

DECEMBER 1997

**MARITIME  
REPORTER**  
AND  
ENGINEERING NEWS

# Great Ships of 1997

**The New World Order**

China settles in as world's third largest shipbuilding nation

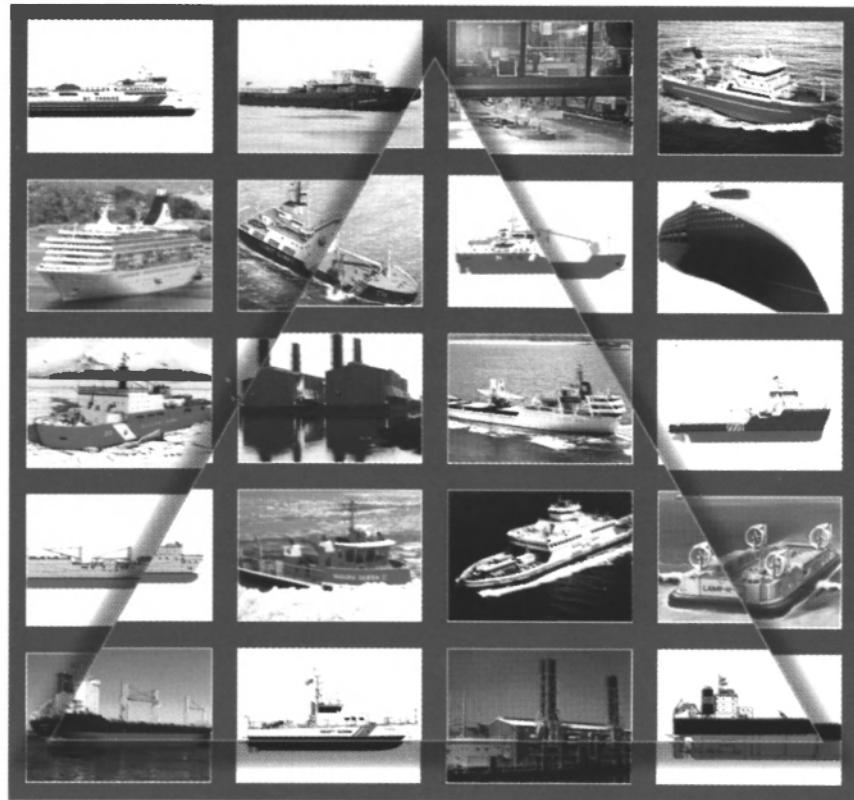
**Workboat Wonders**

Big news abound last month in New Orleans

**CAD/CAM/CIM**

Future success depends on integrating tomorrow's technology today

Ferlship's New Contracts • Recent Ship Sales • Software Solutions • Japanese Maritime Review •  
Far East Update • Ship & Boatbuilding Technology • Marine Literature Review • Bunker Fuel Monitor



# Kvaerner Masa Marine Inc.

**NAVAL ARCHITECTS AND MARINE CONSULTANTS**

Ship design ▲ Marine engineering ▲ Project management ▲ Construction supervision  
 Feasibility studies ▲ Project optimization ▲ Model and full scale testing  
 Ship production technology ▲ Research investigations

**A SYNERGISTIC COMBINATION OF**

## North American Experience

Through its highly qualified and dedicated personnel KMM brings to its clients the experience of:

- US, Canadian and European ship design and construction ▲
- Specialized projects for a diversified clientele ▲
- Ship economics and optimization ▲
- Expanding operation since 1983

## North European Technology

As a member of the Kvaerner Shipbuilding Group, Europe's largest shipbuilder, KMM can offer technology based on:

- Decades of ship design and building experience ▲
- The ship database of 12 shipyards ▲
- Advanced research and technologies ▲
- Producibility as a key design factor ▲
- A wide spectrum of proven designs

1525 West 8th Avenue, Suite 207  
 Vancouver, B.C.  
 Canada, V6J 1T5

Tel: 604-736-8711  
 Fax: 604-738-4410  
 Email: kmmc@mindlink.bc.ca

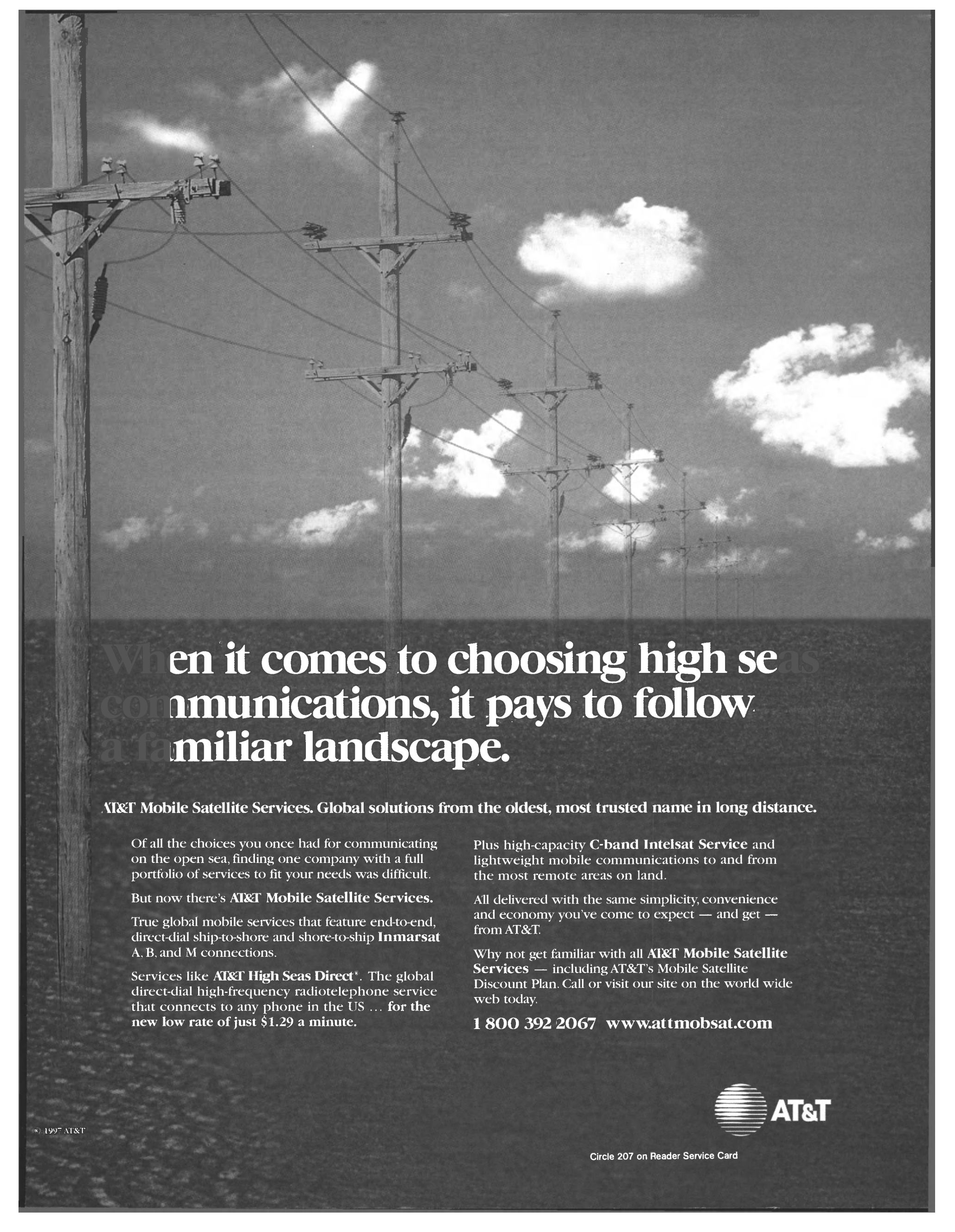
201 Defense Highway, Suite 202  
 Annapolis, MD, 21401  
 U.S.A.

Tel: 301-970-2226  
 Fax: 301-970-2230  
 Email: kmmu2@aol.com

Web: <http://www.kvaerner.no/business/kmm1>

**KVAERNER**<sup>TM</sup>





# When it comes to choosing high seas communications, it pays to follow a familiar landscape.

**AT&T Mobile Satellite Services. Global solutions from the oldest, most trusted name in long distance.**

Of all the choices you once had for communicating on the open sea, finding one company with a full portfolio of services to fit your needs was difficult.

But now there's **AT&T Mobile Satellite Services.**

True global mobile services that feature end-to-end, direct-dial ship-to-shore and shore-to-ship **Inmarsat** A, B, and M connections.

Services like **AT&T High Seas Direct\***. The global direct-dial high-frequency radiotelephone service that connects to any phone in the US ... for the new low rate of just \$1.29 a minute.

Plus high-capacity **C-band Intelsat Service** and lightweight mobile communications to and from the most remote areas on land.

All delivered with the same simplicity, convenience and economy you've come to expect — and get — from AT&T.

Why not get familiar with all **AT&T Mobile Satellite Services** — including AT&T's Mobile Satellite Discount Plan. Call or visit our site on the world wide web today.

**1 800 392 2067 [www.attmobsat.com](http://www.attmobsat.com)**



# EXCLUSIVE AGENT FOR

## MARITIME REPORTER AND ENGINEERING NEWS

### IN THE COUNTRY OF JAPAN



**Ace Media Service, Inc.**  
12-6, 4-chome, Nichiike  
Adochi-ku, Tokyo 121 Japan

TEL: +81-3-5691-3335  
FAX: +81-3-5691-3336

For information about  
advertising from Japan contact  
**Mr. Akio Ishii**

## In This Edition

**Pictured on the cover:** Kvaerner-built *Sea Launch Commander* was selected as one of MR/EN's GREAT SHIPS of 1997. Read up on all 15 ships honored this year, starting on page 45.

## FEATURES

**24**

### Far East Update

Despite tumultuous financial markets, Far East shipyards remain atop the commercial shipbuilding mount. China, propelled by low employment costs, leaps to No. 3. — by Alan Thorpe, international editor



Newport News Shipbuilding brought *American Progress* from computer screen to sea.

### **45 GREAT SHIPS OF 1997**

This year's roster of Great Ships includes a U.S.-built tanker; a refined sugar carrier; a double-ended combi ferry; and an assembly and command ship designed to transport and assemble rockets for offshore site launching.

## SECTIONS

**8**

### Marine Finance

**22**

**Workboat '97:** Post-show wrap-up.

**27**

**Market Report:** Seaborne trade to grow 3.8 percent.

**28**

**Ship Repair & Conversion:** Repair and conversion players continue to grapple with quantity and quality issues.

**31**

### Software Solutions

**33**

**Ship & Boatbuilding Technology:** Using high-tech tools to aid efficiency.

**62**

### Marine Literature Review

**70**

### Japanese Maritime Review

**73**

### People & Company News

**78**

### Products Showcase

**81**

### Bunker Fuel Monitor

**81**

### Recent Ship Sales

**81**

### Index Fleet Valuation

**82**

### Ferlship's New Contracts

**87**

### Buyer's Guide

**88**

### Advertiser's Index

**91**

### Professional/Classified Advertisements

**Subscriptions:** One full year (12 issues) \$18.00 in U.S.; outside of U.S. \$96.00 including postage and handling. For subscription information, contact: Dale Barnett, fax: (212) 254-6271.

## MARITIME REPORTER AND ENGINEERING NEWS

ISSN-0025-3448  
USPS-016-750

No. 12

Vol. 59

Founder: John J. O'Malley 1905 - 1980

118 East 25th Street  
New York, NY 10010  
(212) 477-6700

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means mechanical, photocopying, recording or otherwise without the prior written permission of the publishers.

Maritime Reporter/Engineering News is published monthly by Maritime Activity Reports, Inc. Mailed at Periodicals Postage Rates at Waterbury, CT 06701 and additional mailing offices.

Postmaster send notification (Form 3579) regarding undeliverable magazines to Maritime Reporter/Engineering News, 118 East 25th Street, New York, NY 10010.

Canada Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 0970700. Printed in U.S.A.

Publishers are not responsible for the safekeeping or return of editorial material.

© 1996 Maritime Activity Reports, Inc.

Member



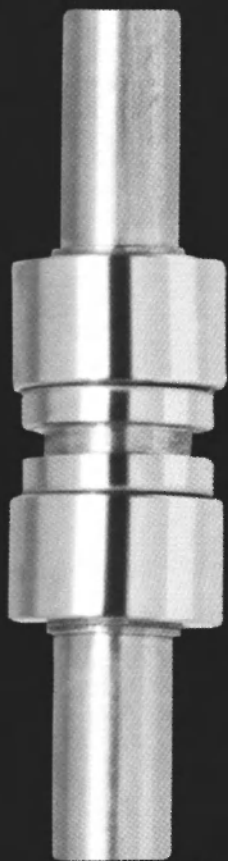
**Business Publications  
Audit of Circulation, Inc.**



# LOKRING

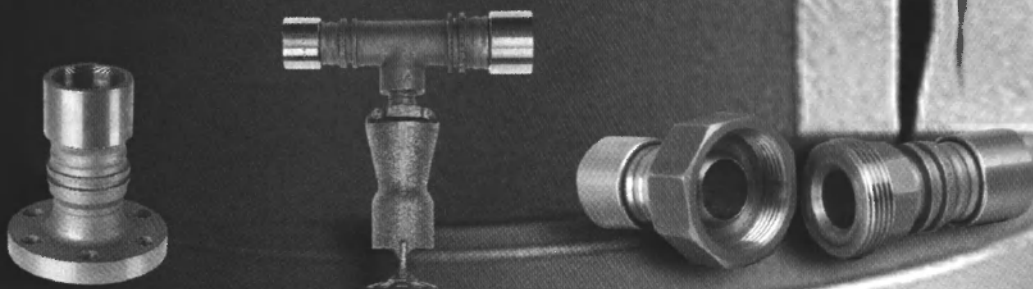
The right way to join pipe

**UNDER BUDGET,  
AHEAD OF SCHEDULE,  
WITH NO HOT WORK...**



- metal to metal, leak tight, permanent connections in minutes
- NAVSEA and ABS approved, USCG accepted
- ferrous and non-ferrous piping systems
- approved for use in fire hazardous applications per ASTM F 1387
- most fitting configurations available
- over 1 million fittings installed

**...business as usual**



call 1-888-NO-WELDS for more information on the LOKRING pipe joining system  
396 Hatch Dr. Foster City, CA 94404

## International Representatives

### INTERNATIONAL OPERATIONS

Charles E. Keil, Vice President  
980 N. Federal Highway, Ste. 206-01  
Boca Raton, FL 33432  
Telephone: +561-368-1021; Fax: +561-368-1161  
24-hr Tel/Fax: +561-998-0313  
Mobile Tel: +561-716-0338

### Australia

ANNE MURRAY/YVONNE SANDFORD  
World Media Network Pty. Ltd.

Surte 5, Level 1, 89 York St., Sydney, NSW 2000 Australia  
Telephone: +61 2 9299 5677; Fax: +61 2 9299 6178

### Benelux

PAULA TACQ  
Maritime Media ML  
Onweg 18 2771 VX Baskoop, Netherlands  
Telephone: +31 172 230707; Fax: +31 172 230708

### Central America

EDUARDO F. LOPEZ/LUIS A. SANCLEMENTE

Transmarine Media Service, P.O. Box 2071, Panama 1, Panama  
Telephone: +507 264 8404/60; Fax: +507 223 8367

### China

WANG ZE/XU XIAO FENG  
Liaoning Foreign Trade Advertising Corp.  
2 Zhongshan Square, Dalian, China 116002  
Telephone: +86 411 2801924; Fax: +86 411 2644606

### Eastern Europe

IVAN BERENYI/OLGA IVANOVA

Pannonia Media Agency, 8630 Balatonboglár  
Radnóti Miklós u. 14, Hungary  
Telephone: +36 85 353 319; Fax: +36 85 353 442

### Egypt

CAPTAIN TARIQ M. OSMAN  
Osman Marine Media Co.  
Algamhoria St., P.O. Box 1248, Alkleej Bldg., Port Said, Egypt  
Telephone: +20 66 340988; Fax: +20 66 325705

### France

DANIEL SOLNICA  
Ediconsult Internazionale, 25 rue Saulnier 75009 Paris, France  
Telephone: +33 1 4246 9571; Fax: +33 1 4246 8508

### Germany & Switzerland

HANSJORG BRANS  
Maritime Media  
Freiherr v. Stein Str. 24, D-63303 Dreieich, Germany  
Telephone: +49 6103 697745; Fax: +49 6103 697743

### Hong Kong

NEWTON CHENG  
Winwell Services Ltd., Room 808, Yu Sung Boon Bldg.  
107-111 Des Vaux Road, Central Hong Kong  
Telephone: +852 2815 0266; Fax: +852 2544 6662

### Italy/Malta

VITTORIO NEGRONE  
Ediconsult Internazionale  
Piazza Fontane Marose, 3-16123 Genoa, Italy  
Telephone: +39 10 583684; Fax: +39 10 566578

### Japan

AKIO ISHII  
Ace Media Service Inc.  
12-6, 4-chome, Nishiike  
Adachi-ku, Tokyo 121, Japan  
Telephone: +81 3 5691 3335; Fax: +81 3 5691 3336

### Korea

JO, YOUNG SANG  
Business Communications, Inc.  
Kwangwhamun P.O. Box 1916, Seoul, Korea  
Tel: +82 2 739 7840; Fax: +82 2 732 3662

### Portugal/Gibraltar

PAULO BREHM  
AZ Publicidade Lda., Rua Almirante Barroso, 52-1 D  
P-1000 Lisbon, Portugal  
Telephone: +351 1 3142256; Fax: +351 1 3525157

### Scandinavia

STEPHAN R.G. ORN/LEON SCHULZ  
AB Stephan R.G. Orn, Box 184  
S-271 24 Ystad, Sweden  
Telephone: +46 411-184 00; Fax: +46 411 105 31

### Singapore

CATHERINE WONG  
The Euro-Asia Link, 391 A Orchard Road #12-01  
Ngee Ann City Tower A, Singapore 238873  
Telephone: +65 337 4658; Fax: +65 456 4610

### South Africa

FINN KVAMSDAHL  
Finn's Enterprises, Media Marketing Division  
P.O. Box 99, 2250 Blinkpan, Republic of South Africa  
Telephone/Fax: +27 13 2963 023

### South America/Caribbean Basin

DELIO R. ALONSO  
Multilink International  
115 Calabria Ave., Ste. 12  
Coral Gables, Fla. 33134  
Telephone: +305-445-6423; Fax: +305-445-1483

### Spain

JESUS MORAN  
Via Exclusivas S.L., Modesto Lafuente, 4 28010, Madrid, Spain  
Telephone: +341 448 7622; Fax: +341 446 0198

### Turkey

NIHAT BOYTUZUN/ROWENA BAILEY  
Kamera Corp., Cumhuriyet Cad. 257/3, Harbiye 80230  
Istanbul, Turkey  
Telephone: +90 212 231 14 20; Fax: +90 212 230 36 97

### United Kingdom

MICHAEL J. DAMSELL  
Euromedia Ltd., P.O. Box 122, Hayward's Heath  
West Sussex RH16 1YE, England  
Telephone: +44 1444 417360/Fax: +44 1 1896 784089



So you were surprised to get the entire design package so fast! That's because you haven't visited our offices recently. Our Autoship systems have speeded up our work – and they let us use all of our knowledge, experience and creativity to develop the design that best meets the needs.

How do we do it now?

Once we've optimized the ship numerically, we design the hull form in **Autoship**. It's a full NURBS-based 3-D modeling program and it's automatically faired.

Throughout, we can check hydrostatics and resistance on-line with **Autopower**. That saves us a lot of time, and we use it to look for extra speed.

Next, we define all the tanks and compartments in **Autohydro**. Calculating volumes and balancing the ship is easy and quick, so we can spend more time to optimize the layout.

We define the structural members in **Autobuild**; the program automatically checks for interference and generates a bill of materials and a complete list of weights. That eliminates manual drafting, saves the yard manhours, and reduces the usual worry about weight.

To save even more, we can export directly to NC cutting machines, radically reducing lofting and nesting costs.

Yes, all these programs come from the same place – Autoship Systems, the world's largest developer of Windows™-based marine software. With Autoship, the entire design process, from concept to cut plates, is a smooth, seamless flow.

Autoship helps us produce better designs, faster, with lower construction costs...benefits you appreciate, and our competitive edge!

**Gain the competitive edge!**

Contact Autoship today for your free demo disk and catalog

Autodesk.  
Registered Application Developer



Windows is a trademark of Microsoft Corporation.  
The Autodesk logo is registered in the U.S. Patent and Trademark Office by Autodesk, Inc.

◆ Design

◆ Hydrostatics

◆ Power & Resistance

◆ Construction

**autoship**  
Systems Corporation


HEAD OFFICE  
403 – 611 Alexander St.  
Vancouver BC  
Canada V6A 1E1

Tel 604. 254 4171  
Fax 604. 254 5171  
Net bpedret@autoship.com

USA • JAPAN  
NORWAY • GERMANY  
UK • FRANCE • AUSTRALASIA  
POLAND • CROATIA • RUSSIA



# NEW RIG CAPACITY



## FRIEDE GOLDMAN OFFSHORE

**A** new purpose-built shipyard on the Gulf of Mexico is hard to believe, but you won't have to wait anymore. Imagine your new build in the world's most modern offshore fabrication facility, the new Friede Goldman Offshore yard, opening in Spring 1998.

**IT'S COMING.** The 90-acre Friede Goldman Offshore facility will include a 95,000 square-foot fabrication shop with the latest state-of-the-art manufacturing equipment, 600-ton mobile crane lift capacity and access to a 30,000 ton lift capacity dry dock.

**BELIEVE IT.** There's no maneuvering down an obstructed channel. Located directly on the Gulf of Mexico off Pascagoula, Mississippi, the easily accessible yard will offer a 302,500 square-foot sub-assembly and launch area for new builds and 2,000 feet of deepwater outfitting bulkhead.

**DEPEND ON IT.** The 1,000 skilled Friede Goldman Offshore workers and experienced project managers will work as a team to produce your new build safely—on time and on budget using premier forming equipment.

It's not just your imagination any longer. To learn more about the world's most modern offshore manufacturing facility call Friede Goldman Offshore—and put the new build you've been waiting for on the fast-track to reality.

FRIEDE GOLDMAN OFFSHORE, A Friede Goldman International Co. 3400 Litton Road Pascagoula, Mississippi 39567  
Phone: 801.898.0000 Fax: 801.789.8222

Circle 235 on Reader Service Card

## EDITOR'S NOTE

A host of seemingly unrelated financial forces have conspired to drag down the maritime market as 1997 comes to a close, but prospects for continued fleet renewals — particularly in the tanker segment — and for the lucrative offshore market remain upbeat for the year to come.

If anything, the recent spate of financial turmoil and market moves has proven the true breadth and depth of international business co-dependency. In particular, events in the Middle East — specifically the recent meeting of OPEC nations — have direct, tangible effects on ship, boat and rig building and supply companies around the world, from the North Sea to the Gulf of Mexico.

As soon as OPEC leaders decreed to boost oil production by 10 percent — combined with the possibility of additional Iraqi oil coming to market with the potential expansion of the U.N. oil-for-food deal — a case of collective jitters hit the stock market, as oil majors, E&P companies and builders alike saw their stock and market value summarily drop.

While the business of extracting and bringing oil to market has, is and will always be a slave to supply and demand, this latest “oil boom” is proving more resilient and less sensitive to price-per-barrel swings for a few reasons. First, worldwide demand for oil products is predicted to rise steadily through 2000, despite recent trouble in the Far East. Second, technology and royalty tax breaks now allows companies to find and extract deepwater resources more cost effectively.

Another trend worth watching in 1998 is the recovery and re-shaping of the Korean market. The near collapse of the Korean financial system warranted a record bail-out on behalf of the International Monetary Fund in the neighborhood of \$55 billion.

This money, of course, comes with strings attached. While specifics of the deal were still unfolding at press time, it seems the package mandates a reform of Korean industrial giants, calling for them to open their traditionally tightly held markets to foreign competition.

What this all means to the shipbuilding market is still uncertain, but any company with hopes of breaking into the Korean market — the world's second largest commercial shipbuilding market — (i.e. shipbuilders and ship equipment suppliers) may have a golden opportunity next year and beyond.



*Gregory R. Trauthwein*

Gregory R. Trauthwein, editorial director

Please contact me with any comments regarding the publication and/or news leads at:

tel: +212-477-6700; fax: +212-254-6271; or e-mail: [trauthwein@marinelink.com](mailto:trauthwein@marinelink.com)

# MARITIME REPORTER & ENGINEERING NEWS

Editorial & Executive Offices  
118 E. 25th St., NY, NY 10010  
Tel: (212) 477-6700; Fax: (212) 254-6271;  
e-mail: [mren@marinelink.com](mailto:mren@marinelink.com)

### PUBLISHERS

Charles P. O'Malley  
John E. O'Malley  
John C. O'Malley

### Vice President

Gregory R. Trauthwein

### EDITORIAL

#### Editorial Director

Gregory R. Trauthwein

#### Senior Editor

Nina D. Miller

#### Production Editor

Anthony Besada

#### Technical Editor

David Tinsley

#### International Editor

Alan Thorpe

#### Editorial Consultant

James R. McCaul, president,  
International Maritime Associates

### INFORMATION SYSTEMS

#### Manager of Information Systems

Susan Cosme

### MARKETING

#### Marketing Assistant

Jennifer Bobbe

### PRODUCTION

#### Production Manager

Adam Hellman

#### Asst. Production Manager

Christopher Eaton

### CIRCULATION

#### Circulation Manager

Dale L. Barnett

### ADVERTISING SALES

#### Regional Sales Manager

Lucia Annunziata

#### Regional Sales Manager

Amy Stuart

#### Regional Sales Manager

Jean M. Vertucci

#### Classified Sales Representative

Carrie Rivera

### U.S. GULF COAST

James N. McClintock

Simpson Corporate Park, Indigo House, Suite A, 206 South  
Tyler Street, Covington, La. 70433

Telephone: (504) 893-5099; Fax: (504) 893-5024

Advertising Sales Information

Telephone: +212-477-6700

Maritime Reporter/Engineering News

**Maritime Week**

the new weekly paper from the publishers of *Maritime Reporter*, provides crucial, timely, financial-related information for anyone conducting business in the maritime industry. For a FREE 4-WEEK trial subscription, contact me by telephone, fax or e-mail using the information above.



# ***This same navigation technology now available in a compact model.***



Advanced Marine Technology  
is an established OEM provider  
of ECDIS products.

The aircraft carrier U.S.S. Constellation  
uses ECDIS navigation technology from  
Advanced Marine Technology.

**INStar**  
Integrated Navigation System

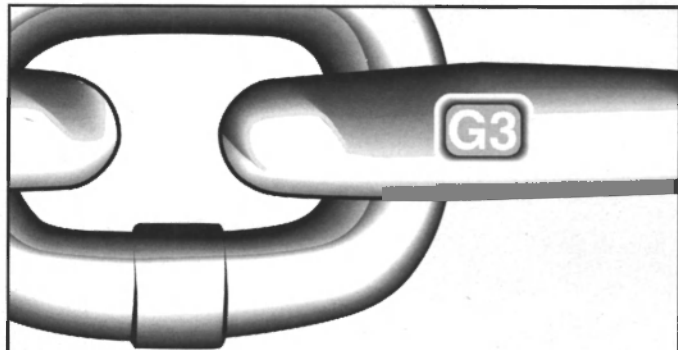
**Now you can have advanced electronic charting  
in our low-cost INStar system.**



Advanced Marine Technology

MAKING NAVIGATION EASIER™

For more information: tel 800-732-2322 or 206-443-5663 • fax 206-443-5661 • e-mail [amt@advmarine.com](mailto:amt@advmarine.com) • [www.advmarine.com](http://www.advmarine.com)



## The Best Source in the Region Just Got Better

**CERTEX, Southern Marine is Now a  
Master Distributor of All ACCO products**

### One Stop Shopping

As a master distributor of ACCO products, CERTEX, Southern Marine can offer an endless selection of marine and overhead lifting chains and accessories. Plus, we're a certified chain sling repair center.

### Call Us First

Because we're the specialists in marine chain and alloy chain for overhead lifting, you are more likely to find exactly what your looking for with the first call.

We can also manufacture slings, designed and built to your requirements.

### Quick Service

You'll appreciate the convenience of our huge inventory that allows you to get same day service on the products that you really need. And, with welded sling capabilities right in Southern Alabama, there's no costly delays while your chain slings are shipped to be repaired.

**CERTEX**  
Southern Marine  
800-231-2052

1920 Ave. A, Brookley Industrial Complex, Mobile, Alabama

ALLOY SLINGS AND REPAIR    MARINE CHAIN    LIFTING CHAIN    CHAIN ACCESSORIES    HOOKS

Circle 305 on Reader Service Card

## MARINE FINANCE

### Halter To Fabricate Substructure For Transocean Offshore

TDI-Halter, Inc. has been awarded a contract from Transocean Offshore, Inc. to build the substructure for *Discoverer Enterprise*, an ultra-deepwater drillship currently under construction in Spain. Halter's Equitable Shipyards will build the approximately 130 x 80 x 67 ft. (39.6 x 24.4 x 20.4 m) substructure, which will then be assembled at Halter's Pascagoula shipyard.

The \$5 million, 1,200-ton substructure is scheduled for completion in the first quarter of 1998 and will be used for dual drilling operations. It will feature two rotary drilling tables and drawworks. *Discoverer Enterprise*, which is committed to a long-term contract with Amoco, will be brought to the U.S. for topside outfitting during the second quarter of 1998 and will subsequently go to work in the Gulf of Mexico. When delivered, it will reportedly be the first of the ultra deepwater drillships to be commissioned and will be capable of working in water depths up to 10,000 ft.

### Baltimore Marine Completes Ship Repair

Baltimore Marine Industries, Inc. has completed its first major ship repair job ahead of schedule and under budget.

Cruise ship *Royal Majesty* arrived at the yard in Sparrows Point, Md., on October 28 for service that included drydocking, repair of structural damage, blasting and painting of the hull. The vessel will be renamed *Norwegian Majesty* after its sale by Majesty Cruise Line to Norwegian Cruise Line. Work on the ship was completed on November 6, one day ahead of schedule.

### SES And ABS Reach Agreement

Shipmanagement Expert Systems S.A. (SES) and the American Bureau of Shipping (ABS) have reached an agreement linking their products ABS SafeNet and SES Q-Control, The Preventive Planned Maintenance, The Survey Status and The Operations Logs modules.

This new concept is designed to offer the shipping industry quality fleet management. It is also designed to provide a cost-efficient basis for ISM Code compliance and conformity, as well as assistance in auditing for the issuing and renewal of ISM certification.

For more information on ABS  
Circle 7 on Reader Service Card

### Litton Wins Samsung Contract

Litton Marine Systems has received an order for four integrated bridge systems from Samsung Heavy Industries.

The systems will be installed on four new ABS classed 308,500 dwt VLCCs under construction at Samsung for Chevron Shipping Company.

The first four systems are scheduled for delivery between 1998 and 1999, and the contract includes options for two additional ships. Under the contract, each ship will be fitted with a Sperry Vision 2100 integrated bridge system.

The bridge installation will include a Sperry VMS VT voyage management system (electronic chart display and voyage data recorder), Decca BridgeMaster VT radars and Sperry gyros, autopilots, steering controls and speed logs. The communications suite will consist of a Sperry 600 Watt A3 GMDSS station.

For more information on Litton  
Circle 8 on Reader Service Card

### Hitachi Zosen Tapped For Three VLCCs, Two Panamax Carriers

Hitachi Zosen Corp. has received an order for three 300,000 dwt, double hull VLCCs from Golden Ocean Group. Each vessel will have a scantling draft of 69 ft. (21.1 m) and will be capable of carrying 2.1 million barrels of crude oil.

Powered by a Hitachi Zosen-MAN-B&W 7S80MC main diesel engine and equipped with the Hitachi Zosen Super Stream Duct (SSD) at the stern, the VLCCs have high propulsion efficiency and energy-saving capability.

In addition, Hitachi Zosen has received orders for two Panamax Jumbo bulk carriers — one from Millennium Shipping Corp. and one from Power Transportation Corp. The vessels will be constructed at the company's Mizuru Works and will be operated by overseas clients represented by Lykiardopulo & Co. Ltd. These bulk carriers will feature more than 75,000 dwt and cargo volume of approximately 89,400 cu. m.

For more information on Hitachi Zosen  
Circle 20 on Reader Service Card

### Philadelphia Gear Wins Avondale Contract

Philadelphia Gear has been selected by Avondale Shipyard to supply the main reduction gears for the LPD-17 class vessels.

The reduction gears are similar to the LSD-41 class reduction gears previously furnished by Philadelphia Gear and will be used to combine power from two 10,400 hp diesel engines to a controllable pitch propeller.

Two reduction gears are required for each ship, and the class size is set at 12 ships. Deliveries are scheduled for October 1999 through 2006.

For more information on Philadelphia Gear  
Circle 11 on Reader Service Card



## MARINE FINANCE

### Appledore Engineering Receives Navy Contract

Appledore Engineering, Inc. has recently been awarded a \$500,000 contract by the U.S. Navy to perform Marine Engineering Services on Navy waterfront facilities in the region to include underwater inspections, geotechnical studies, hydrographic surveys, dredge assessments and analysis, facility planning and engineering studies, design plans, technical specifications, quality assurance plans, regulatory authority permitting and construction administration services.

This is the third multi-year contract Appledore's Marine Engineering Division has received from the U.S. Navy.

For more information on Appledore  
Circle 12 on Reader Service Card

### DRS Technologies Wins \$14.2M Contract

DRS Technologies, Inc. announced that it has been awarded, through its DRS Electronics Systems, Inc. subsidiary, a multi-year contract with an initial maximum value of \$14.2 million from the U.S. Navy to provide AN/SPS-67 radar systems, engineering support and associated installation kits.

The contracted radar systems will be deployed onboard the Navy's new DDG-51 Aegis class ships. Future contracts for additional AN/SPS-67 radar systems for installation on new aircraft carriers and amphibious operation ship platforms are anticipated to be awarded to the company.

The AN/SPS-67 radar system provides ships with ocean surface surveillance and navigation data, as well as detection and tracking of low flying aircraft and other targets.

For more information on DRS  
Circle 17 on Reader Service Card

### Port Weller Dry Docks Wins \$20M Contract

Algoma Central Marine has awarded a contract valued at approximately \$20 million to Port Weller Dry Docks to convert bulk carrier M/V *Algowest* to a self-unloader.

The conversion is in addition to

an \$85 million fleet modernization program for the 23-vessel Algoma fleet.

*Algowest* will arrive at Port Weller in December and will be delivered in June 1998.

Recently, Port Weller announced a \$5 million investment in state-of-the-art technology to upgrade the

production panel line, a robotic welding line and a robotic stiffener line.

Algoma Central previously awarded to Port Weller Dry Docks a \$5.5 million contract for a mid-life refit of M.V. *Algorail* for delivery April 1998 to coincide with the beginning of the Great Lakes ship-

ping season.

The conversion of the *Algowest* is the fourth major conversion Port Weller has carried out for Algoma Central Marine during the last 10 years.

For more information on  
Port Weller Dry Docks  
Circle 14 on Reader Service Card

## REAL SAVINGS AT THE TOUCH OF A BUTTON

### the DK-2 Range

Single and twin channel compact portable systems for full cylinder and fuel pressure analysis

- HIGHEST ACCURACY
- BEST PRESENTATION OF RESULTS
- RUGGED CONSTRUCTION

#### START TODAY

The Doctor systems provide extensive information on the performance of engines quickly, simply and accurately.

Also available is an INSTALLED system and fully featured ON-LINE system



**ICON** SSPE, South Queensferry Tel: +44-(0)131 331 7772  
RESEARCH West Lothian EH30 9TG, UK Fax: +44-(0)131 331 7436

Circle 233 on Reader Service Card

## JACK-OF-ALL-TRADES.

The Lang Range is built to suit the varying needs of all types of marine galleys.

- Blue and brown water vessels.
- Cooktop arrangements: griddles, hot tops, french plates.
- Bake and Roast or Convection Cooking.

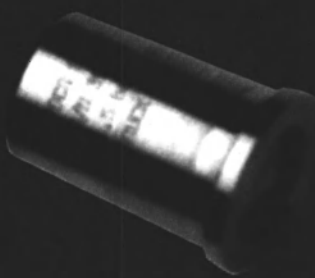
To learn more about Lang's line of heavy-duty marine galley equipment, call:

**lang** 1-800-882-6368  
6500 Merrill Creek Parkway  
Everett, WA 98203



Circle 246 on Reader Service Card

# THE BALLAST SENSOR



actual size

## Use One Sensor for all Shipboard Liquid Levels!

This technology has been designed specifically for surviving the rigors of ballast tank continuous monitoring. It weighs less than one ounce, and is constructed from 100-percent pure titanium.

- Accuracy one-quarter of 1-percent.
- ABS, USCG and Lloyds approved.
- FM Class I, Div. I, intrinsically safe.
- Removal without tank entry.
- Can include temperature.
- One sensor for all shipboard liquids: Fuel Oil, Lube Oil, Fresh Water, Black Water, etc.
- Generic 4-20ma output.
- 15,000 Tanks worldwide.
- Big Blue compatible.
- EMS Automated Draft, Trim, and Heel System compatible.

**EMS**

ELECTRONIC MARINE  
SYSTEMS, INC.  
800 Ferndale Place  
Rahway, NJ 07065

Call today  
for more  
information!

732.382.4344

732.388.5111 fax

emsmarcon@aol.com e-mail

Circle 232 on Reader Service Card

# GO ANYWHERE IN THE WORLD,

you need  
communications  
that can too.



Fleet scheduling used to be less hectic than air traffic control. No more • So now COMSAT Mobile Communication – the largest Inmarsat service provider – makes vessel communications simple, reliable and cost-efficient on all seven of the high seas • Send and receive up-to-the-minute data on weather and routing information, harbor and docking requirements, contractual and exchange information, special cargo needs, ship maintenance and more. Use e-mail, telex, fax or voice • DIAL COMSAT FIRST™, and see how mobile satellite communications can help keep your business right on course. Call +1-301-214-3100 or e-mail us at [SALES@COMSAT.COM](mailto:SALES@COMSAT.COM)

Circle 219 on Reader Service Card

© 1996 COMSAT Mobile Communications





## MARINE FINANCE

# Halter Signs Contract With Hvide And Aker

Halter Marine Group, Inc. has signed a contract to build a new class of construction anchor-handling tug supply (CAHT) offshore support vessel for worldwide deep-water applications with emphasis on the Gulf of Mexico and West Africa. The first-of-class, \$37 million vessel will be built as part of a joint venture between Hvide Marine Inc. and Aker Marine Contractors, Inc., a subsidiary of Aker Maritime, Inc.

The 16,000 hp diesel electric vessel will be built at Halter's Moss Point shipyard and delivery is scheduled for early 1999. An option for a second similar vessel is available to the owners through mid-1998. Hvide Marine will supervise construction and operate the U.S.-flagged vessel, and Aker Marine Contractors will be the commercial manager with responsibility for directing the vessel's work and contracts in the anchor handling and construction markets.

Overall, the CAHT will be 279 ft. (85-m) in length, with a 65-ft. (19.8-m) beam, 26-ft. (7.9-m) depth and approximate 22-ft. (6.7-m) loaded draft. Deck cargo capacity will be approximately 1,500 light tons. The vessel will be equipped with a diesel-electric Z-drive, azimuthing main propulsion system, dynamic positioning system designed to DPS-0 requirements with capability to DPS-2 and will generate approximately 120 metric tons of bollard pull.

In addition, the vessel will have a Fritz Culver three-drum hydraulically driven anchor handling towing winch with a bare drum line pull of one million lbs. on each after drum and a bare drum line pull of 780,000 lbs. on the forward drum, to handle sections of large diameter polyester rope for use in the mooring of MODU's, spars and other floating facilities.

Power will be produced by four remanufactured EMD16-710-G7B main diesel generator sets rated at 2865 kW at 900 rpm, and four rebuilt 3,000 hp DC motors will provide main propulsion. A free running speed of approximately 14 knots is expected. The ship's service generator will be a Caterpillar 3508 engine drive a 450 kW generator at 1,200 rpm. The emergency

generator will be a Caterpillar 3306B engine driving an approximately 190 kW generator. An electro-hydraulic steering system linked to a dynamic positioning system will be available from two stations in the pilot house and one in the engine room. Maneuverability and station-keeping will be aided by a 1,500-hp

retractable azimuthing fixed pitch bow thruster and an 800-hp fixed pitch tunnel bow thruster.

The CAHT will also have a pivoting 300-ton capacity "A" frame crane for lifting over the stern, which will allow the deployment and installation of large suction anchors, templates and other sub-sea structures.

The boat will be capable of storing and handling more than 20,000 ft. of three-inch diameter chain and 52,000 ft. of 3.5 in. diameter wire, rendering it suitable for the transportation, deployment and installation of very deepwater pre-set moorings.

For more information on Halter Marine  
Circle 16 on Reader Service Card

## A Tradition of Innovation and Excellence since 1949



- Superior Workmanship
- Affordable Prices
- Custom Designs
- Construction Plans for 300 Vessels

For nearly 50 years, Blount Industries has continued to design, build and operate high quality, and innovative workboats, cruise ships and dinner ships.

### Blount Industries, Inc.

461 Water Street, Warren, Rhode Island 02885  
(401) 245-8300 Fax (401) 245-8303

Circle 211 on Reader Service Card

## PERCEPTION<sup>®</sup> IS PROJECT MANAGEMENT



### A Fully Integrated Software System

- ◀ Estimating
- ◀ Integrated Scheduling
- ◀ Labor Management
- ◀ Material Management



ASSOCIATES, INC.  
927 West Street Annapolis, MD 21401 USA  
(410) 263-8593 FAX (410) 267-0503  
E-mail: info@sparusa.com

Circle 275 on Reader Service Card

# SEA SWITCH



## High-Level Alarm With No Moving Parts!

This technology was designed specifically for shipboard use to last the life of the hull.

- Constructed of teflon and stainless steel.
- Self-test meets requirements for closed tank gauging.
- Intrinsically safe.
- ABS and USCG approved.
- Self-cleaning.
- Can be replaced on-deck with no tools in less than a minute without venting to atmosphere.
- Multiple display options.
- Big Blue compatible.
- Embedded pump control capability.
- Mates to a standard four inch butterfly flange.

Call today for more information!

EMS

ELECTRONIC MARINE SYSTEMS, INC.  
800 Ferndale Place  
Rahway, NJ 07065

732.382.4344  
732.388.5111 fax  
emsmarcon@aol.com e-mail

Circle 296 on Reader Service Card

## MARINE FINANCE

### Reading & Bates Wins \$105M Mobil Deal

Reading & Bates Corp. reported that its semisubmersible drilling rig *JW McLean* has won a two-year contract with Mobil Corp.'s Mobil North Sea Ltd., worth \$105 mil-

lion. The contract, which will start in the second quarter of next year, came as a result of the early termination in September of Reading & Bates' drilling contract on the Connamera development offshore Ireland.

For more information  
Circle 69 on Reader Service Card

### SHI Wins \$127M Containership Contracts

South Korea's Samsung Heavy Industries (SHI) has won a \$127 million contract to build three container ships for National Shipping Company of Saudi Arabia

(NSCSA). The three ships, each capable of carrying 4,400 containers, are scheduled to be delivered in 1999.

For more information  
Circle 68 on Reader Service Card

### Fosen Contracted For Car Ferry

Compagnie Tunisienne de Navigation (CTN) has ordered a 2,208-passenger/666-car ferry worth approximately \$156 million from Norway's Fosen Mekaniske Verkfteder. Delivery is set for June 1999.

For more information  
Circle 67 on Reader Service Card

### Aker Finnyards Signs Newbuild Deal

Aker Maritime's new Finnish shipyard, Aker Finnyards, signed a \$45.3 million contract with Rederi AB Engship to build a 9,300-dwt RoRo ferry for delivery at the beginning of 1999.

For more information  
Circle 70 on Reader Service Card

### Friede Goldman Wins Contract From Noble

Friede Goldman has announced an EVA-4000 project from Noble Drilling for its Pascagoula-based shipyard HAM Marine, Inc.

*Amos Runner* was expected to arrive at the shipyard in mid-November with a targeted completion date of January 1999.

The conversion project will include converting the submersible rig into an EVA-4000 semi-submersible rig capable of deepwater drilling.

For more information on  
Friede Goldman  
Circle 15 on Reader Service Card

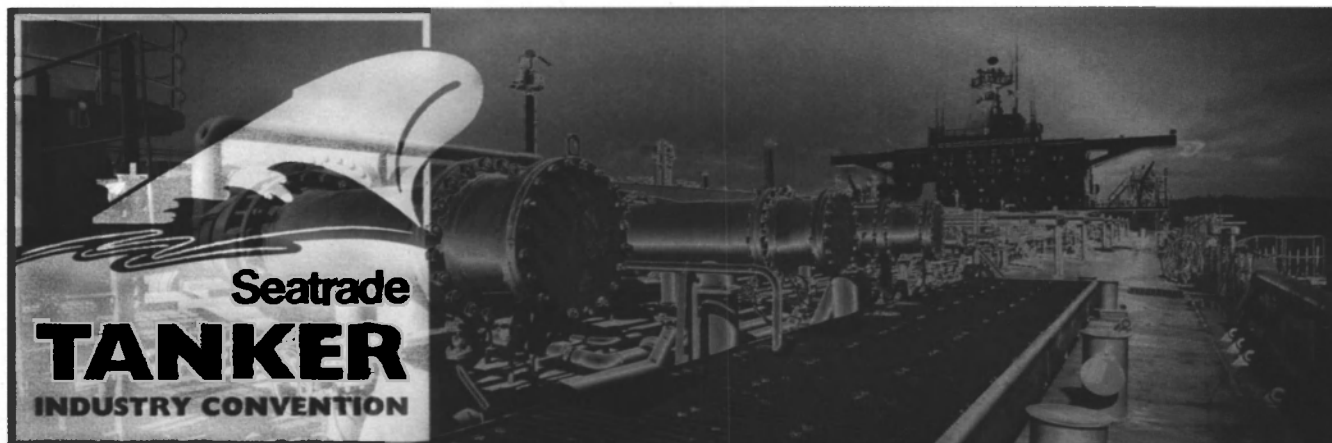
### Kvaerner Wins \$63M In Contracts

Kvaerner has signed a letter of intent with Brovig Offshore for the construction of an oil well test vessel, valued at \$63 million.

Work on the vessel will start immediately at Kvaerner's Govan yard in Scotland, with delivery scheduled for May 1999.

For more information  
Circle 72 on Reader Service Card

## THE FOURTH



**11 - 12 FEBRUARY 1998**

ROYAL LANCASTER HOTEL  
LONDON, UK

Topical discussion, lively debate,  
an unrivalled platform for business

Official Publication:

**Seatrade**  
REVIEW

Reception sponsored by:

**ABS**  
FOUNDED 1902  
AMERICAN BUREAU OF SHIPPING & AFFILIATED COMPANIES

**Miller Freeman**  
A United News & Media company  
Seatrade cruise events are owned by  
Miller Freeman and organised in  
association with the Seatrade Organisation

Please send me information about the fourth Seatrade Tanker Conference and Exhibition, 11-12 February 1998.

My interest is (please ✓):

Attending the conference  Exhibiting to the delegates

Name  Position

Name of company

Nature of business

Address

Post/Zip Code  Country

Telephone  Fax

E-mail

Signature  Date

(please print clearly)

Return this completed form to the Events Department, Seatrade, Seatrade House, 42 North Station Road, Colchester CO1 1RB, UK.

Tel: +44 1206 545121 Fax: +44 1206 545190 E-mail: 100125.543@compuserve.com Visit our website: www.seatrade-global.com

Circle 268 on Reader Service Card

## MARINE FINANCE

### Cosco Sells Vessel For \$19 Million

A Cosco Investment (Singapore) Ltd. subsidiary has agreed to sell a vessel for \$19.3 million to Panamanian company Ruichanghai Maritime Inc. Cosco plans to deliver the bulk carrier by mid-November.

### HHI Wins \$250M Shipbuilding Order

Hyundai Heavy Industries Co. (HHI) won a \$250 million order from Reading & Bates Corp. to build a semi-submersible drilling rig on a turnkey basis.

For more information  
Circle 74 on Reader Service Card

### Bollinger Awarded Contract To Build Barge

Bollinger Marine Fabricators (BMF), a subsidiary of Bollinger Shipyards, Inc., has been awarded a contract to build a tank barge for Allied Towing Corporation. The double skin, Type II tank barge measures 257.6 x 54 x 12 ft. (78.5 x 16.5 x 3.6 m), and is scheduled for delivery in April 1998.

For more information  
Circle 75 on Reader Service Card

### Pan-United Contracted For Double-Hulled Tanker

Pan-United Corp. has won a contract to complete the building of a double-hulled product/chemical tanker.

The contract comes from new client, United Tankers AB of Sweden.

The incomplete 16,700-dwt vessel arrived at Pan-United's facilities in late October.

The ship is expected to be delivered to United Tankers in mid-April 1998 to trade in northern Europe.

### United Tankers Orders Tanker From Spain

United Tankers has ordered an 18,800 dwt stainless steel tanker from Spanish shipyard Factorias Vulcano at Vigo. The new 18,800-dwt, double-hulled chemical tanker will have a tanker volume of 19,500 cu. m. and is scheduled

to be delivered by 2000.

### London & Overseas Sells Tankers For \$51M

London & Overseas Freighters reportedly sold its fleet of three Panamax tankers to clients of

Pegasus Shipping for \$51.5 million. London & Overseas said it expected to make a profit of \$30 million on the sale.

### Tankers For Sale

Turkey's petroleum retailer Petrol Ofisi announced plans to

sell two of its unused oil tankers through tenders. The 3,200-dwt *Boray* and 1,000-dwt *Piri Reis* will be sold after their financial assessment have been completed by the company.

*Boray* has been unused since April, 1996, and *Piri Reis* has been unused since June 1997.



**The ORIGINAL**  
**SIMPLEX COMPACT 2000**

by  
B+V INDUSTRIETECHNIK

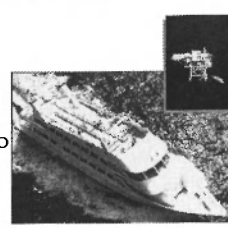
Split Version

There's no substitute for Simplex quality, reliability, safety, and experience. And there's no comparing the service, attention, expertise, and value you get from STI along with the lowest possible prices on sterntube seals and seal spares!

**STI**  
SIMPLEX TURMAR INC.

Toll Free : 1-888-357-3257  
Great Lakes Region  
TEL : (716) 695-0142 FAX : (716) 695-0144  
West Coast Region  
TEL : (253) 853-6747 FAX : (253) 853-6748  
Central Gulf Region  
TEL : (504) 449-0792 FAX : (504) 447-0052

Circle 210 on Reader Service Card



**BRANTON INDUSTRIES**

For more than twenty-five years **Branton Industries** has worked to build a distinguished reputation for quality products and exceptional customer service. **Branton** is proud to be recognized as an industry leader in our commitment to noise abatement and fire protection systems.

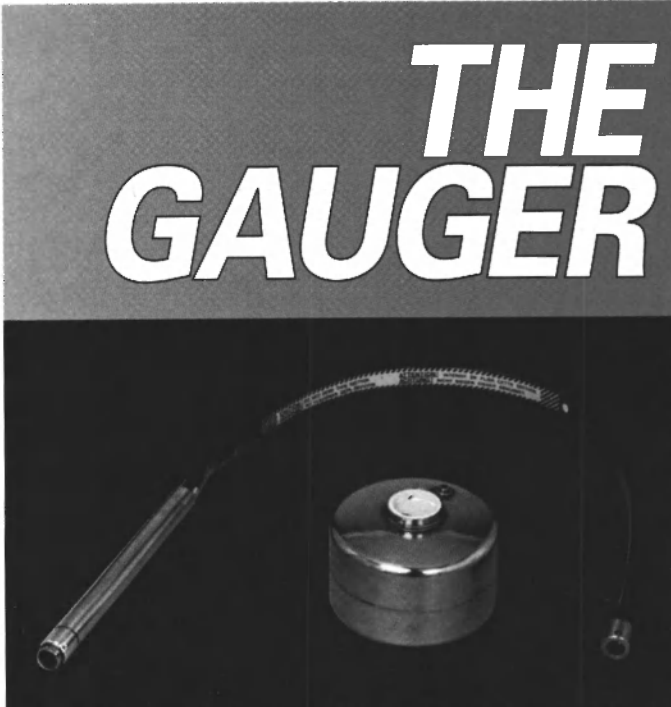
**DISTRIBUTOR / FABRICATOR OF:**

<b>INSULATIONS</b>	<b>JOINER SYSTEMS</b>
Hull Board	Joiner Panels
Sound Abatement	FRP
Structural Fireproofing	Doors
Thermal	Wall Liners
Exhaust	Ceilings

*Polyimide - Mineral Wool - Fiberglass*  
*Complies with USCG and Navy Specs*

P. O. Box 10536  
New Orleans, LA 70181  
(504) 733-7770  
FAX (504) 734-7818

Circle 214 on Reader Service Card



**THE GAUGER**

**Have One-Tenth of an Inch Level Accuracy for All Liquid Cargos!**

This technology requires no in-tank support. The structure has proven reliability on over 10,000 tanks worldwide and has complete milspec self-diagnostics.

- Made of two materials: teflon and stainless steel.
- Can include multiple temperatures.
- Can include tank header pressures.
- USCG and ABS approved for closed tank gauging.
- FM approved Class I, Div. I, Group C & D.
- Big Blue compatible.
- Readout in BBLs/Tons/GAL, etc.
- Sea-made for leak detection.
- Multiple display options.
- Complete load Management Software.
- Embedded Pump Control capability.

**Call today for more information!**

**EMS**

ELECTRONIC MARINE SYSTEMS, INC.  
800 Ferndale Place  
Rahway, NJ 07065

732.382.4344  
732.388.5111 fax  
emsmarcon@aol.com e-mail

Circle 297 on Reader Service Card





Wellington introduces two new lines manufactured with advanced fibers from **AlliedSignal**  
FIBERS

**SteelPlait™ Ropes**  
with **SPECTRA®**  
Performance Materials

*The Ultimate in  
Strength & Flexibility*

- Highest strength-to-weight ratio - replaces steel
- Soft, flexible and lightweight - for easy and safe handling
- Easy to splice
- Excellent energy absorption
- Available in 1" to 6" diameter in 8 strand braided construction
- Corrosion/oxidation resistant

- Towing lines • Head lines**  
• **Mooring • Winch/lifting lines • Tug assist lines**  
• **Lashing/ratchet lines**  
• **Facing lines • Steering Lines • Seismic/ oceanographic towed array lines • Wing lines**

**SeaGard®**  
Polyester Ropes

*The Ultimate in  
Wet Abrasion Resistance*

- High wet strength
- Excellent UV Resistance
- Outstanding durability
- Economical - longlasting value
- Good handling properties and flexibility
- Available in 3 strands, 8 strand plaited and 12 strand double braided constructions; up to 18" diameter

# MORE ROPE POWER

**FOR HEAVY  
MARINE  
APPLICATIONS**



Spectra® and SeaGard® are registered trademarks of AlliedSignal Inc.

**Wellington**

Commercial Products  
1140 Monticello Rd.  
Madison, Georgia 30650  
(800) 228-6680  
Fax: (706) 342-4656

Circle 204 on Reader Service Card

©1997 Wellington Commercial Products

## MARINE FINANCE

### Sumitomo To Supply Tankers To Russian Shipper

Sumitomo Corp. has won an order from Novorossiysk Shipping Co. of Russia for two 100,000-ton, double-hulled oil tankers. The tankers will be manufactured by steelmaker and shipbuilder NKK Corp.

Earlier in the year, Sumitomo and NKK received an order to build four tankers for the Russian company.

For more information  
Circle 71 on Reader Service Card

### Halla Heavy Wins Norwegian Crude Carrier Contract

Halla Engineering and Heavy Industries Limited has won a \$104-million contract for two 153,000-dwt crude oil tankers from Norwegian company Jahre Dahl Bergesen. The first is scheduled for delivery in the second half of 1999.

For more information  
Circle 73 on Reader Service Card

### Saudi Shipping Firm Signs Deal To Refinance Five Tankers

The National Shipping Co. of Saudi Arabia reportedly signed a \$300 million deal with Chase Manhattan Bank to refinance the purchase of five VLCCs.

The Riyadh-based firm, 28.8 percent of which is owned by the Saudi government, has already taken delivery of the five VLCCs, which were built at a cost of approximately \$400 million by Japan's Mitsubishi Heavy Industries.

### Farstad Enters Kvaerner Ship Deal

Farstad Shipping ASA has signed an agreement of intent with Kvaerner ASA for the construction of two VS 483 platform supply vessels.

The vessels are scheduled for delivery in December 1998, and February 1999.

December, 1997

### Transocean Wins Contract

Transocean Offshore Inc. was awarded a 2.5-year contract by Petrobras for the third-generation semisubmersible *Transocean Driller* which is expected to generate revenues of \$125 million to \$130 million including a daily

earned bonus opportunity.

### OSG To Sell 10 Old Cargo Vessels

Overseas Shipholding Group Inc. plans to dispose of 10 of its older

dry cargo vessels.

The company reportedly expects to gain net proceeds of approximately \$140 million from selling the ships, which aggregate approximately one million dwt. According to the company, funds raised will be used to reduce outstanding indebtedness.

*Don't leave port without one*

## Aggreko's NEW Worldwide Shipping Directory

The world's first global reference for emergency rental power

- Worldwide port contacts
- 75 global depot numbers
- Equipment specifications
- 24-hour rental & technical assistance contacts

Call today for your free copy!  
**1-800-443-2447**

**aggreko**  
North America's Rental Specialist

[www.aggreko.com](http://www.aggreko.com)

Circle 213 on Reader Service Card

**flagShip**  
Ship design software for the professional.™

HULLFORM DESIGN
STRUCTURAL DESIGN
STABILITY/HYDROSTATICS
RESISTANCE/POWERING
MANEUVERING
SEAKEEPING
MANUFACTURING
PRODUCTION MANAGEMENT

**FASTSHIP™**  
**MAESTRO™**  
**GHS™**  
**NAVCAD™**  
**AGILESHIP™**  
**SHIPMOPC™**  
**SHIPCAM™**  
**PERCEPTION®**

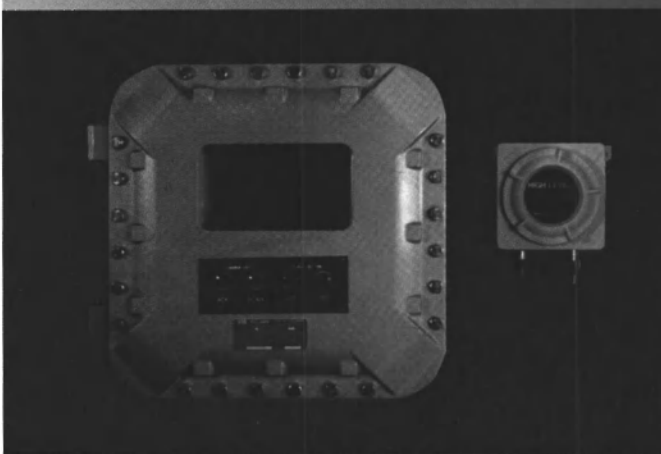
**Proteus Engineering**  
301 Pier One Road, Suite 200  
Stevensville, MD 21666 USA  
tel +(410) 643-7496  
fax +(410) 643-7535  
email: [flagship@atinc.com](mailto:flagship@atinc.com)  
[www.access.digex.net/~proteus](http://www.access.digex.net/~proteus)

CALL TODAY TO LEARN HOW  
FLAGSHIP CAN IMPROVE YOUR  
DESIGN AND CONSTRUCTION  
PROCESS.

**PE** **PROTEUS**  
ENGINEERING

Circle 251 on Reader Service Card

# BIG BLUE



## View Your Entire Loading Operation In One Glance!

The on-deck cargo loading display is designed for use by shipboard personnel on board tank ships and barges to view the complete loading operation in one glance. It is built for the harshest environments of temperature, water, salt, and vibration. It is approved by both ABS and USCG in full compliance for on-deck cargo loading operations.

- Tank ullages in feet, inches or meters.
- Individual tanks rate-of-fill or empty in BBLS/Tons/GAL or metric.
- Individual tanks time-to-full or empty in HR/Minutes.
- Individual tank temperatures.
- Header pressure.
- Individual pump status ON/OFF.
- Two alarm set points for ullage, temperatures and pressures.

**Call today for more information!**

**EMS**

ELECTRONIC MARINE SYSTEMS, INC.  
800 Ferndale Place  
Rahway, NJ 07065

732.382.4344  
732.388.5111 fax  
[emsmarcon@aol.com](mailto:emsmarcon@aol.com) e-mail

Circle 29: on Reader Service Card



COMPANY PROFILE:

**Chevron Lube Oil Helps Sea Princess Operate More Efficiently**

With the utilization of increasingly sophisticated shipboard machinery, particularly main engines, ship owner/operators, more than ever, depend on a ship's lube oil to keep the ship running smoothly and efficiently.

Recent results from the engine bay of a tanker ship indicates that the use of DELO 3000 Marine 30 oil from Chevron Marine Lubricants can help benefit the engine, ship

and shipowner in the short and long-term.

Colt Ship Management's 800 ft. (244 m) Sea Princess works a world itinerary, powered by two diesel engines — with a total of 32, 16-in. pistons — powering the propellers.

When Colt Ship Management, Inc. of Cedar Rapids, Iowa, first took over management of Sea Princess in 1993, it noted that the vessel — before its use of DELO 3000 Marine 30 —



Colt Ship Management's Sea Princess at anchor near Galveston, Texas uses Chevron Marine Lubricants to help keep its two diesel engines in shape for its world schedule.

began to build up sludge inside the engine, according to Chevron. The ship's purifiers were being taken out of service and de-sludged every five days for a cleaning that took quite a few hours. Between the ship's extra maintenance and filter replacement costs, the sludge build-up alone was hurting Sea Princess' profit margin.

At the end of 1996, the ship's lubrication contract was put out to bid, and Chevron won the business based on a total package solution of product performance, technical support and competitive pricing.

In his presentation to win the business, Chevron Marine Lubricants Territory Manager Todd McKenna informed Colt Ship Management Chief Engineer Lucien Durmont that DELO 3000-30 would probably clean up the sludge problem. Despite skepticism, Colt managers accepted Chevron's approach.

When Sea Princess switched to DELO 3000 Marine 30 in the beginning of 1997, a curious event occurred: Filter pluggings were even more frequent. It was determined, however, that this was not because DELO was creating more sludge, but because it was helping to clean the engine's internal components. After a few months and a couple of top-ups, the sludge reportedly virtually disappeared. "The most noticeable difference was in the purifiers and filters. They were sludge free. And the pump was immaculate, too. We recently went 21 days without cleaning the filter, and when we did look, there was no sludge," explained Mr. Durmont.

Colt Ship Management reports that it is now saving approximately \$4,000 per month on filters, \$500 per month on labor (to replace the filters), and \$800 per month on labor to clean the purifier, totaling savings close to \$65,000 per year. These savings lowered the ship's operating costs and, according to Mr. Durmont, the oil's performance so far points to the potential for extended engine life. "We now hope to be able to make a quantum leap by lengthening the interval between ring, piston and bearing renewals," he said.

While Chevron relies on its products to do the job onboard, the rapidly changing maritime market demands that it do more, and the company's relationship with its customer expands far beyond delivering DELO at the dock.

"Today's rapidly changing marine shipping

**STRONGER REPAIRS FASTER, EASIER**

Unique epoxy resin system bonds to almost anything—produces proven, long lasting repairs with outstanding impact strength, tensile strength, and abrasion resistance

- Repairs everything from pinholes and ruptures to complete breaks in pipes, pumps, ducts, tanks, valves, flanges, joints, and machinery casings, including equipment carrying water, low-pressure steam, gases, gasoline, oil, alcohol, and caustics

- Bonds tenaciously to most surfaces including steel, plastic, fiberglass composites, ceramic, and wood



**STANDARD RESIN** for small holes/cracks (large holes/cracks with fiberglass reinforcement)

**RED PUTTY** for medium to large holes, cracks and other defects

**STEEL PUTTY** for steel-like repairs on metal —can be drilled, tapped, machined

**SEALER** for small holes and cracks

**LEVELING COMPOUND** to level corroded surfaces

For detailed literature contact:  
Ferro Corporation  
Liquid Coatings and Dispersions Division  
1301 N. Flora St., Plymouth, IN 46563  
Tel: 219-935-5131 • Fax: 219-935-5278

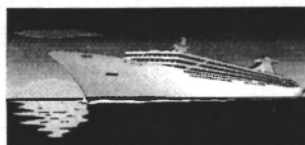


Circle 234 on Reader Service Card

*Worldwide Experience*

**INTERIOR OUTFITTER**

CRUISE SHIPS • DINNER BOATS • WORK BOATS • CASINO VESSELS



**CSI**



Custom Ship Interiors, Inc.

P.O. Box 882 • Solomons, MD 20688 • Fax: 410-326-9125

**410-326-9122**

Circle 228 on Reader Service Card

**RUBBER FENDERS FOR DOCKS, TUGS & WORKBOATS**

Manufactured By

**SOVEREIGN RUBBER AMERICA**

Hillgate Industrial Estate, Carrington Field Street,  
Higher Hillgate, Stockport, Cheshire SK 1 3JW, England

Telephone: 011 44 181 960 4224 Fax: 011 44 181 960 4334  
Contact: Alan Scott-Neve

E-mail: sovram@dial.pipex.com



Certificate No. 946/95

Certificate No. 946/95

Circle 274 on Reader Service Card



business demands a value-added relationship with a lubrication company," explained **Brent Lowe**, Manager of Chevron Marine Lubricants. "Our experience with the *Sea Princess* illustrates this point. We worked closely with the *Sea Princess* engineers to select the right Chevron lubricant for the engine as well as other mechanical systems on the ship."

