

September 2004

# MARITIME REPORTER AND ENGINEERING NEWS

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The 2004

# Propulsion Annual

Legal Beat  
Signed Confessions

Maritime Security  
MTSA: The Big Delay  
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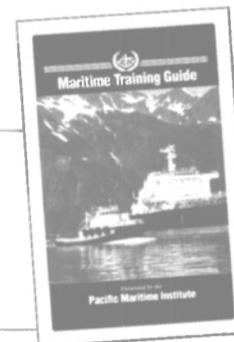
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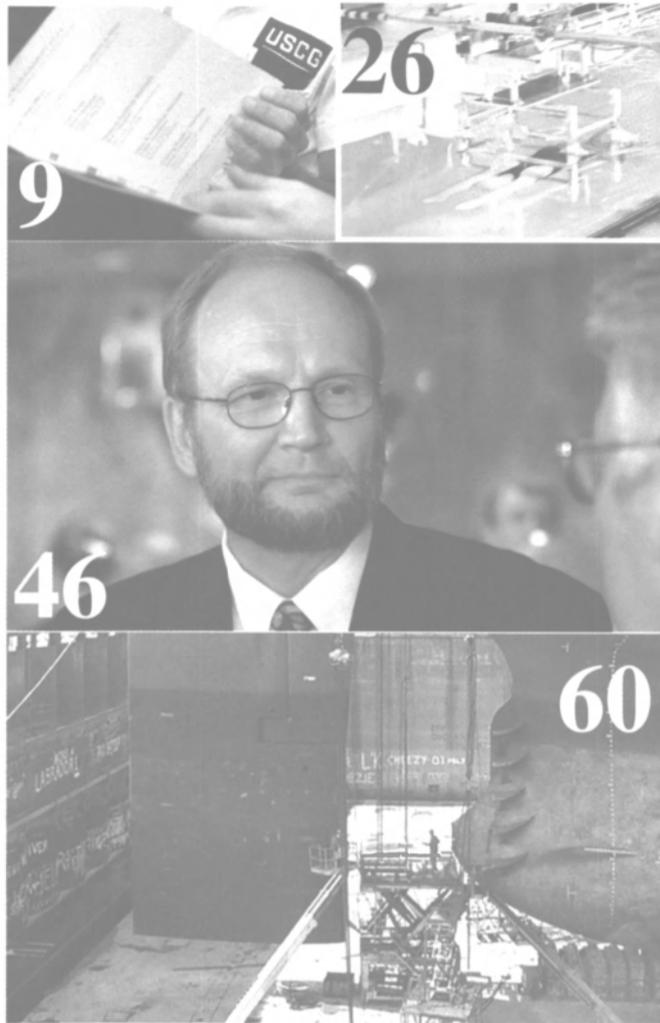
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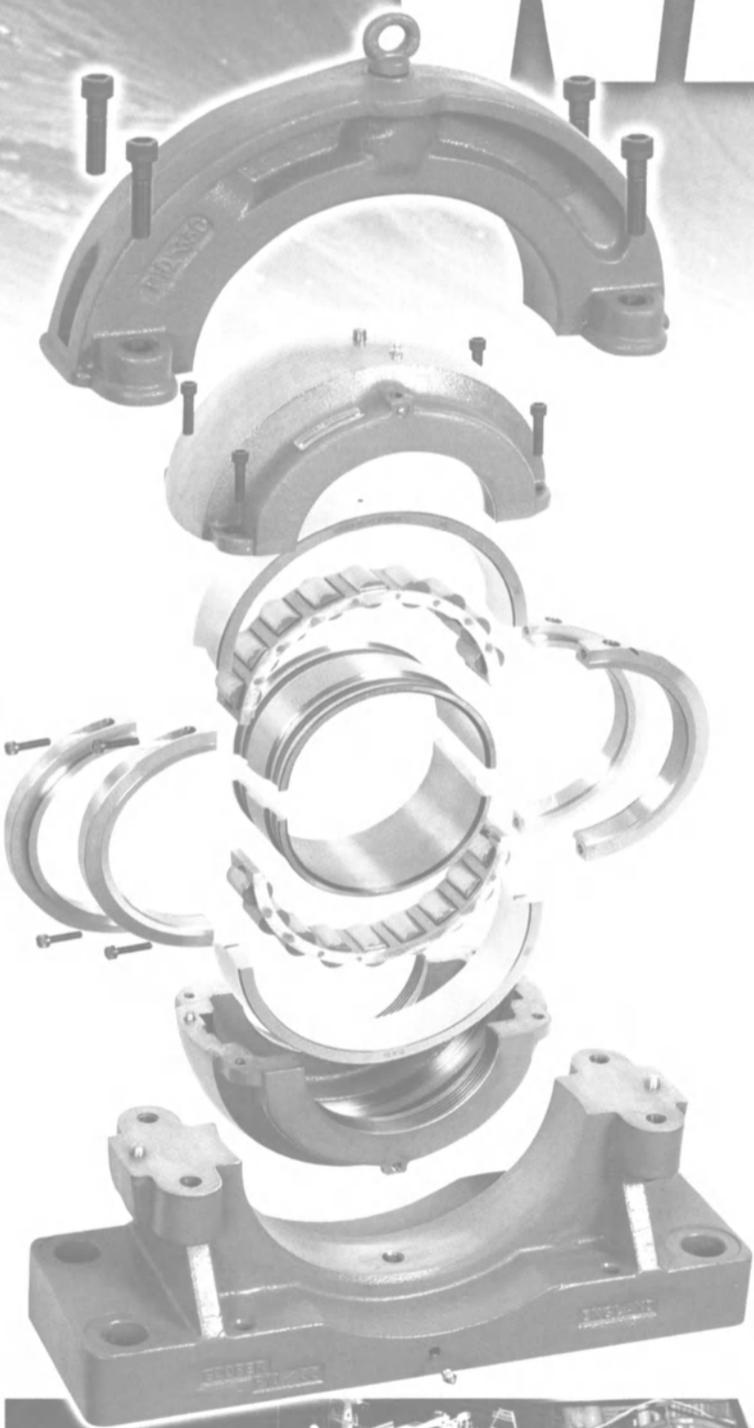
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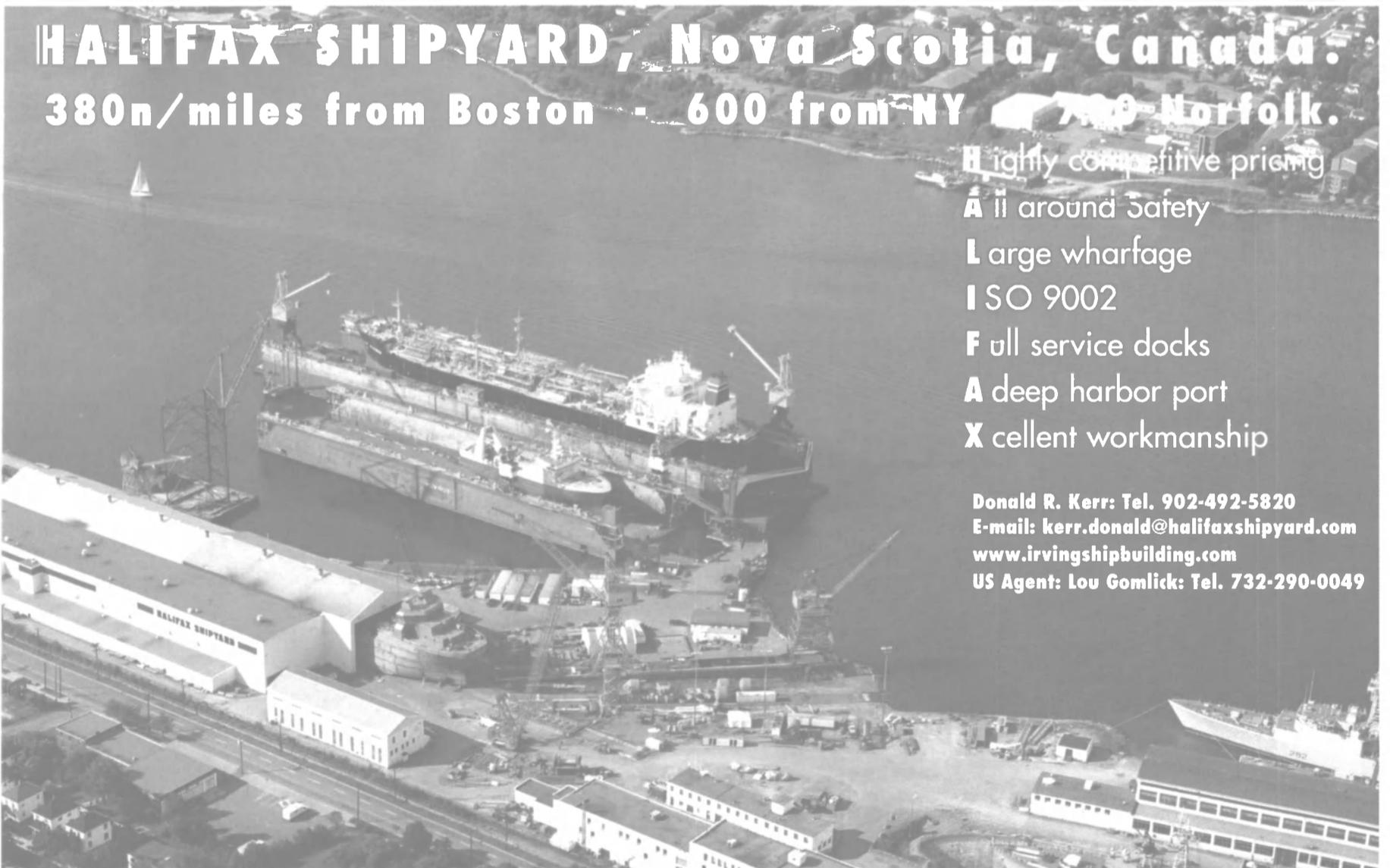
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# SSI Concerns Continue

