

JANUARY 2012

# MARITIME REPORTER AND ENGINEERING NEWS

MARINELINK.COM

## *“We Build Composites”*

**Navy's DDG 1000  
deckhouse takes shape at HII**

### **Ship Repair**

ASRY Lays Foundation for  
Global Expansion

### **Eye on Design**

The Impact of Ships

### **Technical/Legal**

Ballast Water Management  
Technologies

### **Offshore**

Bergen Bound

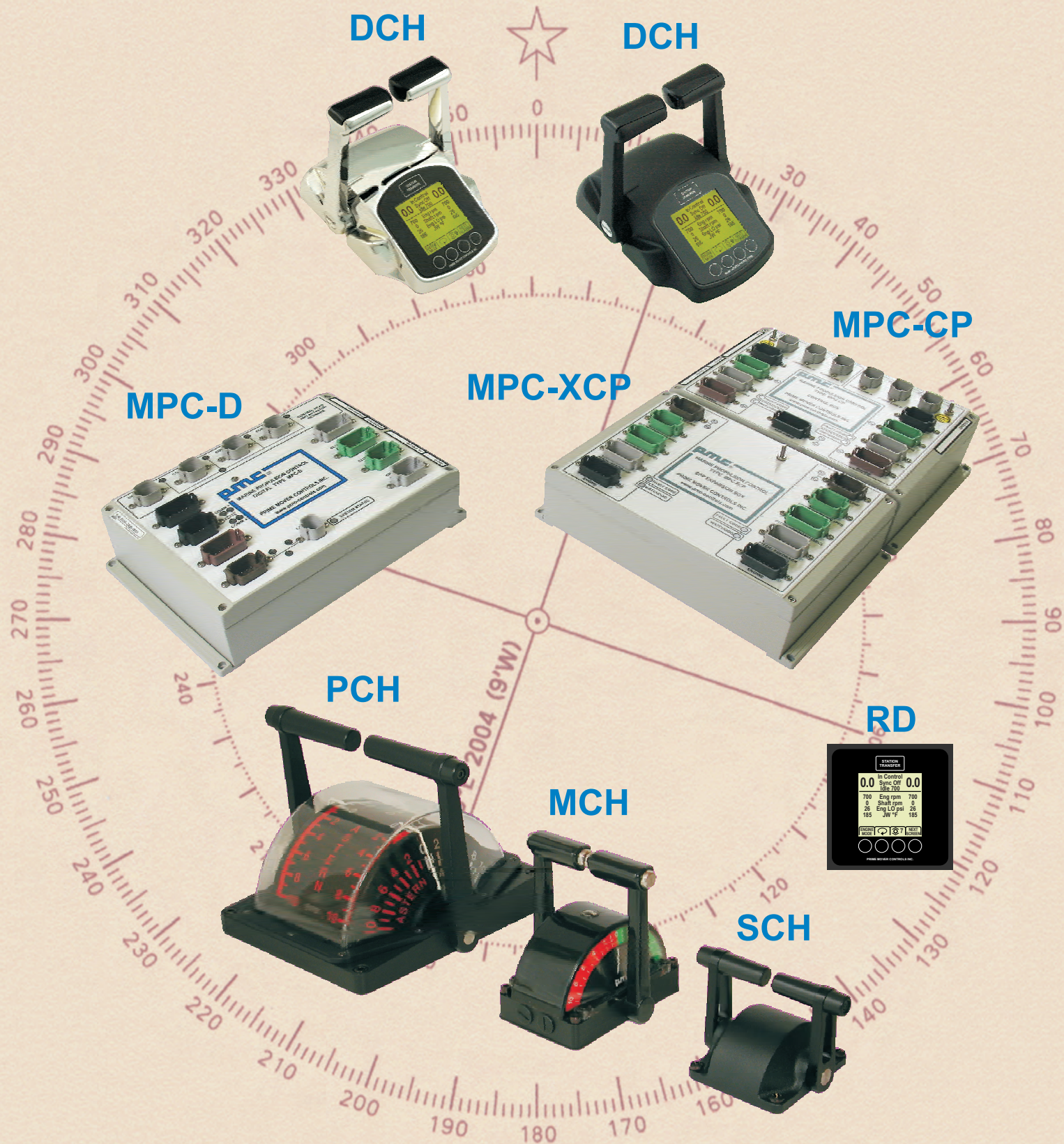
### **Insurance**

Shipyards: Hotbeds of  
Ingenuity & Risk





## Propulsion Controls for Fixed and Controllable Pitch Propellers



A World Leader in Propulsion Controls  
**PRIME MOVES CONTROL INC.**

3600 GILMORE WAY, BURNABY B.C. CANADA V5G 4R8  
TEL (604) 433-4644 FAX (604) 433-5570 [www.pmc-controls.com](http://www.pmc-controls.com)



# SHORTER ROUTE TO BIGGER PROFITS



Wärtsilä is passionate about optimising lifecycle value by delivering whatever you need from the only total offering in the business. Let's work together to find the right route for you. [www.wartsila.com](http://www.wartsila.com)

ENERGY  
ENVIRONMENT  
ECONOMY





# contents

## Bahrain Beauty

Bahrain is home to some of the more modern and innovative architecture in the Middle East, including its World Trade Center which sports 3 large wind turbines.

Oh, and it also features one of the world's more progressive and aggressive ship repair facilities, the Arab Shipbuilding & Repair Yard, which counts the United States Navy as one of its very good clients.

ASRY recently turned 35 and announced major new facility investment and upgrades, geared toward expanding its expertise in the Offshore and Power Barge markets and laying foundation for Bahrain as a Global Maritime Hub and the Gateway to the Gulf. **Full story starts on p. 18**

(Photo: Greg Trauthwein)

## 8 ICEBREAKER FOR SHELL

Edison Chouest Offshore completes an icebreaker for oil major Shell, as it seeks to expand drilling ops in Alaska's Chukchi Sea.

by Susan Buchanan

## 12 SHIPYARDS: HOTBEDS OF INGENUITY & RISK

While modern ship fabrication and repair facilities are replete with high-technology, they are also hot spots for risk hazards.

by Ray Martino

## 14 THE IMPACT OF SHIPS

Numerous research projects ongoing simultaneously at MARIN in The Netherlands study the impact of ships on the world's environs.

by MARIN Staff

## 15 CALL TO ELECTRICAL ENGINEERS

The effort to update and rewrite the IEEE-45 Standard for Electrical Installations requires more experienced electrical engineers.

by Edward Lundquist

## 16 ARE BALLAST WATER STARS ALIGNING?

With new BWTS mandated globally comes one of the most significant commercial marine upgrade programs in a generation.

by Dennis Bryant

## 18 ASRY TURNS 35

As Bahrain's ASRY turns 35, MR tours the yard and meets with management to discuss its massive investment plan to diversify.

By Greg Trauthwein

## 22 BWTS: CHALLENGES FOR INSTALLATION

A new book called *Ballast Water Management: The Guide*, examines installation engineering challenges.

## 24 BERGEN (NORWAY) BOUND

Bergen, Norway is home to a cluster of 124 maritime and subsea technology companies, the gateway to the Norwegian Continental Shelf.

By Clare McIntyre

## 26 THE LARGEST COMPOSITE STRUCTURE ... EVER

The U.S. Navy's DDG1000 will feature a composite deckhouse, the largest composite structure ever built from HII's Gulfport Center.

by Edward Lundquist

## 32 ABB TURBOCHARGING GROWS IN CHINA

At Marintec 2011, ABB Turbocharging outlined its plans to start production in China.

## ON THE COVER

### 26

The largest composite structure ever built, the DDG1000 destroyer deckhouse, is taking shape at HII Composite Center of Excellence at Gulfport, Miss. Edward Lundquist reports.



## ALSO IN THIS EDITION

### 6 EDITORIAL

### 14 EYE ON DESIGN

### 16 GOVERNMENT UPDATE

### 29 MARINE PROPULSION UPDATES

### 36 PRODUCTS

### 38 PEOPLE & COMPANY NEWS

### 41 BUYER'S GUIDE

### 42 CLASSIFIEDS

### 48 ADVERTISER'S INDEX

## SUBSCRIPTION INFORMATION

One full year (12 issues) \$73.00; two years (24 issues) \$105.00 in U.S. (Canada & Mexico also)  
Rest of world one year international \$120.00; two years \$174.00 including postage and handling. For subscription information:

Email: [mrcirc@marinelink.com](mailto:mrcirc@marinelink.com) •

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

Tel: (212) 477-6700 • Fax: (212) 254-6271



# POWER



*Kvichak Marine Industries*



*Scania engines - 12 or 16 liter with ratings from 300 to 800 hp*

## **Power to propel both vessels and business.**

Since 1902, commercial mariners around the world have relied on Scania engines to power their fishing boats, patrol boats, tug boats and ferries. No matter the application, Scania marine engines have earned a reputation for their robust performance, legendary durability and outstanding fuel economy.

*Read more at [www.scaniausa.com](http://www.scaniausa.com)*



**SCANIA**  
Scania U.S.A. Inc.

Scania U.S.A., Inc. • San Antonio, TX • Phone 210.403.0007 • Fax 210.403.0211  
E-mail: [contact@scaniausainc.com](mailto:contact@scaniausainc.com) • Web site: [www.scaniausa.com](http://www.scaniausa.com)

### DISTRIBUTORS

**Northeast/Great Lakes**  
Mack Boring & Parts Co.  
908-964-0700

**Northwest**  
Cascade Engine Center  
206-764-3850

**Southeast/Gulf Coast**  
Certified Diesel  
954-583-4465

**Southwest**  
Boatswain's Locker  
949-642-6800

**Central/Eastern Canada**  
ADF Diesel  
800-517-1489





MOTOR-SERVICES HUGO STAMP, INC.



GOVERNOR CONTROL SYSTEMS, INC.

## Complete TurnKey Engine & Control Solution Providers

We've got your engine and control requirements covered... inside and out. Recognized by marine industry leaders, both MSHS and GCS are reliable, efficient, customer-driven companies. Our factory-trained engineers specialize in providing service and retrofits 24/7.

Visit [www.mshs.com](http://www.mshs.com) or [www.govconsys.com](http://www.govconsys.com)



MSHS - 954-763-3660 +1 800-622-6747 [www.mshs.com](http://www.mshs.com)

GCS - 954-462-7404 +1 877-659-6328 [www.govconsys.com](http://www.govconsys.com)

## MARITIME REPORTER AND ENGINEERING-NEWS

### NEW@ORK

118 E. 25th St., New York, NY 10010  
Tel: (212) 477-6700; Fax: (212) 254-6271  
e-mail: [mren@marinelink.com](mailto:mren@marinelink.com) • Internet: [www.marinelink.com](http://www.marinelink.com)

FLORIDA • 215 NW 3rd St., Boynton Beach, FL 33435  
Tel: (561) 732-4368; Fax: (561) 732-6984

### SUBSCRIPTION INFORMATION

One full year (12 issues)  
• in U.S.: \$69.00; two years (24 issues) \$98.00 • in Canada: \$73.00; two years (24 issues) \$105.00  
• Rest of the World: \$98.00; two years \$152.00 including postage and handling. For subscription information:  
Email: [mrcirc@marinelink.com](mailto:mrcirc@marinelink.com) • [www.marinelink.com](http://www.marinelink.com)  
Tel: (212) 477-6700 • Fax: (212) 254-6271

**POSTMASTER:** Send address changes to: *Maritime Reporter* 118 East 25th Street, New York, N.Y. 10160-1062.  
*Maritime Reporter* is published monthly by Maritime Activity Reports Inc. Periodicals Postage paid at New York, NY and additional mailing offices.

### PUBLISHERS

John E. O'Malley  
John C. O'Malley • [jomalley@marinelink.com](mailto:jomalley@marinelink.com)

### Associate Publisher & Editor

Gregory R. Trauthwein • [trauthwein@marinelink.com](mailto:trauthwein@marinelink.com)

### Contributing Editors

Dennis L. Bryant  
Edward Lundquist

### Correspondents

Joseph Fonseca, India  
Keith Henderson, The Netherlands  
Greg Knowler, China  
Claudio Paschoa, Brazil  
Peter Pospiech, Germany

### Editorial Consultant

James R. McCaul, President, International Maritime Assoc.

### PRODUCTION

Production Manager  
Production Intern

Oksana Martemy • [martemy@marinelink.com](mailto:martemy@marinelink.com)  
Nicole Ventimiglia • [nicole@marinelink.com](mailto:nicole@marinelink.com)

### CORPORATE STAFF

Manager, Accounting Services  
Manager, Public Relations  
Manager - Marketing  
Manager, Information Technology Services

Esther Rothenberger • [rothenberger@marinelink.com](mailto:rothenberger@marinelink.com)  
Mark O'Malley • [momalley@marinelink.com](mailto:momalley@marinelink.com)  
Jocelyn Redfern • [jredfern@marinelink.com](mailto:jredfern@marinelink.com)  
Vladimir Bibik • [bibik@marinelink.com](mailto:bibik@marinelink.com)

### CIRCULATION

Circulation Manager

Kathleen Hickey • [mrcirc@marinelink.com](mailto:mrcirc@marinelink.com)

### SALES

### Vice President of Sales & Marketing

Rob Howard • [howard@marinelink.com](mailto:howard@marinelink.com)

Sales Administration & Office Manager  
Sales & Event Coordinator  
Classified Sales Manager

Rhoda Morgan • [morgan@marinelink.com](mailto:morgan@marinelink.com)  
Michelle Howard • [mhoward@marinelink.com](mailto:mhoward@marinelink.com)  
Dale L. Barnett • [barnett@marinelink.com](mailto:barnett@marinelink.com); Tel: (212) 477-6700

### Advertising Sales Managers

National Sales Manager  
Jack Bond  
[bond@marinelink.com](mailto:bond@marinelink.com)  
Tel: (561) 732-1659  
Fax: (561) 732-8063

Lucia Annunziata  
[annunziata@marinelink.com](mailto:annunziata@marinelink.com)  
Tel: (212) 477-6700  
Fax: (212) 254-6271

Dawn Trauthwein  
[dtrauthwein@marinelink.com](mailto:dtrauthwein@marinelink.com)  
Tel: (631) 472-2715  
Fax: (631) 868-3575

Mike Kozlowski  
[kozlowski@marinelink.com](mailto:kozlowski@marinelink.com)  
Tel: (561) 733-2477  
Fax: (561) 732-9670

Perry Grant  
[grant@marinelink.com](mailto:grant@marinelink.com)  
Tel: (561) 732-0312  
Fax: (561) 732-9670

Terry Breese  
[breesee@marinelink.com](mailto:breesee@marinelink.com)  
Tel: (561) 732-1185  
Fax: (561) 732-8414

### Scandinavia

Roland Persson • [roland@orn.nu](mailto:roland@orn.nu)  
ÖRN MARKETING AB, Box 184, S-271 24 Ystad, Sweden  
Tel: +46 411-184 00; Fax: +46 411 105 31

### Western Europe

Uwe Riemeyer • [riemeyer@intermediapartners.de](mailto:riemeyer@intermediapartners.de)  
Tel: +49 202 27169 0; Fax: +49 202 27169 20

### United Kingdom

Paul Barrett • [E-ieaco@aol.com](mailto:E-ieaco@aol.com)  
Hallmark House, 25 Downham Road, Ramsden Heath, Essex CM11 1PU UK  
T: +44 1268 711560; M: +44 7778 357722; F: +44 1268 711567

### Japan

Katsuhiro Ishii • [amskatsu@dream.com](mailto:amskatsu@dream.com)  
Ace Media Service Inc., 12-6, 4-chome, Nishiike, Adachi-ku, Tokyo 121, Japan  
Tel: +81 3 5691 3335; Fax: +81 3 5691 3336

### Korea

Jo, Young Sang • [biscom@biscom.co.kr](mailto:biscom@biscom.co.kr)  
Business Communications, Inc., Rm 1232, Gwanghwamoon Officia Bldg.  
163, 1-Ga, Shinmoon-Ro, Jongro-Gu, Seoul, Korea 110-999  
Tel: +82 2 739 7840; Fax: +82 2 732 3662





# Together, we can guarantee smooth sailing. Not to mention, smooth loading, steering, winching...

When you're heading out to sea, the last thing you want to worry about is whether critical ship machinery will fail. Which is why it's nice to have a partner like Parker, to help efficiently and cost-effectively build deck machinery and propulsion systems that can handle heavy loads and harsh environments. We've helped engineer durable and reliable **hydraulics, automation, climate control, sealing, and filtration systems** (including **onboard water desalinization**) for ships of all sizes. For more information, go to [parker.com/smoothsailing](http://parker.com/smoothsailing). And see how Parker can help keep your business sailing forward.

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



ENGINEERING YOUR SUCCESS.

[www.parker.com/smoothsailing](http://www.parker.com/smoothsailing) 00800 27 27 5374  
[epic@parker.com](mailto:epic@parker.com)



# IMPACT SYSTEM™

Interactive Media Performance and Campaign Tracking

Give your online advertising real **IMPACT**- an exclusive tracking tool for online advertisers.



Online reports and response data:

Browsers  
Platforms  
Desktop / Mobile  
Countries

Take control of your campaign—only from New Wave Media.

Track your banner ad exposure in real time, with an easy interface

Impressions  
Clicks  
Click Through Rate  
Unique IPs

Access a complete report of your Eblast campaign's success.

Total Emails Sent  
Opened Emails  
Links Clicked

Available for all online/email advertising programs, only from New Wave Media. For more information, contact your representative, or call our offices: (212) 477-6700

## MARITIME REPORTER AND ENGINEERING NEWS

www.marinelink.com

ISSN-0025-3448  
USPS-016-750

No. 1 Vol. 74

118 East 25th Street, New York, NY 10010  
tel: (212) 477-6700; fax: (212) 254-6271

Founder: John J. O'Malley 1905 - 1980  
Charles P. O'Malley 1928 - 2000

Maritime Reporter/Engineering News is published monthly by Maritime Activity Reports, Inc. Mailed at Periodicals Postage Rates at New York, NY 10199 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.

Publishers are not responsible for the safekeeping or return of editorial material. ©2011 Maritime Activity Reports, Inc.

Member



Business Publications  
Audit of Circulation, Inc.

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.



**H**aving served as editor of *Maritime Reporter & Engineering News* for what is now closing in on 20 years, I am to this day still amazed by the continued contradictory nature of this

business. Perfect example is this month's cover which depicts the deckhouse of DDG1000 —the largest composite structure ever built — a massive structure being constructed and handled with seemingly the greatest of ease at **Huntington Ingalls Industries Composite Center of Excellence in Gulfport, Miss.**

The contradiction?

While there is an amazing infrastructure and effort to make this next-generation technology possible, it is precisely this type of innovation and infrastructure that is in the budgetary crosshairs, as the White House is prepared to announce a sweeping change in the way in which it spends on the military infrastructure, meaning a significant reduction in military spending for the generation to come.

Don't get me wrong, as a taxpayer I surely appreciate the need for fiscal control across all categories. But having just returned from a quick trip to the Middle East, and watching the price of oil spike in tandem with Iran's attempt at flexing its naval muscle buds, I find it hard to fathom that our U.S. Navy — which is already stretched perilously thin on both personnel and physical assets — will again be asked to do more with less.

While my recent trip was to the Middle East, it was hardly an arduous mission, rather a comfortable run to and from Bahrain just before the Christmas holiday. The Arab Shipbuilding & Repair Yard (ASRY) recently celebrated its 35th anniversary in business, and this, in conjunction with the inauguration of its \$188m, 1.38km Repair Quay Wall, was cause for invite and celebration. ASRY is an interesting case study, born from and today still owned by the countries that make up the Organization of Arab Petroleum Producing Countries (OAPEC), including: Bahrain, the Kingdom of Saudi Arabia, United Arab Emirates, Kuwait, Qatar, Iraq and Libya. In addition to physical structure, Bahrain has a number of interesting initiatives — from training & education to finance to port infrastructure — which is geared toward making the Kingdom a global maritime and logistics center by 2030. The report on ASRY and the region starts on page 18.

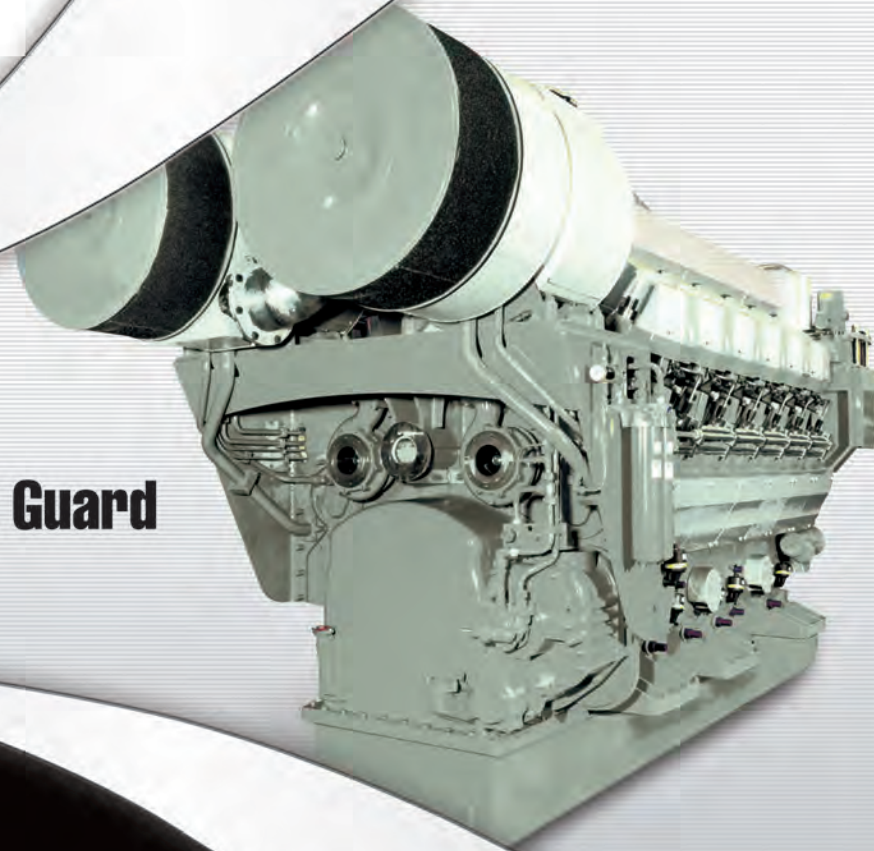
While in Bahrain — as with an earlier 2011 trip the United Arab Emirates — I was able to witness first-hand the amazing amount of maritime work and infrastructure building. The region has of course been impacted by the global economic downturn, and there is the looming presence of political unrest in the region. But as a whole, the Middle East presents a compelling business case for anyone in the global maritime market selling product or service, as the ship repair business is picking up steam with renewed competition, the offshore oil and gas business is growing in earnest, and the surrounding ports and infrastructure is rapidly emerging as a key logistics hub, for the Middle East, India and Asia, and Africa.



# FAIRBANKS MORSE ENGINE



an EnPro Industries company



## Then and now, proud to power the U.S. Coast Guard



*Queen of the Fleet*



*Reliance Class*



*Hamilton Class*



*Polar Class*



*Bay Class*



*Famous Class*

For over 60 years, Fairbanks Morse engines have delivered the dependable power required to keep Coast Guard ships on the job. In keeping with that tradition, today we manufacture the most powerful and fuel efficient 1000 rpm diesel engine in the world – the **FM-MAN 28/33D**. Highlights of the state-of-the-art design include exceptional performance, proven reliability, low emissions, ease of maintenance, and a dramatically low installed weight. At Fairbanks Morse Engine, we value our long history of support for the Coast Guard. Almost as much as we value the future.

[WWW.FAIRBANKSMORSE.COM](http://WWW.FAIRBANKSMORSE.COM)



FM-MAN engines are manufactured under license from MAN Diesel.



# Chouest To Deliver Icebreaker To Shell

by Susan Buchanan

The M/V Aiviq icebreaker, contracted by Shell Oil to support drilling in Alaska's Chukchi Sea, is scheduled to be completed by Louisiana-based Edison Chouest Offshore in early 2012. The vessel, ordered in July 2009, is on track for April 1, 2012, delivery in Galliano, La., and will then head north, according to Shell Oil spokesman Curtis Smith.

The \$200m Aiviq is the largest vessel ever built by Chouest, and will be among the most advanced and powerful, non-military icebreakers on the waters. Lonnie Thibodeaux, Chouest spokesman, said the vessel's hull was scheduled to leave the company's North American Shipbuilding yard in Larose, La. on Dec. 20 for its LaShip yard in Houma, where the bridge is being built for final assem-

bled. The Aiviq will travel through the Panama Canal to Alaska this spring.

In order for a ship to be "ice class," the hull must be thick, and extra girders, beams and bulkheads are needed for structural integrity. The Aiviq is designed to American Bureau of Shipping A3 capabilities to operate in frigid, minus-40-degree Fahrenheit temperatures, and can slash through a meter of ice with 20 centimeters of snow at 5 knots, Smith said. Crafted specially for harsh winter conditions, the ship can also work in Alaska the rest of the year.

The vessel is being built to International Maritime Organization's Polar Code 3, and measures 111.8 m long, with a 22-m beam and 22-m draft. "It has hybrid generators, noise-reduction equipment, and meets or exceeds the U.S.

Environmental Protection Agency's Tier 4 emission standards," Smith said. The Aiviq can hold thousands of barrels of oil. And because it will be stationed far from medical facilities, the vessel will have a hospital on board.

Building the icebreaker has kept more than 600 workers busy in south Louisiana, helping a region hit hard by an offshore drilling moratorium in the summer and fall of 2010, following the BP spill. And the Aiviq is expected to create over 100 jobs in Alaska, according to Shell.

"Like other vessels in the Chouest fleet, we designed the Aiviq, built it and will operate it," Thibodeaux said. "We will crew the Aiviq, and personnel from Shell will be on the vessel too." The icebreaker can accommodate 65 staff in cruise-ship-

like quarters.

While South Louisiana, which seldom sees snow, may be an unlikely place to produce icebreakers, Thibodeaux said "we built the Nanuq ice-class supply vessel for Shell in 2007 and have also built two icebreakers for the National Science Foundation." The Nanuq was outfitted with oil-spill-response capabilities well before the 2010 Macondo spill in the Gulf, he noted. The Aiviq is designed to work in tandem with the Nanuq.

Thibodeaux explained that Aiviq means walrus in the Inupiaq language, and was named by a 12-year-old girl in Nuiqsut, Alaska in a contest sponsored by Shell. Prior to that, the Nanuq, meaning polar bear in Inupiaq, was named by residents of the village of Kaktovik.

The Aiviq is designed with the habits of

**Though located in "snow-less" Louisiana, ECO has good experience building ice-class vessels, including Nanuq (pictured below) ice-class supply vessel for Shell in 2007 and two icebreakers for the National Science Foundation.**

(Photo Courtesy Shell)





(Photo Courtesy Shell)



**Work continues on the M/V Aiviq icebreaker, contracted by Shell Oil to support drilling in Alaska's Chukchi Sea. It is scheduled to be completed by Edison Chouest Offshore in early 2012.**

marine animals in mind. "We're being as proactive as possible in an effort to reduce our overall sound footprint," Smith said. "Insonification is a significant issue for stakeholders who rely on marine mammals for subsistence hunting." Man-made noises disrupt mammals communicating via the emission of sounds in water, often at great distances.

Smith said Shell has long worked with the assistance of ice-class vessels offshore. "Shell drilled the majority of the wells in the Beaufort Sea in the 1980's and 1990's, and drilled four of the five wells ever drilled in the Chukchi during that same period," he said.