This commitment wasn't lost on Mr. **Durmont**. "The Chevron sales and support network is truly interested how the Chevron product is assisting our operation," he explained. "Chevron products meet OEM requirements, and Chevron provides expertise and performance analysis. Plus they can deliver anywhere in the world in a timely manner at a competitive price."

For more information on Chevron  
Circle 51 on Reader Service Card

### SMI Signs Letter Of Intent With Oceaneering

Service Marine Industries (SMI) has signed a letter of intent with Oceaneering International, Inc. for the design and construction of a second 243 ft. (74 m), 4,000 hp multi-service vessel (MSV) with an option for a third. *Ocean Intervention II* will have a diesel electric propulsion system providing a total of 6,400 hp for electrical power generation.

Power will be produced by two CAT 3508B-SCAC diesel engines with a 910 kW SR4B generator and one CAT 3406-DIT diesel engines with a 250 kW SR4 generator.

For stern propulsion, two 1,000 hp GE 752 electric motors in tandem on each shaft line will provide power to two Aquamaster US 2011 360 degree azimuthing thrusters. Maneuverability and station keeping will be aided by a pair of 1,000 hp fixed pitch Kamewa US 3524-2TT tunnel thrusters. *Ocean Intervention II* features full automatic dynamic positioning capability and will be classed ABS DP-2 for unrestricted ocean service and equipped with a fully integrated GMDSS for area A3 operation and will be SOLAS-compliant. The new MSV will feature a built-in, 150-hp Millennium heavy work class ROV and equipment to support diving and related services. With a beam of 54 ft. (16.5 m) and a depth of 19 ft. (5.8 m) and a draft of 15 ft. (4.6 m), the vessel's capacities include oil day and storage

tanks totaling 149,000 gallons, fresh water of 90,000 and drill water or ballast of 300,000 gallons. *Ocean Intervention II* is scheduled to be christened in February 1999, after which it will commence service in deepwater offshore operations.

For more information  
Circle 47 on Reader Service Card

### More Power From Large Sulzer Units

Wartsila NSD has increased the power outputs of the Sulzer RTA48T, RTA58T and RTA68T two-stroke marine diesel engines by approximately seven percent. The output of the RTA48T has been increased from 1,850 to 1,980

bhp/cylinder; the RTA58T from 2,720 to 2,890 bhp/cylinder; and the RTA68T from 3,740 to 4,000 bhp/cylinder (2,750 to 2,940 kW). These new outputs have been obtained by a combination of increasing the BMEP from 18.2 to 19 bar, and raising the engine running speed.

For more information on Wartsila NSD  
Circle 62 on Reader Service Card

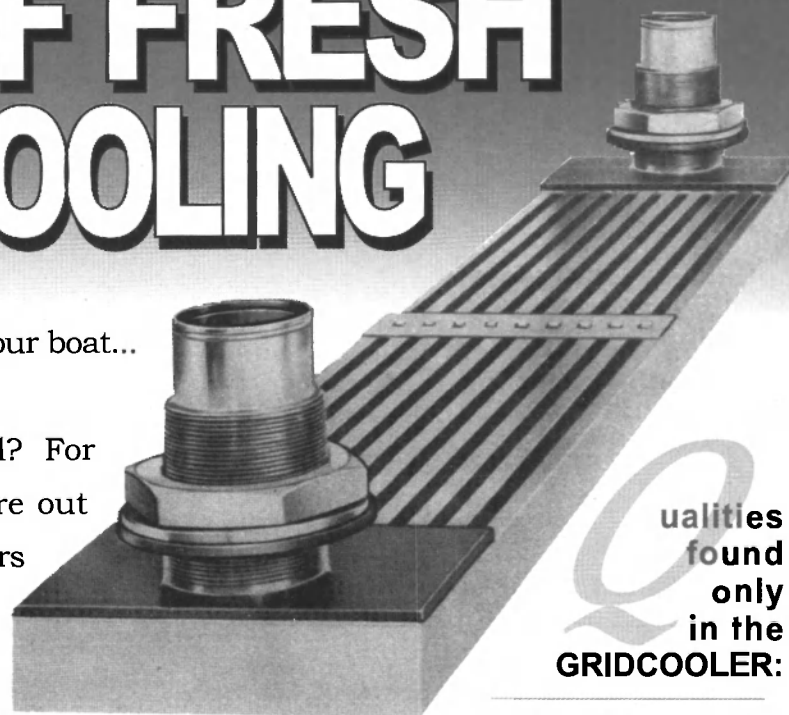
# THE SIMPLEST, MOST DEPENDABLE FORM OF FRESH WATER COOLING

You want the best of everything on your boat... as long as it's affordable...right?

Then why don't you give us a call? For the cost of a phone call, we'll figure out which of over 8000 different Gridcoolers is right for cooling your engine in your application.

How can you go wrong? We've been engineering cooling systems for all types of marine engines for the last 50 years. Our product is so durable, efficient and easy to install that the U.S. Navy wrote their keel cooling specifications around our Gridcoolers.

Why take chances when it comes to your engines' dependability? Do it right the first time... use Fernstrum Gridcoolers.

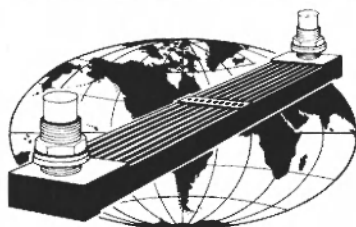


Qualities found only in the GRIDCOOLER:

- Completely assembled and factory tested
- Silver brazed and welded joints
- Heavy gauge 90/10 copper-nickel or 5000 series aluminum rectangular tube
- Custom designed
- The most compact form of keel cooling

## R.W. FERNSTRUM & COMPANY

50 YEARS EXPERIENCE IN ENGINEERED KEEL COOLING



# FERNSTRUM GRIDCOOLER®

1716 11th Avenue, Menominee, MI 49858  
Ph: 906-863-5553 Fax: 906-863-5634

## Amoco And AEI Sign Alliance Framework Agreement

Amoco Corp. and Aker Engineering, Inc. (AEI) recently signed an Alliance Framework agreement which initially covers front-end conceptual engineering

for Amoco deepwater projects in the Gulf of Mexico. AEI will supplement Amoco's internal personnel resources and provide continuity in technical specialists and deepwater developments in other geographical areas and perform engineering work as required by Amoco's Worldwide Engineering and Construction organization to support Amoco projects worldwide.

Both companies reported expectations of the scope of the work broadening over time as the Alliance evolves.

## Oceaneering Completes FPSO Project

Oceaneering International, Inc. has completed the refurbishment

and upgrade of FPSO *Ocean Producer*. The vessel was dry-docked at Lisnave Shipyard in Portugal and the work was supervised by the company's field development and production contracting division Oceaneering Production Systems (OPS).

The work program included a life extension program which will reportedly render the vessel operational for at least 10 more years, incorporating steel renewals, coating of all ballast tanks, flare system modifications to handle higher production levels, repair/replacement of piping and mechanical equipment and re-coating of the hull.

For more information  
Circle 36 on Reader Service Card

## Hvide Marine Purchases Two More Fleets

More than doubling the size of its Middle East fleet and bolstering its position in the Arabian Gulf, Hvide Marine Inc. recently acquired two offshore energy support businesses based in Sharjah, United Arab Emirates. The first, International Marine Services (IMS), operates a fleet of 30 offshore workboats and a ship repair business. The second, Selat Marine Services, operates 14 offshore workboats. The total value of the two transactions is approximately \$56.5 million.

The IMS fleet and marine repair facility were purchased for \$36 million and are expected to generate revenue of about \$18 million in the first full year of operation. The fleet — which consists of three anchor-handling tug supply vessels (AHTS), six anchor-handling tugs (AHT), one supply vessel, four crewboats, one salvage tug, one anchor-handling tug/maintenance vessel, 12 utility vessels and two accommodation barges — operates throughout the Middle East, Thailand and Singapore.

Selat's fleet is being purchased for \$20.5 million and is expected to add an estimated \$10 million in first-year revenues. Its 14 vessels operate throughout the Middle East and consist of three AHTSs, three AHTs, three supply vessels, two crewboats and three utility vessels.

The acquisitions bring to 79 the number of vessels operated by Seabulk Offshore International, Inc., Hvide's Dubai-based Middle East energy services subsidiary, and will boost its annual revenues to approximately \$60 million.

# Is Your Diesel Mist-Behavin'?

## Install A Nelson EcoVent™ Recirculator And Eliminate The Noxious Mist Caused By Diesel Crankcase Blowby.

Diesel engines. We love their might. We dread their mess—especially in engine rooms. But there is a solution. The Nelson EcoVent recirculator can keep your diesel from mist-behavin'!



You see, the Nelson EcoVent recirculator was developed to prevent crankcase fumes from fouling the air intake filter and coating the engine room with noxious mist from diesel crankcase blowby.

In fact, the Nelson EcoVent recirculator removes 99% of the oil mist and airborne particles, so you can duct the now-clean blowby fumes to either the inlet side of the air cleaner, or the clean side for a completely closed system. The result? A Nelson EcoVent recirculator system removes 100% of blowby mists and gases from the atmosphere without engine damage. No wonder it's used by the U.S. Navy, Coast Guard, yacht owners, engine builders, packagers and work boat operators.

What's more, with the Nelson EcoVent recirculator, there's less oil consumption, installation is easy and maintenance is a snap. And you won't find a more competitive price anywhere!

Best of all, with the Nelson EcoVent recirculator on duty, a messy engine room will never be *mist*.

**NELSON**

Industries, Inc.

P.O. Box 428, Stoughton, WI 53589 1-800-356-6606 Fax 1-608-873-1532

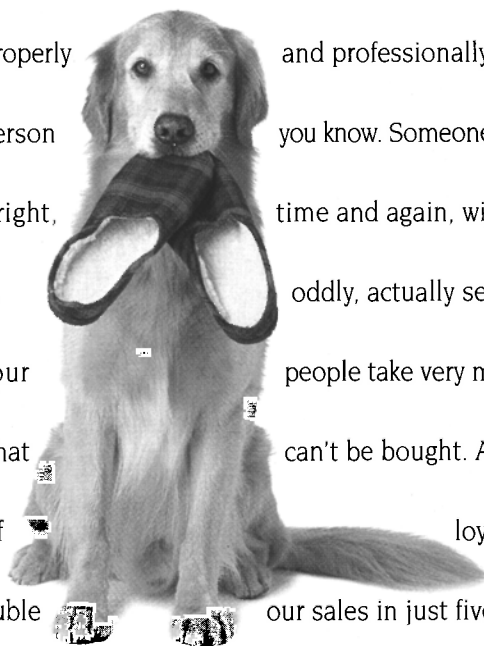
## Hey, you could get used to this.

One of the terrific things about doing business with us is the way you feel doing business with us.

Sure, your lubes need to be at port when your ship arrives—absolutely, positively.

But it's the human side of the transaction that may be just as important. The relief in knowing things will get done properly and professionally. The simple pleasure of working with a person you know. Someone you've learned to trust, who gets things done right, time and again, with very little effort on your part. Someone who, oddly, actually seems to care.

These are qualities our people take very much to heart. It's an approach to business that can't be bought. An approach that has earned a very high level of loyalty from our customers—helping us to double our sales in just five years.



So the next time you're considering lube supplies, ask yourself this: when was the last time you actually liked doing business with an oil company?

Then give us a call: in the U.S., 1-800-462-4478; outside the U.S., 1-415-894-2345; London, 44-171-487-8394; Singapore, 65-831-0280 through 0288.

We do business differently and it's working.



©1997 Chevron Corporation. All rights reserved.

**Circle 216 on Reader Service Card**



## STIKEMAN, ELLIOTT

Canadian  
Barristers & Solicitors

Providing commercial legal services on a global basis with offices in Montreal, Toronto, Ottawa, Calgary, Vancouver, London, New York, Washington, D.C., Hong Kong, Taipei, Budapest, Prague, Singapore and Sydney.

### Shipping & Insurance Section

Hon. W. David Angus, Q.C.

Vincent M. Prager

Laurent Fortier

Peter J. Cullen

Mireille A. Tabib

### Nautical Advisor

Capt. Raymond W. Espley, R.D.

Based in Montreal, specializing in all shipping, insurance, transportation, regulatory and international trade matters.

1155 René-Lévesque Blvd. W.  
Montreal, Quebec  
Canada H3B 3V2  
Tel: (514) 397-3000  
Fax: (514) 397-3222

Circle 301 on Reader Service Card

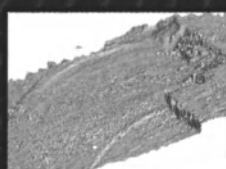
## HYPACK<sup>™</sup> for WINDOWS

from Coastal Oceanographics, Inc.

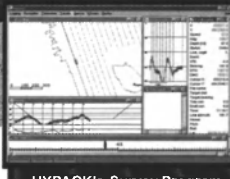
The HYPACK series of advanced design programs continues to build on the Coastal Oceanographics reputation for reliability, accuracy, and fast, world-wide service.

**HYPACK** Hydrographic Software gives you the hydrographic power to lay out survey lines, create plotting sheets, and design cross sectional profiles in a flash. Graphically review your survey data and create new planned lines. Customize your screen sizes. Input up to nine devices, simultaneously. Have single and multibeam data collection capability at your fingertips. Display and edit tracklines, sounding profiles and text data. Apply tide, draft, heave-pitch-roll and sound velocity corrections.

Plus: Full DXF/DGN Support. Plotting, including smooth sheets. The ability to create cross section profiles of multibeam and longitudinal data. And a complete look at your Volumes, including average end area, prismatic, contour and TIN models.



HYPACK's TIN Modeling Program



HYPACK's Survey Program

### COASTAL OCEANOGRAPHICS, INC.

11-G Old Indian Trail  
Middlefield, CT 06455



Phone: (860) 349-3800  
Fax: (860) 349-1982

<http://www.coastalo.com>

Circle 217 on Reader Service Card

## R&D PRODUCT PROFILE

# Drewgard WB

*A technologically advanced,  
environmentally friendly solution to  
hard-film ballast tank protection*

Drew Marine has teamed with Ashland partner Tectyl Industrial Products in a joint research effort to create an advanced solution for protecting ballast tanks from corrosion.

Since 1939, Tectyl has developed hundreds of corrosion preventative coatings for specialized industrial applications. Tectyl is also reportedly the largest manufacturer worldwide of protective coatings for cargo containers, and is a major supplier to both the U.S. Navy and barge industry.

The companies set out to develop a single-component, easy-to-use product that would provide long-lasting hard-film protection for ballast tanks at less cost and inconvenience than conventional two-part coatings.

Achieving exceptional performance over rusted metal was made an explicit goal, along with the challenge of meeting environmental requirements of the U.S. Coast Guard and the International Maritime Organization (IMO), as well as stringent health and safety standards. Furthermore, the applied product had to be light in color to facilitate inspections and surveys, and to allow better visual control during low-light applications.

The result of this collaboration is Drewgard WB corrosion preventative. Applied as a white film, this single-component corrosion protection system is designed to deliver hard-coating performance with a normal service life of five years, yet it can be applied over St2 surfaces prepared by hand and power tool cleaning.

Consequently, surface preparation and application can be easily accomplished while alongside or underway, or during planned dry-docking, whichever proves more convenient. In addition, the product is touted as an environmentally acceptable water-based formulation with low VOCs and a high flash point exceeding 100 degrees C, which helps to minimize health and safety hazards.



Developed specifically for marine use, the unique capabilities of this new ballast tank coating were achieved by modifying two traditional chemistries to combine the corrosion protection properties of a wax with the hard film properties of a synthetic polymer. Using water in place of typical solvents in a proprietary process, the product is formulated as an air-dry wax sulfonate emulsion.

This technology emulsifies the wax components with a synthetic polymer to form a hard film barrier that bonds to the surface of the metal, yet remains flexible to prevent cracking and peeling. Formations of oxides and rust are blocked as long as the barrier remains in place.

The performance achieved by the new technology can help produce significant labor and product economies, beginning with the benefit of preparing surfaces without the need to take the vessel out of service. Sprayed, brushed or rolled onto prepared surfaces, and used straight from the container without mixing or thinning, application is designed to reduce labor.

There is no pot life issue, or the product waste associated with it. The company reports that only one coat is needed to achieve the recommended dry-film thickness of four to five mils (100-125 microns).

Within specified temperature and humidity ranges, the film reportedly dries to the touch in less than 45 minutes, and cures completely within 72 hours.

For more information on Drew Marine  
Circle 65 on Reader Service Card

Maritime Reporter/Engineering News

# Hose-McCann Telephone Company Inc.

## Your Maritime Communications SuperStore.

It is only natural when you think of Hose-McCann Telephone Co., Inc. that high quality, Sound Powered Telephones spring to mind. But we would like you to think again.

To borrow a retail concept, Hose-McCann is now a one-stop SuperStore for all of your marine communication needs. In order to be your complete communication source, we have expanded our manufacturing capability to include: • **Integrated Public Address and / or General Alarm Systems** • **Intercom / Talkback Systems** • **Closed Circuit TV** • **Video Information & Ship's Recreational Entertainment Systems**. When you add this to our already elaborate array of Sound Powered Telephones and Automatic Dial Systems, General Alarm Systems and Military Spec equipment, you can see we and we alone have all your shipboard communication needs covered.

As always, all of our communication systems are designed and manufactured according to the most stringent Hose-McCann quality standards. No product leaves our warehouse without the Hose-McCann name on it. That is your guarantee that it is the toughest, most durable and most reliable product of its kind available today. Our professional team of designers and engineers will have it no other way and neither should you.

Please call us or write for more information on these exciting new product lines. Hose-McCann is now proud to call itself.....  
**the ultimate purveyor of marine communication systems in North America.** We think you'll agree and we look forward to hearing from you soon!



**Hose-McCann  
Telephone Company Inc.**

*We Communicate Better Than The Rest™*

1241 West Newport Center Drive,  
Deerfield Beach, Florida 33442  
Tel. 954.429.1110 Fax. 954.429.1130  
[www.hmctelco.com](http://www.hmctelco.com)

Circle 294 on Reader Service Card







**Detroit Diesel Corporation (DDC)** debuted its new DDC/MTU Series 2000 and Series 4000 engines, available in eight, 12 and 16 V configurations.

The series 2000 features ratings between 536 and 1,800 hp, while the 4000 ranges between 1,180 and 3,650 hp. Both series were developed in conjunction with MTU GmbH.

**Alfa Laval** introduced its MAB 100 Series of solids-retaining centrifugal separators devel-

oped for purification or clarification of mineral oils used in marine installations, power stations and engineering industries.

**Twin Disc, Inc.** announced its development of a new high-capacity, deep-ratio marine transmission designed for use in rugged service applications. The new MG-5170 is rated at 680 hp for ratios through 5.95:1 and 543 hp for 6.53:1 and 7:1 ratios. Maximum rated input speed is 2,500 rpm.

For more information on the companies mentioned above, circle the appropriate number on the Reader Service Card in this issue:

Service Marine Industries .....	39
Bollinger .....	40
SeaArk Marine .....	41
Cummins Marine .....	42
Detroit Diesel Corp. ....	43
Alfa Laval .....	44
Twin Disc, Inc. ....	45

## Designed Especially For Big Boat Handling

Rated Lifting Capacity...660,000 lbs. (300,000 kg)

The Marine Travelift 300 BFM mobile boat hoist is proving itself as a real versatile performer in large boat handling. Originally thought of as a hoist for work boats and commercial fishing boats, the 300 BFM hoist easily meets the challenge of handling today's upsized pleasure craft.

The many design features, which are standard on the 300 BFM hoist, make it easy to handle even the most difficult lifts. The open end design speeds boat loading and unloading, while the beam forward design increases boat clearance for masts and boat bridges.

Two speed hoisting and two speed drive, along with the unit's 90° pivot steering, reduces boat handling time and increases maneuverability, along with boat handling and service opportunities. Our automatic load equaliz-

ing feature provides synchronized sling adjustment and confident boat handling.

The 300 BFM mobile boat hoist features a high strength, low alloy steel super structure with stainless hydraulic tubing for a long, trouble-free service life. Maintenance is easy with low mount, easily accessible power plant and hydraulic compartments.

A sturdy, eight-wheel stance with chain drives and Marine Travelift's pivot trunnion, for travel over uneven terrain, increases yard utilization and eases boat handling congestion.

Best of all, your Marine Travelift 300 BFM mobile boat hoist may be your marina's best investment. It offers economical installation costs when compared to other large boat handling systems, more customer service opportunities, and excellent profit



Full instrumentation is located in the operator's compartment for travel, steering, hoisting, sling spacing and load controls.

potential and outstanding resale value when you decide to increase load capacities.

For complete details and specifications on the 300 BFM mobile boat hoist or our complete line of boat hoists with capacities from 15 to 500 tons, and our line of Mariner® marine forklifts, contact your local distributor or Marine Travelift, Inc., 49 E. Yew St., P.O. Box 66, Sturgeon Bay, WI 54235 USA • Phone: 920-743-6202 • 920-743-1522



The Mariner® F1500 marine forklift has a 15,000 lb. (6800 kg) capacity.

*"The No. 1 Hoist Supplier...  
With Units in Service  
at Marinas Worldwide!"*

**MARINE TRAVELIFT** inc.



### Contact Your Nearest Marine Travelift Representative

**ATLAS INDUSTRIES, INC.**

Tiffin, OH  
TEL: 419-447-4730  
FAX: 419-447-8456

**COASTAL EQUIPMENT, INC.**

Harvey, LA  
TEL: 504-394-7400  
FAX: 504-394-8544

**COASTAL EQUIPMENT, INC.**

Houston, TX  
TEL: 713-433-6411  
FAX: 713-433-3981

**FAM TECH, INC.**

Mobile, AL  
TEL: 334-666-9902  
FAX: 334-666-4112

**FLORIDA LIFT SYSTEMS**

Tampa, FL  
TEL: 800-226-2345  
FAX: 813-626-4713

**ELLING JOHNSON**

Smyrna, GA  
TEL: 770-435-7114  
FAX: 770-435-7114

**W.E. JOHNSON EQUIPMENT CO.**

West Palm Beach, FL  
TEL: 407-582-4804  
FAX: 407-547-0498

**NOTT COMPANY**

Minneapolis, MN  
TEL: 612-888-5511  
FAX: 612-888-2976

**QUALITY EQUIPMENT PRODUCTS**

Lynnwood, WA  
TEL: 206-672-7103  
FAX: 206-776-9588

**SHUL-MAR EQUIPMENT, INC.**

Mechanicsville, VA  
TEL: 804-730-3076  
FAX: 804-730-3078

**MARTIN WALTER CO., INC.**

Norwell, MA  
TEL: 617-878-1216  
FAX: 617-878-7736

**WOLVERINE TRACTOR & EQUIP.**

Detroit, MI  
TEL: 810-356-5200  
FAX: 810-356-2029

**DUGAS EQUIPMENT, LTD.**

Caracquet, NB Canada  
TEL: 506-727-2220  
FAX: 506-727-0952

**RICO EQUIPMENT, (1983) LTD.**

Burnaby, BC Canada  
TEL: 604-291-9973  
FAX: 604-291-6833

**STANMORE EQUIPMENT, LTD.**

Scarborough, Ontario Canada  
TEL: 416-291-1928  
FAX: 416-297-4034

**MARINE TRAVELIFT** inc.

*The No. 1 Hoist Supplier  
at Marinas Worldwide!*

# Power In Numbers

## China — Propelled By Low Employment Costs — Leaps To No. 3

by Alan Thorpe, international editor



Far East Shipyard prices are on the move again. The scurry to place new contracts so far this year is good news for the world's principal shipbuilders — at least in the short-run. The danger is that the volume of new contracting will encourage existing builders to "recommission" old resources — whether actual building docks or workers constructing ships — while new yards proceed with plans to commission new capacity.

Take a look at mainland China, for instance: Coming from almost nowhere in world terms a decade ago, China is now the world's third largest shipbuilder and is in third place on booking new orders. Admittedly still a long way behind Japan — with more than a third of global orders — and South Korea with a little more than a quarter, China is a major new force in world ship construction which just might take the gloss off the biggest global orderbook most builders can remember.

The world's major builders have not been slow to see the writing on the wall. They have, after all, had a few hard lessons to learn over the last two decades. China has encouraged foreign shipbuilders such as Kawasaki Heavy Industries (Jiangsu province), Samsung Heavy Industries (Ningbo) and Hyundai Heavy Industries (Dalian) to help it make a mark. It needs these foreign builders — as a seal of quality — but is still wrestling with yard productivity and quality. With a workforce costing about 1/12 of its peers, there must be a degree of comfort for those promoting Chinese newbuildings on the international market as well as some

very convincing arguments as to why ships should be built there.

Japan achieved a 39.3 percent share of new shipbuilding in 1996, completing 617 ships of 10,182,000 grt, according to a survey by the Shipbuilders Association of Japan (SAJ). This reflected a 9.5 percent rise over the preceding year. South Korea stayed in second position with a 28.5 percent share, completing 188 vessels of 7,370,000 grt during the year. Germany was third with 4.6 percent, followed by China with a 4.4 percent share. Global completions totaled 283 bulkers of 9,805,000 grt; 162 tankers totaling 6,290,000 grt, 202 containerships of 4,689,000 grt and 57 LNG carriers comprising 1,078,000 grt.

Order levels for new ship construction received by Japanese shipyards returned to a more stable level in August after the dramatic rise in grt terms seen in the previous month. Japanese Ministry of Transport statistics, which record orders for ships of 2,500 grt and over, reveal domestic yards secured contracts for 31 vessels of 778,000 grt in August compared with 42 ships of 2.025 million grt received in July. August's figure was 61.6 percent, or 11 ships of 1.25 million grt lower than July's.

Meanwhile, boosted by orders for almost two million grt of newbuildings in September, South Korea's orderbook for the first nine months of this year is almost triple the figure achieved in the corresponding period of 1996. Statistics from the Korea Shipbuilders' Association indicate that domestic builders now command an orderbook of 8.72 million grt or 144 vessels. This compares with orders for 77 ships of 3.03 million grt secured in the first nine months of 1996.

### Japan

Japan's NYK has placed orders with three Japanese shipbuilders for the construction of five 6,000 capacity car carriers in contracts estimated to be worth close to \$300 million. Two of the five ships have been placed with Imabari, with scheduled delivery dates in July

and October 1999. These will be followed by two from Shin Kurushima Dockyard. Kanasashi Shipbuilding, based in Shimizu, eastern Japan, is believed to have secured the contract for the fifth ship, with a delivery date of October 1999.

NYK is also negotiating with Oshima Shipbuilding for the possible construction of two 77,000-dwt bulkers of a shallow draft configuration. The design will have a length of 738 ft. (225 m) and will feature a draft of 42 ft. (12.8 m). This compares with a draft of 45.2 ft. (13.8 m) found on most conventional Panamax designs. The vessels' beam will also be significantly increased to 118 ft. (36 m).

London listed Uglund International Holdings has exercised one of two options for a large vehicle carrier at Tsuneishi Shipyard. The 6,100 car-carrying capacity ship will be an identical sistership to the newbuilding contracted with Tsuneishi in June this year. Contracted at a price of \$54 million, the vessel has a scheduled delivery date of December 2000. Uglund has until December this year to exercise the remaining option for a third similar car carrier for delivery in 2000.

Contracts for five Handysize bulkers worth \$100 million have been won by Mitsui Engineering and Shipbuilding (MES) from Polska Zegluga Morska (Polish Steamship Company) as part of a fleet renewal program. The five 34,600-dwt vessels are destined to operate between Europe and the North American lakes, and as such are to be configured with a narrow breadth. Deliveries are due to commence in early 1999.

Tanker firm MIF has taken a further step in the expansion of its fleet by signing an agreement with a Japanese shipbuilder for a second Aframax newbuilding. Construction of the double-hulled vessel is well advanced at the Imabari Shipyard and delivery is scheduled for the first quarter of next year. The new vessel will be a sistership to the 107,000 dwt tanker MIF received from the same shipyard at the end of June.

### South Korea

A big advance in productivity provides the backdrop to an increased newbuilding order intake by Daewoo Heavy Industries (DHI) this year. Formalization of contracts spanning 35 ships has already topped the figure achieved for the whole of 1996.

It is anticipated that new work generated this year will total 40 ships worth around \$2.5 billion. While the South Korean company secured a 13 percent gain in productivity at its Okpo shipyard last year, it now expects to achieve a further step up of about 21 percent for 1997 against the 15 percent targeted in the annual plan.

The joint venture formed by the tanker interests of Helmut Sohmen has ordered further VLCC tonnage, exercising an option for a 3,000 dwt tanker at DHI. Formed specifically for ordering VLCC tonnage, the joint venture comprises World Wide Shipping, Argonaut and Nordstrom & Thulin (N&T). The ship is expected to be delivered in the second quarter of 2000.

DHI has consolidated its position in the vehicle carrier market through a further deal with Sweden's Wallenius Lines involving high capacity newbuildings. The contract for two vessels offering stowage for 5,850 cars is highly significant from the standpoint of the yard's stability to attract repeat business from a blue chip client.

DHI has also secured its first floating production, storage and offloading (FPSO) vessel order, marking a significant breakthrough in its attempt to enter the sector. DHI will construct the hull of the FPSO vessel for the Terra Nova oilfield off Newfoundland. The company has won the contract for the Terra Nova Alliance, a consortium responsible for the design and construction of the facility and subsea components for developing the field. Construction is scheduled to begin in August 1998 and delivery of the hull from DHI's Okpo yard is due in January 2000.

Danish shipping company AP Moller is believed to have entrusted

## FAR EAST UPDATE

ed its latest investment in VLCC tonnage to Hyundai Heavy Industries (HHI) in a deal thought to be worth \$164 million involving four vessels of two million barrels capacity. Delivery for the first 300,000-dwt vessel is scheduled for the first half of 2000.

Meanwhile, HHI has won a fifth VLCC order from Frontline. The order was placed by Norwegian shipowner **John Fredriksen** who now controls Frontline. A spokesperson for Mr. **Fredriksen** declined to comment on the contract price for the VLCC, which is due to be delivered in two years, but newbuilding analysts in London's sale and purchase brokers estimated the cost at around \$82 million, in line with the four ships already on order from the yard.

Ranking as the first contract awarded by the Hong Kong shipowning community to the world's largest shipbuilder since the return of the territory to China, Wah Kwong has ordered a capesize bulker from HHI. The 171,000-dwt newbuilding commanded a price of \$43 million and is due for delivery in April 1999.

HHI's drive into the more capital intensive sector of the offshore industry has been boosted by a newbuilding contract for a third innovative ultra deepwater dynamically positioned drillship. The order, placed by U.S. drilling contractor Reading & Bates, has been undertaken on the back of a commitment from Norwegian state energy group Statoil to provide two and a half years' employment for the drillship over a five year period.

Singapore based Tai Chong Cheang Steamship (TCC) has strengthened its contractual links with Halla Engineering & Heavy Industries (HEHI) by ordering a 105,000-dwt crude carrier, plus an option on a second vessel, both of which must be delivered before the end of September 1999. Exercising the option would take the overall value of the project to around \$82 million.

Heidenreich Marine has ordered four Panamax size tankers which are specifically designed for use on draft restricted ports. The contracts for the 67,000-dwt vessels has been awarded to HEHI. All four tankers are scheduled for delivery in 1999.

HEHI has also secured orders for four 46,000 dwt products carriers from Danish and Singapore inter-

ests. Estimated to be worth \$128 million, the contract calls for two pairs, one plus one option, of Handysize products tankers for Denmark's Trom Lines and Pacific Carriers of Singapore.

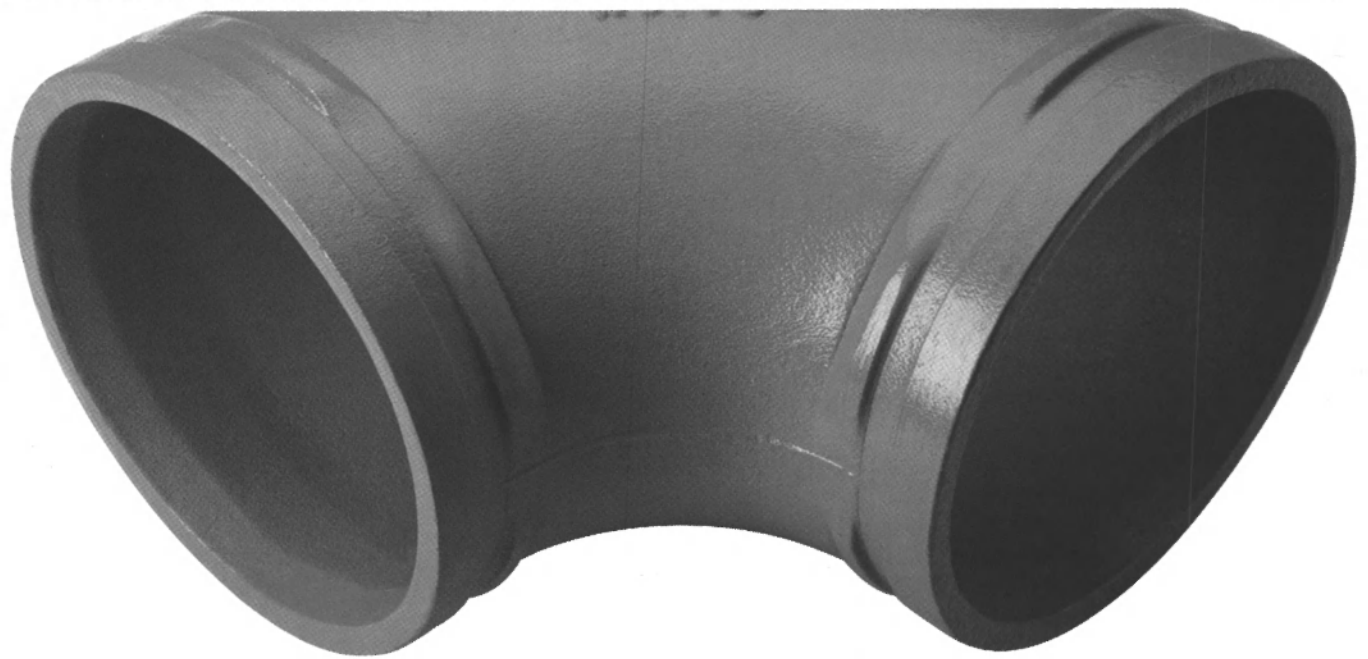
### China

Among orders for Chinese yards:

Nantong Ocean Ship Engineering Company (NOSECO), the joint venture between Japan's Kawasaki Heavy Industries (KHI) and Cosco, is to begin construction of its first Handysize bulk carrier next month. A spokesman for KHI confirmed that the first group of Chinese engineers, who had been

receiving training at the company's Kobe and Sakaide shipyards since the spring of last year, would return to Nantong by this weekend to undertake preliminary work.

A second-hand, 639.7 ft. (195 m) long, 15,000 ton lifting capacity dock has been acquired for the Bohai Sembawang Shipyard



# Speed.



The fastest way to join pipe is also the easiest. That's because of the simple, proven design of the Victaulic® grooved end mechanical coupling system. With it, you can meet deadlines, stay on schedule, and finish on time. Best of all, your customers' installations can become operational much more quickly, compared to welded and flanged systems. The Victaulic system can be used to join steel, stainless steel, plastic and copper piping. Why wait any longer? Call us today. For projects anywhere in the world, contact Victaulic Company, 610-559-3300. Fax us at 610-250-8817. Or see us on the Internet, <http://www.victaulic.com>

**Victaulic**  
A 9001 certified company

Victaulic is a registered trademark of Victaulic Company of America. ©1996 Victaulic Company of America. All rights reserved.

Circle 283 on Reader Service Card



## FAR EAST UPDATE

(Tianjin) Co. Ltd. in northern China, as part of the shipyard's expansion program. The yard, a joint venture between Singapore's Sembawang Shipyard and China Offshore Oil Bohai Corp., is situated in Tangu, in the vicinity of Tianjin Port, along the coastline of the Bohai Sea.

### Singapore

Keppel Singmarine dockyard in Singapore has won a second order worth around \$66 million to build two anchor handling tug supply (AHTS) vessels for the AP Moller group of Denmark. This follows AP Moller's decision to exercise two options that were included in

an earlier contract for the building of its first two AHTS ships. Under the contract, Singmarine, which is part of Keppel Marine Industries, will once again provide engineering design in addition to the construction. Delivery is set for 1999.

Labroy Marine has won a \$25 million contract from Singapore

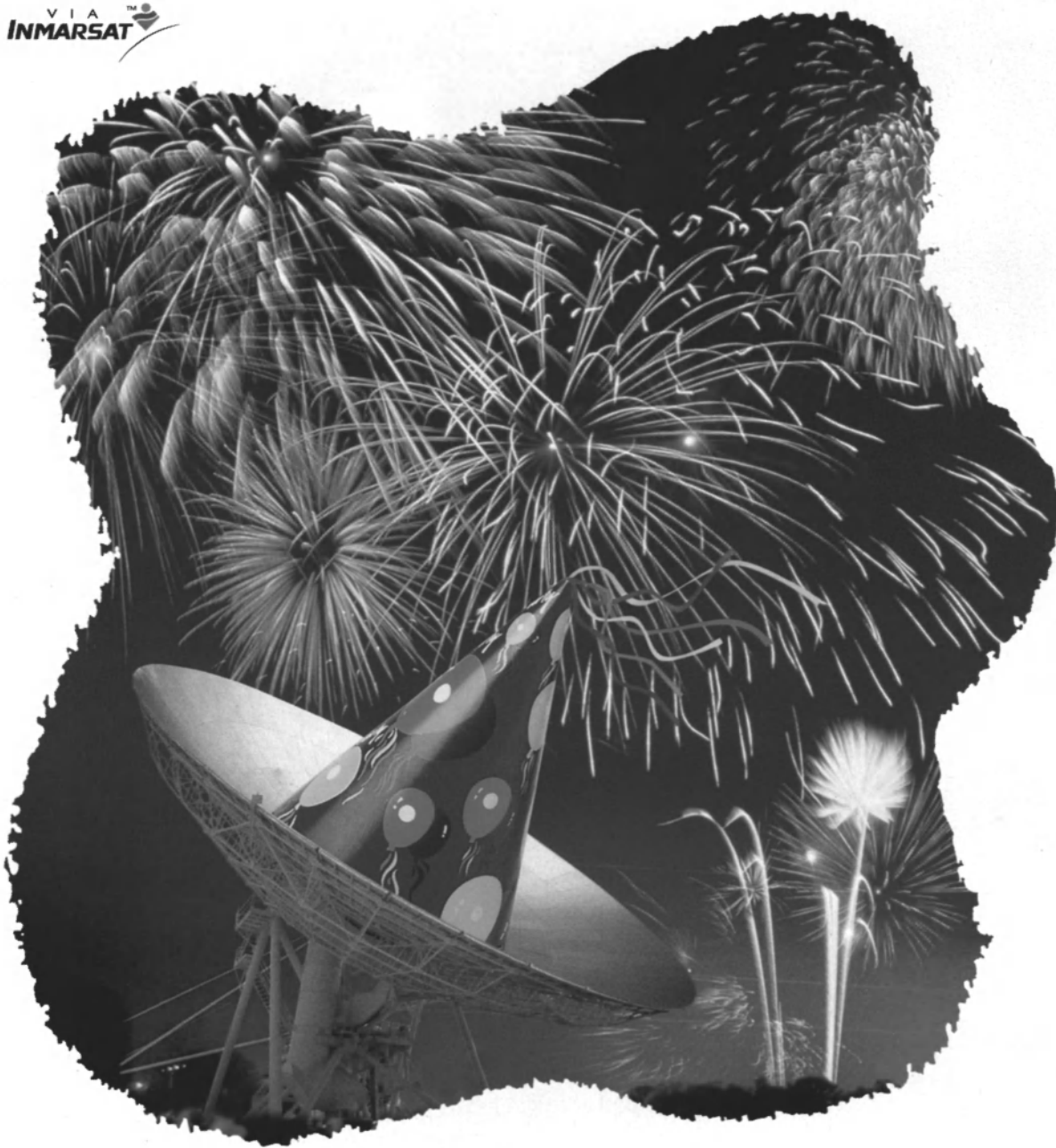
Environment Ministry for three tugs and six barges, scheduled for delivery in about 12 months. The tugs will transport refuse.

### Taiwan

The Restis family group, a leading operator of reefer vessels, has embarked on a major diversification by placing a shipbuilding order in Taiwan for four Panamax dry bulkers, worth \$116 million. The group also disclosed that it is launching a separate company, Modern Shipping, to handle its new interest in the dry bulk trades. The four initial bulkers of 73,000 dwt are to be built in China Shipbuilding Corp.'s (CSBC) Kaoshiung Shipyard at a total cost of \$116 million. All are due for delivery in the second half of 1999.

Yangming Marine Transport is proposing a new phase of liner fleet investment entailing post panamax containerships. It is understood that the state owned carrier is considering a series of five newbuildings with a unit capacity in excess of 5,000 TEU, with CSBC favored to win the order.

VIA  
INMARSAT



**On the 15th anniversary of Sentosa's Inmarsat Services, we're giving our customers a couple of reasons to celebrate.**

One, our Singapore Sentosa Land Earth Station now offers global coverage with Inmarsat-B, Inmarsat-B High Speed Data, Inmarsat-M and **MPLUS** services. The Access Code is 210 for all four services worldwide. And they will function alongside the existing Inmarsat-A service (which is also available globally), and Inmarsat-C (available in POR/IOR).

Sentosa LES Access Codes				
Ocean Region	POR	IOR	AOR-E	AOR-W
Inmarsat-A	10	13-5	13-5	10
Inmarsat-B/M/ <b>MPLUS</b>	210	210	210	210
Inmarsat-C	210	328	-	-

And, more importantly, two, we have also reduced the rates for all our services by as much as 50% such that they are arguably the lowest in the world.

So take advantage of our improved charge bands, cost savings, competence and commitment more than ever. Call on Sentosa Land Earth Station for your Inmarsat answers today. And join in the celebrations.

For proper Access Procedures to Sentosa Inmarsat-  
A service in IOR/AOR-E (Access Codes 13-5), please  
contact Sentosa Customer Service Centre.

**Singapore  
Telecom**

Service first. Always.

For more information, contact Singapore Telecom, International Mobile Service, 15 Hill St, #02-00 Telephone House, Singapore 179352.  
Tel: (65) 4816231. Fax: (65) 4818050. Tlx: (87) 34842. Internet: SENTOSA%IMIR%ST@SINGTEL.COM. Website: http://www.singtel.com/sentosaLES

### Kvaerner Delivers Cables To Singapore-Based Interest

Kvaerner Masa-Yards has delivered the second cable maintenance ship for International Cables Pte Ltd. of Singapore. *CS Cable Retriever* is part of a contract signed between the two parties in 1992 for two cable maintenance vessels, the first, *CS Asean Restorer* was delivered in 1994. International Cables is a joint venture between Singapore Telecommunications Pte Ltd., Asean Cables Pte Ltd. and Cable and Wireless Ltd. *Cable Retriever* will be operated by Cable and Wireless and will be based in Subic Bay, the Philippines. The new vessel is reportedly capable of all aspects of cable laying, recovery and repair.

*Cable Retriever* features three Wartsila Vasa 9R32 and two Wartsila Vasa 6R22 engines with a combined output of 12,885 kW. Propulsion machinery consists of two ABB 2,700 kW inverter motors.

**For more information  
Circle 22 on Reader Service Card**

Circle 272 on Reader Service Card

# UNCTAD Study: Seaborne Trade To Grow 3.8 Percent

According to a study from UNCTAD, the UN trade and development agency, world seaborne trade is forecast to grow by 3.8 percent in 1997 to 4.9 billion tons on revitalized demand for dry bulk cargoes. UNCTAD forecast 5.1 percent growth in dry bulk cargo shipments in 1997, based on higher demand for main dry bulk commodities. The projections reverse the flat 1.1 percent growth of 1996.

UNCTAD forecast that iron ore shipments would expand by 3.5 percent in 1997 and grain shipments would grow slightly by one percent, reversing last year's slump.

Seaborne trade, which has grown continuously in the past decade, grew 2.3 percent in 1996. During the same period, growth in the world merchant fleet was slightly higher, which led to marginally decreasing productivity in fleet capacity.

In the crude oil tanker market, freight rates improved for all principal types of crude oil tankers. Crude oil shipments rose four percent in 1996 to 1.6 billion tons, driven primarily by suppliers from Latin America, the Gulf and North Africa.

Shipments to the U.S., the world's largest importer, rose 3.7 percent in 1996 over the previous year. Shipments to Japan were up two percent, while shipments to Europe rose 8.6 percent (falling four percent to Northern Europe and rising 15 percent to Southern Europe).

In 1997, UNCTAD forecast crude oil shipments to the U.S. to more than double the 1996 rate. Tonnage of the world merchant fleet rose 3.2 percent in 1996 to 758.2 million dwt, the report said.

In 1996, world total surplus tonnage fell to its lowest since 1988, to 48.8 million dwt.

Developed countries, which control nearly 66 percent of the world

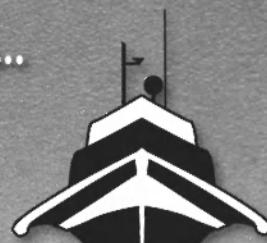
fleet, accounted for more than half of the world's seaborne trade in 1996. These countries increased their share of the world fleet slightly to 19.5 percent in 1996 with 147.5 million dwt from 18.5 percent. Also in 1996, their share

of container tonnage was 18.1 percent and world cargo turnover was 38.9 percent. UNCTAD said investments in new tonnage in 1996 helped the developing world reduce the average age of its container fleet to 12.1 years, in line

with the world average. But according to the agency, the regional picture remained unbalanced, with Asian countries possessing 80 percent of the container tonnage in the developing world and Africans owning virtually none.

*It just got a lot easier to reach  
the maritime industry's top buyers!*

Announcing...



## MariTrends '98

Your Link to the Future

January 24-27, 1998

Opryland Hotel Convention Center

Nashville, TN

### MariTrends '98, the Maritime Industry's MOST POWERFUL Marketing Event

MariTrends '98 has taken all of the guesswork out of marketing your products and services to the maritime industry. We understand that the most important reason to exhibit at a trade show is to gain access to a wide range of qualified buyers. At MariTrends '98, you will reach the top leaders in the industry.

### Incredible Marketing Focus

MariTrends '98 offers you a sales opportunity that is unequalled anywhere in the maritime industry. Why? Because this hard-hitting exhibition is anchored by major successful conventions held by the Passenger Vessel Association, the American Waterways Operators and the National Shipyard Association. As a result, strong attendance is virtually assured because these are the principal organizations representing the passenger vessel, tug, towboat and barge, and shipbuilding and repair industries.

MariTrends '98 is a sound marketing investment because it delivers pre-qualified buyers from these growing markets directly to you. Add MariTrends '98 to your marketing mix and watch your return on investment soar!

Reserve your exhibit space today!  
Call (800) 807-8360 or (703) 807-0100,  
or E-mail: [passvess1@msn.com](mailto:passvess1@msn.com)  
or access our Web site: <http://www.p-v-a.com>.

## Bollinger Establishes Electrical Department

Bollinger Shipyards, Inc. has expanded its industrial capabilities with the establishment of an electrical department. The 14,400-sq. ft. facility specializes in generator/motor repair and maintenance and is headquartered in Harvey, La. at Bollinger Quick Repair.



THE AMERICAN  
WATERWAYS  
OPERATORS



the  
WATERWAYS  
JOURNAL  
Weekly  
since 1927



# Quality, Quantity Issues Abound

The Ship Repair & Conversion exhibition in London last month provided a forum not only for companies to exhibit their wares, but to air their grievances on what ails the industry.

Ship repair and conversion busi-

ness has battled many of the same issues found on the newbuild side, namely the problem of too much capacity — much of it coming on-line from developing countries — which is helping to keep prices artificially low.

## Astilleros Españoles: Moving Forward With Quality

Spain's Astilleros Espanoles group serves well as a microcosm of the changes sweeping the world ship repair and conversion industry. By the end of 1998, the tradi-

tional European shipbuilding and repair powerhouse must proceed with plans to privatize and get all of its yards profitable, all the while implementing drastic capacity reductions. At the same time, the yard is faced with a price-driven, cut-throat competition repair and conversion market.

According to Astilleros Espanoles, the main problem in running a profitable ship repair and conversion operation is the result of unregulated shipyard capacity expansion. "Everybody is busy, but prices are still depressed because the market is still unbalanced," said Astilleros Astander executive **Angel F. Diaz-Munio**. "If we have to be ruled, the rules have to be the same and equal for all."

In order to comply with the EU-mandated capacity reduction program, Astilleros has had to ban Astander from conversion work, allowing only repair jobs for the yard. Meanwhile, the Astano yard is limited to offshore work. While subsidy matters, and particularly the passage of the OECD agreement, are viewed by the group as critical to creating the mythical level playing field, Astilleros believes that worldwide capacity reduction is just as crucial of a link to restoring balance to the repair and conversion markets, and the heart of restoring profitable pricing levels.

While up front pricing is, of course, important, Mr. **Diaz-Munio** said that the whole spectrum of the job — completed correctly and on schedule — is vital to determining the real cost of a job.

Despite the challenges, the group as a whole and the Astander yard specifically have maintained a very positive level of work, depending on loyal customers and focusing on jobs where high quality and high technical solutions have priority over price.

"It is difficult to compete with the up and comers on price," said **Diaz-Munio**. "To expand our markets, we must find the customers who are more interested in quality, safety and price." This stance is proven on the yard's reference list for the six month period from May to October 1997, a list which includes 33 vessels, ranging from chemical tankers from JO Tanker and Storli, to a reefership from Norbulk Shipping and a LGC ship from Hanseatic. In a typical

## Leaders in

## Marine Design Software

**IMSA**

### FlagShip

from Proteus Engineering



**FlagShip** is a complete ship design system, including hullform design (*FastShip*), structural design and optimization (*MAESTRO*), stability, powering, maneuvering, seakeeping, shipyard cost estimating and interfaces to CAD and ship production programs. *FlagShip* is based on time-tested, best-in-class applications, which are in use by more than 1,000 designers in over 30 countries around the world.

### NavCad

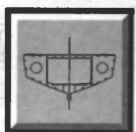
from HydroComp, Inc.



**NavCad** offers an integrated platform to predict resistance and power, and to determine optimum propeller parameters. With *NavCad* each aspect of a ship's performance can be evaluated for virtually every type of displacement hull, semi-displacement and planing craft, river barge train, catamaran and auxiliary-powered sailboat.

### ShipCAM97 / CAD-Link97 NC-Pyros97

from Albacore Research Ltd.



Integrated ship production for Win95/NT. **ShipCAM97**: Fairing and lofting including frames with cutouts, plate expansion, shell expansion and inv. bending. **CAD-Link97**: AutoCAD13 based 3D structural modeling as easy as 2D drafting plus weight & CG. **NC-Pyros97**: NC-code generation from CAD drawings.

### General HydroStatics (GHS)

from Creative Systems, Inc.



Widely recognized as the most advanced and productive trim/stability/strength software. Specialized versions are available for ship operators, for salvage engineers and for small craft designers. Includes efficient modeling for all types of complex vessels, and the ability to analyze them both afloat and aground.

A cooperative association of software developers with complementary marine design products.

13 Jenkins Court  
Suite 200  
Buckham, NJ 03824  
USA

Tel: 603-868-3344  
Fax: 603-868-3366

INTERNATIONAL  
MARINE  
SOFTWARE  
ASSOCIATES

Circle 240 on Reader Service Card

## Chand Corporation

### Software for the Work Boat Industry

## TRIP MASTER

Boat & Barge Tracking, Dispatching, Daily Log, Billing, Crewing, Safety, Financials, Material, and More.

Office and/or Boat Software. Boat to Office E-Mail and Data Transmission.



Featuring



## CUSTOM WINDOWS APPLICATIONS

Designed To Solve Your Most Important Business Software Needs.

## MAINT

Maintenance Management and Scheduling System That Incorporates Material Control Capabilities.



157 Highway 654  
Mathews, LA 70375  
(504)532-2512 \* FAX (504)532-2571  
E-MAIL: INFO@CHAND.COM

**Microsoft**  
SOLUTION PROVIDER



year, Astander will repair between 60 and 70 ships.

In fact, Astander had a record year in 1996 for repair activity, a pace that has kept up in 1997. To October, Astander's two drydocks have recorded 93 percent occupancy, with the larger 754.5 x 106 ft. (230 x 32.2 m) dock having an amazing 98 percent occupancy rate. Astander is currently in the midst of a \$7 million investment plan, which includes: a 200-ton tower crane for Drydock 2; enlargement of repair quays, overall by 229 ft. (70 m); a 25-ton tower crane for a new quayside, which is scheduled to be in service this month; and an increase in the seaway draft, allowing arrivals and departures 24 hours a day.

#### Tuzla Yard Poised To Capitalize On Shift

Turkey is poised to take the ship repair market share from European and Far East competitors, said **Kahraman Sadikoglu**, president of the Tuzla Shipyard. That is, if its new government is willing to back the political and fiscal programs needed to ensure that its yards can meet shipowner's demands of safety, quality, cost and timeliness.

The Tuzla yard has made a major push to capture more complicated repair and conversion jobs. In its docks now is a conversion which embodies the type of work the yard envisions for the future, the *Scarabeo 7* rig conversion. *Scarabeo 7* will be converted from an accommodation rig to a drilling platform, a project that will entail 6,000 tons of steel and 500 tons of pipe. It is due for delivery to Saipem in Italy in October 1998. Graduating from standard drydocking work to more complex conversions and offshore work was a long process in the making. According to Mr. **Sadikoglu**, despite the country's low labor rates, owners were, and to some degree are, still not trusting of the quality of Turkish yards.

Mr. **Sadikoglu** picked up on owners' demands and initiated a new training program for the yard's workers three years ago. An investment in training and safety matters, it seems, has turned into big dividends, with contracts such as the *Scarabeo 7* conversion and the FPSO *Firenze* conversion.

"I believe that there is a big potential in Turkey, there is now a big demand for repair and conversion work particularly in the offshore markets," said **Sadikoglu**, "but, unfortunately, we need more capacity."

For more information on Astilleros Españoles  
Circle 52 on Reader Service Card

For more information on Tuzla  
Circle 53 on Reader Service Card

## Ship Repair Notes

### SWM, SFD Acquired By Carlyle Group

On the heels of a nationwide effort by several ship repair yards, lead by **Arthur Engel** and **B. Edward Ewing** of Southwest Marine Inc. (SWM), to lobby the government for information on projected ship repair budgets, SWM, San Francisco Drydock Inc. (SFD) and The Carlyle Group, a private merchant bank in Washington, D.C., announced the signing of a definitive agreement in which Carlyle agreed to acquire both SWM and SFD.

# It's A TUG OF WAR.



Sometimes running a business can feel like a tug of war. Cummins can help. With a powerful lineup of engines from 64 to 2000 horsepower. Engineered for economy, durability and low cost of operation. And backed by an international network of support systems ready to respond to customer needs.

In a tug of war, every advantage helps. Discover what more and more smart operators are discovering. And put the power of Cummins Marine to work for you.

Call Cummins at  
**1-800-DIESELS (1-800-343-7357)**

Fax: 1-800-232-6393  
e-mail: [powermaster@cummins.com](mailto:powermaster@cummins.com)  
Internet: <http://www.cummins.com>



**POWER TO EARN.**

Cummins Marine  
Charleston, South Carolina, U.S.A.  
Phone: (803) 745-1620  
Fax: (803) 745-1549

Cummins Engine Company, Ltd.  
Daventry, Northants, England  
Phone: 44-1327-886000  
Fax: 44-1327-886102

Cummins Diesel Australia  
Scoresby, Victoria, Australia  
Phone: 61-3-9765-3222  
Fax: 61-3-9764-0034

Cummins Americas, Inc.  
Miramar, Florida U.S.A.  
Phone: (954) 431-5511  
Fax: (954) 433-5797

Cummins Diesel Sales Corporation  
Singapore  
Phone: 65-265-0155  
Fax: 65-264-0664

©1997 Cummins Marine, Division of Cummins Engine Company, Inc. 4500 Leeds Avenue — Suite 301, Charleston, South Carolina 29405 U.S.A.

Circle 227 on Reader Service Card

When  
We Say...

A COLD SPACE DESIGNED & CONSTRUCTED TO MEET  
THE DEMANDS OF THE MARINE INDUSTRY...

We  
Mean...



**ARCTIC SAFE**  
by COSPOLICH

**M**ARINE-QUALITY ENGINEERING and second-to-none construction make **ARCTIC SAFE** the cold space of choice for tough, demanding environments.

Modular construction, strong stainless steel floors and walls, marine quality doors, panels reinforced with interior hardrails, gasketed threaded cap screws cover floor camlocks, seams treated with a non-hardening caulking, and waterproofed, non-gasketed sections assure you of the overall quality of this marine cold storage space.

The **ARCTIC SAFE** is a very special product. It's marine-ready from the deck up. We look forward to your inquiry.

**COSPOLICH**  
REFRIGERATOR CO.

949 Industry Road, Kenner, LA 70062  
(800) 423-7761 • (504) 469-6555  
[www.cospolich.com](http://www.cospolich.com)



# SAILOR

## SALES AND SERVICE AGENTS

**ANTILLES (NETHERLANDS)**  
Radio-Holland Caribbean N.V. - Curacao N.A.  
Phone: +599 9 612577 - Fax: +599 9 612723

**ARGENTINA**  
Oton R. Klein S.A. - Buenos Aires  
Phone: +541 760 0202 - Fax: +541 760 6389

**AUSTRALIA**  
Rubin Marine - Artarmon NSW  
Phone: +61 2 94392333 - Fax: +61 2 94392278

a.m.i. sales - O'Connor, Western Australia  
Phone: +619 337 3266 - Fax: +619 314 2929

**BAHRAIN**  
Aeradio Technical Services - Mina Salman Port  
Phone: +973 727790 - Fax: +973 727811

**BANGLADESH**  
Graphics Communications Ltd. - Dhaka  
Phone: +880 2 8922440 - Fax: +880 2 883627

**BELGIUM**  
Antwerp Marine Radio Company N.V. - Antwerp  
Phone: +32 3 541 04 63 - Fax: +32 3 542 61 73

**BERMUDA**  
Marine Communications - Pembroke  
Phone: +1 441 2950558 - Fax: +1 441 2920079

**BRAZIL**  
O.L. Naval Ltda. - Rio de Janeiro  
Phone: +55 21 222 5667 - Fax: +55 21 242 7934

**BULGARIA**  
International Marine Technologies Ltd. - Rousse  
Phone: +359 82 228216 - Fax: +359 82 279115

**CANADA**  
Radio Holland (Canada) Ltd. - North Vancouver  
Phone: +1 604 293 2900 - Fax: +1 604 293 2930

**CHILE**  
Serprotec LTDA - Valparaiso (Deep Sea)  
Phone: +56 32 232780 - Fax: +56 32 212215

Simrad Chile - Santiago (Fishing)  
Phone: +56 2 235 1068 - Fax: +56 2 235 8732

**CROATIA**  
BELAM-Zastupstvi i Servis - Rijeka  
Phone: +385 51 672343 - Fax: +385 51 672179

**CYPRUS**  
A.P. Hadjipieros Ltd. - Limassol  
Phone: +357 5 345972 - Fax: +357 5 345973

**ECUADOR**  
Industria Anabra C. Ltda. - Guayaquil  
Phone: +593 4 309766 - Fax: +593 4 313694

**EGYPT**  
Suez Electronics Engineering & Trading Ltd. - Cairo  
Phone: +20 2 2742311 - Fax: +20 2 2745219

**ESTONIA**  
AS RSTA - Tallinn  
Phone: +372 6 312082 - Fax: +372 6 312082

**FAROE ISLANDS**  
S.P. Radio Denmark  
Phone: +45 981 89999 - Fax: +45 981 86717  
(For further information)

**FINLAND**  
ASPO Systems Oy - Espoo  
Phone: +358 9 422155 - Fax: +358 9 422908

**FRANCE**  
Geolink - Roquevaire  
Phone: +33 442 32 99 00 - Fax: +33 442 32 94 95

SDM Electronique - Sartroville Cedex  
Phone: +33 1 39 146833 - Fax: +33 1 39 133022

**GERMANY**  
Eina GmbH - 25462 Rellingen/Hamburg  
Phone: +49 4101 30100 - Fax: +49 4101 301214

**GIBRALTAR**  
Electro Med - Marina Bay  
Phone: +350 77077 - Fax: +350 72051

**GREECE**  
Marac Electronics S.A. - Perama - Piraeus  
Phone: +30 1 43 14361 - Fax: +30 1 43 14234

**GREENLAND**  
S.P. Radio Denmark  
Phone: +45 981 89999 - Fax: +45 981 86717  
(For further information)

**HOLLAND**  
Radio Holland Marine B.V. - Rotterdam  
Phone: +31 10 4283344 - Fax: +31 10 4281488

Sailtron B.V. - Utrecht  
Phone: +31 30 2944741 - Fax: +31 30 2937642

**HONG KONG**  
Radio Holland Group - Kwai Chung N.T.  
Phone: +852 24239007 - Fax: +852 24805898

Hoi Tung Communication & Navigation Co. Ltd.  
Phone: +852 25421262 - Fax: +852 25431137

**ICELAND**  
Radiomidun Ltd. - 101 Reykjavik  
Phone: +354 511 1010 - Fax: +354 511 1020

**INDIA**  
Ecome Marine Services Pvt. Ltd. - New Bombay  
Phone: +91 22 763 23 48 - Fax: +91 22 763 23 51

**IRAN**  
Kaman Hormozgan Marine Engineering - Tehran  
Phone: +98 21 222 8020 - Fax: +98 21 222 4502

**ISRAEL**  
Alabout-Yam Ltd. - Haifa  
Phone: +972 4 86 20804 - Fax: +972 4 8627404

**ITALY**  
Compagnia Generale Telemar - Roma  
Phone: +39 6 3221800 - Fax: +39 6 3240148

Generalmare est S.R.L. - Chiavari  
Phone: +39 185 32 33 56 - Fax: +39 185 32 27 31

**IVORY COAST**  
Optim Afrique - Abidjan  
Phone: +225 251 843 - Fax: +225 257937

Nautical Afrique - Abidjan  
Phone: +225 250136 - Fax: +225 250137

**JAPAN**  
Kaigai Gijyutsu K.K. - Yokohama  
Phone: +81 45 6647318 - Fax: +81 45 6647320

**KENYA**  
East African Maritime Services Ltd. - Mombasa  
Phone: +254 11 472086 - Fax: +254 11 472975

**KOREA**  
Samyang Radio Co. Ltd. - Pusan  
Phone: +82 51 413 5000 - Fax: +82 51 413 5002

**KUWAIT**  
Ecome International - Satal  
Phone: +965 2406822 - Fax: +965 2406833

Commercial Co-Ordination Centre W.L.L. - Satal  
Phone: +965 2462347 - Fax: +965 2454350

**LATVIA/LITHUANIA**  
Tiansas Baltia - Riga  
Phone: +371 7286585 - Fax: +371 7821202

**MALTA**  
Medcomms Ltd. - Gzira  
Phone: +356 335521 - Fax: +356 310820

**MEXICO**  
Nautica, S.A. de C.V. - Mexico D.F.  
Phone: +52 5 6519740 - Fax: +52 5 6512825

**MOROCCO**  
Soremar - Casablanca  
Phone: +212 2 442802 - Fax: +212 2 305385

**NEW ZEALAND**  
Electronic Navigation Ltd. - Auckland  
Phone: +64 9 3735595 - Fax: +64 9 3795655

**NIGERIA**  
Netarcomms Nigeria Ltd. - Lagos State  
Phone: +234 1 871662 - Fax: +234 1 264 6083

**NORWAY**  
AEG Norge AS - Oslo  
Phone: +47 22 89 78 00 - Fax: +47 22 89 78 04

**PAKISTAN**  
International Aeradio Pakistan (Pvt.) Ltd. - Karachi  
Phone: +92 21 587800 - Fax: +92 21 5870331

**PHILIPPINES**  
Radio Holland B.V. (Philippines) inc. - Manila  
Phone: +63 2 527 5865 - Fax: +63 2 527 5866

**POLAND**  
EPA Ltd. - 71-324 Szczecin  
Phone: +48 91 874885 - Fax: +48 91 875014

**PORTUGAL**  
Nautel - Electronica Maritima, Ltda. - Lisbon  
Phone: +351 13920940 - Fax: +351 13970084

**QATAR**  
Eastern Technical Services Co. - Doha  
Phone: +974 441412 - Fax: +974 329292

**RUMANIA**  
Imstel Maritime SA Constanta - Constanta  
Phone: +40 41 639038 - Fax: +40 41 674356

**RUSSIA**  
Tiansas Marine Ltd. - St. Petersburg  
Phone: +7 812 567 2090 - Fax: +7 812 567 1901

Moretron Ltd. - Murmansk  
Phone: +47 85 10144 - Fax: +47 85 10144

**SAUDI ARABIA**  
Key Communication Development Ltd. - Dammam  
Phone: +966 3 8336940 - Fax: +966 3 8330728

**SENEGAL**  
Optim Senegal - Dakar  
Phone: +221 234930 - Fax: +221 229676

**SINGAPORE**  
Radio Holland B.V. - Singapore  
Phone: +65 8622218 - Fax: +65 8622430

**SOUTH AFRICA**  
Cape Maritime Electronics (Pty.) Ltd. - Cape Town  
Phone: +27 21 551 3204 - Fax: +27 21 551 3206

Radio Holland Group, Paarden Eiland (Cape Town)  
Phone: +27 21 511 0864 - Fax: +27 21 511 7577

**SPAIN**  
Nautical - San Sebastian de los Reyes (Madrid)  
Phone: +34 1 6549411 - Fax: +34 1 6549600

**SWEDEN**  
Ring Marine AB, Askim/Göteborg  
Phone: +46 31 668400 - Fax: +46 31 663660

Racal Svenska AB, Vastra Frolunda (Göteborg)  
Phone: +46 31 292100 - Fax: +46 31 292109

**TAIWAN R.O.C.**  
Unimax Electric & Co., Ltd. - Kaohsiung  
Phone: +886 7 815 9775 - Fax: +886 7 815 1775

**TANZANIA**  
The Old East African Trading Co. Ltd. - Dar es Salaam  
Phone: +255 51 32249 - Fax: +255 51 46909

**TUNISIA**  
Aicatel Tunisie - 1080 Tunis Cedex  
Phone: +216 1 717177 - Fax: +216 1 719888

**TURKEY**  
Elektro-Deniz Ltd. - Istanbul  
Phone: +90 216 392 77 29 - Fax: +90 216 392 80 18

**UNITED ARAB EMIRATES**  
Ecome International L.L.C. - Dubai  
Phone: +971 4 342333 - Fax: +971 4 342465

**UNITED KINGDOM**  
Ships Electronic Services Ltd. - Rochester (Kent)  
Phone: +44 1634 295500 - Fax: +44 1634 295536

**URUGUAY**  
Electromaritima Uruguayua Ltda. - Montevideo  
Phone: +598 2 947139 - Fax: +598 2 947138

**USA**  
Radio-Holland USA, B.V. - Houston (Texas)  
Phone: +1 713 943 3325 - Fax: +1 713 943 3802

**VENEZUELA**  
Radio Holland De Venezuela S.A. - Maracaibo  
Phone: +5861 987811 - Fax: +5861 982596

### Public v. Private

Founded in 1977 by **Art and Herb Engel**, SWM and SFD, with combined revenues of approximately \$200 million, are ship repair companies specializing in the conversion, overhaul and modernization of government and commercial vessels. Recently, however, the private ship repair industry has lodged complaints about the way the government is handling its ship repair needs. Though there are reportedly only four operating public ship repair yards, down from eight in 1990, employing 21,000 workers, down from 85,000 in 1990, those yards are still reportedly receiving the same amount of money from the government for the repair of naval ships as they were seven years ago. According to **Mr. Ewing** this should not be the case.