By Dennis Bryant, Senior Maritime Counsel, Holland & Knight LLP

I recently expressed concern that the regulations promulgated by the Transportation Security Administration (TSA) on May 18, 2004 relating to Protection of Sensitive Security Information (SSI) are overbroad. Comments were received from some readers stating that the recent USCG Navigation and Vessel Inspection Circular (NVIC) regarding Guidelines for Handling of SSI was not, as I asserted, SSI because the NVIC stated that USCG policy is that only USCG docu-

ments marked 'SSI' are actually SSI. I do not concur. Under the TSA regulations, which are controlling, SSI consists of a long list of information the disclosure of which would, in the opinion of TSA, be detrimental to the security of transportation. USCG NVICs "related

to maritime security" are specifically included in this list, and there is no caveat that the NVIC be marked 'SSI'. I have been advised that TSA is reconsidering its policy regarding SSI in light of the various comments received on its rulemaking. Comments addressing the

issue of the breadth of the regulations include those submitted by the American Petroleum Institute (API) and the Coalition of Journalists for Open Government. In the meantime, though, the current rule is controlling. One can only hope that moderation (such as that exhibited in the USCG NVIC) continues to be exercised until this situation can be resolved.

## NTSB Reports on I-40 Accident; AWO Pledges Support

The American Waterways Operators (AWO) pledged as the National Transportation Safety Board (NTSB) released the results of its investigation of the May 2002 I-40 bridge accident at Webbers Falls, Oklahoma.

AWO President **Thomas A. Allegretti** called the NTSB findings "important information that will help our industry and make the traveling public safer. AWO is a partner with the NTSB and the Coast Guard in improving marine transportation safety. We are committed to studying, learning from and applying the lessons of this investigation for our industry. In particular, AWO would be pleased to provide any assistance possible with regard to the NTSB recommendation that the Coast Guard evaluate the utility and effectiveness of wheelhouse alerter systems on inland towing vessels for preventing accidents."