#### Shell Poised For More Arctic Drilling

Shell plans to drill new wells in the Beaufort and Chukchi seas in 2012 and 2013. The company has invested billions in Arctic leases since 2005 but ran into opposition from environmentalists and native Alaskan groups. Last August, however, Shell received a Bureau of Ocean Energy Management conditional permit to explore for oil in the Beaufort Sea, east of the Chukchi. In October, the EPA issued a final air-discharge permit sought by Shell to drill in the Beaufort Sea. With that air permit, Shell can use its Kulluk rig for 120 days a year in Arctic waters, the agency said. In mid-December, BOEM conditionally approved a

revised, Shell plan to drill six, oil-exploration wells in the Chukchi Sea next year.

Together, the Beaufort and Chukchi seas could hold 27 billion barrels of oil and 132 trillion cubic feet of natural gas, according to the U.S. Geological Survey. In comparison, 17 billion barrels of oil have flowed out of Alaska's Prudhoe Bay fields in the past 30 years.

Icebreaking in the U.S. dates back to the 1830's for clearing harbors in East Coast ports. After the U.S. purchased Alaska in 1867, the Coast Guard --then called the Revenue Marine or Revenue Cutter Service--began to deal with icy Alaskan waters. In this decade, as climate change causes polar ice to melt, more traffic is expected in Arctic waters. Global warming has opened up the Arctic in the summer, expanding the time that drillers and international shippers can operate without risking ice collisions.

Last summer, Coast Guard commandant Admiral Robert Papp warned that if a big oil spill were to occur in the Arctic, the U.S. lacks the infrastructure and equipment to respond quickly. The Coast Guard says that it needs more heavy- and medium-duty icebreakers though paying for them is a challenge. Companies need more vessels to smash through ice too. For now, foreign vessels are allowed to work in frigid U.S. waters under a Jones Act exemption that expires in 2017.

**Raytheon** Anschütz



# NAVAL TECHNOLOGY

Made in Germany

Integrated Navigation Solutions, tailored to the specific needs of the Navy.  
Full lifecycle services included.

- Integration of Navigation and Control Systems
- Experience Program Management and Requirement Engineering
- Logistic Support and Obsolescence Management
- Worldwide In-Service Support



[www.raytheon-anschuetz.com](http://www.raytheon-anschuetz.com)

**Raytheon Anschütz GmbH**

D-24100 Kiel, Germany  
Tel +49(0)4 31-30 19-0  
Fax +49(0)4 31-30 19-840



## Groen Orders Two Seismic Research Support Vessels



Dutch Shipping Company Groen has ordered two Seismic Research & Support Vessels (SRSV's) with Maaskant Shipyards Stellendam (Netherlands), part of the **Damen Shipyards Group**. Maaskant has broad experience in maintenance and repair of Offshore Support Vessels. However, an order for SRSV-newbuilds is a first.

The vessels have been designed in cooperation with Saltwater Engineering (Netherlands) to meet the needs and experiences of Shipping Company Groen. The vessels' all-weather chase and support tasks will focus on seismic activity research. Both SRSV's will be 40 m long with a 9.3 m beam. Two Caterpillar propulsion units of in total 1940kw (2640pk) will give the vessels a design speed of 14 knots. They can be deployed worldwide and have accommodation for 14 people.

## Rolls-Royce, Bestway Debut New Ship Design

Rolls-Royce and China's Bestway Engineering, one year following their announced collaboration on a Joint Project Team (JPT), have unveiled a range of energy efficient ship designs which have been produced to meet the future requirements of the global merchant shipping industry, tailored specifically to meet the needs of merchant shipping, where low emissions and reduced operating costs are key drivers. The vessel types include Liquefied Natural Gas (LNG) carriers, container vessels and general cargo ships, all designed to comply with and exceed future emission targets. Those designs featuring Rolls-Royce gas engines already meet IMO Tier III requirements on NO<sub>x</sub>, SO<sub>x</sub> and CO<sub>2</sub> emissions, which come into force in 2016.

The new JPT vessel range from 2,500 to 37,000 dwt.



# BANGKOK-MAX:



## Innovative 2000 TEU Container Feeder Vessel

Knud E. Hansen A/S and JV partner ABB developed what is described as a highly fuel efficient 2000 TEU Container Feeder Vessel, a vessel's whose main dimensions have been optimized for calling in Bangkok. Propulsion efficiency is boosted by an electrically driven counter rotating ABB Azipod unit, which is fitted behind the directly driven main propeller. The power balance between the main propeller and the Azipod is approximately 65/35%, and as the Azipod can be turned 360 degrees, the vessel will have state of the art maneuverability. Compared to a vessel with a conventional diesel-direct propulsion system the main engine has been down-sized, and with a correspondingly smaller propeller diameter in combination with a low shaft line, ballast water to submerge the propellers in light loaded conditions is generally not necessary. At 18 knots the main engine with its shaft generator will deliver the entire propulsion power including the electrical power for the Azipod unit, the hotel load and the reefer containers. Additional auxiliary power is only necessary if higher speeds (up to 21 knots)

are required or if an exceptionally large number of reefer containers are carried.

Three auxiliary engines with a total electrical power output of approximately 8000 kW are arranged in an auxiliary engine room, which is completely segregated from the main engine room. With the main engine stopped, the vessel is able to navigate with a speed of more than 13 knots on auxiliary power and the Azipod alone, which provides a very high degree of redundancy and more than sufficient "return to port" capability.

The vessel has an overall length of 172m and a beam of 30m. Deadweight at the Bangkok-max draft of 8.2m is approximately 18,300 tons, while it is approximately 28,400t at the fully loaded draft of 10.5m.

HFO tanks have been arranged in a simple, square block below the deck-house in order to minimize the need for trim compensating ballast water and changes of trim during a voyage. Additionally, the tanks are segregated from the sides and the bottom in preparation for Clean Design Class notation. Space has also been prepared in the engine

casing for scrubbers or a SCR system so that the vessel can be adapted for navigating in Emission Control Areas. The vessel is even prepared for zero-emission port calls, because containers holding batteries can be stored on the aft deck and connected to the DC grid.

Five tiers of high-cube containers can be stacked in the holds and six on the hatches. In the gearless version the vessel will carry up to 1,448 TEU on deck and 668 TEU in the holds corresponding to a total high-cube capacity of 2,116 TEU.

As designed, the reefer capacity below deck is 438 TEU (or 258 FEU), and with three tiers on the hatches and four on the aft deck the capacity on deck is 746 TEU (or 370 FEU), giving the vessel a total potential reefer capacity of 1184 TEU (or 628 FEU).

But with 8000 kW of auxiliary power installed, access to the reefer units is practically the only limiting factor for the number of reefers that can be carried, so the capacity on deck may be further increased by higher lashing bridges aft and/or lashing bridges between the hatches.



## GPA Wins Design Deal for T-AGOR 27



Guido Perla & Associates, Inc. (GPA) won a contract to deliver the Regulatory Design and Detail/Production Design for the T-AGOR-27 Ocean Class Research Vessel. The basic design was developed by GPA during a NAVSEA sponsored design competition while under contract with Dakota Creek Industries (DCI) and partnered with leading marine industry equipment vendors. The Navy-owned vessel will be operated by the Woods Hole Oceanographic Institution.

GPA will support DCI, a shipyard in Anacortes, WA, near Seattle, throughout the construction and delivery of the vessel. GPA was hired by DCI to provide a basic design during the Phase I NAVSEA design competition. This phase required development of an original design of the vessel including hull form, structure, arrangements and systems, and integration of equipment from vendors throughout the marine industry to meet a demanding government specification and limited budget. GPA's unique hull form was optimized for sonar operations and fuel efficiency and was model tested during this phase to verify conformation with Navy requirements. This year long process involved multiple design reviews to U.S. Navy and other government organizations and some ABS regulatory review. The T-AGOR-27, an advanced oceanographic research vessel, will have the capability of carrying sufficient supplies and support systems to stay at sea for up to 40 days, covering up to 10,000 nautical miles and withstanding high sea and wind conditions. These capabilities, combined with the ability to operate 75% of the time during the Pacific Northwest and North Atlantic's winter months and powerful ocean exploration equipment and instrumentation, will provide for superior operations. The highly developed equipment includes:

- A multibeam seafloor mapping system for deep and shallow water
- A sub-bottom profiler to map sediments below the seafloor
- An acoustic doppler current profiler to map currents in the water column
- Precise navigation tools for tracking instruments in the water beneath the ship

- An array of networked sensors to measure atmospheric and ocean properties.

The total variable science load, in part stored in up to 2,000 sq. ft. of internal labs and facilities, is 100-200 long tons. These facilities will include a wide variety of lab types with reconfigurable

benches, cabinetry and special electrical requirements, storage for hazardous materials, repair facilities for equipment and systems providing uncontaminated seawater. Besides the indoor facilities, the scientists require a 2,000 ft<sup>2</sup> working area in the stern up top that can handle a range of temporary equipment, 80 ft<sup>2</sup> of

clear deck area alongside one rail, as well as a range of recovery equipment, including winches, wires, cranes, frames, booms and others. Other deck areas will be used to handle incubators, vans, workboats and other temporary equipment.

The T-AGOR-27 is scheduled for delivery in late 2014.



**ELIMINATE THE**  
**DUST**  
**ELIMINATE YOUR**  
**PROBLEMS!**



**Blasters, Welders, and Painters**  
**can Work on the Same Boat at the**  
**Same Time!**

**NEVER STOP PRODUCTION FOR**  
**ABRASIVE BLASTING!**

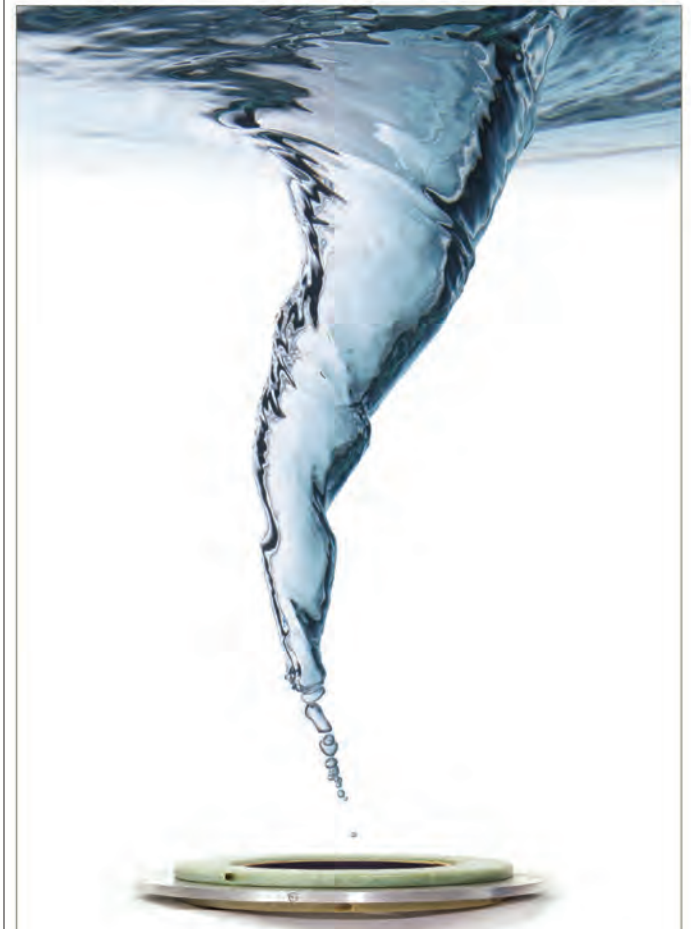
*"This is a process I fully endorse and recommend."*

**Richard Hays**  
NACE Certified Coating  
Inspector Level 3



  
AN MMLJ COMPANY

**(800) 727-5707**  
**www.DustlessBlasting.com**



## Just Add Water

Mide Marine's non-contacting and non-rotating HydroActive™ bulkhead seals only activate in the presence of water - offering the safest and lowest total ownership cost solution for your vessel.

These low wear, low maintenance, commercial and premium grade (high shaft deflection) seals have been developed and qualified for the US Navy. The innovative HydroActive™ technology provides a low leak, no noise bulkhead seal solution with lenient mounting requirements; easily installed on any vessel.

**No Wear, No Maintenance, No Compromise.**

**WWW.MIDEMARINE.COM**

**MIDE MARINE**

**CALL: 1888-MIDEMARINE**



# Shipyards: Hotbeds of Ingenuity & Risk

**By Ray Martino, President,  
Travelers Ocean Marine**

A typical driveway mechanic can open up the hood, dive into a car's guts and emerge hours later with an understanding of what is wrong. Even if the mechanic can't get the engine to purr, the situation usually ends up no worse than when he started.

A ship repairer has a much trickier challenge. Whether in a huge marine repair facility, sharing his duties with thousands of other employees, or on his own, traveling from marina to marina performing maintenance and repairs, he usually is dealing with a vessel that was not designed for attention on land.

In addition, unlike automobiles that roll off an assembly line, each essentially like the others manufactured in that plant, vessels come in all shapes and sizes – each with their own idiosyncrasies. A ship repair professional must often be innovative in his approach to repairs, devising an alternative solution to fit the specific problem he is facing.

This aspect of shipyard work, while attesting to the skills and ingenuity of those who repair vessels, introduces an element of uncertainty at shipyards both large and small, with danger always only a misstep away. Fire is a threat, but many other factors add risk as well, ranging from the evolving scope of repairs to the expertise of subcontractors to the effectiveness of emergency response plans.

To avoid the pitfalls, shipyards can institute best-practice policies that address the issues they face in their day-to-day operations. By working with their agent and insurance company, they can tap into resources that may help them determine the most effective ways to manage risk.

## EMBRACING BEST PRACTICES

Each shipyard's situation – its location, capacity, scope of work, etc. – is different. As a result, creating the best plan to mitigate risk begins with a thorough assessment of a specific shipyard: its physical plant, the type of vessels handled, the safety programs in place, the past track record of performance and much more.

A number of issues, however, cut across all sizes of shipyards and types of vessel repair work. The following sections highlight several key areas to consider when seeking effective risk management.

## FIRE SAFETY

When asking the general public what can go wrong with ships, the response is likely to refer to the sinking of the Titanic or a headline-grabbing issue with an oil tanker. But based on Travelers' considerable experience in the industry, fire is likely the single most important risk that shipyards should manage to avoid significant losses.

Fire not only injures people, disables equipment and damages ships already in the yard for repair, but it can also destroy the capability of the shipyard to continue as a viable business. If the physical plant is rendered unusable for a lengthy period of time, it can be all but impossible to fulfill contracts for future work.

When performing welding or other "hot" work, an effective fire-watch program is critical – and that means not only training employees in the process, but also making sure that the assignment is taken seriously and that the program is followed rigorously. A required two-hour watch after hot work has been completed might make the difference between a spark that is spotted and extinguished or a smoldering area that bursts into flames because the watch period is cut short.

## CONTRACTUAL PROTECTION

When a ship is dry-docked for repairs, a contract usually spells out what work will be performed and who is responsible for the damage to the vessel during the repair process. During the course of work on the vessel, the scope of the agreed-upon repairs may change. The owner may request additional work, or the damages may be more extensive than known at first, requiring more repair tasks in different areas. All of this is a common occurrence for shipyards.

Unfortunately, it is also common for contract provisions to lag behind the changes in the work being done. If the paperwork is ignored and proper addendums are not completed when the scope of work changes, gray areas may emerge if something goes wrong. A contract that initially provided ample protection for the shipyard's interests may suddenly have holes big enough for a damaged ship to fall through, presenting the shipyard owner with unexpected liability and costs.

Contracts, whether they are with the ship's owner or with subcontractors who are performing specialized work during

the course of repairs, should include effective provisions for transferring risk. A shipyard's legal advisors can determine the most effective way to indemnify the owners and transfer liability risks. However, it is the shipyard that must make sure contract modifications occur before additional work is authorized.

## SAFETY PROGRAMS

Activity at a shipyard can remind observers of an anthill, with large numbers of workers moving quickly in all directions, each busy with a specific task or collaborating on part of a larger project. But at any moment, equipment can malfunction, a part can come loose and fall, an accident can occur, a vessel can be damaged or a worker can be injured.

Safety can be – and should be – addressed across the multiple dimensions of what occurs in a shipyard:

- Training and orientation. Workers must have adequate training for the tasks they are performing, and they should be well-versed in the appropriate safety procedures. New hires should complete an orientation program so they understand the scope of the activities in the shipyard and the protocols for ensuring safety.
- Emergency procedures. The shipyard should have a documented plan for responding to emergency situations that is shared with all employees, reinforced on a regular basis with refresher training, and easily accessible when needed. The plan should cover circumstances ranging from employee injuries to evacuating the premises in the case of fire to securing the property and vessels in the face of an approaching hurricane.
- Equipment maintenance. Accidents can happen at any time, but they are less likely to occur when equipment is well-maintained and working properly. A crane that malfunctions, resulting in a dropped vessel, not only causes a costly delay but also damages the reputation of the shipyard as a reliable custodian of the vessels in its care.
- Control of premises. Subcontractors, delivery personnel, crew from ships undergoing repairs – any number of outsiders have reason to enter a shipyard. If controls are not placed on who comes and goes, with identification required for entry, the shipyard can leave itself open

to liability. A shipyard owner can learn this the hard way when, for instance, his workers help a driver load a truck and watch him drive away, only to discover later when another truck comes for the same load that the first driver was a clever thief.

## INSURANCE STRATEGY

A shipyard may need a variety of marine insurance coverages, such as hull and liability for workboats, inland marine for equipment, bumbershoot for excess liability, and property coverage for piers and wharves. It may also need all of the coverages that any other business requires, including general liability, property, and commercial auto, to name some of the most common.

While coverage can be obtained piece-by-piece from a number of insurance companies, a more effective strategy might be to identify a single company that can cover most if not all of the insurance needs the shipyard has. One key advantage of this approach is having only one company and one team of adjusters if a claim is filed, rather than having multiple insurance companies involved. This can also help to reduce disputes regarding which policy is responsible for various claim expenses. Shipyards will also want to weigh the value of business continuity insurance. If a fire puts a yard out of commission, such coverage can help speed repairs, pay for the cost of obtaining alternative repair facilities, tide a company over when its cash flow disappears, and make the prospects for business recovery much greater.

## A FISH OUT OF WATER

When a vessel comes in for repairs, a shipyard faces a delicate task, despite the hardy materials and vast tonnage involved. Ships are meant to be afloat. Much like a fish out of water, when they are not in their element, a lot can go wrong.

Shipyards that adopt best practices, from their handling of fire danger and contractual obligations to their safety programs and insurance strategy, can limit the risks involved in vessel repair. By working closely with their agent and insurance companies, shipyard owners and managers can identify the most effective ways to protect their business and stay afloat, even when the unexpected happens.



# Wärtsilä to Design Brazil Pipe Lay Vessels



Wärtsilä will supply the design and propulsors/positioning system for a series of two new flexible pipe laying vessels (PLVs) for advanced operations. The vessels are to be built at the Daewoo Shipbuilding & Marine Engineering (DSME) shipyard in Korea. The owner and operator of the vessels is a joint venture formed between France-based energy industry company, Technip and the

Brazilian oil & gas industry company, Odebrecht Óleo & Gás (OOG). The vessels will work on a long-term charter in Brazilian waters for Petrobras.

The contract is a breakthrough for Wärtsilä Ship Design in Brazil, and the new VS 4146 PLV design has been tailored to the stringent requirements of both the owners and Petrobras. The vessels, which have a high pipe lay tension

capacity of 550 tons, are designed to achieve optimal fuel consumption in the design conditions, and to meet the need for efficient flexible pipe laying operations.

They will be utilized mainly to install umbilical and flexible flow lines and risers to connect sub-sea wells to floating production units in waters more than 2,500m deep.

## Metal Trades Completes Navy Fuel Barge

Metal Trades completed two double hull Fuel Barges for the U.S. Navy as a sub-contractor to Maybank Industries. The ABS-classed 7,000 barrel barges are designed to carry diesel and JP-5 fuel in four cargo tanks within a 180 x 44 ft. hull. The two barges (YON-332 and YON-333) were designed by Bristol Harbor Group. Metal Trades will be launching two more double hull barges in 2012 for the same customer, with final delivery to U.S. Naval facilities on the East Coast.





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



# Hyde GUARDIAN<sup>®</sup>

## Ballast Water Treatment System



-  **Filtration** – Efficient stacked-disk technology. Modular design. Reliable automatic backwashing.
-  **UV Treatment** – High-intensity, medium pressure UV Treatment.
-  **No Chemicals** – Safe and environmentally friendly. No increased corrosion risk.
-  **Easy Service** – Simple, automatic operation. Low operating cost.

**LEAVE NOTHING BUT YOUR WAKE.<sup>®</sup>**



+1.724.218.7001 | [sales@hydmarine.com](mailto:sales@hydmarine.com) | [www.hydmarine.com](http://www.hydmarine.com)

**Hyde Marine<sup>®</sup>**  
Ballast Water Management Technology  
A CALGON CARBON COMPANY



# Passing in the Night (or Day) ... *The Impact of Ships*

MARIN (Maritime Research Institute Netherlands) is involved in several projects examining the effects of passing ships. Here we present the many ways MARIN helps to shed light on this phenomenon.

## BASIN TESTS

MARIN's Shallow Water Basin facilitates a wide range of model testing. A recent ship passing study again showed this versatility when two complete harbours were modelled, including more than 4,000 m of their surrounding shoreline. This ship passing study aimed to investigate the feasibility of two possible new barge dock locations at an existing terminal in Beaumont. The main objective was to assess the mooring line loads on two barges moored in the dock when a vessel passes. Model testing of passing ship ef-

fects in narrow waterways requires special attention. Modelling the approach of the passing vessel is one of the points that needs additional care. When the passing vessel is not accelerated appropriately in the basin, unwanted shock-type waves propagate in front of it. For the Beaumont terminal study the model setup of around 4,000 m ensured that no shock-type waves were generated.

An additional point of interest is the modelling of the mooring system. Monopiles, fenders and mooring lines can all be modelled in the basin. However, for this project a numerical model was set up for the mooring system of the barges. The barges were rigidly moored in the basin and the measured (time-dependent), total mooring forces were used as input for the numerical model. This means different mooring layouts could be

studied without carrying out additional model tests. By changing the harbour depth and the speed and dimensions of the passing vessel in the basin tests and by varying the mooring layout in the numerical simulations, a complete series of tests was performed that provided the customer with the information they needed to continue the project.

**Joop Helder & Willemijn Pauw,**  
j.helder@marin.nl

## NUMERICAL TESTS

The effects of passing ships on moored vessels can also be investigated numerically. An investigation was made into the applicability of MARIN's in-house tools to predict passing ship effects. A distinction was made between the flow around the passing ship and the effect of this flow on the moored ship. When the passing ship sails under a drift angle, or when the keel clearance is small, viscous effects are expected to be important. Therefore, the flow around the passing ship was analysed by the RANS code REFRESCO which accurately takes into account the viscous boundary layer and lift effects on the hull.

The effect of the flow on the moored ship and the resulting forces were then analysed using the linear diffraction code DIFFRAC. For this purpose, a coupling between the two codes was made. Passing ship model tests in the Shallow Water Basin were then used for the validation of the coupled tools. This validation showed that viscous effects are indeed important in the case of drifting ships. Forces on the moored ship can be computed with satisfactory accuracy up to drift angles of at least 15 degrees (see figures) and a considerable improvement was obtained compared to a full potential flow approach. For small drift angles, a potential flow solution for the passing ship turned out to be sufficient.

**Serge Toxopeus & Tim Bunnik,**  
s.toxopeus@marin.nl

## COMPUTER MODELLING AND FULL-SCALE MONITORING

Existing ports have to accommodate ships with ever increasing sizes. ROPES,

a new Joint Industry Project, is developing reliable computer models to predict motions and the mooring loads of moored ships and at the same time, it is contributing to innovative, dynamic berth systems. Moored ships experience suction effects from passing ships and this increases in relation to the restriction of the waterway and the size and speed of the passing ship. The passing distance is obviously a critical variable. Passing events can threaten loading and discharging operations in both a safety-related and economical sense; excessive motions may lead to interruptions, damage and even to dangerous situations. ROPES is developing a numerical prediction method to quantify these effects for arbitrary ship and port geometries. To investigate the physics of the real world and to validate the numerical model an extensive, full-scale monitoring campaign is being conducted by MARIN.

On May 2, the first series of full-scale measurements started at ECT's Delta Terminal in Rotterdam. In close cooperation with the Port of Rotterdam and the pilots and boatmen, MARIN's Trials & Monitoring team instrumented the mooring lines with load cells and installed a motion sensor set on each vessel calling into the terminal around the clock for a period of two weeks. While building a database of passing vessels in the busy harbour of the Maasvlakte, moored ships' motions, line loads, and the metocean conditions were measured from the moment of arrival to departure.

This first series of measurements spanned six ships being passed by more than 30 vessels, ranging from feeders to the very largest container carriers. While analysis continues, the ROPES monitoring campaign will continue at three more jetty locations, including a riverside mooring and a ship-to-ship offloading site. In phase II the potential of dynamic berthing systems, where the mooring is dynamically controlled from shore, will be investigated and a control algorithm for such systems will be developed.

**The ROPES JIP is still open for new participants. Henk van den Boom & Eric Wictor, h.v.d.boom@marin.nl**

**ROPES, a Joint Industry Project, is developing reliable computer models to predict motions and the mooring loads of moored ships and at the same time, contributing to innovative, dynamic berth systems.**





## Navy, IEEE Keep Electrical Ship Standard Current

# Call to Electrical Engineers

By Edward Lundquist

It's been a year since we first told you here in Maritime Reporter about the effort to update and rewrite the IEEE-45 Standard for Electrical Installations on Ships. At that time, we urged qualified experts to offer suggestions and volunteer to join in the effort as members of the committee. Thanks to those who agreed to support the committees work, a great deal of progress has been made, says Moni Islam, chair of the IEEE-45 Standard Coordinating Committee. However, he says, there is still important work to be done and volunteers are still needed, especially now that some of the work is coming to a conclusion.

The IEEE-45 standard was first released in 1920. Although periodically updated—the last time was in 2002—the current update is looking at many issues that come under the standard, such as design, controls, integration, testing and others. “In the process of standards development, we are initiating fundamentals of design changing how we will design electrical systems in ships in the future,” Islam says. “We have a superb team of experts who are undertaking this very large task, but more engineers are needed. We want to encourage more people to help with this effort.”

There are science and technology challenges. New designs for naval ships must address power continuity, survivability, safety and reliability. Managing life cycle costs must be considered at the outset. Common architectures, common design tools and standard interfaces will permit technology upgrades and maintainability and information sharing. “This will require us to educate the engineers about these standards and how to best employ them,” Islam says.

A large number of standards are currently under development, says Paul Bishop of the Bishop Group, who chairs the P45.3 Systems Integration and P45.4 Mission Systems standards teams as well as the IEEE Power and Energy Society's Marine Systems Coordinating Committee. Bishop says, “We are involved in a new, emerging and rapidly changing technology. We are bringing an old technology—electric power—into a new world environment. These standards are establishing the rules for the electric transfusion.”

Today's electric ships are so radically different—from power electronics to higher voltages to standard interfaces and superconducting systems—the IEEE standard that governs them has to be totally rewritten.

The new breed of electric ships must be safe, reliable and survivable in combat and harsh operating environments. Power continuity, frequently shifting loads and finite power generation capacity are important factors, and affordability must be balanced with capability. Total life cycle costs must be de-

signed into the system. Open architectures, common design tools and standard interfaces will permit technology upgrades and maintainability and information sharing. That's a big reason why the Navy wants to be involved in the development of standards that will have an impact on its future ships, and is embracing this effort wholeheartedly.