**Mr. Ewing** indicated that because private ship repair yards are able to offer more competitive prices and because the Navy has reportedly indicated an interest in privatizing more of its ship repair business, private yards should be receiving more business from the government. As a result of this — and cutbacks in defense spending — companies like SWM, who depend on the Navy for most of their business, have experienced steep losses of late. At SWM alone, revenues dropped from \$350 million in 1990 to \$200 million in 1997, decreasing its workforce from 4,000 to 1,800. In addition to the difficulties presented by decreased defense spending and the use of public yards, **Mr. Ewing** and others in the ship repair industry have maintained that the government does not release information about projected spending, making it difficult for ship repair companies to conduct business in a secure environment. To combat this trend, the six ship repair associations nationwide have banded together under the umbrella of the Shipbuilders Council of America and hired a consultant to work with the government toward achieving some basic objectives. These objectives include: establishing improved communications between the Navy and the ship repair companies; achieving the mandated 60/40 percent split between public and private ship repair budget allotments; and designating a contingency fund for emergencies, which have reportedly been funded in the past by money earmarked for private ship repair yards.

### Moving Forward

Despite these obstacles, the ship repair industry remains hopeful for improvements. SWM has turned a profit for the past two years, according to **Mr. Engel**, making it an attractive acquisition for the Washington, D.C.-based Carlyle Group, one of the leading private buyers of defense and aerospace businesses.

"The timing of our sale could not be better. Both companies are healthy and performing well, and the future looks bright," **Mr. Engel** commented. "In addition, The Carlyle Group will provide the companies with the resources for continued growth."

**Mr. Engel** added that he did not expect the

transaction to have any effect on either SWM's or SFD's employees or customers. "Carlyle is an investment company, not an operating company. A primary reason for selling to Carlyle is the importance that Carlyle placed on our employees," he stated.

Following the acquisition of both companies by Carlyle, **Mr. Ewing**, SWM's current COO, will be promoted to the position of CEO for both companies. **Mr. Engel** will resign from his position of CEO of SWM and SFD following the closing of the acquisitions to concentrate on the management of several other business holdings.

### New U.K. Contestant Enters Repair Fray

A new U.K. ship repair company — **J. Kirkaldy and Sons** — expects its floating drydock, located at the Dorset port of Portland, to be ready for duty by the end of this month. The dock was acquired from Sweden in August, and has been undergoing extensive refurbishment. The new yard intends to fill what it perceived to be a gap in yards to handling ships to 6,000 dwt.

### A&P Falmouth Wins Contract

A&P Falmouth has won a contract to carry out a refit on the MOD Royal Fleet Auxiliary Landing Ship (Logistic) or "LSL" vessel *Sir Geraint*. Work will include tail shaft repairs, maintenance of bow door and bow and stern ramp systems, installation of a low level lighting network, and the inspection, overhaul and replacement of main engine modules.

Circle 55 on Reader Service Card

### Railko Debuts New Bearing Package

Railko Limited launched a new bearing package which includes the complete design from a stern shaft diameter and approximate housing size, to classification society requirements, delivery and bearing assembly fitting assistance services at the yard.

Circle 54 on Reader Service Card

### A&P Tyne To Refit Color Viking

Color Line is bringing its ferry *Color Viking* to the U.K. for refit work. This is reportedly the first time a British ship repair company has won a contract from a Norwegian ferry operator. The 20,581 grt ship will include a general annual refit and maintenance and installation of new fish tail spousons.

Circle 56 on Reader Service Card

### Hellenic Shipyards Wins Alexander Conversion

Hellenic Shipyards Co. of Greece has won a contract from Latsis Group for conversion work on motor yacht *Alexander*.

The 394 ft. (120 m) vessel is to be converted into a high class passenger cruise liner, with completion scheduled for February 1998.

Circle 57 on Reader Service Card

## SOFTWARE SOLUTIONS

### Worldscale Launches Electronic Freight Schedule

In cooperation with energy information solutions specialist Saladin, the Worldscale Associations in London and New York have produced an electronic

version of the annual tanker freight schedule, dubbed Worldscaleplus.

The new electronic system will be available as of January 1, 1998, and will contain all the rates and supporting information published in the schedule. Designed to increase the efficiency of retrieving

rates, the new Windows-based system will enable users to retrieve all voyage information, including fixed and variable rate differentials and charterers' account items. Worldscaleplus will enable users to add unpublished rates, user notes and reference tags for commonly used voyages or ports.

### New Refrigerant Software From ESS

Environmental Support Solutions (ESS) has released a new version of its Refrigerant Compliance Manger software. The new product, dubbed Refrigerant Compliance Manger 97 Professional Edition, is specifically designed for Windows95 and utilizes the processing power of the 32-bit operating system. Addressing the "Millennium Bomb," date fields have been revised to accommodate four-digit years instead of two, ensuring accurate scheduling of future events.

For more information on ESS  
Circle 28 on Reader Service Card

### Dataworks Gets Business Boost From Systems Orders

Dataworks has completed an order from Seascope Shipping Ltd. for a complete 46-user system, comprising a PC network and shipbroking and messaging package. Dataworks has also completed a 16-user complete system installation comprising a shipbroking and messaging package in addition to a PC network for shipmanagement company Denholm. Along with additional recent orders, these contracts produced a three-month turnover of more than \$800,000 for Dataworks.

For more information on Dataworks  
Circle 30 on Reader Service Card

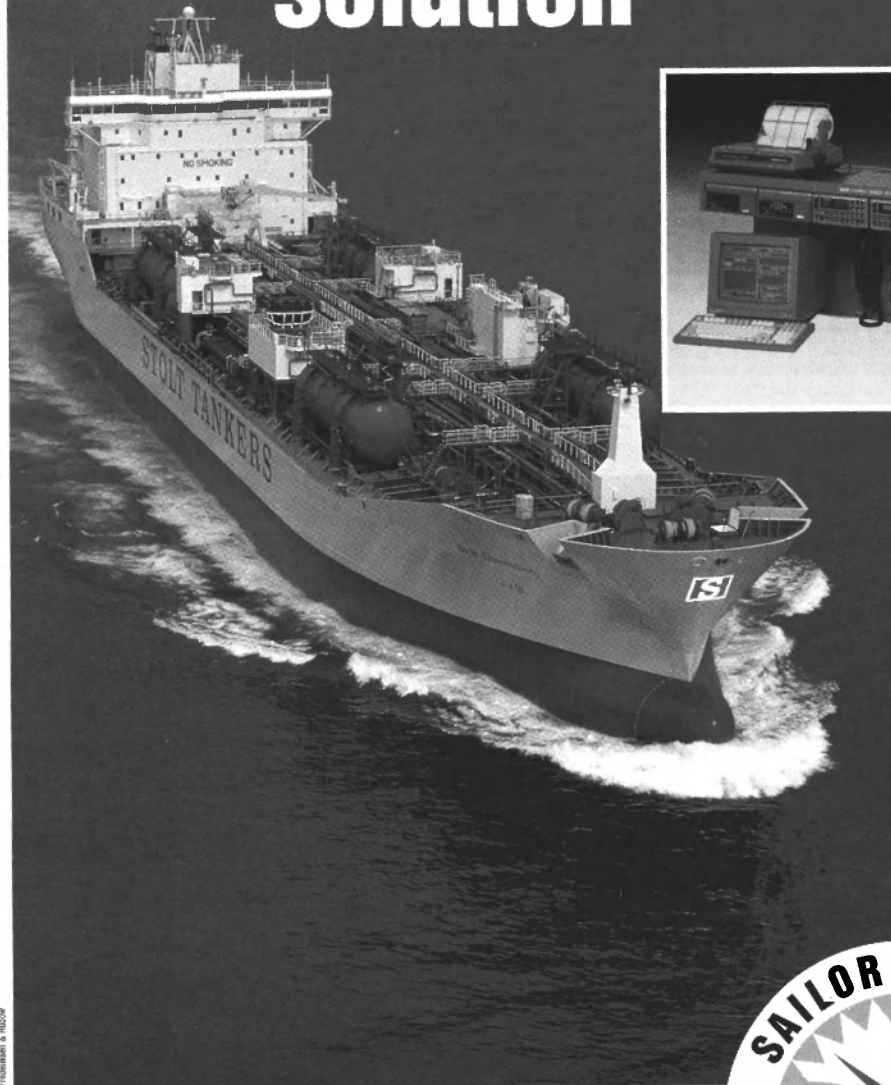
### MMS To Outfit American Progress

Global marine software provider Marine Management Systems, Inc. (MMS) will supply Mobil Corporation petroleum product tanker *American Progress* — the first double hull vessel built in a U.S. shipyard to standards required in the U.S. OPA 90 — with a Fleet Manager Enterprise for Windows system. An integrated suite, the Fleet Manager Enterprise for Windows manages inventory, ordering, planned maintenance, communications, e-mail, vessel reporting, personnel, payroll, forms, IACS and classification requirements and fleet-wide reporting.

For more information on MMS  
Circle 31 on Reader Service Card

(Continued on page 40)

# The GMDSS solution



M/T Stolt Innovation,  
Stolt Parcel Tankers Inc.



The SAILOR COMPACT  
GMDSS STATION

The SAILOR GMDSS CERTIFIED SERVICE concept has been developed to ensure the shipping industry a uniform level of service covering specific requirements for spare parts, replacement units and technical manuals, all supported by annual technical training of service personnel.



For more than half a century, the green SAILOR communication systems have been the guarantee of reliable, efficient and safe communication at sea. Today, the SAILOR product range includes a full line of communication equipment and systems, including the internationally recognized SAILOR GMDSS solutions and the latest developments within satellite communication. Sailor is supported world wide by a highly qualified service network.

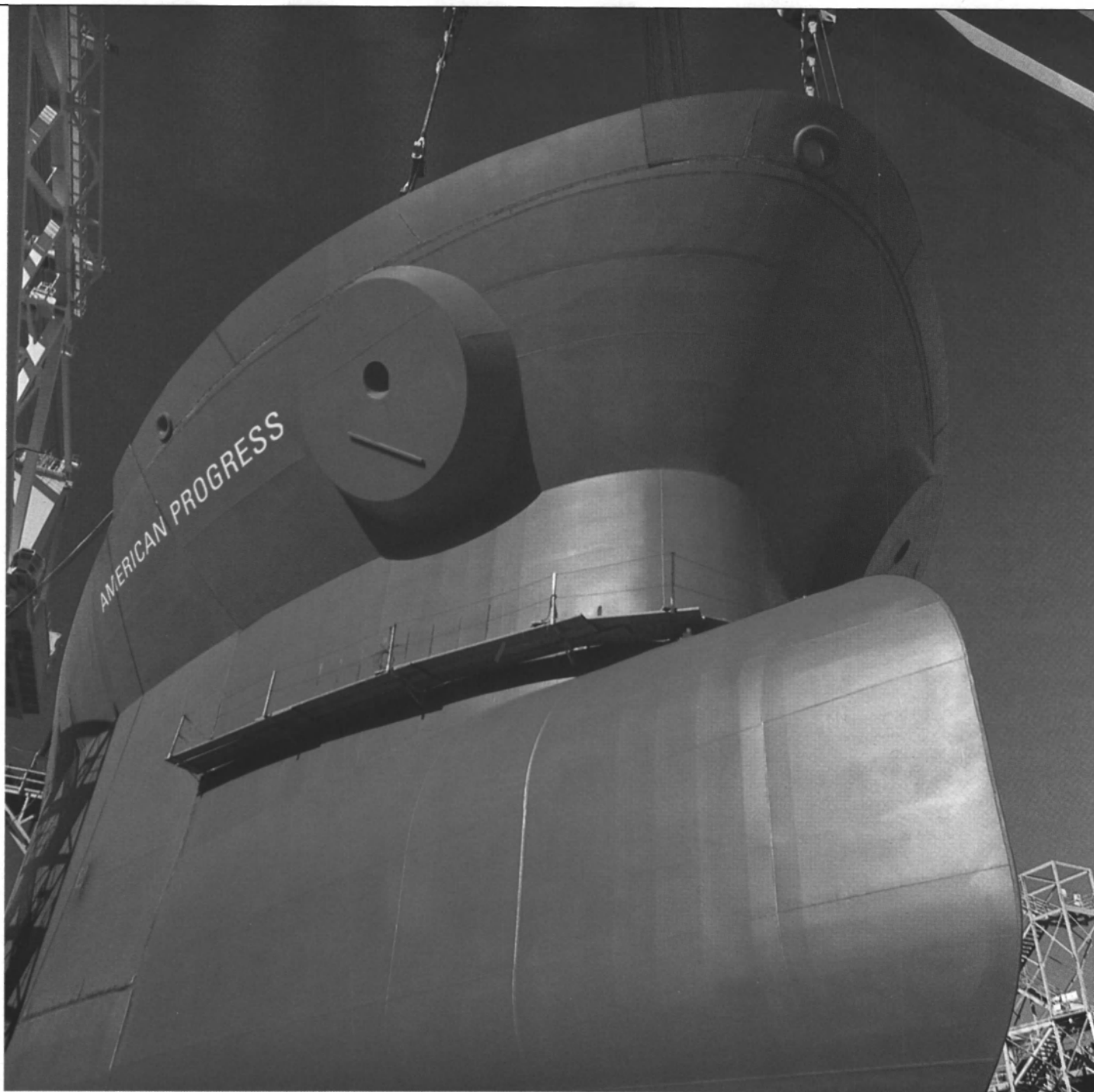
# SAILOR

SAILOR. FOR GLOBAL COMMUNICATION

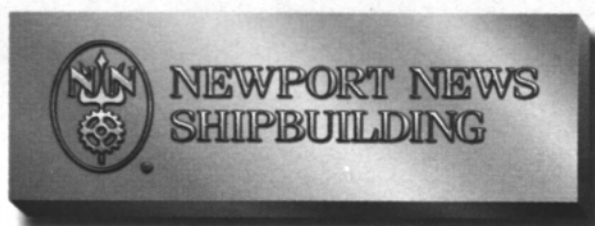
S.P. RADIO A/S · Porsvej 2 · DK-9200 Aalborg SV · Denmark  
Phone int. +45 9818 0999 · Telex 69 789 SPRAD DK · Telefax int. +45 9818 6717

Circle 264 on Reader Service Card





WE'RE *the only*  
SHIPYARD MAKING  
AMERICAN PROGRESS



At Newport News Shipbuilding, we're moving ahead on delivery of the first in a series of double-hulled Double Eagle tankers. *American Progress* will sail this fall. It's a milestone – for both the yard and our customer, Mobil Corporation – marking the first ship built in America with a double hull, all mild

steel and a centerline bulkhead to meet U.S. and international environmental and safety requirements. No job is as important as building the finest ocean-going commercial ships for today's demanding global markets. We're making *American Progress* the next giant step.

WORLD'S MOST ADVANCED SHIPBUILDER

## CAD/CAM/CIM : Using Today's High-Tech Tools For State-Of-The-Art Shipbuilding

World-class shipyards and design firms are focusing on how best to use computers in the ship design and production process. The key to their success in areas such as design, factory automation and systems integration is enhanced computer-aided design/computer-aided manufacturing/computer-integrated manufacturing (CAD/CAM/CIM).

CAD/CAM/CIM systems are found in all leading shipyards today. The systems may comprise commercial software such as FORAN, TRIBON and CATIA, or software that was developed in house, such as HICADEC and MATES. The application may be for quick-turnaround initial design, one-off production design or the production design of a series of ships. The following paragraphs address selected CAD/CAM/CIM systems in world-class shipyards.

### DESIGN

#### In-House Development/ Series Production

The HICADEC CAD/CAM system is typically used to support the design and production of series VLCC and containerships. While HICADEC is important in the design phase, perhaps its greatest strengths are evident during production. HICADEC, initially developed by Hitachi Zosen, is used at the Ariake Works, one of the most modern shipyards in Japan. The system is also in use at Denmark's Odense Steel Shipyard. Hitachi Zosen and Odense share ongoing development work and have tailored the system to the individual needs of each yard. At the Ariake Works, HICADEC currently enables detail design and most of production design to be accomplished in seven to eight months between completion of the basic design and first cutting of steel. The production planning (block divisions and fabrication sequence planning) is done independently.

#### In-House Development/ One-Off Production

As with HICADEC, Mitsubishi Heavy Industry (MHI) developed its MATES system in-house. However, the system is tailored to

one-off designs in support of the yard's business strategy of building one-off rather than series products. MATES focuses on the

design phase of shipbuilding. Key features of the MATES hull system, which permits rapid development of new ship product defini-

tions, are the topological modeling capabilities and libraries of parametric-defined regional structural

(Continued on page 35)

# NO DRAIN, NO PAIN.

## 4,000 hours between oil changes!!



Now it's easy with the new CENTINEL™ Advanced Engine Oil Management System, an innovation that can save you a lot of time and money, hour after hour.

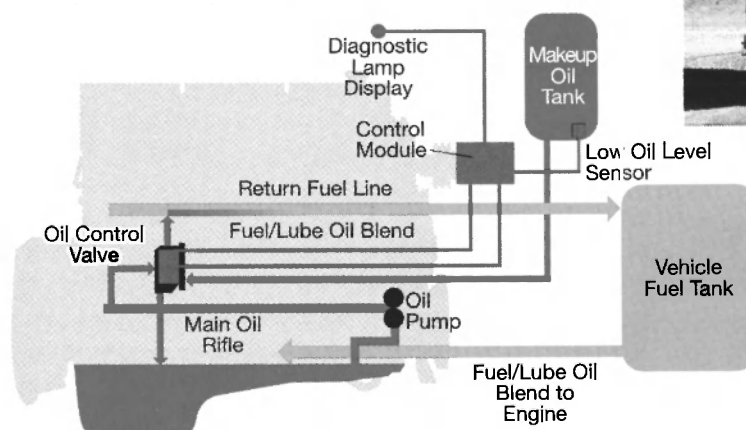
#### How CENTINEL Works:

CENTINEL is an onboard continuous replacement system that operates according to the engine's actual duty cycle. Using proprietary electronic controls, the CENTINEL system monitors

fuel rate and replaces oil at rates engineered for continued reliability and durability of the engine.

CENTINEL's continuous oil replacement process stabilizes engine oil quality and allows oil and filter change intervals to be extended to unprecedented levels. With CENTINEL, you can:

- Extend oil change intervals to 4,000 hours
- Extend oil filter change intervals to 1,000 hours
- Reduce oil and oil filter disposal costs
- Reduce downtime
- Increase productivity and profitability



CENTINEL is available exclusively through Cummins distributors and dealers. For details, contact your nearest Cummins location or phone 1-800-DIESELS (1-800-343-7357).



# CENTINEL™

©1997 Cummins Engine Company, Inc., Box 3005, Columbus, IN 47202-3005, U.S.A.

Circle 226 on Reader Service Card

## SHIP & BOATBUILDING TECHNOLOGY

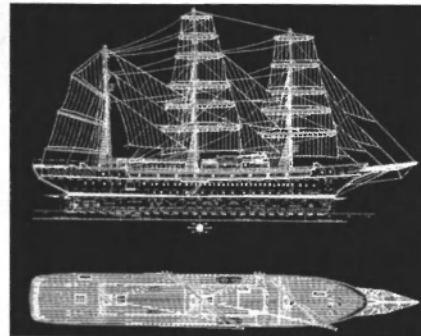
### Foran V40

Foran V40 from Sener is a highly integrated CAD/CAM/CIM system developed specifically for ship design and construction. The system can reportedly be designed for virtually any type of vessel and adapted to meet the specific

requirements of shipyards, both for engineering and production. A full-ship product model serves as the main information vehicle for ship design and production information. It contains topological and parametric relationships, 3D geometry, material definition, static and dynamic attributes and

manufacturing data.

This model is created once and increases with accuracy as the design matures and progresses. The model is stored in a single data base. The most recent design information is available for all parties involved in the design, lending concurrent engineering and coop-



Pictured is a screen from the Foran V40, showing information for the design of decks and bulkheads.

# Thermax

®

### SALES & DISTRIBUTION

Panel Specialists, Inc.  
Thermax NA  
3115 Range Road  
Temple, TX 76504-1240, USA

Tel: (800) 947-9422 \*USA only  
(254) 774-9800  
Fax: (254) 774-7222

### INTERIOR JOINER WALL PANELS

AROUND THE WORLD ..... NAVAL ARCHITECTS, INTERIOR DECORATORS, MATERIAL SPECIFIERS, SHIPBUILDERS, JOINERS, AND CABINET MAKERS LOOK TO THERMAX FOR:

- NON-COMBUSTIBLE marine construction boards meeting requirements of SOLAS and IMO resolutions
- Marine fire rated construction boards for bulkheads, joiner panels, walls, double shell, and ceiling
- Marine Regulatory Body Certification (USCG/UL, Canadian Coast Guard, UK DOT, Lloyds, DNV, etc.)
- Excellent core material for marine furniture fabrication
- Environmentally friendly construction material (no fibers, no formaldehydes, nontoxic)
- Technical Support
- Inventory in the USA ready for immediate shipment
- Laminating services available
- Metal profiles for bulkhead systems upon request
- Design, production, and sales of marine products according to requirements of DIN ISO 9001 / EN 29001

#### SALES

Panel Specialists, Inc. (PSI)  
13114 Dulaney Valley Road  
Glen Arm, MD 21057-9601, USA

Tel: (800) 540-5503 \*USA only  
(410) 592-8540  
Fax: (410) 592-3185

## ISO 9001

Registered and Certified

THERMAX • Subsidiary of ISOVOLTA AG • Austria  
A Constantia Industrieholding A.G. Company

Circle 280 on Reader Service Card

# Western Branch Metals

America's Number One Source for Quality  
**AQUAMET™ Boat Shafting**

Around the country and around the world, the marine industry turns to Western Branch Metals for AquaMET boat shafting. Stocking the full line of AquaMET shafting: AquaMET 17, 18, 19 and 22 in all sizes from 1" to 7", no other company can ship out a shaft faster than Western Branch.



**WBM**  
WESTERN BRANCH METALS, INC.

For inquiries and orders call:  
**(800) 446-8133 Fax: (757) 380-8842**

Visit our website at [www.aquamet.com](http://www.aquamet.com)

2401 Wesley Street • Portsmouth, VA 23707 Stocking Warehouses: Portsmouth, VA • Harahan, LA • Kent, WA

Circle 285 on Reader Service Card

erative working.

Foran V40 features automatic reporting and drawing tools to document the user-definable intermediate assembly levels. All models of the system are configured for UNIX, Open VMS and Window NT operations and run on a variety of hardware platforms.

For more information on Sener  
Circle 2 on Reader Service Card

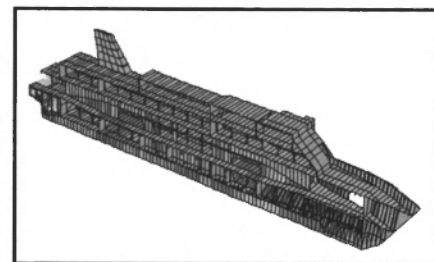
### Proteus Maestro

Developed by Proteus Engineering, Maestro (Method for Analysis Evaluation and STRuctural Optimization) is a computer program for optimum design of structures such as ships, submarines and floating platforms. Maestro's capabilities include rapid structural modeling, finite element analysis, failure analysis, evaluation of structural adequacy, structural optimization and detailed stress analysis. Maestro's modeler provides an interactive graphical environment for the rapid development of ship structural models.

The user enters basic hull geometry data and the modeler automatically generates the 3D finite element data.

This program is currently widely used by various navies, classification societies and ship builders and designers.

For more information on  
Proteus Engineering  
Circle 1 on Reader Service Card



Pictured is a Maestro-designed 341.2 ft. (104 m), 1,000 ton all-aluminum, high speed ferry. The vessel features two vehicle decks and two passenger decks and was designed according to DNV High Speed Light Craft Rules.



(Continued from page 33)

patterns. Topological modeling is used extensively for hull structure definitions to facilitate design alterations and new product development based on derivatives from previous designs.

#### Third Party Development

Howaldtswerke-Deutsche Werft (HDW) has taken a different approach from Hitachi, Odense and MHI, and outsources many of its support functions, including the development of CAD systems. Two of its support organizations in the ship design area are Norddeutsche Informations-Systeme GmbH (NIS) and SMK Ingenieurburo GmbH. A key principle guiding the HDW efforts to enhance profitability was to re-engineer business processes first, before attempting to automate these processes. The 80/20 rule of carrying out 80 percent implementation at 20 percent of the cost was adhered to in developing process improvement plans. These plans and their underlying concepts were evaluated annually and adjusted by experience to-date. Hardware (NC and robotics) vendors and software vendors were involved in the planning.

#### FACTORY AUTOMATION

Over the past 10 years, leading European and Japanese shipyards have invested a significant amount of effort in the development and implementation of robotics and other factory automation technology in their manufacturing processes. Factory automation is viewed by these yards as increasingly important in maintaining their competitive edge into the 21st century.

#### Reducing Construction Span Times

World-class shipyards in Europe and Japan continuously strive to reduce the time to design and construct their ships. One way to help reduce these span times is through the use of robotics. This technology enables shipyards to weld at the cell level rather than at numerous intermediate steps, thus reducing the number of production stations. This directly reduces the level of work decomposition, block moves, material handling, welding distortion and manual straightening operations. All this results in fewer operations (planned and unplanned) and therefore shorter total construction span times.

Maintaining critical labor skills in areas such as welding, painting and forming is crucial to all shipyards. In shipyards around the world, operations managers are having to deal with shrinking qualified labor forces in the metal trades and with cyclic levels of work. Often, they find it impractical to maintain a fixed level of shop employees or to train new personnel only to meet production peaks. As a result, many world-class yards are turning to computer-based technology and machines to perform critical tasks. Shipyards using this approach report increases in response time and quality control in fabrication and assembly. A key benefit of factory automation, particularly in the area of robotics, is the increase of production predictability and the corresponding reduction in span time variability in shipbuilding assembly processes.

The high degree of repeatability of machine oper-



- Grade 2
- Grade 3
- R3-R3S
- R4
- Large stock of chains, from 16 to 178 mm.
- Stud and Studless



**VICINAY**  
CADENAS, S.A.

Particular de Sagarduy, 5  
Phone 34+4+489 11 30 • Telex 32741  
Fax 34+4+489 11 40  
BILBAO (Spain)

Circle 282 on Reader Service Card

## Ship Design

Naval Architecture, Marine Engineering, and Program Support Services



***Since 1957 - Commercial and Military Ship New Construction and Conversion Design, Detail Design, International Construction Program Support, Marine Consulting, Pollution Prevention Programs***

*New York, NY • Arlington, VA • Newport News, VA • Pittsburgh, PA  
Port Hueneme, CA • Bath, ME • Seattle, WA • Pascagoula, MS*

**John J. McMullen Associates, Inc.**  
Two World Trade Center, Suite 1510  
New York, NY 10048

Tel: (212) 466-2200

Fax: (212) 466-2282

Circle 213 on Reader Service Card

## Gibbs & Cox, Inc.

TEL: 212-366-3900 50 W 23 St. NY, NY 10010 FAX: 212-366-7999



**Engineering and Design Support  
To Shipbuilders Around the World  
Since 1929**



Arlington, VA

Hampton, VA

Brunswick, ME

Circle 237 on Reader Service Card

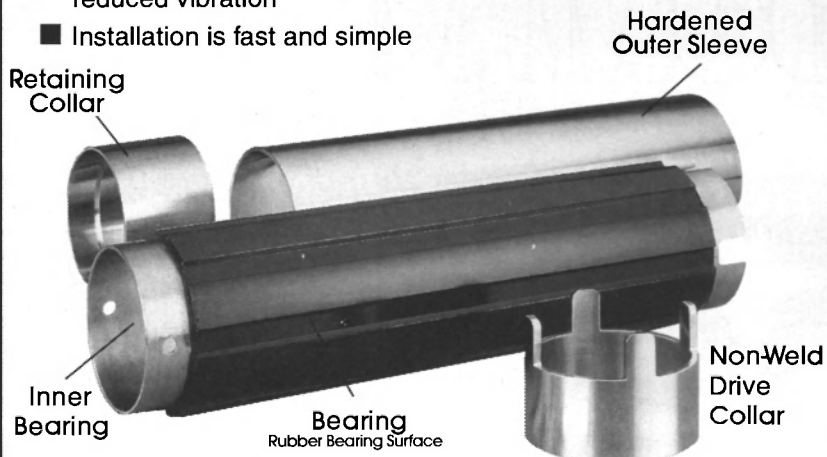
## WATER LUBRICATED BEARING SYSTEM

# Look No Further!

The best water-lubricated bearing system is here.

The first real innovation in water-lubricated bearings in over 70 years is now available. It will out perform all other bearings. And here is how:

- Patented installation method ensures secure attachment to the prop shaft, preventing spin out
- Eliminates shaft wear, reduced maintenance costs and boat downtime
- Longer bearing life, improved lubrication and reduced vibration
- Installation is fast and simple



**Look no further.** For more information about the Aeroquip water-lubricated bearing system, contact your local Aeroquip distributor, or call us for a brochure and/or product video.

Telephone: 800.336.4397 FAX: 919.235.3563



Marine Products Division  
P.O. Box 369, Middlesex, NC 27557-0369

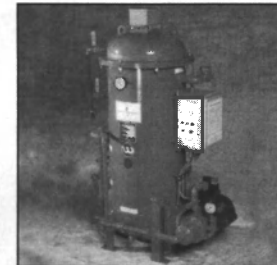
Circle 203 on Reader Service Card



## Quality Products For The Worldwide Marine Industry



Marine heads



Oily Water Separators

**Microflush Marine Heads** in stainless steel or vitreous china use only two quarts of water per flush. Options include rear or downward discharge, internal or remote flush activators.

**Marine Sanitation Devices** have no moving parts, no power requirements and low maintenance. Discharge by gravity or sump/pump. Accommodates crews from 3 to 100 men. IMO approved. USCG certified.

**Oily/Water Separators** in 7 models: .15-5.0 cu. meters p/hour. Coalescing technology means no replacement filters required.

## MICROPHOR® Quality Products

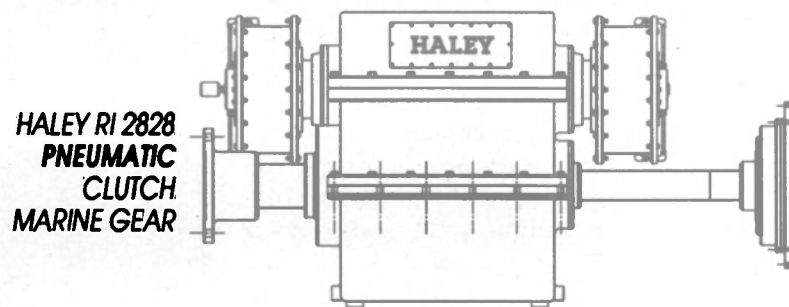
Microphor, Inc.

452 East Hill Road, Willits, CA 95490-1460 USA  
(800) 358-8280, (707) 459-5563, Fax: (707) 459-6617  
E-mail: info@microphor.com, www.microphor.com

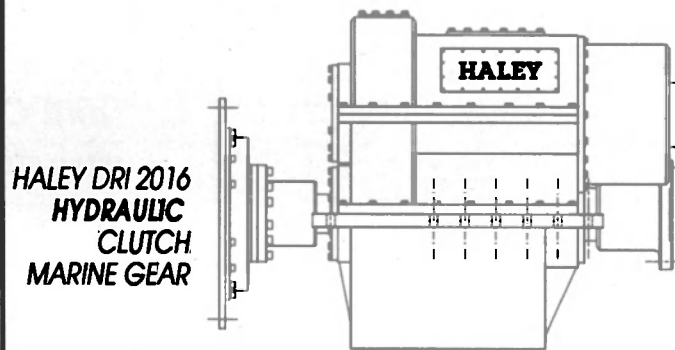
Circle 255 on Reader Service Card

# HALEY CLUTCHES GEAR COUPLINGS

800-6,000 HP Range • Ratios From 2:1 Up To 10:1  
Able To Match Existing Foundations With Custom Designs  
**HALEY** Clutches & Couplings Complete The Perfect Package



HALEY RI 2828  
PNEUMATIC  
CLUTCH  
MARINE GEAR



HALEY DRI 2016  
HYDRAULIC  
CLUTCH  
MARINE GEAR



MEMBER AMERICAN GEAR MANUFACTURERS ASSOCIATION

## MARINE GEARS, INC

P.O. BOX 689 • Greenville, MS 38702-0689 • TEL 601-332-8716 • FAX 601-335-4322

## MARINE GEARS INTERNATIONAL, INC.

2600 Concord • Belle Chasse, Louisiana 70037  
TEL 504-394-4431 OR TOLL FREE 1-800-227-9198 • FAX 504-394-1460

Circle 252 on Reader Service Card

ations permits managers to predict workflow to a level of precision that is unobtainable with human worker operations. Obtaining this precision in performance enables managers to reduce schedule margins and plan shorter span times with confidence.

#### Better Accuracy Control On Non-Automated Operations

Shipbuilding automation tends to have a disciplining effect on the human worker. The use of robots is an example. The shipyard takes advantage of the robots' strength, which is their capability for repeatability, as noted above. Also, the shipyard may take advantage of the robots' weakness, which is their lack of adaptability. Even after 20 years of robotic development, the human welder is still superior in adaptive processing; for example, the worker is much better at adjusting to variations in geometry, such as weld gap widths. However, shipyards have found that it is inherently more productive and profitable to minimize process variability and maintain exacting tolerance standards all along the manufacturing process. There is documented evidence that this reduces the overall costs and time to produce the final product. Thus, the perceived disadvantage of "lack of adaptability" becomes an advantage in "ensuring lack of variability" in the products that flow to the robots. Recognizing this fact, shipbuilders such as Odense insert robotic systems into their manufacturing stream for the expressed purpose of forcing and enforcing accuracy control of all detail and interim assembly products.

#### State Of Automation Of Fabrication And Assembly Processes

Robotics have been implemented in a wide variety of applications at the leading European and Japanese shipyards.

Profile cutting, marking and labeling is almost exclusively performed by robotically manipulated plasma arc and oxyfuel cutting systems that are integrated into automated conveyors for material handling and sorting.

Nesting and racking of the cut components are determined by computer aided planning systems that are interfaced to the product modeling systems of the engineering groups.

Welding robots are applied to egg-crate assembled panels, upper deck and tank top seaming operations at erection and curved structures.

These systems utilize infrared and touch sensing feedback for adaptive positioning. Process and path programming is automated with data prepared by, and obtained from, the CAD model. Portable track-guided robots are applied to upper deck and tank top seaming operations at erection. Portable and gantry-mounted robots are in common use in world-class shipyards. Hull coating and thermal deformation are near-

## SEMCO

MARINE INC.

- Switchboards and Consoles
- Electrical Installation - Worldwide
- 24-hour Service At Sea or In Port
- European Spare Parts and Cable on Stock
- SEMCO Voyage Recorder & Masterclock
- SEMSAFE Watermist Fire Fighting

CONTACT US NEXT TIME YOU HAVE ELECTRICAL PROBLEMS OR NEED SPARE PARTS!

Phone (954) 792-9666 Fax (954) 321-6517  
3721 S.W. 47 Ave. - Ste. 309 • Ft. Lauderdale • FL 33314 - U.S.A.

Circle 270 on Reader Service Card



### SERVICE VALVE & FITTING

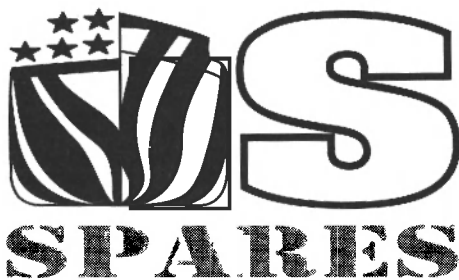
a division of V.V.S., Inc.

- Servicing the Gulf Coast for all your piping needs -

Your full service source for all U.S. standard and metric valves, pipe fittings, pipe and tubing.

Houston, TX • Phone: (713) 641-6733  
Fax: (713) 641-3107  
Mobile, AL • Phone: (334) 438-5130  
Fax: (334) 438-5140

Circle 271 on Reader Service Card



Season's Greetings  
Joyeux Noel  
Feliz Navidad  
Frohliche Weihnachten  
謹賀新年

partsman@us-spares.com

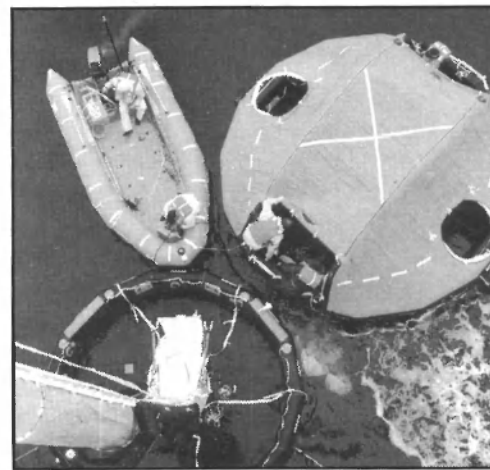
Circle 281 on Reader Service Card

## THE ONLY EVACUATION SYSTEMS THAT ADE US CSAST GDARD APPDVED.



#### Evacuation Slide System.

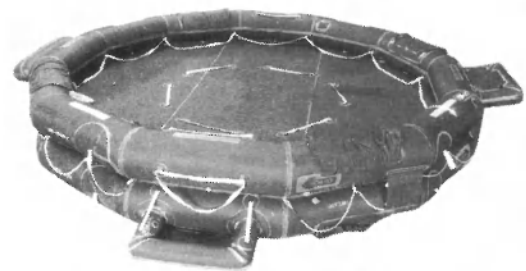
Designed specifically for Low Freeboard Vessels, it is a combination slide and platform. It provides speedy evacuation for all passengers - young, old and physically challenged. US Coast Guard Approved.



#### Evacuation Chute System.

The most efficient, easy-to-use, flexible, and cost-effective marine evacuation system available in the world. It evacuates passengers and crew in the shortest possible time.

Manufactured to meet or exceed all SOLAS requirements. US Coast Guard Approved



We manufacture the only US Coast Guard approved single 100 person Reversible Inflatable Platform.

These sturdy platforms are designed for passenger carrying vessels operating in protected waters. Fully reversible - it offers instant boarding, which ever way it inflates. Also available in 10, 25 and 50 person sizes.



#### DBC MARINE SAFETY SYSTEMS

12351 Bridgeport Road, Richmond, B.C.  
Ph. (604) 278-3221 Fx. (604) 278-7812  
1-800-931-3221  
sales@dbcmarine.com  
www dbcmarine.com

Circle 229 on Reader Service Card



## SHIP & BOATBUILDING TECHNOLOGY

ing reality at a number of shipyards. This last application implies the use of a significant degree of intelligence (craftsman "know-how") imbedded into the robot programming and control systems as well as the utilization of interim feedback data for in-process adaptations.

### SYSTEMS INTEGRATION

Common to all world-class shipyards is the move toward greater integration of design, engineering, production, planning, management and procurement. A fully-integrated approach may be called CIM (computer-integrated manu-

facturing or computer-integrated management). Such an approach is highly reliant upon computer technology. Hitachi's definition of CIM is the broader computer-integrated management rather than the computer-integrated manufacturing definition. The goal of current Hitachi Zosen efforts is to integrate the graphical (CAD) data

with the management data required for production planning and management. Object-oriented database approaches are being used with the intent of developing more expert systems to facilitate the development of designs consistent with producibility considerations. Hitachi has made productivity studies that suggest only 30 percent of the efforts are concerned with actual design work. The remaining 70 percent are directed toward production of documents, searches for information, inquiries and communications. Odense performs considerable in-house development work on integration tools between HICADEC and other automation systems used at Odense. Also, the shipyard has developed a host of integration tools for information exchange both within Odense (between design disciplines, materials control, purchasing, production, etc.) and with vendors and subcontractors. On a larger geographic scale, integration between yards and with management locations in cities apart from the shipyards is typical of initiatives in the CIM arena. For example, Odense and Hitachi maintain an ISDN high performance telephone connection, which is used by Hitachi to access the Odense system and load new versions of HICADEC overnight as necessary. Also, the IHI Kure shipyard is linked to the main office in Tokyo and all manufacturing yard LANs are networked together.

**Rotating and Speed Control Units**

**STORK-KWANT**

Voltastraat 3, P.O. Box 23  
8600 AA Sneek Holland  
Phone: +31 (0)515 413745  
Fax: +31 (0)515 422478

*Quality with Commitment*

Circle 278 on Reader Service Card

## Barnacle Remover



Rapidly remove paint, rust, scale, barnacles, and other hard coatings from metal, concrete, or wood surfaces without heavy pressure. New Swirl-Off scarifier attaches to your grinder, sander, drill, or polisher. Rotary tool scours tough deposits. Using pneumatic tools, it removes marine growths underwater. Easier, faster, and safer than scraping, sandblasting, or chemicals. There's nothing else like it! Ask for Bulletin MAR-1 showing many models and styles.

**DESMOND**

The Desmond-Stephan Mfg. Co., P.O. Box 30, Urbana, Ohio 43078  
Phone 937-653-7181, Fax 937-653-5511

\*Trademark of The Desmond-Stephan Mfg. Co.

Circle 230 on Reader Service Card

## ComNav AUTOPILOTS

**STORMPROOF**

"Whenever sea conditions get worse, so does my autopilot performance." Sound familiar? Not if you own a ComNav Autopilot. Stormproof your steering performance in ALL sea conditions with ComNav Autopilots... the calm during the storm.

Call or fax for free brochure:

Phone 1-800-428-0212

Fax 1-800-470-9611

E-Mail:

Website:

sales@comnavmarine.com

www.comnavmarine.com

ComNav Marine Ltd.  
1915 Stainsbury Avenue  
Vancouver, BC, Canada V5N 2M6

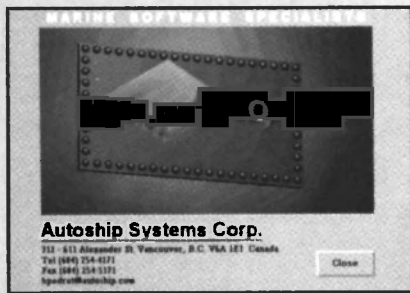
Circle 218 on Reader Service Card

*Jonathan M. Ross, P.E., is Director of Engineering of Proteus Engineering in Stevensville, Md., where he is involved in computer-aided design, engineering and manufacturing for ships and shipyards in the U.S. and overseas.*

*This article is based on the paper Shipbuilding CAD/CAM/CIM: How World-Class Companies Are Applying the State of the Art, presented by Mr Ross and John A. Horvath (National Steel and Shipbuilding Company) at the 9th International Conference on Computer Applications in Shipbuilding, October 13-17, 1997. This paper is largely based on the Phase I report of the National Shipbuilding Research Program Project 4-94-1. Copies of the report may be downloaded from the Internet (<http://www.nsnet.com>) or ordered as hard copies from the University of Michigan Transportation Research Institute (tel: 313-763-2465).*

Maritime Reporter/Engineering News

## Autoship Provides Total Solution



The Autoship Systems' software is designed to provide vessel designers and builders a total CAD/CAM solution from initial hull design to shell plate curving and formation. The Autoship suite of products includes:

- Autohydro 5.0 (due for early 1998), which will allow for advanced damage/flood simulation, advanced testing options able to handle Estonia Resolution 14 rules, better user interface and enhanced flexibility;

- Autoplate 7.0, which arrived earlier this year, which generates shell expansion drawings, a choice of plate expansion methods, full fabrication information and a classification scheme to organize stock and plates. Output from Autoplate is available to a designer's favorite CAD system through extensive use of DXF. Autoplate 7.0 is also able to handle plates with any number of sides;

- Autoship 7.0, which also arrived earlier this year, which allows open GL rendering, which is faster and better than the previous system. It also offers improved Autohydro output, and puts no limits on numbers of objects. A new, built-in surface match replaces the separate Automatch program.

Autoship also offers the Autoload stability program (see related story on next page), which is used onboard ships for monitoring ship stability. Based on Autohydro, output from which has been approved by DNV, and is accepted by the U.S. and Canadian Coast Guards, ABS and other official bodies.

For more information from Autoship  
Circle 64 on Reader Service Card

## ABS Makes Move Toward Risk And Reliability Standardization

ABS will release its proposed classification rules governing machinery and systems. "ABS is

December, 1997

committed to providing the marine industry with the most technically advanced, commercially oriented and easy to use standards for the enhancement of maritime safety," said **Robert D. Somerville**, ABS president. "The new ABS Proposed Machinery Rules are the first step toward applying leading edge, risk and reliability-based technology to

a vessel's operating plant."

The new proposals include a complete reassessment of the existing Machinery Rules with respect to their applicability, clarity, ease of use and intent. Associated efforts have been expended on a complete modernization and restatement of the ABS Rule for refrigerated vessels, machinery and systems, and

in the development of new standards for redundant propulsion.

The ABS Proposed Machinery Rules also contain Human Factor Engineering considerations. Human reliability techniques have been identified as part of a risk-based approach to safety.

For more information on ABS  
Circle 35 on Reader Service Card

# Diesel Power

## linking ports, coasts and continents by passenger ships and ferries



Passenger ships and ferries are connected with ports, coasts and continents by timetables that are accurate down to the last minute.

Under such circumstances the reliability of the propulsion plant takes on particular importance. MAN B&W four-stroke Diesel engines have been proving their reliability either as straightforward Diesel propulsion or Diesel-electric propulsion plant on board famous cruise liners and ferries.

With its comprehensive engine programme and the lowest heavy fuel consumption rate ever reached, MAN B&W is able to supply the ideal propulsion concept for every ship.

### Worldwide Service

MAN B&W Diesel, Stadtbachstr. 1, D-86153 Augsburg, Telephone (+49 821) 32 20  
MAN B&W Diesel, Inc., 17 State Street, New York, NY 10004, Telephone (212) 269-0980  
Circle 251 on Reader Service Card





## SOFTWARE SOLUTIONS

(Continued from page 31)

### GN Comtext Aims to Defuse Millennium Bomb

Global communications service provider GN Comtext is currently devising a strategy aimed at pre-

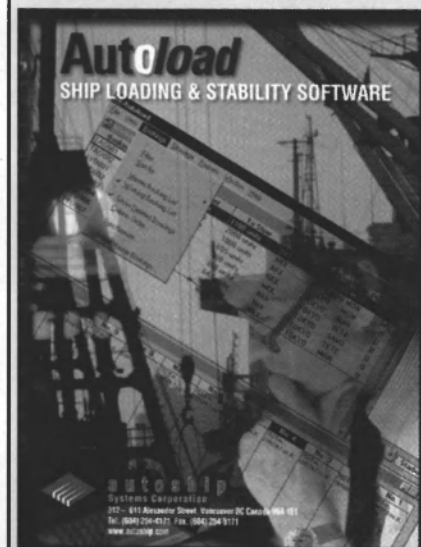
empting the complications which will be encountered by the IT industry by the "Millennium Bomb."

The company's Year 2000 project is designed to ensure compliance by all third-party suppliers of equipment, systems and services.

In this way, the anticipated problems — inherent in the IT industry's use of only two digits to indicate year dates — will be resolved before they are able to have an adverse impact on the industry.

For more information on GN Comtext  
Circle 29 on Reader Service Card

### Autoship Offers Ship Loading And Stability Software



Available from Autoship is the Autoload ship loading and stability software.

Autoload addresses three main areas for ship cargo planning: making stowage planning faster and easier than manual methods; providing accurate stability calculation and monitoring capabilities; and integrating with the carrier's own information systems platform.

Autoload handles a ship's entire voyage, and allows users to move back and forth between ports, stowing cargo at any port while controlling over-stowage and ship's hydrostatics.

Autoload uses an Autoship hydrostatics "engine," a module which produces output approved by the Norwegian Maritime Directorate and accepted by DNV, ABS and the U.S. and Canadian Coast Guards.

The report engine generates graphs which can be exported to word processing and spreadsheet programs, calculating force, bending moment and hog and sag conditions.

The Autoload systems permits complete manipulations of stowage plans to take into account hydrostatics limitations such as IMO requirements.

For more information on Autoship  
Circle 48 on Reader Service Card

## Flying the flag for world shipping



The International Shipping Exhibition  
Piraeus, 1-5 June 1998



Join the excitement, the energy, the 'buzz' that is Posidonia. A magnet for the maritime industry, drawing the shipping elite to Piraeus.

Five days of non-stop business and social activity. Discussion and debate at the highest level. An international showcase of new ideas, products and technology. Thousands of shipping people sharing a passion for their industry.

The place to talk, do business and savour Greek hospitality at its best. Book now for Posidonia 98.

For the latest information contact:

Posidonia Exhibitions SA on +30 1 428 3608/3609 (phone),  
+30 1 428 3610 (fax), 241937 Expo Gr. (telex)

or The International Selling Agents:

The Seatrade Organisation on +44 1206 545121 (phone),  
+44 1206 545190 (fax), 100125.543@compuserve.com (E-mail)

Circle 220 on Reader Service Card



## Krupp Builds New Docking Facility



The RoRo facility for ferry terminal I at Puttgaden is shown during construction.

Krupp Stahlbau Hannover GmbH and Krupp Fodertechnik GmbH have been commissioned by German ferry operator Deutsche Fahrgesellschaft Ostsee mbH (DFO) to build a double-decker hydraulically-adjusted link span for berth I at the Puttgarden ferry terminal. This RoRo facility is used to load and unload the new double-ended ferries used by DFO and Danish state railways (DSB).

The two ships operated by DFO were recently christened *Schleswig-Holstein* and *Deutschland*.

Krupp Stahlbau Hannover was responsible for the steel structures of the new docking facility, while Krupp Fodertechnik provided mechanical equipment.

## Conoco Tanker Back To Work After Collision



Pictured is Conoco tanker *Guardian*, featuring the gash sustained by the vessel during a recent collision.

Conoco tanker *Guardian*, credited with preventing a major oil spill in southwest Louisiana due to its double hull design, was expected to resume operations last month, after sustaining a 100 x 4 ft. gash during its October 31 collision with a tug-and-barge flotilla on the Calcasieu River. Despite the tear, the vessel safely delivered the 550,000 barrels of crude oil it was holding.

For more information on Conoco  
Circle 46 on Reader Service Card

## Ingalls Christens 12th Aegis Destroyer

The U.S. Navy newest Aegis guided missile destroyer (DDG 78) was recently christened *Porter* at Ingalls Shipbuilding division of Litton

Industries.

The 12th Aegis destroyer to be launched and christened of 17 ships contracted to Ingalls, *Porter* will join the U.S. Atlantic Fleet, homeported in Norfolk, Va., following its commissioning in 1999. Four previous vessels have been christened *Porter* into fleet service, including a steam torpedo boat which served from 1897 to 1912, and three destroyers, DDs 59, 356 and 800.

For more information on Ingalls  
Circle 49 on Reader Service Card

## Company Profile: Centraalstaal B.V.

Aluminum/steel processing company Centraalstaal B.V. supplies aluminum and steel kits and components to the shipbuilding industry.

With computer-controlled autogenous and plasma cutting machines, the company performs cold frame bending and cold deforming as well as shaping of shell plates both single and double curved.

Through the Direct Numerical Control (DNC), a central CAD/CAM computer provides connected machinery with necessary production software.

Centraalstaal's production range varies from motorcruisers, yachts and tugs to containerships and VLCCs.

For more information on  
Centraalstaal B.V.  
Circle 37 on Reader Service Card

## Important choices for your next repair

Three specialist repair yards, offering a very high degree of experience, safety consciousness and fiercely competitive pricing. And last, but not least, a first class client portfolio.

Why not call on one of the Astilleros Españoles Group's three repair yards, now?



**Astillero**  
**ASTANDER**

Santander  
SPAIN  
Tel +3442 20 91 00  
Fax +3442 20 91 01

## Astano

Ferrol  
SPAIN  
Tel +3481 34 07 00  
Fax +3481 34 09 54

**Astilleros**  
**de CADIZ**

Cádiz  
SPAIN  
Tel +3456 27 33 50  
+3456 27 33 54  
Fax +3456 27 83 62

# ASTILLEROS ESPAÑOLES



The leader in deck hardware for 60 years

# QUALITY DECK HARDWARE

Choose Smith Berger for the highest quality deck hardware for your offshore, towing, oceanographic, dredging, and workboat needs.

- FAIRLEADS • DECK SHEAVES
- CHAIN STOPPERS • FLAG BLOCKS
- TOW PINS • STERN ROLLERS
- ENGINEERING EXPERIENCE FOR CUSTOM DESIGNS.

For information, please contact:

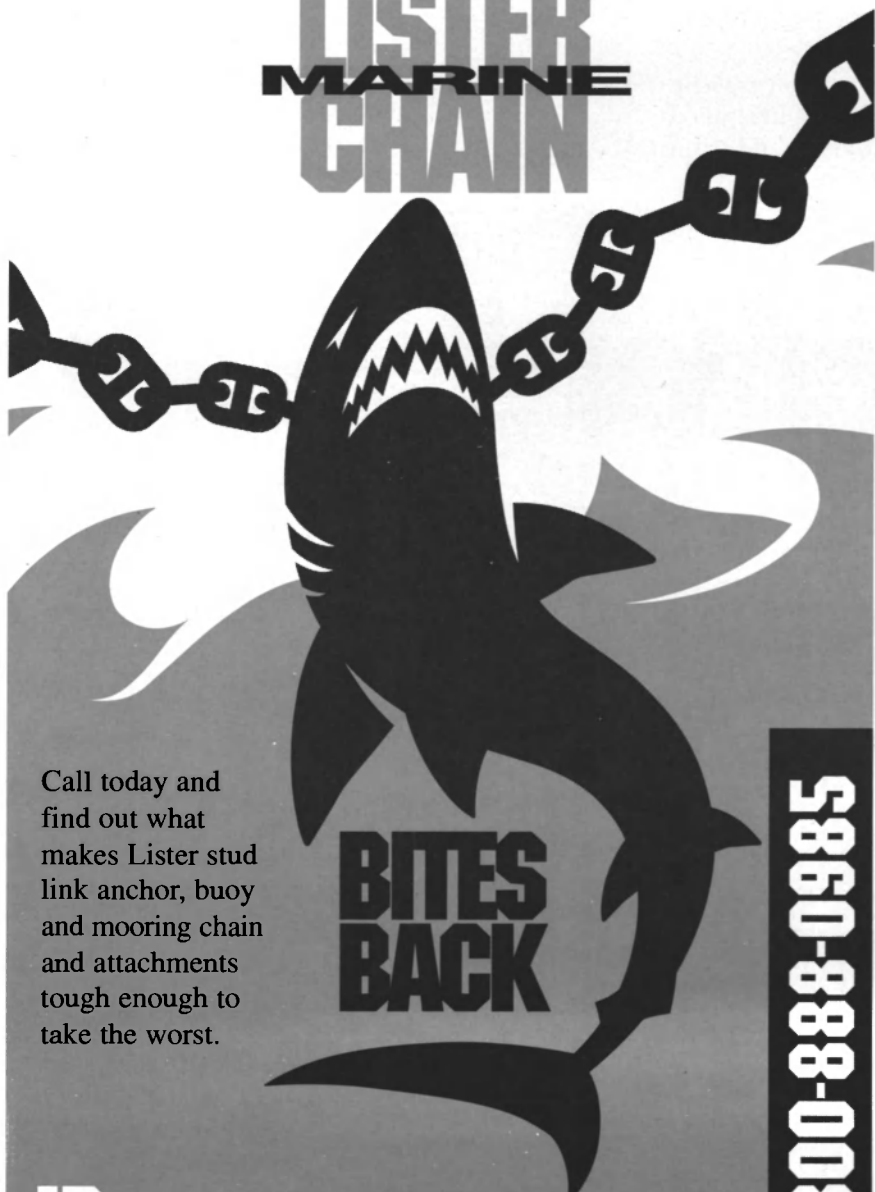
## Smith Berger Marine, Inc.

516 S. Chicago St. Seattle, WA 98108 206/764-4650 FAX: 206/764-4653

Circle 273 on Reader Service Card

### MONSTER TOUGH

## LISTER MARINE CHAIN



Call today and find out what makes Lister stud link anchor, buoy and mooring chain and attachments tough enough to take the worst.

## BITES BACK



Specialty bolt & chain products  
Richmond, British Columbia, Canada  
(604) 273-5411 Fax: (604) 273-5495  
Division of Columbus McKinnon Corporation

# 1-800-888-0985

Circle 246 on Reader Service Card

## Avondale Christens Second Bob Hope Class Sealift Ship

The second of seven Strategic Sealift Ships being built for the U.S. Navy was recently christened at the west-bank shipyard of Avondale Industries, Inc.



USNS Fisher.

Like the first Bob Hope Class vessel, USNS *Fisher* (T-AKR 301) will support the nation's ability to deploy military equipment and supplies quickly to U.S. troops worldwide. The Sealift contract provides for the construction of up to seven Sealift ships. Five vessels are currently under construction.

One option each for the remaining two ships will be awarded in 1998 and 1999. Once exercised, these options will bring the Avondale Sealift program to a total of seven ships.

For more information on Avondale  
Circle 23 on Reader Service Card

## Tsuneishi Delivers Namesake To Ming May

Owner Ming May Navigation Corp. recently took delivery M/V *Ming May*, built by Tsuneishi Shipbuilding Co. Ltd.'s Tsuneishi Shipyard.

The new 738 x 63 x 46 ft. (225 x 19.1 x 13.9 m) vessel is scheduled for worldwide operation.

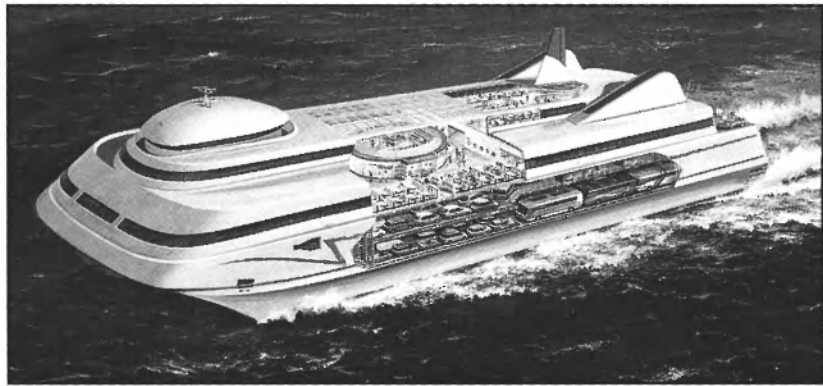
For more information on Tsuneishi Shipbuilding Co.  
Circle 25 on Reader Service Card



Ming May.

### M/V Ming May Main Particulars

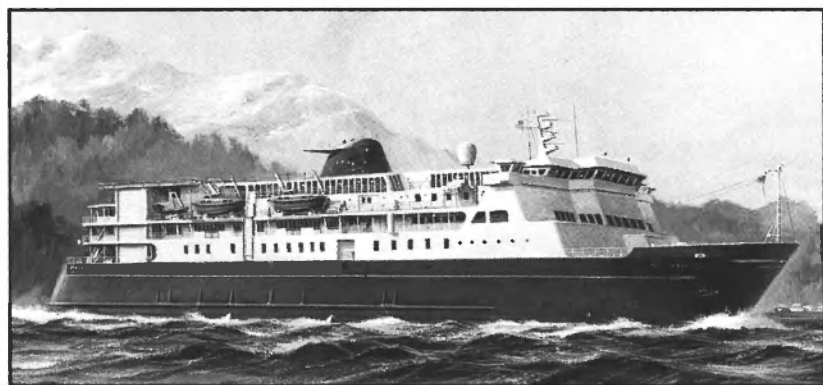
Length, o.a.	738.2 ft. (225 m)
Breadth, molded	106 ft. (32.3 m)
Gross tonnage	38,338
Displacement	83,735 tons
Lightweight	9,730 tons
DWT	63,170
Service speed	14.5 knots
Main engine	Mitsui-MAN B&W 6S60MC
Flag	Liberia
Classification	.BV



**Seaflight:** 110m, Passenger, Cars, Bus, Gas Turbine



**E-CAT:** Passenger, High Speed, Low Wake



**Ro/Ro:** 115m, Passenger, Car, Trucks, Cabins



**Monohull HSM-150:** High Speed, Aluminum, Diesel, Passengers, Cars



**Trimaran HST-800:** 40 Knot, Steel Trimaran, Gas Turbine, Passengers, Cars, Freight

# CONNECT WITH HALTER FERRIES

**W**hatever the job...fast vehicle/freight/people carrier or a slower tourist or charter boat, Halter has the optimum vessel for you. As a world leader in SES, SWATH and high-speed, low-wake multi-hull vessels, designed and built passenger vessels to customer specifications for cost, capacity, speed, range, passenger comfort, seakeeping, reliability and safety. Name your propulsion... diesel, gas turbine, CODAG, Z-drive, cycloidal, water jets, we've built them all. And we build in steel, aluminum and composites or combinations thereof.

So, if you have any ferry connections to make, connect with Halter Marine... the world's largest builder of small to medium sized ships.



13085 INDUSTRIAL SEAWAY ROAD  
GULFPORT, MS USA 39503

TEL: 601-896-0029 • FAX: 601-897-4828



## Wärtsilä NSD Declares 64 Ready For Market

A six-cylinder prototype of what is reportedly the world's largest medium-speed engine, the Wärtsilä 64, was started more than a year ago at the Wärtsilä NSD Vaasa research center in Finland. One thousand operating hours later, the Wärtsilä 64 is now

in the endurance testing phase. The manufacturer reports that test results have been encouraging in every respect, and — after minor adjustments — the engine's low fuel consumption can be demonstrated at NOx values clearly below the IMO curve.

The in-line and V-engine of the Wärtsilä 64 have different strokes — 900 and 770, respectively. This indicates that the in-line engine is mainly prepared for geared propulsion systems, while the V-engine is slightly more optimized for diesel-electric installations in prepara-

tion for the day when single-engines and single-propellers cannot respond to the output needed by the largest container ships.

A number of design solutions from Wärtsilä NSD are built into the engine. Early examples are the nodular cast iron piston skirt, and even more important, pressurized piston skirt lubrication, which together make it possible to elevate the maximum cylinder pressure to 160-170 bar.

The introduction of the antipolishing ring years ago has helped eliminate the problem with increasing oil consumption, while drastically reducing wear rates of piston rings, piston ring grooves and liners. The technology has been endurance tested for 1,000 hrs. at 220 bar cylinder pressure in a Wärtsilä 46 engine.

To accommodate the higher cylinder pressures Wärtsilä NSD, together with the piston suppliers, has developed a box-type piston, which offers an excellent structural rigidity.

The thick-pad bearing philosophy, which means that the bearings are designed for an ample oil film thickness, was also introduced together with the Wärtsilä 46 and has since been standard in all Wärtsilä engines. The crankshaft gives an impression of the ample bearing pins and journals.

The capacity to take high cylinder pressures was in fact a prerequisite for the development of the Low NOx Combustion process because one vital element in this process is increased compression pressure, which automatically leads to a higher combustion pressure. Thanks to a specially designed injection rate, the maximum cylinder temperature is lower than in a normal Seiliger process, which is an important element in the reduction of NOx.

Circle 99 on Reader Service Card

# PIPE FABRICATORS!

**Are You Looking for More PRODUCTIVITY?  
Call WALLACE COAST!**

**N**ew pipe fabricating equipment will make your pipe shop more competitive. Complete systems are available from Wallace Coast. The latest development in pipe storage, pipe selection, cutting, flange welding, CNC bending, conveying and saddle/hole cutting offer big improvements in productivity.