Since the I-40 accident, AWO has worked cooperatively with government to understand the causes of barge/bridge accidents and take action to make marine transportation safer. Highlights include:

The Coast Guard-AWO Bridge Allision Working Group, established immediately after the I-40 accident to study the frequency and causes of towing vessel bridge accidents. The Working Group report, released in May 2003, recommended a package of prevention measures to improve bridge safety.

A pilot project with the U.S. Coast Guard to implement Crew Endurance Management systems as a means of improving decision-making fitness and increasing safety levels on towing vessels.

Sample policies on Bridge Transit Safety and Operator Incapacitation, developed by AWO safety experts for use as tools for inland and coastal operations. AWO's Board of Directors will vote in October to add requirements for safe bridge transit and operator incapacitation procedures to the AWO Responsible Carrier Program, a third-party-audited safety management system with which all AWO members must comply as a condition of membership in the association.



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## Editor's Note

I was in New Orleans last month to give a presentation dubbed "Maritime and the Media" at the GICA annual convention. Stereotypical stale introduction jokes aside (evidently, not many had heard this one, as it actually produced *some* laughter), the presentation gave me unencumbered time to assess what we do here, in the broad perspective.

Now many, including the guy who signs my check, might assume that this is an ongoing rather than isolated process. But like many of you reading this, the daily, weekly, monthly and yearly job of multi-tasking, infinite deadlines and continual troubleshooting despite the best laid plans often leaves pondering "the big picture" low on the list. This industry, in general, has a noted aversion to media coverage of any type, an innate reaction built on many reasons, including generations of coverage by the general media only when things go terribly wrong. It's a shame, really, because, case in point of my 24 hours in New Orleans, there are so many great stories to be told (though I must admit, most are followed by the disclaimer "but you can't print that!") Reading Dennis Bryant's "Signed Confessions" starting on page 9, you might be tempted to dump me in the formerly mentioned media category. However it is an important story to tell, and all operators need to be aware of the lesson a few companies are learning to the tune of millions of dollars.

This edition is pivotal for a number of reasons, chief among them it is the one that will be going with us to SNAME in Washington and SMM in Hamburg. For those of you who have not been to either of these events for awhile, it would be a worthy venture to look again. SNAME maintains its leadership on the technical front, producing what is arguably the finest technical conference in the world with a broad range of topics to whet most any appetite. On the heels of an outstanding show in San Francisco last year, the exhibition is again sold out and the papers line-up for Washington will not disappoint. Additional information can be found on page 83, or by visiting [www.sname.org](http://www.sname.org).

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## On the Cover



Pictured on this month's cover is the Wartsila SODE, its new Dual Fuel engine. In conjunction with the MR Propulsion Annual and the SMM2004 preview, MR had the opportunity to talk with **Matti Kleimola**, Wartsila CTO and newly appointed president of CIMAC. His comments on propulsion and the marine industry are on page 46.

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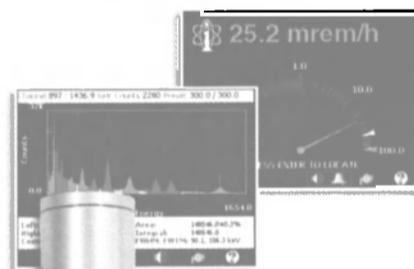
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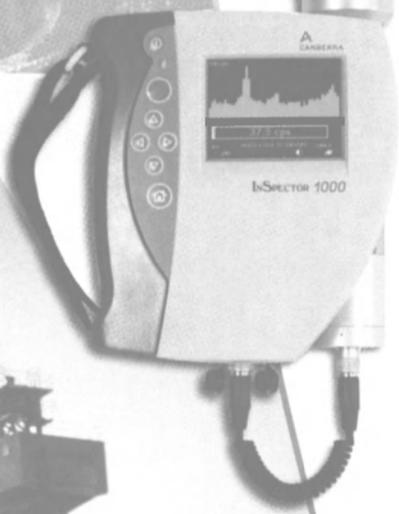
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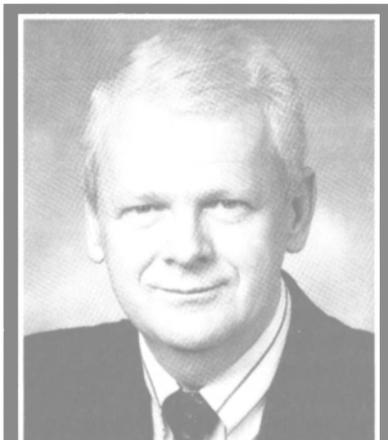