“IEEE 45 is the foundation for guiding an engineer in the design of a shipboard power system,” says Dr. Norbert Doerry, a technical director at the Naval Sea Systems Command. “Power systems onboard ships have evolved considerably over the recent past with the increased use of integrated power systems, power electronics, and advanced control systems. The traditional 60 Hz, AC450 volt 3 phase ungrounded distribution system is no longer the favored option for many ship designs. The ongoing update of IEEE 45 recognizes these changes have happened.”

**Qualified electrical engineers and individuals with experience in electrical systems in maritime and naval applications are urged to participate in this important effort to update IEEE-45.**

**Contact: Moni Islam  
Email: [Moni.islam@ieee.org](mailto:Moni.islam@ieee.org);  
Tel: 504-333-5004**

Doerry says the Navy is interested in ensuring IEEE 45 remains relevant to warship design principally to reduce design risk and to reduce costs. “If IEEE 45 is written to apply to naval warships, design engineers will not need to learn multiple ways of designing shipboard power systems for different markets. Likewise, a common set of rules facilitates using the same equipment onboard naval ships and other ships.”

The standard can also apply to any power management system at sea, such as drill rigs, which are vulnerable to blackout conditions in much the same way as ships. “I appreciate the offshore industry personnel coming forward with issues which must be addressed by various communities, such as research entities, equipment manufacturers, and systems of system designers. We need more work in system protection coordination, and then it needs to be simplified to meet the guidelines expressed through the IEEE standards. This research must be done before it can be addressed at the standard development level,” Islam says.

Islam is looking to the research community to engage and address the offshore issues, provide data, and express the results in a form for practical applications.

He is looking forward to ONR-sponsored Advanced Electrical Power System (AEPS) engineers to share the challenges they are facing to address protection coordination issues. He is also looking to hear from the Variable Frequency Drive (VFD) manufacturers so they can share their issues related to the system-level protection challenges.

Islam says the engineers who have worked on the new standard so far have done an outstanding job. “They have made a real contribution to the profession,” Islam says.

### About the Author

Captain Edward Lundquist, U.S. Navy (Ret.) is a principal science writer for MCR Federal, LLC.



## Smart, Reliable Power In Extreme Conditions

Schweitzer Engineering Laboratories, Inc. (SEL) delivers innovative solutions that transform electrical power systems into robust, integrated networks. Our high-quality products increase safety, reduce costs, and are designed, built, and tested to withstand the extreme conditions of the commercial marine industry.

- SEL POWERMAX® Power Management, Protection, and Control System—Protects against blackouts with advanced technology that revolutionizes protection and control for islanded power systems.
- Arc-Flash Mitigation Technologies—Combine light-sensing technology with fast overcurrent protection to provide high-speed, arc-flash detection without false tripping.
- SEL-700 Series Relays—Provide a complete line of protection for motor, generator, and distribution systems with a mean time between failures (MTBF) of 300 years.

Learn more about SEL's innovative solutions, exceptional customer service, and ten-year, worldwide warranty at [www.selinc.com/industrial/petro](http://www.selinc.com/industrial/petro).



SCHWEITZER  
ENGINEERING  
LABORATORIES

[www.selinc.com](http://www.selinc.com) | +1.509.332.1890

Join SEL at  
**ASNE DAY 2012**  
February 9–10 • Arlington, VA  
**Booth 116**



# Are the Ballast Water Stars Aligning?

By Dennis L. Bryant

Ballast water was first recognized by the scientific community as a vector for transfer of potentially invasive marine species more than 30 years ago. It took a number of years, and acceptance that zebra mussels had reached the Great Lakes in the ballast water of ships arriving from the Black Sea, before the maritime industry generally acknowledged that they were part of the problem. Initially, high seas ballast water exchange was the only available means for removing potentially invasive species from the tanks. That methodology presented risks to the stability of the ship (and the safety of the crew), as illustrated by the near-loss of the car carrier Cougar Ace in 2006 in waters of the North Pacific Ocean just south of the Aleutian Chain.

The search for alternative means of reducing the risk of introduction of invasive marine species commenced immediately, but problems quickly arose. Environmental advocates could not agree amongst themselves as to how low the risk should be and what methodologies should be acceptable. Some environmentalists contended that the ballast water should be sterilized before discharge, making it much more pure than common tap water. Some in the marine industry tried to deny that a problem existed or that, if it did, existing vessels should not have to be altered. Some nations (and in the United States, some



CleanBallast from RWO GmbH - Marine Water Technology, Veolia Water Solutions & Technologies

states, and one city) adopted independent standards, resulting in a patchwork of requirements that continue to vex the marine industry.

Finally, on February 13, 2004, Party States approved the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention). There is a big difference, though, between getting attendees at an international conference to sign a document as they head out the door and getting the governments that sent them to formally ratify and agree to be

bound by a new convention. This has been particularly true with the BWM Convention, where many of the provisions were aspirational in that technology for achieving the goals of the Convention did not exist in 2004.

The BWM Convention did, though, establish standards for measuring the acceptability of ballast water control devices. As a result, engineers now had a clear goal and began the process of designing and testing various technologies for meeting those control standards. It took several more years, but technologies

were finally shown as meeting the BWM Convention standard. Now, there is a critical mass of approved technologies, providing ship owners an opportunity to select the system that works best in their particular situation. As of August 9, 2011, 34 ballast water management systems that make use of active substances have received basic approval under the BWM Convention approval process and 20 such systems have received final approval.

There is a fly in the ointment of the BWM Convention. Seven years after its promulgation, the Convention is still not officially in force. The Convention provides that it will come into force 12 months after the date on which not less than 30 states, the combined merchant fleets of which constitute not less than 35% of the gross tonnage of the world's merchant shipping, have ratified or otherwise accepted the Convention. As of November 30, 2011, the BWM Convention has been ratified by 31 states with 26.44% of the required gross tonnage. There are strong indications, though, that the threshold for implementation will be met during 2012, such that the Convention can officially come into force during 2013. Based on this expectation, ship owners increasingly are installing approved ballast water management systems in their existing vessels and new vessels are being designed to include those systems.

## Ballast Water Management Systems that Use of Active Substances, Received IMO Final Approval

Name	Country	Manufacturer	Date of Final Approval
PureBallast System	Norway	Alfa Laval/Wallenius Water AB	July 13, 2007
SEDNA	Germany	Degussa GmbH	April 4, 2008
Electro-Clean	Republic of Korea	Techcross Ltd. & KORDI	October 10, 2008
OceanSaver	Norway	MetaFil AS	October 10, 2008
CleanBallast	Germany	RWO	July 17, 2009
NK-O3 BlueBallast System	Republic of Korea	NK Company Ltd.	July 17, 2009
ClearBallast	Japan	Hitachi Ltd.	July 17, 2009
GreenShip Sedinox	The Netherlands	GreenShip Ltd.	July 17, 2009
GloEn-Patrol Ballast Water Mgmt. System	Republic of Korea	Panasia Co.	March 26, 2010
Resource Ballast Technologies System	South Africa	Resource Ballast Technologies	March 26, 2010
JFE BallastACE	Japan	JFE Engineering Corp.	March 26, 2010
EcoBallast	Republic of Korea	Hyundai Heavy Industries	March 26, 2010
SP-Hybrid BWMS Ozone Version	Japan	Mitsui Engineering & Shipbuilding	October 1, 2010
ARA Ballast	Republic of Korea	21st Century Shipbuilding	October 1, 2010
BAIChlor	China	Qingdao Sunrui Corrosion & Fouling	October 1, 2010
OceanGuard	Norway	Qingdao Headway Technology	October 1, 2010
BalPure	Germany	Severn Trent De Nora	October 1, 2010
HiBallast	Republic of Korea	Hyundai Heavy Industries	July 15, 2011
Purimar	Republic of Korea	Samsung Heavy Industries	July 15, 2011

Source: International Maritime Organization



#### About the Author

Dennis L. Bryant, Maritime  
Regulatory Consulting, Gainesville,  
FL, Tel: 352-692-5493  
Email: dennis.l.bryant@gmail.com



### With the adoption of Ballast Water Treatment (BWT) systems, market demand is estimated for installations in the neighborhood of 39,000 ships globally in the next five years

In the meantime, the US Coast Guard worked to develop a standard for vessels operating in US waters. The political will necessary for the United States to ratify the BWM Convention was lacking. After much consensus building, the Coast Guard finally proposed a domestic standard consistent with the international standard, with the proviso that the domestic standard would be tightened when it was shown that technology had improved to a significantly higher level. As of the writing of this article, the Coast Guard final rule is undergoing review at the Office of Management and Budget (OMB) with publication in the Federal Register expected for early 2012.

After a federal court ordered the Environmental Protection Agency (EPA) to regulate ballast water discharges through its National Pollutant Discharge Elimination System (NPDES), some commentators lost hope that the federal government could develop an internally unified standard. After much consideration, though, the EPA recently proposed that, commencing in 2013, covered vessels implement as part of the Vessel General Permit (VGP) program the same standard as that proposed by the Coast Guard.

Things are not quite as smooth at the state level. The good news is that Wisconsin recently changed its position and will only enforce the standard found in the BWM Convention. California continues to cling to its very high standard, despite evidence that that is no technology in existence that can achieve the required level of purity. California, though, has extended its deadline in the past and is expected to do so in the future unless and until a technological breakthrough is achieved. New York State is now the lightning rod on the ballast water management issue. It conditioned the state's approval of the EPA VGP program on the inclusion of a ballast water discharge standard for New York waters similar to that of California but with a harder dead-

line. New York has grudgingly granted one brief extension of deadline, but will provide no signal that further deadlines should be anticipated. Meanwhile, despite all the evidence to the contrary, it contends that there is technology available to meet its very high ballast water discharge standard.

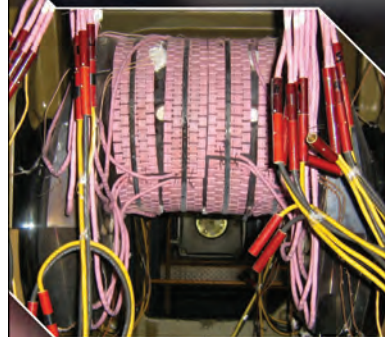
Some members of Congress have finally decided to address the issue directly. The Coast Guard and Maritime Transportation Act of 2011 (H.R. 2838) as approved by the House of Representatives on November 15, 2011, includes a provision that would limit the ability of the individual states to impose more stringent ballast water discharge standards on commercial vessels than those imposed by the federal government. The bill is now under consideration by the Senate.

It is possible, albeit unlikely, than none of the potential breakthroughs discussed above will come to fruition in 2012. It is more likely that the BWM Convention will acquire that requisite ratifications to allow it to come into force; that the US Coast Guard will promulgate its ballast water management regulation mirroring, in large part, the BWM Convention standards; and that the EPA will publish its 2013 VGP program standards following the Coast Guard lead with respect to ballast water management. The fate of the Coast Guard and Maritime Transportation Act is less certain. The coming year will see a highly contentious national election campaign, which may provoke legislative gridlock on Capitol Hill. Developments at the state level are even less predictable. Over all, though, 2012 may be the year in which stars align for ballast water management and things finally get beyond top dead center. These developments will result in even more vessels installing modern ballast water treatment equipment and will encourage manufacturers to develop improved ballast water management technology.

## QUALITY MACHINING IN-PLACE



... ANY PLACE IN THE WORLD



### Crankshaft Repair

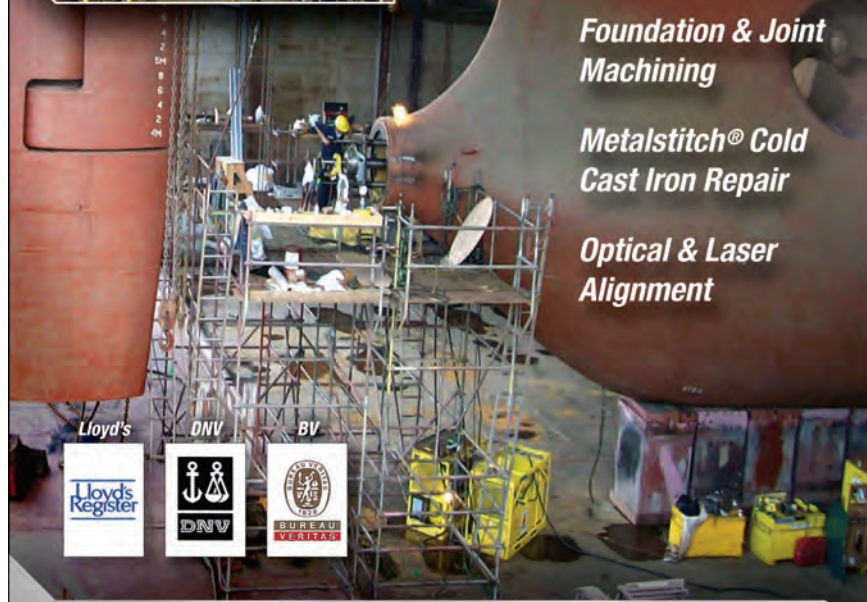
Inspection  
Straightening  
Annealing  
Machining  
Grinding/Superfinishing

### Engine, Rudder & Stern Tube Boring

### Foundation & Joint Machining

### Metalstitch® Cold Cast Iron Repair

### Optical & Laser Alignment



—The Only USA Representative of Metalock International  
—In-Port or Voyage Repairs

help@inplace.com ■ 414.562.2000 (phone)  
www.inplace.com ■ 414.562.2932 (fax)

Marine advertising's strongest link

# MarineLink.com

Connecting your business with  
the world's largest marine  
audience online.

ANIMATED AND STATIC BANNER ADVERTISING  
NEWS PAGE BANNERS  
CUSTOM EMAIL SERVICE  
VIDEO & WEBINAR HOSTING  
MARITIME TODAY E NEWSLETTER

## GET LINKED!

Contact us for more information. [www.marinelink.com](http://www.marinelink.com)





# ASRY

by Greg Trauthwein, editor

(Photo: ASRY)

## 35 Years Strong & the Cornerstone in Bahrain's Push to become a Global Maritime Power

While small in stature at just 760 sq. km. with a population of 1.2 million, the Kingdom of Bahrain, an archipelago in the Persian Gulf just east of and connected by causeway to Saudi Arabia, seeks to grow its stature in the world marine market to become a global maritime and logistics center by 2030. The Arab Shipbuilding & Repair Yard Co. (ASRY), which is central to this success, last month celebrated several key milestones, including the anniversary of its 35th year in business and the opening of its new 1.38km Repair Quay Wall, the cornerstone of the shipyard's \$188 million facilities expansion investment program and a signal of the yard's intent to diversify its operations. While the ASRY event was high-profile, including the official inauguration of the new Repair Quay Wall by Bahrain's Deputy King HRH Prince Salman bin Hamad Al Khalifa, the investment in ASRY is just one plank in Bahrain's 2030 strategy which is intent on creating in the Kingdom a Global Maritime and Logistics Center. "Our major objective is to make Bahrain a strategic gateway and shipping hub to the northern gulf, while further strengthening ASRY's role as a major global player in the offshore, off-

shore repair and other related services to the shipping industry," said ASRY's Chairman, Shaikh Daij bin Salman bin Daij Al Khalifa.

### ASRY'S LONG HISTORY

ASRY was created as the first ship repair yard in the Arabian Gulf designed specifically for the dry docking and repair of super tankers, and with a single 500,000 dwt graving dock, ASRY opened for business in 1977. ASRY was originally conceived, and to this day is still owned, by the countries that make up OAPC (Organization of Arab Petroleum Producing Countries), including Bahrain, Kingdom of Saudi Arabia, United Arab Emirates, Kuwait, Qatar, Iraq and Libya.

ASRY has steadily built its business in the Gulf and its global reputation, but it has not been immune from the cyclical nature of the ship repair business, and has watched ship repair sales suffer in recent years in parallel with the ailing global economy and ship owner's penchant for spending fewer dollars on the upkeep of ships. "I think we have to be optimistic but we have to be realistic," said Shaikh Daij. "The market has not rebounded yet, but it will rebound. Ships must be repaired and maintained."

Despite the recent and prolonged global economic downturn, though, ASRY fared relatively well in 2010, repairing 210 ships and rigs – a record number – compared to 168 the previous year.

According to Chris Potter, ASRY's CEO for nearly two decades, traditionally the shipyard maintains an even keel in its business source, with 50 percent coming from the seven Arab owners of the shipyard; and 50 percent from the international market. In 2010 that ratio was skewed more heavily (65%) to the international business; while this year it has taken a turn (65%) toward Arab owners.

"ASRY was the first ship repair yard in the Middle East and since its inception has established itself as a leader both in the region and internationally," said ASRY's Chairman, Shaikh Daij bin Salman bin Daij Al Khalifa. "I'm delighted to say that the baby of the ship repair industry in 1977 has matured into truly a world leader."

ASRY's original 500,000dwt capacity graving dock today is complemented by two floating docks capable of accommodating vessels up to 80,000dwt and 120,000dwt respectively, two of the largest slipways in the region and 15 repair berths. "ASRY has also moved on

from being just a Super Tanker repairer, although VLCC and ULCCs still provide a large slice of the yard's annual workload, and today you will see every conceivable type of commercial vessel undergoing repair, from tugs and offshore support vessels, through dredgers, general cargoships, bulk carriers, and containerships to gas tankers. In recent years ASRY has diversified even further, especially into the offshore oil and gas markets, especially for the repair of jack-up rigs, and into the technically demanding naval repair sector," said Shaikh Daij. "ASRY is truly a world-class 'one-stop-shop' for owners' repair and maintenance requirements."

**In addition to routine repair, ASRY looks to the refit business coming with the adoption of Ballast Water Treatment (BWT) systems, a market demand that is estimated at 39,000 ships in the next five years,** to help smooth the traditional troughs inherent to the ship repair industry.

Today ASRY is much more diversified than when it opened shop in 1977. While ship repair remains its staple, it today has built strong additional business lines including: the repair of military ships, notably garnering a significant share of U.S.



## ASRY's Repair Facilities

### Dock 1 (Graving Dock)

Length o.a.	375m
Length o.a. keel blocks	375m
Width o.a.	75m
Maximum depth above keel blocks	8.85m
Maximum crane capacity	100 tons
Maximum size of ship	500,000 dwt

### Dock 2 (Floating Dock)

Length o.a.	252m
Length o.a. keel blocks	235m
Width o.a.	53m
Clear width between wing walls	44m
Maximum depth above keel blocks	9.7m
Maximum crane capacity	12 tons
Dock lifting capacity	33,000 tons
Maximum size of ship	120,000 dwt

### Dock 3 (Floating Dock)

Length o.a.	227m
Length o.a. keel blocks	210m
Width o.a.	49m
Clear width between wing walls	40m
Maximum depth above keel blocks	9.7m
Maximum crane capacity	12 tons
Dock lifting capacity	30,000 tons
Maximum size of ship	80,000 dwt

### Slipways

Dry berth length	255m
Maximum length between blocks	140m
Draft	4.50m
Maximum size of ship	to 5,000 tons displacement



(Photo: ASRY)

Central to ASRY's push into the lucrative outfitting and repair of offshore structures is its \$188m investment in its new 1.38km Repair Quay Wall which is located north east of the existing yard in an area known as the ASRY Basin,

Navy ship repair business in the region; expanded of its ASRY Offshore Services (AOS) and efforts to service the region's burgeoning offshore oil and gas business on both the rig and offshore service vessel sides of the business, via the aforementioned Repair Quay Wall and 200,000 sq. m of offshore fabrication and load-out area; and ASRY recently announced a Joint Venture with U.K.-based Centrax to design and build a new line of power barges to serve growing power needs in developing countries globally.

### THE NEW REPAIR QUAY WALL

ASRY's new 1.38km Repair Quay Wall is located north east of the existing yard in an area known as the ASRY Basin, and will essentially fast-track the company into the lucrative outfitting and repair of offshore structures. The Quay Wall was designed by the UK's Royal Haskoning and built by Nass Contracting. With an alongside water depth of 12m, the new facility is capable of accommodating three 300,000 dwt vessels simultaneously. Craneage, when installed in March 2012, will comprise two level-luffing cranes, running on rails, designed and built by Germany's Ardel. The cranes, of the company's Kranich range of sin-

gle-jib cranes, are lightweight, flexible units, offering extremely low maintenance and tailored for the demanding requirements of shiprepair as well as offshore rig repairs and installation work. One of the cranes will be a Kranich 1000-47, the other a Kranich 1000-28, both with a maximum lift of 30 ton swl.

ASRY's facilities expansion program is not just about the new Repair Quay Wall. The investment also includes the construction of a 200,000 sq. m. hard standing offshore fabrication area, with load out quay. "There is a lot of competition for small (offshore) vessels in the Gulf, and it takes significantly more marketing, but it is starting to pay off," CEO Potter said.

### POWER BARGE BUSINESS

In an attempt to further expand its business lines to help smooth the curves of the ship repair market, ASRY earlier this year joined forces with UK-based power generation packaging specialist Centrax, to form a joint venture company ASRY-Centrax Ltd., a joint venture that will to design and build Power Barges. ASRY has designed the barges itself, and will build them on its two large slipways. ASRY-Centrax's initial offering is the

TPB125, a self-contained modular electricity generating system which features a pair of Rolls-Royce Trend gas turbines together producing 125MWe, and individual barges can be linked together in multiples and supplied with a tanker barge or barges configured for the storage of liquid or LNG fuels. Particular care has been paid to ensuring the environmental aspects of the operation, and the barges are designed with double skin fuel and oil tanks, as well as an 80 dBA at one meter sound attenuation.

Prospects for the power barge business are expected to grow rapidly, particularly in developing nations where it is increasingly difficult to insure and finance land-based structures due to the possibility of insurrection attack. Placing the power station on barges offshore helps to transform the economics of the power project, as the system is further from harm's way, and can be pulled out altogether in the face of real danger. To accommodate the needs of developing countries, the 125 MWe system size was chosen as optimal primarily because it enable a relatively shallow draft (2.6 m) barge, enabling it greater lanes of access when dredging is not practical or possible. While company officials were hesitant to provide a global

projection for the business in terms of power or pricing, they did admit that a particular Nigerian developer is mulling the acquisition of "double digit" numbers of barges, and world areas such as the rebuilding of Iraq will present opportunities.

Depending final outfitting, particularly the inclusion of key security elements, night vision and helidecks, for example, the 125 MWe power barges will sell for between \$100m and \$125m.

### BAHRAIN'S PORT EXPANSION

The recent opening of the Khalifa Bin Salman Port (KBSP) is a modern container port operated by APM Terminals, and another plank in Bahrain's drive to solidify it as a global maritime hub. In particular, it is seen as a potential hub of transport to the region, particularly for destinations in the Upper Gulf.

The Khalifa Bin Salman Port (To date the port handles about 340,000 TEU per year (including a call recently from the largest containership to ever call Bahrain, the 7500 TEU APL Portugal) with a capacity for 1.1 million TEU, and the ability to expand on the current location to more than 2.5 million TEU/yr. should conditions prove right for expansion.





**Shaikh Daij bin  
Salman Al Khalifa**  
Chairman, ASRY and the  
General Organization of Sea  
Ports, Kingdom of Bahrain

Shaikh Daij bin Salman Al Khalifa is Chairman of the ASRY and GOP Board and Undersecretary for Ports Affairs at the Ministry of Finance. He held the position of President of Customs from March 2006 until June 2008 and prior to that

Shaikh Daij was Assistant Undersecretary for Foreign Trade at the Ministry of Industry and Commerce. Other positions presently held by him include: Chairman of Asry Marketing Services Ltd. (ASRYMAR) and Board Member, United Arab Shipping Company and Bahrain Convention and Exhibition Authority. Previous positions held by him included: Chairman of Bahrain Airport Company and GCC Patent Office, Deputy Chairman, Bahrain Promotions & Marketing Board, and Board Member of Tender Board, Aluminium Bahrain (ALBA), Shaikha Hessa Girls School and King Fahd Causeway Authority. Shaikh Daij holds a BSBA in International Business from the American University, Washington, D.C. and a Leadership Management Diploma (Gulf Executive Program) from the University of Virginia.

While business demand has not yet materialized, it is envisioned that the region is poised for rapid near and long-term expansion, driven by a resurgent boom for offshore oil and gas business, and also for the continued reconstruction of Iraq. While KBSP continues to expand, there are a number of additional port and infrastructure projects in the country that are designed to provide an overall positive impact, including:

- the construction of a 25km causeway that will connect Bahrain with Qatar;
- the construction of an LNG terminal;
- the construction of a building materials terminal at the old port facility; and
- deepening of its navigation channel to 15m.

#### FUTURE GROWTH

ASRY's growth plan for the future will not diverge much from its steady, conservative plan since its inception 35 years ago. "We are ready for opportunities when the time is right," said ASRY's Chairman, Shaikh Daij. "It's all about market conditions and timing. The market conditions today are not optimized for us to expand, as ship repair sales are down while the offshore business is up."

While he would not supply specific details on what, exactly, would constitute the 'right' conditions, he did admit that the organization is consistently evaluating opportunities in the region and abroad.

## Four New Shipyard Tugs to be Delivered

ASRY does not engage in the construction of new vessels, as its CEO Potter put it succinctly: "It is very simply, really: We have found that there has been more money to be made repairing ships and rigs than building them." But it does build for its own account, and today it is building a series of four new tugs, delivering the first at the end of 2011. The tugs are a design from Singapore's SeaTech Solutions International, with a materials package provided by Singapore's Pacific Ocean Engineering & Trading (POET). They replace the yard's aging fleet of six 32-ton bollard pull tugs, which have been in service since 1977.

The tugs measure 25.8 x 9 x 5m with a molded draft of 4m, and feature Azimuth Stern Drive (ASD) generating a bollard pull of 40 tons with speed, at half load, of 11 knots. While the four boats were designed for docking and berthing operations within the shipyard, they are also able to perform coastal offshore towing operations. They feature a compact deckhouse placed well inboard, with spacious aft and fore decks. The wheelhouse provides a 360 degree view, while sky windows are fitted for enhanced ship handling operations. The hull is constructed of a double chine design with inclined transom stern and tapered bow. A double-plate skeg provides for good directional stability. The tugs have a low air draft, enabling them to provide assistance to highly raked ships when docking and undocking, as well as maneuvering under mooring lines. The hull is divided into four watertight compartments, while a heavy sheer strake around the hull, coupled with cylindrical fenders at the bow and the stern, provide for enhanced hull protection. Towing bits are located forward and aft, plus a combined hydraulic anchor/towing winch on the foredeck. Propulsion is via two Schottel SRP 1010 CP steerable rudder propeller units with CP inward rotating propellers in nozzles driven by two 1,324kW Yanmar 8N21 resiliently-mounted diesel engines, via cardan shafts, flexible couplings and clutch. Auxiliary machinery comprises two 99kW Volvo Penta diesel generators and two 20 cu. m./hr. bilge pumps. Each tug has accommodation for a crew of eight.



[Photo: Greg Trauthwein]

The Maersk Idaho, which carries a lot of gear for the U.S. military in the Middle East, was in ASRY's massive drydock recently for 30 days of general repair.



[Photo: Greg Trauthwein]





Bahrain is connected to oil-rich Saudi Arabia via causeway, and plans are underway to build a 25 km causeway connecting Bahrain to the gas-rich nation of Qatar, forwarding the Kingdom's ambition to be a leading regional and global maritime hub.