### COMPLETE SYSTEM DESIGN

Wallace Coast designs and installs complete pipe shop systems to suit your needs.

### PIPE SHOP SOFTWARE

Calculates cutting length of pipes, CNC bending data, intersection data, using your CAD data.

### PIPE STORAGE

Computer controlled pipe storage and retrieval are the starting point. Automatic pipe length measurement of random pipe is an option.

### AUTO CUT-TO-LENGTH

Nested requirements can be cut on a CNC saw system.

### AUTO FLANGE FIT/WELD

Reduce fabrication time to four minutes for 4" pipe. Flange hole offset can be calculated from CAD piping design data.

### CNC PIPE BENDING

Pipe with flanges in place can be bent accurately.

### SADDLE/HOLE CUTTING

Accurate oxy-fuel and plasma cutting with CNC controls saves time. No layout required.

### CONTACT

Wallace Coast Machinery Division  
Jesse Engineering Company  
5225 7th Street East  
Tacoma, Washington USA 98424  
Phone: (253)922-7433  
Fax: (253)922-1413  
e-mail: jessenco@worldnet.att.net  
Web Site: <http://www.jesse-wallace.com>

Circle 307 on Reader Service Card

Sailed any uncharted waters lately?

Explore a Sea of Information on

# MARINELINK

<http://www.marinelink.com>

### Wärtsilä 64 Technical Data

OUTPUT STAGE I				
	In-Line		V-Form	
Bore (mm)	640		640	
Stroke (mm)	900		770	
Stroke/Bore Ratio	1.41		1.2	
Nom. Speed	327.3	333.3	400	428.6
Mean Piston Speed (m/s)	9.82	10	10.3	11
Mean Eff. Pressure (bar)	25.5	25	23.5	22
Max. Output/Cyl. (kW)	2,010	2,010	1,940	1,940
Max. Cyl. Pressure (bar)	190		190	
Compression Ratio	16		16	
Turbocharging	SPEX		SPEX	
Cyl. Nos.	5,6,7,8,9		12,16,20	

# GREAT SHIPS OF 1997



## Taixing

**Shipyard** .....3.MAJ  
**Ship type** .....Multi-purpose cargo liner  
**Ship name** .....Taixing  
**Owner/operator** . Chinese Polish Joint Stock  
 .....Shipping Co.

3. Maj delivered M/V *Taixing* to the Chinese Polish Joint Stock Shipping Co. in September. The 556-ft. (169.7-m) multi-purpose cargo liner is the first in a new series of three sister vessels ordered by the company from 3. Maj. In fact, the Croatian yard has maintained a very good relationship with this owner, starting in 1988 when a series of four sister vessels was ordered.

*Taixing* is capable of carrying general cargo, grain, bulk and ore cargo, heavy cargo, vehicles and containers, as well as dangerous cargoes. Accommodations (for 28 persons) on the ship are located aft, with three decks, forecastle, poop, raked stern, bulbous bow, transom stern and double bottom. Its capacities are as follows:

Twindeck A	.....14,466 cu. m. grain
Twindeck B	.....9,657 cu. m. grain
Holds	.....13,215 cu. m. grain
Total	.....37,339 cu. m. grain (33,606 cu. m. bale)
Maximum capacity	.....1,094 TEU
No. reefer sockets	.....30

Deep tanks in the cargo area between hold nos. 2 and 3 is provided for heavy fuel oil.

The vessel is propelled by 3. Maj-built New Sulzer diesel (type 5RTA62) which is remotely controlled from the engine room control console and from the wheel-house. The two-stroke, five-cylinder unit develops 9,500 kW

at 109 rpm, and features a 620 mm bore and 2,150 mm stroke. Specific fuel consumption is 171 g/kWh.

The main ballast lines consist of two ballast duck-built in double bottom, forming a ring system. Two centrifugal ballast pumps and two centrifugal bilge pumps are used for ballast service. Electro-hydraulic remote control is provided for operation of main valves of ballast, bilge and transfer system.

For safety, a CO<sub>2</sub> fire extinguishing system is featured in the engine room and cargo spaces. In addition, there is a sea water extinguishing and deck wash system.

## Taixing Main Particulars

Class	.....LR
Flag	.....Malta
Port of registry	.....Valleta, Malta
Length, o.a.	.....556.6 ft. (169.7 m)
Length, b.p.	.....533 ft. (162.5 m)
Breadth, molded	.....90.2 (27.5 m)
Draft, at summer freeboard	.....30.5 ft. (9.3 m)
DWT	.....22,271 metric tons
GT	.....19,134
Main Engine	.....New Sulzer (3.MAJ)
MCR	.....9,500 kW at 109 rpm
Speed	.....16.2 knots
Daily fuel consumption	.....32.7 tons
Propeller	.....Lips
Diesel engines	.....Sulzer
Generators	.....Uljanik-Siemens
Emergency generator	.....Scania, Stamford
Boilers	.....Aalborg-Sunrod
Navigation equipment	.....Raytheon

## Keoyang Majesty

**Shipyard** .....Hanjin Heavy Industries Co., Ltd.  
**Ship type** .....Cargo (Woodchip Carrier)  
**Ship name** .....Keoyang Majesty  
**Owner/operator** .....Keoyang Shipping Co., Ltd.

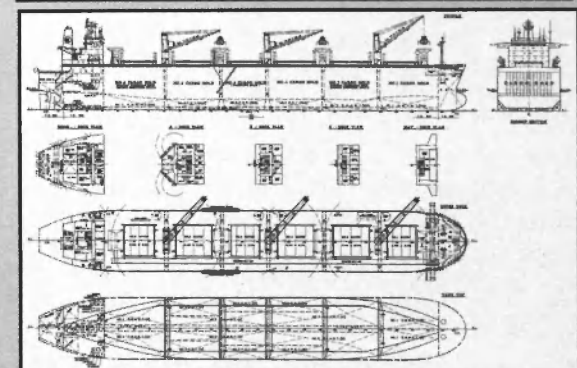
The Keoyang Majesty is a 725-ft. (221-m) woodchip carrier specially designed for Keoyang Shipping Co. The vessel is designed as raked stem with bulbous bow, transom stern without curvature and flush deck with forecastle. All accommodation space on the vessel, including the navigation bridge and propulsion machinery space, have been located aft. Vibration and noise is designed in order to avoid resonance, not only for the comfort of the crew but for conserving the life of the ship's equipment.

During ballast voyages, the no. 4 hold may be used as a water ballast tank and provision is made for nos. 2 and 6 to be ballasted in port to obtain minimum air draft. Main propulsion is provided by an MAN B&W 6L60MC, two stroke diesel, which is turbocharged and develops maximum power of 15,600 ps at 123 rpm. For regular service, it produces 13,060 ps at 116.5 rpm.

The vessel — designed and constructed solely to carry woodchips — has six cargo holds and is equipped with a self-unloading system. Each hold is closed by a hydraulically operated hat cover.

From the hoppers, chips are transferred to main conveyors (nos. 1 and 2) running along the starboard side on the upper deck by feeder conveyors. The main conveyors transport the chips to a shuttle conveyor running below deck at the forward end of the no. 1 hold extending overboard to enable discharge ashore. The vessel's unloading capacity is 975 tons/hour. An automatic system has been adopted for most equipment, and the vessel carries

(Continued on page 57)





# GREAT SHIPS OF 1997



## Pusan Senator

Shipyard .....Hyundai Heavy Industries  
 Ship type .....Containership  
 Ship name .....Pusan Senator  
 Owner/operator .....Norddeutsche  
 .....Vermögensanlage GmbH

*Pusan Senator* is the first in a series of 10 identical containerships being built at Hyundai Heavy Industries for Norddeutsche Vermögensanlage GmbH of Germany. The vessel, delivered in May, was chartered out to DSR-Senator Line.

*Pusan Senator* is designed to have superior propulsion efficiency against the changeable draft, which will be caused by its loading scheme. The vessel measures 964.8 x 105.6 x 39.4 ft. (294.1 x 32.2 x 12 m). The ship has six holds, five of which are arranged forward of the engine room, and one in back. A maximum of 11 rows and eight tiers of 20-ft. con-

tainers can be stowed in the holds. The vessel is a "girderless" type, allowing it to carry the maximum 11 rows in a hold and 13 rows on deck. The total TEU capacity is 4,571, of which 2,307 is in holds, 2,264 on deck, with 118 FEU and 132 TEU reefer sockets. Pontoon-type hatch covers close the six holds, and each hatch cover is made up of three panels (except No 1F). Maximum panel weight is kept below 30 tons to suit port cranes.

*Pusan Senator* is powered by a Hyundai-B&W 9K 90MC-C main engine, which develops an MCR of 41,040 kW at 104 rpm, delivering a service speed of 23.7 knots. Electric power is supplied by a pair of main diesel generators, with an output of 1,550 kW at 720 rpm; one main diesel generator with an output of 1,380 kW at 720 rpm; and one 300-kW emergency generator. The vessel is classed by GL.

(Continued on page 57)

## MRS Pioneer

Shipyard . . .Frisian Shipyard Welgelegen (FSW)  
 Ship type .....Refined Sugar Carrier  
 Ship name .....MRS Pioneer  
 Shipowner .....Mackay Refined Sug

A product of the closely integrated and highly competitive shipbuilding sector in the north Netherlands, and Anglo-Australian in concept, the refined sugar carrier *MRS Pioneer* is an exceptional vessel by any measure. Although there have been earlier projects entailing the adaptation of existing ves-

sels for similar tasks, the 21,900-dwt *MRS Pioneer* is touted as the first ship purpose-built as a fully self-sustaining carrier of refined sugar in bulk. The vessel marks a milestone for both the Australian-flag mercantile marine, and for Frisian Shipyard Welgelegen (FSW) of Harlingen, one of Europe's most modern yards. *MRS Pioneer's* complex cargo system confers the capability to take the handling-sensitive, granulated material from the shore side terminal and distribute it efficiently and safely throughout

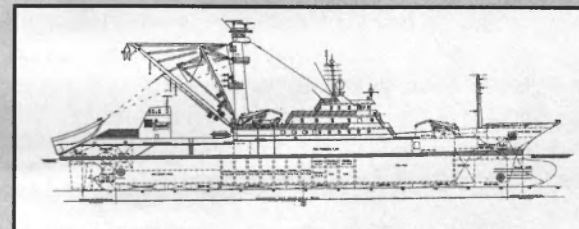
(Continued on page 57)

## Via Libeccio

Shipyard .....H.J. Berreras, S.A. —  
 .....Astilleros Españoles  
 Ship type .....Fishing Vessel  
 Ship name .....Via Libeccio  
 Owner/operator .....Saupiquet

## Via Libeccio Main Particulars

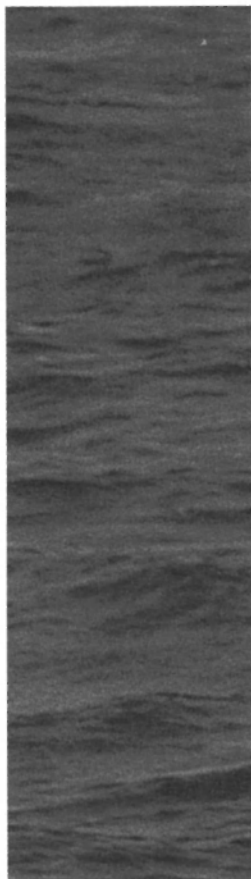
Designer .....	Barreras — Astilleros Españoles
Flag .....	France
Contract date .....	March 1995
Float out date .....	July 1996
Delivery date .....	December 1996
Length, o.a. ....	(107.5 m)
Length, b.p. ....	(94.5 m)
Breadth, molded .....	(16.6 m)
Depth, molded to main deck .....	(7.5 m)
Draft, design .....	(6.8 m)
Draft, scantling .....	(7.3 m)
GT .....	3,886
DWT .....	3,150
Speed, service .....	19
Cargo capacity .....	3,200 cu. m.
Bunker (diesel oil) .....	1,100 cu. m.
Classification .....	BV
Main engine .....	Cegelec, Diesel Electric
Output .....	6,200 kW at 1,200 rpm
Gears .....	GMD
Propeller .....	Lips
Alternators .....	Caterpillar
Cargo cranes/Cargo gear .....	Tecnicas Hidraulicas
Mooring equipment .....	Marco
Bow thruster .....	Kamewa
Stern thruster .....	Balino Kamewa
Bridge control .....	Furuno
Radars .....	Furuno
Satnav .....	Furuno







**Samsung Heavy Industries,  
Exploring Another Pacific Ocean**

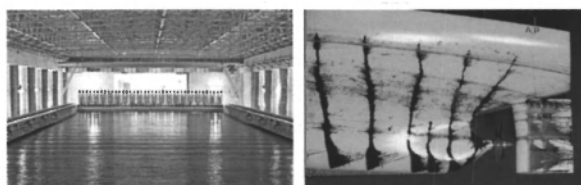


### **The whole of the vast ocean in a single towing tank**

From linear induction motor type towing carriage and directional spectrum wave maker to cavitation tunnel. Comprehensive tests using advanced simulation technology is at the heart of our high-performance ship designs.

### **Quality, a promise to our customers**

Our highest priority is not on the quantity of orders we receive, but on the design and production of safe, cost-effective ships. And we pledge that we'll continue to do our best to lead the way with superior quality.



# We have met our fiercest competitor.

## And It's Us.

**S**TEWART & STEVENSON SERVICES INC. is the largest distributor of General Motors Corporation Electro-Motive Division (EMD) diesel engines. We design and package EMD power generation equipment and marine propulsion packages.

Frequently, when we offer our new EMD packages we are asked by our customers to quote our rebuilt engine packages as well. It happens so often that we have become our own biggest competitor! Our customers know that either way — new or rebuilt — they are purchasing the best medium speed engine money can buy, at the lowest price.

In 26 U. S. states, 10 South American countries, and all of Central America and the Caribbean, S&S is authorized to engineer, sell and package EMD engines. So call Stewart & Stevenson Services Inc. (S&S) for your next EMD quote, or call us for your rebuilt EMD quote.



**Coverage to spare**  
S&S offers engineering and sales in 26 U.S. States and 28 foreign countries, including all the Caribbean Islands.

**SALES, PARTS, SERVICE**

**SALES ONLY**



**NEW ORLEANS BRANCH**  
1400 Destrehan Avenue  
Harvey, LA 70058  
(504) 347-4326  
Fax: (504) 348-8970

**HOUSTON BRANCH**  
8631 East Freeway,  
Houston, TX 77029  
(713) 871-8100  
Fax: (713) 871-8197





Bill Marquette  
SALES MANAGER  
NEW ORLEANS

Circle 277 on Reader Service Card

# GREAT SHIPS OF 1997

## American Progress

Shipyard .....Newport News Shipbuilding  
 Ship type .....DH Product Tanker  
 Ship name .....American Progress  
 Owner/operator .....Mobil Oil Corp.

Inclusion of the Newport News Shipbuilding (NNS)-built *American Progress* as a Great Ship of 1997 is significant for many factors. The vessel, christened in early September and delivered to Mobil Corporation, is a double-hull petroleum products tanker. More importantly, perhaps, is that it is the first double-hull vessel built in a U.S. shipyard to standards required in OPA 90, which requires all ships carrying petroleum products in U.S. coastal waters to be double-hull by 2015.

It is also the first

ocean-going petroleum tanker built in America in more than a decade. The ship will transport gasoline and distillates primarily from Mobil's Beaumont, Texas refinery to its markets in Florida.

The 46,000-dwt Double Eagle product tanker follows in a distinguished lineage of vessels built at NNS, most ships of late for the U.S. Navy. In its 111-year history, the yard has produced approximately 800 ships.

The U.S.-flag ship is powered by an MAN B&W main engine — producing 10,800 bhp at 96 rpm — which will drive the ship to a service speed of 14.5 knots. It measures 600 x 105.6 x 36.7 ft. (183 x 32.2 x 11.2 m), and has a 55,000 cu. m. cargo capacity.

While built in the U.S., the ship contains a large amount of top equipment from suppliers around the globe, including: Uitor and Shinko firefighting equipment; Schat-Harding life saving equipment; Aalborg Sunrold boilers; Porsgrunn steering gear; a Nakashima propeller; an Alfa Laval fresh water generator; a Detagasa bilge water separator; a Kay Lindegaard incinerator; Shinko pumps; a Permea Maritime Protection inert gas system; and more.

"The builder's trials went extremely well. *American Progress* met all of her performance requirements and is a quality ship — one that will be a great addition to our 111-year legacy of building great ships," said **Bob Gunter**, Double Eagle program director at the shipyard.

"This fine ship underscores our commitment to operate a fleet of state-of-the-art double-hull vessels that meet or exceed U.S. and international environmental and safety requirements," commented **Gerhard Kurz**, president of Mobil Shipping and Transportation Company. "The *American Progress* reflects Mobil's dedication to maintaining its leadership position in marine transportation. But double-hull technology is only part of the answer. Well trained crews, good maintenance practices, a sound management structure and a total commitment throughout the organization are also essential."

*American Progress* was originally named *Despotico* when it was first commissioned by Eletson Holdings of Piraeus, Greece. The contract between NNS and Eletson was the first commercial ship order to an American shipyard from an international customer since 1957. However, before building had reached completion, an agreement among the three companies had *Despotico* sold to Mobil and renamed. The new ship will be Mobil's third double-hull vessel to enter service and is the first of nine double-hull tankers — the Double Eagles — being built at NNS.

## American Progress Main Particulars

Flag .....	U.S.
Classification .....	ABS Oil Carrier
Length, o.a. ....	600 ft. (183 m)
Length, b.p. ....	572 ft. (174.3 m)
Breadth .....	105.6 ft. (32.2 m)
Depth .....	63 ft. (19.2 m)
Draft, design .....	36.7 ft. (11.2 m)
Draft, scantling .....	40 ft. (12.2 m)
DWT, design .....	40,878
DWT, scantling .....	46,095
Cargo capacity (100%) .....	55,000 cu. m.
Ballast capacity (100%) .....	19,800 cu. m.
Brake horsepower, CMCR .....	10,800 metric BHP x 96 rpm
Brake horsepower, NCR .....	9,180 metric BHP
Trial speed, NCR .....	14.5 knots
Accommodations .....	28 persons
No. tanks .....	14
Cargo segregations .....	3
Fuel consumption, NCR .....	.2671/day
Main Engine .....	MAN B&W, slow-speed diesel engine
FiFi Equipment .....	Uitor, Shinko
Life Saving Equipment .....	Schat-Harding
Boilers .....	Aalborg Sunrold
Steering Gear .....	Porsgrunn
Propeller .....	Nakashima
Fresh Water Generator .....	Alfa Laval
Bilge Water Separator .....	Detagasa
Incinerator .....	Kay Lindegaard
Cargo Pumps .....	Shinko
Inert Gas System .....	Permea Maritime Protection
Tank Cleaning Machines .....	Toftejorg
Sewage Plant .....	Hamworthy
Oil Discharge Monitor and Control System .....	Navalimpianti Group

Designed in-house by Newport News Shipbuilding, the first Double Eagle shuttle tanker sailed off of the CAD/CAM screen and into Mobil's fleet this year.





# GREAT SHIPS OF 1997



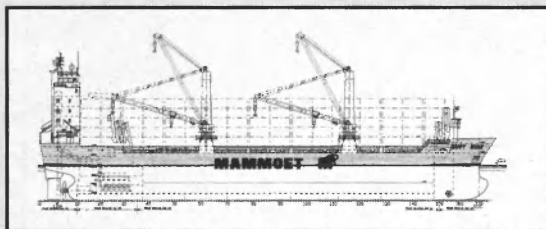
**Happy River**

**Shipyard** .....Merwede Shipyard  
**Shiptype** .....Heavy Lift  
**Ship name** .....Happy River  
**Ship owner** .....Mammoet Shipping

Dutch know-how in the field of heavy-load transportation is encapsulated in a versatile new breed of vessel commissioned this year by specialist operator Mammoet Shipping of Amsterdam and Japanese pool partner Mitsui OSK Lines.

Two rotating mast cranes fitted along the starboard side of 16,516-dwt series-opener *Happy River*, conferring an 800-ton tandem lift capability, testify to Mammoet's core skills in heavy-lift and project cargo transportation. But the design is of particular significance in the complementary freight-carrying possibilities which it offers, providing a flexible tool of trade for the long-term.

*Happy River* has been conceived as a competitive trader in timber, paper and other forestry goods, containers, general cargo, bulk commodities and dangerous goods, as well as being a vehicle for the heavy-load business.



Such versatility, without diluting the mainstream potential for indivisible, heavy or awkward items of freight, gives the shipowner greater resilience to fluctuations in market demand and reduces the in-ballast legs that can be associated with the heavy-lift trade.

Mammoet entrusted the entire four-vessel program to Merwede Shipyard, which is located at Hardinxveld-Giessendam, where a complete indoor shipbuilding process is employed. Construction of the fourth-of-class was subcontracted to another Dutch yard, the Vlissingen company Royal Schelde.

*Happy River* has an enclosed cargo-carrying volume of 645,000-cu. ft. in a single, unobstructed, box-shape hold, accessed through a maximum-width hatchway, and complemented by a substantial weatherdeck capacity for heavy freight, indivisible items, timber and containers.

MacGregor-designed hatchcovers of the high-stowing, Foldtite-type are employed for the cargo opening of 298 x 58 ft. (91 x 17.7 m) through the main deck coamings, while stowage options have been increased by the incorporation of a 'tweendeck.

Containers can be stacked five-high on deck, for a total stow of 725-TEU or 330-FEU, with the balance of 356-TEU or 159-FEU transported in the hold.

The MacGregor liftaway pontoon-type 'tweendeck panels give clear access up to 288.7 x 58 ft. (88 x 17.7 m), and can also be deployed as grain bulkheads and partly as

(Continued on page 60)

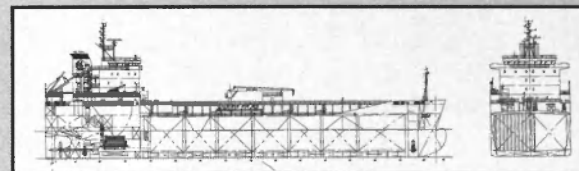
## Rina Amoreiti

**Shipyard** .....Lindenau GmbH  
**Ship type** .....Double Hull Tanker  
**Ship name** .....Rina Amoreiti  
**Owner/operator** .....Marichem Europe S.r.l.

### Rina Amoreiti Main Particulars

Designer	.....Lindenau
Flag	.....Italy
Classification	.....RINA
Contract date	.....December 1995
Float out date	.....January 1997
Delivery date	.....October 1997
Length, o.a.	.....394 ft. (120 m)
Length, b.p.	.....377 ft. (115 m)
Breadth, molded	.....78.7 ft. (24 m)
Draft, design	.....27 ft. (8.2 m)
Draft, scantling	.....29.5 ft. (9 m)
GT	.....9,850
DWT, design	.....12,000
DWT, scantling	.....13,940
Speed	.....15.5 knots
Complement	.....25
Cargo capacity	.....16,400 cu. m.
Water ballast	.....4,896 cu. m.
Bunker	.....976 cu. m.
% high tensile steel	.....12
Main engine	.....MaK, 8M 552C
HP	.....6,000 kW
Auxiliary engines	.....Yanmar
Propellers	.....Lips
Thrusters	.....Lips
Generator engines	.....Yanmar
Thruster engines	.....Lips
Emergency generator	.....Caterpillar
Couplings	.....Vulkan
Gears	.....Renk
Engine controls	.....Kongsberg Norcontrol, Janssen
Steering controls	.....Ulstein-Tenford
Deck machinery	.....Hatlapa
Shafting	.....Lips
Bearings	.....Nordische Stahlwerke Bach
Coatings	.....Hempel
VHF radio	.....General Telemar

(Continued on page 86)





# GREAT SHIPS OF 1997

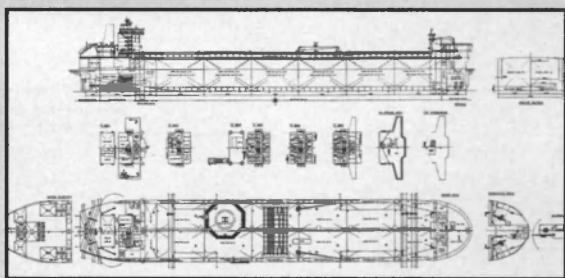


## Elisabeth Knutsen

**Shipyard** ..... Astilleros Españoles —  
 ..... Factoria De Sestao  
**Ship type** ..... Shuttle Tanker  
**Ship name** ..... Elisabeth Knutsen  
**Owner/operator** ... Knutsen Boyelaster VI KS

*Elisabeth Knutsen* is the latest example of Astilleros Espanoles prowess in the field of designing and building world-class quality shuttle tankers.

Built for the demanding Norwegian owner



Knutsen Boyelaster, the vessel is powered by a pair of MAN B&W diesel engines, which drive Ulstein propellers through Lohmann gears to deliver a service speed of 14.7 knots. The main engine is capable of developing a maximum continuous output MCR of 13,580 bhp (10,010 kW) at 127 rpm. To aid in navigational safety and efficiency, the ship is fitted out with two bow thrusters, two aft thrusters and a high-performance rudder for each propeller.

The double-hulled vessel is specially designed for meeting the requirements of a dedicated shuttle tanker for offshore loading. The ship has one longitudinal bulkhead in center line and several transverse bulkheads to form 12 cargo tanks, two slop tanks and wing and double bottom tanks for water ballast.

Its segregated ballast tank configuration is

*(Continued on page 83)*

## Alexandra

**Shipyard** ..... Aarhus Flydedok  
**Shiptype** ..... Reefer  
**Ship name** ..... Alexandra  
**Shipowner** ..... Dalmoreprodukt

From its Vladivostock base on the Sea of Japan on Russia's Pacific rim, the deepsea fishing and processing specialist Dalmoreprodukt has engineered a major new phase of development of its transporter fleet.

The 4,260-dwt *Alexandra* is the first of seven sisterships designed for the primary role of transferring chilled and frozen fish

from factory ships on the grounds to Russia, the Far East and North America. The class is distinguished by the use of state-of-the-art Danish reefer technology and a high proportion of western European equipment, and by its suitability for operations in trades outside Dalmoreprodukt's usual business.

Constructed in Denmark by north Jutland shipbuilding firm Aarhus Flydedok, the compact new 15-knot class carries an essential first-line capability in conveying catches and fish products to the various markets, with a capacity to efficiently engage in the fruit trades. The flexibility of the design better

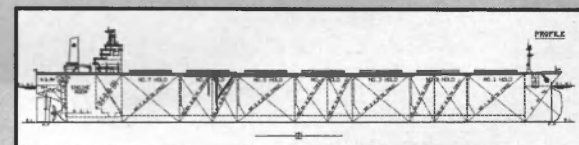
*(Continued on page 83)*

## Peene Ore

**Shipyard** ..... Daewoo Heavy Industries Ltd.  
**Ship type** ..... Ore Carrier  
**Ship name** ..... Peene Ore  
**Owner/operator** ... Reederei F. Laeisz GmbH/Krupp

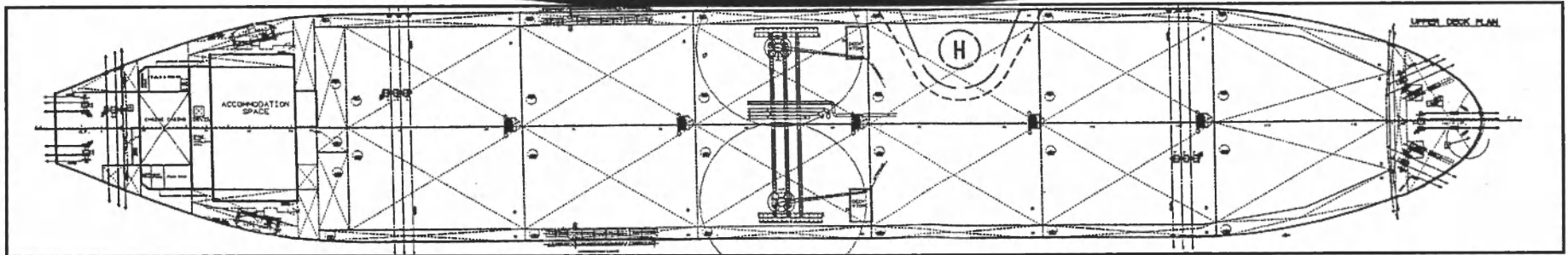
## Peene Ore Main Particulars

Designer	..... Daewoo Heavy Industries
Flag	..... Liberia
Classification	..... ABS
Float out date	..... June 1997
Delivery date	..... Sept. 1997
Length, o.a.	..... 1,089 ft. (332 m)
Length, b.p.	..... 1,050 ft. (320 m)
Breadth, molded	..... 190 ft. (58 m)
Draft	..... 75.5 ft. (23 m)
GT	..... 155,000
DWT	..... 321,000 metric tons
Speed, service	..... 14.7 knots
Complement	..... 32
Cargo capacity	..... 179,100 cu. m.
Fuel consumption	..... 86.3 t/day at NCR
% High tensile steel	..... 40
Main engine	..... Hanjung Co., B&W 7S80MC
HP	..... 34,650 at 79 rpm (MCR)/29,450 bhp at 74.8 rpm (NCR)
Generator engines	..... MAK
Emergency generator	..... Ssang Yong
Motor starters	..... Hyundai
Engine controls	..... Norcontrol
Steering gear	..... Tongmyung-KHI
Deck machinery	..... Kocks
Shafting	..... Daewoo
Radar	..... Atlas
Compass	..... Anschutz
GPS	..... JRC/JLR
Autopilot	..... Anchutz
Satnav	..... JRC
Ballast pumps	..... Shinko
Heat exchangers	..... SWEP
Compressor	..... Sabroe
Lifeboats	..... Hyundai
Liferafts	..... Viking
Davits	..... Dongwoo
FiFi system	..... Namyang
Computers	..... Kokumatation



Maritime Reporter/Engineering News

# GREAT SHIPS OF 1997



## British Harrier

Shipyard: . . . . . Samsung Heavy  
 . . . . . Industries Co., Ltd., Korea  
 Shiptype: . . . . . Double Hull Tanker  
 Ship name: . . . . . British Harrier  
 Shipowner/operator: . . BP Shipping

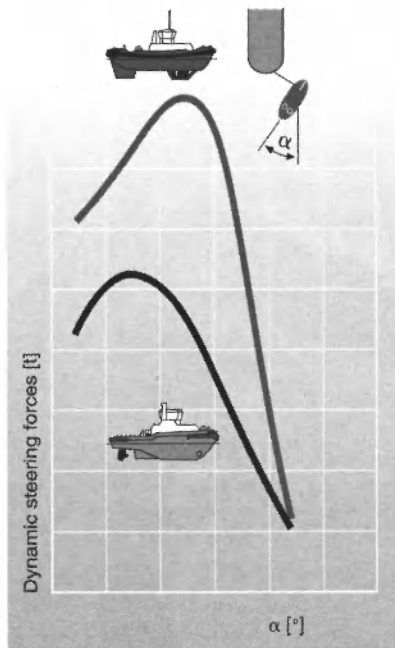
An ultra modern double hull tanker, *British Harrier* was designed and constructed by Samsung Heavy Industries (SHI) with an emphasis on environmental safety. The vessel features innovative HFO storage tanks with longitudinal partition bulkheads. Structural design was accomplished through state-of-the-art computer calculation for 40-year fatigue life and enhanced scantling in the highly corrosive top and bottom cargo regions.

Operational safety and flexibility has been accomplished through the installation of a dual vent and IG main line, a water deluge system around the lifeboat and accommodations, twin ladders for all cargo and ballast tanks, inspection walkways in tanks, modern ECDIS and Integrated Navigation System and an ergonomic bridge design complying with Lloyd's Register of Shipping NAV1 notation.

*British Harrier* features 12 cargo tanks and two slop tanks, and can carry three grades of cargo. The vessel's cargo pumping system consists of three pumps, each with an auto-unloading system and stripping pump. The ballast system features two main lines and large capacity pumps.

*British Harrier* is powered by a Samsung B&W 6S70MC main diesel engine providing a service speed of 14.5 knots.

## Voith Tractor – Dynamic Forces of Two Tugs



Voith Schneider America Inc.  
 121 Susquehanna Avenue, Great Neck, N.Y. 11021  
 Tel. (516) 466 57 55, Fax (516) 466 53 80

That's the logic

Therefore:  
no tractor  
but Voith Tractor

**VOITH HYDRO**  
MARINE TECHNOLOGY

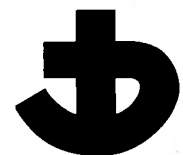
Voith Hydro GmbH & Co. KG, Marine Technology  
 P.O. Box 1925, D-89509 Heidenheim  
 Tel. (07321) 37-0, Fax (07321) 37-7105

Circle 289 on Reader Service Card

**WE'LL GET YOU QUICK  
OUT OF THE SUEZ CANAL**

Time is money. Especially when vessels are left waiting. This is why A/S DAN- BUNKERING Ltd. - one of the world's leading bunker enterprises - offers a complete package solution to vessels passing through the Suez Canal. Now, with just a call to our Egypt Department's "Around-the-clock" service you receive bunkerfuels, lubricants, freshwater and transit. Passing through the Suez Canal could hardly be any easier or quicker.

Give it a try.



**A/S DAN-BUNKERING Ltd.**  
**Egypt around the clock Service**

Tlph. +45 33 93 54 01  
 Fax +45 33 93 54 11  
 Circle 201 on Reader Service Card



# GREAT SHIPS OF 1997



## Schleswig-Holstein

**Shipyard** .....Van der Giessen-de Noord  
**Shiptype** .....Double-Ended Combi Ferry  
**Ship name** .....Schleswig-Holstein  
**Shipowner** ..Deutsche Fahrgesellschaft Ostsee

An advance in Finnish propulsor technology is central to a new generation of double-ended combi ferries introduced in 1997 to raise service levels, and virtually double route capacity, on a key international route in the southern Baltic.

Employing a common concept in similar classes of vessel, the German and Danish partners on the Puttgarden/Rodby service have contributed two ships apiece in the wholesale modernization of the Vogelfluglinie (Bird Flight Line) run.

The terminals have also been the subject of major expenditure, so as to dovetail with the new breed of faster, larger ships in the comprehensive upgrading of the near-sea connection for highway and rail links between continental Europe and southern Scandinavia. Danish Scandlines (formerly DSB Rederi) concentrated its investment at the north Jutland yard of Orskov, while Deutsche Fahrgesellschaft Ostsee (DFO) took its newbuilding requirement to Van der Giessen-de Noord in the Netherlands. The 15,187-gt *Schleswig-Holstein* gave first form to the German renewal program.

The new vessel and its consorts mark a step

change in service performance, cutting the crossing time to just 44 minutes, and incorporating a high-redundancy, diesel-electric primary power installation and the innovative Contaz (contra-rotating azimuthing) propulsor system devised by Aquamaster-Rauma.

*Schleswig-Holstein* is fitted at each end of its symmetrical hull with two of the Contaz azimuthing propulsion units, which confer a high degree of maneuverability, rapid acceleration, efficiency optimization, and claimed benefits in regard to noise and vibration levels. The system facilitates swift berthing and departure, a vital aspect of the intensive, around-the-clock sailing pattern that characterizes the Puttgarden/Rodby operation.

No less significant, the adoption of the Contaz arrangements has also facilitated the use of a more hydrodynamically expedient form at each end of the vessel, reminiscent of a bulbous bow, which has brought benefits in speed, propulsion efficiency and directional stability. In addition to efficiency, the powering arrangements based on a central diesel-electric plant reflect particular considerations of operational flexibility and service reliability, since the availability of five diesel-generators provides a margin that will allow schedules to be made up in the event of weather delays or other factors, while imbuing a high degree of redundancy.

The prime movers are five MaK M32 medium-speed engines running at 600 rpm, three

(Continued on page 86)

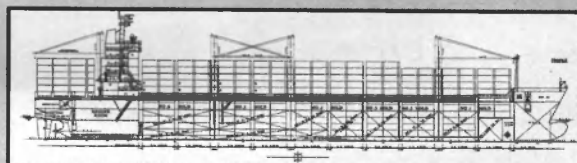
## Sea Jaguar

**Shipyard** .....Daewoo Heavy Industries Ltd.  
**Ship type** .....Containership  
**Ship name** .....Sea Jaguar  
**Owner/operator** .....Conti/NSB

## Sea Jaguar Main Particulars

Designer	Daewoo Heavy Industries
Flag	Panama
Classification	GL
Contract date	May 1995
Float out date	January 1997
Delivery date	April 1997
Length, o.a.	674 ft. (205.5 m)
Length, b.p.	639.7 ft. (195 m)
Breadth, molded	90 ft. (27.4 m)
GT	24,053
DWT, design	22,100 metric tons
DWT, scantling	28,300 metric tons
Draft, design	28.9 ft. (8.8 m)
Draft, scantling	33.1 ft. (10.1 m)
Speed, service	20 knots
Complement	25
Cargo capacity	2,113 TEU
Bunker	2,200 cu. m.
Water ballast	11,100 cu. m.
Fuel consumption	49.7 t/day at NCR
% High tensile steel	14.6
Main engine	Korea Heavy Ind. B&W 7L60MC
HP	18,200 bhp at 123 rpm (MCR)/16,380 bhp at 118.8 rpm (NCR)
Propellers	Thyssen
Thrusters	Kamewa
Generator engines	Wärtsilä
Thruster motor	Narelli
Generator	Wärtsilä
Emergency generator	Ssang Yong
Motor starters	KT Electric
Anti-heeling system	Frank Mohn
Shaft couplings	Daewoo
Engine controls	Norcontrol
Steering gear	Tongmyung
Deck machinery	Kocks
Shafting	Daewoo
Bearings	Blahm+Voss

(Continued on page 86)





# Hanjin, Korea's pioneering shipyard, makes headway with the delivery of its 5,300 TEU Full Container Carrier



Hanjin ; a major contributor to  
the leading shipbuilding nation  
of Korea

## HANJIN HEAVY INDUSTRIES CO., LTD.

### ■ HEAD OFFICE & YOUNGDO SHIPYARD

29, 5-KA, PONGNAE-DONG, YOUNGDO-KU, PUSAN, KOREA  
• TEL:(051)410-3311/4 • FAX:(051)410-3339 • TLX:HHICP K53330

### ■ SEOUL OFFICE

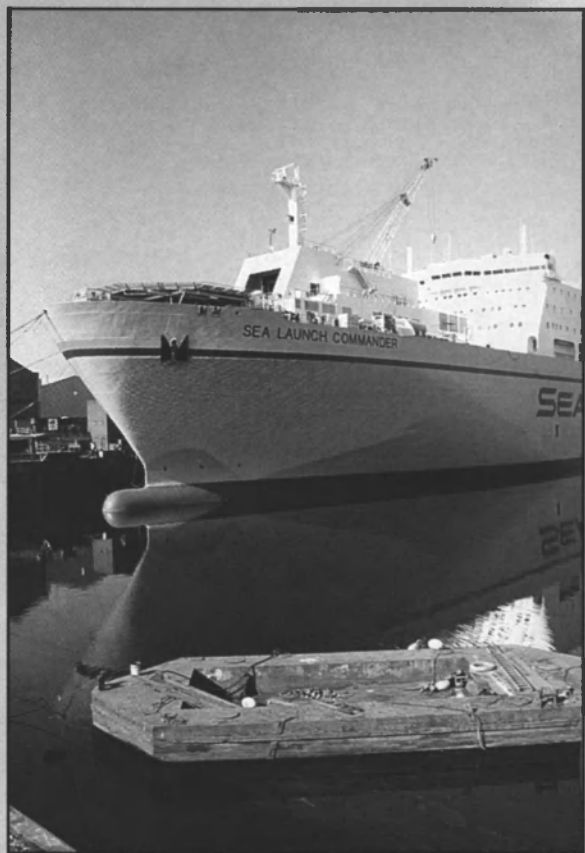
MARINE CENTER, 118, 2-KA, NAMDAEMUN-RO, CHUNG-KU, SEOUL, KOREA  
• TEL:(02)728-5450 • FAX:(02)756-5455 • TLX:HHICS K23669

### ■ ULSAN SHIPYARD

462, YONGJAM-DONG, NAM-KU, ULSAN, KOREA  
• TEL:(0522)259-3029 • FAX:(0522)259-3222

Circle 302 on Reader Service Card

# GREAT SHIPS OF 1997

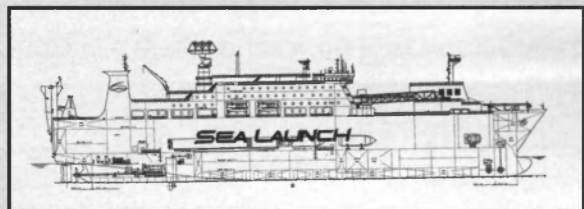


## Sea Launch Commander

**Shipyard** .....Kvaerner Govan  
**Ship type** .....Assembly and Command Ship  
**Ship name** .....Sea Launch Commander  
**Ship owner** .....Sea Launch Company

Stemming from a highly innovative scheme to put satellites into space from an equatorial ocean launching point, the remarkable assembly and command ship (ACS) *Sea Launch Commander* testifies to the versatility both of the Kvaerner Group and of the surviving shipbuilding industry on the Clyde.

Constructed by Kvaerner Govan, the 34,000-ton displacement ACS is the world's first commercial vessel specifically designed to transport rockets and satellites for assembly afloat and eventual transfer to an offshore rocket launch platform. The completion of the build and outfitting project in Scotland has been followed by the installation of rocket control equipment in Russia, in preparation for the start of the owning consortium's launch program in June 1998. The unique ACS has a multi-functional role in support of the self-propelled, semi-submersible platform, which will put spacecraft into orbit from locations on the equatorial belt in the Pacific. It is anticipated that most payloads



will be destined for geostationary orbit, to be effected from an area east of the Kiribati (Christmas) islands, and approximately 1,000 miles south east of Hawaii.

Launching on the equator means that the earth's rotational forces can be harnessed to their greatest effect, enhancing rocket performance and payload capability. An ocean platform is also advantageous in that it confers an ability to launch into any orbit from the same mobile pad. *Sea Launch Commander* has been built to the account of Sea Launch Company, a consortium comprised of space industry enterprises RSC Energia of Russia, KB-Yuzhnoye/PO-Yuzhmash of the Ukraine, and Boeing Commercial Space Co. of the U.S., plus the Kvaerner Group. Along with the semi-submersible, also owned by the joint venture, *Sea Launch Commander* will operate out of a dedicated terminal in Long Beach, Calif.

The new ACS is fitted for control, command and monitoring of the launch platform and its dynamic positioning (dp) system during the semi-submersible's unmanned periods, and is also equipped for remote control of the rocket launching procedure and for mission monitoring.

The vessel is characterized by a huge internal volume used as a hangar and mating point for rockets and satellites, and subdivided into four compartments by partial transverse bulkheads and sliding doors. Elements and craft are brought onboard across a hydraulically actuated stern ramp and through a watertight door, both supplied by Kvaerner Ships Equipment.

Thus, rocket components will be moved into the ACS, where assembly of the distinct, pre-manufactured rocket stages, along with third-stage rocket processing and fueling, will be undertaken. *Sea Launch Commander* will also receive the satellite, integrate the payload with the rocket and ultimately transfer the assembled rocket and encapsulated spacecraft onto the stern ramp, for lifting by crane on to the launch platform. Movement of the rocket between the various processing areas in the subdivided hold is effected longitudinally by trolleys and rails, and laterally by overhead gantries.

The main hangar has been dimensioned for up to three complete Zenith rockets.

The entire shelterdeck is laid out with launch control rooms, a communications complex and technical spaces designated for testing, monitoring and controlling the rockets and spacecraft. Two independent, highspeed digital radio communications systems are installed to ensure reliable links between ship and platform during remote-controlled launch operations. Accommodation has been provided for a maximum of 240, as the usual crew complement will be boosted by technicians, scientists, customers and dignitaries. The ship is fully air-conditioned throughout the quarters, fueling and

rocket deck spaces. Besides fire detection, fire protection, gas and oxygen monitoring arrangements, gas scrubbers and emergency ventilation systems serve compartments designed to handle toxic propellants.

The vessel is fitted with two eight-cylinder, Wartsila R46 medium-speed main engines, delivering a total of 21,000-bhp. Drive is through a Lohmann+Stolterfoht gearbox to a single KaMeWa controllable pitch propeller, providing a service speed of 19.5 knots.

Electrical energy is derived from two exceptionally powerful shaft generators, driven off the after end of the transmission and delivering five-MW each, complemented by four Ulstein Bergen-based 1,220-kW aggregates. One of the main determinants of the capacity of the electrical system is the high load imposed by the dp system, which employs twin tunnel thrusters in the bow and a retractable, azimuthing unit at the stern. Hughes Space & Communications has contracted with the international Sea Launch venture for 13 launches. The first is slated for next June, when an HS702 communications satellite will be put into geostationary orbit to form part of the PanAmSat network. —

David Tinsley

## Sea Launch Commander Main Particulars

Length, o.a.	667.3 ft. (203.4 m)
Length, b.p.	599 ft. (182.60 m)
Breadth, molded	105.8 ft. (32.3 m)
Depth	85.3 ft. (26 m)
Design draft	26.2 ft. (8 m)
Gross tonnage	50,023
DWT, design	11,200
DWT, scantling	12,317
Classification	DNV
Flag	Liberia
Float our date	December 1996
Delivery date	November 1997
Main engines	Wartsila NSD
Fuel consumption	.75 tons/day (main engine)
Gearboxes	Lohman+Stolterfoht
Propellers, Bowthrusters	KaMeWa
Main engine-driven alternator	ABB Industrier
Emergency generator	Cummins
Couplings	Vulkan
Steering controls	Ulstein Frydenboe
VHF, SSB radios	Skanti
Compass	Anschutz
Heat Exchangers	Alfa Laval
AC	Novenco
Lifeboats	Umoe Schat Harding
Liferafts	Seadog
FiFi	Wormald
Alternator	Ulstein
Mooring equipment	Aquamaster Rauma
Doors, Ramps, Cargo lifts	Kvaerner Ships Equipment
Ballast control system	ABB Industrier
Waste disposal plant	Teamtec, Hamworthy
Radar	Kelvin Hughes
SatNav	Philips
Loran	Furuno
ECDIS	Kelvin Hughes



# GREAT SHIPS OF 1997

(Keoyang Majesty,  
Continued from page 45)

the designation UMA2 (Unattended Machinery Automation system 2).  
Built to specifications of the Korea Register of Shipping,

## Keoyang Majesty Main Particulars

Designer	Hanjin Heavy Industries
Flag	Panama
Length, o.a.	725 ft. (221 m)
Length, b.p.	695.5 ft. (212 m)
Breadth, molded	105.5 ft. (32.2 m)
Depth, molded	74.7 ft. (22.7 m)
Draft, design	35.1 ft. (10.7 m)
GT	42,989
DWT, design	48,618
DWT, scantling	48,618
Draft, scantling	10.716 m
Speed, service	16.4 knots
Cargo capacity, grain	108,316 cu. m.
Bunkers, heavy oil	3,489.7 cu. m.
Bunkers, diesel oil	184.7 cu. m.
Fuel consumption	126.1 g/bhp
Main Engine	Man B&W
Manufacturer	Hanjung
kW/rpm (each)	15,600 bhp/123 rpm
Propellers, manufacturer	Stone Manganese Marine
Propeller, material	FP/NiAlBr
Boilers	Kangrim
Cargo Cranes/Cargo Gear	MacGregor-Hagglunds
Cargo Capacity/speeds	17.2 ton/80m/min
Cranes	Dongham
Mooring Equipment	Aquamaster-Rauma
Hatch covers	MacGregor
Doors	MacGregor
Complement	15 officers, 9 crew
Bridge control systems	NABCO
Fire detection systems	Salwico
Radar	Japan Radio
SatNav	J.R.C.
Other navigation	Tokimec
Computers	Hyundai

High tensile steel	51%
Main Engines	Hyundai B&W
Propellers	Hyundai
Thrusters	Hyundai-Kamewa
Generator Engines	Hyundai-B&W Holeby
Generators	Hyundai
Emergency generator	Bertel O. Steen
Anti-heeling system	Frank Mohn A/S
Engine controls	Norcontrol
Steering controls	Tong Muyng-Khi
Deck machinery	Kocks
Shafting	Hyundai
Bearings	Hyundai
Coatings	Korea Chemical
SSB radio	STN Atlas
Radar	STN Atlas
Compass	Anschutz
GPS	Trimble, NT2000
Autopilot	Anschute
Dgps navigation	Trimble, NT 200D
Pumps	Allweiler
Heat Exchangers	Sweep
Air Conditioning	Hi-Pres Korea
Lifeboats	Fassmer
Liferafts	DSB
Davits	Davit International
FiFi System	NK Fire
Waste management system	Kangrim, Jonghap, Bio-Aerob
Desalination Equipment	Alfa Laval
Ballast control system	Norcontrol
Computers on the ship	Kockumation AB, Stein Sohn, Norcontrol

(MRS Pioneer,  
Continued from page 46)

the hold spaces, and discharge the foodstuff directly into reception facilities.

In addition to working the cargo in bulk, the ship incorporates a bagging plant and bag unloading arrangements which assist the operator in meeting the logistical demands of the traffic.

The project was initiated by U.K.-based sugar and commodity trader ED&F Man, based on the requirements of Mackay Refined Sugars (MRS) of Queensland. The vessel has accordingly provided the Australian company with versatile new capacity for transporting granulated sugar, produced from cane at its Mackay refinery, to markets in Australia and New Zealand and further afield in the southern hemisphere and Asia Pacific rim.

The concept behind *MRS Pioneer* is rooted in considerations of transportation efficiency and delivered quality of a refined foodstuff sensitive to degradation, contamination and dampness through deficient handling and stowage arrangements.

Shipment in bulk makes for substantially more rapid throughput, at

(Pusan Senator,  
Continued from page 46)

## Pusan Senator Main Particulars

Flag	Germany
Classification	GL
Contract date	September 1995
Float out date	December 1996
Delivery date	May 1997
Length, o.a.	964.8 ft. (294.1 m)
Length, b.p.	929 ft. (283.2 m)
Breadth, molded	105.6 ft. (32.2 m)
Depth, molded	71.5 ft. (21.8 m)
Draft, design	39.4 ft. (12 m)
Draft, scantling	42.6 ft. (13 m)
Speed, service	23.7 knots
DWT, design	55,543
DWT, scantling	63,551
Complement	24
Cargo Capacity, cu. m.	4,571 TEU
Bunkers	6,170, 349 cu. m.
Water ballast	18,125 cu. m.
Fuel consumption	143.6 MT/D

December, 1997

# SHIPBUILDING MACHINERY & MARINE TECHNOLOGY



## INTERNATIONAL TRADE FAIR

# HAMBURG

### SEPT. 29 - OCT. 3, 1998



Hamburg Messe



Von Lehsten Inc.  
Dieter von Lehsten

38 West 32 Street · Suite 1210 · New York 10001  
Tel.: (+1) 212-967 31 10 · Fax: (+1) 212 629 60 52

Circle 200 on Reader Service Card



# Mission Critical Performance at workgroup prices

When you're ready to move your IT applications to Windows NT®, Intergraph is the expert way to go. Our InterServe® line of Windows NT servers unleash the power of Intel's 200 MHz Pentium® Pro processors. Superior engineering and high-availability features will satisfy even your most demanding mission-critical applications. And best of all, the InterServe line of high-performance servers starts at \$3,934.

InterServe is part of Intergraph's total system solution – including storage, site management, and networking. And every solution is backed by our own award-winning service, support, and consulting.

No company understands Windows NT like Intergraph. In 1993, we moved our entire 8,000-seat enterprise from UNIX to Windows NT. Today we're Windows NT from top to bottom. When you're ready to make the move, call the experts at 800-747-2232. Or visit our Web site at [www.intergraph.com/federal](http://www.intergraph.com/federal). Ask about the agencies we've already helped switch to Windows NT. Then check our GSA Schedule (#GS-35F-4155-D), and see why government customers are choosing Intergraph.



**We'll take you there.**

IS 660/650    IS 645/635    IS 625/615

Hot-Swap Disk Drives	○	○	○
InterSite™ Server Monitoring	○	○	
Hot-Swap Power Supplies	○	○	
Hot-Swap Fans	○		

## INTERGRAPH FEDERAL SYSTEMS

Intergraph and the Intergraph logo are registered trademarks, InterServe and InterSite are trademarks of Intergraph Corporation. The Intel Inside logo and Pentium are registered trademarks and the Pentium Pro processor logo is a trademark of Intel Corporation. Windows NT is a registered trademark of Microsoft Corporation. Other brands and product names are trademarks of their respective owners. Copyright 1997 Intergraph Corporation, Huntsville AL 35894-0001. MC970362

Circle 24 on Reader Service Card



# GREAT SHIPS OF 1997

## MRS Pioneer Main Particulars

Length, o.a.	551 ft. (168 m)
Length b.p.	523 ft. (159.5 m)
Breadth molded	75.4 ft. (23 m)
Depth	43.3 ft. (13.2 m)
Design draft	31.5 ft. (9.6 m)
DWT	21,900
Gross tonnage	17,100
Sugar capacity	22,050 cu. m.
Trial speed	15.3 knots
Main engine	Wärtsilä

550-tons/hour for both intake and discharge, compared with conventional, bagged cargo distribution. Hold volume can, of course, be more effectively utilized with bulk, since bags require greater space per unit ton, while transportation in bulk better enables the refined sugar to be kept under requisite temperature and humidity conditions.

In addition, the arrangements in *MRS Pioneer* circumvent the problem of bag damage associated with the loading, stowage and conventional-type discharge of bagged sugar cargoes.

The concept is a development on the BIBO (bulk in, bags out) system incorporated in two vessels, *CHL Innovator* and *CHL Progressor*, transformed in 1985 and 1989, respectively, from conventional bulk carriers. In the case of the latest, purpose-designed ship, operating potential has been widened by offering self-discharging capabilities in bulk as well as bagged form.

ED&F Man and Australian company Thomas Nationwide Transport (TNT) were the two leading international companies responsible for the development of the pioneering BIBO method, initially used to place sugar refined in northern France on to outlets in Africa and the Middle East. The systems employed in *MRS Pioneer* reflect special considerations of the nature of granulated sugar, not least of which is its natural tendency to cliff when being loaded into a hold, the propensity of its crystalline structure to degradation and dust creation if dropped from a height of more than 2 m, and the liability to damage through inadequate hold ventilation.

While special measures have been taken to suppress dust, all electrical systems in the potentially hazardous areas are designed to

be spark-free, and explosion hatches have been incorporated in the structure to direct the force in such a way as to minimize damage to the ship and reduce danger to personnel.

The sugar carrier provides a new reference on the Australian coast

for Finnish-developed medium-speed machinery, in the form of a nine-cylinder, Wärtsilä 46 series main engine.

The well-proven design develops 8,145 kW at 500 rpm, power being transmitted to a Lips controllable pitch propeller through a

Lohmann+Stolterfoht reduction gearbox, off which a Somer shaft generator is driven.

*Pioneer* has put down an important marker for the industry in northern Europe, underscoring its abilities in highly specialized, one-off projects. — *David Tinsley*

# BMI

## BALTIMORE MARINE INDUSTRIES, INC.

*The management and skilled work force of*  
**BALTIMORE MARINE INDUSTRIES, INC.**

*are pleased to announce that, effective October 1, 1997,*  
*our company began operations at the former*  
*BethShip, Sparrows Point Yard facility.*

*The organization and facilities at*  
**BALTIMORE MARINE INDUSTRIES, INC.**

*have remained intact. We will continue to serve the marine and heavy industries*  
*with unsurpassed repair, manufacturing and conversion services at one*  
*of the largest and best equipment facilities on the U.S. east coast.*

**BALTIMORE MARINE INDUSTRIES, INC.**  
*is dedicated to becoming your preferred shipyard and*  
*manufacturing facility. Our goal is to win your repeat business.*

*To discuss your next project or to learn more about our new company:*  
**PLEASE CALL (410) 388-7701 OR FAX (410) 388-6687.**

# BMI

## BALTIMORE MARINE INDUSTRIES, INC.

ISO 9002 CERTIFIED

formerly

**BethShip**  
Sparrows Point Yard

### *Your Shipyard for the New Millennium*

600 Shipyard Road Baltimore, Maryland, USA 21219-2599 Tel (410)388-4630 Fax (410)388-6687

# GREAT SHIPS OF 1997

(Happy River,  
Continued from page 51)

watertight bulkheads. Handled by the ship's gear, provision is made for fitting the panels at various heights in the holds as well as vertically at various longitudinal locations to permit cargo separa-

tion. The hatchcover sets and associated hydraulic operating equipment have been engineered to function effectively in the most extreme winter conditions in the Baltic, St. Lawrence Seaway and Russia's Arctic regions, where Mammoet anticipates extensive

project activity. As the symbol of her primary purpose, the two Huisman Itrec mast cranes stooled on the starboard side of the hatchway are each designed to lift 400-tons at 60-ft. (18-m) radius, or up to 350-tons as far as 67.4 ft. (20.5 m) outboard, slewing

at a maximum list of four degrees.

The pairing of the equipment can allow piece weights of up to 800 tons to be handled, and still offering a tandem lift capacity of 700-tons at an outreach of 29.5 ft. (9 m) from the ship's starboard side. Auxiliary hoists are provided for the efficient working of lighter cargoes.

The primary power installation in *Happy River* is a nine-cylinder, in-line example of the Wartsila 46 medium-speed engine, developing a maximum continuous rating of 8,775 kW at 500 rpm, and coupled to a Renk Tacke reduction gearbox. Rotational speed is thereby reduced to 130 rpm at the Lips controllable pitch propeller. — *David Tinsley*

## Happy River Main Particulars

Length, o.a.	454 ft. (138.4 m)
Length, b.p.	419.6 ft. (127.9 m)
Breadth, molded	74.8 ft. (22.8 m)
Maximum draft	32.1 ft. (9.8 m)
DWT, max.	16,516
Gross tonnage	10,990
Displacement	21,400 tons
Hold capacity	17,863 cu. m.
Speed (9.5 m draft)	15.6 knots
Contract date	November 1995
Float out date	January 1997
Delivery date	May 1997
Main engines	Stork Wartsila
Total hp	8,775/500 rpm
Propeller	Lips
Thruster	Lips
Generator engines	Mitsubishi
Generators	Taiyo Electric
Emergency generator	Mitsubishi/Taiyo
Anti-heeling system	Winel
Couplings	Vulkan
Reduction gears	Renk Tacke
Steering controls	Frydenbo
Deck machinery	Huisman-Itrec
Pumps	Shinko
AC	Novenco
Lifeboats	Fassmer
Liferafts	Marin Assist
Davits	Umoe-Schat
FiFi	Ajax
Hatch covers	MacGregor
Separators	Alfa Laval
Filters	Ball
Steel pre-preparation	Centraalstaal
Thermal acoustics	ICC Marine & Offshore
Noise & vibration	Intersona
Flow meters	VAF
Anchor, anchor chains, cables	Wortelboer
CAD 3-D drawings	Vuyk Engineering
Welding equipment	Unitor
Starting air compressor	Sperre
Communications system	Radio Holland Marine
Model testing	Marin
Classification	Lloyd's Register

(Great Ships of 1997,  
Continued on page 83)



## MOTOR-SERVICES HUGO STAMP, INC.

AUTHORIZED DISTRIBUTORS & SERVICE CENTER



Authorized Dealer

### TURBOCHARGER SERVICES

- MAN B&W
- EGT - NAPIER
- HOLSET - BANNEWITZ
- STATE-OF-THE-ART COMPUTERIZED BALANCING
- FIELD SERVICE WITH FACTORY TRAINED ENGINEERS
- REBLADING WITH NEW OR RECONDITIONED COMPONENTS
- ABB TURBOCHARGER REPAIRS, 'OEM' SPARE PARTS & EXCHANGES

24 HOURS SERVICE HOT-LINE 1-800-622-6747 (MSHS)

3190 SW 4TH AVENUE - FORT LAUDERDALE, FL 33315 - PH: (954) 763-3660 FAX: (954) 763-2872

Circle 311 on Reader Service Card

## PFA-95 = PORTABLE (A-FFF) FOAM APPLICATOR - 95 GPM



### DESCRIPTION

The "next generation" self contained portable foam system. Simply don the NOMEX clad foam bladder jacket, connect the foam concentrate pick up tube to the self educating nozzle and you have 7 minutes of continuous A-FFF foam. Using the ratio controller, the fire fighter can select 1%, 3% or 6% foam proportioning. By using 2 PFA-95 foam bladder jackets "team concept", the quick change over method can be employed giving continuous flow of A-FFF foam. Because the self educating nozzle is connected to the ships fire hose, the nozzleman can instantly select foam or sea water application as conditions warrant.

### MERCHANT MARINE

SOLAS Required  
for Ships & OSV's 500 grt & over as follows:  
Engine Room, Machinery Spaces  
Ro-Ro Special Category Spaces  
Passenger Ship Cargo Spaces

### US NAVY

Rapid Response  
Rescue and Assistance (R&A)  
Downsizing: "Smart" Equipment  
PFA-95: On line where there is no fixed foam station.  
Battle Damage Group Concept

IMSSCO, International Marine Supply & Service Co. San Diego, CA Tel 619 260 0728 - Fax 260 6537 Email IMSSCO@worldnet.att.net

CANADA: Maritime Services Inc Vancouver Tel 604 294 4444 Fax 604 294 5879

USA GULF COAST: GulfSouth Fire & Safety Co. New Orleans Tel/Fax 504 522 2335

USA EAST COAST: Derbyshire Foam System Products Philadelphia Tel 215 844 3200 Fax 849 8680

USA WEST COAST: The Clendenning Associates Inc. Lynnwood WA Tel 425 712 1948 Fax 712 7087

Circle 310 on Reader Service Card



Safety and Quality in All Fields of Technology • Ship's Classification • Offshore and Environmental Technology  
Industrial Services • QM Certification • Research and Development



*Signed. Sealed. Safe.*

Germanischer Lloyd is your partner for safety and quality in shipping and shipbuilding. Our specialists support you with state-of-the-art-methods, starting at the design stage of your ship. Our rules and guidelines for ship's classification are regarded as recognised rules of technology and find worldwide application.

With an international network of over 400 branches and offices, we're there to help you in more than 120 countries. Protecting people, preserving the environment, securing investments – that's what we are working for.

We're competent, unbiased and independent.



**Germanischer Lloyd**

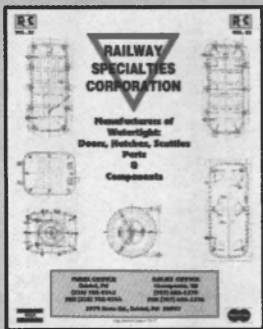
CERTIFIED SAFETY

Head Office Hamburg • Vorsetzen 32 • D-20459 Hamburg  
e-mail [ [headoffice@hamburg.germanlloyd.de](mailto:headoffice@hamburg.germanlloyd.de) ]  
Phone [ ++49/40/3 61 49 - 0 ] Fax [ ++49/40/3 61 49 - 200 ]

Germanischer Lloyd (USA) Inc. • Newport Financial Center  
111 Pavonia Avenue • Suite 1410 • Jersey City, New Jersey 07310-1755/U.S.A.  
Phone [ ++1/201/216-1725, 216-1726 ] Fax [ ++1/201/216-1727 ]

Circle 308 on Reader Service Card

# Marine Literature Review



## Watertight Doors, Hatches & Scuttles

Railways Specialties Corporation manufactures complete components, supplemental parts, and repair parts for railroad, industrial and marine use. The watertight components feature ABS-approved closures. Railways specialties also supplies parts for accommodation ladders, drains, and hooks.

CIRCLE NO. 100



## Easy Installation and Removal Gear Drives

Falk Corp.'s Quadrive shaft-mounted gear drives feature "torque assist" TA Taper™ bushings for easy installation and removal and higher ratings. Falk's TA (taper assist) taper brushing design eliminates the binding associated with twin-taper and single-flanged bushings.

CIRCLE NO. 101



## Drydock Vessels in Multiple Berths

Syncrolift, Inc., designs the SYNCROLIFT shiplift and transfer system which enables shipyards to drydock any number of vessels in multiple berths adjacent to the shiplift itself. The transfer system takes the place of several floating dock or drydock facilities and facilitates modern shipbuilding and shiprepair techniques.

CIRCLE NO. 102



## More Effective Epoxies

TFT solvent-free marine epoxies are unique in their ability to bond to dry, damp or completely submerged surfaces. Most of these epoxies contain Kevlar™ microfibers for internal strength and durability. Flooring, insulating, corrosion-resisting and pipe-wrapping epoxy products make up the TFT line.

CIRCLE NO. 103



## Climate Control for Tough Environments

Dry Air Technology designs, engineers and manufactures environmental control equipment for the marine industry. Products include high-performance, light-weight ventilators and commercial dehumidifiers for complete climate control in all types of work environments.

CIRCLE NO. 104



## Marine Video Experts

Two marine engineers head Gardy McGrath International, one of the largest full-service television production facilities in America. The company offers high-quality video support to the shipping industry. Whether it's customized STCW compliance training or Web Site video or animation, Gardy McGrath is ready to enhance your next project.

CIRCLE NO. 105



## From Russia With Know-How

Proletarsky Zavod is a shipbuilding machinery enterprise, carrying out all stages of design, manufacture, supply and service for: deck equipment, including cargo cranes, steering gears, winches and thrusters; power engineering, including gas/steam turbo generators, pumps, and hydraulic motors; and general machinery.

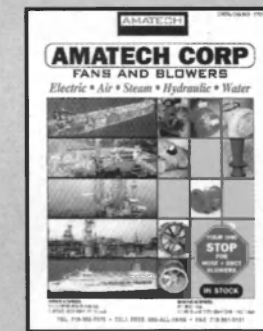
CIRCLE NO. 106



## DeWij's Bowthrusters Provides Flexibility

DeWij's bowthrusters come in a range of models. The tunnelthrusters are hydraulically or mechanically driven. The hydraulic motor is built inside the tunnel, while the mechanical features right-angled, spiral beveled gear-reduction. Bow Jets from DeWij's are driven hydraulically, electrically or diesel direct.

CIRCLE NO. 107



## One Stop for Hose/Duct/Blowers

Amatech premium quality ventilators and blowers are recognized for quality and reliability and have the ability to handle the most difficult jobs. Amatech blowers are ideal for handling marine degassing, venting ballast tanks, oil and chemical carriers. They are also suitable for cooling, engine room ventilation.

CIRCLE NO. 108



## Chilling and Vapor Recovery

Refrigeration Resources, Co. manufactures reciprocating chillers in complete packaged units, pre-wired, pre-piped, run-tested and ready-to-install. This pamphlet features two models. Model CH is a screw compressor, process liquid chiller for continuous, non-stop operation.

CIRCLE NO. 109





### Control System and Deisel Engine Monitoring

Icon Research manufactures monitoring equipment for the shipping industry. The "Doctor" engine performance analyzers include portable and on-line systems for cylinder and fuel pressure measurements. "Guardian" systems provide permanent monitoring of ancillary equipment, alerting operators to impending problems and minimizing machine stripdown during ship surveys. **CIRCLE NO. 110**



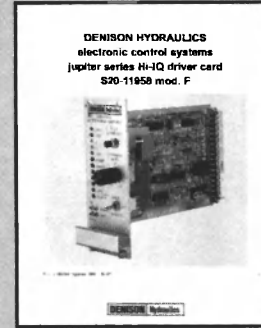
### Construction, Repair & Conversion

Atlantic Companies is an umbrella for four facilities: two in Mobile, Ala. with direct access to Mobile Bay; and two in Jacksonville, Fla., with direct access to the Atlantic Ocean. The Atlantic Companies have an international reputation for their work on chemical tankers, commercial vessels, and repair and conversion of ships up to 4,000 tons and 400 feet in length. **CIRCLE NO. 111**



### Specialized Valves and Regulators

Technical information and specifications on check valves for aerospace and military applications are featured in this brochure from Circle Seal Controls, Inc. Included are product features, operating range, cracking pressure, port sizes, connections, and seat materials and options. The company, located in Corona, Calif., is committed to continuous design improvement. **CIRCLE NO. 112**



### Linear Bi-directional Driver

Denison Hydraulic's Jupiter HI-IQ current driver, designed for the control of Denison's GoldCup High IQ pump, may also be used to control any other variable displacement pump, variable displacement motor, hydraulic actuator or other device employing a low-current servovalve and position feedback. **CIRCLE NO. 113**



### Speed Nozzles Move Ships

Rice Speed Nozzles (patent pending) offer less resistance, more thrust and fuel savings with a special shape and skewed propeller. They are geared for smoother performance, vibration-free operation and longer life. Made by computerized cutting equipment and certified welders from electrolytic material, they are guaranteed for everlasting service. **CIRCLE NO. 114**



### Orkot Composites

A non-asbestos laminated material incorporating solid lubricants, Orkot® "TLM Marine" has exceptional wear resistance, and virtually no swell in water, providing dimensional stability. Orkot tolerates edge loading and misalignment even with the heaviest loads. It is particularly suited to freeze fitting, without the danger of shattering. **CIRCLE NO. 115**



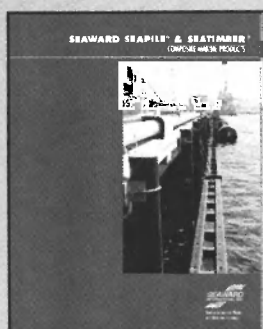
### Seaworthy Choices

Choose Smith Berger for the highest quality deck hardware for your offshore, towing, oceanographic, dredging and workboat needs. Products include: fairleads • deck sheaves • chain stoppers • flag blocks • tow pins • stern rollers. Smith Berger has been the leader in deck hardware for over 60 years. **CIRCLE NO. 116**



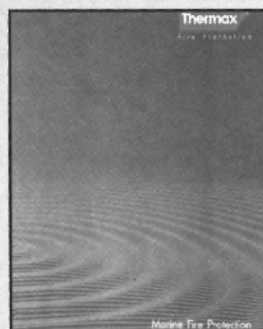
### Cast Steel Valves

For over 70 years, William E. Williams Valve Corporation has manufactured quality steel valves designed, engineered and tested to meet or exceed industry standards. The specifications in this brochure include gate valves, globe valves, swing checks and ball valves. **CIRCLE NO. 117**



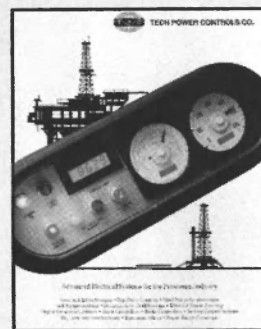
### Maximum Protection Through Innovation

Seapile® and Seatimber® Composite Marine Piling and Timbers from Seaward International are the optimum choices for long-term protection of piers and docks. Made from 100% recycled plastic and reinforced with fiberglass rebar, Composite Marine products are currently used in multiple marine industry applications. **CIRCLE NO. 118**



### Joiner Bulkhead Wall Panels

Thermax non-combustible, non-toxic, marine construction boards are used worldwide for joiner bulkheads, panels, liners, ceilings, door cores and furniture cores. Thermax has all major regulatory body certificates and meets the requirements of IMO/SOLAS resolutions. Thermax is sold, distributed warehoused, laminated, and cut to size in North America by PSI. **CIRCLE NO. 119**



### Advanced Electrical Systems for the Petroleum Industry

Whether you need dependable electrical systems for drilling and production operations or for downstream pipeline gathering, refining and chemical processing, you need Tech Power Controls Co. They provide the latest in electrical technology, switchgear, control systems, and support services. **CIRCLE NO. 120**



### The Power and Purity of Water

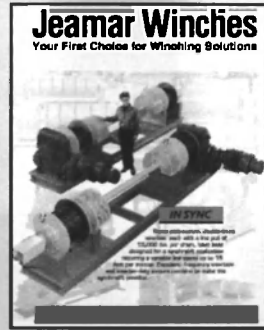
A combination of robotics and high-pressure water jets can make defouling, depainting and decoating easier, cleaner, more environmentally safe and cost-effective. Waterjet Systems, Inc., a wholly owned subsidiary of Pratt & Whitney, specializes in waterjets and supplies Automated Robotic Maintenance Systems (ARMS®). **CIRCLE NO. 121**





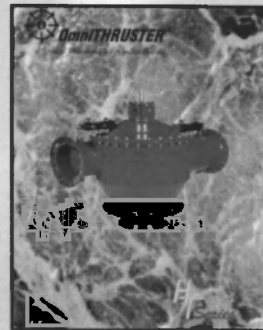
### BMEP Balancer

The BMEP Balancer, made by General Thermodynamics is a pneumatic damping system which yields the mean value of the pressure existing in the cylinder for the entire cycle. The BMEP Balancer provides exact fuel adjustment by scanning the entire cycle, not just one point. It saves fuel, provides for the smoothest running engine, and fits a standard indicator valve. **CIRCLE NO. 122**



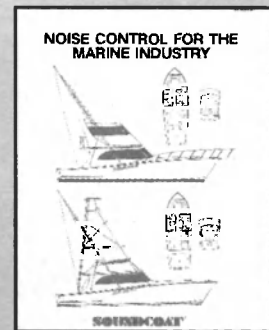
### Jeamar Winches

Jeamar has recently published this 8-page catalog illustrating a wide variety of unique winches built in non-standard configurations. The illustrations are detailed with an explanation of the use of each winch. The catalog also illustrates Jeamar's capability of designing and manufacturing winches specifically to a client's requirements. **CIRCLE NO. 123**



### Marine Maneuvering and Propulsion Systems

For over 25 years, OmniTHRUSTER has been a world leader in the development of waterjet maneuvering systems. Our unique patented designs, which provide diverse maneuvering ability and auxiliary propulsion, have been the installation choice on vessels worldwide. **CIRCLE NO. 124**



### Noise Control for the Marine Industry

The Soundcoat Company has been involved in noise control since 1963, working with naval architects, the U.S. Navy, boatyards and marinas. Soundcoat has provided solutions for vessels of all sizes, including pleasure boats, oil tankers, ferry boats, and research vessels and dredges. **CIRCLE NO. 125**



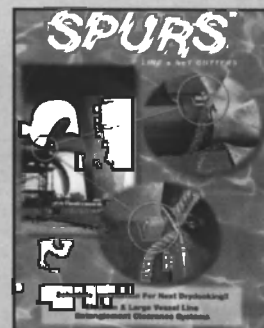
### Lister Marine Chain

Lister stud link anchor, buoy and mooring chain and attachments are Monster Tough – tough enough to take the worst. Send for complete information today. Or call 1-800-888-0985 and find out why Lister is a leader in heavy duty specialty bolt and chain products. **CIRCLE NO. 126**



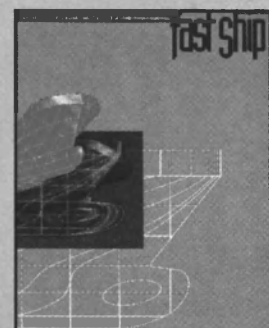
### Custom Nozzle Fabrication

CNF features Kort Nozzles, all sizes, with ABS Certification upon request. Products are "Manufactured in the USA," with quick delivery. They are built to customer specifications. **CIRCLE NO. 127**



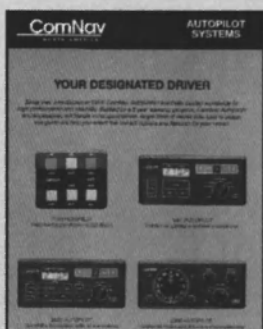
### Sophisticated Cutting Done Simply

SPURS is a sophisticated entanglement clearance system, built to work dependably over millions of miles. As a line moves towards your propeller, it is engaged by rotating cutter blades and delivered to the stationary cutter blade. This eliminates the hazards of discarded lines and nets, which are the most common cause for unscheduled haulouts due to running gear oil seal damage. **CIRCLE NO. 128**



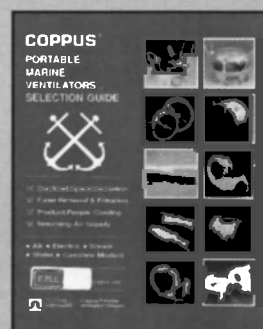
### Marine Software Specialists

IMSA (International Marine Software Associates) is an association of select developers of marine design computer software, providing solutions to the shipbuilding and marine industries. IMSA gives a strategic advantage from concept to completion with the best software for each specialized discipline integrated into a comprehensive suite. **CIRCLE NO. 129**



### Your Designated Driver

ComNav Autopilots are trusted worldwide for high performance and reliability. Regardless of your vessel size, type or usage, this flyer will help you select the best options and features. Models are designed for smaller boats and pleasure boats, as well as commercial use and larger vessels. **CIRCLE NO. 130**



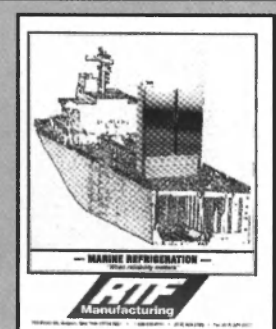
### Portable Ventilators

Coppus portable marine ventilators are effective for confined space ventilation, fume removal and filtration, product and people cooling, and breathing air supply. Air, electric, steam, water and gasoline models are available, with the ability to ventilate hard-to-reach and hazardous spaces. **CIRCLE NO. 131**



### American Technology That Talks to the World

The SEASAT 3 GMDSS System is your ultimate choice for global Inmarsat-C communication links, offering fast and reliable connections to any worldwide fax, data subscriber or directly to and from another Inmarsat unit. It ensures fast and reliable transfer of information and supports all Inmarsat communication modes. **CIRCLE NO. 132**



### When Reliability Matters

RTF makes heavy duty refrigerators and freezers for marine use. All constructed of reinforced and heavy gauge steel, these refrigerators, freezers and marine cold food counters come in a variety of sizes and can be used in modular arrangements. All feature CFC Free Urethane insulation, heavy duty chrome-plated hinges and stainless steel spill-proof shelves. **CIRCLE NO. 133**





### Rugged Construction Strainers, Filters, Valves and Pumps

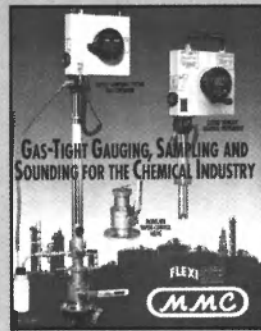
Kraissl Company is a long-time manufacturer of heavy-duty simplex and duplex strainers and filters for protecting equipment in pipeline service. They feature a complete line of three-way transfer valves, and also specialize in positive displacement oil transfer pumps and rotary air pumps. **CIRCLE NO. 134**



### All You Leave Behind is Water

The patented treatment method of Exceltec's OMNIPURE Marine Sewage Treatment system is based on an electrochemical process that uses seawater to produce sodium hypochlorite disinfectant, while achieving a 90-95% oxidation rate and a total bacterial kill within minutes.

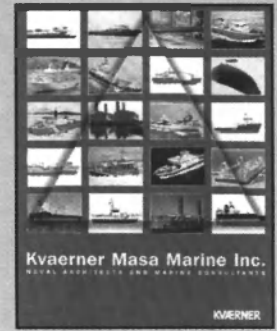
**CIRCLE NO. 135**



### Gas-Tight Chemical Tank Gauging

MMC International (Inwood, NY) designed this Closed Trimode to deliver fast and accurate gauging, sounding and sampling for tanks carrying chemicals, while keeping operators in compliance with the growing body of safety and environmental regulations.

**CIRCLE NO. 136**



### Kvaerner Masa Marine Inc.

KMM has been serving North America since 1983, offering a full range of technical, management and procurement services, including: all aspects of ship design and construction supervision; model tests and full scale trials; technical feasibility studies and economic analyses; ship production technology; project management; research and analytical investigations. **CIRCLE NO. 137**



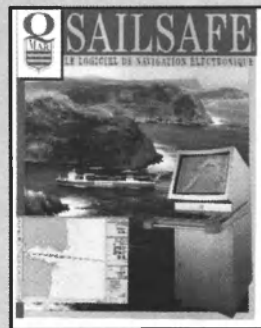
### Mobil Lubricants

For more than 100 years, Mobil lubricants have protected the engines and equipment of the most important vessels in the world. Vessels like those you own or operate. This new brochure explains why Mobil should be your lubricant supplier. A brief summary of Mobil's mineral and synthetic lubricants is included separately. **CIRCLE NO. 138**



### Fully Integrated Flowmeter Systems

Through the years companies have tried many techniques to measure the flow of fuel on large diesel engines, both for permanent field installation and in portable, temporary configurations for engine testing. Fuelcom from Flowdata, Inc., is the first field-proven system to meet the needs of both applications. **CIRCLE NO. 139**



### Sailsafe Automated Navigation System

The Sailsafe navigation system from Q-Mar integrates digital marine maps with a system of positioning by satellite (DGPS). It runs on a standard Windows NT or Windows 95 operating system. It allows for planning and recording of routes taken, viewing of multiple maps, and creation of alternative scenarios and the importation of radar data. **CIRCLE NO. 140**



### Thordon Rudder Bearing Systems

Thordon Bearings introduces its new Rudder Bearing Systems brochure. With over 20,000 vessel-years of rudder bearing experience in the past 25 years, Thordon SXL rudder bearings are the proven choice for value, performance and complete freedom from water pollution concerns. **CIRCLE NO. 141**



### Ship To Shore Access

Gangways • Ladders • Battens • Brows • Treads • Grating. From the initial design concept through the finished product, ACL Industries has the in-house capabilities to handle the complete project. Our broad spectrum of capabilities encompass welding, machining, engineering, finishing and process painting.

**CIRCLE NO. 142**



### Centrifugal Pumps

Ampco Pumps has been providing quality NiAlBr pumps to the marine industry for over 50 years. Their non-compromising features result in higher efficiencies, longer life, and lower energy and maintenance costs. Each pump is custom built to your specifications and tested prior to verify hydraulic, mechanical and electrical performance. **CIRCLE NO. 143**



### New York City's Largest Dry Dock Facility

GMD Shipyard is the largest dry dock facility in New York City, within a 24-acre industrial park. It's a facility with a deepwater pier space and dry docks managed by marine fabrication and repair professionals and staffed by skilled craftsman, technicians and specialists.

**CIRCLE NO. 144**



### Full-Service Marine and Offshore Electronic Equipment

Mackay is a turnkey provider of equipment, service and airtime. From safety and communications equipment to engine room monitoring devices, Mackay delivers. We back you with a 24-hour-a-day repair service and satellite airtime links via INMARSAT and AMSC.

**CIRCLE NO. 145**





### Early Warning System

The major cause of motor breakdown in the marine industry is insulation degradation when the motor is idle. Until the FailSafe Insulation Monitor was introduced, automatic warning of impending insulation problems was not available. FailSafe devices provide continuous monitoring of insulation resistance with automatic early warning of possible insulation failure. **CIRCLE NO. 146**



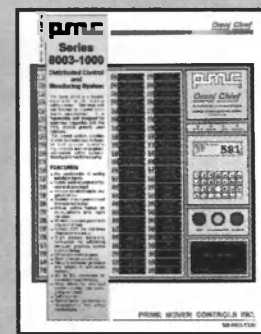
### Transas GMDSS Simulators

To implement GMDSS by 1999, over 4,000 officers will need to be trained each month. Transas GMDSS Simulators will help with this massive task. Suitable for very complex communication tasks without sacrificing user friendliness, Transas GMDSS Simulators are a key element for any GMDSS training ashore and onboard. **CIRCLE NO. 147**



### Baldt Anchors

Because the anchor is the key to effective mooring or anchoring, it is essential to know what to expect from various types, and the associated hardware. Baldt Incorporated's Hardware brochure provides detailed descriptions of all Baldt anchor products, as well as the recommended applications and minimum performance characteristics of each. **CIRCLE NO. 148**



### Distributed Control & Monitoring System

Prime Mover Controls, Inc. offers a color brochure featuring the PMC Omni Chief Distributed Control And Monitoring System for shipboard engine and machinery alarm annunciation. Prime Mover Controls, Inc., 3600 Gilmore Way, Burnaby, BC, Canada V5G 4R8. email: info@pmc-controls.com. tel: (604) 433-4644 fax: (604) 433-5570. **CIRCLE NO. 149**



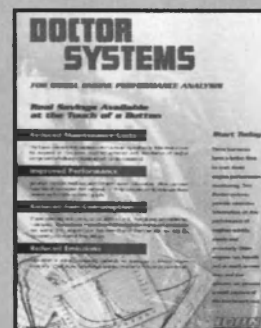
### CSI for Quality Interiors - Worldwide

CSI's mobile construction teams have provided and installed quality marine interiors in over 80 vessels throughout the world, since 1984, from cruise ships to casino boats. Specialties include: joiner/bulkheads; doors; ceiling systems; paint and wall coverings; tile and carpet; and more. **CIRCLE NO. 150**



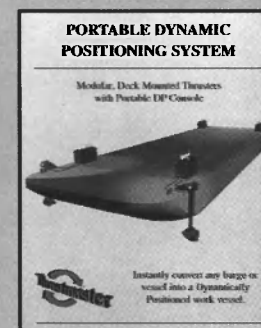
### Flange Facing Systems

Wachs makes flange facing fast, affordable and easy. Now anyone can produce a lathe quality surface finish on flat and raised face flanges in minutes. Wachs flange facing systems feature fast and easy set up, simple operation, solid performance and built in versatility. You'll eliminate flange replacement, reclaim scrap flanges and flanged valves, and minimize downtime. **CIRCLE NO. 151**



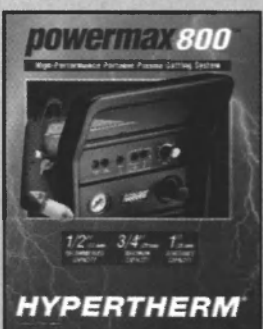
### Diesel Engine Performance Analysis

The Doctor Systems, from Icon Research, provide extensive information on the performance of engines quickly, simply and accurately. Older engines can benefit just as much as new ones, and the systems can provide rapid payback of the investment cost. **CIRCLE NO. 152**



### Portable Dynamic Positioning Systems

Portable DP systems from Thrustmaster of Texas allow instant conversion of a dumb barge or a conventional OSV into a dynamic positioned work vessel. The whole system can be installed or removed in a few days without the need for vessel modifications or drydocking. **CIRCLE NO. 153**



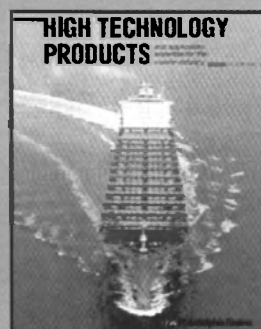
### The New Standard in Hand Plasma Cutting

Hypertherm's Powermax800 delivers fast, high quality cuts on .5-in. mild steel, aluminum or stainless, with sufficient power for cutting .75-in. or even severing one-in. Unique torch design allows drag cutting with long parts life. Advanced, portable, multi-voltage power supply delivers reliable, high-duty output for the toughest applications. **CIRCLE NO. 154**



### Insulation Specialists

Portacover Insulation Blankets from Pacor are ideally suited for use on diesel engine exhaust systems, silencers, marine exhausts, gas and steam turbines, valves and flanges. Pacor is a leading innovator in the design and manufacture of removable blankets to fit any size or shape. A basic Portacover will withstand temperatures to 1,200 degrees F. **CIRCLE NO. 155**



### High Technology Products

Examples of typical marine applications for these epoxy resin compounds, epoxy adhesives, specialty coatings and pourable chocking systems are outlined in this bulletin. These products are proven for all types of vessels, offshore platforms, mooring buoys and crane rails. Other uses include LNG/LPG tank mounting; hull and rudder fairing; and heavy-duty nonskid coatings. **CIRCLE NO. 156**



### Rental Temperature Control

Aggreko is the largest worldwide supplier of rental power, temperature control and oil-free compressed air equipment. Our product line includes silenced generators, HVAC and process chillers, air-conditioners, electric heaters, dehumidifiers, 100% oil-free air compressors and a complete line of accessories. Aggreko offers 24-hour emergency assistance. **CIRCLE NO. 157**





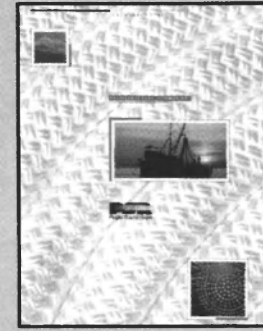
**Power Transmission and Control**  
The success of Elasta-Flex clutches and brakes is the result of OSI Technologies' 50 years of uncompromising commitment to quality products and services. This brochure details the specifications for both the CB style, for general power transmission applications, and the VC style, for high torque applications.  
**CIRCLE NO. 158**



**Decontactor - A Unique Product**  
A decontactor is an industrial plug and receptacle that is listed by UL Standards as a non-fused disconnect switch, and can be used as the disconnecting means in a properly fused inductive or resistive circuit, without requiring additional linkage to a safety switch or mechanical interlock.  
**CIRCLE NO. 159**



**Engineering Services and Products**  
Since 1966, PREDICT's DLI Marine Services has specialized in the testing and measurement of dynamic phenomena. Our engineers and technicians possess a wealth of experience in vibration-based machinery diagnostics, propulsion system troubleshooting, line-shaft alignment, torque and horsepower measurements, oil and wear particle analysis, and noise and vibration measurement and control.  
**CIRCLE NO. 160**



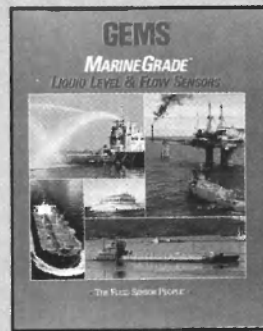
**Puget Sound Rope**  
Puget Sound Rope, founded on the principles of change, innovation and new technology, is a major supplier of high performance ropes. PSR is a major supplier of braided rope to the U.S. DOD, as well as manufacturing for commercial, offshore and the fishing industry. Website: www.pсроpe.com. E-mail: sales@psrope.com.  
**CIRCLE NO. 161**



**Marine Hydraulic Specialists**  
This brochure gives the technical specs for HPS Hydraulic Thrusters and Hydraulic System Components. These thrusters are engineered and designed to cut down turbulence and increase propeller efficiency. 316 Stainless Hydraulic Thrusters provide unparalleled performance and high reliability, and are rated for continuous duty.  
**CIRCLE NO. 162**



**Integrated Software**  
Nautical Technology Corporation is a group of international shipping and computer service professionals whose NTC Ship Manager integrated software package is designed to eliminate your "paper trail" forever. Over 3,000 ship/modules of NTC Ship Manager are in use worldwide on supertankers, tugboats, dry cargo vessels, container ships, ferries and scientific and government vessels.  
**CIRCLE NO. 163**



**MarineGrade Liquid Level & Flow Sensors**  
This 20 page brochure includes flow switches, level switches, tank level indicating transmitters and receivers, self-checking liquid level switches, SureSite® and DIPSTICK liquid level indicators, and solid-state accessories. Full of operation and application photos and illustrations.  
**CIRCLE NO. 164**



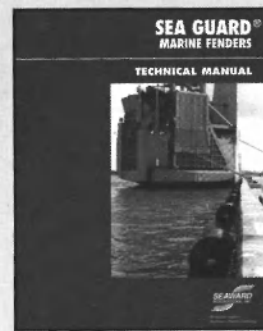
**Carbon Fiber Driveshafts**  
Addax Inc. manufactures filament wound carbon fiber driveshafts, whose significant benefit is a high strength-to-weight ratio when compared to steel driveshafts for long span applications. Lighter weight optimizes vessel speed and/or passenger capacity as well as eliminating the need for, and the cost of, intermediate support bearings.  
**CIRCLE NO. 165**



**Tank Level Indication and Control System**  
The standard LevelCom 100 by TMS is designed to connect directly to a pneumatic sense line. Optional models also accept input from virtually any pressure sensor. Completely self-contained, the LevelCom 100 requires no external devices such as pressure transmitters, purge valves or custom scales, and is completely programmable.  
**CIRCLE NO. 166**



**Quality Steering Equipment**  
The EP5000 electric/hydraulic steering system is the latest in VanderVelden ship steering gear equipment, to be used in combination with the 1DWF50, a compact preassembled double ram steering gear. The system's advantages are easy installation and commission and interfacing with all modern proportional gyro-assisted "automatic pilots."  
**CIRCLE NO. 167**



**Fendering Made Easy**  
Seaward International's newly released SEA GUARD® Foam-Filled Marine Fenders technical manual is now available. Providing comprehensive technical data on standard and custom fenders in both English and metric specifications, and offering a step-by-step guide to designing fendering systems. To request a copy, please contact Seaward at 1-800-828-5360, mail@seaward.com, or fax to 540-667-7987.  
**CIRCLE NO. 168**



**Intergrated Navigation With INStar**  
Navigation precision, reliability, and performance achieves a new level in INStar which summarizes real-time information from crucial shipboard sensors into graphical displays for fast, accurate interpretation. The system promotes safety with highlighted depth contours and soundings in unsafe depths, a highly sensitive visual and audible alarm system.  
**CUT NO. 169**





### Marine Communications Superstore

When you think of Hose-McCann Telephone Co., Inc., Sound-Powered Telephones probably spring to mind. But Hose McCann has expanded its manufacturing capability to include integrated public address and general alarm systems; intercom/talkback systems; closed circuit TV; video information and ship's recreational entertainment systems. **CIRCLE NO. 170**



### Efficient Repair

International Ship Repair and Marine Services, Inc., offers 24-hour, seven-day-a-week ship repair with 4,000 feet of berthing space at its Tampa, Fla. location. The company, which has been repairing vessels since 1973, recently added extensive repair equipment and facilities and is capable of handling anything from small voyage repair to scheduled major repairs. **CIRCLE NO. 171**



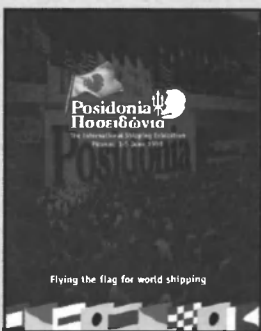
### Business Management

Hornblower Marine Services helps marine businesses meet changing market conditions by utilizing high-technology resources and sophisticated management skills. Our service-oriented product line reflects an in-depth knowledge of regulatory standards, client needs and emerging trends within the passenger vessel industry. **CIRCLE NO. 172**



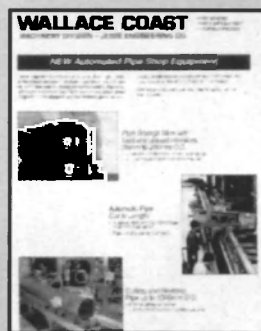
### Shipbuilders, Architects and Engineers

Washburn & Doughty builds and designs steel and aluminum boats, up to 200-ft., in a 50,000 sq. ft. indoor facility. Washburn & Doughty is committed to building hardworking and seaworthy boats and, consequently, enjoys success constructing fishing and research vessels, barges, car ferries, passenger vessels, floating docks, tugs, and workboats. **CIRCLE NO. 173**



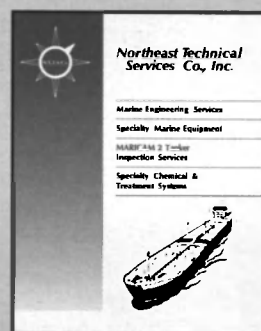
### Posidonia '98

Don't miss this magnet for the international shipping industry. This year's exhibition, to be held June 1-5, will highlight the activity of Greek owners, renowned for their exceptional business skill. Since 1969 Posidonia has been a magnet for the maritime world, drawing the shipping elite to Piraeus, Greece every two years. **CIRCLE NO. 186**



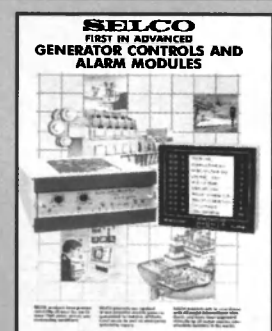
### State of the Art Pipe Fabrication Technology

Wallace Coast Machinery has been supplying the world's leading shipyards with superior pipe bending machines for many years and has completed several pipe shop production modernization projects with state of the art equipment and technology. We design CNC Pipe Benders, automatic flange tack & welding machines. **CIRCLE NO. 176**



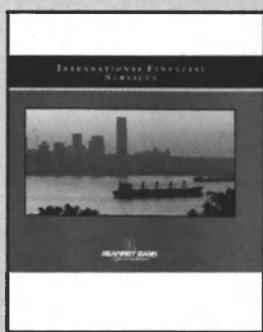
### More Than Design

We develop methods and systems that benefit ship owners and plant operators by improving the effectiveness and efficiency of their systems and equipment. Our MARICAM 2 system permits the thorough inspection of under-deck structures in tankers and chemical carriers without entering the tank. **CIRCLE NO. 177**



### Selco

This brochure gives the full technical specifications and special features of synchronizers, alarm annunciators and indicator units, power monitoring, engine start and management, and process-logging from Selco Worldwide. **CIRCLE NO. 178**



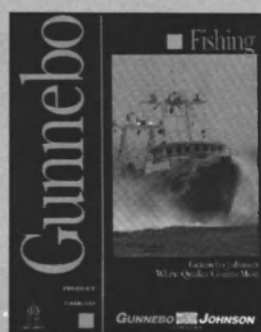
### International Financial Services

Seafirst Bank has 50 years of expertise to help you handle the new global business environment, including automated services that let you do business from your PC. Seafirst can assist you with letters of credit, international collections, foreign exchange, international funds transfer, banker's acceptances, and government export programs. **CIRCLE NO. 181**



### Sewage Treatment Systems

The ORCA Marine Sanitation Device Manufactured by Envirovac, Inc. has improved their Type II USCG/IMO certified ORCA product line. The IIA-165/330/500 models have a new design including PLC control panels with submersible grinder pumps. The IIA-12/24/36/70 models have an improved macerator and clear cover. For more information, call (800) 654-8539, ext. 225. **CIRCLE NO. 179**



### Quality Fishing Chains

Gunnebo Johnson Corporation provides chains, swivel links, master links, couplers, and hook links for the fishing industry. Every product is grade 80 Alloy Steel. The Alloy Chain is known worldwide for its reliable strength, wearability and consistency of dimensions. Gunnebo guarantees complete quality every day, and is recognized by the ISO. **CIRCLE NO. 180**



### MSC Coupling

RENOLD Hi-Tec Couplings have been world leaders in the design and manufacture of flexible couplings for over 40 years, and recently acquired the Holset Engineering Company Limited to add to their expertise. The MSC Coupling has been designed and developed to satisfy the whole range of diesel drive and compressor applications. **CIRCLE NO. 183**





**Don't Leave Port Without It!**

PFA-95 portable foam applicators are made to ensure the safety of your mission every time with quick fire suppression response made operable by one person in with 15 minutes of training. The system includes a foam jacket, self-educting nozzle, carry bag and cover, and mounting bracket, making it easy to locate all items in an emergency.

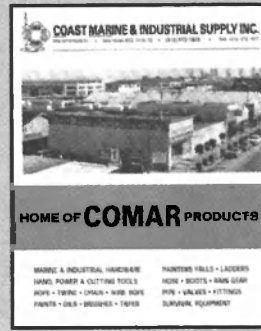
**CIRCLE NO. 184**



**Accu-Miser Griddle**

The Toastmaster Accu-Miser Griddle features accurate temperature control and even heat distribution for more consistent cooking. Toastmaster, a premier manufacturer of electric cooking and warming equipment, offers a wide product line, including toasters, food warmers, rotisseries, convection ovens and ranges.

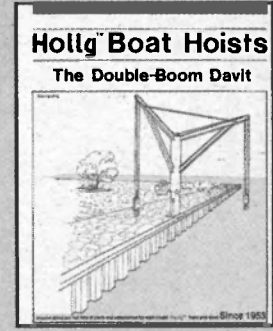
**CIRCLE NO. 185**



**Coast Marine & Industrial Supply**

C M & R Supply, home of COMAR products, located in San Francisco, is a convenient warehouse of the finest marine products available. If they do not stock what you need, they will direct to the source. Products include: hand, power & cutting tools, rope, twine, chain and wire rope, nets, winches, rat guards, ladders, pipes, valves and fittings, and survival equipment.

**CIRCLE NO. 182**



**Double-Boom Davit Design**

Holly Hoist features a unique Double-Boom Davit design for lifting and lowering boats over land water. A built-in swivel mechanism allows 360° rotation. Systems are available to meet U.S.C.G., S.O.L.A.S., A.P.I., Mil-Spec, or O.S.H.A. requirements. Standard models with made-to-order dimensions. Numerous options available.

**CIRCLE NO. 186**

# Don't Be Left Out of the next

## Marine Literature Review...

*Maritime Reporter & Engineering News* will publish the Marine Literature Review six times in 1998, starting with the January 1998 edition.

To find out how your company can be featured in this high-profile section free-of-charge, contact Jennifer Bobbe, Marketing Assistant, at:

*Maritime Reporter & Engineering News*

118 E. 25th St.

New York, NY 10010

tel: +212-477-6700; fax: +212-254-6271

e-mail: bobbe@marinelink.com

### "LIT REVIEW" Publication Guide

The Marine Literature Review is scheduled for publication in the pages of *MR/EN* six times in 1998.

- **January**  
(Deadline: Dec. 8)
- **March**  
(Deadline: Feb. 10)
- **May**  
(Deadline: April 7)
- **August**  
(Deadline: July 7)
- **October**  
(Deadline: Sept. 8)
- **December**  
(Deadline: Nov. 10)

# First LPG FSO Installed Off Nigeria

Long renowned for efficiency and technological advances, Japan has released another technological first with the delivery and installation of what is billed as the world's first purpose-built steel LPG Floating Storage and Offloading Vessel (FSO). Dubbed *Escravos*, the unit started operations in Chevron Nigeria Limited/Nigerian National Petroleum Corp. oil field offshore Nigeria in July.

Built by IHI's Aichi Works, the permanently moored unit uses an external turret mooring system, and is designed to operate 20 years without drydocking.

Rising up to meet a number of technological challenges, the new vessel features the IHI SPB (Self-supporting Prismatic shape IMO type B) LPG containment system.

This containment system was originally developed and proven reliable with LNG carriers built by IHI. In addition, the FSO features redundancy in major machinery and equipment, and a maintainability which was introduced to comply with the requirements of operating for unusually long, uninterrupted operations.

*Escravos* was ordered by Chevron Nigeria Limited in February 1994, and completed in October 1996. It is the core

installation of the Escravos Gas Project now being constructed at the Escravos oil field located about 33 km east offshore Lagos, Nigeria.

The project was started in October 1992, for environmental reasons. At present, the associated gas coming from the subsea oil field of Escravos has been flared and discharged into the atmosphere.

But in recent years, with global environmental protection in high demand, this project was implemented to reduce flaring and recover gas more effectively.

The FSO is a floating structure with the facilities to chill the gas after refining, to store it as LPG of near ambient pressure and low temperature, and to offload it onto an LPG tanker.

While the environmental conditions in *Escravos* are relatively mild, the structural design of the hull and cargo tank are built to a design basis according to environmental conditions of the North Atlantic Ocean.

In addition, the design of the FSO is based on the rules for building and classing steel vessels of the American Bureau of Shipping (ABS).

For the fire protection and fire extinguishing system and helicopter deck, the rules of F-AMC and HELDK-SH of DNV are applied.

## General Arrangements

The *Escravos* hull has a very simplified shape to secure structural accuracy during construction and reduce hull steel weight, as well as to secure rolling motions in waves to satisfy allowable operating conditions of the machinery and equipment, and avoid interference with the mooring chains.

To enhance steady heading during towage and directional stability in order to avoid swinging when permanently moored, a pair of skags is provided at the stern. The FSO is permanently moored at the bow using an external turret mooring system supplied by SOFEC of the U.S. and MODEC of Japan.

The accommodation house is arranged at the bow so as to keep it predominantly upwind of the cargo tanks. The cargo tank portion has a double bottom, and three cargo tanks are arranged. In addition, water ballast tanks are provided in the double bottom spaces. The offloading stations for offloading stored LPG to the tanker are arranged at three places, both sides and port of the stern, allowing the stations to be used selectively, so according to conditions.

Two revolving deck cranes are provided at midship and stern to

*(Continued on bottom of next page)*

# Mobil Helps Japanese Jetfoil Operator Save Oil, Money



Jetfoil *Tsubasa*, one of Sado Kisen's jetfoils servicing the route from Niigata to Sado Island in the Sea of Japan.

To meet its unique lubrication needs, Japanese ferry operator Sado Kisen — owner of five jetfoils — has chosen a synthetic oil formulated not for ships, but for aircraft engines.

For 20 years Sado Kisen has worked exclusively with Mobil to lubricate its jetfoil engines. It uses Mobil Jet Oil II which is used by almost 50 percent of the world's commercial airlines, as well as the U.S. Space Shuttle.

The Mobil product, a synthetic oil designed for thermal and oxidative stability, is designed to the special needs of jetfoil engine systems, proven by the fact that it is used by a large percent of jetfoils in Japan.

Along with Mobil technicians, the lubricant allowed Sado Kisen to reduce the amount of oil it used by half.

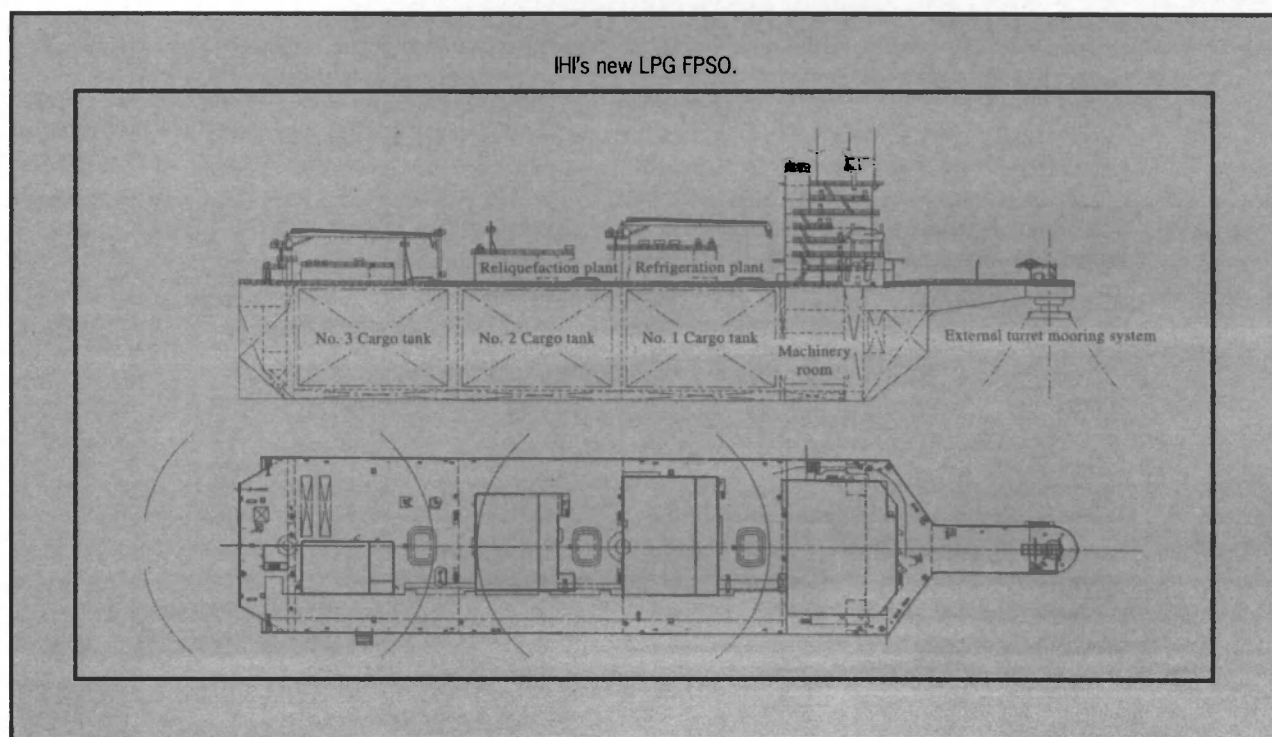
## Lower Costs, Higher Reliability

Sado Kisen has been so reliable as a people mover that it is now the sole supplier of public transportation from the coastal city of Niigata to Sado Island in the Sea of Japan.

"Thanks to Mobil's services, we have never encountered serious engine trouble since we started our jetfoil passenger services in 1977," said **Yoshiaki Kogawara**, senior manager of Sado Kisen's High Speed Craft Department.

Sado Kisen was established in 1913 to provide public transportation to Sado Island, starting operations with two steam ferries in 1914.

In 1977, the company introduced





Japan's first jetfoil service, and today it operates a fleet of five diesel ferries and five jetfoils.

The company's high-speed, reliable service has been so effective that in 1996, its only competition — an airline — stopped flying to Sado Island. That year, Sado Kisen vessels carried 650,000 people, most of them tourists.

Sado Kisen's jetfoils, built by Boeing Corp., are powered by aviation-type Allison gas turbines. The units create a waterjet system

that, according to Boeing, helps to decouple the vessel from surface water, providing a smooth ride even in heavy seas. With foils extended, the vessels cruise at approximately 43 knots.

The propulsion system operates on a waterjet principle, using pumps to discharge water at high

pressures through nozzles directed aft. Each vessel has two pumps which deliver 24,000 gallons per minute. Each pump is powered by a gas turbine system.

According to Sado Kisen engineers, the most critical challenge for a jetfoil engine lubrication sys-

tem comes from accumulated sodium chloride crystallized from seawater, which causes oil-path plugging. Analyzing used oil is the best way to monitor such accumulations, but detecting seawater in a used oil sample in extreme high temperature atmospheres is difficult. To solve the problem, Mobil

(Continued from previous page)

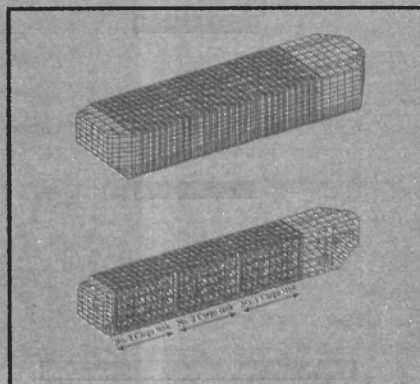
handle the offloading hose.

The cargo tank of the FSO is designed by the Leak Before Failure (LBF) concept in conformity with the self-supporting tank type B in IMO Gas Code. In fatigue design of the type B tank, the builder insisted that the actual structural construction tolerance be better than the tolerance assumed in the design.

Although the hull structure is not subjected to the type B by IMO Gas Code, it was evaluated in order to ensure reliability equivalent to that of the cargo tank.

**Principal Particulars**

Length, o.a. ....	565 ft. (172.1 m)
Length, b.p. ....	466.2 ft. (142.1 m)
Breadth, molded ....	118.1 ft. (36 m)
Design draft, molded ....	77 ft. (23.4 m)
DWT .....	37,354
GT .....	40,681
Cargo tank .....	IHI SPB system (3)
Accommodation .....	50
Diesel generator .....	1,750 kW (4)
LPG refrigeration plant, R22 cascade type	
.....	1,885 kW (2), 920 kW (2)
Reliquification plant, direct type	
.....	1,897 cu. m./hr. (3)
Cargo pump, deep-well type ...	530 cu. m./hr. (6)
Inert gas generator .....	3,600 cu. m./hr.
Loading capacity .....	1,075 cu. m./d (normal)
.....	3,180 cu. m./d (maximum)



Pictured is the FEM analysis model of hull and tank (top external, bottom internal view).

**Announcing  
The Leading Shipbuilding Nation in the World  
The Leading Maritime Exhibition in Asia**

**SEA  
EXHIBITION 98  
JAPAN**

INTERNATIONAL  
MARITIME EXHIBITION  
PACIFICO YOKOHAMA

**11-13 March 1998**

**Third in the series of highly  
successful Sea Japan exhibitions**

Organised by:  
Seatrade  
Miller Freeman Japan Co. Ltd

Sponsored by:  
The Shipbuilders' Association of Japan  
The Japanese Shipowners' Association  
Japanese Marine Equipment Association  
Japan Ship Exporters' Association

To book space or for further information contact

Christopher Eve  
Miller Freeman Japan Co. Ltd  
No. 23, Chuo Building  
4-2 Nihonbashi-Kodenmacho  
Chuo-ku, Tokyo 103, Japan  
Tel: +81 3 3669 5811  
Fax: +81 3 3669 5830  
E-mail: 7165101421@compuserve.com

or The International Sales Agents:  
Seatrade  
Seatrade House  
42 North Station Road  
Colchester CO1 1RB, UK.  
Tel: +44 1206 545121  
Fax: +44 1206 545190  
E-mail: 100125.543@compuserve.com

**Miller Freeman**  
A United News & Media company  
Seatrade events are owned by  
Miller Freeman and organised in  
association with the Seatrade Organisation

## JAPANESE MARITIME REVIEW

introduced a program to analyze sodium chloride instead of seawater itself. It also conducts spectrometric analysis to trace metals in used oil samples.

Together, the two analyses have been used effectively to pinpoint possible seawater contamination

and to determine timing for oil renewal. The ferry company, which carries out engine overhauls and maintenance in its own shop, has also developed an onboard system to measure electrical conductivity of the system oil. This Total Acid Number

(TAN) system is an effective tool for determining appropriate oil drain intervals.

Through the oil monitoring system, Sado Kisen detected a potentially significant problem in the oil cooling system.

The company was able to take

preventive measures, avoiding possible serious damage to the system caused by seawater contamination.

Sado Kisen's maintenance system is so effective that the company provides training to other ferry operators in Japan, but it also relies on Mobil's technical expertise. The company was able to reduce the jetfoils oil filling volume by one-half, lowering the fleet's oil consumption and reducing lubrication costs by \$10,000 annually.

Sado Kisen had been filling the oil to the system's maximum capacity to avoid oil oxidation and viscosity increase.

Based on the recommendation of Mobil engineers familiar with the special properties of Mobil Jet Oil II, the ferry operator reduced the filling volume by one-half and began replacing the oil only when oil sample tests showed unacceptable oil oxidation, an increase in viscosity or contamination by seawater. Use of the Mobil lubricant also resulted in better engine cleanliness, according to Sado Kisen.

### Engineered For Performance

Mobil Jet Oil II is a combination of a high stable synthetic base fluid and a package of unique chemical additives. It was formulated for thermal and oxidative stability and to resist deterioration and deposit formation both in liquid and vapor phases. It also provides excellent resistance to foaming.

The lubricant is recommended for use in most aircraft gas turbine engines, including the Allison Engines used in Sado Kisen's jetfoils. It is just one of a line of Mobil synthetics designed to serve the specialized needs of the transportation industry.

"Shipping companies around the world have come to view us as a partner to work with them to solve complex maintenance problems," said **Roland Frey**, general manager of Mobil Marine Sales and Services. "From operators of small fleets to owners of the largest vessels on Earth, we've demonstrated time and time again that our oil and our service can combine to save our customers money," said **Masao Fukuda**, sales manager of Mobil Sekiyu, who helps to service Sado Kisen's jetfoils.

For more information on Mobil  
Circle 6 on Reader Service Card

### Solid Handmade Anchor Chain Bracelets and Necklaces

<p>900 8 1/2" Sterling Silver \$45</p> <p>10kt Gold \$235</p> <p>14kt Gold \$295</p> <p>18kt Gold \$355</p> <p>1000 8 1/2" Sterling Silver \$60</p> <p>10kt Gold \$350</p> <p>14kt Gold \$490</p> <p>18kt Gold \$595</p> <p>1100 8 1/2" Sterling Silver \$195</p> <p>10 kt Gold \$899</p> <p>14kt Gold \$1225</p> <p>18kt Gold \$1475</p> <p>2100 8 1/2" Sterling Silver \$215</p> <p>10kt Gold \$1205</p> <p>14kt Gold \$1685</p> <p>18kt Gold \$2195</p>	<p>3100 8 1/2" Sterling Silver \$271</p> <p>10kt Gold \$1728</p> <p>14kt Gold \$2448</p> <p>18kt Gold \$2975</p> <p>4100 8 1/2" Sterling Silver \$356</p> <p>10kt Gold \$2641</p> <p>14kt Gold \$3697</p> <p>18kt Gold \$4435</p> <p>3100HC 8 1/2" Sterling Silver \$285</p> <p>10 kt Gold \$1820</p> <p>14kt Gold \$2560</p> <p>18kt Gold \$3325</p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Each Chain is Handmade  
Link by Link.  
Any Length Size Available.  
All Anchor Chains Available  
in Lobster, Shackle & Pin,  
Hidden or Brummel Clasps.

For a Free Catalogue or  
to Place an Order, Please Call  
**Tel: 1-800-368-5595**  
**Fax: 310-791-5102**

Circle 256 on Reader Service Card



## PEOPLE & COMPANY NEWS

### OffshoreINLAND Names New Operations Manager

**Joe Oliver** has been named manager of Operations for OffshoreINLAND. With more than 25 years of experience in the marine hydraulics industry, Mr. **Oliver** will be responsible for expanding the company's marine service business on the East Coast. Formerly with Cunningham Marine, he brings experience in ocean-going steering systems service, as well as other hydraulically operated deck machinery.

### M. Rosenblatt & Son Awarded Certification

The San Francisco, San Diego and Bremerton offices of M. Rosenblatt & Son, Inc. have become certified by ABS Quality Evaluations, Inc. to the International Organization for Standardization (ISO) 9001 standard. The three offices comprise the firm's Western Division and represent the first phase of the company's ongoing effort to achieve certification for the entire company.

### Outboard Marine Appoints Rabe VP

Outboard Marine has announced the appointment of **Paul R. Rabe** to vice president of North American Marketing and Sales for its Marine Power Products Group (MPPG). In his new position, Mr. **Rabe** will be responsible for the marketing and sales of the company's outboard brands, parts and accessories products and the ORM FICHT business development initiative. He will also oversee the coordination of the company's stern drive power systems joint venture with Volvo Penta, the strategic alliance with Suzuki Motor Corp., and new worldwide business development.

### Lowery Brothers Rigging Center Acquired By WWW

Williamsport Wire Rope Works, Inc. (WWW) announced that its subsidiary Williamsport Distribution Company, Inc. has acquired Lowery Brothers Rigging Center, an authorized distributor of WWW's Bethlehem Wire Rope

products.

### Hanft Named Senior VP At Blue Star Lines

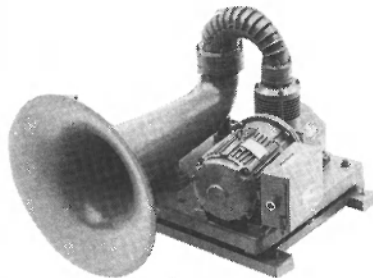
**Richard Hanft** has been named senior vice president, Commercial

for Blue Star Lines (BSL), where he will play a key role in driving the company's sales, marketing, pricing and customer service functions throughout North America.

Prior to assuming his new position, Mr. **Hanft** served as vice president, Western Region, direct-

ing BSL's West Coast Container Service (WCCS). During his tenure in this position he was instrumental in initiating BSL's fixed-day, weekly service on the West Coast — the first in the North America-Australia/New Zealand trade.

## HEAVY-DUTY SIGNALS by **Kahlenberg**



#### Model S-120 Piston Horn

Chosen for use on aircraft carriers as well as commercial vessels over 200 meters in length, the S-120 utilizes an oscillating piston driven by 7-1/2 horsepower 3 phase 220/440 volt electric motor producing 143 dB and a fundamental frequency of 94 Hz in 1/3 octave band at one meter.



Kahlenberg Signals were developed to withstand the punishing use of commercial and military service. Their durability has been demonstrated over decades of service on ocean-going vessels ranging from naval warships to commercial vessels. Military specifications have required extensive testing for many of these whistles and the accessories supplied with them, which have proven the exceptional qualities of Kahlenberg design and manufacturing.

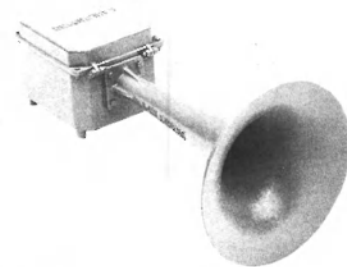
#### OTHER QUALITY KAHLENBERG PRODUCTS AND SERVICES INCLUDE:

FAIRWATERS, PROPELLER REBUILDING, PROPELLERS UP TO 120" DIA, SHAFTS, COUPLINGS, BEARINGS, STUFFING BOXES, AIR COMPRESSORS, SOLENOID VALVES, USCG-ASME AIR RECEIVERS, FOG SIGNAL TIMERS, WHISTLE LIGHTS, AUTOMATIC AND AT WILL CONTROLS.

#### KAHLENBERG BROTHERS COMPANY

P.O. Box 358, 1966 MONROE ST.  
TWO RIVERS, WISC. 54241  
PHONE: (920) 793-4507  
CABLE: KAHLENBERG  
FAX: (920) 793-1346

MARINE PRODUCTS SINCE 1895



#### Model S-203C S-203 CHT

For vessels over 75 meters in length, this design allows both whistles to exceed 143 dB (1/3 octave band). The S-2036 and S-203 CHT are virtually maintenance free. Durability is ensured by the use of bronze and marine aluminum construction materials through out. For the most extreme cold weather operation, Model S-203 CHT (shown) includes a thermostatically controlled, heated enclosure for both the combination manual/electric valve, and the horn sounding body.

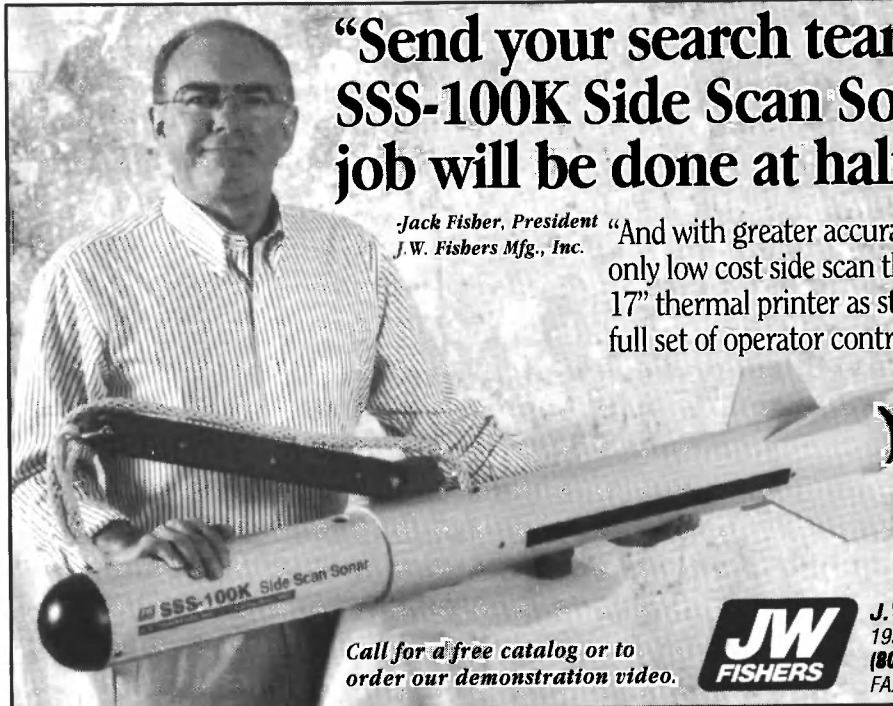
Circle 295 on Reader Service Card

## "Send your search team after our SSS-100K Side Scan Sonar, and your job will be done at half the cost."

*Jack Fisher, President  
J.W. Fishers Mfg., Inc.*

"And with greater accuracy! The SSS-100K is the only low cost side scan that comes with a built-in 17" thermal printer as standard equipment and a full set of operator controls to give you complete control of the unit. It has a range of 1800 feet on each side, and comes complete with fish and tow cable."

Only \$26,995



Call for a free catalog or to  
order our demonstration video.

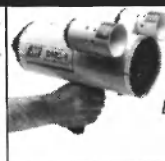


J.W. Fishers Mfg., Inc.  
1953 County St., E. Taunton, MA 02718 USA  
(800)822-4744 Tel. (508)822-7330  
FAX: (508)880-8949 or 822-1931

#### Proton 3 Marine Magnetometer



\$8,495



DHC-1  
Diver-held  
Camera  
\$3,495



Pulse 12  
Boat-towed Metal Detector  
\$5,795



Sea Otter ROV  
\$18,995



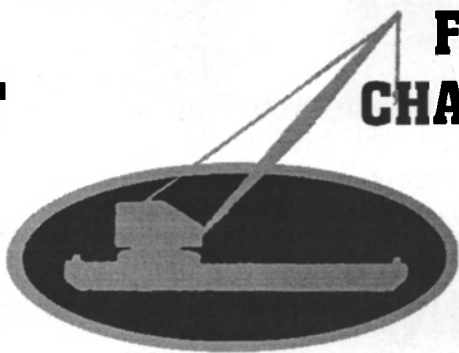
TOV-1 Towed Video  
\$4,195

Circle 244 on Reader Service Card

# STERLING EQUIPMENT

**FOR  
RENT**

**FOR  
CHARTER**



## A DIVISION OF JAY CASHMAN INC.

- DECK BARGES (VARIOUS SIZES)
- CRANE BARGES/DREDGES/DUMP SCOWS
- CRANES (GROVE/P&H/MANITOWIC)
- BUCKETS (VARIOUS TYPES & SIZES)
- VARIOUS HEAVY CONSTRUCTION EQUIP.
- WINCHES/ANCHORS/ANCHOR BALLS/AND
- OTHER MARINE EQUIPMENT!

# 617-561-4469

PLEASE CONTACT BOBBY D. FOR MORE  
INFORMATION ON ADDITIONAL EQUIP.

62 NAY STREET  
EAST BOSTON, MA 02128  
VISIT OUR WEBSITE ADDRESS @  
WWW.STERLINGEQUIPMENT.COM

Circle 276 on Reader Service Card

## PEOPLE & COMPANY NEWS

### Marine Division Reorganization At PRS

Since its temporary suspension by the International Society of Classification Societies (IACS) Council in May, Polski Rejestr Statkow (PRS) has reviewed and reorganized its marine surveying classification, certification and quality-related control and technical service activities, which have been reorganized and restructured into one, single-industry unit — PRS Marine Division. **Dr. Jan Jankowski** has been appointed managing director of the new division and will be responsible for strategic planning and the development and implementation of the new quality-related corrective and preventative control systems now in force. **Kazimierz W. Waberski** has been appointed Survey and Classification director and Capt. **Gabriel Oleszek, Msc**, has been named Quality manager of the Polish Register of Shipping. He will be responsible for ensuring the full implementation, monitoring and control of all quality systems now in operation throughout PRS' offices.

### Kurz Honored With McGuire Safety Award

**Gerhard E. Kurz**, president of Mobil Shipping and Transportation Co., has been awarded the 1997 McGuire Safety Award in recognition of his, and Mobil's, leadership in promoting the safety and protection of the marine environment. Recipients of the award are selected each year by a representative group of members of IACS (International Society of Classification Societies) and are announced during the annual meeting of the Classification Society Consultative Committee (CSCC) at the headquarters of International Registries Inc. (IRI).

Mr. **Kurz** is chairman of the Oil Companies International Marine Forum (OCIMF) and the Marine Preservation Association (MPA). He is a member of the board of directors of the American Bureau of Shipping (ABS) and serves on the boards of the U.S. Coast Guard Foundation, TOVALOP, CRISTAL and Seamen's Church Institute.

### Hagner Named VP At Maritrans

Maritrans Inc. has appointed **Thomas R. Hagner** as vice presi-

dent of Engineering Services. He brings more than 30 years experience to his new post. For the past 15 years, Mr. **Hagner** has been involved in operations engineering and overseas oil tanker construction projects for Arco, Amoco and Saudi Aramco including basic design, contract negotiation, drawing review and guarantee claims adjudication. He also has experience in managing oil spill response departments, establishing damaged hull computation systems and representing companies in regulatory development.

### Globe Wireless Expands Sales Force

Maritime telecommunications service provider Globe Wireless has announced key appointments to its expanding worldwide sales network. **Richard A. Johnson** has been named vice president, Sales, responsible for the company's worldwide sales and customer support activities. **Michael P. McNally** has been appointed vice president, International Sales and will concentrate his initial activities in Europe, Asia, the Middle East and the northeastern U.S. **Walter J. Kane, III**, will be the new director of Sales, Americas, responsible for Canada, Latin America, and the U.S. South Atlantic, Gulf and West Coasts. **Andrew Waters**, the new director of International Sales, will be primarily responsible for creating and managing Globe Wireless's first full branch office in Athens, which will provide sales and service to customers in the Mediterranean, Black Sea and Adriatic regions.

### New Propulsion System Passes Test

A team led by Northrop Grumman Corp. has successfully completed a 500-hour endurance test of the WR-21 Intercooled Recuperated (ICR) advanced-cycle gas turbine ship propulsion engine, which is being developed for future U.S. and allied Navy warships. The ICR gas turbine engine is expected to deliver fuel savings of approximately 27 percent over conventional gas turbine propulsion systems. This will reportedly result in extended ship range for a given fuel capacity, more unrefueled time on-station for a given fuel capacity or reduced fuel storage requirements for a given range.

For more information  
Circle 3 on Reader Service Card

Maritime Reporter/Engineering News



## PEOPLE & COMPANY NEWS

### KOBELCO Marine Engineering Appoints New Agents

NIMAC America, Inc. has been appointed direct sales and marketing agents in the U.S., Canada, Mexico and the Caribbean for Kobelco Compact seals and its spare parts produced by Kobelco Marine Engineering Co. Ltd. Roland Marine Inc. will retire from active sales while continuing to provide services through December 31. MCR Engineering Co. Inc. has been appointed to provide services after December 31 with the factory authorized service engineers transferring from Roland Marine Inc. and qualified MCR engineers.

For more information on NIMAC  
Circle 4 on Reader Service Card

### Engel Holdings Acquires Cabrillo Hoist

Engel Holdings, LLC has acquired Cabrillo Hoist Inc., owner of one of the largest fleet of Alimak Personnel/Material hoists — temporary elevators used during medium and high-rise building construction — in the Western U.S. Cabrillo currently maintains in the Los Angeles, San Francisco, Las Vegas and Seattle areas.

**William Knudsen**, who has been with Cabrillo Hoist for the past eight years, will continue as general manager and will be responsible for the daily operations of the company.

### Celebrity Cruises Receives Mercury

Celebrity Cruises recently received new 77,713-ton, 1,870-passenger *Mercury* at Meyer Werft shipyard. The vessel's arrival boosts the Celebrity fleet to five ships and more than 8,200 lower berths.

### Academy Inducts Hall Of Famers

Former U.S. Maritime Administrator **Warren G. Leback** and **Robert H. Scarborough**, a retired U.S. Coast Guard (USCG) flag officer and past vice commandant of that service, were inducted into the Hall of Distinguished Graduates at the U.S. Merchant Marine Academy in Kings Point,

N.Y. Both men were members of the Academy's Class of 1944 and attained shipmaster's licenses early in their careers.

Mr. **Leback** sailed with Grace Line after graduation and has held positions with Grace, Central Gulf Steamship Co., Sea-Land Service, El Paso LNG and Puerto Rico

Marine Management Co. He served as U.S. Deputy Maritime Administrator from 1981 to 1985 and was appointed to head the agency from 1989 to 1992 when he retired from federal service.