## ASRY's Time Line

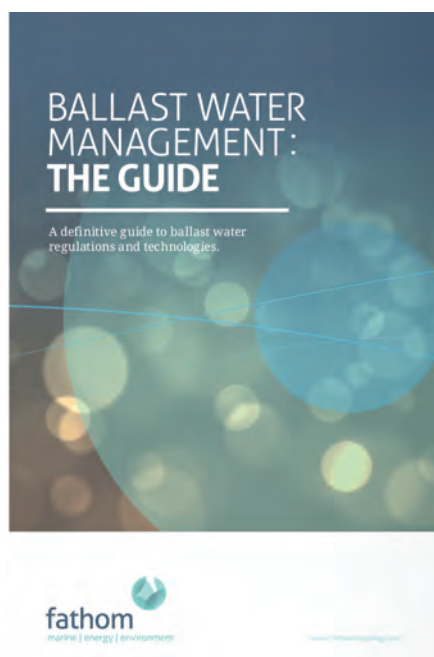
- **1974** - Dredging and land reclamation for the construction of ASRY starts – costing US \$340m
- **1977** - Yard officially opened by the late Emir H.H. Shaikh Isa Bin Salman Al Khalifa
- **1979** - Dock 1 accepts then the world's largest tanker – World Petronas
- **1981** - 1st LNG carrier repaired – 22,041dwt Venator owned by Norway's Peter Smedvig
- **1982** - Yard fits world's largest propeller (11m diameter, weighing 70 tons) to the 357,632dwt tanker Wind Escort, owned by Norway's Lars Krogh
- **1988** - ASRY taps fresh water spring on sea bed, a world technology first!
- **1991** - ASRY buys two floating docks from US repairer Jacksonville Shipyards and dredging work starts for the arrival of the new docks. At the same time a new compressed air and service building is built for the floating docks
- **1992** - The two floating docks arrive in Bahrain after a 70 day tow from the East Coast of the USA, via the Suez Canal
- **1993** - Seafarers Center opened
- **1995** - ASRY becomes the world's first shipyard to be awarded ISO 9002 Quality Certification
- **1996** - Yard enters Floating Storage & Offloading (FSO) conversion market, with work on the tanker Knock Taggart
- **1997** - ASRY opens Sludge Treatment Plant, the first shipyard in the Arabian Gulf to do so
- **1998** - Successfully drydocks the ULCC Sea Splendour, despite the vessel being 7m too long for Dock 1. This tanker spent 155 days undergoing repair
- **1999** - Yard enters the newbuilding market with the construction of the workboat Shadedee for Kuwait Oil Tanker Co (KOTC)
- **2001** - Becomes the first shipyard to achieve ISO 9001:2000 Quality Accreditation
- **2006** - Starts construction of new slipways – the largest of their type in the region
- **2008** - ASRY forms new offshore division; ASRY Offshore Services (AOS), to specifically handle oil and gas related work. Opening of new slipways.
- **2010** - ASRY becomes first shipyard in the Middle East to achieve ISO 28000 & ISO 20858:2010 Quality Certification
- **2011** - Sets up joint venture ASRY-Centrax Ltd to tackle the Power Barge newbuilding market. December sees the official opening of the yard's new 1.38km repair quay wall and the delivery of the first of four new shipyard tugs.

Photo: Greg Trautwein



## Ballast Water Treatment Systems

## Challenges for Installation Engineering



The following is an excerpt from Chapter 5 - "Ballast Water Treatment" from "Ballast Water Management: The Guide" published by Fathom, the leading provider of market intelligence products and services for the marine and energy industries. The guide has been compiled with the support of ABS, extending their current publications around ballast water management. In addition "Ballast Water: The Guide" provides company profiles and critical analysis of ballast water treatment systems.

'Ballast Water: The Guide' is available to pre-order at [www.fathomshipping.com/Guides](http://www.fathomshipping.com/Guides) and Amazon priced at £95 from December 12th. Email: [info@fathomshipping.com](mailto:info@fathomshipping.com)

Many of the challenges related to engineering the actual installation of a ballast water treatment system have been noted in the sections describing the treatment technology factors above. These challenges can be especially acute when installing a system on an existing vessel.

Finding solutions to treatment system back pressure and potential flow rate reductions, power consumption demands, control system integration and space requirements, as well as access for installation, can be difficult and costly.

While these are worked out with the vendor, design engineer and class society, the following additional factors should also be taken into consideration.

#### INTAKE/DISCHARGE ISOLATION: CROSS-CONTAMINATION

Care must be taken when designing the piping system modification required for treatment system installation to prevent any accidental cross-contamination of intake and discharge water – a particular concern for systems that redirect the main ballast flow.

Cross-contamination can occur if contaminated water, either from the sea chest or a tank which may require treatment prior to discharge, passes through a pipe that is shared by the treated ballast water being discharged. Valves which do not provide a reliable seal may also allow some contamination of treated ballast.

Isolation of intake and discharge flows is not always possible.

However, in two-pump ballast systems where flexibility in the ballasting/deballasting time is acceptable, it is recom-

mended that one pump be dedicated for ballast intake and one for discharge. Transfers between tanks should be done by the 'discharge' or 'clean' pump unless

#### SAMPLING AND IN-SERVICE TESTING

Designing proper and convenient sampling and testing facilities is an important part of the installation engineering. Port State Control and other authorized regulatory officers may, at any time for the purpose of determining whether the ship is in compliance with the discharge requirements, come on board and take samples of the ballast water. IMO G2 'Guidelines for Ballast Water Sampling' call for the sampling to be a simple and speedy process, applicable at the point of ballast discharge and safe to the ship and crew. The sample volume and method for biota collection are key to the design of the sampling facilities which should include flexible hoses, holding tanks and work area. Unfortunately, with the sampling port required to be near the discharge that is often located in the engine room where space is limited, handling of significant quantities of water may be difficult to arrange or simply impractical.

#### MAINTAINING BALLASTING FLEXIBILITY

Full ballast system operational flexibility can be maintained with treatment systems. However, it may not be necessary or cost effective for particular ships to provide for the treatment of all isolated ballast systems on board, maintain maximum flow rates at all times and provide for stripping systems (eductors) to continue to be used.

Examples

1. A vessel that does not move significant ballast during normal operations may not need the treatment system to handle full pumping flow rates.
2. Eductor-based stripping systems may not need special attention if the full treatment course is completed in the tank before discharge, or if the eductor power water can be taken from a treated source.
3. Dedicating ballast pumps for intake and discharge may reduce flexibility but may simplify piping connections

and lower the risk of cross-contamination.

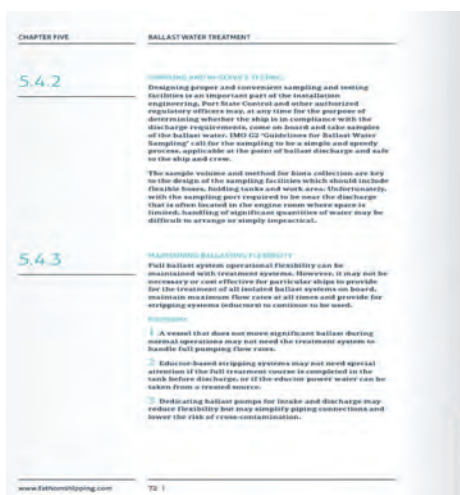
#### MAINTAINING BALLASTING FLEXIBILITY

While for most existing vessels, detailed as-built drawings of the ship's ballast piping system and engine room arrangement may not be readily available, gathering of certain relevant information is important to a smooth installation (as well as possible treatment selection decisions) and should not be overlooked. Detailed dimensional information is required for all vessel systems and outfits that may be impacted by the new equipment in order to properly evaluate locations for equipment installation and piping runs and avoid interferences.

Further, installation sequence planning requires a detailed understanding of routes for equipment access and the minimum clearances available. Availability of suitable equipment lifting points also needs to be documented. Advanced techniques using 3-D laser scanning technology may be useful in this regard.

#### SEDIMENT CONTROL

Ballast water tanks and their internal structure should be designed to minimize accumulation of sediments and permit for easy cleaning and maintenance. Design guidance of ballast tanks and other design enhancements given in the G12 Guidelines are to be adhered to as far as practicable. There are also practical steps or procedures that can be implemented in the ballast water operation for sediment control. The recommendations given in the G4 Guidelines, Part A, Section 1.3, are to be adhered to as far as practicable. Details of the methods and operational procedures for the sediment management on board the vessel, including the disposal of sediments and the associated safety considerations, etc., are to be documented in the vessel's ballast water management plan (BWMP). The remainder of Chapter 5 sets out the installation criteria that must be met in order for a ship to gain the optional BWT or BWT+ notation from class society ABS. These are included to demonstrate the range of technological factors that operators must consider.





**MARITIME  
REPORTER**  
AND  
ENGINEERING NEWS

Second Annual  
Don Sutherland Memorial



# Maritime Photo Contest

See your image on the cover of the world's largest maritime magazine

Your photo could be on the cover or in the pages of the most widely read publication in the global maritime industry. Enter as many photos as you like, in each of the five categories. Entries can be submitted and viewed at:



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

All images must be entered by May 11, 2012 to be considered. The winners will be published in the June 2012 issue of Maritime Reporter and Engineering News, with the Grand Prize Winner featured on the front cover of the magazine.

This contest was established to honor the memory of the late Donald S. Sutherland, renowned maritime photographer and writer, who passed away unexpectedly in 2010.

## Categories:

Ships and Boats  
Offshore Structures  
People  
Maritime Scenes  
Weather Systems

**Dec. 6, 2011 -  
May 11, 2012**

2011 Grand Prize Winner-  
Budi Prakasa



## Sponsored By:



**SCANIA**  
Scania U.S.A. Inc.



Irving Shipbuilding Inc.

(902) 423-9271

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



For complete contest rules go to <http://www.maritimephotographs.com/rules-and-terms.asp>





The semi-submersible Songa Delta rig at Coast Centre Base, near Bergen, Norway, for regular 5-year maintenance in November 2011.

# Bergen Bound

by Clare McIntyre

## The Bergen region is home to 60% of Statoil operations for the Norwegian Continental Shelf

The Hanseatic trading city of Bergen, on the edge of the Norwegian North Sea, has a long maritime tradition. From shipping to aquaculture to offshore oil and gas, this is a city whose economic identity is defined by its ties to the sea. The city is by far Norway's largest port, with more than 13 million metric tonnes of cargo transported to and from Bergen in 2010. Bergen is also the country's largest center for aquaculture and marine science research, and is home to the Institute of Marine Research and an active marine science research centre at the University of Bergen.

In addition, since the 1970s, Bergen has been a region of focus for Norway's offshore oil and gas industry, given its strategic location close to several of Norway's North Sea oil and gas fields. While Stavanger remains the Norwegian oil industry's administrative hub, the Bergen region has established itself as a key operational base - today, the Bergen region is home to 60% of Statoil operations for the Norwegian Continental Shelf (NCS).

In particular, the Bergen region today is a leader in the field of subsea technology - companies here compete and collaborate to drive the development of new solutions for subsea oil and gas operations.

Though the term "cluster" is regularly bandied about around the world, the ver-

sion created and touted in Bergen is true to the send of the work, part of a government investment in 12 regional groupings designated as Norwegian Centers of Expertise (NCE).

Known as NCE Subsea, the Bergen cluster's activities support innovation, increased capacity and internationalization. Because the Bergen region has specific strengths in after-market activities, NCE Subsea is also highly specialized, focusing on maintenance, modification and operations (MMO).

The cluster is jointly administered by Innovation Norway, SIVA (the Industrial Development Corporation of Norway), and the Research Council of Norway.

In total, 124 companies and organizations are members of the NCE Subsea network, which is led by a board representing the entire Bergen region, as well as most of the key players in the Norwegian offshore and subsea sectors. Statoil, Aker Solutions, FMC, Coast Center Base and the research organization SINTEF Petroleum Research are all included on the board, which is led by Chair Mr. Tove Ormevik, OIM at Skarv FPSO for BP. The cluster benefits from the presence of the many large oil and gas companies in the Bergen area. Companies like Aker Solutions, FMC, Statoil and DNV have a major presence here, alongside local

companies with international reach such as Framo Engineering and DOF Subsea. Many of these companies are expanding their presence and facilities in and around Bergen.

The financial infusion that comes with being named an NCE has also helped the cluster to develop: the cluster organization receives \$900,000 from the Norwegian government, for 12 years. NCE Subsea also benefits from project funding to supplement its operating budget.

Thanks to this support from the Norwegian government and additional contributions by members, the cluster organization itself is not profit-driven. But it is very clearly business-driven, and focussed on creating economic opportunities for members and partners.

### EXPANDING INFRASTRUCTURE

The official designation of the cluster in 2006 gave new profile to the Bergen region's strengths and has encouraged companies to invest and develop in the region. Many companies are undertaking aggressive expansion programs, displaying their strong confidence in continued oil and gas-related activity on the Norwegian continental shelf.

Twenty minutes outside of Bergen, the benefits of geographical co-location within the cluster are on display. The

Ågotnes industrial estate, just west of the city, is home to NCE Subsea's offices, and also houses facilities of key players including Aker Solutions and Statoil.

Statoil's main Bergen offices are at Sandsli, but its Subsea Pool, which manages Statoil's tools for subsea production on the Norwegian continental shelf, maintains a facility at Ågotnes.

Aker Solutions' expanded Ågotnes facility opened in 2009, and is the company's largest subsea service and maintenance base worldwide. Ågotnes focusses on the refurbishment and upgrade of christmas trees used on subsea installations on the Norwegian Continental Shelf.

Coast Center Base (CCB), which is a 50% owner of the Ågotnes estate, also has a major facility here for logistics, maintenance and supply activities for North Sea oil and gas fields including Troll - the world's largest subsea development - as well as Statfjord, Gullfaks, Veslefrikk, Huldra and Kvitebjørn.

Across the water from Ågotnes, Framo Engineering's extensive new facility at Horsøy is visible. Framo is a Bergen-based product developer, supplier and system supplier, with three main product groups - pumps and subsea systems, multiphase metering, and swivels and marine systems.



Companies in the cluster benefit from collaboration on subsea technology development, in many cases supported by Statoil. The Norwegian oil giant, which *Fortune* recently named one of the world's 10 most innovative companies, is a major driver in the subsea sector.

*Statoil has a goal of achieving production of at least 20.5 million barrels per day by 2020.*

Framo, which was fully acquired by Schlumberger in July 2011, purchased the former fish-processing site in 2007, and in 2008 began a \$171m infrastructure development. The Horsøy site includes a harbor, a logistics worksite, R&D facilities, assembly, and testing, including the full-scale pressure testing of large systems. At a total of 750 000 sq. m., the site also has the potential for co-location of Framo's sister and partner companies in the Bergen cluster.

#### INNOVATION, COLLABORATION

Companies in the cluster benefit from collaboration on subsea technology development, in many cases supported by Statoil. The Norwegian oil giant, which *Fortune Magazine* recently named one of the world's 10 most innovative companies, is a major driver of innovation in the subsea sector, and is collaborating with several cluster members on new subsea technologies.

Statoil has an ambitious goal of achieving production of at least 20.5 million barrels per day by 2020. At least a third of this new production is projected to come from current wells, through both increased oil recovery and the extension of their productive lives.

Ove Magne Kallestad, Statoil's Vice President of Subsea Technology & Operations, said that technology is essential to meeting this target. According to Kallestad, Statoil is focussed on both the reliable operation of existing wells and the development of new technology for the subsea.

Continued operation of existing wells requires upgrading and refurbishment of existing subsea technology. In Bergen, a major source of aftermarket activity is the ongoing need to refurbish of subsea christmas trees, which control the flow of subsea oil and gas.

While the average lifespan of a christmas tree is around 20 years, maintenance of either the tree or the well is typically required between 5 and 10 years after installation. Many of the trees in use today were installed in the 1990s, and now require maintenance and upgrading.

In Bergen, both FMC and Aker Solutions have facilities for christmas tree refurbishment at Ågotnes. Trees can be returned to their former operating capacity, and also upgraded to include new features and capabilities that have been developed in the past 20 years.

New technology is also critical, and since 2009 Statoil has been working with Framo Engineering on a subsea boosting system which uses Framo's wet gas compressor technology to increase subsea gas production.

The compressor, which allows for boosting of gas containing both water and condensate, is as efficient as a conventional compressor and eliminates the need for upstream treatment of gas. Statoil is considering the technology as an option to maintain production on Gullfaks C beyond 2013, and to increase total recovery from the reservoir.

Framo has been working on this technology for ten years, and entered into a partnership and funding arrangement with Statoil in 2009. The compressor is presently undergoing testing at Framo's Fusa facility, near Bergen. A decision is expected in early 2012 as to whether to adopt this technology concept for the Gullfaks C field.

Aker Solutions is also working with Statoil to bring to market with a new product aimed at improving recovery from mature fields.

Their power and communications system, known as PodEx, can be used to provide extra power and communications ability to existing subsea installations, without a wholesale upgrade.

This allows new tools and sensors to be installed on existing wells, without disruption. The first PodEx system is currently undergoing integration testing for Statoil's Njord field on the NCS, and Aker is expecting that it will be installed in 2012.

Meanwhile, smaller companies, such as independent Bergen company ClampOn, are also contributing to subsea technology innovation. ClampOn specializes in subsea ultrasonic sensor technology, building each sensor by hand in their

Bergen facility. Their sensors help companies increase oil recovery by providing additional information to manage the flow of oil and gas.

Their products are non intrusive (they "clamp on" to an existing installation), and can be moved around without the risk of leakage.

ClampOn recently launched its Corrosion-Erosion Monitoring System (CEM), which allows for observation and man-

agement of corrosion and erosion in subsea pipes. This is particularly important when trying to safely extend the life of existing wells. The CEM has been in development for 10 years and uses acoustic transducers to send information about the condition of a section of pipe. ClampOn currently has two major orders for this product, one for a BP field life extension project in the Gulf of Mexico and one for Total in the North Sea.



• Hosted Buyer Program  
• April 9 - 12, 2012  
Ritz-Carlton Fort Lauderdale



## Making Strong Connections

Work Boats Exchange is an entirely new way for fleet owners to vet and source new products and for top marine suppliers to meet one-on-one with the buyers that need their products the most. Unlike trade shows, the Exchange revolves around a series of highly-focused face to face meetings between marine executives with purchasing power and authority. Meetings are pre-qualified, pre-set and guaranteed!

The Exchange is held for the express purpose of sourcing new products and building long-lasting and profitable new relationships. The unique format allows both owners and suppliers to consolidate up to 24 business meetings into 2.5 days!

**Connecting Commercial Fleet Owners with the Industry's Leading Marine Suppliers.**

Contact us at: 978.263.1334  
KKelly@ExchangeEvents.com • www.WorkBoatsExchange.com





(Photo: Huntington Ingalls Industries)

## DDG 1000 composite deckhouse nearing completion.

by Edward Lundquist

Composite materials are used to make cars, planes and boats, and have been used to build minesweepers and small surface combatants. Now, the largest composite structure ever built—the DDG 1000 destroyer deckhouse—has been fabricated in Mississippi and is being shipped to Maine for assembly aboard the future USS Zumwalt (DDG 1000).

In this dramatic example of a “shared build,” General Dynamics Bath Iron Works is the lead yard, but the superstructure and hangar are being built at Huntington Ingalls Industries (formerly Northrop Grumman Ship Systems) Composite Center of Excellence at Gulfport, Mississippi. The composite deckhouse, which sits upon a steel base fabricated at HII’s Pascagoula yard, will be placed on a barge and transported to Bath by sea, a transit of more than 2,000 nm. The deckhouse is being built at HII to take advantage of the Gulfport facility’s unique capabilities with composites.

“We’re a fabrication yard,” says Donny Dorsey, director of operations at Huntington Ingalls Industries Composite Center of Excellence in Gulfport, Miss. “We

don’t build ships. We build composites.”

Dorsey says the facility builds large ship structures using fiberglass and carbon fiber, as well as core materials such as balsa wood.

According to Jay Jenkins, the HII site director at Gulfport, the company is using the Vacuum Assisted Resin Transfer Molding (VARTM) process for the DDG 1000 deckhouse involving carbon fiber fabric, balsa wood, synthetic foam and a resin system.

“We place layers of carbon fiber cloth over the balsa core, then seal with a plastic vacuum bag connected to the resin system. When we evacuate all the air and pull a vacuum on the bag, it draws resin in,” says Jenkins. “When the material is saturated the resin undergoes a chemical transformation and cures while inside the vacuum bag.”

Jenkins says this process can be used for various sized objects. “We can do big decks, including 150x50 foot flat panels. We can use curved molds, or create vertical structures. We can build a hull up to 300 feet with composites.”

He says composite structures with the same strength are half as heavy as steel

and a quarter to a third as heavy as aluminum. Less topside weight improves stability and has speed and fuel efficiency benefits. Plus, it doesn’t fatigue and won’t crack or corrode, and you don’t have to paint it. “Lifecycle costs are dramatically less,” Jenkins says.

“The biggest benefit is weight,” Dorsey says. “Composites also allow a lot of options for shapes, and gives you the ability to place systems in the structure, such as antennas, as you fabricate it. You can’t do that with steel or aluminum.”

In fact, a main feature of the DDG 1000 deckhouse is that the antennas—or apertures—are embedded directly in the structure itself.

The deck house is covered with radar absorbing material. Altogether, with the many ways the DDG 1000 design reduces signatures, this 14,000-plus ton ship has the radar cross section of a small fishing boat.

### VERSATILE CAPABILITY

“We can make large units from composites. We build them inverted, so we’re working hands down, which is best for the craftsman,” Jenkins says. “The deck-

house will be about 900 tons. **The hangar will be almost 200 tons and is 60 feet from side shell to side shell. The hangar is the largest unsupported space ever built for a ship.** When complete, we turn them over and get them ready to be shipped to Maine.”

When major sections of a ship are built at two different yards, it’s important that the modules are fabricated to exacting specifications to ensure a proper fit.

“Working with composites allows us to be very precise and accurate,” he says. “We build to a tolerance of 3 mm or less (1/8th in.). Steel ships have precision to about a half inch. Our accuracy control people are very busy measuring with lasers.”

The Gulfport facility has built mine hunters for the U.S. Navy as well as composite masts.

Jenkins says the Gulfport facility is uniquely capable and qualified to build large modular structures, such as deckhouses for combatants.

“We are also building the forward and after masts for the USS San Antonio-class (LPD 17) of amphibious ships. These are essentially radomes, where the antennas



are inside instead of outside,” Jenkins says.

USS Arthur W. Radford (DD 968) received the prototype composite Advanced Enclosed Mast/Sensor System (AEMS) in 1997, upon which the LPD 17 masts are based. That mast was fabricated at the shipyard facilities in Pascagoula, Miss.

“Composites uses different types of materials combined together to achieve the properties and characteristics you want it to have,” Jenkins says.

“We use the same process to build them as we use for DDG 1000, but we use a foam core and E-glass cloth instead of carbon fiber. It’s less expensive. The core is ‘frequency selective’ foam that allows energy of specific frequencies to pass in and out of the mast. For example, energy in the wavelengths of the SPS 48 3-D air search radar in the after mast can pass through the mast, but other frequencies are kept out. This contributes greatly to the stealth attributes of the ship, not mention cutting down on maintenance and prolonging service life of the radar because it’s protected from the harsh elements.”

Jenkins says there are currently ships in the fleet with stacks that have cracking and corrosion. “We could replace aluminum stacks, hangars or superstructures with composites. It’s lighter than aluminum, and doesn’t crack or corrode.”

Such a replacement program would be a major undertaking, Jenkins says. But why not build the next generation of Arleigh Burke destroyers—known as DDG 51 Restart—with composite deckhouses and hangars?

#### COMPOSITES VS. OTHER MATERIALS

Unlike steel, composites do not conduct electricity and does not have a magnetic signature.

The deck house is covered with radar absorbing material. Altogether, with the many ways the DDG 1000 design reduces signatures, **this 14,000-plus ton ship has the radar cross section of a small fishing boat.**

The drawback for composites is acquisition cost. Since buying ships and maintaining ships are funded by different budgets, paying a premium to buy a ship that has better total ownership costs usually doesn’t work out. And, Jenkins says, the steel shipyards buy ready-made material, where everything HII uses at Gulfport must be created from scratch. “We build our own ‘steel.’”

Composite can burn, and there is a

toxicity of the resins in the cloth system. But the balsa core acts as an insulator. Balsa will char but it doesn’t really burn, and altogether the composite structure doesn’t transfer heat the way metal does. On a steel ship, if there is a fire in one space, the adjoining space will heat up

quickly. But composite acts as an insulator and will confine the fire, and basically self-extinguishes itself once the heat source is removed.

If you held a piece of the composite material in your hand, you might think it would be vulnerable to attack. But, Jen-

kins says the current structure used on DDG 1000 is comparable to a metallic structure for ballistic protection. If specified, an aramid fiber like Kevlar could be incorporated into the composite for greater protection.

The balsa used for the core isn’t a spe-

### Proven Fuel Savings with FloScan



“I have used FloScan for over 15 years to identify our most fuel efficient towing speed. We monitor our GPS speed once we get strung out on the towline and then start backing off the throttles until we see a 20% drop in fuel usage. Running more efficiently also helps to reduce our carbon footprint.”  
Dana L Brodie - Hawaiian Tug & Barge

#### FloScan's New DataLog Software



FloScan's new DataLog Software records and displays fuel consumption data in real-time. For NOx emissions reporting, inventory control and to optimize engine and vessel performance.

**FloScan Advantages**

- 40 years of experience monitoring fuel flow
- 750,000+ installations without a single fuel blockage
- No bypass line required -- blocked rotor has no effect on fuel flow and pressure drop
- Flow sensor has no replaceable parts (no maintenance required)
- Repeatability guaranteed to (+/-) 0.5% for lifetime of sensor

**FloScan**

- Available for diesels up to 6000 hp
- DataLog Software priced at \$995
- Flowmeters priced from \$1000 to \$6000
- Call 206-524-6625 or e-mail sales@floscan.com for quotes

www.floscan.com  
Seattle, WA USA

# ClearSpan™

fabric structures


**Sustainable Design-Build Solutions**



**MADE IN USA**

Buildings available up to 300' wide. • Low in cost per sq. ft.  
Natural daytime lighting. • Easy to relocate.  
Expandable. • Little or no property taxes.

Call one of our ClearSpan specialists today at 1.866.643.1010 or visit us at [www.ClearSpan.com/ADM](http://www.ClearSpan.com/ADM).



### SMITH BERGER MARINE, INC. OFFERS A COMPLETE LINE OF SHARK JAWS



**SAFE - RELIABLE - ECONOMICAL**

Smith Berger Marine, Inc. builds a full range of Shark Jaws for Anchor Handling Tug Supply vessels. Standard ratings are 100, 200, 350, 500 and 750 metric tons and all units have Quick Release at the rated load. Smith Berger flexibility allows us to customize our equipment to suit the operating characteristics of your vessel. Third party certification, load tests, release tests and load monitoring systems are available options.

Rely on the 100 year history of Smith Berger to outfit your vessel with our rugged and dependable equipment.

**SHARK JAWS • TOWING PINS • STERN ROLLERS**

Smith Berger Marine, Inc. 7915 10th Ave., S., Seattle, WA 98108 USA  
Tel. 206.764.4650 • Toll Free 888.726.1688 • Fax 206.764.4653  
E-mail: sales@smithberger.com • Web: www.smithberger.com

# Peel Strip Remove



An improved method for removing paint, rust, adhesives & coatings from concrete. Aurand tools literally “peel” any accumulation from any hard surface. Here is the power of sandblasting in a compact, hand-held tool that can be used wherever a hard surface needs to be prepped prior to painting, refinishing or coating.

Available in several widths, and in gasoline, pneumatic and electric models.

TAKE IT OFF, TAKE IT ALL OFF

Since 1937



1210 Ellis Street  
Cincinnati, Ohio 45223-1843  
(513) 541-7200 • FAX (513) 541-3065  
Email: sales@aurand.net • web: www.aurand.net • (800) 860-2872





Photo: Huntington Ingalls Industries

cial kind of wood. It is imported from Ecuador, and comes in different densities—12, 15 and 20 lbs. per cubic foot. “We use the denser wood where we need greater stress resistance,” Jenkins says.

“We can make large units from composites. We build them inverted, so we’re working hands down, which is best for the craftsman,” Jenkins says. “The deckhouse will be about 900 tons. The hangar will be almost 200 tons and is 60 feet from side shell to side shell. It’s the largest unsupported space ever built for a ship. When complete, we turn them over and get them ready to be shipped to Maine.”

“Working with composites allows us to be very precise and accurate,” he says. “We build to a tolerance of 3 mm or less (1/8th in.). Steel ships have precision to about a half inch. We do a lot of work

with our accuracy control people measuring with lasers.”

Because the carbon fiber is black, it’s not possible to see imperfections such as bubbles or a place where the cloth didn’t bond, Jenkins says every item fabricated at the plant is inspected with ultrasound.

### LARGE SCALE

The HII Gulfport facility is an environmentally controlled facility. “To build composites you need to control temperature and humidity,” says Dorsey. “But’s also a great work force benefit, because it can be hot and humid in Alabama, especially in the summer.”

It’s like any other composites facility, Dorsey says, but to a large scale. For example, the center boasts the world’s largest computer numerically controlled (CNC) saw.

HII found that qualified workers for composite structures were not easy to come by. All employees receive three weeks of classroom training, and they’re tested before they are allowed out onto the shop floor.

The company also established a U.S. Department of Labor Certified Composite Apprentice Program.

“You can find people with the right skill sets, but if you’re doing something that hasn’t been done before you can’t just go hire them,” Dorsey says. “You have to train them.”

When the company had difficulty finding people with experience fabricating ship sections, they realized they had an untapped market. Since much of the work with composite structures involves the wood core, HII started recruiting people with carpentry experience. Since the

housing market was depressed in the Gulf Coast region, people who were skilled with working with wood were available.

The first two DDG 1000 deckhouse and hangar assemblies are in production, with the third—DDG 1002—now under contract.

The future of the facility is unclear. Originally planned as a class of 32 ships, then 24, then 7, the Navy finally decided to build just three Zumwalt-class destroyers. “The business case for this facility is seven,” says Dorsey.

“The Gulfport facility is a national asset in terms of composite capability and capacity,” says Karrie Trauth, Ingalls Shipbuilding’s DDG 1000 program manager. “Our shipbuilders continue to prove this on a daily basis with the significant work they are performing in composites for U.S. Navy shipbuilding programs.”



# Power Turbine Generator for Marine Applications

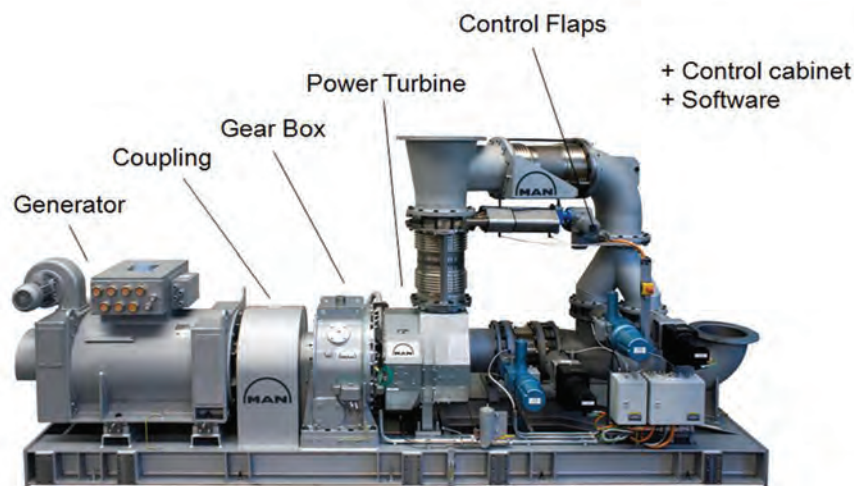


Image Credit: MAN Diesel &amp; Turbo SE

Individual parts of the PTG. The system can extract up to 5% of additional power with a maximum of 4,700 kW, depending on the size of the main engine.

Posted by Keith Henderson,  
December 20, 2011

MAN Diesel & Turbo energy saving combination of high efficiency turbochargers with power turbine generators has already been in use in shore based powergen applications. In a recent announcement, shipping line Reederei Horst Zeppenfeld, Germany has ordered this system in its first marine application. It will be installed in two 4,700 TEU container ships presently building by Samjin Shipbuilding, Weihai, Shandong, China. The vessels, scheduled for delivery mid 2013, have a LOA of 823 ft (251 m), and are powered by a single MAN B&W 6S80ME-C9.2 low speed two stroke engine with power output of 27MW.

The increasing efficiency of modern turbochargers means that there is a portion of unused exhaust energy available. The Turbo Compound System Power Turbine and Generator (TCS-PTG) makes use of that excess exhaust energy.

The system diverts excess exhaust, up to 13 percent of exhaust gas flow, from the exhaust gas receiver to a power turbine that is inserted parallel to the turbochargers. The turbo performance and main engine output is not affected by the use of the PTG which can extract up to five per cent of additional power with a maximum of 4,700 kW, depending on the size of the main engine.

The power turbine drives a generator via a reduction gearbox that produces electrical energy at 50 or 60 Hz. Depending on the ship's energy requirements, the PTG can supplement or replace onboard

auxiliary gensets.

MAN Diesel & Turbo recommend the TCS-PTG system for marine applications with main engines above 20 MW and where the electrical power requirement in more than 10 percent of main engine power. A payback period for the system can be as short as 3 to 5 years, depending on usage and of course fuel prices.

Join the conversation @  
**MaritimePropulsion.com**

— the largest maritime group on the internet which specifically targets the topic of commercial marine propulsion trends and technologies.

## VLOC Vale Beijing Next Destination Dry-dock

Posted by George Backwell, January 01, 2012

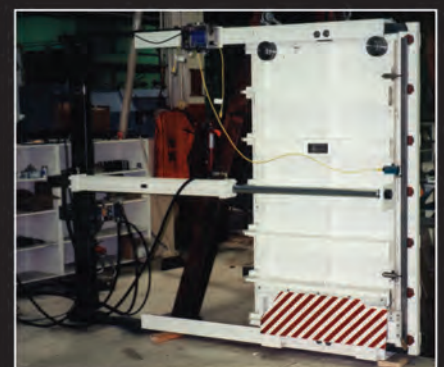
Good news and bad for Vale as the Old Year gave way to the New. First the good news: after a six month delay since these columns told of the maiden voyage of VLOC Vale Brasil at long last a Valemax VLOC (Berge Everest) gained China entry to discharge iron ore from the Vale conglomerate's Brazil minefields. The bad news, also coming before Christmas, concerned another of their juggernauts, Vale Beijing. A few days ago VLOC Vale Beijing was towed off the berth to avoid risk of foundering alongside the Vale iron ore loading terminal at Ponta Madeira, having earlier reported ingress of water to a partly loaded cargo hold. According to Lloyd's List a full hull scan by robot device confirmed cracks to the hull with the ship's three ballast pumps working around the clock to contain the flow. What is the extent of the damage to Vale Beijing?

### Vale Beijing Structural Damage

In a few words, the hull plating was found to have cracked in the vicinity of a water ballast tank, and from there water was making its way into a cargo hold. Vale Beijing is classed by DNV whose preliminary inspection reportedly described (in addition to the crack in outer hull plating) fairly substantial internal damage to web frames and longitudinals in the vicinity of the water ballast tank. Informed opinion considers such damage a likely consequence of excess localized stresses in the hull structure sustained while loading the heavy ore. An available dry-dock capable of handling the 362 m (1,188 ft) long VLOC is being sought.

## The LEADER Since 1939

### Sliding Watertight Doors and Custom Closures



ENGINEERING + EXPERIENCE = A WINNING TRADITION™



**Walz & Krenzer, Inc.**

91 Willenbrock Rd., Unit B4, Oxford, CT 06478 • www.wkdoors.com  
Tel: 203-267-5712 • Fax: 203-267-5716 • E-mail: sales@wkdoors.com



### Caterpillar Launches Cat C175-16 Marine Propulsion Engine

Caterpillar introduced the Cat C175-16, the latest in a line of high performance engines designed to meet IMO Tier II emissions requirements. The C175-16 is rated at 2001 – 2168 bkW @ 1600 rpm and 2239 bkW - 2550 bkW @ 1800 rpm. The new propulsion engine extends Caterpillar Marine's high-speed engine power range beyond the 3516C-HD engine.

The C175-16 uses ACERT Technology. Cat ACERT engines feature optimized turbocharging and aftercooling to provide reliable maximum power output. Efficient combustion reduces engine wear and maximizes fuel, driving the C175-16 to pull the maximum amount of energy from each injection event.

With a bore of 175 mm (6.9 in) and a stroke of 220 mm (8.66 in), the C175-16 features include:

- Turbocharged and aftercooled aspiration
- MCS approved monitoring, alarm, and protection system
- Cross-flow head design
- Simplified electrical system

[www.marine.cat.com](http://www.marine.cat.com)

# ABB Azipod Efficiency Gains 2%

One of the original creators of podded propulsion solutions for the maritime market announced another breakthrough which improves efficiency further. ABB reports that recent modifications to its Azipod propulsion unit frame design have seen hydrodynamic efficiency improved by more than two percent. The modifications include a newly optimized Azipod fin shape and a new pod cap structure, called Xtail. The revised fin structure receives water flow from the propeller at a new, less acute angle, and its new curved design redirects the flow more efficiently. The unit's new X-tail, installed for the pod cap structure, straightens water flow on ejection from the Azipod propulsor, minimizing water swirling.

Royal Caribbean International's Radiance of the Seas was the first cruise ships to benefit from the new fin shape and X-tail. The modifications to Azipod were completed during its drydock visit in May 2011. Her sailings from May to September witnessed the benefits when compared to a sister vessel and her previous operational portfolio: more than 2 percent in hydrodynamic efficiency improvement was achieved.

Based on the positive result from the test, ABB will now include its new fea-



Azipod with X-tail and optimized fin.

tures in new Azipod XO units and provide refitted services to existing vessels equipped with older Azipod VO and XO units.

At the beginning of 2011 ABB together with Eniram introduced Azipod Dynamic Optimizer (ADO), a software tool which optimizes the Azipod toe angle. The tool has helped to improve unit efficiency and initial results from the trial installation on Holland America Line's Noordam indicate that 1.5 percent savings may be achievable on this vessel.

When the Azipod propulsion system was first introduced to the cruise market in 1990s, around an eight percent rise in efficiency was recorded compared to existing ships, in terms of shaft line effi-

ciency, according to the manufacturer. After that, step by step improvements were made to the Azipod shape, resulting in about another seven percent efficiency improvement. Two years ago, when 'next generation' Azipod - Azipod XO units were launched, another two percent improvement was achieved. Thus combining this to the recent improvements, Azipod hydrodynamic efficiency has totally been improved by more than 12 percent compared to the first cruise vessel application.

To date, over 100 vessels have been equipped with Azipod propulsion units and more than 240 Azipod units have been delivered or are on order.

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

Technical knowledge and practical experience are the pillars that support maritime safety.

Setting the Standard for Service.

[www.eagle.org](http://www.eagle.org)

Setting Standards of Excellence

## Are Stray Currents Destroying Your Machinery?

- Sohre SHAFT GROUNDING (EARTHING) BRUSHES are used on propeller shafts, turbines, generators, electric motors, gears, pumps, etc. Failure to properly ground (earth) rotating shafts can result in expensive damage to seals, bearings, and other critical components.
- Self Cleaning. Operate dry or with oil. Gold/silver composite bristles.
- Working parts removable during operation without contacting adjacent parts.

"TOOTHBRUSH" TYPES "LW," "L" & "S" (SCHEMATIC)

"PLUNGER" TYPE "A" (SCHEMATIC)

- Brush internals are insulated from casing.
- Provision to raise brush from shaft during operation and to inactivate if contact is not desired.
- Brush is suitable for transmission of instrument signals from the rotor **without the need of special slip rings.**
- Voltage and current monitors available.
- Little or no maintenance.

© 2006 SOHRE TURBOMACHINERY® INC. ABS TYPE APPROVAL B-568026

**SOHRE TURBOMACHINERY® INC.**  
 MONSON, MASSACHUSETTS, USA 01057  
 TEL: (413) 267-0590 FAX: (413) 267-0592  
 TSOHRE@SOHRETURBO.COM WWW.SOHRETURBO.COM

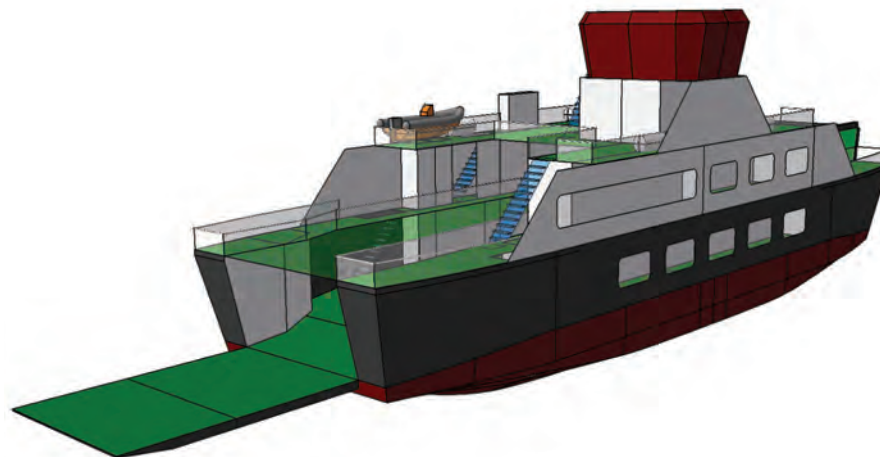


**Imtech**

# Hybrid Propulsion System for Ferries

Imtech Marine won a contract to supply the hybrid propulsion system, consisting of diesel electric in combination with battery technology to the world's first diesel electric, hybrid seagoing ferries. Owned by Scottish company Caledonian Maritime Assets Limited (CMAL), the two vehicle and passenger RoRo ferries will be built by Ferguson Shipbuilders of Glasgow. The vessels will be powered by diesel generator sets, feeding power to a 400 Volt switchboard, which will supply power to permanent magnet propulsion motors. Innovative green technology supplied by Imtech Marine includes two lithium battery banks of approximately 700kWh, reducing fuel and CO2 consumption by at least 20%. The ferries will be operated by Clyde and Hebrides Ferry Services, CalMac Ferries, and will be designed for the many short routes around the Clyde and Hebrides. With a service speed of nine knots, the hybrid ferries will be able to accommodate 150 passengers, 23 cars or two HGVs.

The vessel design and power configuration



ration additionally realizes 19-24% savings of power input to the propulsion units over a conventional diesel mechanical solution. When in port, the ships will completely switch off the propulsion and switch to batteries and ultimately shore connection, which will result in significant cost savings and further reduction of the carbon footprint. Next to a substantial reduction in fuel consumption and CO2 emissions, noise levels will also be reduced. The ferries will charge

overnight and in the future the CMAL aims to use energy from wind, wave or solar systems for charging the batteries, making the vessels even more environmentally friendly. The ferries will undergo a week of sea trials and this will be followed by an additional 21 days to test the vessels on all of the routes operated by CMAL.

The first vessel is expected to be delivered in the summer of 2013 and the second a month later.

## Volvo Penta IPS Power in Russian Pilot Boats



Russian state owned company Rosmorport ordered six 14m pilot boats powered by Volvo Penta's Inboard Performance System (IPS) drive system. Volvo Penta launched its IPS six years ago. With forward facing propellers and steerable drive units, IPS is designed to deliver improved performance, reduced fuel consumption and increased on-board comfort. The semi-planing Rosmorport pilot boats will be equipped with twin IPS450 packages with slow propellers providing maximum speed of 22 knots. The pilot boats are designed by MT-Shipbuilding and will be built by Moscow Shipbuilding & Shiprepair yard. The majority of the boats will be located in Azov and Black Sea area of Russia providing pilot service in river deltas.

### Building on our years of experience in response to your marine construction and repair needs.

Donjon Shipbuilding and Repair, LLC is supported by an experienced shipyard management team that has worked in the marine construction and repair business for decades, bringing continuity and experience to Donjon Shipbuilding.

**LET OUR EXPERIENCE**  
get to work for you today.

We offer affordable, quality services with a focus on maintaining the highest standards in the areas of:

- Shipbuilding & Barge Construction
- Vessel Conversion & Repowering, Drydock, Repair and Maintenance
- Steel Fabrication & Assembly



**D**  
**DONJON**  
**SHIPBUILDING**  
**AND REPAIR**

220 E. Bayfront Parkway Erie, PA 16507 (814) 455-6442 [www.donjonshipbuilding.com](http://www.donjonshipbuilding.com)

## Four Problems...



Particles



Water



Varnish



Acid

## ...One Solution



3 micron Filtration removes > 98% of particles



Water absorption and separation to 400 ppm or less



Adsorption of varnish. One Filter Insert removes 8 pounds



Acid removal, restoring the TAN

Control all these four contaminants with one CJC™ Oil Maintenance System!

For more information, visit [www.ccjensen.com/contamination](http://www.ccjensen.com/contamination) or call (800) 221-1430



**Clean Oil - Bright Ideas**

C.C.JENSEN Inc. | [www.ccjensen.com](http://www.ccjensen.com)





## ABB Turbocharging

# Prepping for Growth in China

At the Marintec 2011 marine trade show in Shanghai, ABB Turbocharging announced its latest move: the start of production in China of its most modern high pressure single stage turbocharger for low speed 2-stroke engines, the A100-L. ABB Turbocharging's involvement in the Chinese market started in December 1978 with the conclusion of a license agreement with the organization that subsequently became its joint venture partner, Chongqing Jiangjin Turbo & Charger Machinery Co., Ltd, a subsidiary of the China Shipbuilding Industry Corporation. In parallel, on the after-sales side a service network was installed, mainly for turbochargers on the ships of Chinese owners. The ABB Jiangjin Turbo Systems Co., Ltd, joint venture was forged in 2006 and, as the next step, 2009 saw the opening of the state-of-the-art turbocharger factory in Jiangjin, close to the previous place of manufacture.

"The driving force behind this progressively increasing commitment has been our strategy of always providing Chinese engine builders and end users full access to the new products and service offerings they need," said Oliver Riemenschneider, head of the global ABB Turbocharging Business Unit. "To get this right, we have to fully connect with the engine builders of China, supporting their development efforts with our local team of application engineers, dedicated to the Chinese market and constantly in contact with it."

The feedback gathered from these contacts and extensive market research pointed in the same direction: the time had come to localize the A100 turbocharger generation. "This is triggered by the expansion of licensed production of 2-strokes as a result of China's intention to be the global number one in shipbuilding," Riemenschneider said.

The first A100-L turbocharger to leave the Jiangjin factory "is an example of the A165-L, the smallest A100-L model, and will be fitted to one of the first examples of a new, small bore 2-stroke engine to be produced at the brand new factory of a brand new player in the 2-stroke engine market," Riemenschneider said. "I am talking about a 6 cylinder model of Wärtsilä's new 35 cm bore RT-flex35, from a series being built by Yuchai Marine Power Co. at its recently completed factory in Doumen, in the southwest of China." The engines will be used in a series of 20,000 DWT bulk carriers being built at a shipyard in Fujian province.



The factory of ABB Jiangjin Turbo Systems Co., Ltd. is one of the most modern turbocharger facilities in the World.

## A100-L

"During its final development stages an A190-L turbocharger for low speed 2-stroke engines set a new efficiency record for an ABB turbocharger of well over 75%," Riemenschneider said. "Significantly, the record was achieved at a higher pressure ratio than the previous best – the A100-L is capable of producing pressure ratios in the range 4.7 to 5.1." This combination of high pressure ratios and high efficiency enables manufacturers of low speed 2-stroke diesel engines to reduce the effects of the so-called "NOx-SFC trade-off". This is principally achieved by transferring the work of compressing the combustion air from the piston to the turbocharger, so that more useful power is available at the crankshaft. "In daily commercial operation, fuel savings as high as 2 g/kWh are being achieved aboard a wide range of vessel types. For a 50 MW rated low-speed engine burning heavy fuel oil (HFO), and assuming a fuel price of \$500 per ton, this amounts to savings of \$ 300,000 over a typical 6000 hour operating year," Riemenschneider said.

Local production of the A100-L means the Jiangjin factory now manufactures modern turbochargers for both 2-stroke and 4-stroke engines. While growth in shipbuilding is currently the major contributor, China is positioning to become the most important market for large engines in the world overall.

"The diversification we will see in the demand for turbochargers will set the pattern for the future and is mirrored in the unique combination of ownership and design bases we need to supply in China," Riemenschneider said. "These comprise licensees like Yuchai Marine Power Co.; local Chinese engine builders; joint venture companies bringing together local producers and western manufacturers; and implants by the leading international engine builders. There will be big demands on engine system and component suppliers like us to cover whole ranges of, predominantly, four stroke applications."

Looking at specific 4-stroke growth sectors, considerable demand is forecast for the coastal and inland waterways vessels which play such a big part in China's



Oliver Riemenschneider, head of the global ABB Turbocharging Business Unit.



**A100 turbochargers cover a full spectrum of high, medium and low speed engines. The A100-L (L=low speed) addresses 2-stroke engines with bores from 35 cm ( A165-L) to multiple turbocharger systems on the largest bore 2-strokes in existence ( A190-L).**

transport infrastructure. "As in several sectors in China, renewal of engines and engine technology will be strongly dependent on the introduction of emissions legislation," Riemenschneider said. "Judging by the preparations we are seeing, this will certainly happen and low emissions engines with acceptable fuel consumption will require the latest turbocharging technology.

In fact, there is even the possibility of the Chinese engine industry doing a double step on engines powering inland and coastal ships, straight from older diesels to the latest gas and dual fuel engine technology, given that new reserves of gas have been found in China and a supply infrastructure is being installed."



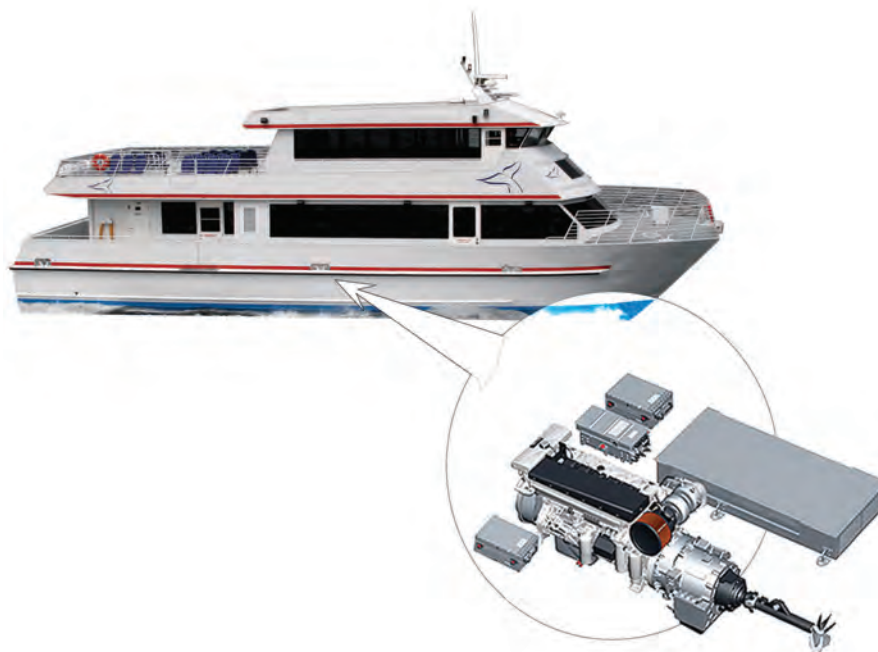
## Northern Lights, BAE Offers Hybrid Propulsion Solution

Northern Lights, Inc. (NLI) is seeking to redefine the traditional engine room with its hybrid-marine solution. NLI combines its high-performance Lugger propulsion engines with BAE Systems' HybriDrive Propulsion System.

The system uses a Propulsion Control System (PCS) to efficiently direct power produced from the electric generator for immediate use, or holds it in the Energy Storage System (ESS) to provide clean, quiet power without the engine, while the propulsion motor provides power to the prop. The system can be customized to fit a myriad of marine applications.

"The entire package is designed to be clean, quiet and environmentally responsible," said NLI vice president Mike Maynard. "Our hybrid-marine solution is designed for continuous duty usage and will reduce both energy waste and fuel costs."

With its components fully scalable, the NLI hybrid-marine system is designed to provide flexibility in engine room layout. It will run not only as a standard electric propulsion system, but can be configured into an auxiliary power kit to provide all of the ship's service AC power without



the waste and pollution associated with underloading. The hybrid system can even be outfitted for accessory power for

modern vessels' complex systems of thrusters and winches.

[www.northern-lights.com](http://www.northern-lights.com)

### Patent Protection for Hybrid Prop System

Aspin Kemp & Associates (AKA) and Foss Maritime Company with their technology partner XeroPoint Energy, have received U.S. patent protection for its hybrid propulsion and energy management system. AKA, a Canadian system integrator and marine engineering company partnered with Foss, which owns and operates one of the largest tug and barge fleets on the U.S. West Coast, in developing this technology. "Diesel engines are designed to optimally perform at or near their full load design point," said Paul Jamer, VP of Corporate Development at AKA. "However, many marine vessels operate under variable load requirements. Our system provides operators with the flexibility of a diesel electric system and the simplicity of a conventional system, without the cost or footprint of a traditional full diesel electric installation."

The hybrid propulsion and energy management system is patented under U.S. Patent 8,062,081 and additional international patents are pending.



**AMT**  
ADVANCED MARINE TECHNOLOGIES

**Merging Our Marine Synergies To Deliver Innovative Solutions**



**Improve Visibility With DiamondHeat**  
Diamond Sea Glaze's electrically heated glass provides greatly improved safety, visibility and comfort in severe weather conditions.



**Type Approved Hellbergs Fire Doors**  
Manly Marine builds attractive, solidly constructed fire doors to varying regulatory standards for A and B classed divisions. Available with many options.  
Please visit us at the **Seattle Boat Show - Booth 405**

Whatever your marine needs—from custom windows, doors, hatches and custom glass to cranes, davits and passerelles—call an AMT sales representative at 1.604.607.0091  
Check us out at [www.advancedmarinetechologies.com](http://www.advancedmarinetechologies.com)

ADVANCED MARINE TECHNOLOGIES



Diamond Sea Glaze



MANLY MARINE



STEELHEAD MARINE

# SKOOKUM®

## BLOCKS RIGGING

SINCE 1890



**SHACKLES** — "GOLD STANDARD", forged from the finest alloy steel. Available all styles. Safety pin available in capacities up to 210 ton.

**FAIRLEADS** — Timken bearing equipped. Deck and flange mounted. 4" through 48" sheave diameters. Roller fairleaders also available.


**BLOCKS** — All bearing types available. 4" through 36" models, capacities 5 ton through 75 ton for single sheave styles. Capacities up to 500 ton in multiple sheave models.