Mr. **Scarborough** sailed in the merchant marine and the U.S. Navy prior to joining the USCG in

1949. He was selected for flag rank in 1973 and served as Commander of the Ninth Coast Guard District. He later served as Chief of Operations and Chief of Staff for the USCG. In 1978, he was named vice commandant of the service with the rank of vice admiral.



# Bring Home "Big J" One Mile at a Time

During the holiday season, the Battleship New Jersey Foundation hopes you'll give the *USS New Jersey* the ultimate gift — a voyage home.

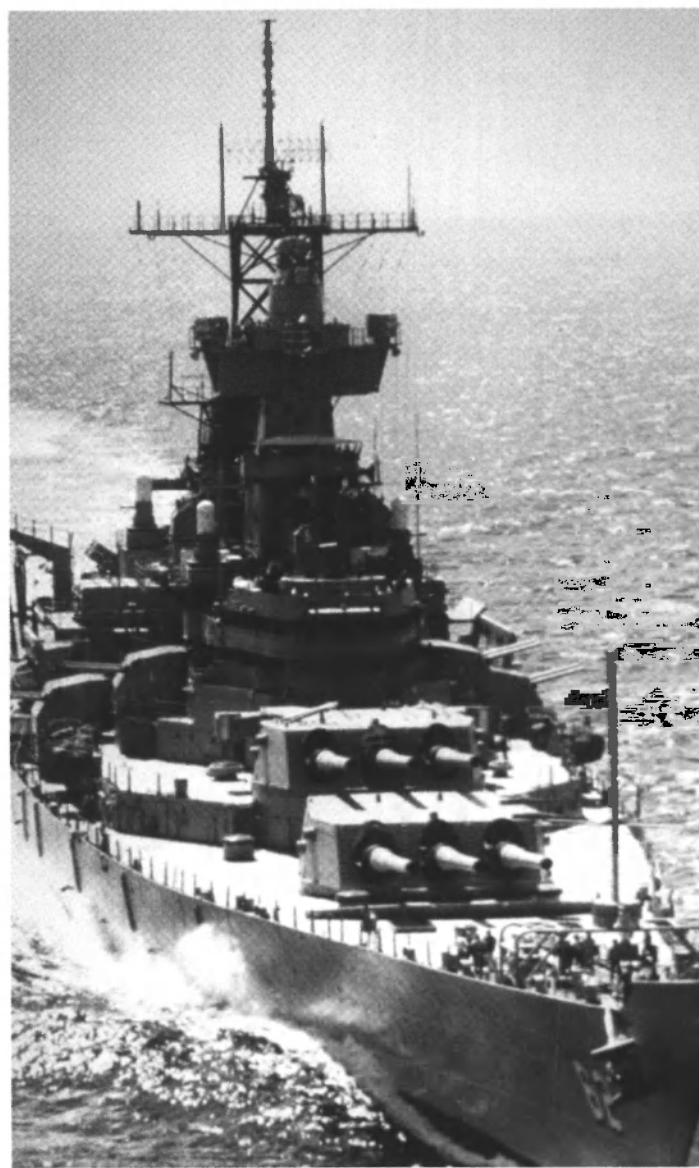
*New Jersey* is awaiting her final mission — serving our nation as a world-class museum and veteran's memorial. Once the Navy releases its most decorated ship, BB-62 will be moved to a place of honor near the Statue of Liberty and Ellis Island.

To help make possible the 7,000-nautical-mile voyage to New Jersey from Bremerton, WA via the Panama Canal, the Battleship New Jersey Foundation is seeking tax-deductible contributions of \$10 a mile to Operation "Big J" — Bring Me Home. Contributors will receive a frame-able certificate and a *New Jersey* gift.

- \$50 - quarterly *BB Bulletin* and membership info
- \$100 - *New Jersey* 8"x10" Kodak color photo
- \$250 - antique gold *New Jersey* collector coin
- \$500 - signed James Flood BB-62 color lithograph
- \$1000 - bronze wall plaque of the *New Jersey* crest
- \$2500 - 12" section of teak deck with authenticity certificate

Pledges may be paid in installments. Deck section will be awarded upon return of BB-62 to New Jersey. Other gifts will be rewarded upon fulfillment of the pledge. Recognition programs for major donors and corporations are available.

Three million dollars already has been contributed or pledged to Operation "Big J" — Bring Me Home from more than 16,000 individual and corporations as well as the State of New Jersey. Additional funding of several million dollars is needed to bring home *New Jersey* and open her to the public. Please answer this call as *New Jersey* always answered our nation's call.



I am/ We are pleased to contribute or pledge \$ \_\_\_\_\_ to sponsor \_\_\_\_\_ miles of the *New Jersey's* final voyage home at \$10/mile.

Name \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

Mail your check and this coupon to "\$10 A Mile," % Battleship New Jersey Foundation, 1715 Highway 35, Middletown, NJ 07748. To contribute via Visa or Mastercard or to learn how you can help Operation "Big J" — Bring Me Home, call the Foundation at (732) 671-6488. Visit us on the Web at [www.battleshipNJ.org](http://www.battleshipNJ.org).



This ad prepared courtesy of Hammond Farrell Inc., New York, NY.

## ZOLLERN ZR-WINCH

### Tradition and Innovation

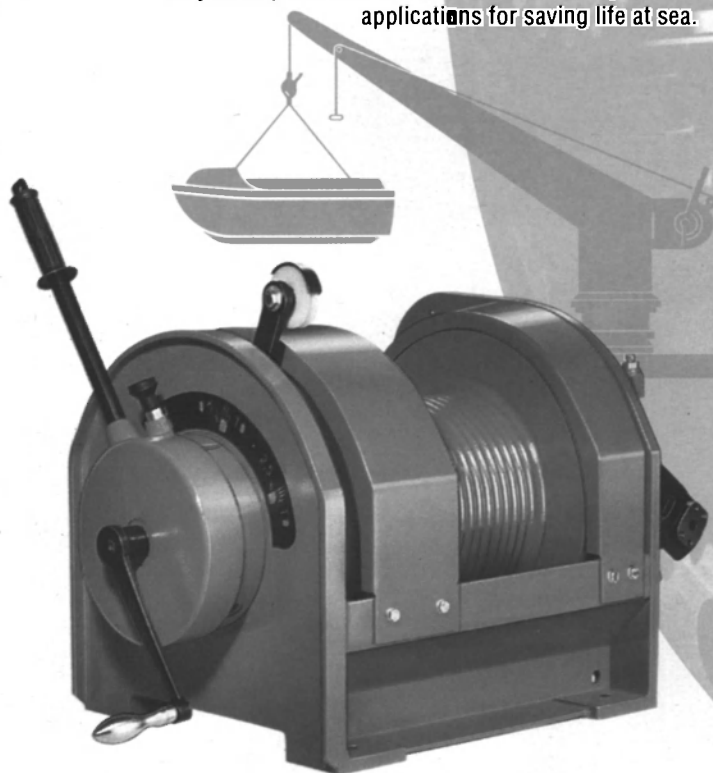
A powerful lifeboat/rescue boat winch for all conditions.

ZOLLERN have developed a winch specifically to meet the new regulations for lifeboat and recovery boat winches, drawn up by „Germanischer Lloyd“ (GL). ZOLLERN now has type approval and certification by GL for use in a variety of applications:

- Service boats
- Lifeboats
- Life rafts
- FreeFall boats
- Multipurpose cranes and davits for both supply and rescue

ZOLLERN's unique free descent brake and novel centrifugal speed control for safe lowering in emergency situations is setting a standard for rescue and launching applications.

So you may use the ZOLLERN ZR WINCH in your applications for saving life at sea.



ZOLLERN planetary gear units are used in hoist winches with single line capacities to 125 tons in: mobile crans, ship cranes and offshore cranes as well as many other types of materials handling equipment.

So you can see that ZOLLERN is always the right choice.

# ZOLLERN

Werk Herberlingen  
ZOLLERN Vertriebs-GmbH+Co.  
Antriebstechnik  
Heustraße 1  
D-88518 Herberlingen  
Phone +49 7586-959-547.  
Fax +49 7586-959-575

AT 6.08.16

Circle 29 on Reader Service Card

## PEOPLE & COMPANY NEWS

### Hempel Coatings Achieves Quality Management System Approval

Houston-based Hempel Coatings, Inc. has successfully passed LRQA's ISO 9001 audit and received a Certificate of Approval. The company's Quality Management System is applicable to the design, manufacture and technical service of marine and industrial coatings.

### Hornblower Makes Personnel Changes

**Tomas P. Johnson** has joined Hornblower's Marine Services as director of Business Development based in Boston. **Gary Seabrook** has transferred from sister company Hornblower Dining Yachts to join Hornblower Marine Services as director of Operations, and is currently assigned as general manager of the Jacksonville operation for the St. John's River Ferry Service. In addition, Capt. **David Clark** has been promoted to general manager of New London Operations, where he will oversee the operation of the new 48 knot fast passenger ferry *Sassacus*, operating from New London, Conn. to Manhattan.

### Siemens Appoints Head Of New Division

**Ulrich Gerdemann** has been appointed head of the newly formed Infrastructure, Marine Engineering, Testing Division (ATD IS) of the Industrial Projects and Technical Services Group (ATD) of Siemens AG. Mr. **Gerdemann** began at Siemens in 1970 as commissioning engineer for rolling mills. The range of products and services of ATD IS extends from marine electrical equipment and electric filters to turnkey diesel power plants, testing facilities, research laboratories and airport systems.

### Western Shiprepair Yard Appoints U.S. Agent

Geometric Marine Services has recently been appointed the exclusive U.S. agent for Western Shiprepair Yard in Lithuania. Offering three floating docks with lifting capacity up to 27,000 tons and extensive fabrication facilities, the shipyard employs more than 1,600 workers.

### Boatrac's Expands Executive Team

Boatrac's, Inc. has announced the appointment of **Daniel W. Negroni** to the newly created position of vice president, Business Development.

Mr. **Negroni** joins the company after two years with Seltzer Caplan Wilkins & McMahon where he focused on business transactional law within the high technology industry. From 1993 to 1995, he held the position of vice president, Sales and Marketing at Dearan Imports, where he was responsible for increasing sales.

### Femenia To Serve As Sname President-Elect

Professor **Jose Femenia** has been elected to serve as the 1998 president-elect for The Society of Naval Architects and Marine Engineers (SNAME). Professor **Femenia** was elected to train under current SNAME President **David A. O'Neil** and sit on the SNAME Executive Committee and council during 1998; he will begin his two-year term as president in January of 1999.

Professor **Femenia** spent 31 years as a teacher and department head of marine engineering at SUNY Maritime College. He has been the Engineering Department Head at the U.S. Merchant Marine Academy since 1995.

### Chand Names President

**Chris Bollinger** has been named president of Chand Corp., a marine industry material wholesaler and integrated logistical support services provider and one of Bollinger Shipyards, Inc.'s (BSI) eight subsidiaries. Mr. **Bollinger** is a vice president of BSI and a member of its board of directors. He will retain his current position as program manager for the Army Barge Derrick Program for the next few months.

### New Location For MAR

MAR, Inc. has moved its offices to Lauderdale Marine Center, 2001 SW 20th Street, Ft. Lauderdale, FL 33315. The company operates research vessels and designs all types of modifications for yachts, commercial and government vessels. MAR also designs new construction workboats and yachts for various domestic and international clients.



**Oronite Names Pavlica Account Manager, Welcomes Gallaher**



Sally Pavlica

The Oronite Additives Division of Chevron Chemical Company has announced that **Sally Pavlica** has been named senior account manager. In her new position, Ms. Pavlica will be responsible for

Texaco and Ultramar Diamond Shamrock accounts and will serve as multi-regional account manager for Texaco. Ms. **Pavlica** joined Chevron in August 1996, as senior product specialist in the Business Management Group.

Oronite has also announced that **Linda Gallaher** has joined the company as Fuels Product Specialist. She will be responsible for market and technical support to gasoline and diesel additives customers.

**MAN B&W Opens Dalian Office**

MAN B&W Diesel recently opened its Dalian office in the People's Republic of China. **Virginia Wang** has been appointed manager of the office, which will promote sales in the Chinese market.

**Farr Forms Transport And Engine Products Division**

Farr Company recently announced the formation of a Transportation and Engine Products Division to be headed by **G. Samuel Benson** as business unit manager. Located in Memphis, Tenn., the new operating unit, which is both a consolidation and an expansion of the company's previous engine and railroad products groups, was established to serve Farr's growing base in the marine, railroad, mass transit, truck and heavy equipment markets. Production will be handled by Farr's manufacturing plants in Jonesboro, Ark. and Holly Springs, Miss. The division will offer a range of products for marine diesel engines of all sizes from 75 to 6,000 hp. Products include single and multi-stage high efficiency air filters and air cleaners, inlet air moisture separators, liquid filter systems for fuel

and lube oil applications, exhaust system components and other performance and safety products.

**Hempel Coatings Receives Approval**

Hempel Coatings, Inc. has suc-

cessfully passed Lloyd's Register Quality Assurance's ISO 9001 audit and received its Certificate of Approval.

The company's Quality Management System is applicable to the design, manufacture and technical service of marine and industrial coatings.

**Arsenale Di Venezia Hires New Management**

Arsenale Di Venezia recently announced the appointment of Giancarlo Zacchello as president and Davino Poli as managing director.

**We'd like to introduce your company to the entire marine industry!**



**We're Maritime Reporter...**

and since our foundation (over half a century ago) we've grown to become the world's largest information provider to the marine industry. Today more marine professionals read **Maritime Reporter** than any other marine publication...thousands more...And when they're not reading **Maritime Reporter**, they're probably reading one of our other publications -- **Marine News** or **Maritime Week**. Publishing the marine industry's THREE leading publications gives our readers (and advertisers) the advantage of the combined resources of the largest information network in the history of marine publishing. More information...more often...means more readers.

**MARITIME REPORTER**  
AND  
ENGINEERING NEWS

118 E 25th Street  
New York, NY  
10010

tel: 212-477-6700  
fax: 212-254-6271

e-mail: info@  
marinelink.com

## PRODUCTS SHOWCASE

### Furuno Releases Improved Color Sounder

Furuno has updated and improved its commercial-grade FCV292 10-in. color video sounder fish-finding unit.



Furuno's improved Color Video Sounder.

The dual-frequency FCV292 now offers selectable output power of one, two or three kW. Operating frequency pairs can be selected

from 28, 50, 88 or 200 kHz.

The improved color sounder features display range changes including a new maximum range scale and shift setting of 10,500 ft., a maximum fixed range scale of zero to 1,500 ft. and a new maximum shift or display start depth from one to 9,000 ft.

The FCV292 also features a total of nine color arrangements for a more accurate depiction of fish and underwater structures.

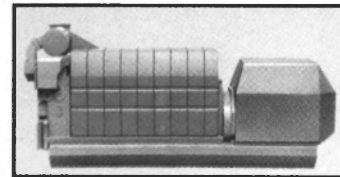
A new clutter curve displays different echo strengths or colors with greater clarity and improvement to the sensitivity adjustment range, allowing for more exacting system control.

Its display modes include Marker Zoom, Bottom Lock, Bottom Discrimination, Bottom Zoom, NAV data and A-scope.

For more information on Furuno  
Circle 26 on Reader Service Card

### MAN B&W Offers GenSet And Propulsion Engine

A new generation of HFO engines is now being offered by MAN B&W with the addition of the L27/38, an innovative, compact HFO engine available in a propulsion version from Alpha Diesel and a GenSet version from Holeby Diesel.



The new MAN B&W HFO engine, L27/38, comes in genset and propulsion versions.

The L27/38 is touted as smaller and lighter than other long-stroke engines in its power class and can be installed in restricted engine room areas. It has high output and low lube and fuel oil consumption, and is designed for 20,000 to 25,000 service hours between overhauls.

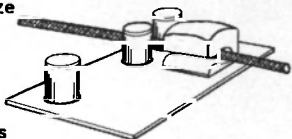
Each complete cylinder assembly can be removed as a unit for maintenance or replacement without requiring a large overhaul height. The L27/38 meets future IMO NOx emission limits. All support functions including oil and water pumps, coolers, filters and safety and regulator valves are housed in a single front-end box for easy access and maintenance.

For more information on MAN B&W  
Circle 34 on Reader Service Card

### Hydraulic Tow Pin Units

#### Features:

- ☑ Hard wearing manganese steel vertical rollers rotating on bronze bushings
- ☑ Optional tow line hold-down and stern rollers available
- ☑ 8" and 12" diameter pins now available with 12" or 16" vertical rise
- ☑ 3,4 or 5 pin models and compact unit available



Call or Fax for our free brochure

### WESTERN MACHINE WORKS

1870 Harbour Road - North Vancouver, BC - Canada - V7H 1A1  
Phone: (604) 929-7901 Fax: (604) 929-7951

Circle 286 on Reader Service Card

### There's Only One Choice in the Northeast



#### For Ship Design, Construction, Conversion & Repairs

The Equipment & Expertise You Need:

- 2200 Ton Marine Railway
- 2500 Ton Floating Drydock
- 2000 Feet Deepwater Berthing
- On-Site Welding, Carpentry, Electrical, Pipe Fitting & HVAC Shops
- Certified for U.S. Government Contracts

#### Let Us Bid On Your Next Project

1 Washington Street • Newport, Rhode Island 02840-0943

Tel (401) 846-6000 • Fax (401) 849-7964

Visit Our Web Site: [americanshipyard.com](http://americanshipyard.com)

Circle 205 on Reader Service Card

### A Marine Engineering Company That Does More Than Design

Our technical staff has an unsurpassed background, not only in engineering design, but also in shipyard work and ship and power plant operations. Our services and product offerings include:

#### ◆ The MARICAM 2 ◆

The MARICAM 2 (shown at left) is a revolutionary, patented new system that permits the safe yet thorough inspection of under deck structures of tankers and chemical carriers *without entering the tank.*

Specialty Equipment for the Marine and Power Plant Industries

Expertise in Structural, Storage, Piping, Electrical, HVAC, and Machinery Systems

Specialty Chemical and Treatment Systems

Compliance, Effectiveness, and Damage Surveys

Project Management



### Northeast Technical Services Co., Inc.

P.O. Box 38189, Olmsted Falls, OH 44138  
Phone: (440) 236-9191 • Fax: (440) 236-9188



78

Circle 303 on Reader Service Card



Specializing in state of the art marine controls

Engine room automation - The TMS System 2000  
Tank Level Gauging systems - The LevelCom 100  
Temperature & Bearing Monitor Panels  
Engineers Alarm Panels, Digital Draft Gauges

For information on the TMS System 2000, LevelCom 100 Liquid Level Computer or any of the other fine TMS products and services please call or write us at:

6040 N Cutter Circle, Suite 302, Portland, OR 97217  
Phone: 503-285-8947 Fax: 503-285-1379  
Or visit our home page at <http://www.tms-usa.com>

Circle 279 on Reader Service Card



P.O. Box 296  
Enterprise Street  
E. Boothbay, ME 04544  
(207) 633-6517



Washburn & Doughty builds over 50% of its boats for repeat customers. We enjoy this success because from tugs to ferries, Washburn & Doughty always builds to the highest standards in the proud Marine tradition.

Circle 291 on Reader Service Card

### Cygnus Ultrasonic Equipment Available From Underwater Technology

Underwater Technology recently signed an exclusive agreement to represent Cygnus Instruments, Inc. in the Texas Gulf area to the marine, shipping and offshore service industries.

The marketing measures will be directed at vessel operators and surveyors who measure metal thicknesses in ships, offshore drilling rigs and offshore structures.

Cygnus measuring meters implement a multi-echo method to detect metal thickness and can measure through paint. The meters can be used underwater to depths of more than 1,000 ft. and are available with data loggers which will log eight hours of readings before changing batteries.

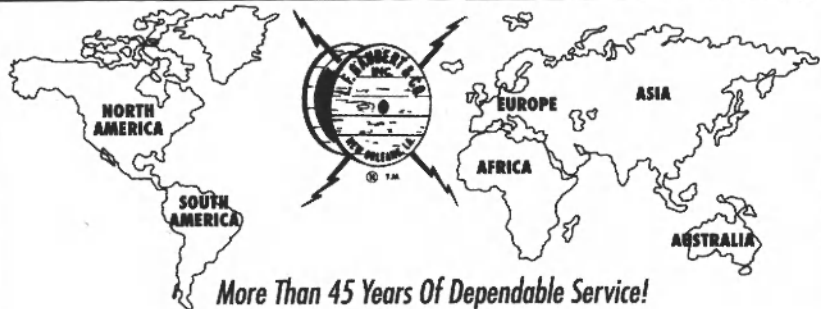


Cygnus's hand-held multiple echo ultrasonic thickness gauge.

For more information on Cygnus  
Circle 38 on Reader Service Card



# L.F. GAUBERT & CO. INC.



More Than 45 Years Of Dependable Service!

P.O. BOX 50500 • NEW ORLEANS, LA • 70150  
 Phone: (504)822-7272 Fax: (504)821-9309  
 1-800-831-7534 Call Us For Your FREE Newsletter

**DISTRIBUTE & MANUFACTURE  
 ELECTRICAL SHIPBOARD CABLES**

**NAVY-COMMERCIAL-CONTROL  
 ELECTRONIC-PORTABLE  
 COMMUNICATION-SIGNAL-MINING  
 WELDING-COAXIAL & POWER  
 CABLES-FABRICATE ELECTRICAL CABLES  
 TO YOUR SPECIFICATIONS**

**Quality Is Our MOST Important Feature!**

Circle 245 on Reader Service Card

## We specialize in high-performance ropes

Puget Sound Rope's focus is to specifically design, develop and manufacture ropes for high-performance applications...like yours. Our state of the art facilities manufacture braided ropes with proven success as face wires, towing hawsers and mooring lines.



Our strongest rope, **Plasma™12-Strand**, is twice as strong as Kevlar® rope and 50% stronger than conventional Spectra® fiber rope. Our extensive quality assurance/testing program has shown that Plasma ropes retain all of the properties of Spectra, including light weight, toughness, and near-zero stretch – yet are 20% lower in cost. Size-for-size Plasma ropes are also stronger than steel cable, at 1/10th the weight!

When it comes to critical applications, customers around the world depend upon our expertise in rope performance and safety. Contact us today for more information on how we may be of help to you.



tel: 360-293-8488 fax: 360-293-8480  
 email: sales@psrope.com



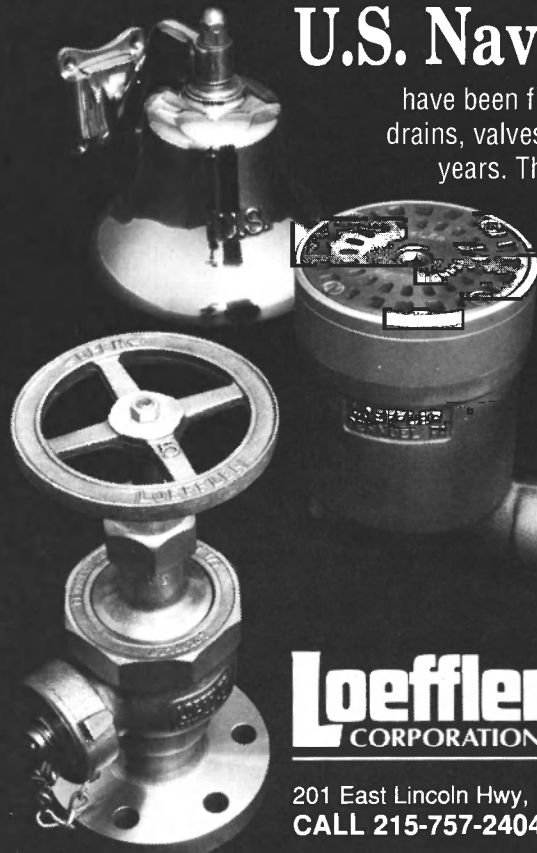
Spectra® is a registered trademark of AlliedSignal Inc.  
 Kevlar® is a registered trademark of E.I. DuPont

Visit our web site: [www.psrope.com](http://www.psrope.com)

Circle 262 on Reader Service Card

## U.S. Navy Ships...

have been fitted with Loeffler deck drains, valves, and bells for over 40 years. They are precision made to the latest applicable NAVSEA, BUSHIPS, or MIL standard. If you are building for the U.S. Navy or Coastguard, you need Loeffler.



CALL TOLL FREE  
 1-800-752-7595

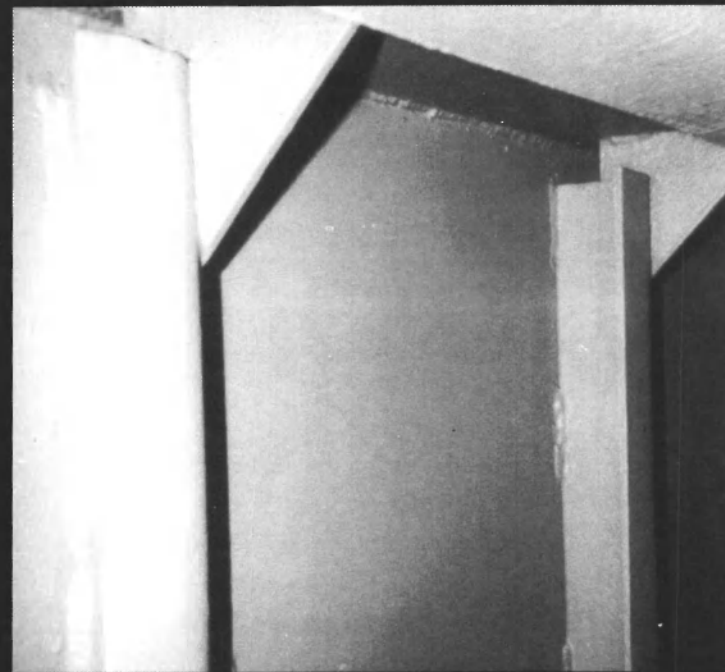
**Loeffler™**  
 CORPORATION


201 East Lincoln Hwy, Penndel, PA 19047-4097  
 CALL 215-757-2404 • FAX 215-757-7105

Circle 249 on Reader Service Card

# EASY KOTE

A NEW MULTIPURPOSE SURFACE TOLERANT PAINT



- POTABLE WATER – Classified by UL under ANSI/NSF standard 61. 
- SALT WATER BALLAST – Type approval from ABS, DNV, BV, others pending.
- PAINT PRIMER – Top coat with acrylics.

**EASY KOTE** is a water based modified asphaltic coating that dries to a semihard finish. It is safe to torch, heat resistant, and inexpensive to use.

**EASY KOTE** has gone through a comprehensive testing by Marine Materials Technology Centre for Applied Materials Research in Norway which resulted in a class rating of C-2.

DIVISION  
**ROYAL CHEMICAL CORP.**  
 P. O. BOX 342 • GRETNA, LA. 70054  
 USA



**OVERSEAS  
 DISTRIBUTORS  
 NEEDED**

**504/392-8811**  
 Fax 504/392-2173

Circle 263 on Reader Service Card

## PRODUCTS SHOWCASE

### Petro-Marine Offers Portable Temperature Instrument

The Mini AvTemp is a state-of-the-art, portable electronic temperature instrument available from Petro-Marine Co., Inc.

Mini AvTemp reportedly reduces the time needed to measure the temperature of a petroleum tank while increasing accuracy.

Approved for use in hazardous locations, the Mini AvTemp's chemical resistant probe/cable is mounted on a reel, and takes up to 20 temperatures to give an automatic

average.

Powered by batteries, the instrument has memory and a temperature stabilization feature which reportedly prevent inaccurate temperature readings.

For more information on Petro-Marine  
Circle 19 on Reader Service Card

### Raytheon Anschutz Introduces Pathfinder/ST MK2

Raytheon Anschutz offers the new Pathfinder/ST MK2, a new generation of color radars featuring 21 and 29-in. displays which can be delivered with high-resolution screens and permit a radar/ECDIS-overlay.

Antennas with increased rate-of-turn are available for high-speed vessels.

With an additional autopilot operator unit placed with the radar equipment, the ship can be controlled directly from the radar. With a deck stand, table-top versions can be adjusted to ergonomic requirements.

For more information on  
Raytheon Anschutz  
Circle 33 on Reader Service Card

### OMAT Introduces OptiMil



OMAT Control Technologies introduces OptiMil, a milling/drilling optimization device designed to enhance productivity and tool utilization in milling and drilling processes of computer numerical control (CNC) machines and machining centers. The device, which can be connected to almost any CNC machine, constantly monitors metal cutting conditions and adjusts the feed rate in real-time to the highest possible level.

The real-time control allows for the automatic optimization of the machining process.

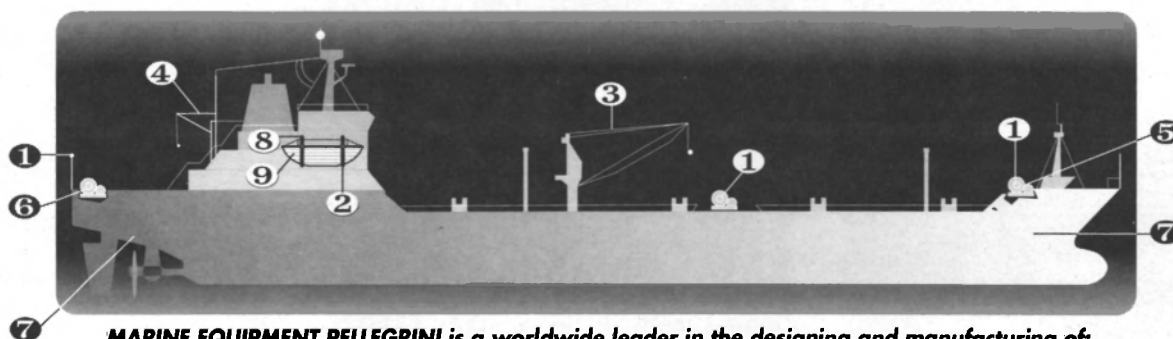
OptiMil increases tool utilization through tool protection, tool wear monitoring, tool breakage detection and tool life extension.

During strong resistance, OptiMil reduces the feed rate and, if necessary, stops the machine to avoid damage to tools, workpiece or machine. When there is less resistance, the device increases the feed rate.

For more information on OMAT  
Circle 32 on Reader Service Card



### HOIST with safety and technology



MARINE EQUIPMENT PELLEGRINI is a worldwide leader in the designing and manufacturing of:

- |                                            |                                       |                                            |
|--------------------------------------------|---------------------------------------|--------------------------------------------|
| ① Commercial and Military Deck Machineries | ④ Hoists                              | ⑤ Lifeboat                                 |
| ② Davits and Free Fall Launch System       | ⑤ Anchor Windlass, Capstan, Fairleads | ⑥ Rescueboat                               |
| ③ Specialized Crane & Handling System      | ⑥ Constant Tension Mooring Winches    | ⑩ Workboat                                 |
|                                            | ⑦ Hydraulic Power Units               | ⑪ ILS, Training, Worldwide Product Support |

OUR PRODUCTS ALWAYS MEET YOUR TECHNICAL REQUIREMENTS. FOR DETAILED INFORMATION PLEASE contact MARINE EQUIPMENT PELLEGRINI:

HEADQUARTER: Via E. Torricelli, 2/A - 37135 Verona-Italy  
phone: 39-45-508877 fax: 39-45-508855

U.S.A. AGENT: International Marketing & Business, Inc.  
5108 52nd Street, N.W. - Washington, D.C. 20016  
phone: (202)363 - 3076 fax: (202)363 - 2724

AUSTRALIA SUBSIDIARY:  
Baker & Provan, St. Marys P.O. Box 271, Nsw - Australia  
phone: 0061-2-6233244 fax 0061-2-6734025

Circle 258 on Reader Service Card

## Heavy Duty Hand Winches

Non-Recoil  
Automatic Brakes

- Six different series - A hand winch for any application.
- Line pulls from 150 lbs. to 11,000 lbs.
- Fast Delivery on over 27 models



WG Series Heavy Duty



CW Series Compact Heavy Duty



WSG Series Heavy Duty

Setting The Standard in Heavy Duty Winching!

### JeamarWinches

1051 Clinton Street, Buffalo, New York, U.S.A. 14206  
Tel: (716) 854-3211 • Fax: (716) 854-4141  
Visit our web site at: [www.jeamar.com](http://www.jeamar.com)

Circle 292 on Reader Service Card

## ANCHORS CHAINS

1/2" up to 4 1/2", U2/U3  
from STOCK!

G. J. Wortelboer jr. B.V.  
P.O. Box 5003  
3008 AA Rotterdam,  
Nederland  
Tel.: 31 10 4292222  
Fax.: 31 10 4296459  
Telex: 28393 GJWNL

## WORTELBOER



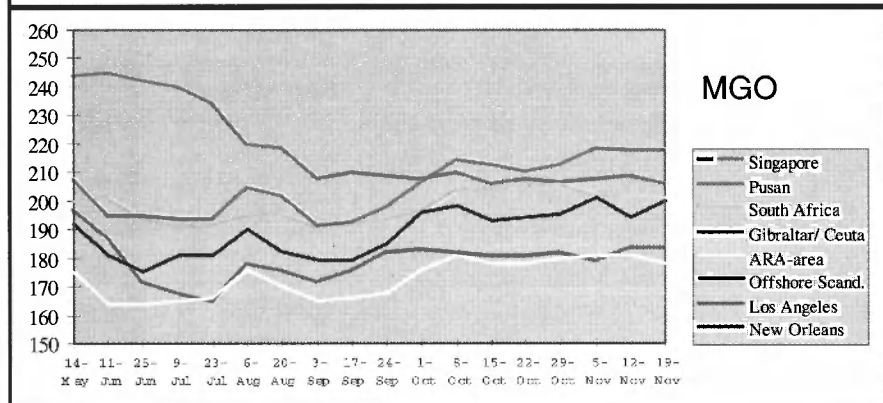
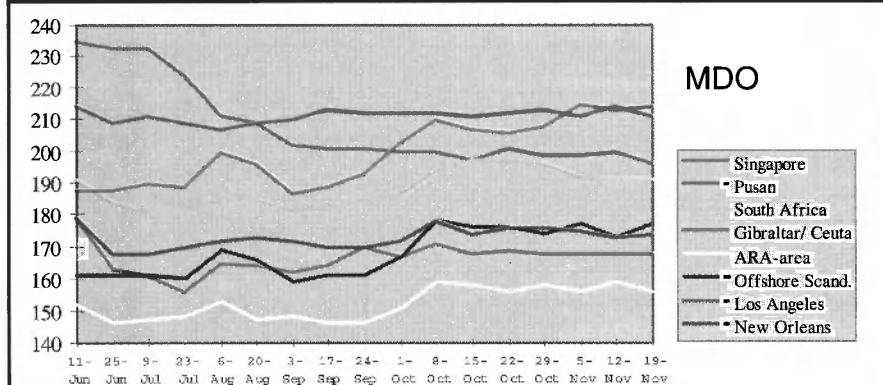
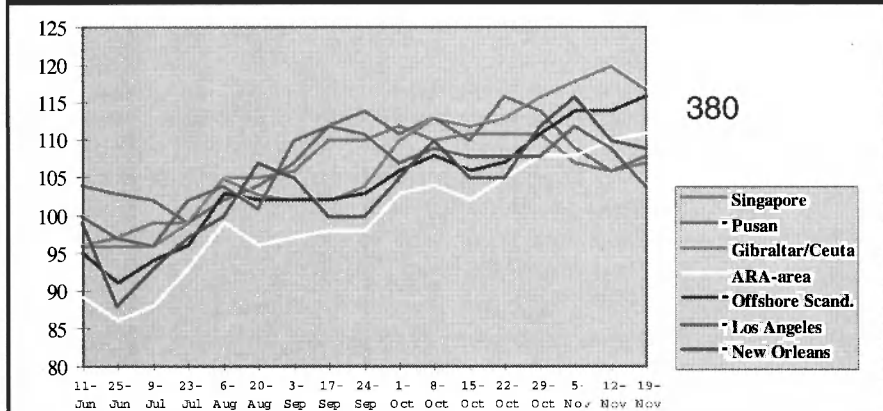
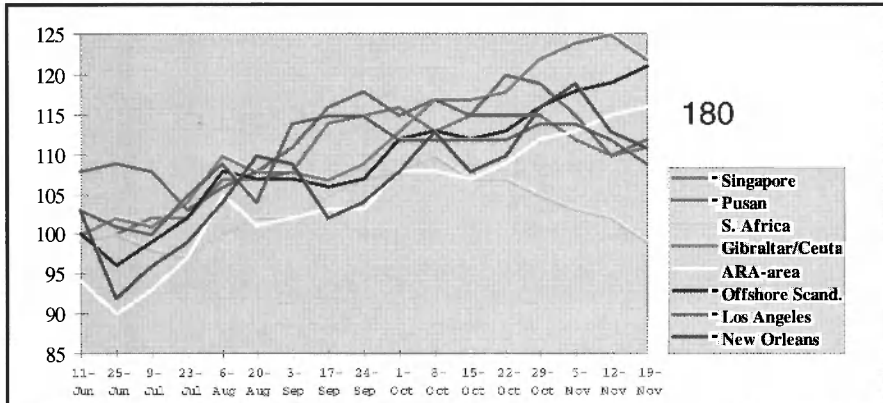
Circle 236 on Reader Service Card



# Bunker Fuel Monitor



A/S DAN-BUNKERING Ltd.



\* ARA-area = Amsterdam/Rotterdam/Antwerp

All prices are delivered FOB (Free On Board) in U.S.\$

MGO = Marine Gas Oil - MDO = Marine Diesel Oil

Above prices are indications only. For firm offer, please call Carsten Ladekjaer at: +45 64 41 54 01; or e-mail: middelfart@dan-bunkering.dk.

A/S DAN-BUNKERING Ltd. is one of the leading bunker traders. From their offices in Middelfart and Copenhagen they arrange bunkers at competitive prices all over the world.

MIDDELFAKT Tel +45 64 41 54 01 Fax +45 64 41 53 01 Tlx 58253 (BUNKER DK) E-mail middelfart@dan-bunkering.dk	COPENHAGEN Tel +45 33 93 54 01 Fax +45 33 93 54 11 Tlx (DABUNK DK) E-mail copenhagen@dan-bunkering.dk
-------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------

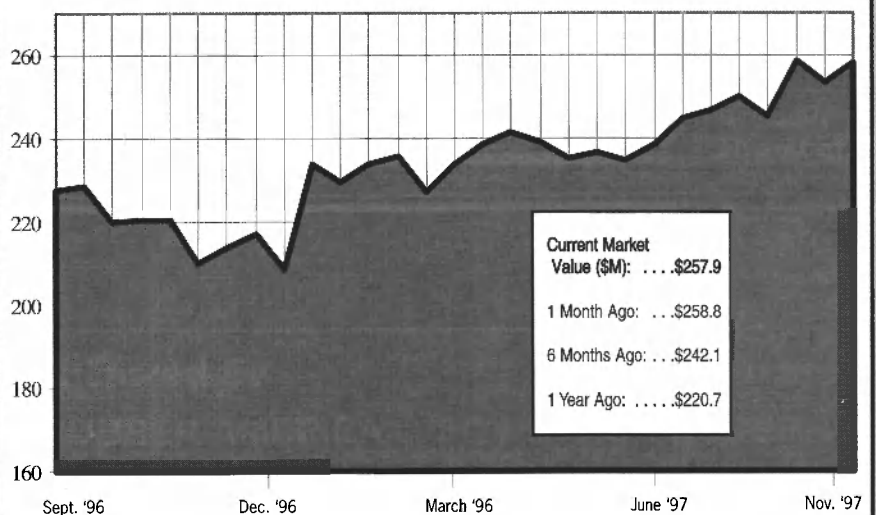
<http://www.dan-bunkering.dk>

# Recent Ship Sales

This report, compiled by Shipping Intelligence, Inc., a New York maritime consulting firm, tracks sale prices of secondhand bulk carriers and tankers. For more information, call tel: (212) 997-0966.

Date Reported	Vessel Name	Vessel Type	DWT	Year Built	Sale Price (M)
10/10/97	Meridian Venus	Bulker	17,677	77	\$1.9
10/24/97	Samsun Light	Bulker	22,225	80	\$4.3
10/24/97	Anangel Wisdom	Bulker	22,363	74	\$1.6
10/24/97	Halla Pioneer	Bulker	22,457	83	\$6.7
10/24/97	Pistis	Bulker	22,627	73	\$1.5
10/24/97	Morning Orchid	Bulker	25,996	85	\$8.8
10/3/97	Nomadic Querida	Bulker	26,983	77	\$4.5
10/17/97	Sanko Splendour	Bulker	27,652	85	\$9.9
10/3/97	Pylos	Bulker	28,362	77	\$3.2
10/24/97	Andhika Madonna	Bulker	33,346	85	\$10.2
10/3/97	Liberty Victory	Bulker	37,052	84	\$10.4
10/17/97	Valetta	Bulker	37,648	80	\$4.1
10/10/97	Diman	Bulker	41,025	76	\$3.8
10/3/97	Massy Phoenix	Bulker	41,254	85	\$13
10/10/97	Oriental Viking	Bulker	42,842	85	\$12.6
10/31/97	Ocean Prize	Bulker	43,474	85	\$13
10/3/97	Aleksey Danchenko	Bulker	52,450	85	\$7.8
10/3/97	Geroi Stalingrada	Bulker	52,450	83	\$6.8
10/31/97	Giuseppe Lembo	Bulker	54,223	75	\$3.8
10/17/97	California	Bulker	60,158	82	\$11
10/17/97	Merchant Pilot	Bulker	62,250	80	\$8.5
10/17/97	Merchant Prelude	Bulker	62,267	80	\$8.5
10/17/97	Maersk Sembawang	Bulker	63,695	84	\$14
10/24/97	Mariann	Bulker	64,064	77	\$5.3
10/24/97	Kvaerner	Bulker	65,085	73	\$2.8
10/17/97	Samsun Spirit	Bulker	67,368	83	\$11.8
10/17/97	Agia Dynamis	Bulker	69,107	77	\$6.2
10/17/97	Merchant Pride	Bulker	69,458	90	\$22
10/10/97	Yugala	Bulker	69,497	86	\$16.3
10/17/97	Merchant Pioneer	Bulker	69,763	88	\$18.5
10/31/97	Atlanticway	Bulker	72,100	78	\$3.8
10/10/97	Theomitor	Bulker	77,300	82	\$9.4
10/17/97	Viva	Bulker	110,439	75	\$5
10/31/97	Hydro	Tanker	11,520	80	\$9.2
10/10/97	Kapitan Nagonyuk	Tanker	17,639	84	\$6.6

# Index Fleet Valuation



The Index Fleet Valuation is representative of the resale market for Bulk Carriers and Tankers as a whole. The Index Fleet consists of 15 vessels, nine Bulk Carriers and six Tankers, of various sizes and ages. Fluctuations in the value of the world fleet are mirrored in the Index Fleet. This report, compiled by Shipping Intelligence, Inc., a New York maritime consulting firm, tracks sale prices of secondhand bulk carriers and tankers. For more information, call tel: (212) 997-0966.

## Ferliship's New Contracts

Orders are listed alphabetically, by vessel type. Publisher is not responsible for errors or omissions. For additional information on this, or other ship market information, contact: Ferliship, Paseo De San Francisco De Sales, 8, 28003 Madrid, Spain, tel: +341 441 4138; fax: +341 441 4138.

OWNER OPERATOR	SHIPYARD	TYPE	No.	DWT	DELIV	OWNER OPERATOR	SHIPYARD	TYPE	No.	DWT	DELIV
SINGMARINE DOCKYARD	SINGMARINE DOCKYARD	AHTS	1	3,700	8/99	KRUPP FORDERTECHNIK + HYUNDAI	KRUPP FORDERTECHNIK + HYUNDAI	DREDGER	1	—	98
HYUNDAI	HYUNDAI	BULK CARRIER	1	172,000	99	HARLAND & WOLFF	HARLAND & WOLFF	DRILLSHIP	1	—	9/99
TSUNEISHI	TSUNEISHI	BULK CARRIER	2	45,000	99/00	SAMSUNG	SAMSUNG	DRILLSHIP	1	—	99
SHANGAI SHIPYARD	SHANGAI SHIPYARD	BULK CARRIER	1	45,000	99	FBM MARINE	FBM MARINE	FAST FERRY	1	—	6/98
TSUNEISHI	TSUNEISHI	BULK CARRIER	1	45,000	98	LARSNES VERKSTED	LARSNES VERKSTED	FISHING	1	—	98
SUMITOMO	SUMITOMO	BULK CARRIER	1	—	98	SIMEX FLEKKEFJORD	SIMEX FLEKKEFJORD	FISHING	1	—	98
HYUNDAI	HYUNDAI	BULK CARRIER	1	172,000	00	FACTORIAS VULCANO	FACTORIAS VULCANO	FISHING	1	—	99
HITACHI ZOSEN	HITACHI ZOSEN	BULK CARRIER	2	75,000	00	DAEWOO	DAEWOO	FLOATING STORAGE OFFTAKE	1	—	99
HALLA	HALLA	BULK CARRIER	1	169,150	99	DAEWOO	DAEWOO	FRIGATE	1	—	—
ONOMICHI	ONOMICHI	BULK CARRIER	1	23,200	10/98	KVAERNER WARNOW WERFT	KVAERNER WARNOW WERFT	HOTEL SHIP	1	—	12/97
SAIKI	SAIKI	BULK CARRIER	1	23,200	10/98	NKK CORP.	NKK CORP.	LNG	1	12,000	00
mitsui	mitsui	BULK CARRIER	1	75,000	99	mitsubishi h.i.	mitsubishi h.i.	LNG	1	71,000	00
SAIKI	SAIKI	BULK CARRIER	1	—	98	mitsubishi h.i.	mitsubishi h.i.	LNG	1	71,500	10/00
HALLA	HALLA	BULK CARRIER	1	170,000	00	SASAKI	SASAKI	IPG	1	1,200	97
HUDONG SHIPYARD	HUDONG SHIPYARD	BULK CARRIER	2	70,000	99	ZHONGHUA SHIPYARD	ZHONGHUA SHIPYARD	MULTI-PURPOSE	1	8,874	00
CHINA SHIPBUILDING CORP.	CHINA SHIPBUILDING CORP.	BULK CARRIER	2	80,000	99	ZHONGHUA SHIPYARD	ZHONGHUA SHIPYARD	MULTI-PURPOSE	1	8,874	99
ISHIKAWAJIMA HARIMA H.I. (IHI)	ISHIKAWAJIMA HARIMA H.I. (IHI)	BULK CARRIER	1	48,500	00	CASSENS	CASSENS	MULTI-PURPOSE	1	8,500	99
ISHIKAWAJIMA HARIMA H.I. (IHI)	ISHIKAWAJIMA HARIMA H.I. (IHI)	BULK CARRIER	4	48,500	99	SAEVIK SUPPLY	SAEVIK SUPPLY	MULTI-PURPOSE OFFSHORE	3	—	99/00
CHINA SHIPBUILDING CORP.	CHINA SHIPBUILDING CORP.	BULK CARRIER	2	80,000	99	ULSTEIN VERFT	ULSTEIN VERFT	MULTI-PURPOSE OFFSHORE	1	—	11/99
DAMEN SHIPYARDS	DAMEN SHIPYARDS	BULK CARRIER	2	4,630	3/98	SERVICE MARINE INDUSTRIES (SMI)	SERVICE MARINE INDUSTRIES (SMI)	OFFSHORE SUPPLY	1	—	—
mitsui	mitsui	BULK CARRIER	5	34,600	98/99	HALTER MARINE PANAMA	HALTER MARINE PANAMA	OFFSHORE SUPPLY	1	—	12/98
HITACHI / NAIKAI	HITACHI / NAIKAI	BULK CARRIER	1	28,100	99	NAKATANI	NAKATANI	PASSENGER	1	—	97
SAMSUNG	SAMSUNG	BULK CARRIER	1	73,000	00	NAKATANI	NAKATANI	PASSENGER	1	—	97
SAMSUNG	SAMSUNG	BULK CARRIER	1	72,680	00	DAEWOO	DAEWOO	PCC	1	17,300	6/00
SUMITOMO	SUMITOMO	BULK CARRIER	2	73,500	99	BRATTVAAG SKIPSVERFT	BRATTVAAG SKIPSVERFT	PLATFORM SUPPLY	1	7,500	8/99
IMABARI SHIPBUILDING	IMABARI SHIPBUILDING	BULK CARRIER	1	74,000	9/99	DAEWOO	DAEWOO	PRODUCT CARRIER	1	30,000	4/99
DAEDONG SHIPBUILDING	DAEDONG SHIPBUILDING	BULK CARRIER	1	72,700	—	DAEWOO	DAEWOO	PRODUCT CARRIER	1	30,000	1/99
SUMITOMO	SUMITOMO	BULK CARRIER	2	73,500	98	MALAYSIA SHIPYARD	MALAYSIA SHIPYARD	PRODUCT TANKER	2	6,500	99
SANDYAS	SANDYAS	BULK CARRIER	1	75,500	12/98	3 MAJ	3 MAJ	PRODUCT TANKER	2	70,700	—
HALTER MARINE INC.	HALTER MARINE INC.	CAHTS	1	—	99	DAEDONG SHIPBUILDING	DAEDONG SHIPBUILDING	PRODUCT TANKER	2	45,000	00
DETLEF-ROLAND WERFT SHIPYARD	DETLEF-ROLAND WERFT SHIPYARD	CAR CARRIER	1	—	10/98	DAEDONG SHIPBUILDING	DAEDONG SHIPBUILDING	PRODUCT TANKER	2	45,000	99
DETLEF-ROLAND WERFT SHIPYARD	DETLEF-ROLAND WERFT SHIPYARD	CAR CARRIER	1	—	3/99	MALAYSIA SHIPYARD	MALAYSIA SHIPYARD	PRODUCT TANKER	2	6,500	99
IMABARI	IMABARI	CAR CARRIER	2	20,600	99	HYUNDAI	HYUNDAI	PRODUCT TANKER	1	29,999	99
KANASASHI	KANASASHI	CAR CARRIER	1	20,600	10/99	HALLA	HALLA	PRODUCT TANKER	1	45,000	99
SHIN KURUSHIMA	SHIN KURUSHIMA	CAR CARRIER	2	20,600	99	HALLA	HALLA	PRODUCT TANKER	1	45,000	99
FOSEN MEK VERKSTEDER	FOSEN MEK VERKSTEDER	CAR FERRY	1	—	6/99	DAEDONG SHIPBUILDING	DAEDONG SHIPBUILDING	PRODUCT TANKER/CHEMICAL	3	45,000	1/99
MALAYSIA SHIPYARD	MALAYSIA SHIPYARD	CLEAN PRODUCT TANKER	4	6,500	1/99	USUKI	USUKI	REEFER	1	8,850	99
HUDONG SHIPYARD	HUDONG SHIPYARD	CONTAINER	2	24,973	99	KITANIHON	KITANIHON	REEFER	1	5,000	99
KVAERNER WARNOW WERFT	KVAERNER WARNOW WERFT	CONTAINER	2	—	99	AKER FINNYARDS	AKER FINNYARDS	RO-RO	1	9,300	—
HYUNDAI	HYUNDAI	CONTAINER	2	50,000	8/99	ULSTEIN VERFT	ULSTEIN VERFT	SEISMIC SURVEY SHIP	2	—	99
MAWEI	MAWEI	CONTAINER	1	10,500	99	HELLESØY	HELLESØY	SUPPLY	1	—	99
HAKATA ZOSEN	HAKATA ZOSEN	CONTAINER	1	—	98	HALTER MARINE INC.	HALTER MARINE INC.	SUPPORT VESSEL	2	—	98
CHINA SHIPBUILDING CORP.	CHINA SHIPBUILDING CORP.	CONTAINER	4	—	00	HALLA	HALLA	TANKER	1	153,000	99
CHINA SHIPBUILDING CORP.	CHINA SHIPBUILDING CORP.	CONTAINER	1	—	99	DAEWOO	DAEWOO	TANKER	1	300,000	99
mitsubishi h.i.	mitsubishi h.i.	CRUDE OIL CARRIER	1	259,999	11/00	KAWASAKI H.I.	KAWASAKI H.I.	TANKER	1	259,999	9/00
HYUNDAI	HYUNDAI	CRUDE OIL TANKER	1	308,300	00	ISHIKAWAJIMA HARIMA H.I. (IHI)	ISHIKAWAJIMA HARIMA H.I. (IHI)	TANKER	1	260,000	12/00
HYUNDAI	HYUNDAI	CRUDE OIL TANKER	1	308,300	99	ISHIKAWAJIMA HARIMA H.I. (IHI)	ISHIKAWAJIMA HARIMA H.I. (IHI)	TANKER	1	260,000	10/99
HITACHI ZOSEN	HITACHI ZOSEN	CRUDE OIL TANKER	2	298,500	00	mitsubishi h.i.	mitsubishi h.i.	TANKER	1	259,999	4/00
HITACHI ZOSEN	HITACHI ZOSEN	CRUDE OIL TANKER	1	298,500	99	ISHIKAWAJIMA HARIMA H.I. (IHI)	ISHIKAWAJIMA HARIMA H.I. (IHI)	TANKER	1	300,000	08/00
KAWASAKI H.I.	KAWASAKI H.I.	CRUDE OIL TANKER	1	310,000	00	HALLA	HALLA	TANKER	4	67,000	99
NAIKAI	NAIKAI	CRUDE OIL TANKER	1	4,999	97	SAMSUNG	SAMSUNG	TANKER	1	310,000	—
mitsui	mitsui	CRUDE OIL TANKER	1	260,000	99	DAEWOO	DAEWOO	TANKER	1	300,000	12/99
mitsui	mitsui	CRUDE OIL TANKER	1	280,000	99	DAEWOO	DAEWOO	TANKER	1	300,000	00
KOYO DOCK	KOYO DOCK	CRUDE OIL TANKER	1	107,250	00	MAIN IRON WORKS	MAIN IRON WORKS	TRACTOR TUG	1	—	98
BLOHM + VOSS	BLOHM + VOSS	CRUISESHIP	1	—	00	J. G. HITZLER	J. G. HITZLER	TRACTOR TUG	1	—	98
DAEDONG SHIPBUILDING	DAEDONG SHIPBUILDING	CHEMICAL/ OIL TANKER	1	45,000	99	TSUNEISHI	TSUNEISHI	VEHICLE CARRIER	1	20,000	00
DCN	DCN	DEEPSEA OIL RIG	1	—	99	TSUNEISHI	TSUNEISHI	VEHICLE CARRIER	1	58,600	12/00

### New CEO At ZF Marine

Roland Heil has been appointed CEO for ZF Marine Group Worldwide. Mr. Heil was most recently executive vice president and COO of the ZF Group North American Operations. He will now be based at the ZF Marine Group in Padova, Italy. With this change, Jim Orchard, president and CEO of ZF Group, North American Operations, announced the restructuring of U.S. operations. Helmut Schulz will now be group vice president for Off-Road, Industrial and Bus System Products. Dave Adams will take over as group vice president for transmissions. Steve Lash has been appointed to group vice president for Lemforder Chassis

Systems, and Paul Lankes will be group vice president for Lemforder Steering systems and Elastomers.

### Shell Becomes Largest ARCS Installer

The U.K. Hydrographic Office (UKHO) recently announced that Shell International Trading and Shipping Company has installed Admiralty Raster Charts Service (ARCS) on board 47 members of its fleet of tankers and gas carriers and on an additional three systems to assist in onboard training.

This is reportedly the largest installation of the ARCS so far. ARCS is running on Navmaster Professional Office which has been bought as an onboard route man-

agement and planning system using PC Maritime software.

### AME Appoints New Executive Director

Australian Maritime Engineering (AME) CRC has announced that Dr. Colin Chipperfield, a materials engineer, has replaced Don Lennard as executive director. Dr. Chipperfield has experience working for the U.K. Atomic Energy Authority Research Laboratories and for BHP Melbourne Research Laboratories, where he amassed a 17-year tenure. Prior to joining AME CRC, he served as deputy executive director of the Australian Nuclear

Science and Technology Organization.

### Leica Wins Swedish Navy Contract

Leica GPS has received orders from the Swedish Material Administration for more than 60 DGPS navigators for the Swedish Navy. The equipment is being supplied by C.A. Clase, Leica's agent in Sweden. Leica will supply, per the terms of the contract, MX412B 12-channel DGPS navigators with built-in differential beacon receivers. The installations on the Swedish ships also include ancillary equipment, to be provided by C.A. Clase.

Circle 63 on Reader Service Card



# GREAT SHIPS OF 1997

(*Elisabeth Knutsen,*  
Continued from page 52)

optimized with respect to the vessel's trim, motion behavior and even load distribution.

The cargo loading system is able to load cargo from a conventional terminal alongside a dock; from an offshore Loading Station on the surface flexible hose type (OLS) in Dynamic Positioning (DP) mode; and from an articulated loading platform in DP mode. The vessel's liquid cargo carrying capacity is 138,776 cu. m.

The Norwegian-flagged *Elisabeth Knutsen*' classification is for a vessel designed and constructed for unrestricted ocean service in accordance with the DetNorske Veritas rules.

## Elisabeth Knutsen Main Particulars

Designer	Astilleros Espanoles
Flag	Norway
Float out date	April 1997
Delivery date	September 1997
Length, o.a.	868 ft. (264.7 m)
Length, b.p.	841.8 ft. (256.5 m)
Breadth, molded	139 ft. (42.5 m)
Draft, design	49 ft. (15 m)
Draft, scantling	51.5 ft. (15.7 m)
GT	71,850
DWT, design	117,916
DWT, scantling	124,758
Speed, service	14.7
Cargo capacity	138,776 cu. m.
Bunkers, heavy oil	3,743 cu. m.
Bunkers, diesel oil	266 cu. m.
Water ballast	53,913 cu. m.
Fuel consumption	178.8 gr/kW hr.
Classification	DNV
Main engine	(2) MAN B&W 7S50MC
Output	10,010 kW at 127 rpm
Gears	Lohmann
Propellers	Ulstein Propeller AS
Alternators	ABB
Diesel alternators	MAN B&W Holey
Boilers	Mitsubishi/Mnsubishi
Cargo cranes/gear	Nor-Marine
Mooring equipment	Ulstein
Cargo pumps	Kvaerner
Cargo control system	Kvaerner Ships Equipment
Ballast control system	Kvaerner Ships Equipment
Bow, stern thruster	Ulstein Propeller
Bridge control system	Furuno
Fire detection	Autronica
FiFi system	Unitor
Radars	Furuno
Satnav	Furuno
Computers	Deskpro
Incinerator	Teamtec-Golar
Waste disposal plant	Hamworthy

(*Alexandra,*  
Continued from page 52)

ensures optimum long-term utilization of the tonnage, given the seasonal nature of the ocean harvest from region to region.

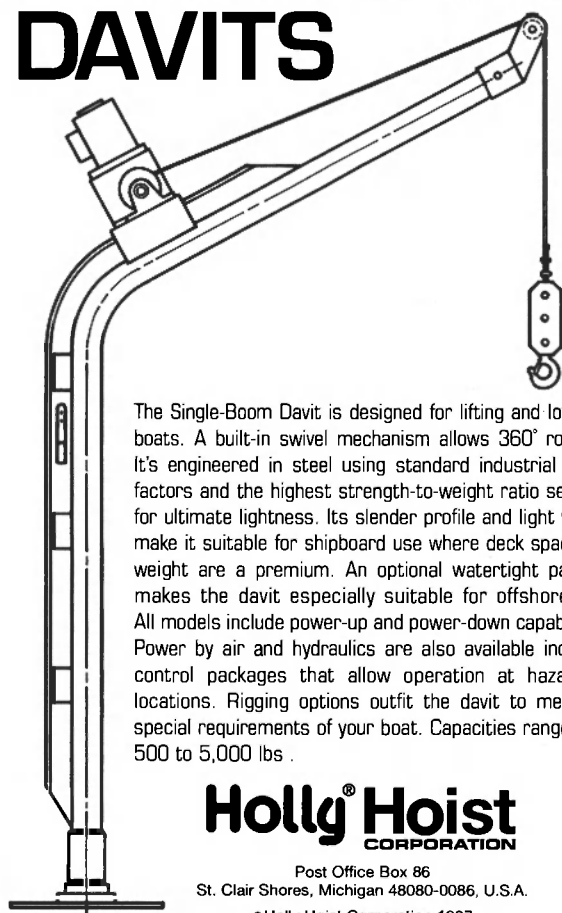
The design offers 194,000-cu.-ft.

of insulated space for palletized cargo in two holds, subdivided by tweendecks to create a total of six refrigerated compartments. The Sabroe Marine reefer plant provides for frozen goods at constant temperatures down to minus 30 degrees C, for chilled cargo and

fruit at zero degrees C or higher, for the transportation of banana cargoes at plus 13 degrees C, and for other temperature-sensitive cargoes at up to plus 15 degrees C.

The computer-controlled machinery is arranged for direct evaporation of R22, and has been

## DAVITS



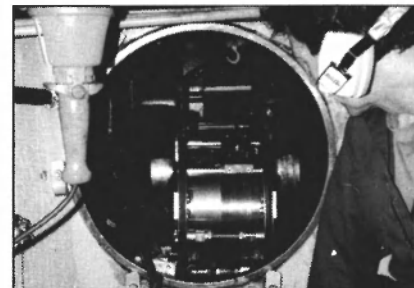
The Single-Boom Davit is designed for lifting and lowering boats. A built-in swivel mechanism allows 360° rotation. It's engineered in steel using standard industrial safety factors and the highest strength-to-weight ratio sections for ultimate lightness. Its slender profile and light weight make it suitable for shipboard use where deck space and weight are a premium. An optional watertight package makes the davit especially suitable for offshore use. All models include power-up and power-down capabilities. Power by air and hydraulics are also available including control packages that allow operation at hazardous locations. Rigging options outfit the davit to meet the special requirements of your boat. Capacities range from 500 to 5,000 lbs.

### Holly® Hoist CORPORATION

Post Office Box 86  
St. Clair Shores, Michigan 48080-0086, U.S.A.  
©Holly Hoist Corporation 1997

Circle 300 on Reader Service Card

## CRANKPIN & MAIN JOURNALS GRINDING, MACHINING, POLISHING 'IN-PLACE' IN YOUR ENGINE.



In-Port or  
Voyage  
Repairs.

Anywhere  
in the  
World

- ENGINE MAIN BEARING LINE BORING
- OPTICAL MEASUREMENT & ALIGNMENT
- METALSTITCH® REPAIR FOR CAST IRON



### IN-PLACE MACHINING COMPANY

USA 800-833-3575 International 414-562-2000 FAX 414-265-1000

24 HOUR EMERGENCY SERVICE ...day or night, 365 days a year.

Circle 241 on Reader Service Card

## BOWTHRUSTERS

Different models ranging from normal tunnelthrusters  
upto full 360 degrees Azimuthing Jets.

**Tunnelthrusters...** hydraulically or mechanically driven. Hydraulically, offered upto 200hp, with the hydraulic motor built inside the tunnel. Mechanically, with right-angled, spiral beveled gearreduction. Offered upto 800hp.

**Bow Jets...** driven hydraulically, electric or Diesel-direct. Offered from 25hp upto 3000hp. Possibility for full certification by all the major classificationbureaus like Lloyds, D.N.V., Germanische Lloyds, etc., etc.

**Azimuthing Jets...** hydraulically, electric or Diesel-direct driven. 360 Degrees proportional thrust for propulsion or (emergency) manoeuvring. Offered from 100hp upto 3000hp with all major classifications for unrestricted sea-service and ice-class operations.

Call, write or fax for more information!  
Agents wanted!



EUROPE: P.O. Box 320, 1960 AH Heemskerk, Netherlands  
Tel.: +31 251 230972, Fax +31 251 253456

USA: DeWijns Marine International, Inc.;  
c/o Harbour Industries, Inc.  
9471 Haymeadows Road, Suite 307  
Jacksonville, Florida, 32256 USA  
Tel. +1 904 448 0321, Fax +1 904 731 5893

Propulsion, Bowsteering and Emergency Manoeuvring

Circle 231 on Reader Service Card

## Marine Deck Hardware and Equipment



♦ ANCHORS: ♦  
50 to 60,000 Lbs. - New and Used  
Stockless - Danforth - L.W.T. - Halls - Snug Stowing

♦ CHAIN ♦  
3/4" to 5 1/8" - New and Used  
Stud Link - Cast Steel - Grades 2 and 3 - Oil Rig Quality  
for Moorings, Towing, Barge Handling,  
Ship's Replacement

♦ WINCHES - WINDLASSES - CAPSTANS ♦  
Vertical or Horizontal Hand, Electric, Diesel, Hydraulic  
or Repowered to your specs

♦ HATCHES - WATERTIGHT DOORS  
MANHOLE COVERS - SCUTLES - PORTHOLES ♦  
All Sizes - New or Reconditioned

♦ PANAMA CHOCKS - DOUBLE BITTS  
SINGLE BITTS - CAST STEEL CLEATS  
AND KEELS ♦

All Sizes Available, New & Used

♦ FENDERS PNEUMATIC ♦  
For Rent or Sale  
All Sizes,  
New & Used

SERVING  
THE MARINE & OIL INDUSTRIES  
FOR OVER 35 YEARS  
WE ARE  
DIRECT FACTORY  
DISTRIBUTORS & IMPORTERS

GIGANTIC  
INVENTORY  
NEW &  
USED  
Call  
Toll-Free  
(800)  
322-3131

IN STOCK  
NOW  
in the West Coast  
East Coast and  
The Gulf



WATERMAN  
SUPPLY CO., INC.

P.O. BOX 596  
WILMINGTON, CA 90748  
PH: (310) 522-9698  
FAX: (310) 522-1043

Circle 284 on Reader Service Card

# GREAT SHIPS OF 1997

(Alexandra, continued from previous page)

designed to facilitate a switch to R404a or some other medium in the future, if environmental edicts so require. The air cooling system allows cargo to be carried at four different temperature regimes within the six compartments.