**SHEAVES** — Choice of manganese or cast steel, all types of bearings.





**Stock or Custom Engineered**  
Proved dependable throughout the world — in the roughest, toughest applications

Call for FREE Catalog: 1-800-547-8211 • [www.skookumco.com](http://www.skookumco.com)

## pima valve, inc.



*Quality Marine Valves*

*Supplying the U.S. Navy, U.S. Coast Guard and Major Shipbuilders for over 40 years.*

Phone: (520)796-1095 Fax: (520)796-4012

*Check out our new website at:*

# pimavalve.com



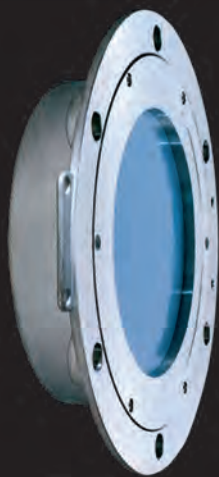
The industry's premier  
online news source

**MarineLink.com**

- contracts  
- offshore  
- security  
- company news

"Now with  
leak detection"

**THE  
RADAR**



### Smart Radar Level Sensor with Generic RS485 Output

The first flat array antenna for liquid tank gauging. This software driven array allows for each sensor to remotely configure itself for the type of product as well as the structural characteristics within each tank. It is completely self-diagnostic and is factory calibrated using a laser interferometer to .1mm. It is designed for the harshest environments and can be provided in a high temperature version to 385°F. It is intrinsically safe with Class 1, Div. 1, Group D & C approvals. As a smart sensor, all processing calculations and software are resident in the device itself, only a high level generic data output, i.e., RS485 (or others on request) is sent to the cargo control area.

#### Options:

- Multiple alarm set-points
- Temperature • PV Pressure • I.G. Pressure
- Tank Management Software
- Automated draft and trim

**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  
http://www.emsmarcon.com

# Thruster Oil & Water Don't Mix

By Steffen Nyman, C.C. Jensen, Inc.

Can your vessel continue operation despite of water ingress in a thruster?

Water in thruster oil systems is a serious problem costing marine and offshore vessel owners millions of dollars every year for thruster repairs, oil changes, down time and dockings. According to an IMCA survey thruster malfunctions accounted for 15% of all lost positions from 1991 to 1994 (not including computer and electrical failures). Another later survey proved that azimuth thrusters failed an average of 7.7 times per year and tunnel thrusters failed an average of 2.8 times per year. This paper describes the reasons for water ingress in thrusters, solutions and cases. The main focus is on water in the gear oil, since this account for the majority of thruster breakdowns. It is not necessary to accept the problems as unavoidable, as there are proven, efficient methods of removing water from the oil, making it possible to continue operating the vessel despite of water ingress in the thruster!

#### Reasons for water ingress in thruster oil

Water ingress occurs mainly as a result of leakage of the main propeller shaft seal of the thruster, although there has been an impressive effort in recent years by the seal manufacturers to develop means to prevent this from occurring.

In theory the header tank should prevent water seepage into the thruster oil, but in reality the water contamination remains a major problem for the following reasons:

**1.** When the thruster is operating, the shaft seals can perform a pumping action that will overcome the static pressure from the header tank. This is generally known, but the mechanics of how it occurs has not been investigated fully.

**2.** The dynamic water pressure created by the pressure pulses from the propeller blades on the seal can be higher than the static head pressure on the oil, causing the water to ingress through the shaft seal.

**3.** Vibration in the ship can cause a slight curvature in a propeller shaft which will enable water to pass the shaft seal.

**4.** Fishing gear, rope or wire can get caught on the propeller shaft and destroy the seal.

**5.** If the seal is old, worn or otherwise damaged, water will ingress through it due to the loss of header pressure caused by the periodic heaving of the vessel in heavy seas.

Shaft seal wear is often caused by particle contamination in oil. Even particles less than one micron in size can have an abrasive effect on the seal, since its dynamic tolerance is less than 0.5 micron.

This is an often overlooked factor that will shorten the expected lifetime and reduce the performance of the seal.

Though much effort has been put into improving the thruster shaft seal, the complexity of the associated problems means that developing the "perfect seal" is still in the future.

Due to lack of solutions, the thruster OEM's and many vessel operators have more or less accepted the problem of water contamination in thruster oil and the associated maintenance costs. However, water can be removed from thruster oil utilizing a simple, but highly effective solution.

#### Offline filtration

An effective offline filter, also referred to as a kidney loop filter, can make a huge difference.

Offline filters specifically designed for thruster gear oil are capable of removing both submicron particle, varnish deposits and most importantly to separate water from oil continuously without the need for replacing blocked filters when a major leak happens.

Offline thruster filters are incorporating their own pump which should operate 24/7, typically turning over 10% of the sump capacity per hour, meaning the whole oil volume is filtered 2-3 times per day.

Most units are fitted with electrical preheaters for enhanced filtration and water separation from the oil when the vessel operates in cold waters, as well as a by-pass valve/pressure switch for safety when the insert need to be replaced. A drain tank is convenient and should be considered for larger filters.

Many marine and offshore vessel operators worldwide vouch for the performance of offline thruster filters since they have experienced reduced maintenance costs after less than 6 months operation.

More importantly, a good thruster filter will allow the vessel to continue operation, despite of water

#### CJC PTU2 Thruster Filter installed.

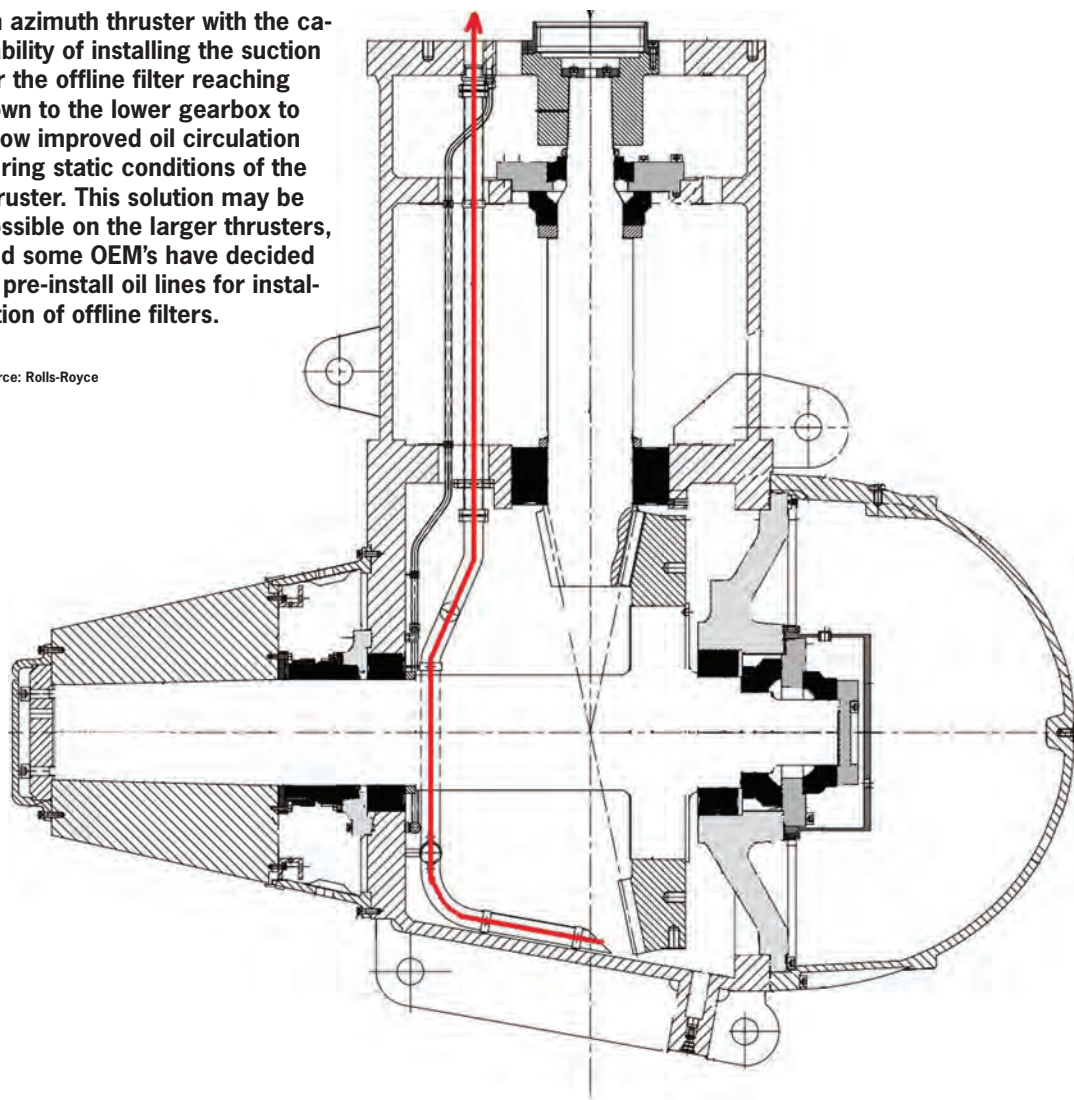


Source: C.C. Jensen



An azimuth thruster with the capability of installing the suction for the offline filter reaching down to the lower gearbox to allow improved oil circulation during static conditions of the thruster. This solution may be possible on the larger thrusters, and some OEM's have decided to pre-install oil lines for installation of offline filters.

Source: Rolls-Royce



ingress. The optimum is to remove sea water continuously without the need for changing out numerous water-logged filter inserts, and to avoid the salt concentration building up in the oil, which can occur if evaporative equipment is utilized.

Continuous water separation from thruster oil may be the edge needed to allow the vessel to continue working and defer the docking to a later date, especially for supply vessels and anchor handling tugs, this could mean the difference of being able to complete a delivery/contract without the need to come off-hire to fix the leak, as this usually means dry-docking the vessel.

As an extra benefit, a good thruster oil filter will also take care of the particle and varnish contamination in the oil, extending the life of the oil, the shaft seal(s), the gears, bearings and all other components in the system.

On most thrusters the oil pressure in the void space and the lower gearbox is not very high, but the operation draft can vary 5 – 15 meters on some types of vessels and drilling rigs, which will require higher pressurized gravity lines to compensate for this. Ask the thruster manufacturer if in doubt.

This will necessitate the requirement for a higher pressure filter unit.

#### How offline filters are installed on thrusters

The ideal solution is to take suction from the lowest part of the lower gearbox. With fixed thrusters, such as tunnel thrusters, this is possible, but with

azimuthing thrusters it is difficult due to the fact that they can rotate 360 degrees. However, the circulation of the oil is often enough to pick up dirt and water so that it can be removed with an offline thruster filter connected to the void space in the top.

The design of some azimuth thrusters do facilitate the connection of a continuous operating offline filter unit to take suction from the lower gear section where the build up of particles and water occur when the thruster is not running.

What can be expected when installing a quality offline thruster filter?

Continuous operation will typically be able to keep the oil cleanliness in regards to particle contamination below ISO code 16/14/12 (NAS 5), and the water level in oil below 500 ppm (0.05%), depending on the efficiency of the installed offline filter system.

In many cases water levels lower than 500 ppm can be achieved, but here the rate of water ingress and the demulsibility of the oil plays an important role (the oil's ability to shed water).

#### Conclusion

If thruster reliability is important for the operation of your vessel, then do not hesitate - find a quality and purpose built offline thruster filter and get peace of mind !

Please see attached application stories for results obtained in thruster oil systems utilizing offline filtration

10 years online over 2 million users  
**MaritimeJobs.com**  
 where employers and job seekers connect



“Now with leak detection” **THE BALLAST**



### Smart Strain Gauge Level Sensor with Generic 4-20mA Output

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 2 oz. and is constructed from 100% pure titanium.

- It's the size of your thumb
- Accuracy .25% of full scale
- 100% Titanium
- Weighs less than 2 oz.
- ABS/USCG/Lloyds approved
- FM Class 1, Div. 1 Intrinsically Safe
- Removal without tank entry
- No mercury or other contaminants
- Interfaces to your existing monitoring system
- One sensor for all shipboard liquids: fuel oil, lube oil, fresh water, black water, etc.
- Generic 4-20 mA output
- Used in 15,000 tanks worldwide

Many Options

Call today for more information!



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

732.382.4344  
 732.388.5111 fax  
 emsmarcon@aol.com e-mail  
 http://www.emsmarcon.com



## Maritime Professional

The Essential Quarterly Magazine

Register today for your FREE SUBSCRIPTION:  
www.maritimeprofessional.com/subscribe.aspx

Q2 Edition 2011

Energy Transportation



# THE BUBBLER



## Smart Pneumatic Level Sensor with Generic 4-20mA Output

The Bubbler is an electro-pneumatic level transmitter that allows remote level measurement using a 4-20mA analog output. The lack of air pressure poses no operational problems, due to an automatic one-way valve which closes as soon as the pressure drops below 1 bar, this prevents back flow in the bubbling line towards the transmitter. Over pressure is also protected against by an automatic one-way valve.

- It's the size of a grapefruit
- Explosion proof housing
- Accuracy .3% full scale
- Automatic over-pressure valve
- Automatic stop valve for air failure
- Automatic cleaning of bubbling line
- Connection for pressurized tanks
- 2 pair 24 VDC and 4-20mA cable
- Top or side mount

Many Options

**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  
http://www.emsmarcon.com

## Omega's New Horizons in Automation Version 30

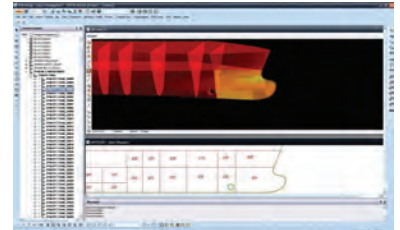
Contains over 100 full color pages of the latest products from Omega's automation line: programmable logic controllers, smart relays, enclosures, process measurement and control devices, motion control sensors, human machine interface, pushbuttons, proximity sensors, relays and timers, wire connection and more! A couple of Omega's popular automation products include the OSC XL "all-in-one" controller and the SCE-3RV series of weatherproof enclosures. A user-friendly index is available for easy product search, economical choices, popular models and accessories.



Email: [info@omega.com](mailto:info@omega.com)  
[www.omega.com](http://www.omega.com)

## AVEVA Space Management

AVEVA released AVEVA Space Management 12.1, part of the AVEVA Marine portfolio. AVEVA Space Management automatically creates and manages layout drawings that document the subdivision of the ship into spaces with their functional design properties. It reduces risk in the design of more complex ships such as cruise ships, naval surface vessels, submarines, ferries and off-shore supply vessels. AVEVA Space Management generates a full ship wide, room-oriented functional definition of the ship design, which can be reused in other design disciplines. As the design evolves decisions regarding the shape and functional properties of spaces are recorded and refined in AVEVA Space Management. It supports design decision making for spaces at the whole ship level. This means that the interrelationships between the functional needs of adjacent spaces can be easily handled to ensure that the overall ship design is safe, complies with regulations and is cost efficient.



[www.aveva.com/marine](http://www.aveva.com/marine)

## ZAZZ Engineering ATC's Touch Interface

ZAZZ engineering's ATC's touch interface, for engine room ventilation control, was conceived from the start to have vibrant graphics, intuitive design and the look and feel of easy-to-use, touch-based consumer electronics. The ATC (Automated Touch Control) automatically controls engine room ventilation monitoring inside and outside temperature, fan speed and engine room pressure. Powered by an integrated 24V DC supply, the ATC touch interface is equipped with an Ethernet Port for easy connection to the CPU. Available in two standard screen sizes, 8.4" and 10.4" other sizes are available.



Email: [gmacdonald@zazzeng.com](mailto:gmacdonald@zazzeng.com)  
[www.zazzeng.com](http://www.zazzeng.com)

## New Welding Machine from WSS

Wilhelmsen Ships Service (WSS) has launched a new, welding machine that allows operation of three separate welding processes within one unit. The Unitor UWW-161 MP (Unitor Wire Welder- 161 Multi Process) allows users to carry out stick-electrode welding, wire welding (MIG/MAG) and TIG welding using a 230 volt single-phase 16 amp slow fuse. Weighing just 12 Kg, the machine is fully portable and has been manufactured in compliance with CE directives and standards of conformity, with a "touchable" Open Circuit Voltage of only 10 volts, making it extremely safe for ship-board use.



[www.wilhelmsen.com/shipsservice](http://www.wilhelmsen.com/shipsservice)

## WPT Power Adds Hydraulic Pump Drives

WPT Power announced a new line of Hydraulic Pump Drives. The WPT Power Pump Drives (PPD) will better equip WPT to meet a more extensive range of engine driven application needs and extend our ability to work on broader application requirements. The Power Pump Drives are available for indirect or auxiliary drives, which make them suitable for off highway and mobile equipment. The Power Pump Drive mounts between the engine and the rugged WPT Power Take-Offs and provides for multiple live or clutched pumps. The pump drive is self-contained and does not require external lu-





brication or pumps. Internal heat exchangers can be added where required and a variety of options, including PTO clutches, are available. The WPT Power Pump Drives are available in four different sizes with maximum torque capacities from 413 lb-ft [560Nm] through 4650 lb-ft [6300 Nm] and operating speeds from 2,100 rpm to 3,000 rpm. All units mount to standard SAE housings and provide up to 8 pump mounting faces. All Power Pump Drives are provided with flexible couplings on the input side for torsional dampening.

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

### PPG Debuts PSX ONE Coating

PPG Industries' protective and marine coatings business has introduced PSX(R) ONE coating in the U.S. for use in protective and marine project applications. As a one-component acrylic-siloxane coating, PSX ONE coating is designed to provide outstanding color and gloss retention in a durable, lower-volatile organic compound (VOC) formulation that can be applied by brush, roller or spraying. Engineered for inland marine, petrochemical, water, wastewater and other application segments, PSX ONE coating is a high-gloss, non-isocyanate product that complements PPG's existing line of siloxane coatings, including epoxy-polysiloxane PSX 700 coating, which has more than a decade of proven performance.

[www.ppgpmc.com/northamerica](http://www.ppgpmc.com/northamerica)

### OMNIPURE Marine Sewage Treatment Systems

The OMNIPURE Series 55 marine sewage treatment system from Severn Trent De Nora has been selected for use on four new ultra-deepwater drillships being constructed for a subsidiary of Noble Corporation by Hyundai Heavy Industries at its shipyard in Korea. Hyundai Heavy Industries purchased eight customized OMNIPURE systems to treat black and gray water onboard the drillships. Each drillship will be fitted with two OMNIPURE systems, accommodating a total personnel capacity of 210 per drillship. The first set of OMNIPURE systems will be delivered in December 2011, with the second set due for delivery in April 2012, the third set in November 2012 and the fourth in April 2013. The OMNIPURE Series 55 systems have received Bureau Veritas certification per IMO Resolution MEPC.159(55) and USCG Certificate of Approval to MEPC.159(55).



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

## MARITIME PROPULSION

**Powering the Maritime Industry**

Maritime Propulsion is the online database for marine power and propulsion equipment. Find product reports, engine specifications, suppliers, and auxiliary machinery.

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

# THE SEA SWITCH TWO



## Smart Electronic Level Switch with No Moving Parts

The Sea Switch Two was designed and patented for all tank applications. The Sea Switch Two offers a reliable solution for liquid level detection and control for cargo, ballast, and storage tanks, without any moving parts.

The Sea Switch Two uses a fully static system that is based on the propagation of an acoustic wave into a metallic rod. A piezo-electric sensing element produces a wave along the rod. As the liquid reaches the sensing element the oscillation stops and the alarm is activated.

The Sea Switch Two sensor detects high, high-high, or low level in any liquid with an alarm output given by a dry contact or current loop change 6-18 mA.

- Easy installation • Self-test built-in
- Fully static system – no moving parts

**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](mailto:emsmarcon@aol.com) e-mail  
<http://www.emsmarcon.com>

## Nitrogen Membrane Technology for the Prelude Project

Shell has appointed Norwegian-based Air Products to deliver Nitrogen Membrane Technology for its Prelude LNG Project to be launched outside Australia. "Currently, we feel an increasing focus on gas and we are proud to be one of the preferred suppliers in this area, both for shipping companies as well as for the processing industry," said Tom Cantero, MD Air Products. More than 60 gas tankers are currently on order, leading to the need of large-scale production plants. Shell is taking a lead and shows an innovative and future oriented approach, which has led to the decision to move storage



and processing facilities close to the fields rather than transporting unprocessed gas over large distances. The new production facility is to be built into the world's largest vessel, measuring 488 m in length and 74 m in width, displacing some 600,000 tons when fully loaded, of which 260,000 tons are steel. Gas production is to commence in 2017 and the vessel is expected to stay moored at location for 25 years. The production is estimated to be at least 3.6 million tons of LNG per year as well as Liquid Petroleum Gas and condensate for export.

"The order to the Shell Prelude project results from several years of intense development. Air Products invented the technology behind membrane-based nitrogen production and we have expressed a clear ambition to continue leading the market. We are very proud to deliver to the world's first floating LNG facility and see this as an appreciation of our work, quality and products." Cantero said.



### WWS ORDERS FOUR PSVS FROM DAMEN

Newly founded offshore support company World Wide Supply (WWS) ordered four PSV 3300 CD's with Damen Shipyards. The PSV 3300 CD, built according to Damen's E3 principles, is a newly designed PSV for servicing O&G rigs worldwide and is specifically designed to perform safely and economically in adverse weather conditions. All

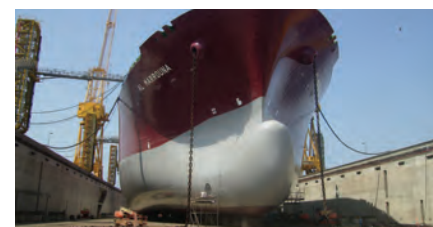


four vessels will be built at Damen Shipyards Galati, Romania. First delivery scheduled for early 2013, last delivery end of 2013. The 80m long vessel has a large, 720 sq. m. main deck. Damen benefited from design input from its Norwe-

gian client WWS and from operational studies carried out on Damen PSV's operating in the North Sea and in Brazilian waters.

### A MILESTONE FOR N-KOM AND INTERSLEEK

September 2011 witnessed a milestone for International Paint and N-KOM, the Nakilat-Keppel Offshore & Marine Limited, Erhama Bin Jaber Al Jalahma Ship-



yard, with the coating of three LNG vessels marking the application of 10,000 liters of Intersleek foul release technology at the new Qatar facility in less than four months since opening. The Al Marrouna and Al Areesh, 151,700 cu. m. sister ships operated and managed by Teekay Marine Management and the 137,354 cu. m. Doha, which is owned by a Japanese consortium led by Nippon Yusen Kaisha (NYK Line) and managed by NYK LNG Shipmanagement Ltd., were all repaired with the Intersleek700 system within four weeks, completing the projects ahead of schedule, with the time savings afforded by the foul release system a key factor.

The Al Marrouna and Al Areesh, coated with the Intersleek700 scheme at new-building in October 2006 and January 2007 respectively, needed only one full coat at this latest docking.

### CHESAPEAKE TO BUILD 7TH TUG FOR VANE

Chesapeake Shipbuilding Corp. of Salisbury, MD announced today that it has signed a contract with Vane Brothers of Baltimore, MD to build another new ocean going tug. The new contract represents the 7th tug that Chesapeake Shipbuilding will have built for Vane Brothers in just over five years. Construction has already begun.

The new tugboat, designated Hull 105, will be nearly identical to the previous six tugboats built for Vane Brothers. It will be equipped with twin Caterpillar 3512 main engines producing a combined 3,000 horsepower, and a single drum hydraulic winch from JonRie of New Jersey. Similar to the previous tugs, the new boat will have comfortable accommodations for seven crew members. The tug will measure 94-ft. long with a 32-ft. beam, and a 13-ft. depth.

Each Chesapeake Shipbuilding tug is built in a controlled indoor environment, before being moved and launched into Maryland's Wicomico River. Chesapeake Shipbuilding has recently made significant upgrades to its facility to increase its production capacity and efficiency.

Chesapeake Shipbuilding designs and builds steel commercial and industrial vessels between 90 and 300 ft. The yard has upgraded its production capacity significantly in recent years, by building three new hull fabrication buildings and investing in automated equipment.

## SNAME 2012 ANNUAL MEETING PROVIDENCE, RI, OCTOBER 24-26

Call for papers on topics related to Naval Architecture, Marine and Ocean Engineering, including:

- Offshore Wind Technology
- Alternative Fuels
- New International Regulations - Design and Operational Considerations
- Government and Military Vessels
- Small Craft Design and Construction
- Unmanned Systems for Naval, Marine, and Ocean Engineering
- Eastern Canadian Ocean Development
- Computational Techniques in Naval Architecture
- Ship Production Technologies

### SNAME Annual Meeting Papers

Deadline for Extended Abstracts: January 31, 2012

Abstracts Accepted: February 29, 2012

AM2012@sname.org

### Ship Production Symposia Papers

Deadline for Abstracts: June 1, 2012

Abstracts Accepted: June 20, 2012

SPSpapers@sname.org

[www.sname.org/events/callforpapers](http://www.sname.org/events/callforpapers)





#### INGEMANSON PRESIDENT OF VOLVO PENTA

Björn Ingemanson, 53, has been appointed new President of Volvo Penta, as of April 1, 2012, when he will succeed the current President Göran Gummesson, who will retire.



Ingemanson

#### SKOU APPOINTED CEO OF MAERSK LINE

Søren Skou was appointed CEO of Maersk Line effective January 16, 2012. Skou was previously CEO of Maersk Tankers and replaces Eivind Kolding, who leaves to become Chairman of the Executive Board of Danske Bank.



Skou

#### GL NAMES NEW SVP GLOBAL SALES

Germanischer Lloyd (GL) appointed Christian Freiherr von Oldershausen to the newly created position of Senior Vice President Global Sales. In his new position, he will be responsible for enhancing global sales



von Oldershausen

#### NOL CHAIRMAN RETIRES

NOL Group said that its Chairman, Cheng Wai Keung, will retire from the NOL Board after its annual general meeting scheduled in April 2012. He will be replaced by Kwa Chong Seng, who was appointed as Director of the NOL Board with effect from January 1, 2012.

#### SIGNAL ANNOUNCES PROMOTIONS

Signal International announced the promotions of Michael R. Cook to Vice President of Contracts and Technical Support, Signal International and Andrew P. Veith to Vice President of Engineering, Signal International.

#### HAUSMAN PRESIDENT, COO OF DELTA RIGGING

Delta Rigging & Tools, said that Mitch Hausman has joined the company as President and COO.

#### EBDG ADDS STAFF

Elliott Bay Design Group (EBDG) said that Darren Monzingo has re-joined Elliott Bay Design Group, responsible for developing concept and contract designs, feasibility studies and cost analyses for new vessel construction and existing vessel modifications. Also, James Jennings has earned status as a professional engineer.

#### DNV, KEMA CREATE ENERGY COMPANY

DNV has acquired 74.3% of KEMA's shares, creating a consulting and certification company within the cleaner energy, sustainability, power generation, transmission and distribution sectors. DNV and KEMA will form an energy consulting, testing and certification company that can drive the worldwide transition towards a safe, reliable, efficient and clean energy ecosystem.

#### PAYNE, ENGELBRECHT JOIN GPA

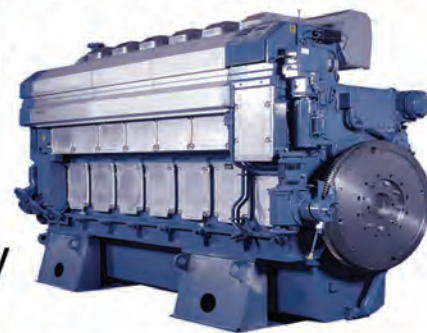
Joseph E. Payne, P.E. has joined Guido Perla & Associates, Inc. (GPA) as the Electrical Department Manager and Chief Electrical Engineer. Eric Engelbrecht has joined Seattle-based Naval Architecture and Marine Engineering firm Guido Perla & Associates, Inc. (GPA) as a Project Manager.

#### TRANSAS MARINE & ECDIS TRAINING

Transas Marine GmbH is the first among all German training institutes to receive BSH Flag State approval for its STCW conform ECDIS training. BSH has issued a certificate for Transas with an honorable number BSH-2011-921-001.

# MARITIME PROPULSION

Maritime Propulsion is the largest online database for marine power & propulsion equipment - the fastest way to find engine reports, specs, suppliers, and exclusive articles on industry developments.



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

**Smith Maritime**  
Ocean Towing & Salvage Services

**Smith Maritime**  
967 Bulkhead Road  
Green Cove Springs, FL 32043  
TEL: 904.284.0503 | FAX: 904.284.0508  
Email: ops@smithmaritime.us

**ANCHORS**

**ANCHOR**  **MARINE**

**CHAINS**

LARGEST INVENTORY OF NEW & USED IN THE U.S.A.

ALL TYPE ANCHORS & CHAIN  
ABS, LLOYDS  
GRADE 2, 3, K-4  
CHAIN & FITTINGS

FAX: 713/644-1185  
WATTS: 800/233-8014  
PHONE: 713/644-1183

P.O. BOX 58645  
HOUSTON, TX 77258

sales@anchormarinehouston.com  
www.anchormarinehouston.com



## Work Boats Exchange

# A New Hosted Commercial Marine Buyer's Event

*Maritime Reporter will act as exclusive sponsoring publication for Work Boats Exchange at the Ritz-Carlton Fort Lauderdale*

Regardless of industry, the ability to continually meet potential new clients is the cornerstone to any company's success. While the marine industry is well armed globally with traditional exhibitions, an emerging concept — the Hosted Buyer Event — is gaining steam as a viable and productive means to earn new business.

"Hosted Buyer Events are quite commonplace on the automotive side of ZF's business," said **David Santos, Product Line Manager – Commercial Craft,**



**"In a traditional trade show you have a 40 x 60 with a lot of equipment and noise; this is one on one or two on one, and it's an intense, concise, concentrated focus."**

**Ed Todd, Director of OEM Sales, Dometic Marine**

**ZF Marine LLC.** "Our automotive counterparts attend these events regularly and commonly point to them as some of the most successful meeting opportunities they can have with both potential and existing clients. Hosted Buyer Events put the right people from both sides face to face. It allows ZF to present our technology to the people who most need to hear about it, in a relaxed and distraction free environment."

*Maritime Reporter & Engineering News* is, for the first time, serving as exclusive media partner to Work Boats Exchange, a hosted commercial marine buyer's event produced by Global Exchange Events, a rising star in the creation of industry-leading Hosted Buyer Events market. The event is building a small but exclusive list of executives in vessel owning companies to meet with a similarly small and exclusive group of marine builders, equipment and service providers, including Dometic Marine and ZF, scheduled for April 9-12, 2012 at the Ritz-Carlton Fort Lauderdale.

"We see this as the perfect complement to trade shows," said Rob Ingraham, CEO of Exchange Events. "After participants have had a chance to really see what's out there at the shows, our events offer a second round of very focused one-on-one meetings between fleet owners and marine suppliers that are ready to discuss new business development and close deals. It just works."

Just because it's more intimate, it does not mean that success is guaranteed just

walking in the door. **Ed Todd, Director of OEM Sales at Dometic Marine,** participated in a similar event early in 2011 to great success, and he advises on how to make the most of your investment.

**"I think the main thing is focus, as you don't have a whole lot of time,"** said Todd, "In a traditional trade show you have a 40 x 60 with a lot of equipment and noise; this is one on one or two on one, and it's an intense, concise, concentrated focus. When I first went in, I didn't go in with a canned speech, I more or less used it as time to interview people. You have to be astute and targeted."

*Maritime Reporter*, will act as the exclusive sponsoring publication of Work Boats Exchange. "The support of New Wave Media and their innovative publications can't be overstated," said Karen Kelly, EVP of the Work Boats Exchange. "We know how valuable our events are for promoting partnerships and we're thrilled to be working with Rob Howard (Senior VP, New Wave Media/Marine Link) and his team on the commercial marine industry's newest hosted buyer event."

"In this industry trade shows will continue to play an important role in the marketing mix, but there are limitations. The current economy dictates that companies can no longer afford to send all of the people they would have previously sent to these shows," said **ZF's Santos.** "The result is that the right people may not be there to see you, or see



**ZF Marine is a leading participant in the Work Boats Exchange, scheduled to take place at the luxurious Ritz-Carlton Fort Lauderdale on April 9-12, 2012.**

your product offering. That represents many potentially missed opportunities on both sides. Also, trade shows are large and there are lots of distractions. Sales staff are being pulled in different directions and attendees are trying to knock out their "visit list" with only so many hours to attend the show. There's just too much going on to facilitate deeper discussions. **Work Boats Exchange will take away the "noise" and create an environment for a clear exchange of ideas."**

For more information, contact:

**Karen Kelly**

**Tel: 978-263-1334**

**Email: [kkelly@exchangeevents.com](mailto:kkelly@exchangeevents.com)**

**[www.workboatexchange.com](http://www.workboatexchange.com)**

## MPT Upgrades Simulator

Maritime Professional Training (MPT) has upgraded its simulator, and the maritime training and education provider is claiming that it will be world's most visually realistic maritime simulator training experience. The system is a result of MPT's plans to upgrade the visual projection systems of the Main Bridge located at their S.M.A.R.T. (Simulation For Maritime Assessment, Research and Training) Campus in Fort Lauderdale.

This is the latest capital improvement in MPT's Project 2010 and Beyond, an ongoing campaign to upgrade virtually all of the facilities at their three Fort Lauderdale campuses. A DNV-approved Maritime Training Center and an ISO 9001:2008 company, MPT operates the

most complete full-service private maritime training school in the country. MPT has chosen NavSim Services as the Prime Vendor for the upgrade and Projection Design as the hardware supplier. Transas USA will continue as the software provider. The installation will feature newly upgraded F32 Projectors that supply up to 8000 lumens each projected onto a 120-ft. (36.5m) curved screen to provide a visually immersive environment that greatly improves on direct-view displays. The upgraded installation will also feature Projection Design's patented Multi Image Processors supplying image adjustments at the pixel level, which provides a level of realism unmatched in other display solutions.

**[www.MPTusa.com](http://www.MPTusa.com)**

## ClassNK Establishes First Ever Subsidiary

ClassNK has established a new wholly-owned subsidiary, ClassNK Consulting Service Co., Ltd., located in Tokyo. This new company, ClassNK's first ever subsidiary, heralds a new chapter in the storied history of the Society, the world's largest in terms of tonnage.

This development was made possible by the Society's change in legal status to a general incorporated foundation under Japanese law in April 2011, and promises much in terms of cultivating new areas of growth. This subsidiary in particular will allow ClassNK to broaden its activities in the field of maritime consulting.

Speaking on this momentous occasion ClassNK Chairman and President, Mr. N.

Ueda, said: "We firmly believe in developing new ways to advance the global maritime industry. This new subsidiary allows us to do just that by opening up new possibilities for ClassNK, possibilities to provide customers with a new range of services at the same high quality they associate with ClassNK."

### Subsidiary Overview

**Company name:**  
**ClassNK Consulting Services Co., Ltd**

**Address:**  
**4-7, Kioi-cho, Chiyoda-ku, Tokyo, 102-8567, Japan**

**Representative:**  
**Mr. Noboru Ueda, CEO and President**



# BUYER'S DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER. 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 assumes no responsibility for errors. If you are interested in having your company listed in this Buyer's Directory Section, contact Mark O'Malley at [momalley@marinelink.com](mailto:momalley@marinelink.com)

## ATTORNEYS

Blank Rome, International and Maritime Litigation 600 New Hampshire Avenue, NW, Washington, DC, Germany, tel:(202) 772 - 5800, fax:(202) 772 - 5858, [JKimball@BlankRome.com](mailto:JKimball@BlankRome.com)

## AUTOPILOT SYSTEMS

AG Marine, 5711 34th Ave NW 2nd floor, Gig Harbor, WA, tel:253 851-0862, fax:253 851-0865

## BOATBUILDING AND DESIGN

Brunswick Commercial and Government Products, 420 Megan Z Avenue, Edgewater, FL Molde, Norway, tel:(386) 423 - 2900, fax:386-423-9187, [BCGPinfo@brunswick.com](mailto:BCGPinfo@brunswick.com)

## BOW AND STERN THRUSTERS

Omnithruster Inc., 2201 Pinnacle Parkway Twinsburg, Ohio 44087, Cleveland, OH 44139, USA, tel:330 963-6310, fax:330 963-6325, [widmer@omnithruster.com](mailto:widmer@omnithruster.com) contact: Kurt Widmer, [www.omnithruster.com](http://www.omnithruster.com)

## CAPSTANS

Coastal Marine Equipment, 20995 Coastal Parkway, Gulfport, MS 39503-9517, USA, tel:228-832-7655, fax:228-832-7675, [sales@coastalmarineequipment.com](mailto:sales@coastalmarineequipment.com) contact: Ralph Waguespack, [www.coastalmarineequipment.com](http://www.coastalmarineequipment.com)

## COMMUNICATIONS SERVICE

David Clark, PO Box 15054, Worcester, MA 01615, USA, tel:1-800-298-6235, [Sales@davidclark.com](mailto:Sales@davidclark.com) contact: Sales Department, [www.davidclark.com](http://www.davidclark.com)

## CONTROL SYSTEM-

## MONITORING/STEERING

Omega Engineering, One Omega Dr., Stamford, CT 06907, USA, tel:203 359-1660, fax:203 968-7192, [kkwait@omega.com](mailto:kkwait@omega.com) contact: Kathy Kwait, [www.omega.com](http://www.omega.com)

## CORDAGE

Helkama Bica Oy, Lakimiehenkatu 4, KAARINA FI-20780, Finland, tel:+358-2-410 8700, [sales@helkamabica.fi](mailto:sales@helkamabica.fi)

## CRANKSHAFT REPAIR

In-Place Machining, 3811 N. Holton St., Milwaukee, WI 53212, USA

## DIVING & SALVAGE

Imenco, 16111 Park Entry Dr., Ste 100, Houston, TX, USA, tel:(713) 480-7777, fax:909-626-8326, [al.cohen@imenco.com](mailto:al.cohen@imenco.com) contact: Al Cohen, [www.imenco.com](http://www.imenco.com)

## ELECTRIC PROPULSION

Avtron Industrial Automation, 7900 E.Pleasant Valley Road, Independence, OH, tel:216 642-1230/ext 1263, fax:216 642-6037, [mduskey@avtron-ia.com](mailto:mduskey@avtron-ia.com) contact: Mark R. Duskey, [www.avtron-ia.com/marine.htm](http://www.avtron-ia.com/marine.htm)

## GALLEY EQUIPMENT

Jamestown Metal Marine Sales, Inc., 4710 Northwest 2nd Ave., Boca Raton, FL 33431, USA  
LOIPART AB, P.O.Box 694/Metallgatan 2-4, ALINGSAS, tel:+46 322 668 360, fax:+46 322 637 747, [loipart@loipart.se](mailto:loipart@loipart.se)

## GROUNDING & EARTHING BRUSHES

Sohre Turbomachinery, 128 Main Street, Monson, MA 01082-0889, USA, tel:(413) 267-0590, fax:(413) 267-0592, [tsohre@sohreturbo.com](mailto:tsohre@sohreturbo.com) contact: Thomas Sohre, [www.sohreturbo.com](http://www.sohreturbo.com)

## GYROCOMPASS

AG Marine, 5711 34th Ave NW 2nd floor, Gig Harbor, WA

## HOISTS

Coastal Marine Equipment, 20995 Coastal Parkway, Gulfport, MS 39503-9517, USA, tel:228-832-7655, fax:228-832-7675, [sales@coastalmarineequipment.com](mailto:sales@coastalmarineequipment.com) contact: Ralph Waguespack, [www.coastalmarineequipment.com](http://www.coastalmarineequipment.com)

## HVAC

Jamestown Metal Marine Sales, Inc., 4710 Northwest 2nd Ave., Boca Raton, FL 33431, USA

## INTERIORS

Jamestown Metal Marine Sales, Inc., 4710 Northwest 2nd Ave., Boca Raton, FL 33431, USA  
Thermax Marine-Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76501, USA, tel:813 340-3940, fax:813 264-2507, [thermax@panelspec.com](mailto:thermax@panelspec.com) contact: John Hutchinson, [www.thermaxmarine.com](http://www.thermaxmarine.com)

## JOINER- WATERTIGHT DOOR-PANELING-CEILING SYSTEM

Thermax Marine-Panel Specialists, Inc., 3115 Range Rd., Temple, TX 76501, USA

## LIFESAVING EQUIPMENT

C.M. Hammar AB, August Barks Gatan 15, 421 32 Vastra Frolunda, Sweden

## LIFT EQUIPMENT

Imenco, 16111 Park Entry Dr., Ste 100, Houston, TX, USA, tel:(713) 480-7777, fax:909-626-8326, [al.cohen@imenco.com](mailto:al.cohen@imenco.com) contact: Al Cohen, [www.imenco.com](http://www.imenco.com)

## LUBRICANTS

Varna Products, 4305 Business Drive Cameron Park, CA 95682, tel:530-676-7770, fax:530-676-7798, [tmcachran@VARNAproducts.com](mailto:tmcachran@VARNAproducts.com)

## METEOROLOGICAL INSTRUMENTS

R. M. Young Company, 2801 Aero Park Drive, Traverse City, MI, tel:231-946-3980, fax:231-946-4772, [vsherman@youngusa.com](mailto:vsherman@youngusa.com)

R.M. Young Company, 2801 Aero Park Dr., Traverse City, MI, tel:231-946-3980, fax:231-946-4772, [vsherman@youngusa.com](mailto:vsherman@youngusa.com)

## MOORING PRODUCTS AND SYSTEMS

PSI/Tideslide, 3075 Shattuck, Ste 801, Saginaw, MI, tel:989-695-2646, fax:989-695-2648, [mbaluha@tideslide.com](mailto:mbaluha@tideslide.com)

## HAYCOMM EQUIPMENT

Marlink, Offices in: Oslo, London, Hamburg, Brussels, Athens, Dubai, Mumbai, Singapore, Tokyo, Washington DC and Houston, tel:+32 70 233 220, fax:+32 2 332 3327, [customer.service@marlink.com](mailto:customer.service@marlink.com)

## NAVAL ARCHITECTS, MARINE

## ENGINEERS

BMT Fleet Technology, 311 Legget Dr, Kanata, ON K2K 1ZB, Canada  
MCA Engineers, Inc., 1100 Quail Street, Suite 218,, Newport Beach, CA 92626, USA

## NAVIGATION

AG Marine, 5711 34th Ave NW 2nd floor, Gig Harbor, WA

## OFFSHORE SERVICES

Imenco, 16111 Park Entry Dr., Ste 100, Houston, TX, USA, tel:(713) 480-7777, fax:909-626-8326, [al.cohen@imenco.com](mailto:al.cohen@imenco.com) contact: Al Cohen, [www.imenco.com](http://www.imenco.com)

## PADLOCKS/LOCKS

Lockmasters USA, Inc., P.O. Box 2532, Panama City, FL, tel:800-461-0620, fax:850-914-9754, [sales@lockmastersusa.com](mailto:sales@lockmastersusa.com)

## PROPULSION EQUIPMENT

VOLVO PENTA OF THE AMERICAS INC, 1300 Volvo Penta Drive, Chesapeake, VA, tel:+1 757 3824010, [lindsay.shrewsberry@volvo.com](mailto:lindsay.shrewsberry@volvo.com)

Wartsila, Puotikuja 1, Vaasa, tel:011 35 8107090000 contact: Jessica Akerberg, [www.wartsila.com](http://www.wartsila.com)

## RIGID INFLATABLE BOATS

Pennel & Flipo Inc., P.O. Box 1695 Mount Pleasant, SC 29465, tel:843-270-4191, fax:843-883-3000, [orca@pennelusa.com](mailto:orca@pennelusa.com)

## SAFETY PRODUCTS

Landfall Navigation, 151 Harvard Avenue, Stamford, CT, tel:203 487-0775

## SATELLITE COMMUNICATIONS

David Clark, PO Box 15054, Worcester, MA 01615, USA, tel:1-800-298-6235, [Sales@davidclark.com](mailto:Sales@davidclark.com)  
Delta Wave Communications, Inc., 8001 Hwy 182 E. Morgan City, LA 70380, Morgan City, tel:(985) 384-4100, fax:(504) 617-6393, [tom.clark@deltawavecomm.com](mailto:tom.clark@deltawavecomm.com)

## SEATING

H.O. Bostrom, 818 Progress Ave., Waukesha, WI 53186, USA, tel:262.542.0222, fax:262.542.3784, [sales@hobostrom.com](mailto:sales@hobostrom.com) contact: Mike Oemichen, [www.hobostrom.com](http://www.hobostrom.com)

ShockWave Suspension Seating Solutions, 2074 Henry Avenue Sidney, BC V8L 3S6 Canada, tel:1-250-656-6165 Ext. 232, [sean@shockwavesseats.com](mailto:sean@shockwavesseats.com)

## SEPARATORS

Westfalia Separator, 100 Fairway Court, Northvale, NJ

## STORAGE BUILDINGS

ClearSpan Fabric Structures, 1395 John Fitch Blvd. South Windsor, CT 06074, tel:860-528-1119, fax:860-289-4711, [demande@farmtek.com](mailto:demande@farmtek.com)

## TESTING SERVICES

BMT Fleet Technology, 311 Legget Dr, Kanata, ON K2K 1ZB, Canada

## WATERMAKERS

Maxim Evaporators, LLC, 6702 Linwood Avenue, Shreveport, LA, tel:318-629-2460, fax:318-629-2465, [www.maximevaporators.com](http://www.maximevaporators.com)

## WIRES & CABLE

ICC Cable Corporation, 2125 Center Avenue Suite 401, Fort Lee, NJ, tel:(201) 482-5750, fax:(201) 482-5751, [jkim@icccable.com](mailto:jkim@icccable.com)

ICC Cable Corporation, 2125 Center Avenue Suite 401, Fort Lee, NJ, tel:(201) 482-5750, fax:(201) 482-5751, [jkim@icccable.com](mailto:jkim@icccable.com) contact: Jang Kim, [www.icccable.com](http://www.icccable.com)

**MARITIME  
REPORTER  
AND  
ENGINEERING NEWS**

**SUBSCRIBE  
NOW**

Log on to **MarineLink.com** and register to receive your copy online or in print today!



<p><b>January</b> Ad Close: Dec 22</p> <p><b>US Navy Report</b></p> <p>Market: Floating Production Systems</p> <p>Technical: Ballast Water Treatment Systems</p> <p>Directory: Marine Propulsion Equipment</p> <p><b>ASNE Day</b> Feb 9-10</p>	<p><b>February</b> Ad Close: Jan 26</p> <p><b>Cruise Shipping Annual</b></p> <p>Market: Ports &amp; Logistics</p> <p><b>ROUNDTABLE:</b> Satellite Communications</p> <p>Directory: Marine Electronics Buyer's Guide</p> <p>Special Report: Germany</p> <p><b>Seatrade</b> Mar 12-15</p>	<p><b>March</b> Ad Close: Feb 23</p> <p><b>The Ship Repair Edition</b></p> <p>Market: Training &amp; Education: Facilities &amp; Systems</p> <p>Technical: Software Solutions</p> <p>Directory: Coatings &amp; Corrosion Control</p> <p><b>CMA</b> Mar 19-21</p> <p><b>CIMPS-Europort</b> April 25-27</p>
<p><b>April</b> Ad Close: Mar 22</p> <p><b>Offshore Deepwater Annual</b></p> <p>Market: Offshore Wind &amp; Renewable Energy</p> <p>Technical: Offshore Service Vessels</p> <p>Directory: Deck Machinery, Winches &amp; Ropes</p> <p>Special Report: The Netherlands</p> <p><b>OTC</b> April 30 - May 3</p>	<p><b>May</b> Ad Close: April 26</p> <p><b>The Green Ship Edition</b></p> <p>Market: Patrol, Escort Craft &amp; RIBs</p> <p>Technical: The Integrated Bridge: Modern Bridge Technology &amp; Technique</p> <p>Directory: Posidonia 2012 Preview: New Technology Guide</p> <p>Special Report: Middle East Maritime Cluster</p> <p><b>RoRo</b> May 22-24</p> <p><b>MACC</b> June</p> <p><b>Posidonia</b> June 4-8</p>	<p><b>June</b> Ad Close: May 24</p> <p><b>Annual World Yearbook</b></p> <p>Market: Military Might: Innovative Designs</p> <p><b>ROUNDTABLE:</b> Information Technology &amp; Software Solutions</p> <p>Directory: Maritime Fuels, Lubricants &amp; Additives</p> <p><b>Don Sutherland Photo Contest</b></p>
<p><b>July</b> Ad Close: June 2</p> <p><b>Arctic Operations</b></p> <p>Market: Oil Spill Response &amp; Recovery</p> <p><b>ROUNDTABLE:</b> Coatings &amp; Corrosion</p> <p>Directory: Training &amp; Education – Facilities &amp; Systems</p> <p>Special Report: Brazil</p>	<p><b>August</b> Ad Close: July 26</p> <p><b>The Shipyard Edition</b></p> <p>Market: Maritime Communications</p> <p>Technical: Maritime &amp; Shipbuilding Tools</p> <p>Directory: SMM 2012 Preview: New Products &amp; Technologies</p> <p>Special Report: Singapore Maritime Cluster</p> <p><b>SMM</b> Sept 4-7</p>	<p><b>September</b> Ad Close: Aug 23</p> <p><b>Marine Propulsion Annual</b></p> <p><b>ROUNDTABLE:</b> Diesel Engine Manufacturers</p> <p>Technical: Marine Salvage &amp; Recovery</p> <p>Directory: Insulation, Pipes, Pumps &amp; Valves</p> <p><b>Rio Oil &amp; Gas</b> Sept 17-20</p>
<p><b>October</b> Ad Close: Sept 20</p> <p><b>Marine Design &amp; Construction</b></p> <p>Market: Maritime, Port &amp; Harbor Security</p> <p>Technical: Deepwater Floating Production Systems</p> <p>Directory: CAD/CAM &amp; Other Software</p> <p><b>SNAME</b> Oct 24-26</p> <p><b>MAST Americas</b> Nov 14-16</p> <p><b>Inmex China</b> Nov 21-23</p>	<p><b>November</b> Ad Close: Oct 25</p> <p><b>Workboat Annual</b></p> <p>Market: Offshore Service Vessels (OSVs)</p> <p><b>ROUNDTABLE:</b> Workboat Academy: Training &amp; Education</p> <p>Directory: Heavy Lifting: Deck Machinery &amp; Cranes</p> <p>Special Report: Turkey</p> <p><b>Int'l Workboat Show</b> Dec 5-7</p>	<p><b>December</b> Ad Close: Nov 22</p> <p><b>Great Ships of 2012</b></p> <p>Market: Port &amp; Harbor Dredging Annual</p> <p>Technical: Maritime Fire &amp; Safety Products &amp; Systems</p> <p>Directory: World Shipyards: Newbuild, Repair &amp; Conversion</p> <p>* Please note that the publisher reserves the right to alter this editorial calendar. All planned features are subject to change in light of changing industry trends and developments.</p>





Employment/Recruitment • [www.MaritimeJobs.com](http://www.MaritimeJobs.com)

# MaritimeJobs.com

where employers and job seekers connect

The Maritime Industry's Leading Employment Website. For more information contact: Jean Vertucci at [vertucci@marinelink.com](mailto:vertucci@marinelink.com)



Administration - Construction  
Crewing - Engineering  
Finance - M & R  
Operations - Sales  
Tel/Fax (206) 232-6041  
[bobemaritimerecruiters.com](http://bobemaritimerecruiters.com)  
(Established 1969)



Professional Mariner Directory  
\* Advanced Mariner Search  
\* Post Maritime Job Listings  
\* Accept Applications  
[www.FindAMariner.com](http://www.FindAMariner.com)  
*List jobs for free*

## Employment Spotlight



Service with Energy

GLOBAL EXPANSION  
UNLIMITED POSSIBILITIES-  
Multiple Positions Available  
Hornbeck Offshore

Click For More Information


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



U.S. & International  
Openings Available:  
Navy & Commercial  
Shipbuilding  
Oil, Gas & Petro- Chem Industry  
Contact EileenNorton,  
[eileen.norton@advantageresourcing.com](mailto:eileen.norton@advantageresourcing.com)  
800-525-7555 x1304 [www.hirethinking.com](http://www.hirethinking.com)



Do you have your copy?  
**Subscribe NOW!**  
Log on to [www.MarineLink.com](http://www.MarineLink.com)  
and register to receive your copy  
online or in-print today!



FairfieldNodal is known for its development/  
use of advanced ZNodal Systems for both  
Shallow & Deep Water Acquisition of Seis-  
mic Data. We are expanding currently. Our  
crews work the GOM & Internationally out of  
Sugar Land, TEXAS.

FairfieldNodal is seeking experienced Seismic Personnel.

We are Accepting applications for following:

**Natural Gas/Air Compressor Mech.:** Experience with multi-stage compressor  
& CAT motors (Natural Gas or diesel)

**Source Mechanic: (Air Gun Mechanic)** Experience operating/maintaining air  
guns for seismic "Source" Data Acquisition Operations.

**Navigation Specialists (Operators/Shift Leader/Chief)** Experience with  
Positioning systems for efficient seismic data acquisition operations.

**Seismic Observer (Operator/Shift Leader)** Experience with seismic data  
acquisition operations (OBC experience preferred)

**Seismic Party Chief** Experience managing marine seismic operations (OBC/  
Node experience preferred)


**EQUAL TIME schedule ~ ACCRUED PAID TIME OFF**

Fairfield pays a Generous Travel Allowance (domestic and International) Medical,  
Dental, Vision, Life & Disability Benefits start DAY ONE. 401(k) savings plan/  
company match starts after 90 days.

Successful candidates complete criminal background checks, drug tests, medical  
physicals & agility testing. Candidate must possess/be able to obtain T.W.I.C.,  
Passport and possibly MMC.

Contact: Jeff Hodge @ E-mail: [jhodge@FairfieldNodal.com](mailto:jhodge@FairfieldNodal.com)  
Phone: Call 281.275.7642 Mobile: 281.615.8499

FairfieldNodal Careers: [http://www.fairfieldnodal.com/FairfieldPlus/  
Careers/index.html](http://www.fairfieldnodal.com/FairfieldPlus/Careers/index.html)  
FairfieldNodal is an EOE



## MARINE SURVEYOR/AUDITOR

Bureau Veritas is recruiting in the  
United States of America.

We are looking for candidates who can  
bring a significant contribution to our  
surveying/auditing activities. Career  
progressions inside the Company may be  
offered to successful candidates for the  
following positions.

**Marine Surveyor/Auditor**  
Location: New Orleans, Louisiana

- Ability to perform classification  
and statutory surveys.
- Enhanced experience in the field of bulk  
carriers, tankers, gas carriers, and  
passenger ships is a plus.
- Previous experience of class  
surveyor, P+I Inspector, Chief Engineer  
or equivalent required. Additional training  
will be provided by the Company
- Experience as an ISM and ISPS auditor a plus.

Compensation commensurate with experience.

Contact: Fax +954-763-9718 or email to  
[wade.stoner@us.bureauveritas.com](mailto:wade.stoner@us.bureauveritas.com)





**BOLAND**  
INDUSTRIAL

The Leader in Vibration Analysis  
Call Us Today at 251-232-7163  
[www.bolandindustrial.com](http://www.bolandindustrial.com)

**C. R. CUSHING & Co., INC.**  
NAVAL ARCHITECTS • MARINE ENGINEERS • TRANSPORTATION CONSULTANTS

30 VESEY ST  
7TH FLOOR  
NEW YORK, NY  
10007

SINCE  
**1968**

Ph: (212) 964-1180  
Fax: (212) 285-1334  
info@crcco.com  
www.crcco.com

**CODA MARINE DESIGN INC.**  
DESIGN SUPPORT FOR THE MARINE INDUSTRY

3D Design & Modeling  
Computer Renderings



[www.codamarine.com](http://www.codamarine.com) - 604.886.0031

**CUNNINGHAM & WALKER**  
MARINE CONSULTANTS, INC.


NAVAL ARCHITECTURE & MARINE ENGINEERING  
MARINE HVAC ENGINEERING  
MARINE ELECTRICAL ENGINEERING

345 OLD PLANTATION DR., ST. AUGUSTINE, FL 32086  
TEL: 904-797-4785 FAX: 904-797-4785

2012 Update  
GHS Version 13.00

GHS keeps getting better in response to feedback from the large user base. Well over 170 improvements during the last year have gone in to further the performance and reliability of this mature software. New features include vessel profiles drawn on Longitudinal Strength plots; a weight distribution report and graph; enhanced international character set support, multiple threads on multiple-processor machines; enhanced GROUP report including maximum FSM and permeability columns.