The hatchways have been carefully dimensioned to permit up to 12 20-ft. containers to be stowed directly below, in addition to the 40-TEU slots on the weatherdeck, thereby conferring additional earnings opportunities.

Shipboard equipment specialist MacGregor was contracted to supply the shipsets of weatherdeck and 'tweendeck high-stowing, folding hatch covers, as well as the coamings, and to undertake the associated cover insulation work throughout.

A new type of hatch seal was specified to allow controlled atmosphere (CA) cargo preservation. Two Norlift deck cranes, positioned on the centerline and plumbing the two holds, enable the ship to work cargo ashore using her own equipment, if necessary, while providing the means of lifting the fruits of the deep from mother-ships and factory ships at sea. Double-reeved, the units can hoist eight tons at 590-ft. (18-m) outreach. An eight-cylinder M32 engine, a representative of the new medium-speed family from the Caterpillar-owned MaK factory in Kiel, delivers 3,520-kW of primary power through Valmet reduction gearing to a KaMeWa controllable pitch propeller.

To assist with the task of maneuvering alongside vessels in open sea conditions, *Alexandra* is fitted with a 300-kW Brunvoll bowthruster.

The electrical installation in Nassau-registered *Alexandra* also testifies to the considerable western European input to the Russian-owned vessel, featuring a bank of three MTU-driven 420 kW gensets and a 600 kW-plus Stamford shaft alternator driven off the gearbox. Completion of the smart new Dalmoreprodukt series at Aarhus will be followed in 1998 by the production of two further vessels of a successful, 9,000-dwt multi-purpose container carrier class for Denmark's Elite Shipping, and a pair of 8,200 dwt stainless steel tankers for Italian owners. — David Tinsley

## Alexandra Main Particulars

Length, o.o.	320.5 ft. (97.7 m)
Length, b.p.	300.2 ft. (91.5 m)
Breadth, molded	52 ft. (15.7 m)
Depth	33.1 ft. (10.1 m)
Draft, scantling	20 ft. (6 m)
DWT	4,260
Gross tonnage	3,817
Cargo capacity	194,000 cu. ft.
Speed	15 knots
Hatch covers	MacGregor
Deck cranes	Norlift
Main engine	MaK
Reduction gear	Valmet
Propeller	KaMeWa
Bow thruster	Brunvoll
Gensets	MTU
Shaft alternator	Stamford

## Sea Bird

Shipyard .....Hitachi Zosen  
Ship name .....Sea Bird  
Owner/operator .....Yasuda Ocean Vessel Co., Ltd.

### Sea Bird Main Particulars

Designer	Hitachi Zosen
Flag	Japan
Classification	JG
Contract Date	July 8, 1996
Float Date	Feb. 7, 1997
Delivery Date	March 31, 1997
Length, o.o.	203 ft. (62 m)
Breadth, molded	50 ft. (15.4 m)
Draft, design	7.5 ft. (2.3 m)
GT	850
Displacement	556 tons
Lightweight	416 tons
DWT, design	140
Speed, service	approx. 30 kt
Bunker	30 cu. m.
Fuel consumption	209 g/kW
Main Engine	Niigata Engineering
Main Engine Type	Niigata 16U 16 FX
Total hp	11,000 ps
Propellers	Water jet x 4
Generator engines	425 ps x 1,800 rpm x 2
Generator	350Kva x 440v x 60 Hz x 30 2

## Seiun Maru

Shipyard .....Sumitomo Heavy  
.....Industries Ltd. (Uraga Shipyard)  
Ship type .....Training Vessel  
Ship name .....Seiun Maru  
Owner/operator .....Institute for  
.....Sea Training, Ministry of Transport



### Seiun Maru Main Particulars

Contract Date	Dec. 1995
Float Out Date	March 1997
Delivery Date	Oct. 1997
Length, o.o.	380.6 ft. (116 m)
Length, b.p.	344.5 ft. (105 m)
Breadth, molded	58.7 ft. (17.9 m)
Draft	20.6 ft. (6.3 m)

GT	5,884
DWT	2,673
Speed, service	19.5 knots
Complement	252 (including 180 cadets)
Bunker	1,641 cu. m.
Fresh water	1,357 cu. m. (including drinking water)
Fuel Consumption	25.2 tons/day
% High Tensile Steel	Mild steel only
Main engine	Mitsui Engineering & Shipbuilding Co.
Main engine type	6L50MC
Total HP	10,500 PS
Auxiliary boiler	Mitsubishi Heavy Industries
Propellers	Nakashima
Thrusters	Nakashima
Generator Engines	Yanmar
Generators	Taiyo Electric
Emergency Generator	Taiyo Electric
Motor Starters	JRCS
Fin Stabilizers	Brown Brothers (Tokimec)
Engine controls	Mitsui
Steering controls	Yokogawa Denshikiki
Deck machinery	Kawasaki
Shafting	Nakashima
Bearings	Nakashima
VHF radio	Japan Radio
SSB radio	Japan Radio
Radar	Tokimec
Compass	Yokogawa Denshikiki
GPS	DX Antenna
Autopilot	Yokogawa Denshikiki
Collision avoidance	Tokimec
Pumps	Namiwa Pump
Heat exchangers	Showa Industrial, Alfa Laval
Air Conditioning	Nomirei
Lifeboats	Shigi Shipbuilding
Liferafts	Sumitomo Electric
Davits	Nippon ICAN
FiFi System	Kashiwa
Waste Management System	Taiko Kikai
Desalination Equipment	Sasakura Engineering
Doors/Ramps/Cargo Lifts	WineL B.V. (Harada)
Ballast Control System	Utsuki Keiki
Computers on the ship	Mitsui

## NYK Antares

Shipyard .....Ishikawajima-Harima Heavy  
.....Industries Co. Ltd.  
Ship type .....Containership  
Ship name .....NYK Antares  
Owner/operator .....Orion Shipholding S.A.



(Continued on page 86)



# BUYERS DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors. If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 477-6700.

## ABRASIVES

Western Garnet Int'l, P.O. Box 3389, Kirkland, WA 99083

## AIR CONDITIONING AND REFRIGERATION -

Repair & Installation  
Stork Canada, 47 boul. Marie-Victorin, Candiac, Quebec, Canada, J5R 1B6  
ABB Flakt Marine, Box 1043, S-436 21 ASKIM SWEDEN  
Adrick Marine, Adrick Marine, 81 Mahan St., West Babylon, N.Y. 11704  
Carrier Transicold, P.O. B. 4805, Syracuse, NY 13221  
Refrigeration Resources., 210 West Side Ave., Jersey City, NJ, 07035

## ALARMS, FACTORY MUTUAL-APPROVED

SELCO 353 A Asbury Commons Dr., Atlanta, GA 30338

## ALUMINUM BOATS

American Eagle Mfg., 780 Pearle Jensen Way, La Conner WA 98257  
Munson Mfg., 780 Pearle Jensen Way, La Conner WA 98257  
Worksliff, Inc., 10824 Bothell Hwy S.E., Bothell, WA 98012-6869

## ANCHORS AND CHAINS

All Alpha Int'l, Inc. P.O. Box 498985, Cincinnati, OH 45249  
Baldt, Inc., 801 W. 6th St., Chester, PA 19013  
Crandall Dry Dock Engineers Inc., P.O. B. 505804, MA 02150  
G.J. Wortelboer Jr. BV, P.O.B. 5003, 3008 AA Rotterdam, Nether  
Marit Chain, 230 Avenue Desandrouins, 59300 Valenciennes FRANCE  
Washington Chain & Supply Inc., Box 3645, Seattle, WA 98124  
Waterman Supply Co., P.O. Box 596, Wilmington, CA 90748  
Willem Pot, P.O.B. 29102, 3001 GC Rotterdam

## AUCTIONEERS

MACI Auctioneers, 2334 Willis Rd., Richmond, VA 23230

## AUTOPILOT SYSTEMS

ComNav Marine, 1915 Stainsburg Ave., Vancouver, B.C. CANADA

## BALLAST

Mineral Research & Recovery Inc., 4620 S. Coach Dr., 85714 Tucson, AZ  
Redland Genstar Inc., Executive Plaza IV, Hunt Valley, MD 1091 21031-  
Universal Minerals, P.O.B. 986, Tucson, AR 85714

## BASKET STRAINERS

Beaird Industries Inc., 601 Benton Kelly Street, Shreveport, LA 71106-7198

## BEARING—Rubber, Metallic, Non-Metallic

Blohm & Voss Industrie GmbH, P.O. B. 100720, D-2000 Hamburg 1, GERMANY;  
Simplex-Turmar Inc., P.O. B. 168, Little Neck, NY 11363-0168 U.S.A. Reps:  
Ralko Ltd., Loudwater, High Wycombe, Bucks  
Hamshire ENGLAND HP109QV  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Orion Corp., 1111 Cedar Creek Rd., Grafton, WI 53024  
Thordon Bearings Inc., 3225 Mainway, Burlington, Ont., CANADA L7M 1A6  
Vesco Plastics, P.O. B. 40647, Cleveland 2022 SOUTH AFRICA

## BILGE SYSTEMS

RGF Marine, 3875 Fiscal Ct., West Palm Beach Florida 33404  
Nelson Div., Exhaust & Filtration Sys., Hwy. 51 West, P.O. Box 428, Stoughton, WI 53589

## BLOCKS & RIGGING

Skookum, P.O. Box 280, Hubbard, OR 97032

## BOAT BUILDER

Blount Marine, 461 Water Street, Warren, RI 02895

## BOAT RENTAL

Edison Chaiset, P.O. Box 309, Gailland, LA 70354

## BOAT SHAFTING

Western Branch Metals, Inc., 2401 Wesley St., Portsmouth, VA 23707

## BOILERS

Clarke Chapman Canada, 1075 North Service Rd. West, Oakville, Ontario CANADA

## BOX COOLERS

Ships Machinery Int'l, 8375 N.W. 56 St., Miami, FL 33166

## BRIDGE WIPERS

In-Mar Systems, Yellowstone Street, Kenner, LA 70064

## BROKERS

151 Maritime Services, 34062 El Encanto/B, Dana Pt. CA 92629  
Captain Astad Company, Inc., P.O. Box 350486, Ft Lauderdale, FL 33335  
Jack Faulkner, 2419 Caddy Lane, P.O. Box 371, Flossmoor IL 60422  
Mowbray's Tug & Barge Sales Corp., 35 De Hart St., Morristown NJ 07960

## BULKHEAD SEALS/PANELS

CSD North America, 250 Commercial St., Unit 2006A, Manchester, NH 03101  
Blohm & Voss Industrie GmbH, P.O. B. 100720, D-2000 Hamburg 1, GERMANY  
Panel Specialists, Inc./Thermax, 3115 Range Rd., Temple, TX 76501  
Ralko Ltd., U.S.A. Reps: Simplex-Turmar Inc., P.O.B. 675, Tonawanda, NY 14151-0675  
Rox Corp., 12402 E. 60th St., Tulsa, OK 74146-6922  
Todco, P.O.B. 1087, Marion, OH 43302

## CABLE TRANSIT SYSTEMS

CSD North America, 250 Commercial St., Unit 2006A, Manchester, NH 03101

## CAD/CAM SYSTEMS

Albacore Research, 3080 Uplands Rd., Victoria, B.C. CANADA V8R 6B4

All Alpha Int'l, Inc. P.O. B. 498985, Cincinnati, OH 45249

Autoship Systems Corp., #403, 611 Alexander St., Vancouver, BC, Canada V6A1E

Creative Systems, Inc., P.O. B. 1910, Port Townsend, WA 98368

Kockums Computer Systems AB, PO Box 50555, S-202 15 Malmö SWEDEN

Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

TIMSCO, P.O. B. 91360, Mobile, AL 36691

Ship Motion Associates, 10 Danforth St., Portland, ME 04101-4567

## CARGO MONITORING & CONTROL SYSTEM

Ian-Conrad Bergan, Inc., 3409 Gulf Breeze Parkway, Golf Breeze, FL 32561

Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017

## CEILING

Todco, P.O.B. 1087, Marion, OH 43302

## CHARGE AIR COOLERS

Crane Heater, 17 Grandview Ave., W. Orange, NJ 07052

## CHEMICALS

Ashland Chemical/Drew Ameroid Marine, One Drew Plaza, Boonton, NJ 07005

Uniservice Americas, 57174 Hardin Rd., Slidell, LA 70461

Unitor Ship Service Inc., 2375 W. Esther St., Long Beach, CA 90813

## CLAMPING—Pipe, Tubes, Hose

ZSI, 39074 Webb Ct., Westland, MI 48185

## CLASSIFICATION SOCIETY

American Bureau of Shipping, 2 World Trade Center, 106th Fl, New York, NY 10048

Det Norske Veritas, 70 Grand Ave., Riveredge, N.J. 07661

## CLUTCHES

Centa Corp., 8185 Cass Ave., Darien, IL 60561

Haley Clutch and Coupling Corp., 1820 Hwy. 1 North, Greenville, MS 38702

## COATINGS / COATINGS PROTECTION

Coroseal Inc., 1045 12th Ave. NW F5A, Issaquah, WA 98027

Hempel, 6901 Cavallade St., Houston, TX 77028

Royal Chemical Corp., 2705 Concord Rd., Belle Chasse, LA 70037

TMT Services Corp./RUSTECO, P.O.B 11398, Torrence, CA 90510-1398

## COMMUNICATIONS SERVICE

Hose McCann, 1241 W. Newport Gender, Deerfield Beach, FL 33442

ICG Satellite Services, 8400 NW 52nd St., Suite 110, Miami, FL 33166

Maritime Telecommunications Networks, Inc., 8400 NW 52nd St., Suite 110, Miami, FL 33166

Ascot Talcote AB, Eppendorfer Weg 234, D-20251 Hamburg, GERMANY

AT & T Maritime Services, 412 Mt. Kemble Ave 5170, Morristown, NJ 07960

## COMPOUNDS

ITW Philadelphia Resins, 130 Commerce Dr, Montgomeryville, PA 18936

## COMPUTER LOFTING

Barataria Lofting Co., Inc., 1616 Barataria Blvd., Ste. 4, Marrero, LA 70072

## COMPUTER / COMPUTER SOFTWARE

Autoship Systems Corp., #403, 611 Alexander St., Vancouver, BC, CANADA V6A1E

Chand Corporation, 157 Hwy 654, Mathews, LA 70375

Coastal Oceanographics, Inc., 11-G Old Indian Trail, Middlefield, CT 06455

Creative Systems, Inc., .O. Box 1910, Port Townsend, WA 98368

Marine Management System, 470 West Ave., Stamford, CT. 06902

Sener, C/Severo Ochoa, 4 Parque Tecnológico de Madrid, 28760 Tres Cantos - Madrid SPAIN

Intecolor Corp., 2150 Boggs Rd., Deluth GA 30096

## CONDENSERS/SEPARATORS

Beaird Industries Inc., P.O. Box 31115, Shreveport LA 71130

## CONSOLE-GMDSS

Furuno USA, Inc., 271 Harbor Way, S. San Francisco, CA 94080

Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017

Sea, Inc., 7030 220th S.W., Mountlake Terrace, WA 98043

## CONSULTANT

Boland Industrial & Consulting Services, P.O.B. 91360, Mobile, AL 36691

## CONTROL SYSTEM—Monitoring

Engine Monitor, Inc., 179 Hickory Ave. Harahan, LA 70123

GEC ALSTHOM Diesels Inc., 10801 Kempwood Drive, Suite 1, Houston, TX 77043-1412

Ian-Conrad Bergan, 3409 Gulf Breeze Pkwy, Gulf Breeze, FL 32561

Gems Sensors Division, One Cowles Rd., Plainville CT 06062

MMC International, 60 Inip Dr, Inwood NY 11096

Prime Mover Controls, 3600 Gilmore Way, Burnaby V5G 4R8 CANADA

Robertson Marine Systems, 3000 Kingman St., Suite 207, Metairie, LA 70006

Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

Stork-Kwant BV, P.O.B. 23, 8600 AA Sneek, Netherlands

Electronic Marine Systems, 800 Ferndale Pl., Rahway, N.J. 07065

## CONTROL SYSTEM—Steering

AutoNav Marine Systems Inc., 55A Clipper St., Coquitlam, B.C., Canada V3K 6X2

Engine Monitor, Inc., 179 Hickory Avenue Harahan, LA 70123

Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

Stork-Kwant BV, P.O.B. 23, 8600 AA Sneek, Netherlands

## CONTROL VALVES

Leslie Controls, 12501 Telecom Dr., Tampa, FL 33637

## CONVERSIONS & REPAIRS

Vancouver Shipyards, 50 Pemberton Ave., N. Vancouver, B.C.

## CANADA V7P 2R2

## CORROSION CONTROL

Corrosec Inc., 8114 304th Ave., SE, Preston, WA 98050

Nace Int'l, 1440 South Creek Dr., Houston, TX 77084

TMT Services Corp./RUSTECO, P.O.B 11398, Torrence, CA 90510-1398

## COUPLINGS

Mapeco Products, 90 Forest Ave., Locust Valley NY 11560

Apollo International, 78 Degraw St., Brooklyn, NY 11231

Aquadrive System, 17 Ave. D, Atlantic Highlands, N.J. 07716

Centa Corp., 8185 Cass Ave., Darien, IL 60561

Haley Clutch and Coupling Corp., 1820 Hwy. 1 North, Greenville, MS 38702

Lo-Rez Vibration Control, Ltd., 186 West 8th Ave., Vancouver, B.C. V5Y 1N2

Mapeco Products, 90 Forest Avenue, P.O. Box 382, Locust Valley, NY 11560

Walz & Krenzer, 90 FForest Ave., Locust Valley, NY

## CRANE—HOIST—DERRICK—WHIRLIES

Bisso Marine Co. P.O. Box 4113, New Orleans, LA 70178

Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235

McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454

New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

## CRANES

Clarke Chapman Canada, 1075 North Service Rd. West, Oakville, Ontario CANADA

Lakeshore, Inc., P.O. Box 809, Iron Mountain, MI 49801

## CRANKSHAFT DEFLECTION ANALYZER

FCS, Inc., 22 Main St., Centerbrook, CT 06409

## CRANKSHAFT REPAIR

Goltens Worldwide, 160 Van Brunt St., Brooklyn, NY 11231

In-Place Machining Co., Inc. 1929 North Butlum Street, Milwaukee, WI 53212-3793

## CYLINDER LINERS

Silsan Silindar Ve Motor Elemanlar, P.O. Box 127, Carsi, Adana, Turkiye 01210

## DECK MACHINERY — Cargo Handling Equipment

Lakeshore, Inc., P.O. Box 809, Iron Mountain, MI 49801

Markey Machinery Co., Inc., P.O. Box 24788, Seattle, WA 98124-0788

McElroy Machine & Mfg. Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454

New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

Skookum, Inc., P.O. Box 280, Hubbard, OR 97032

Smith Berger Marine Inc., 516 South Chicago Street, Seattle, WA 98108

## DECK MACHINERY

Skookum, P.O. Box 280, Hubbard, OR 97032

Clarke Chapman Canada, 1075 North Service Rd. West, Oakville, ONTARIO CANADA

Intercontinental Engineering, P.O. Box 9055, Kansas City, MO 64168

McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454

New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

Skookum, Inc., P.O. Box 280, Hubbard, OR 97032

Smith Berger Marine Inc., 516 South Chicago Street, Seattle, WA 98108

## DEHUMIDIFIERS

Dry Air Technologies, 313 N. Oak St., Burlington, WA 98233

## DESALINATION - REVERSE OSMOSIS

Offshore Marine Laboratories, 22994 El Toro Rd., Lake Forest, CA 92630

Lifestream Watersystems, Inc., P.O. Box 634, Huntington Beach, CA 92647

Matrix Desalination, 3295 S.W. 11th Ave., Fort Lauderdale, FL 33315

Reverso Osmosis of South Florida, 12301 SW. 133 Court, Miami, FL, 33186

## DIESEL ACCESSORIES

Hermont Marine, Inc., 3528 Griffith, St.-Laurent, QUEBEC CANADA H4T 1A7

Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison, IL 60101

Liberty Technologies, 555 North Lane, Conshohocken, PA 19428

## DIESEL ENGINE ANALYZER

FCS, Inc., 22 Main Street, Centerbrook, CT 06409

Hermont Marine, Inc., 3528 Griffith, St.-Laurent, QUEBEC CANADA H4T 1A7

## DIESEL ENGINE — Spare Parts & Repair

Alaska Diesel, 4420 14th Ave., NW, Seattle, WA 98107

Brigantine Services Ltd, 48 Wang Lok St., Yuen Long Industrial Estate, New Territories, HONG KONG

Caterpillar, Inc., Engine Div., P.O. Box 610, Mossville, IL 61552-0610

Castoldi S.p.A., Viale Mazzini, 161, 20081, Abbiategrosso, ITALY

Cummins Engine Co., 4500 Leeds Ave., Ste. 301, Charleston, SC 29405-8521

Cummins Mid-South, Inc., 110 E. Airline Highway, Kenner, LA 70062

John Deere, John Deere Rd., Moline, IL 61265

DMI Norshippo Co., P.O. Box 2100, Norfolk, VA 23501-2100

GEC ALSTHOM Diesels Inc., 10801 Kempwood Drive, Suite 1, Houston TX 77043-1412

Goltens Worldwide, 160 Van Brunt St., Brooklyn, NY 11231

In-Place Machining Co. Inc. 1929 North Butlum Street, Milwaukee, WI 53212-3793

Kiene Diesel, 325 S. Fairbanks, Addison, IL 60101

Klattenberg Marine, 17 Grandview Ave., W. Orange, NJ 07052

Liberty Technologies, 555 North Lane, Conshohocken, PA 19428

MAN B&W Diesel AG, Stadtbachstrasse 1, D-86153 Augsburg 1, GERMANY

MAN B&W Diesel A/S, Tegholmegade 41, DK-2450 Copenhagen SV, DENMARK

MAN B&W Diesel, 17 State St., New York, NY 10004

Motor-Service AB, Box 2115, S-144 04 Ronninge, SWEDEN

Motor-Service-Hugo Stamp, 3190 S.W. 4th Ave., Ft. Lauderdale, FL 33315

Paxman Diesels, P.O. Box 8, Paxman Works, Colchester, Essex, CO1 2HW, ENGLAND

Ulslein Bergen AS, PO Box 924, N5002 Bergen, NORWAY

Wartsila Diesel, 201 Defense Highway, Annapolis, MD 21401

Goltens, 160 Van Brunt St., Brooklyn, NY 11231

## DIVING & SALVAGE

Coast Marine Services, 793 B Mira Flores, San Pedro CA 90733

Bisso Marine Co. P.O. Box 4113, New Orleans, LA 70178

H.J. Merrhue, P.O.

(Continued from page 84)

### NYK Antares Main Particulars

Flag	Panama
Classification	Nippon Kaiji Kyokai
Delivery date	October 1997
Length, o.a.	984 ft. (299.9 m)
Length, b.p.	929.5 ft. (283.8 m)
Breadth, molded	131.2 ft. (40 m)
GT	75,637
DWT, design	71,500
DWT, scantling	80,900
Draft, design	42.6 ft. (13 m)
Draft, scantling	46 ft. (14 m)
Speed, service	23 knots
Complement	30
Cargo Capacity	5,700 TEU
Bunker	9,200 cu. m.
Water ballast	19,680 cu. m.
Fuel consumption	190.6 tons/day
Main engine type	Du-Sulzer 11RTA96C
Total hp	53,300 kW
Propellers	Mitsubishi Heavy Industries
Thrusters	Kawasaki
Generator engines	Daihatsu Diesel
Generators	Nishishiba Electric

Motor Starters	Nishishira/Terasaki
Engine controls	Nabco
Steering controls	Kawasaki
Deck Machinery	Fukushima
Shafting	Nippon Chutanko
Bearings	Japan Marine Techno
Coatings	Kansai Paint
VHF Radio	Anritsu
Compass	Yokogawa Denshikiki
GPS	Furuno Electric/Trimble Navigator
Autopilot	Yokogawa Denshikiki
Collision avoidance radar	STN Atlas
Pumps	Shinko Industries/Taiko Kikai Industries
Heat exchangers	Shinko Industries/Alfa Laval

### (Schleswig-Holstein, Continued from page 54)

of which are rated at 3,520 kW, the two at 2,640 kW. The machinery is distributed between two engine rooms.

The four Contaz propulsors can absorb a total of 12,000 kW of the combined 15,840-kW output of the power station-type installation,

which also feeds the ship's other users of electrical energy.

To achieve the scheduled crossing time of 44 minutes, the vessel has to achieve 16.5 knots.

Reflecting the importance of the route in the regional transport infrastructure, and the railway parentage of both Danish Scandlines and DFO, as a subsidiary of Deutsche Bahn, the new RoRo ferries take rolling stock as well as commercial vehicles, cars and passengers.

*Schleswig-Holstein* can accommodate two trains of 193.5 ft. (59 m) in length, or can alternatively accept up to 2,050 ft. (625 m) of road freight or 294 cars.

An upper RoRo deck is designated purely for cars, with rail wagons or carriages and all goods vehicles kept at main deck level, as necessary.

*Schleswig-Holstein* and sister-ship *Deutschland* are seen as fresh assertions of Van der Giessen-de

Noord's skills in constructing sophisticated ferries.

The prolific output from its covered premises at Krimpen aan den IJssel, upstream of central Rotterdam, has included five large ferries for North European and Chinese owners, besides the Vogelfluglinie pair, all in the last three years.

### Schleswig-Holstein Main Particulars

Length, o.a.	465.8 ft. (142 m)
Length, bp	439.6 (134 m)
Breadth, molded	81.4 ft. (24.8 m)
Scantling draft	19.7 ft. (6 m)
DWT, max.	2,904
Gross tonnage	15,187
Passenger capacity	900
Rail lanes	386.2 ft. (117.7 m)
Maximum trailer lanes	2,050 ft. (625 m)
Maximum cars	294
Trial speed	18.5 knots
Contaz Propulsors	Aquamaster Rauma
Main Engines	MaK

### (Sea Jaguar, Continued from page 54)

Coatings	Hempel
VHF/SSB radios	STN Atlas
Radar	STN Atlas
Compos; Autopilot	C. Platt
GPS	STN Atlas
Collision avoidance	STN Atlas
Pumps	Shinko
Heat exchangers	Daewoo
AC	Hi-Pres
Lifeboats	Hatecke
Liferafts	Viking
Waste management system	Volcano
Fresh water generator	Alfa Laval
Deck crane/Cargo lifts	MacGregor
	Hagglunds
Ballast control system	Pleiger-Far East
Computers	Seacos

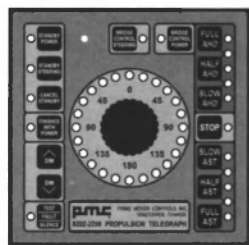
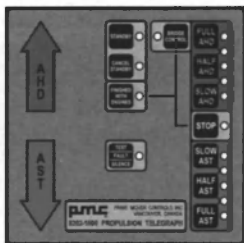
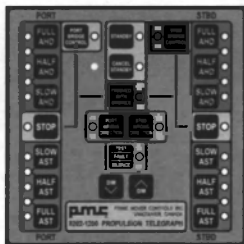
### (Rina Amoreiti, Continued from page 51)

SSB radio	General Telemar
Radar	Norcontrol, Kelvin Hughes
Compass	Norcontrol, C. Plath
GPS	Norcontrol
Autopilot	Norcontrol, C. Plath
Satnav	General Telemar
Pumps	Allweiler, Bornemann, Grundfoss
Heat exchangers	Prang, Schmidt, Wiesloch
Lifeboats	Schat-Harding
Liferafts	RFD
FiFi system, WMS	Unitor
Desalination Equipment	Serck Como
Manifold/Proviants Cranes	ACTA
Cargo control	Norcontrol, Saab Tankradar
Ballast control	Norcontrol, Saab
Thermal oil plant	Wiesloch
Cargo tank stripping system	Navalimpianti
Inert gas generator	Kvaerner
Cathodic protection system	Cathelco,
	Deckma
Deepwell cargo pumps	Svanehoj,
	Danfoss
Valves	Perlwitz, Gestra,
	Medana & Visca, Kahler

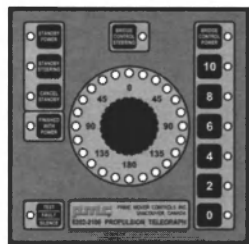
## PMTC 8202 Series Propulsion Telegraphs

This is it; the Telegraph you have been looking for. It is reliable, versatile, compact and low cost.

- Telegraph orders for conventional or azimuth drive system
- Independent standby orders
- Single or twin screw
- Forward or aft facing
- Optional wrong direction alarms
- Optional limited rotation for jet drives
- Optional connection for data logger or printer



- Multiple BR and ER stations
- Super bright order indicators for daylight operation
- Backlit buttons for night operations
- Bridge units are dimmable
- Reliable communication and transceiver technology for the marine environment
- Dual 24VDC inputs use ship's power supplies
- Self diagnostics
- Minimum wire count for low cost installation
- 144mm DIN mounting



### PRIME MOVER CONTROLS INC.

DESIGN, MANUFACTURE and SERVICE of  
MARINE CONTROL COMPONENTS and SYSTEMS  
Electronic - Pneumatic - Hydraulic

3600 GILMORE WAY, BURNABY BC CANADA V5G 4R8  
TEL (604) 433-4644 FAX (604) 433-5570 email: info@pmc-controls.com

**ROPE A GIRL**  
NOTE A GUY!

FOR MUSCULAR DYSTROPHY  
HELP MDA  
HELP PEOPLE

Muscular Dystrophy Association  
(800) 572-1717

**MDA**

Wonder Woman is a trademark of DC Comics. Used with permission. Copyright ©1994 DC Comics

**LEE VAC SHIPYARDS, INC.**  
We Make It Happen!

NEW CONSTRUCTION	GAMBLING VESSELS
	INLAND PUSHBOATS
CONVERSIONS	SUPPLY BOATS
REPAIRS	SEISMIC VESSELS
DRYDOCKING	BARGES
	SPECIALTY VESSELS

Hwy. 90 East  
P.O. Box 1190  
Jennings, LA 70546

PH. 318/824-2210  
FAX 318/824-2970

Circle 247 on Reader Service Card



Ultra Poly Inc., 2926 South Steele, Tacoma, WA 98409  
Urethane Products, 17007 South Broadway, Garden, CA 90248  
Viking Fender Co., 1160 State St., Perth Amboy, NJ 08861

**FIBERS**  
Wellington, P.O.B. 244, Madison, GA 30650

**FILTERS**  
Boil Filter, 15 International Dr., East Granby, Ct. 06206

**FILTER SYSTEMS**  
Luber-Finer, Inc., 5050 Quorum Drive, Dallas, TX 75240

**FIN STABILIZERS**  
Blohm & Voss Industrie GmbH, P.O. Box 10 07 20, D-2000 Hamburg 1, GERMANY;  
Raikoo Ltd.: U.S.A. Reps: Simplex-Turmar Inc., P.O.B. 675, Tonawanda, NY 14151-0675  
U.S.A. Reps: Raikoo Ltd., P.O.B. 675, Tonawanda, NY 14151-0675

**FIRE FIGHTING EQUIPMENT**  
IMSSCO, 2040 Harbor Island Dr., Suite 201A, San Diego, CA 92101

**FIRE RESISTANT PANELS**  
Bainbridge Aquabatten, 252 Revere St., Canton, MA 02021  
Panel Specialists, Inc./Thermax, 3115 Range Rd., Temple, TX 76501

**FIRE SUPPRESSION EQUIPMENT**  
American Pacific Corp., 3770 Howard Hughes Pkwy, Las Vegas, NV 89100

**FLAME RETARDANT TEMPORARY COVERING**  
Bainbridge, 252 Revere St., Canton, Mass. 02021

**FUEL CONSERVATION**  
Instruments Computer & Controls, Inc., 70 South Bow Rd., Hooksett, NH 03106

**FUEL DECONTAMINATION**  
Enviro Response Prod., P.O. Box 4011, Ft. Meyers, FL 33932  
Environmental Solutions Int'l, 11002 Raccoon Ridge, Reston, VA 20191-4911

**GALLEY EQUIPMENT**  
Commercial Products, 3924 Forest Drive, Ste. 11, Columbia, SC 29204-4148  
Cospolch Refrigerator Co., 949 Industry Rd., Kenner LA 70062  
Jamestown Metal Marine Sales, Inc., 4710 Northwest Second Ave, Boca Raton, FL 33431  
Lang Manufacturing, P.O. B. 905, Redmond, WA 98073  
Marine Accommodations, 3830 Williamsburg Rd, Jacksonville, FL 32256

**GANGWAYS, LADDERS**  
SlipNot Safety Flooring, 2545 Beaufait St., Detroit, MI 48207  
Wooster Products Inc., 1000 Spruce St., P.O. Box 896, Wooster, OH 44691

**GEAR REPAIR**  
Haley Marine Gears International, Inc., 2600 N. Concord Belle Chasse, LA 70037  
Cincinnati Gear Company, 5657 Wooster Pike, Cincinnati, OH 45227

**GENERATOR**  
Alaska Diesel, 4420 14th Ave., NW, Seattle, WA 98107  
Baylor Co., 500 Industrial Blvd., Sugarland, TX 77478

**GLARE PROTECTOR**  
McInnis Industries  
2301 Hwy 365  
Port Authur, TX 77640

**HATCH COVER SEAL RENOVATION**  
Baywood Inc., 3841 Soundway, Bellingham, WA 982263

**HEAT EXCHANGERS**  
Alfa-Laval Separation Inc., 955 Mearns Rd., Warminster, PA 18974

Beaird Industries Inc., P.O. Box 31115, Shreveport, LA 71130  
Crane Heatex, 17 Grandview Ave., West Orange, NJ 07052

**HIGH PRESSURE WATER JETTING**  
Aqua-Dyne, Inc., 3620 W. 11th Street, Houston, TX 77008-6004

**HOISTS**  
JD Neuhaus Corp., 2603 Rolling Rd., Gwynn Oak, MD 21207

**HORNS/WHISTLES**  
Kahlenberg Bros Co., P.O. Box 358, Two Rivers, WI 54241  
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

**HOSES**  
Apollo International, 78 Degraw St., Brooklyn, NY 11231

**HYDRAULICS**  
Cunningham Marine Hydraulics Co., 201 Harrison St., Hoboken, NJ 07030

Engine Monitor, Inc., 179 Hickory Ave. Harahan, LA 70123  
Hamilton Jet, P.O. Box 709, Christchurch, NEW ZEALAND  
Ultra Hydraulics Limited, Cheltenham Road East, Gloucester, GL2 9QN, ENGLAND

**INFORMATION TECHNOLOGIES**  
Marine Management Systems, 470 West Ave., Stamford, CT 06902

**INSTRUMENTATION**  
Instruments East, Inc., 1037 West 45th St., Norfolk, VA 23508  
Gems Sensors, Inc., 1 Cowels Rd., Plainville, CT, 06062

**INSULATION**  
Blohm & Voss Light Insulation, Bartels & Laders GmbH, Norderebstrasse 1S, 20457 Hamburg GERMANY  
Panel Specialists, Inc./Thermax, 3115 Range Rd., Temple, TX 76501

Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123  
Superior Energies Inc., P.O. Drawer 386, Grovas, TX 77619

**INTERIORS**  
Custom Ship Interiors, Inc., P.O. Box 882, Solomons, MD 20688  
Hopeman Brothers, P.O. Box 820, 435 Essex Ave., Waynesboro, VA 22980

Insulations, Inc., Rt. 5, 12360 Leisure Rd, Baton Rouge, LA 70807  
Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave, Boca Raton, FL 33431

Marine Accommodations, 3830 Williamsburg Rd., Jacksonville, FL 32256  
TODCO, Inc., P.O. Box 1087, Marion, OH 43302

**JOINER—Waterlight Door—Paneling—Ceiling System—Decking**  
All Alpha Int'l., Inc. P.O. Box 498985, Cincinnati, OH 45249

Branton Ind., 1101 Edwards Ave., Jefferson, LA 70181  
Commercial Products, 3924 Forest Drive, Ste. 11, Columbia, SC 29204-4148

CustomShip Interiors, Inc. P.O. Box 882, Solomons MD 20688  
Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980

Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123  
Marine Accommodations, 3830 Williamsburg Park, Suite7 Jacksonville, FL 32257

Panel Specialists, Inc./Thermax, 3115 Range Rd., Temple, TX 76501

Walz & Krenzer, Inc., 90 Forest Ave. Locust Valley N.Y. 11560

**KEEL COOLERS**  
R.W. Femstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
The Walter Machine Co., Inc., 84-98 Cambridge Avenue, Jersey City, NJ 07307

**LASER ALIGNMENT**  
Boland Industrial & Consulting Services, P.O.B. 91360, Mobile, AL 36691

**LIFEBOATS/RAFTS**  
American Eagle Mfg., Inc., 780 Pearle Jensen Way, LaConner, WA 98257  
DBC Marine Safety Systems, 12351 Bridgeport Rd., Richmond, B.C. CANADA V6V1J4  
Norsafe AS, P.O. Box 115, N-4818 Faervik, Norway  
Viking Life Saving Equipment, 1625 N. Miami Ave., Miami, FL 33136  
Willard Marine Co., Inc., 1250 N. Grove St., Anaheim, CA 92806  
Zodiac of North America, P.O. Box 400, Stevensville, MD 21666

**LIFESAIVING EQUIPMENT**  
MGI International, 119-225 West 1st St., North Vancouver, B.C. CANADA  
Stearns Manufacturing, P.O. Box 1498, St. Cloud, MN 56302

**LIGHTING SYSTEMS / EQUIPMENT—Lamps, Fixtures, Searchlights**  
ACR Electronics, Inc., 5757 Ravenswood Rd., Ft. Lauderdale, FL 33310-5247  
Archway Marine, 4501 Swan Ave., St. Louis, MO 63110  
Goltan Marine, 160 Van Brunt St., Brooklyn, NY 11231  
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

Pauluhn Electric Mfg. Co., Inc. 1616 N. Main, P.O. Box 53, Pearland, TX 77581  
Francis Searchlights/Stam Supply Co., 4415 6th N.W., Seattle, WA 98107

**LINE HANDLING VIDEO**  
Moxie Media, Inc., 5734 Jefferson Hwy., Harahan, LA 70123

**LIQUID LEVEL GAUGES**  
King Engineering Corp., P.O. Box 1228, Ann Arbor, MI 48106

**LIQUID OVERFILL PROTECTION SYSTEMS**  
E.R.L. Marine Products, P.O.Box 1026, New Albany, IN 47151-1026  
Metntape, Inc., 59 Porter Rd., Littleton, MA 01460  
Gems Sensors, Inc., 1 Cowels Rd., Plainville, CT, 06062

**LOGISTICS**  
VL Logistics Consultants, Inc., 3420 Bienville Blvd., Ocean Springs, MS 39564

**MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING**  
Goltan Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231

Maritime Power 200 Henderson St., Jersey City, NJ 07302  
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150  
Wallace Coast Machining, 1920 Waukegan Rd., Glenview, IL 60025

**MARINE CALIBRATION DEVICES**  
Hermont Marine, Inc., 3528 Griffith, St-Laurent, QUEBEC CANADA H4T 1A7

**MARINE CEILING**  
Hydro-Aluminium, Vik Verk, N-5880 VIK I SOGN, Norway  
Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807

Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76501

**MARINE CONSULTANTS**  
Kvaerner Masa Marine, 201 Defense Hwy., Annapolis, MD 21401

**MARINE DECKING**  
E.H. O'Neill Co., 1405 Chippendale Rd., Lutherville, MD 21093  
Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980

Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807  
Selby, P.O.Box 1600, Sapulpa, OK 74067

**MARINE DRILLING & BLASTING**  
Marine Drilling & Blasting, Inc., P.O. Box 18098, Beverly Hills, CA 90209-4098

**MARINE ELECTRONICS**  
Frank L. Beier Radio, 2001 Ridgeway Drive, Metairie, LA 70001  
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

Saab Marine Electronics AB, Box 13045, 402 51 Goteborg, SWEDEN  
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

**MARINE ELEVATORS**  
McElroy Machine, 1101 Lorraine Rd., Biloxi, MI 39535-4454

**MARINE EQUIPMENT**  
Waterman Supply, P.O. Box 596, Wilmington, CA 90748  
Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302

Northeast Technical, P.O. Box 38189, Olmstead Falls, Ohio, 44138  
Bohnet & Associates, 1150 Rule Rochelle, Sidell, VA 70458  
McElroy Machine, P.O. Box 4454, Biloxi, MS 39535-4454

**MARINE FINANCING**  
Safeco Credit Co. Inc. 4909 156th Ave. NE, Redmond, WA 98052

**MARINE FIRE PROTECTION**  
Insulations, Inc., Rt. 5, 12360 Leisure Road, Baton Rouge, LA 70807  
Unitor Ship Service Inc., 2375 West Esther Street, Long Beach, CA 90813

**MARINE GEARS**  
The Falk Corp., PO Box 492, Milwaukee, WI 53201-0492  
Haley Marine Gears, Inc. P.O. Box 689, Greenville, MS 38702

Marine Gears, P.O. Box 689, Greenville, MI 38701  
Cincinnati Gear Company, 5657 Wooster Pike, Cincinnati, OH 45227

**MARINE INSURANCE**  
John G. Alden, 1300 SE 17th St., Fort Lauderdale, FL 33316

**MARINE PUMPS**  
Gilkes Inc., P.O. Box 628, Seabrook, TX 77586

**MARINE SAFE VIDEO**  
Moxie Media, Inc., 5734 Jefferson Hwy., Harahan, LA 70123

**MARINE SHAFTING**  
Kahlenberg Bros, P.O. Box 358, Two Rivers, WI 54241

**MARINE SURPLUS SALES**  
Defense Reutilization & Marketing Service, 2163 Airways Blvd., Memphis, TN 38114

**MARINE SYSTEMS SIMULATION**  
Applied High Technology, 4 Place Dee Commerce  
Brossard, Suite 201 Quebec Canada J4W-3B3

**MECHANICAL PUMP SEALS**  
John Crane Marine, USA, 1536 Barclay Blvd, Buffalo Grove, IL 60089

**METERS**  
Selco USA, 2508 Lakebrook Ct., Atlanta, GA 30360

**MONITORS**  
Intercolor Corp., 2150 Boggs Rd., Deluth GA 30096

**MOORING LINES**  
Phillystran, Inc., 151 Commerce Drive, Montgomeryville, PA 18936-9628

**MOTOR PROTECTION EQUIPMENT**  
Marine Safe Electronics, 37 Staffern Dr., Concord, Ontario L4K CANADA

**NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS**  
Northeast Technical, P.O. Box 38189, Olmstead Falls, Ohio, 44138

Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Hwy., Arlington, VA 22202  
Bay Engineering, 253 N. First Ave., Sturgeon Bay, WI 54235  
Donald L. Blount, 2550 Ellsmere Ave., Ste. K, Norfolk, VA 23513

C. Baxter & Associates, P.O. Box 9006, Mobile, AL 36609  
CDI Marine Co., 4040 Woodcock Dr., Suite 200, Jacksonville, FL 32207

Childs Engineering Corp., Box 333, Medfield, MA 02052  
Crandall Dry Dock Engrs., Inc., P.O. Box 505804, Chelsea, MA 02150

Crane Consultants, 15301 First Ave S., Seattle WA 98148  
C.R. Cushing, 18 Vesey St., New York, NY 10007  
CT Marine, 56 Crooked Trail, Rowayton, CT 06853

Cunningham & Walker, 1762 Providence Hollow Lane, Jacksonville, FL 32223  
Arthur D. Darden, 3200 Ridgeway Dr., Suite 403, Metairie LA 70002

DeJong & Lebet, Inc., 1734 Emerson Street, Jacksonville, FL 32207

Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129

Designers & Planners, 2120 Washington Blvd. Ste.200, Arlington, VA 22204  
Elliot Bay Design Group 5301 Shilshole Ave. N.W. Ste. 200, Seattle, WA 98107

Encon Mgmt & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706  
GHM Inc. (Ind. Measurement Consultants), P.O. Box 1836, Newport News, VA 23601

Gibbs & Cox, Inc., 50 West 23rd St., New York, NY 10010  
Heger Dry Dock Engineers, Inc., P.O.B. 6605, Holliston, MA 01746  
J.J. McMullen, 2341 Jefferson Davis Hwy, Arlington, VA 22202

John W. Gilbert & Assoc., Inc., 199 State St., Boston, MA 02109  
The Glosien Assoc. Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle, WA 98104

Guido Perla & Assoc., 720 3rd Ave., Ste. 1200, Seattle, WA 98104  
Morris Guralnick Associates, Inc., 130 Sutter St., Ste. 400, San Francisco, CA 94104

C. Raymond Hunt Associates, 69 Long Wharf, Boston MA 02110  
J.H. Inc., 3412 Progress Dr., Bensalem, PA 19020

R.D. Jacobs & Associates, 11405 Mann St., Roscoe, IL 61073  
Kvaerner Masa Marine Inc., 201 Defense Highway, Suite 202, Annapolis, MD 21401

James S. Krogen, 799 Brickell Plaza Ste. 701, Miami, FL 33131  
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225

MCA Engineers, Inc., 2960 Airway Ave., #A-103, Costa Mesa, CA 92626  
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063

McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454  
John J. McMullen Associates, Inc., 1 World Trade Ctr, Ste 3000, NY, NY 10048

Fendall Marbury, P.O. Box 2321, Annapolis, MD 21401  
Marine Design & Operations, Inc., 225 E. 1st Ave., Roselle, NJ 07203

Marine Management Systems Inc., 470 West Ave., Stamford, CT 06902  
Marine Power Associates, 1010 Turquoise St., Ste 217, San Diego, CA 92109

Maritech, Sealcliff, Bay Road, Newmarket, NH 03857  
Maritime Design, Inc., 3020 Hartley Rd., Jacksonville, FL 32257

R.J. Mellusi & Co., 71 Hudson St, New York, NY 10013  
Nautical Designs, Inc. 2101 S. Andrews Ave, Suite 202, Ft Lauderdale FL 33316

Olsen Marine Surveyors Co., P.O. Box 283, Port Jefferson, NY 11777  
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 620 Fulson St., Ste. 301, San Francisco, CA 94107

Sargent & Herkes, 225 Baronne St., Suite 1405, New Orleans LA 70112  
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

Sea School, 10812 Gandy Boulevard, St. Petersburg, FL 33702  
Seaworthy Systems Inc., P.O. Box 965, Essex, CT 06426; 17 Battery Pl., New York, NY 10004; P.O. Box 975, Barnegat Light, NJ 08006; 2001 N. Beauregard Street, Alexandria, VA 22311; 50 Vashell Way, Orinda, CA 94563

George G. Sharp, Inc., 100 Church St., New York, NY 10007  
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235  
A.K. Suda & Ass., 3004 19th St., Metairie, LA 70002-4989

TIMSCO, P.O. Box 91380, Mobile AL 36691

**NAVIGATION & COMMUNICATIONS EQUIPMENT**  
Electronic Marine Systems, 800 Ferndale Pl., Rahway, N.J. 07065  
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080

ICS Electronics Ltd., Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex, UK  
KVH Industries, Inc., 110 Mackay Communications, 2721 Discovery Dr., Raleigh, N.C. KVH Industries, 110 Enterprise Center, Middletown, RI 028425268

Negron Marine Consultants, 840 Bond Street, Elizabeth, NJ 07201

Offshore Systems, 930 West 1st Street, North Vancouver BRITISH COLUMBIA

Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017  
Scandinavian Micro Systems P.O. Box 155, N-1411, Kolboten, NORWAY

Sea, Inc., 7030 220th S.W., Mountlake Terrace, WA 98043  
Simrad, 19210 33rd Avenue West, Lynwood, WA 98036  
Simrad Robertson, 10801 Hammerly, Suite 100, Houston, TX 77043-1923

Standard Communications, P.O. Box 92151, Los Angeles, CA 90009  
Transas Marine, 19105 36th Ave. West, Bldg.#2, Suite 101, Lynwood, WA 98036

Trimble Navigation, 585 North Mary Avenue, P.O. Box 3642, Sunnyvale, CA 94086  
Waterway Communications System, Inc. 453 E. Park Pl., Jeffersonville, IN 47130

Offshore Systems International, 5013 Pacific Hwy East, Fife, WA 98424  
Q-Mar Inc., 1801 McGill College, Montreal, Quebec H3A2N4 Land Sea Systems, 849 Seahawk Circle, Suite 103, Virginia Beach, VA 23452

**NOZZLE SYSTEM**  
Custom Nozzle Fabrication, P.O. Box 547, Pascagoula, MS 39568  
Rice Propellers, Av Rios Espinoza #88, Mazatlan, MEXICO 82180

**OIL—Marine—Additives—TESTING**  
Mobil Oil Corporation, 3225 Gallows Road, Fairfax, VA 22037-0001

**OIL CONTENT METERS/CALIBRATION**  
Hermont Marine, Inc., 3528 Griffith, St-Laurent, QUEBEC CANADA H4T 1A7

**OIL - LESS FRYER**  
Ro-Fry, 1400 Toastmaster Dr., Elgin, IL 60120

**OIL MIST DETECTORS**  
Autronica Marine, 234 Industrial Pkwy, Northvale, N.J. 07647  
Hermont Marine, Inc., 3528 Griffith, St-Laurent, QUEBEC CANADA H4T 1A7

**OIL TANK CLEANING**  
Brain Industries Australia, Pty. Ltd., 21 Bearing Rd., Seven Hills, NSW 2147 AUSTRALIA

**OIL/WATER SEPARATORS**  
Alfa-Laval Separation, Inc., 955 Mearns Rd., Warminster, PA 18974-0556  
Blohm & Voss U.S.A. Reps: Simplex-Turmar Inc., P.O. Box 168, Little Neck, NY 11363-0168

Fast Systems, 3240 North Broadway, St. Louis, MO 63147  
MMC International, 60 Inip Dr., Inwood NY 11096  
Westfalla Separators, 100 Fairway Ct., Northvale N.J. 07647

Nelson Industries, Highway 51 West, Stoughton, WI 53589  
RGF Marine, 3875 Fiscal Ct., W. Palm Beach, FL 33404

**PAINT—COATING—CORROSION CONTROL**  
Corrosal, Inc., 1045 12th Ave. NW-F5A, Issaquah, WA 98027

Esgard, Inc., P.O. Drawer 2698, Latayette, LA 70502  
Ferro Corp., 1301 North Flora St., Plymouth, IN 46663  
Jamestown Distrib., 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02835

Hempel Coatings, 6901 Cavalcade St., Houston, TX 77028  
Microphor, Inc., Marine Div., 452 E. Hill Rd., P.O. Box 1460, Willits, CA 95490

Sigma Coatings, 8979 Market St., Houston, TX 77029, 330 Rover Rd., Harvey, LA 70059,  
1100 Adams St., Hoboken, NJ 07030  
TNO Institute of Industrial Technology, P.O.B. 3, 2600 AA Delft, Netherlands

Unitor Ship Services Inc., 2375 West Esther Street, Long Beach, CA 90813

**PIPE FITTINGS/CUTTINGS/CONNECTING/ SYSTEMS**  
Georg Fischer DISA Pipe Tools Division, 407 Hadley St., Holly, MI 48442

Lokring Corp., 396 Hatch Drive, Foster City, CA 94404  
Victaulic Co., 4901 Kesslersville Rd., Easton, PA 18042

**PIPE JOINING PRODUCTS**  
Victaulic Co., 4901 Kesslersville Rd., Easton, PA 18042

**PNEUMATIC HOISTS**  
J.D. Neuhaus, 9 Loveton Circle, Sparks, MD 21152

**POLLUTION CONTROL/ PRODUCTS/MARINE SERVICES**  
Oil Mop, Inc., 221 Rue De Jean, Lafayette, LA 70508

**Ports**  
Port of Olympia, 915 Washington NE, Olymnia WA 98501

**POWER GENERATORS**  
Aggreko, Inc., 4607 W. Admiral Doyle Dr., New Iberia, LA, 70560  
FCS, Inc., 22 Main St., Centerbrook, CT 06409

**PROPELLERS**  
Kahlenberg Bros, P.O. Box 358, Two Rivers, WI 54241  
Associated Marine Technologies, 4016 Seaboard St., Portsmouth, VA 23701

Holland Roer Propellers, 2273 Batataria Blvd, New Orleans LA, 70072  
Rice Propellers, Av. Rios Espinoza #88, Mazatlan, MEXICO 82180

Rolla SP Propellers SA, P.O. Box 251, Via Silva 5, 6828 Balerna, SWITZERLAND  
S&S Propellers, 26-15 123rd St., Flushing, N.Y. 11354  
Sound Propeller, 1608 Fairview Avenue E., Seattle, WA 98102

General Thermodynamics, 210 South Meadow Rd., Plymouth, MA 02360

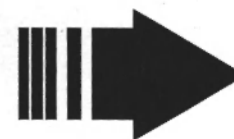
**PROPULSION EQUIPMENT**  
—Bowthrusters, Diesel Engines

# INFORMATION

## SHOWCASE

**Get Free Information Fast**

Circle the appropriate Reader Service Number  
on the opposite page.



Page	Advertiser	Product	R/S#	Page	Advertiser	Product	R/S#
53.....	A/S DAN BUNKERING.....	BUNKERS.....	201	9.....	LANG MANUFACTURING.....	MARINE EQUIPMENT.....	246
8.....	ACCO CHAIN & LIFTING.....	LIFTING CHAINS.....	305	86.....	LEEVAC SHIPYARDS.....	SHIPYARD.....	247
7.....	ADVANCED MARINE TECH.....	ELEC. CHARTING DISPLAY..	202	42.....	LISTER CHAIN.....	ANCHORS/CHAINS.....	248
36.....	AEROQUIP CORP.....	BEARING SYSTEM.....	203	79.....	LOEFFLER CORP.....	VALVES & BELLS.....	249
15.....	AGGREKO.....	TEMP POWER STATIONS....	213	3.....	LOKRING.....	PIPE JOINING SYSTEMS....	250
14.....	ALLIED SIGNAL/WELLINGTON.....	ROPES & FIBERS.....	204	39.....	MAN B&W DIESEL AG.....	MARINE EQUIPMENT.....	251
78.....	AMERICAN SHIPYARD CORP.....	SHIPYARD.....	205	36.....	MARINE GEARS.....	GEARS.....	252
41.....	ASTILLEROS ESPANOLAS.....	SHIPBUILDING.....	206	23.....	MARINE TRAVELIFT.....	HOISTS.....	253
1.....	AT&T MOBILE SAT. COM.....	COMMUNICATIONS.....	207	36.....	MICROPHOR.....	SANITATION DEVICES.....	255
4.....	AUTOSHIP.....	SOFTWARE.....	208	60.....	MOTOR-SERVICES HUGO STAMP....	DIESEL ENGINE PARTS.....	311
13.....	B+V INDUSTRIETECHNIK GMBH.....	SIMPLEX COMPACT 2000....	210	72.....	NAUTICAL GOLD CREATIONS.....	NAUTICAL JEWELRY.....	256
59.....	BALTIMORE MARINE INDUSTRIES....	SHIPYARD.....	309	18.....	NELSON INDUSTRIES.....	RECIRCULATOR.....	288
75.....	BATTLESHIP NJ FOUNDATION.....	FOUNDATION.....	209	32.....	NEWPORT NEWS.....	SHIPBUILDING.....	257
11.....	BLOUNT MARINE.....	BOATBUILDER.....	211	78.....	NORTHEAST TECHNICAL.....	TANKER INSPECTION SYS..	303
22.....	BOATRACS INC.....	SATTELITE COMM.....	212	80.....	PELLEGRINI MARINE EQUIPMENT....	MARINE EQUIPMENT.....	258
13.....	BRANTON INDUSTRIES.....	MARINE EQUIPMENT.....	214	86.....	PRIME MOVER CONTROLS.....	MARINE EQUIPMENT.....	259
28.....	CHAND CORP.....	SOFTWARE.....	215	86.....	PROPULSION SYSTEMS INC.....	PROPULSION SYSTEMS....	260
19.....	CHEVRON USA.....	LUBRICANTS.....	216	15.....	PROTEUS ENGINEERING.....	COMPUTER SOFTWARE.....	261
20.....	COASTAL OCEANOGRAPHICS.....	MARINE ELECTRONICS.....	217	79.....	PUGET SOUND ROPE.....	ROPES.....	299
38.....	COMNAV MARINE.....	AUTOPILOT SYSTEMS.....	218	27.....	PVA/MARTITRENDS.....	EXPO.....	288
10.....	COMSTAT MOBILE COMM.....	SATTELITE COMM.....	219	79.....	ROYAL CHEMICAL.....	BALLAST & VOID COATING..	263
29.....	COSPOLICH REFRIGERATION.....	REFRIGERATION.....	221	17.....	RW FERNSTRUM.....	COOLING SYSTEMS.....	293
22.....	CSD SEALING SYSTEMS.....	SEALING SYSTEMS.....	225	31.....	S.P. RADIO A/S.....	COMMUNICATIONS.....	264
33.....	CUMMINS ENGINE CO.....	MARINE EQUIPMENT.....	226	30.....	S.P. RADIO A/S.....	COMMUNICATIONS.....	264
29.....	CUMMINS MARINE.....	MARINE EQUIPMENT.....	227	47.....	SAMSUNG HEAVY INDUSTRIES.....	MARINE EQUIPMENT.....	266
16.....	CUSTOM SHIP INTERIORS.....	SHIP INTERIORS.....	228	71.....	SEATRADE.....	TRADE SHOWS.....	267
37.....	DBC MARINE SAFETY SYSTEMS.....	EVACUATION SYSTEMS.....	229	12.....	SEATRADE.....	TRADE SHOWS.....	268
38.....	DESMOND-STEPHAN MFG.....	SWIRL-OFF SCARIFIERS.....	230	40.....	SEATRADE ORGINAZATION.....	EXPO.....	220
83.....	DEWIJS MARINE INTERNATIONAL....	MARINE EQUIPMENT.....	231	77.....	SEAWARD INTERNATIONAL.....	FENDERS.....	269
9.....	ELECTRONIC MARINE SYSTEMS.....	NAVIGATION.....	232	37.....	SEMCO MARINE INC.....	ELECTRICAL EQUIPMENT...	270
11.....	ELECTRONIC MARINE SYSTEMS.....	NAVIGATION.....	296	37.....	SERVICE VALVE & FITTING.....	VALVES & FITTINGS.....	271
13.....	ELECTRONIC MARINE SYSTEMS.....	NAVIGATION.....	297	26.....	SINGAPORE '98 TRADE SHOW.....	TELECOMMUNICATIONS....	272
15.....	ELECTRONIC MARINE SYSTEMS.....	NAVIGATION.....	298	42.....	SMITH-BERGER MARINE.....	DECK HARDWARE.....	273
16.....	FERRO CORP.....	EPOXY REPAIR SYSTEM.....	234	16.....	SOVEREIGN RUBBER AMERICA.....	MARINE EQUIPMENT.....	274
5.....	FRIEDE GOLDMAN INT'L.....	SHIPBUILDER.....	235	11.....	SPAR ASSOCIATES.....	SHIPBOARD MGMT SYS.....	275
80.....	G.J. WORTELBOER JR. B.V.....	ANCHORS, CHAINS.....	236	74.....	STERLING EQUIPMENT.....	MARINE EQUIPMENT.....	276
61.....	GERMANISCHER LLOYD.....	SHIPBUILDER.....	308	48,49	STEWART STEVENSON.....	DIESEL ENGINES.....	277
36.....	GIBBS & COX.....	NAVAL ARCHI- TECTS.....	237	20.....	STIKEMAN, ELLIOT.....	LEGAL SERVICES.....	301
43.....	HALTER MARINE GROUP.....	TECTS.....	239	38.....	STORK-KWANT.....	UNIVERSAL TELEGRAPHS..	278
57.....	HAMBURG MESSE & CONGRESS .....	SHIPBUILDING.....	200	78.....	TECHNICAL MARINE SERVICES.....	TANK LIQUID LEVEL GAUGE	279
55.....	HANJIN HEAVY INDUSTRIES.....	EXHIBITION.....	302	34.....	THERMAX.....	BULKHEAD PANEL.....	280
83.....	HOLLY HOIST CORP.....	SHIPYARD.....	300	37.....	US SPARES.....	MARINE EQUIPMENT.....	281
21.....	HOSE MC CANN.....	REFRIGERATION.....	294	35.....	VICINAY CADENAS USA.....	SHIPBUILDING.....	282
9.....	ICON RESEARCH.....	COMMUNICATIONS.....	233	25.....	VICTAULIC CO.....	PIPE JOINING PRODUCTS..	283
28.....	IMSA.....	DIESEL PERFORMANCE .....	240	53.....	VOITH HYDRO MARINE TECH.....	TRACTOR MACHINERY.....	289
60.....	IMSSCO.....	CAD/CAM SYSTEMS.....	310	44.....	WALLACE COAST.....	SHIPYARD.....	307
83.....	IN-PLACE MACHINING.....	PORTABLE FOAM SYSTEM..	241	78.....	WASHBURN DOUGHTY.....	MARINE EQUIPMENT.....	291
77.....	INTERGRAPH.....	CRANKSHAFT REPAIR.....	242	83.....	WATERMAN SUPPLY.....	MARINE EQUIPMENT.....	284
35.....	J.J. MC MULLEN.....	COMPUTER EQUIP.....	243	34.....	WESTERN BRANCH METALS.....	BOAT SHAFTING.....	285
73.....	J.W. FISHERS.....	NAVAL ARCHI- TECTS.....	244	78.....	WESTERN MACHINE WORKS.....	SHIPBUILDERS.....	286
80.....	JEAMAR WINCHES.....	TECTS.....	292	76.....	ZOLLERN.....	WINCHES.....	290
73.....	KAHLENBERG BROS. CO.....	UNDERWATER METAL DET..	295				
C4.....	KARL SENNER.....	WINCHES.....	306				
C2.....	KVAERNER MASA MARINE.....	SIGNALS.....	287				
79.....	L.F. GAUBERT & CO.....	PROPULSION EQUIPMENT..	245				

The listings above are an editorial service provided for the convenience of our readers.