GHS Load Monitor (GLM), the onboard configuration of GHS, allows GHS users to configure onboard systems and provide their clients the best combination of features.



**General HydroStatics**

Ship Stability and Strength Software

GHS ..... Full-featured naval architect's system  
GHS Load Monitor (GLM) ..... Onboard configuration  
GHS/Salvage ..... Salvor's package  
BHS ..... Basic hydrostatics and stability

**Creative Systems, Inc.**  
Creators of GHS™

P.O. Box 1910 Port Townsend, WA 98368 USA  
phone: (360) 385-6212 fax: 385-6213  
email: sales@ghsport.com

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

For 40 years, the software that naval architects love.

Established in 1854



**GRANDALL**  
DRY DOCK ENGINEERS, INC.

• Consulting • Design • Inspection  
Railway and Floating Dry Docks  
Dry Dock Hardware and Equipment

Box 505804, Chelsea, MA 02150 (617) 884-8420 Fax: (617) 884-8466  
[www.grandalldrydock.com](http://www.grandalldrydock.com)



**genoadesign**  
international ltd.

"Production Lofting & Detail Design"

Servicing marine and offshore industries internationally.

• Barges • OSVs • Towboats • Tugs • Ferries • Tankers • Workboats

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

**GEORGE G. SHARP, INC.**

22 CORTLANDT STREET, NEW YORK, NY 10007  
TEL (212) 732-2800 FAX (212) 732-2809

WASHINGTON (703) 548-4400  
VIRGINIA BEACH (757) 499-4125  
BREMERTON (360) 476-8896  
SAN DIEGO (619) 425-4211

[www.georgesharp.com](http://www.georgesharp.com)  
MARINE SYSTEMS • ANALYSIS & DESIGN



**GIBBS & COX INC.**


NAVAL ARCHITECTS AND MARINE ENGINEERS

Arlington, VA 703.416.3600  
New Orleans, LA 504.265.8316  
Hampton, VA 757.896.0200  
Washington, DC 202.863.3600  
Philadelphia, PA 703.839.8954  
New York, NY 212.366.3900

[www.gibbscox.com](http://www.gibbscox.com) Since 1929

SPECIALISTS IN THE DESIGN OF:

- OFFSHORE SUPPORT VESSELS
- TUGS AND TOWBOATS
- BARGES
- HIGH SPEED CRAFT
- NAVAL VESSELS
- CREWBOATS
- SPECIAL PURPOSE VESSELS
- YACHTS



DESIGN, CONSULTING, SURVEYING AND DRAFTING SERVICES

**GUARINO & COX, LLC**  
Naval Architects, Marine Designers and Consultants  
19399 Helenberg Road Suite 203 Covington, LA 70433  
Tel: (985) 871-9997 Fax: (985) 871-9927 [www.guarino-cox.com](http://www.guarino-cox.com)

**HEGER DRY DOCK, INC.**

531 Concord Street, Holliston, MA 01746  
Engineering for all types of dry docks

- Design
- Docking Calculations
- Certifications
- Engineer/Diver
- Inspections
- U.S. Navy 1625D FCR's

Phone: (508) 429-1800 Fax: (508) 429-1811  
[www.hegerdrydock.com](http://www.hegerdrydock.com)



**Herbert Engineering Corp.**

Naval Architecture Marine Engineering Ocean Engineering  
Marine Transportation Consulting Marine Software Development

Optimizing safety, efficiency,  
and environmental performance through design

510-814-9700 • [www.herbert.com](http://www.herbert.com)



NAVAL ARCHITECTURE & MARINE ENGINEERING

(619) 232-8937  
[www.mshipco.com](http://www.mshipco.com)

**M.A.C.E.**

Marine Industry

FT. LAUDERDALE - USA - WORLDWIDE

PHONE: (954) 563-7071 FAX: (954) 568-6598

- N.D.T. Services
- Vibration - noise - structural/modal analysis
- Field balancing, Laser Alignment
- Torque - torsional vibration analysis
- IR - Thermography inspection
- Emission tests, Engine Performance tests



**MSCorp** Marine Engineering  
Naval Architecture  
Logistic Support  
Maintenance Planning

70 Fargo Street Boston, MA 02210 f: 617.542.2461 p: 617.542.3345

[www.msccorp.net](http://www.msccorp.net) • San Diego • Virginia Beach

CG State Pilotate License Insurance/ Mariners' Disability Insurance

For Quotes on License Insurance or Mariners' Disability Insurance  
See our web site: [marinellicenseinsurance.com](http://marinellicenseinsurance.com)

R.J. Mellusi & Co., 29 Broadway, Suite 2311 New York, N.Y 10006  
Office (212) 962-1590, Cell (917) 584-4665  
Rjmellusi@sealawyers.com



Many Styles Available

100% Glare Reduction  
5 Mils thick

Fire-Retardant  
IMO Certified

Bunk Curtains

Sum Screens

Porthole Curtains

**IMMEDIATE DELIVERY ON SELECTED STYLES**

(718) 983-5600 (800) 336-6857 Fax (718) 983-9127  
Website: [metromarine.com](http://metromarine.com) E-mail: [sales@metromarine.com](mailto:sales@metromarine.com)  
METRO MARINE DESIGN ASSOCIATES MADE IN THE USA

**TideSlide®**  
Mooring Products & Systems  
"Your Berth Control is Our Business!"  
1(800)780-6094 +1(989)695-2646 [www.TideSlide.com](http://www.TideSlide.com)



- \*Free Valuable Deck Space
- \*Improve Crew Safety
- \*Pier Height Line Positions
- \*No Maintenance
- \*Moor Any Ship, Any Pier Worldwide
- \*Completely Automatic Deployment
- \*Safe Sea-State Mooring
- \*Increase Mooring Efficiency
- \*Integrated Systems or Retrofitted for Any Vessel

**VB1 Vessel Based & Pier Based Mooring Systems**

Sea water intake filters, strainers and screens

**866 - 265 - 0502**

Yankee Wire Cloth Products, Inc.  
221 W. Main St.,  
West Lafayette OH 43845  
Fax: 740-545-6323  
[www.maritimefilter.com](http://www.maritimefilter.com)

Engineering And Design  
Marine Casualty Response  
Marine Survey And Inspection  
Port Engineering Services

Updated!



**JMS**  
NAVAL ARCHITECTS  
SALVAGE ENGINEERS  
[JMSnet.com](http://JMSnet.com) · 860.536.0009

**U.S. Navy Salvor's Handbook V.2**  
Expert engineering guidance in your iPhone  
Go to: [www.JMSnet.com](http://www.JMSnet.com)

JOHN W. GILBERT ASSOCIATES, INC.  
Naval Architects and Marine Engineers



350 Lincoln St., Suite 2501  
Hingham, MA 02043  
T: 781-740-8193  
F: 781-740-8197  
E-Mail: [inbox@jwgainc.com](mailto:inbox@jwgainc.com)  
[www.jwgainc.com](http://www.jwgainc.com)

**MARINE DUTY PORTABLE SURFACE PREP EQUIPMENT**



Pressure Washer Systems Up to 7,000 PSI Shipped Worldwide

**WATER CANNON** [WATERCANNON.COM](http://WATERCANNON.COM)  
1-800-333-WASH(9247)

**Muldoon Marine Services**  
COMMERCIAL DIVING • MARINE SERVICES

**REDUCE FUEL CONSUMPTION**  
Propeller Polishing, Hull Cleaning

**UWILD SURVEYS**  
Approved By All Major Class Societies

**IN-WATER REPAIRS**

24-Hour: (562) 432 5670  
Long Beach, CA  
[www.muldoonmarine.com](http://www.muldoonmarine.com)



**USCG License Software**

Affordable - Merchant Marine Exam Training  
<http://hawsepipe.net>

Freelance Software  
39 Peckham Place  
Bristol, RI 02809  
(401) 556-1955 - [sales@hawsepipe.net](mailto:sales@hawsepipe.net)

10 years online over 2 million users

**MaritimeJobs.com**  
where employers and job seekers connect



**CCTS**  
Clean Cam Technology Systems

6300 Seven Seas Avenue  
Bakersfield, CA 93308  
(888) 473-3626  
<http://www.cctskit.com>

**WHY REPOWER?**

**Tier 2 compliance from your 2-stroke!**  
Emission-reduction engine rebuild kits for your Detroit Diesel 71 & 92 Series engines.

Engine rebuilding service available. We have rebuilt engines for the US Navy, US Air Force, cities and municipalities, and ongoing test engines with BNSF railroad.

**Diesel Engine Parts & Service**  
All make and model diesel engines. Full service parts supplier. Complete engines available. Nationwide shipping.



**AIRBAGS & MARINE SUPPLY**  
LAUNCHING ~ HAULOUTS ~ SALVAGE  
"PORTABLE & AFFORDABLE"

We also supply:  
ANCHORS • CHAIN • ABSORBENTS • OIL SPILL BOOM  
PNEUMATIC AND FOAM FILLED MARINE FENDERS  
CHAIN STOPPERS • QUICK RELEASE HOOKS • ROPE

**BLUE OCEAN TACKLE INC**  
Marine Fenders - Oil Spill Products

TEL: 619-336-2403  
FAX: 619-649-0909  
[www.blueoceantackle.com](http://www.blueoceantackle.com)  
[sales@blueoceantackle.com](mailto:sales@blueoceantackle.com)  
"Veteran Owned Small Business"





**MARITIME PROPULSION**  
Powering the Maritime Industry

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

The first interactive database indexing marine power and propulsion equipment - the industry's online resource for engines, parts, specs, suppliers, and auxiliary machinery.

Supplier Listings

5 keyword tags  
(ex. outboard, repair)

Logo / store image  
(160 x 80 px)

Link to your site

Contact information  
(ph, fax, address, email)

Direct contact window



1 year company listing - just \$495 USD

For details, contact your sales representative or call our offices: Rhoda Morgan (212) 477-6700



Focused business news, delivered quarterly

**Maritime Professional**

Free subscriptions for qualifying professionals

<http://www.maritimeprofessional.com/magazine/subscribe.aspx>

**SIMPLE. RUGGED. RELIABLE.**

**KIENE Cylinder Pressure Indicators for measuring diesel engine firing pressures...**

- Easy to use - simple and reliable
- Reduce maintenance costs.
- Improve engine availability.
- Use to balance cylinders.
- Pinpoint engine Problems.
- Optimize fuel consumption.
- Fits any standard indicator valve.
- Recommended and used by major engine builders
- Minimal investment to monitor engine condition.



Contact us now for more information.

**KIENE** DIESEL ACCESSORIES, INC.  
Phone: 1-800-264-5950  
Fax: 630-543-5953  
[www.kienediesel.com](http://www.kienediesel.com)  
E-mail: [info@kienediesel.com](mailto:info@kienediesel.com)

**BOOKS FOR THE SHIPPING INDUSTRY**

Marine engineering • Cargo work & stability • Ship handling • Ship's business • Tugs & towing • Maritime safety & security • Navigation



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

The Nautical Mind Bookstore  
email: [books@nauticalmind.com](mailto:books@nauticalmind.com) | toll free: (800) 463-9951

**CERTIFIED MARINE SEWAGE DEVICES (MSD) FOR ALL VESSELS!**



**SCIENCO/FAST**  
a division of Bio-Microbics, Inc.

For more information  
[www.marineFAST.com](http://www.marineFAST.com)



**B-15, C, A-60 INTERIOR JOINER PANEL SYSTEMS**  
CERTIFIED by SOLAS, IMO, FTP CODE, EU MED, USCG, TRANSPORT CANADA

**PANEL SPECIALISTS, INC.**

Terry Mannion, Marine Division Manager  
[www.panelspec.com](http://www.panelspec.com)

**Sales & Production**  
3115 Range Road  
Temple, Texas 76504  
Tel: (254) 774-9800  
[www.ThermaxMarine.com](http://www.ThermaxMarine.com)



THERMAX PANELS  
Non-Combustible, Non-Toxic

**Sales**  
Tel: (410) 963-1160  
[sales@ThermaxMarine.com](mailto:sales@ThermaxMarine.com)

Inventory in the USA ready for immediate shipment

**MARITIME REPORTER AND ENGINEERING NEWS**

Your ad deserves the largest circulation available - contact us for 2012 ad rates and options. (212) 477-6700





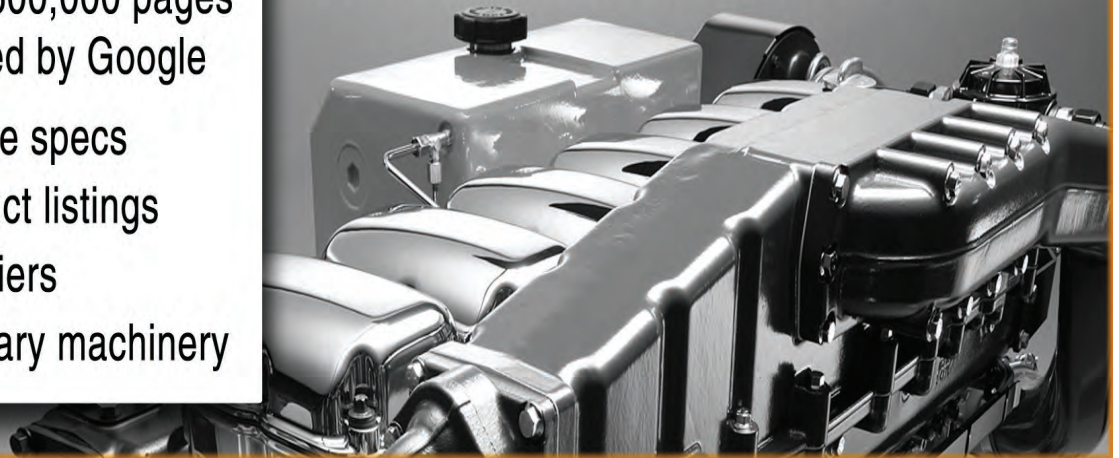
# MARITIME PROPULSION

**Powering the Maritime Industry**

Over 600,000 pages indexed by Google

- engine specs
- product listings
- suppliers
- auxiliary machinery

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



## Vessels/Real Estate/Business for Sale/Charter New/Used Equipment • [www.MaritimeEquipment.com](http://www.MaritimeEquipment.com)

**RASMUSSEN EQUIPMENT COMPANY**

Berger Fairleads • Anchor • Spud Winches • Skagit Clyde • Manitowoc • Deck Winches

(800)227-7920 • [equipmentsales@rasmussenco.com](mailto:equipmentsales@rasmussenco.com)

Standard rental/sale terms and conditions may be viewed on the homepage at our website, [www.rasmussenco.com](http://www.rasmussenco.com)

**2 Jack-up Barges Available for Charter**  
100' x 50' 100 ton capacity

**Consultant fees paid for successful job leads**

Fax your inquiry on other heavy marine rental needs  
Entire US & Canada  
Phoenix Marine, 449 Washington Rd, Sayreville NJ 08872  
• Phone 732-390-2800 • Fax 732-390-2833  
• Email: [barges@phoenixmarine.com](mailto:barges@phoenixmarine.com)

**SUNY Maritime College** is requesting sealed bids from bidders to purchase a Water Barge named the SUNY No. 1 (a/k/a/ EX-Water Barge No. 42) in its current "as-is, where-is" condition at its current mooring. The minimum bid price for the sale of this Water Barge is \$25,000. The Water Barge is located at Olivet Pier - SUNY Maritime College - 6 Pennyfield Avenue - Bronx, NY 10465.

Bidders who would like to receive the Notice of Sale should email their information (name, e-mail, address, phone, fax, etc.)

to [jrodriguez@sunymaritime.edu](mailto:jrodriguez@sunymaritime.edu)

It is the State University of New York's policy to take affirmative action to ensure that New York State certified minority and women-owned business enterprises (M/WBEs) are given the opportunity to demonstrate their ability to provide the University with commodities and services at competitive prices.

**Collection of the Water Barge must be February 15, 2012.**

**Southern Recycling**

We buy barges, ships, and other marine vessels and structures for scrap.  
We adhere to the highest ES&H standards.  
Serving the rivers and coasts of the U.S.

AMELIA • BROWNSVILLE • HOUSTON • MOBILE  
MORGAN CITY • NEW ORLEANS

**CALL 800 - GO SCRAP**

**MARITIME REPORTER** AND ENGINEERING NEWS *Do you have your copy?*

**Subscribe NOW!**

Log on to [www.MarineLink.com](http://www.MarineLink.com) and register to receive your copy online or in-print today!

**RASMUSSEN EQUIPMENT COMPANY**

Used Vertical Warping Capstans

MODEL SA1817-22H  
18" Barrel, 22 hp, 1300 PSI/30 GPM, Sacrificial steel doubler plates.  
Location: Seattle, WA  
Price: \$30,000 ea., As Is

Tel: 206-762-3700 • Fax: 206-762-5003 • [www.rasmussenco.com](http://www.rasmussenco.com)

We've been serving the general & marine construction industries for over 70 years.

**ZIDELL MARINE CORPORATION**

*Specializing In Barges*

- ◆ Single or Double Hull, Inland or Ocean-Going
- ◆ Design, Construction & Modification
- ◆ Chartering & Sales

Ask for Bill Gobel  
503-228-8891 1-800-547-9259  
3121 SW Moody Avenue, Portland, Oregon 97239



GET FREE INFORMATION ONLINE at: [www.maritimeequipment.com/mr](http://www.maritimeequipment.com/mr)

Page#	Advertiser	Website	Phone #	Page#	Advertiser	Website	Phone #
30	ABS	www.eagle.org	(281) 877-5861	11	Mide Technology Corporation	www.mide.com.com	(888) MIDEMARINE
39	Anchor Maine & Supply, INC	www.anchormarinehouston.com	(713) 644-1183	11	MMLJ Inc.	www.dustlessblasting.com	(800) 727-5707
27	Aurand Manufacturing	www.aurand.net	(513) 541-7200	5	Parker Hannifin Corporation	www.parker.com	(800) C-PARKER
31	C.C.JENSEN, INC.	www.ccjensen.com	(800) 221-1430	33	Pima Valve	www.pimavalve.com	(520) 796-1095
27	ClearSpan Fabric Structures	www.ClearSpan.com	(866) 643-1010	C2	Prime Mover Controls Inc.	www.pmc-controls.com	(604) 433-4644
33	Diamond Sea Glaze	www.advancedmarinetechology.com	(604) 607-0091	C3	Radio Holland USA	www.radiohollandusa.com	(713) 378-2100
23	Donald Sutherland Photo Contest	www.maritimephotographs.com	Please visit our website	9	Raytheon Anshuetz GmbH	www.raytheon-anshuetz.com	49 (0) 431 30190
31	Donjon Marine Co., Inc.	www.donjonshipbuilding.com	(814) 455-6442	3	Scania USA	www.scaniausa.com	(210) 403-0007
25	Effort Group, LLC/The Workboat Exchange	www.workboatexchange.com	(978) 236-1334	15	Schweitzer Engineering Laboratories	www.selinc.com	(509) 332-1890
34,35	Electronic Marine Systems	www.emsmarcon.com	(732) 382-4344	33	Skookum	www.skookumco.com	(800) 547-8211
36,37	Electronic Marine Systems	www.emsmarcon.com	(732) 382-4344	27	Smith Berger Marine	www.smithberger.com	(206) 764-4650
7	Fairbanks Morse	www.fairbanksmorse.com	(608) 364-4411	39	Smith Maritime	www.smithmaritime.us	(904) 284-0503
27	Floscan	www.floscan.com	(206) 524-6625	38	SNAME	www.sname.org	Please visit our website
4	Governor Control Systems	www.mshs.com	(800) 622-6747	30	Sohre Turbomachinery, Inc.	www.sohreturbo.com	(413) 267-0590
13	Hyde/Calgon	www.hydemarine.com	(724) 218-7001	29	Walz & Krenzer, Inc.	www.wkdoors.com	(203) 267-5712
17	In-Place Machining	www.inplace.com	(414) 562-2000	1	Wartsila	www.wartsila.com	Please visit our website
C4	Karl Senner, Inc.	www.karlse Jenner.com	(504) 469-4000				

The listings above are an editorial service provided for the convenience of our readers.  
If you are an advertiser and would like to update or modify any of the above information, please contact: [productionmanager@marinelink.com](mailto:productionmanager@marinelink.com)



**MARITIME  
PROPULSION**  
Powering the Maritime Industry

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

The first interactive database indexing marine power and propulsion equipment - the industry's online resource for engines, parts, specs, suppliers, and auxiliary machinery.

### Supplier Listings

keyword tags  
(ex. outboard, repair)

logo / store image  
(160 x 80 px)

link to your site

contact information  
(ph, fax, address, email)

direct contact window



The screenshot shows a search result for 'Bartles and Sons Marine Engines'. It includes the company logo, a brief description of their services (outboard, repair, rebuild, etc.), contact information (phone, fax, address, email), and a direct contact window. Arrows from the text on the left point to these specific elements on the website screenshot.

**1 year company listing - just \$495 USD**

For details, contact your sales representative or call our offices: **Rhoda Morgan (212) 477-6700**



**Focused business news,  
delivered quarterly**

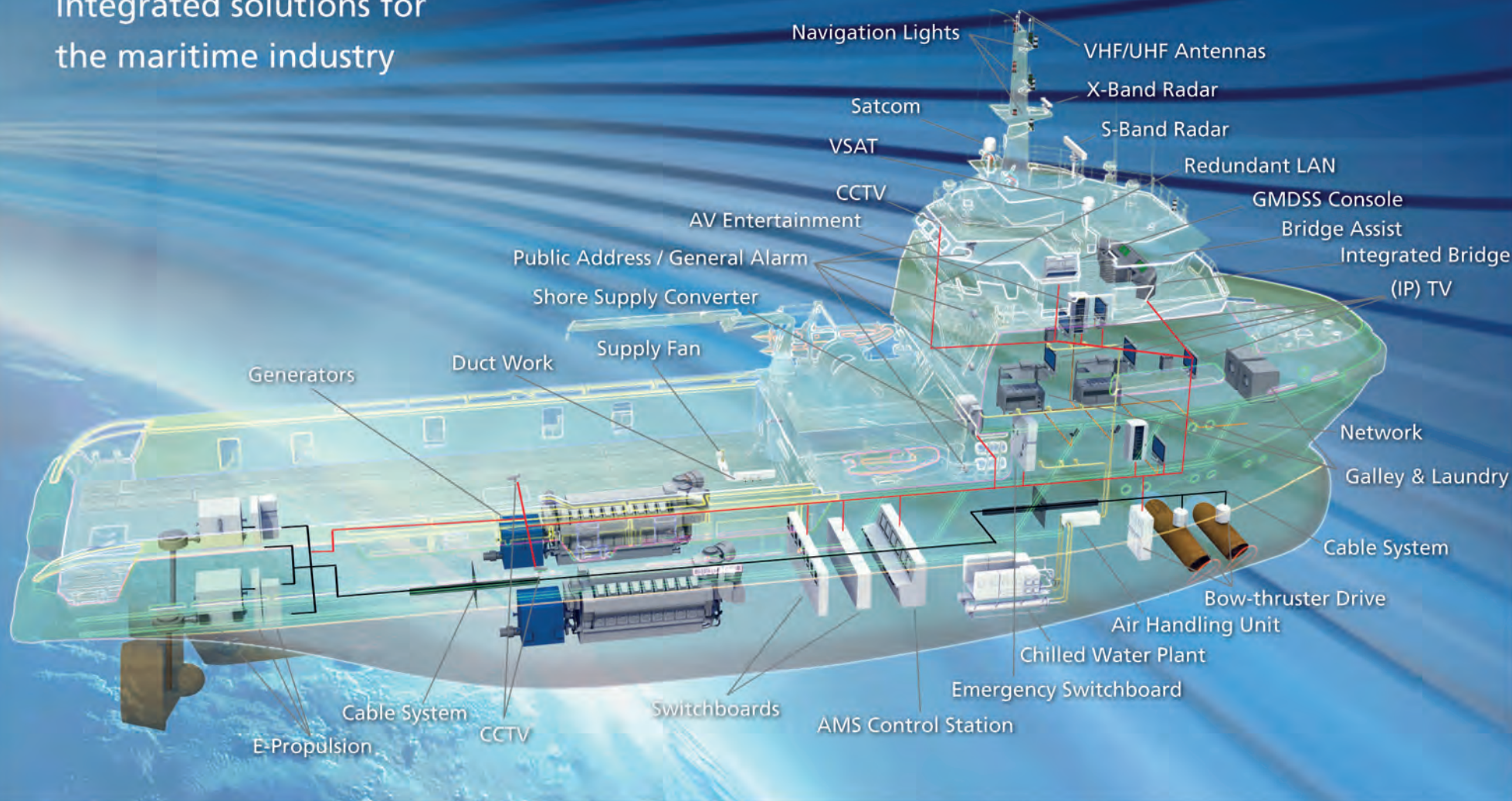
**Maritime  
Professional**

Free subscriptions for qualifying professionals

<http://www.maritimeprofessional.com/magazine/subscribe.aspx>



Integrated solutions for the maritime industry



# Your partner in technology



Imtech Marine may be a new name in the North-American maritime business, but we're not exactly a newcomer. Radio Holland USA is a solution provider in maritime electronics and connectivity solutions while Techsol Marine is an established name in vessel automation, power management, switchboard and electric/hybrid propulsion. As an integral part of Imtech Marine, both companies focus on the entire life cycle of your ship or offshore installation. With more than 80 offices along all major shipping routes of the world, Imtech Marine can help you move your business forward.







# *When Only the Best Will Do!* **KARL SENNER, INC.**



## **M/V John Boozman**

**Karl Senner, Inc.** supplied Blessey Marine Services two (2) REINTJES WAF 562 reverse reduction gears, with vertical offsets and ratios of 5.9:1 for this new construction added to the Blessey Fleet.

**Shipyard:** Verret Shipyard, Plaquemine, Louisiana

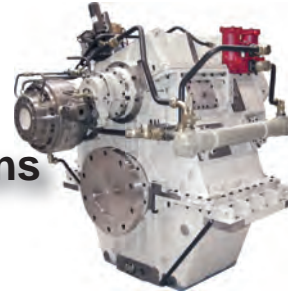
**Owner:** Blessey Marine Services, Harahan, Louisiana



**Azimuthing thrusters**



**Marine Transmissions**



**Controllable Pitch Propellers and Bowthrusters**



## **Contact Us**

**NEW ORLEANS** Karl Senner, Inc. 25 W. Third St. Kenner, LA 70062 Phone: (504) 469-4000 Fax: (504) 464-7528

**WEST COAST** Karl Senner, Inc. Seattle, WA Mr. Whitney Ducker (425) 338-3344

**E-MAIL•US** [service@karlsenner.com](mailto:service@karlsenner.com) [sales@karlsenner.com](mailto:sales@karlsenner.com) [parts@karlsenner.com](mailto:parts@karlsenner.com)

Please visit our new website

**[www.karlsenner.com](http://www.karlsenner.com)**