Caterpillar, 100 NE Adams Street, Peoria, IL 61629-2320  
Centa Corp., 8185 Cass Ave., Darien, IL 60561  
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227  
deWijns Marine International B.V., Postbus 320, 1969 NJ  
Heemskerck, Nederland  
The Falk Corp., PO Box 492, Milwaukee, WI 53201-0492  
Fincantieri, Diesel Engines Div—GMT, Bagnoli della  
Rosandra 334, Trieste, ITALY  
GE Naval & Drive Turbine Systems, 166 Boulder Dr.,  
Fitchburg MA 01420  
GEC ALSTHOM Diesels Inc., 10801 Kempwood Dr. Ste 1,  
Houston, TX 77043-1412  
Gollens Worldwide, 160 VanBrunt St., Brooklyn, NY 11231  
Harbormaster Marine Inc., 31777 Industrial Rd., Livonia, MI  
48150  
Harrington Metal, 6720 124th Ave. Lenville, MI 49408  
Hedco Engineering, Inc., 1320 Kemper Meadow, Ste. 500,  
Cincinnati, OH 45240  
In-Place Machining Co., Inc. 1929 North BuffumStreet,  
Milwaukee, WI 53212-3793  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Krupp Mak, 7555 Danbro Crescent, Mississauga, Ontario,  
CANADA L5N 6P9  
LIPS B.V., P.O. Box 6, 5150 BB Druenen, The Netherlands  
Lohmann & Stolterfoht, P.O. Box 1860, D-58408 Witten,  
Germany  
Lo-Rez Vibration Control, 186 West 8th Ave., Vancouver, BC  
CANADA, V5Y 1N2  
Mapeco Products Inc., 90 Forest Ave., Locust Valley, N.Y.  
11560  
Markisches Werk, P.O. Box 1442, D-5884 Halver GERMANY  
MAN B&W Diesel, 17 State St., New York, NY 10004  
MAN B&W Diesel A/S, Ostervej 2, DK-4960 Høleby,  
DENMARK  
MAN B&W Diesel A/S, Alpha Diesel, Niels Juels Vej 15, DK-9900  
Frederikshavn, DENMARK  
MAN B&W Diesel GmbH, Stadtbachstrasse 1, D-86153  
Augsburg 1 GERMANY  
Omnithruster, Inc., 743 N. Main St., Orange, CA 92688  
Orion Corp., 1111 Cedar Creek Rd., Grafton, WI 53024  
Oy Wartsila Ab, Vasa and Abo Divisions, P.O. Box 244,  
SF65100 Vasa, FINLAND  
Rolla SP Propellers SA, Via Silva 5, P.O. Box 251, 6828  
Balerna SWITZERLAND  
S&S Propellers, 26-15 123rd St., Flushing, N.Y. 11354  
Karl Senner Inc., 25 W Third, Kenner LA 70062  
Schottel-Werft, Manizer Strasse 99, D-56322 Spay/Rhein,  
GERMANY  
Schottel North America, Inc., 1505 Corbin Ave., Hammond,  
LA 70403  
Siemens Electric Ltd., 1180 Courtneypark Rd., Mississauga,  
ONTARIO  
Stewart & Stevenson, 1400 Destrehan, P.O. Box 8, Harvey  
LA 70059-0008  
Thrustmaster of Texas, P.O. Box 840189-12227 IFM 529,  
Houston, TX 77284-0189  
Ulstein Bergen Diesel A/S, P.O. Box 924, N-5002, Bergen,  
NORWAY  
Ultra Hydraulics Limited, Cheltenham Road East, Gloucester,  
GL2 9QN, ENGLAND  
Voith Hydro Marine Technology, P.O.B. 1125, D89509,  
Heidenheim, GERMANY  
U.S. Rep: Voith Schneider America Inc., 121 Susquehanna  
Ave., Great Neck, NY 11021

**PUMP—Repair—Drives**  
Gilkes, Inc., PO Box 628, Seabrook, TX 77586  
Hamworthy Marine, Inc., 1129 Hospital Dr. Ste 3C,  
Stockbridge, GA 30281  
Kraissl Company, 299 Williams Ave., Hackensack, N.J.  
07601-5225  
Vita Motivator, 566 Parker St., Newark, NJ 07104

**RADARS—ARPA**  
Furuno USA, Inc., 271 Harbor Way, S. San Francisco, CA  
94080  
Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017

**REFRIGERATION EQUIPMENT/SERVICES**  
Adrick Marine, 81 Mahan St., West Babylon, N.Y. 11704  
Ashland Chemical Co., Drew Marine Co., One Drew Plaza,  
Boonton, NJ 07005  
RTF Mfg., RD #1 Route 66, Hudson, NY 12534  
Unitor Ship Service Inc., 2375 West Esther Street, Long  
Beach, CA 90813  
Refrigeration Resources., 210 West Side Ave., Jersey City, NJ,  
07035

**REFRIGERATORS & FREEZERS**  
RTF Manufacturing, RD #1, Rte. 66, Hudson, NY 12534

**REMOTE VALVE OPERATORS**  
American United Marine Corp., 5 Broadway, Rt 1, Saugus,  
MA 01906  
Elliott Manufacturing, P.O. Box 773, Binghamton, NY 13902  
Triumph Controls, 205 Church St., North Wales, PA 19454

**RH PROPULSION**  
Boll Filter, 15 International Dr., East Granby, Ct., 06206  
Gollens, 160 Van Brunt St., Brooklyn, NY 11231

**RIGID INFLATABLE BOATS**  
American Eagle, 780 E. Pearle Jensen Way, LaConner, WA  
98257  
Willard Marine, Inc. 1250 N. Grove St., Anaheim, CA 92806  
Zodiac of N. America Thompson Creek, P.O. Box 400,  
Stevensville, MD 21666

**ROPE—Manila—Nylon—Hawsers—Fibers**  
American Mfg. Co., 200 Southpark Rd., Lafayette, LA 70508-  
3609  
Bayer AG, D-41538, Dormagen, GERMANY  
Phillystran, Inc., 151 Commerce Drive, Montgomeryville, PA  
18936-9828  
Puget Sound Rope, 1012 Second St., Anacortes, WA 98221  
Wellington, P.O.B. 244, Madison, GA 30650

**RUDDER BUSHES**  
Vesco Plastics, P.O. Box 40647, Cleveland 2022, South  
Africa

**SAFETY DECKING**  
SlipNot Safety Flooring, 2545 Beaufait St., Detroit, MI 48207  
Datrex, Inc., P.O. Box 1150, Kinder, LA 70648-1150

**SAFETY LIGHTING**  
Datrex, Inc., P.O. Box 1150, Kinder, LA 70648-1150

**SANITATION DEVICE—Pollution Control**  
Byrne, Rice & Turner, Inc., 1172 Camp Street, New Orleans,  
LA 70130

Exceltech International Corp., 1110 Industrial  
Blvd., Sugarland, TX 77478  
Envirovac Inc., 1260 Turret Dr., Rockford, IL 61111  
Fast Systems, 3240 North Broadway, St. Louis, MO 63147  
Headhunter Inc., 214 SW 21st Terrace, Fort Lauderdale, FL 33312  
Micropher, 452 East Hill Road, Willits, CO, 95490  
Owens Mfg., Hwy 92, Youngsville, LA 70592  
Research Products Blankenship, 2639 Andjon Dallas, TX  
75220

**SATELLITE COMMUNICATIONS**  
American Mobile Satellite Corp., 10802 Parkridge Blvd.,  
Reston, VA 22091  
Boatrac, Inc., 6440 Lusk Blvd. #D-201, San Diego, CA  
92121-2758  
Furuno USA, Inc., 271 Harbor Way, S. San Francisco, CA  
94080  
KVH Industries, Inc., 110 Enterprise Center, Middleton, R.I.  
02842-5268  
ICG Satellite Communications, 8400 NW 52nd St., Suite 110,  
Miami, FL 33166  
Mackay Communications, 2721 Discovery Dr., Raleigh, N.C.  
27604-1851  
Norwegian Telecom, Postboks 6701 St. Olavs Plass, N-0130,  
Oslo, Norway  
PTI Telecom, Station 12, P.O. Box 30150-2500 JD The  
Hague, NETHERLANDS  
Radio-Holland USA, 8943 Gulf Freeway, Houston, TX 77017  
Singapore Telecom, 15 Hill Street, Telephone House, 2nd  
Storey, Singapore 0617  
Telstra Mobile Satellite & Radio Services, 79 St. Hilliers Rd.,  
Auburn NSW 2144, AUSTRALIA  
Westinghouse Wireless Solutions Co., 930 International Dr.,  
Linthicum, MD 21090  
Land Sea Systems, 849 Seahawk Circle, Suite 103, Virginia  
Beach, VA 23452

**SCALE MODELS**  
Markitect, PO Box 225, Oconomowoc, WI 53066  
Scale Reproductions, 16346 County Road 13, Fairhope, AL  
36532  
Sturgeon Bay Model Shop, 187 N Ninth Ave., Sturgeon Bay  
WI 54235

**SCARIFIERS**  
Desmond-Stephan, P.O.B. 30, Urbana, OH 43078

**SEALS**  
John Crane Marine, USA, 1536 Barclay Blvd, Buffalo Grove,  
IL 60089  
Blohm & Voss Industrie GmbH, P.O. Box 10 07 20, D-20457  
Hamburg, GERMANY  
U.S.A. Reps: Simplex-Turmar Inc, P.O. Box 168, Little Neck,  
NY 11363-0168  
John Crane Marine, 1536 Barclay Blvd., Buffalo Grove, IL  
60089

**SEALANTS**  
Boatlife Industries, 2081 Bridgeview Dr., N. Charleston, SC,  
29405

**SENSORS**  
Gems Sensors, One Cowles Rd., Plainville CT 06062

**SHAFT HORSEPOWER MEASURING SYSTEM**  
Instruments Computers & Controls, 70 South Bow Rd.,  
Hooksett, N.H. 03106

**SHIP CERTIFICATION**  
American Bureau of Shipping, 2 World Trade Center, 106th  
Fl., New York, NY 10048

**SHIP EQUIPMENT**  
Metric Systems Corp., 645 Anchors St., Ft. Walton Beach,  
FL 32548

**SHIP LIFTS**  
Synchrolift Inc., Two Datan Center, 9130 S. Dadeland Blvd.,  
Miami, FL 33156-7850

**SHIP REPAIR**  
Gollens Worldwide, 160 Van Brunt St., Brooklyn, NY 11231

**SHIP VALUATION**  
Capt. E.S. Geary, P.O. Box 1246, Fajardo, P.R. 00738

**SHIPBOARD FURNITURE / SWITCHING  
SYSTEMS**  
Metric System Corp., 645 Anchors St., Ft. Walton Beach, FL  
32548

**SHIPBUILDING—Repairs, Maintenance, Drydocking**  
American Eagle Mfg., 780 Pearle Jensen Way, La Conner  
WA 98257  
Amfels, Inc., P.O. Box 3107, Brownsville, TX 78523  
Astilleros Espanoles, S.A. Ochandiano, 14-16 28023 El Plantio  
SPAIN  
Atlantic Marine, Inc., P.O. Box 3202, Mobile, AL 36652  
Atlantic Marine, Inc., 8500 Heckscher Dr., Jacksonville, FL 32226  
Avondale Industries Inc., P.O. Box 50280, New Orleans LA 70150  
Bender Shipbuilding & Repair, P.O. Box 42, Mobile AL 36601  
Blount Marine Co., P.O. Box 4113, New Orleans, LA 70178  
Blount Marine, 461 Water St., Warren, R.I. 02885  
Bollinger Lockport & Larose, P.O. Box 250, Lockport, LA 70374-  
0250  
Caridoc, P.O. Box 1147 Port Of Spain, Trinidad, W.I.  
Chris-Marine AB, P.O. Box 9025, S-2000 39, Malmö, SWEDEN  
Conrad Industries, 1501 Front Street, P.O. Box 790, Morgan City,  
LA 70381  
Fincantieri SPA Cantieri Navali Italiani, Via Cipro 11, 16129 Genoa  
ITALY  
Gollens Worldwide, 160 Van Brunt St., Brooklyn, NY 11231  
Gulf Coast Fabrication, Inc., P.O. Box 539, Lakeshore, MS 39558  
HDW, Kiel, Germany, USA Rep., Roland Marine Inc., 90 Broad St.,  
NY, NY 10004  
Haller Marine Group, Inc., 13085 Industrial Seaway Rd, Gulfport,  
MS 39503  
Hitachi Zosen, Hitachi Shipbuilding & Engineering Co., 1-1-1  
Hitotsubashi  
Chiyoda-Ku Tokyo 100 Japan  
In-Place Machining Co., Inc. 929 North Buffum Street, Milwaukee,  
WI 53212-3793  
Jacksonville Shipyards, 750 E. Bay St., Jacksonville, FL 32202  
Jeffboat, Inc., P.O. Box 610, Jeffersonville IN 47130  
Kvaerner Masa-Yards Oy, Box 132, SF-00151, Helsinki, FINLAND  
Kichak, 615 N. 34 St., Seattle, WA 98103  
Leevac Shipyards, P.O.Box 1190, HWY 90 East, Jennings, LA  
70546  
Lindenau GmbH, Skagerrakufer 10, Postfach 9093 D-2300 Kiel,  
Friedrichsrot GERMANY  
Motor-Service AB, Box 2115, 144 04 Ronninge, SWEDEN  
Munson Hammerhead, 780 Pearle Jensen Way, La Conner WA  
98257  
Newport News, 4101 Washington Ave., Newport News, VA

23607  
Peterson Builders, Inc., 101 Pennsylvania Ave., Sturgeon Bay, WI  
54235-0650  
Thomas Marine, 37 Bransford Street, Patchogue, NY 11772  
Samsung Heavy Ind., 25, 1-ka, Bongrae-dong, Chung-ku, Seoul,  
Korea  
SeaArk, P.O. Box 210, Monticello AR 71655  
SeaFab, P.O. Box 1651, 4111 Cedar St. Pascagoula, MS 39567  
Service Marine Industries, P.O. Box 3606, Morgan City LA 70381  
Skipperiner Shipyards, 621 Park Plaza Dr, Dept 21, LaCrosse WI  
54601  
Steiner Shipyard, Inc., P.O. Box 742, Bayou la Batre, AL 36509  
Swath Ocean, 979 G Street, Chula Vista, CA 92011  
Westport Shipyard, P.O. Box 308, Westport, WA 98595 Willard  
Marine, Inc., 1250 N. Grove St., Anaheim, CA 92806  
Zodiac of North America Inc., Thompson Creek Rd., P.O. Box 400,  
Stevensville, MD21666  
Friede Goldman, 625 E. Capitol Street, Suite 402, Jackson, MS  
39201

**SHIP OPERATORS**  
Hornblower Marine Service, Pier 3, Ferryboat Santa Rosa, San  
Francisco, CA, 94111

**SHIPYARD / CABLES**  
Ballimore Marine Industries., 600 Shipyard Rd., Baltimore, MD  
21219-2599  
Washburn Doughty, P.O. Box 296, E. Boothbay, ME 04544  
American Shipyard Corp., One Washington St., POB  
570, Newport, R.I. 02840-0943  
Anixter Wire & Cable, 2617 Edenboro Ave., Metairie, LA  
70002  
G.M.D. Shipyard, Flushing Ave./Cumberland, Brooklyn, NY  
11205

**SHIVES**  
Skookum, P.O. Box 280, Hubbard, OR 97032

**SILENCERS**  
Beard Industries Inc., P.O. Box 31115, Shreveport LA 71130  
Nelson Division, Exhaust & Filtration Systems, Hwy. 51  
West, P.O. Box 428, Stoughton, WI 53589

**SLIDING DOORS**  
Mapeco Products, 90 Forest Ave., Locust Valley NY 11560

**SOFTWARE**  
Ship Motion Associates, 10 Danforth St., Portland, ME 04101-  
4567

**SOLAR SHADE**  
McInnis Industries  
2301 Hwy 365  
Port Arthur, TX 77640

**SOUND CONTROL**  
Soundcoat, One Burt Dr., Deer Park, NY 11729

**STAIRMASTER SAFETY TREADS**  
ACL Industries, 177 Gay St., Manchester, N.H. 03103  
SlipNot Safety Flooring, 2545 Beaufait St., Detroit, MI 48207  
Wooster Products, Inc., 1000 Spruce Street, P.O. Box 896,  
Wooster, OH 44691-6005

**STEERING GEARS/STEERING SYSTEMS**  
AutoNav Marine Systems Inc., 55A Clipper St., Coquitlam,  
B.C., Canada V3K 6X2  
Cunningham Marine Hydraulics Co., 201 Harrison St.,  
Hoboken, NJ 07030  
Jastram Engineering, 485 Mountain Hwy N., North  
Vancouver, B.C. CANADA V7J 2L3

**STERN TUBE BEARINGS**  
Blohm & Voss, Industrie GmbH, P.O.B 100720, D-20457,  
Hamburg GERMANY  
IHC Lagersmit, P.O.B. 5 - 2960 AA Kinderdijk - HOLLAND  
Raikoo Ltd., Loudwater, High Wycombe, Bucks Hampshire  
ENGLAND HP109QV

**STERN TUBE BUSHES**  
Blohm & Voss, Industrie GmbH, P.O.B 100720, D-20457,  
Hamburg GERMANY  
Raikoo Ltd., Loudwater, High Wycombe, Bucks Hampshire  
ENGLAND HP109QV  
Vesco Plastics, P.O. Box 40647, Cleveland 2022, South  
Africa

**STERN TUBE SEALS**  
Blohm & Voss Industrie GmbH, P.O. Box 10 07 20, D-20457  
Hamburg, GERMANY  
U.S.A. Reps: Simplex-Turmar Inc, P.O. Box 168, Little Neck,  
NY 11363-0168  
IHC Lagersmit, P.O.B. 5 - 2960 AA Kinderdijk - HOLLAND

**STORAGE/WORKSHELTERS**  
Poly-Steel Shelters, 1209 E. Ocean Blvd., Stuart, FL 34996

**STRAINERS & FILTERS**  
Kraissl Co., 299 Williams Ave., Hackensack, NJ 07601

**STUFFING BOXES**  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241

**SURFACE PREP TOOLS**  
Aurand Mfg., 1210 Ellis St., Cincinnati, Ohio 45223

**SURFACE PREPARATION**  
Aqua-Dyne, Inc., 3620 W. 11th  
Street, Houston, TX 77008-6004

**SURVIVAL EQUIPMENT**  
Sea, Inc. 7030 220th S.W., Mountlake Terrace, WA 98043

**TANK CLEANING MACHINES**  
Cloud Co., 41200 Horizon Lane, San Luis Obispo, CA 93401

**TANK LEVELING INDICATORS**  
American United Marine Corp., 5 Broadway, Rt. 1, Saugus,  
MA 01906  
Bergan Tank, 3409 Gulf Breeze Pkwy, Gulf Breeze, FL  
32561  
ERL Marine Products div, PO Box 1026, New Albany, IN  
47151-1026  
FCS, Inc., 22 Main St., Centerbrook, CT 06409  
lan-Conrad Bergan, 3409 Gulf Breeze Parkway, Gulf Breeze,  
FL 32561  
Gems Sensors, One Cowles Rd., Plainville, CT 06062  
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner,  
LA 70088  
MMC International, 60 Inip Dr, Inwood NY 11096  
Prime Mover Controls, 3600 Gilmore Way, Burnaby V5G 4R8  
CANADA  
Saab Marine Electronics AB, P.O. Box 13045, S-402 51  
Goteborg SWEDEN  
Technical Marine Service, 6040 North Cutter Circle, Portland,  
OR 97217  
Electronic Marine Systems, 800 Ferndale Pl., Rahway, N.J. 07065

**TANK LIQUID LEVEL GAUGES**  
Headhunter, Inc., 214 SW 21st Terrace, Fort Lauderdale, FL  
33312  
King Engineering Corp., P.O. Box 1228, Ann Arbor, MI 48106

Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner,  
LA 70088  
Gems Sensors, Inc., 1 Cowles Rd., Plainville, CT, 06062

**TEMPORARY POWER STATIONS**  
Aggreko, Inc., 4607 West Admiral Doyle Dr., New Iberia, LA  
70560

**TESTING SERVICES**  
Wyle Laboratories, 7800 Govern's Dr. S.W., Huntsville, AL  
35897

**THERMAL INSULATION**  
Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123  
Superior Energies Inc., P.O. Drawer 386, Groves TX 77619

**THICKNESS TESTING**  
Cygnus Instruments, 1993 Moreland Parkway, Suite 202,  
Annapolis, MD 21401  
M.A.C.E., 5910 N.E. 15th Ave., Fort Lauderdale, FL 33331

**TOILET SYSTEMS**  
Headhunter, Inc., 214 SW 21st Terrace, Fort Lauderdale, FL  
33312  
Research Products/Blank, 2639 Andjon, Dallas, TX 75220

**TORSIONAL VIBRATION SPECIALISTS**  
M.A.C.E., 5910 N.E. 15th Ave., Fort Lauderdale, FL 33331  
T.W. Spaetgens, 186 W. 8th Ave., Vancouver, BC, CANADA,  
V5Y 1N2  
Vibranalysis Engineering Corp., 9300 Gamebird, Houston,  
TX 77034

**TOWING—Barges, Vessel Chartering, Lighterage,  
Salvage, etc.**  
Jack Faulkner, 2419 Caddy Lane, Flossmoor IL 60422

**TRAINING COURSES**  
Marine Safety Intl., Marine Terminal Laguardia Airport, NY  
11371  
Star Center, 2 West Dixie Highway, Dania, FL 33004

**TRAINING SIMULATOR**  
Applied High Technology , 4 Place Dee Commerce  
Brossard, Suite 201 Quebec Canada J4W-3B3

**TURBOCHARGERS**  
ABB Turbocharger Co., 1460 Livingston Ave., North  
Brunswick, NJ 08902

**ULTRASONIC TESTING**  
Coast Marine Services, 793 B Mira Flores, San Pedro CA 90733  
M.A.C.E., 5910 N.E. 15th Ave., Fort Lauderdale, FL 33331

**ULTRASONIC THICKNESS GAUGES**  
Cygnus Instruments, Inc., P.O. B. 6417, Annapolis, MD 21401

**VACUUM TOILET SYSTEM**  
Envirovac Inc., 1260 Turret Dr., Rockford, IL 61111  
Fast Systems, Inc., 3240 N. Broadway, St. Louis, MO 63147  
Jets Vacuum Sewage System, P.O. Box 14, N-6060 Hareid,  
NORWAY

**VALVE CONTROL SYSTEM**  
Elliott Mfg., P.O. Box 773, Binghamton, NY 13902

**VALVES AND FITTINGS**  
Cla-Val Co., P.O. Box 1325, Newport Beach, CA 92663  
Derbyshire Machine & Tool, 5100 Bellfield Ave., Philadelphia, PA 19144-1788  
ERL Marine Products Div., PO Box 1026, New Albany, IN 47151-1026  
Stacey Fetterolf Corp., P.O. Box 103, Skippack, PA 19474  
lan-Conrad Bergan, 3409 Gulf Breeze Pkwy, Gulf Breeze, FL 32561  
Kraissl Company, 299 Williams Ave., Hackensack, N.J. 07601-5225  
Leslie Controls, 12501 Telecom Dr., Tampa, FL 33637  
Loeffler Corp., 201 E. Lincoln Hwy., Pennell, PA 19047-4057  
MMC International, 60 Inip Dr, Inwood NY 11096  
Service Valve & Fitting, P.O. Box 9665, Mobile, AL 36609  
W&O Supply, 3465 Evergreen Ave., Jacksonville, FL 32206

**VAPOR RECOVERY CONTROLS**  
E.R.L. Marine Products, P.O. Box 1026, New Albany, IN  
47151-1026  
lan-Conrad Bergan, Inc., 3409 Gulf Breeze Parkway, Golf  
Breeze, FL 32561  
Refrigeration Resources., 210 West Side Ave., Jersey City, NJ,  
07035  
Electronic Marine Systems, 800 Ferndale Pl., Rahway, N.J. 07065

**VENTILATION SYSTEMS / PRODUCTS**  
Stork Canada, 47 boul. Marie-Victorin, Candiac, Quebec,  
Canada J5R1B6  
ABB Flakt Marine, Box 1043, S-436 21 ASKIM SWEDEN  
Novenco Hi-Press A/S, P.O. Box 310, Roskildevej 325A, DK-  
2630 Taastrup, DENMARK  
Dry Air Technologies, 313 N. Oak St., Burlington, WA 98233

**VIBRATION ANALYSIS**  
T. W. Spaetgens, 186 W 8th Ave., Vancouver BC CANADA  
V5Y 1N2  
Vibranalysis Engineering Corp., 9300 Gamebird, Houston,  
TX 77034

**VISCOSITY MEASUREMENT**  
Cambridge Applied Sys., 196 Boston Ave., Medford, MA  
02155

**WASTE WATER TREATMENT**  
Envirovac, 1260 Turret Drive, Rockford, IL 61111  
Research Products Blankenship, 2639 Andjon Dallas, TX 7522  
Uniservice Americas, 57174 Hardin Rd., Sidell, LA 70461  
RGF Marine 3875 Fiscal Ct., West Palm Beach Florida 33404

**WATERMAKERS**  
Reverse Osmosis of South Florida, 12301 SW 133 Court, Miami  
Florida, 33186

**WATER PURIFIERS**  
Alfa-Laval, Desalt A/S, Starnholmen 93, DK-2650 Hvidovre,  
Copenhagen, DENMARK  
Alfa-Laval Separation Inc., 955 Mearns Rd., Warminster, PA 18974  
Beard Industries Inc., P.O. Box 31115, Shreveport LA 71130  
Lifestream Water Purification Equip., 16611 Gemini Lane, Huntington Beach,  
CA 92647  
Offshore Marine Labs, 22994 El Toro Rd., Ste. 105, Lake Forest, CA 92630  
Rochem Separation Systems, 2900 Morocco Rd, Ida, MI 48140

**WEATHER INSTRUMENTS**  
Aanderaa Instruments, Fanaveien 13B, 5050 Nestun,  
Bergen, NORWAY

**WELDING**  
Welding Consultants USA, 10399 Paradise Blvd. #101, St.  
Petersburg, FL 33706

**WELDING AND REFRIGERANT PRODUCTS**  
Ashland Chemical/Drew Ameroid Marine, One Drew Plaza,  
Boonton, NJ 07005  
Unitor Ship Service Inc., 2375 West Esther Street, Long  
Beach, CA 90813

**WINCHES AND FAIRLEADS**  
Jeamar Winches Ltd., 53 Maple Ave., Richmond Hill,  
Ontario L4C6P3, CANADA  
MMC International, 60 Inip Dr, Inwood NY 11096  
Markey Machinery, P.O. Box 24768, Seattle, WA 98124  
McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS  
39535 4454  
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA  
02150  
Smith Berger Marine Inc., 516 S. Chicago St., Seattle, WA 98108  
Skookum, Inc., P.O. Box 280, Hubbard, OR 97032

**WIND MONITORING SYSTEMS**  
Aanderaa Instruments, Fanaveueb 13B, 5051 Bergen, NORWAY

**WIRE AND CABLE**  
Anixter Inc., 2617 Edenboro Ave., Metairie, LA 70002

**WORKBOATS**  
Ambar Marine Inc., 221 Rue de Jean, Lafayette, LA 70508

# PROFESSIONAL

## OFFSHORE, ONSHORE, MARINE and PETRO-CHEMICAL CONTRACT PERSONNEL SHORT and LONG TERM

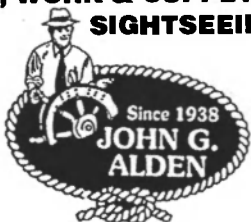
Temp to Perm  
Engineers, Designers and Draftsmen (All Disciplines)  
Project Engineers, Managers and Construction Management and Supervision  
Safety Engineers, Trainers and Inspectors  
Corrosion Engineers and Certified Inspectors (All Disciplines)  
Petroleum and Chemical Engineers  
Drilling and Production Personnel  
Employee Based Firm - Since 1984



**Advantage Professional Staffing**  
3340 Severn Ave. • Suite 320 • Metairie, LA 70002  
(504) 780-9500 • Fax (504) 456-1144  
Qualified Professionals According To Need

## JOHN G. ALDEN QUOTE LINE 1-800-330-3370

For fast response on  
**TUGS • BARGES • RIGS  
CREW, WORK & SUPPLY BOATS,  
SIGHTSEEING.**



**MARINE INSURANCE**  
1300 SE 17th Street, Fort Lauderdale, FL 33316  
Fax: 305-525-0588

**ANKER MARINE PAINTS**  
21 CHARLES STREET  
WESTPORT CT. 06880  
PHONE 203-226-5200  
FAX 203-226-5246  
**WORLD WIDE SERVICE  
SINCE 1962**

**CAPTAIN ASTAD COMPANY INC.**  
• SHIPBROKERS & MARINE CONSULTANTS  
• SALE & PURCHASE - ANY TYPE VESSELS  
• NEW CONSTRUCTION - CONVERSIONS  
• OWNERS REPRESENTATIVE

Office Phone: (504) 585-7317 • (504) 522-3007  
Private Phone: (504) 585-7301 • (504) 522-6006  
2900 Energy Centre, 1100 Poydrea Street  
New Orleans, LA 70163-2900

**E&A MARINE CO., INC.**  
**COMPLETE TOPSIDE REPAIRS**

- Full Machine and Electrical Shops
- Daihatsu Diesel Authorized Service & Parts
- Shipfitting, Pipefitting, Certified Welding, Diesel Repairs
- Motor and Generator Rewinding, Dynamic Balancing
- Pump Repairs and Custom Fabrications
- Experienced Riding Crews for all Trades

75 Huntington St., Brooklyn, NY 11231  
Telephone: 718-875-6700 • Fax: 718-858-0029  
**QUALITY ..... SERVICE ..... VALUE**

**BAND, LAVIS & ASSOCIATES, INC.**  
Naval Architects & Marine Engineers  
800 Ritchie Highway  
Severna Park, Maryland 21146  
Tel: (410) 544-2800; Fax: (410) 647-3411;  
E-Mail: bla@access.digex.net  
Web Site: www.access.digex.net/~bla

**C. BAXTER, JR. & ASSOCIATES**  
NAVAL ARCHITECTS/ENGINEERS & SURVEYORS  
3113 Cottage Hill Road  
Mobile, AL 36609  
Tel. (334) 476-1998  
(800) 398-6691

**BAY ENGINEERING, INC.**  
• NAVAL ARCHITECTS • MARINE ENGINEERS • SHIP AND BARGE DESIGN  
• SELF-UNLOADING TECHNOLOGY • CONCEPT AND CONTRACT DESIGN  
• CONSTRUCTION DRAWINGS  
253 N. First Avenue  
Sturgeon Bay, Wisconsin 54235  
Phone: (920) 743-8282 Fax: (920) 743-9543

**BAYFRONT MARINE, INC.**  
EXPERT WORLDWIDE VESSEL DELIVERY SERVICE  
EXPERIENCED PROFESSIONALS  
Licensed  
Masters, Engineers and Crews  
Call Mel or Diane Longo (904) 824-8970

**BISSO MARINE**  
• HEAVY LIFT SPECIALIST  
• MARINE SALVAGE  
• WRECK REMOVAL  
• SONAR SURVEY - DIVING

P.O. BOX 4113  
NEW ORLEANS, LOUISIANA 70178  
Phone: (504) 866-6341  
Fax: (504) 865-8132

Office (334) 666-7121 Home (334) 660-7577  
Fax (334) 666-7126 Beeper (334) 316-1750

Boland Industrial Consulting Services, Inc.  
Equipment Reliability • Vibration Analysis • Laser Alignment • Lubrication

John S. Boland P.O. Box 91360  
President Mobile, AL 36691

**CADSERV** Marine Drawing Digitizing Specialist  
Blueprints → CAD Files  
• AutoCad or Microstation output  
• Ship Design Experienced Supervisors

3107 West Commodore Way Phone: (206) 288-2443  
Suite 204 Fax: (206) 286-0346  
Seattle, Washington 98199 E-mail: rparas@worldnet.att.net

**CHILDS ENGINEERING CORPORATION**  
WATERFRONT ENGINEERING • DIVING INSPECTION  
BOX 333 MEDFIELD, MA 02056 (508) 358-8845

**C.R. CUSHING & CO., INC.**  
NAVAL ARCHITECTS, MARINE ENGINEERS & TRANSPORTATION CONSULTANTS  
18 Vesey Street  
NEW YORK, NY 10007  
TEL. (212) 964-1180 CCUSHING@INTERSERV.COM  
FAX: (212) 285-1334 CRCUSHING@AOL.COM

**CDI MARINE COMPANY**  
Supporting The Marine Engineering Industry

JACKSONVILLE (904) 805-0700  
PHILADELPHIA (609) 862-3555  
PORTSMOUTH (757) 397-8000  
BREMERTON (360) 479-8828  
PASCAGOULA (601) 475-0985

E-Mail address: info@cdi-marine.com

**MAINTENANCE SOFTWARE  
MARINE DISPATCH & BUSINESS SOFTWARE  
LOGISTIC SUPPORT  
SPARES & WAREHOUSE SERVICE**

MICROSOFT CERTIFIED SOLUTION PROVIDER

**CHAND CORPORATION**  
BUSINESS CONSULTING & CUSTOM SOFTWARE

157 HIGHWAY 654, MATHEWS, LOUISIANA 70375  
PHONE: (504) 532-2512 / FAX: (504) 532-2571

**GHS**  
General HydroStatics

**CREATIVE SYSTEMS INC.**  
CREATORS OF GHS

Stability Software Products  
GHS ..... Full-featured hydrostatics  
BHS ..... Mid-range package  
BHS/YACHT ..... Yacht designer's package  
GLM ..... Shipboard trim and stability  
GHS/SALVAGE ..... Salvage oriented package

Developers of advanced hydrostatics software since 1972.  
P.O. Box 1910 Port Townsend, WA 98368 USA  
TEL (360) 385-6212 FAX (360) 385-6213

Serving the marine industry for over 140 years

**CRANDALL DRY DOCK ENGINEERS, INC.**  
Consulting • Design • Inspection  
Railway and Floating Dry Docks  
Dry Dock Hardware and Equipment

Box 505804 Chelsea, MA 02150 (617) 329-3240 Fax (617) 884-8466

**CT MARINE**  
• NAVAL ARCHITECTS • MARINE ENGINEERS •

- VAPOR RECOVERY
- TUGS
- TOWBOATS
- BARGES

Tel. 203-831-0405 Fax. 203-831-0407  
56 CROOKED TRAIL, ROWAYTON CT. 06853

**CUNNINGHAM & WALKER**  
MARINE CONSULTANTS, INC.

NAVAL ARCHITECTURE & MARINE ENGINEERING  
MARINE HVAC ENGINEERING  
MARINE ELECTRICAL ENGINEERING

1762 PROVIDENCE HOLLOW LANE, JACKSONVILLE, FL 32223  
TEL 904 292 9293 FAX 904 824 1423



**WATERFRONT PROPERTY-BARGE FACILITY  
ROGERS TERMINAL**  
1,400 FT. OF WATERFRONT, DOCKS, CONVEYOR, TRUCK  
SCALES. APPROXIMATELY 15 ACRES ON VERGIDRIS  
RIVER CHANNEL AND HIGHWAY 66 IN CATOOSA OKLA-  
HOMA. CALL BUDDY (602) 258-3718

**MARINE SURVEYING FIRM FOR SALE**  
Headquarters in North East, currently serving New  
England, NY/Phil. Metro and Los Angeles, CA  
Consistent annual revenue exceeds \$450K  
Seeking cash buyout, terms negotiable  
FAX INQUIRIES TO: (732) 651-0882

Selling a complete floating GAS FREE barge cleaning plant in Baton  
Rouge. Includes:  
• DRY DOCK • WORK FLOATS  
• 1000 HP PUSH BOAT • ROUGH TERRAIN CRANES  
• BARGE MOUNTED CRANE • LIMA 600 T  
• DECK BARGES 140 X 35 X 12 • WINCHES/DECK FITTINGS  
For information, please call E.J. Naquin @ MORRILL & ASSOCIATES  
(504) 368-9521 or (318) 332-5463

**Dynatrol®** The Best Available!  
% Concentration - % Solids  
• METALWORKING FLUIDS  
• QUENCHANTS  
• PLATING BATHS  
• ACIDS  
• CAUSTICS, etc.  
Automation Products, Inc.,  
3030 Maxroy Street, Houston, Texas 77008-6294 USA  
Fax 713-869-7332 Telephone 800-231-2062 D478-CL111



SILENCERS - FLEX CONNECTORS  
VIBRATION ISOLATORS - EXPANSION JOINTS  
Call for a complete catalog or Engineering Manuals  
for Cummins/Onan, Caterpillar, DDC, Kohler  
**SILEX INC.** - One Source... One Supplier  
TOLL-FREE 1-800-387-7818

**WASTE OIL REMOVAL**  
USED OILS, CENTRIFUGE REJECT, OILY  
WATERS, BAD FUEL, OTHER WASTES  
SERVING PORTS IN CONNECTICUT, NEW YORK,  
NEW JERSEY, PENNSYLVANIA, DELAWARE,  
MARYLAND, WASHINGTON DC, VIRGINIA  
302 378 6300 212 243 1055


**TUGBOATS &  
TOWBOATS**  
A 1998 Calendar  
13 - 8x10 QUALITY  
COLOR PHOTOGRAPHS  
\$10.95 (includes postage and handling)  
Washington residents add 88c sales tax  
Canadian orders add 50c - U.S. funds  
Foreign orders add \$2.00 - U.S. funds  
Mailed First Class  
**HARBOR IMAGES**  
P.O. Box 1176 Richland, WA 99352

**ALL WEATHER PROTECTION  
FROM CAROLINA COCKPIT**  
Corrosion Proof, Lightweight, Engineered,  
Deck Structures and Control Cabs  
Ready to install aboard your vessels  
and equipment  
P.O. Box 83037, Portland OR 97283  
503-735-0339 Fax 503-735-0337



Replacement Parts For:  
B&W • Pielstick • GMT-Fiat  
Cooper • Enterprise • Alco  
Superior • Fairbanks  
**APPLIED ENERGY CORP**  
4188 Center Park Drive Colorado Springs, CO 80916  
Phone (719) 573 1163 Fax (719) 573 1167  
E-Mail: Applied @ JTP.com  
Internet: http://www.JTP.com / Applied

**Instant Liquid Storage**  
Collapsible Tanks  
• Fuel • Oil  
• Water • Wastes  
• Coolants • Ballast  
• 100 to 100,000 gal  
• Ready to Ship and Use  
**AERO TEC LABORATORIES, INC.**  
Spear Road Industrial Park, Ramsey, NJ 07446-1251 USA  
Phone: 201-825-1400 Fax: 201-825-1962



**SHAFT HORSEPOWER  
MEASUREMENT**  
THE "DIGITAL TORQUE METER SYSTEM"  
\*\*FIBER OPTIC SENSORS \*\*STAND ALONE SYSTEM  
\*\*SOFTWARE PACKAGE FOR IBM OR COMPATIBLES  
\*\*CAN MONITOR UP TO THREE SHAFTS  
\*\*24 HOUR TECHNICAL SUPPORT LINE  
\*\*PATENTED  
**I.C.C., CORP.**  
603-485-3800  
Fax 603-485-5209




**FINANCIAL ENGINEERS**  
CREATIVE FINANCIAL SERVICES  
FOR THE MARINE INDUSTRY  
FINANCIAL GUARANTEES  
TITLE XI & DEFENSE EXPORT  
SYNERGISTIC DYNAMICS, INC.  
WILMINGTON ISLAND GA 31410  
912-897-4764

**CENTRIFUGE REPAIRS**  
24 HOUR REPAIR SERVICE  
HIGH SPEED BALANCING • BOWL REPAIRS  
WANTED TO BUY OR SELL USED CENTRIFUGE EQUIPMENT  
Alfa Laval • DeLaval • Sharples • Bird •  
Westfalia • Humboldt • Broadbent • Western  
States • Flotweg • Ketema • ATM • IHI •  
Mitsubishi • Baker-Perkins • APV • Krauss  
Maffei • Barrett

**CENTRIFUGE REPAIR AND ENGINEERING, INC.**  
302 N. 16th • P.O. Box 868, LaPorte, Texas 77571  
Tel. 281-471-3767 • Fax 281-470-0861  
CRE@HYPERCON.COM



The simplest and most innovative design  
in quick release technology is now  
field-proven world wide.  
**SEA CATCH®**  
TOGGLE RELEASE  
TECHNOLOGY  
Made in USA  
**Features:**  
• Perpendicular or parallel release directions.  
• Hitch-pin safety lock.  
• Computer generated parts from stainless plate.  
• TR7 Weight: 4 lbs (1.8 kg)  
• TR7 Certified break load: 35,210 lbs (15.95 mt)  
• Several models/capacities to meet your needs.  
9816 Jacobsen Lane  
Gig Harbor, WA 98332 USA  
**McMillan DESIGN, INC.** Tel: (253) 858-1985 Fax: (253) 858-1986



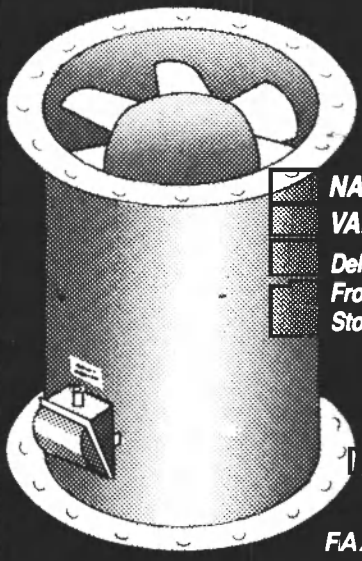
**Tired of nautical reproductions**  
Maritifacts has only **authentic**  
**marine collectibles** rescued from  
scrapped ships: navigation lamps,  
sextants, clocks, bells, barometers,  
flags, binnacles, telegraphs, portholes & more.  
Current Brochure - \$1.00 FAX: 904-645-0150  
**MARITIFACTS, INC.**  
P.O. Box 350190 Jacksonville, FL 32235-0190  
PHONE: (904) 645-0150



**A/B Training Now Available!!**  
Earn up to \$980/wk with upgrade to A/B!  
6 months documented deck time required.  
We have openings for Captains, Mates, Pilots,  
A/B's & O/S's, Tankermen, Engineers (any HP)  
Company paid upgrade programs, Competitive  
wages, and benefits offered  
**MARINE JOBS, INC., 334/380-0765 or**  
E-mail us at [mjiwws@aol.com](mailto:mjiwws@aol.com)

**Spare Parts - Far East**  
**SCARDANA**  
Fax: (1) 514-671-3898  
Tel: (1) 514-465-2480  
Japan - Korea

**JON M. LISS ASSOCIATES, INC.**  
411 BOREL AVENUE, SUITE 505 • SAN MATEO, CALIFORNIA 94402  
**NAVY STANDARD  
VANE AXIAL FANS**  
Delivery  
From  
Stock  
**(415) 573-9191**  
FAX (415) 572-8458



## FOREIGN SPARE PARTS

# SCARDANA

Fax: (1) 514-671-3898 (24 hrs.)  
Tel: (1) 514-465-2480 (24 hrs.)



**CAMAR International Corp.**  
186 Prescott St. Worcester MA 01605

## FMS REPAIR PARTS

For Ex-USN Ships in Foreign Navies



The most complete stock of MILSPEC replacement parts and components for:

Blowers & Compressors  
Steam Turbines  
Pumps  
Steam Valves  
Steam Boilers



Rotating  
Equipment  
Specialists

For Sales, Service and Support Call

(800) 352-7629  
or fax to (508) 752-5687

## SHIP SPARES

- Hamworthy • Hatlapa • Tanabe
- Sabroe • Iron • Sulzer • MAN B&W
- Naniwa • Sauer & Sohn • Yanmar • Alfa Laval
- Mirless Blackstone • Ruston/Paxman
- Mitsubishi • Daihatsu • Teikoku • Caterpillar
- Cummins • Detroit • John Deere
- Atlas Copco • Ingersoll Rand

H.P. INTERNATIONAL INC.

3812 W. Linebaugh Avenue, Tampa, FL 33624  
Tel: 813-968-6884 Fax: 813-961-2028

## AIR START COMPRESSORS

### SPARE PARTS

SPERRE, HATLAPA, TANABE, ETC.  
QUALITY ASSURANCE TO ISO 9002 CERTIFICATED



**S.B.P. Marine**  
LIMITED

4 SEVERN WAY BEWDLEY  
WORCESTERSHIRE  
ENGLAND UK. DY12 2JQ  
PHONE: 44-1299-404068  
FAX: 44-1299-401684

**PURIFIER/CENTRIFUGE**  
Spare Parts - All Foreign Makes

# SCARDANA

Fax: (1) 514-671-3898  
Tel: (1) 514-465-2480

One Stop  
Shopping For All  
Purifier Parts

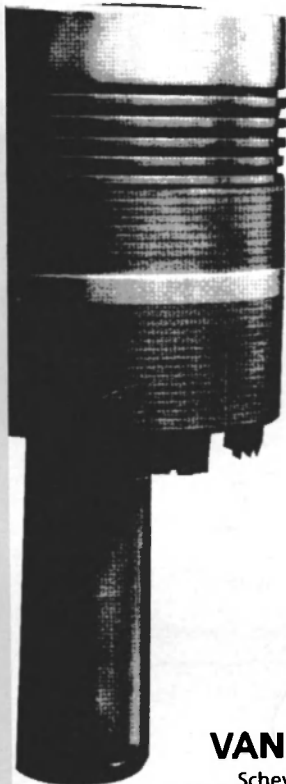
# DIESEL

# ENGINE

# PARTS

RECONDITIONED

NEVERUSED



## VAN WEST-HOLLAND B.V.

Scheveningenstraat 23, 1976 AV IJmuiden  
Tel.: 31-255-532944 Telex +44.888.006 Fax 31-255-534530

## FULL CREWS NEEDED FOR:

- Offshore Tug Boats • Supply Boats
- Utility Boats
- Crew Boats • Inland Boats

CALL CHIEF ENGINEER - THOMAS BREWER TODAY!  
OFFSHORE INTERNATIONAL, INC.

3925 N. 1-10 Service Road W., Suite 130  
Metairie, LA 70002

Telephone: 504-455-1392 • Fax: 504-454-8866

## VESSELS FOR SALE/CHARTER



Specializing In Barges

- ♦ Single or Double Hull, Inland or Ocean-Going
- ♦ Design, Construction & Modification
- ♦ Chartering, Sales & Brokerage



**ZIDELL**  
MARINE  
CORPORATION

Ask for Bill Gobel or Jack Breshears  
503-228-8891 1-800-547-9259

3121 SW Moody Avenue, Portland, Oregon 97201

## EMPLOYMENT/RECRUITMENT

### General Manager, Marine Operations (Portland, Oregon)

**Duties:** Management of 55-acre four berth marine terminal in Portland, stevedoring operations at Port of Portland and Port of Vancouver, Washington, and bulk and break bulk cargo facilities: design and implement administrative and operational policies and procedures; review vessel operations with superintendents, agents & Port Captains; analyze budgets, financial results and expenditures of vessel operations to increase profits; analyze & improve staffing and equipment requirements; analyze and resolve vessel stowage issues including financial issues; prepare container & break bulk cargo pre-stowage and stowage plans; conduct pre-operations meetings with agents/Port Captains; analyze issues regarding position of cargo for efficient stevedoring; determine number of longshoremen required for vessel and terminal operations; determine cargo handling equipment required for efficient operation; handle labor relations matters with union steward, labor relations committee and arbitrations.

**Education/Experience:** Ten (10) years of experience in the offered position or the related occupation of superintendent of cargo vessel. Experience must include five (5) years in a) management of operations and finances of vessels with operating budgets in excess of \$1 million per year; b) conducting financial analyses of, and preparing handling and stowage plans for, cargo operations in excess of \$1 million. Will supervise a staff 8 to 10 people. Applicant must have legal authority to permanently work in the United States.

**Salary:** \$96,000 per year, plus bonuses and benefits, exempt position; 8 a.m. to 6 p.m., in the Portland, Oregon area. Resume and/or cover letter must reflect every listed all requirements or it will be rejected.

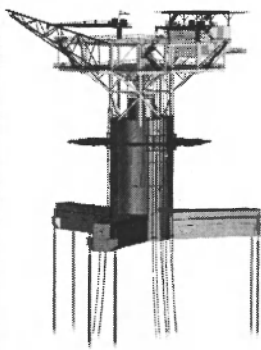
Please send resume by December 30, 1997 to: Employment Department; Attn: Job Order Number 5551586; Union Street N.E., Room 201; Salem, OR 97311-0024.

### PORT ENGINEER - DIESEL/STEAM

Major shipping company has immediate opening for a Port Engineer with a B.S. in Marine Engineering or equivalent and 10 years of experience in the Marine field. Responsibilities include supervision of performance of diesel and steam propelled vessels worldwide, including application of theoretical and technical knowledge in the supervision of dry-docking and repairs of company's fleet of large vessels of unlimited break horsepower. Must be willing to travel extensively in U.S. and abroad. Individual must be physically able to board company vessels. Company provides competitive salary and excellent benefit package. Send resume and salary requirements to:

Recruiter PE  
P.O. Box 53366  
New Orleans, LA 70153  
EOE M/F/V/D





**Atlantia Corporation** is an offshore designer and constructor specializing in innovative shallow and deep water oil and gas production systems. Our SeaStar® Tension Leg Platform has opened new opportunities in deep water. The first SeaStar® is under construction and additional SeaStars are under contract to build. Atlantia has assembled a small, but high caliber staff of experienced naval architects and engineers to develop the SeaStar®. We are now seeking talented, imaginative and energetic people to expand this staff for additional SeaStar® designs.

The positions listed below specifically apply to the SeaStar® hull design. The overall responsibilities of the hull design team encompass the development of the preliminary and final designs, determination of scantlings and welding requirements, global and local structural analysis, development of contract plans and specifications, and preparation of design reports. PC competency essential. Qualified individuals should submit resume with salary requirements to: TLP Engineering Manager, Atlantia Corporation, 1177 West Loop South, Suite 1200, Houston, Texas 77027, or fax (713) 850-1178 or email to: TLP@atlantia.com

**SENIOR NAVAL ARCHITECT/STRUCTURAL ENGINEER** - MS degree required with 10+ years experience, primarily in hull structure design. Demonstrated experience with design and construction of stiffened plate and shell construction and familiarity with ABS/DnV code is a must. Shipyard experience is desirable and written and verbal communication skills are a plus. You will become a key member of the hull design team with potential for advancement as hull design team leader.

**NAVAL ARCHITECT/STRUCTURAL ENGINEER** - MS degree required with 2-5 years experience; graduate work must be in structures. Desired experience includes: hull scantling design, floating offshore structures, structural analysis, and stability analysis. Familiarity with ABS/DnV codes, STRUCAD/SACS/ANSYS, welding, and shipyard practice are a plus.

**SENIOR OCEAN ENGINEER/STRUCTURAL ANALYST** - MS degree required with emphasis on structural mechanics, with 10+ years experience in structural analysis and design, including hull-type offshore structures. Must be proficient at finite element analysis and familiar with ABS/DnV structural code. Ability with FORTRAN programming and UNIX operating systems is expected. Familiarity with hull structures, hydrodynamic loading, fatigue, marine dynamics, stochastic analysis is highly desirable. This is a lead position working with several analysts and engineers as part of a total structural design team.

**DESIGNER/DRAFTSMAN** - Several positions open encompassing Hull Structure and Marine Systems. Familiarity with hull design/construction and AUTOCAD13 necessary. Marine system designers should be familiar with ABS/USCG codes. Shipyard and offshore industry experience and 3D AUTOCAD modeling are a plus. You will primarily be working as part of the dedicated deep water team working with naval architects and marine engineers in the development of preliminary and contract plans for the SeaStar® hull structure or marine systems. Other tasks may include 3D modeling, checking of builder shop drawings, and weight take-off.



### Astilleros Braswell International S.A. (ABISA) Panama

ABISA is the leading shiprepairer and only private drydock facility in the Panama Canal area. As part of its ongoing expansion they now need the following personnel.

#### Project Manager

Reporting to the General Manager, this position involves liaising and negotiating with the owners representative to ensure a timely and commercial completion of repairs.

#### Ship Repair Manager

Responsible for coordinating all operations connected with the repair of a ship in a 'hands on' manner.

Both positions require good managerial, motivation and interpersonal skills.

Experienced persons preferred, but consideration will be given to commercially minded professionals in the marine industry who possess the right attitude to fit into a hardworking and aggressively marketed shiprepair yard.

Though English is the language of ABISA and the management team is drawn from an international base, a working knowledge of Spanish is desirable for liaison with the local workforce.

Excellent salary, relocation expenses and benefit packages are available for the right applicants.

Interested applicants should reply in writing with full CV, including current photograph to: **Astilleros Braswell International S.A., c/o Geometric Marine Services, 302 3rd St., Suite 7, Neptune Beach, FL 32266.**



## A GLOBAL PARTNERSHIP

At the Saudi Arabian Oil Company (Saudi Aramco), an unsurpassed international work-force and "candor" teamwork have helped build one of the world's greatest explorers, producers and exporters. Top-flight North American engineers are joining forces with Saudi Arabs and other nationalities from around the world to achieve even greater success. Take your place in this global partnership, as Saudi Aramco meets tomorrow's leadership challenges.

### BARGE ENGINEER/JACK UP RIG

As Captain for the offshore jack-up rig, you will maintain and operate the jacking and skidding systems, perform load calculations and supervise loading and offloading of materials and equipment. To qualify, you must possess a BS in Mechanical Engineering, or completion of formal seamanship training, and 5 years' experience as a Barge Engineer on a jack-up drilling rig.

As a Saudi Aramco employee, you will receive a very attractive compensation package including comprehensive benefits. For consideration, send or fax your resume/salary history to: **Aramco Services Company, 06S-35-97, P.O. Box 4530, Houston, TX 77210-4530; fax: (713) 432-5663.**

**SAUDI ARAMCO**

<http://www.careermosaic.com/cm/aramco>

## DO YOU NEED QUICK INFORMATION RIGHT NOW?

Reach Real Buyers of Marine Products, Equipment, Services and Maritime Employers! Our 1998/99 Mariner's Industry Specific Company Directories and Employment Guide can help you!

**Mariner's Employment Guide** ISBN 0-9644915-0-8, 357 pages packed with merchant marine employment information and over 1,900+ useful marine related firms listed. \$85.00 U.S. plus \$4.00 S&H in U.S.A.

**Volume No. 1 - Worldwide Shipyards, Boat Repair Yards and Dry Docks** ISBN 0-9644915-2-4, 2,330+ Companies. \$75.00 U.S. plus \$4.00 S&H in U.S.A.

**Volume No. 2 - Shallow-Draft Vessel Owners (U.S.A.)** ISBN 0-9644915-3-2, 2,337+ Companies. \$75.00 U.S. plus \$3.00 S&H in U.S.A.

**Volume No. 3 - Offshore Oil Platforms (Rigs) and Support Vessel Owners (U.S.A.)** ISBN 0-9644915-4-0, 2,042+ Companies. \$75.00 U.S. plus \$3.00 S&H in U.S.A.

**Volume No. 4 - Worldwide Cruise Ships & Entertainment/Casino Vessel Owners** ISBN 0-9644915-5-9, 519+ Companies. \$45.00 U.S. plus \$3.00 S&H in U.S.A.

**Volume No. 5 - Deep-Draft, Fishing & Yachts Sail & Motor (U.S.A.)** ISBN 0-9644915-6-7, 3,000+ Companies. \$85.00 U.S. plus \$4.00 S&H in U.S.A.

**Volume No. 6 - Offshore Oil Platforms (Rigs) and Support Vessel Owners (Foreign)** ISBN 0-9644915-7-5, 2,960+ Companies. \$85.00 U.S. plus \$4.00 S&H in U.S.A.

**Volume No. 7 - Deep-Draft Vessel Owners (Foreign)** ISBN 0-9644915-8-3, 889+ Companies. \$65.00 U.S. plus \$3.00 S&H in U.S.A.

**Volume No. 8 - Shallow-Draft Vessel Owners (Foreign)** ISBN 0-9644915-9-1, 339 Companies. \$55.00 U.S. plus \$3.00 S&H in U.S.A.

You may purchase all the above 9 books for \$350.00 plus \$15.00 S&H in U.S.A. Ask for Mariner's Directory & Guide ISBN 0-9644915-1-6, Two Volume Set, over 1,212 pages and over 17,316+ marine related firms listed worldwide, a \$275.00 savings.

For the "Need It Now" details you have been looking for, place the specific merchant marine industry of your choice at your fingertips now! For less than a penny each... Listings include Phone, Fax, Telex, Cable, contact names, equipment owned, gross tonnage, horsepower, etc.



### FOR MORE INFORMATION CONTACT: MARINE TECHNIQUES PUBLISHING

126 Western Avenue, Suite 206  
Augusta, Maine 04330-7252 U.S.A.  
Phone: 207-622-7984  
Fax: 207-621-0821

SAN 288-7805

#### FOR CREDIT CARD ORDERS CALL OUR DEALERS:

**Bluewater Books & Charts - Ft. Lauderdale, Florida**  
Toll Free in U.S.: 1-800-942-2583  
Phone: 954-763-6533  
FAX: 954-763-6533

**Captain's Nautical Supplies - Seattle, Washington**  
Toll Free in U.S.: 1-800-448-2278  
Phone: 206-283-7242  
FAX: 206-281-4921

**Pilothouse Nautical Books - Philadelphia, Pennsylvania**  
Toll Free in U.S.: 1-800-407-4566  
Phone: 215-336-6414/17  
FAX: 215-336-6415

There has never been a better, more cost-effective way to reach your markets or maritime employers.

Dealer Inquiries Welcomed - Volume Discounts Available

BOAT JOB LISTINGS UPDATING  
DAILY  
CALL 24 HOUR  
MARINE JOB HOTLINE  
50+ 389-JOBS (5627)



**State of Alaska**  
 Department of Transportation and Public Facilities  
 NAVAL ARCHITECT  
 \$4,711 Per Month

The Alaska Department of Transportation and Public Facilities, Marine Engineering, has an immediate need to fill a Naval Architect position. This position, located in Juneau, Alaska, is responsible for providing technical support for marine vessel design, construction, and operation.

**MINIMUM QUALIFICATIONS:** Bachelor's degree from an accredited college with a major in naval architecture, marine engineering or a closely related field and six years of professional experience in the design, construction, renovation or modification of ships. Additional qualifying experience may be substituted for the required education on a year-for-year basis.

**HOW TO APPLY:** Note: Recruitment is open outside the State of Alaska. Alaska residents shall receive preference. Application must be made with an Applicant Profile and Job Qualification Summary that can be completed on the Internet at <http://notes.state.ak.us> or by calling (907) 465-4430. (800) 587-0430 in Alaska, for a hard copy application. These forms, on-line or hard copy must be received (not postmarked) no later than 5:00 p.m. **December 31, 1997**, at Department of Administration, Division of Personnel, P.O. Box 110201, Juneau, AK 99811-0201. Fax (907) 465-2576. Don't miss the deadline. Submissions after the deadline are not accepted.

The State of Alaska is an equal opportunity employer and supports workplace diversity. Individuals requiring accommodation, call 1-800-770-8225 TTY (Relay Alaska).

## PORT ENGINEER

Tropical Shipping, a leader in the ocean freight industry has an opportunity in our West Palm Beach facility for a Port Engineer.

Responsibilities include supervising the repair & maintenance of fleet of vessels to maintain highest level of readiness.

The successful candidate will possess BS in marine engineering or related field, 4 yrs. shore-side supervisory experience & 2 years sea-going experience as engineer of motor vessels.

We offer an excellent benefits package & competitive salary. For consideration, please send resume with salary history to, or apply in person:

Human Resources Dept.  
 821 Avenue E.  
 Riviera Bch, FL 33404  
 Fax to: (561) 840-2956  
 email to: [mgrandi@tropical.com](mailto:mgrandi@tropical.com)  
 EOE/Drug Free Workplace

DET NORSKE VERITAS (DNV) was established in 1864 and is one of the world's leading maritime classification societies. We have an immediate opening for a SHIP SURVEYOR to work in the New Orleans, LA office.

We will also need to expand personnel in Houston, Texas and River Edge, New Jersey by the end of the first quarter of 1998.

Requirements include B.S. degree Naval Architect or Marine Engineering or equivalent and approx. 10+ yrs. ship related experience, i.e. ship superintendent, field marine experience, etc. Extensive travel is required as well as the ability to work independently.

Qualified candidates, please send resume to:

J. Lunde  
 DNV  
 70 Grand Avenue  
 River Edge, N.J. 07661  
 EOE/M/F/H/V

## BOAT JOBS

### BENDER MARINE, INC.

*The leader in Maritime employment  
 now hiring !!*

- Captain • Mates • Pilots • Engineers
- Tankerman • AB's, OS's and QMED's

**START WORK IMMEDIATELY !!**

- OCEAN TUGS • CREW BOATS • UTILITY BOATS •
- INLAND BOATS • CARGO BOATS • CASINO BOATS

\* CALL TOLL FREE 1-888-824-1626 \*

[www.bendermarine.com](http://www.bendermarine.com)

## OFFSHORE STRUCTURAL ENGINEER

Performs deep water offshore oil and gas utilities detailed design and analysis including foundation design, fatigue protection design, and corrosion protection design in accordance to API (American Petroleum Institute) and AISC (American Institute of Steel Construction) regulations and codes using advanced wave theory in engineering application and computer software packages. Performs design and analysis of loadout, transportation, launch, lowering, docking and stormsafing procedures of deep water structures. Performs finite element analysis of nonlinear material, deformation, bucking and dynamic models. Requires Master's degree in Civil Engineering or Engineering Mechanics, plus 3 years experience in the job offered or 3 years experience as Structural Engineer. \$46,600./year. 40 hrs/wk. Apply at Texas Workforce Commission, Houston, Texas, or send resume to 1117 Trinity, Room 424T, Austin, TX 78701, J.O. #TX0241624.

Ad Paid By An Equal Employment Opportunity Employer.

MARINE TOWING COMPANY N.Y. AREA HAS OPENING FOR ASSISTANT PORT ENGINEER. APPLICANT MUST BE ABLE TO SUPERVISE AND ASSIST SHIPYARD PERSONNEL, EFFECT MECHANICAL AND ELECTRICAL REPAIRS, HANDLE STOREKEEPER DUTIES, DIESEL MECHANIC AND WELDING SKILLS AND EXPERIENCE WITH DETROITS AND CATERPILLAR DIESEL ENGINES AND GENERATOR SETS NECESSARY. GOOD COMMUNICATION AND ORGANIZATIONAL SKILLS MANDATORY.

EXCELLENT BENEFITS AND SALARY. SEND RESUME TO

**SEA WOLF MARINE, INC.**  
 6 WATSON COURT EAST  
 EDISON, NJ 08820-2307  
 ATTN: PETE F.

**SENIOR FLEET BUYER:** Purchase parts for ships (machinery and electrical equipment, deck equipment); Review bids and issue purchase orders. Confer with vendors to obtain product information and select products for purchase. Form/maintain vendor development program and maintain supplier contacts. 2 years experience required. 40 hours per week. Salary commensurate with experience. To apply send resume to Schiller Service Corp., 1001 Thomas Street, Hampton, VA 23669.

## VP Sales and Marketing

Leading manufacturer of rope and cordage products seeks industry expert who can plan and direct sales and marketing functions of company. The right candidate must be a recognized leader in developing and implementing successful, strategic marketing and sales programs resulting in consistent and profitable revenue growth. This person must have track record showing ability to coordinate with manufacturing, distribution, sales and finance executives to produce programs that meet short and long-term growth objectives. Demonstrated leadership, communication and functional skills required, as is degree in marketing or related business area; MBA preferred.

Competitive comp. benefits and incentive plan offered. Qualified candidates should send resume and salary requirements in confidence, to:

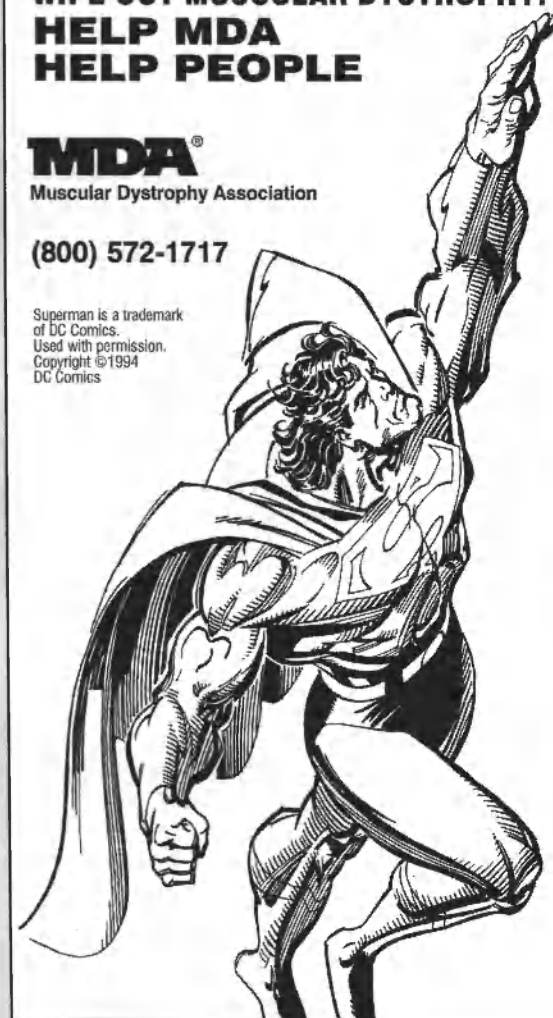
P.O. Box 102  
 Maritime Reporter  
 118 E. 25th Street  
 New York, NY 10010  
 M/F/D/V

**VOLUNTEER**  
**FOR THE FIGHT!**  
 WIPE OUT MUSCULAR DYSTROPHY!  
 HELP MDA  
 HELP PEOPLE

**MDA**<sup>®</sup>  
 Muscular Dystrophy Association

(800) 572-1717

Superman is a trademark of DC Comics. Used with permission. Copyright ©1994 DC Comics



Administration - Construction  
 Crewing - Engineering  
 Finance - M & R  
 Operations - Sales

(Established 1969) P O Box 260 • Mercer Island, WA 98040 • 206-232-6041



**Don't Miss The Opportunity To Participate  
In Asia's Mega-Maritime Event.**



# SingaPort '98



**The 5th International Maritime  
Exhibition & Conference**



Incorporating

**Logistics & Distriparks ASIA '98**

**24-27 MARCH 1998 • WORLD TRADE CENTRE • SINGAPORE**

As Asia's premier maritime exhibition and conference, SingaPort offers unrivalled access to the region's markets in a cost-effective manner. SingaPort's track record speaks for itself. SingaPort '96, for example, drew:

- 462 exhibitors
- 7400 qualified trade visitors from 33 countries
- 300 conference delegates

The Exhibition is supported by the industry's most comprehensive conference programme covering topics on Ports, Shipping, Logistics, Ship-building and Ship repair.

**Exhibit at SingaPort '98 and reap the benefits.  
Contact the organisers now!**

## Exhibit Profile

- Port and Terminal equipment/facilities
- Cargo and material handling equipment
- Shipping and ship management services
- Marine equipment - generators, engines
- Logistic and Distribution services
- Marine consultancy & engineering services
- Ship-building, repair and conversion technology
- Ship machinery & equipment



Accorded the **Approval International Fair (AIF)** status by the Singapore Trade Development Board, for its proven track record.



Accredited the **Union des Foires Internationales (UFI)** status for its excellent performance and proven track record.

**Please mail or fax completed form to:**

**Ms Christine Ng**

Times Conferences & Exhibitions Pte Ltd  
Times Centre

1, New Industrial Road Singapore 536196

Tel: (65) 2848844 ext.428 Fax: (65) 2865754

E-mail: tcecn@corp.tpl.com.sg

E-mail: chandran@hq.singaporeport.gov.sg

**Please send me more  
information on SingaPort '98**

Exhibition  Conference

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Company: \_\_\_\_\_

\_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Tel: \_\_\_\_\_

Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

Organised by:



Jointly managed by:



Official airline:



Official publications:



# KARL SENNER, INC. ... WHEN ONLY THE BEST WILL DO



## M/V SPIRIT OF ENDEAVOUR

KARL SENNER, INC. supplied two Reintjes  
WAF 741 - 3.039;1  
vertical offset, reverse reduction marine gears  
for the repower of the M/V Spirit of Endeavour

Owner: Alaska Sightseeing Tours

**REINTJES**  
MARINE GEARBOXES

**REXROTH**  
MARINE CONTROLS

**BERG PROPULSION**  
CONTROLLABLE PITCH PROPELLERS AND BOWTHRUSTERS

**ABB**  
ASEA BROWN BOVERI  
TURBOCHARGER SERVICE

**WESTFALIA**  
SEPARATOR

**CENTRICO**

**SALES, PARTS, SERVICE • 500 H.P. TO 20,000 H.P.**

# Karl Senner, Inc.



**WEST COAST**  
Karl Senner, Inc.  
12302 42nd Drive S.E.  
Everett, WA 98208  
Mr. Whitney Ducker  
(206) 338-3344

**NEW ORLEANS**  
Karl Senner, Inc.  
25 W. Third St.  
Kenner, LA 70062  
(504) 469-4000  
Telefax: (504) 464-7528

**EAST COAST**  
Olof Wadehn Enterprises  
30 Sheppard Lane  
Huntington, Long Island  
New York 11743  
Mr. Olof Wadehn  
(516) 692-4548