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Maritime Reporter & Engineering News

# Signed Confessions



Dennis L. Bryant, Senior Maritime Counsel at the law firm of Holland & Knight, Washington, D.C., is a contributing editor of MR/EN.

By Dennis Bryant, Senior Counsel,  
Holland & Knight LLP

Many in the maritime industry are beginning to view the oil record book as a signed confession. The number of prosecutions in the United States for fraudulent entries in oil record books is rising exponentially and fines have recently skyrocketed. In the years 1998 through 2001, research has revealed one prosecution in each year for oil record book violations. In 2002, there were seven prosecutions - and four of those were against individual chief engineers. In 2003, nine prosecutions, four of which were again against individual chief engineers. Through the middle of August 2004, there have been seven prosecutions, and only two were directed at individual chief engineers. Criminal fines to date have totaled \$52,285,000. Shipping companies are also being required to implement court-supervised compliance programs.

There has been a veritable explosion in the number and amounts of awards made to crewmembers who report violations to the U.S. Coast Guard. In 1998, the first award (\$500,000) was made to a crewmember on a cruise ship operating in Alaska. In 2002, an award of \$250,000 was made to a crewmember on another cruise ship, this one operating out of Florida. The third award (\$225,000) was made in 2003 to a crewmember on a bulk carrier docked in Portland, Oregon. So far in 2004, there have been three awards totaling \$3.4 million. The awards have reached a level where virtually any crewmember suspected of implication in an oil record book falsification or an environmental violation (or simply disgruntled with his

or her employer) may be willing to provide evidence to the Coast Guard or other law enforcement official.

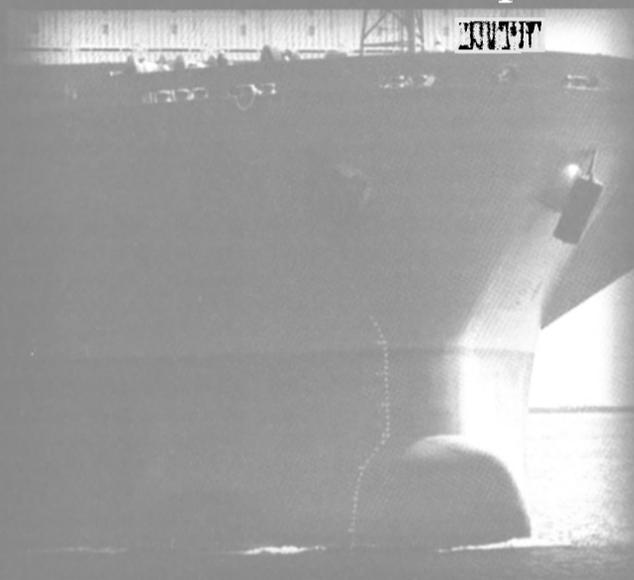
How do we get to this sad state of

events?

Waste liquids naturally accumulate in the bilges of ships. Part of those waste liquids consists of oil. To prevent the

waste liquids from overwhelming the cargo spaces and the engine room, the material is periodically discharged over the side and into the ocean. Some years

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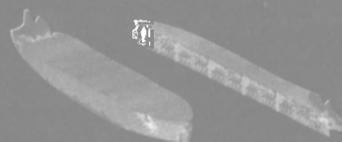
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## Government Update

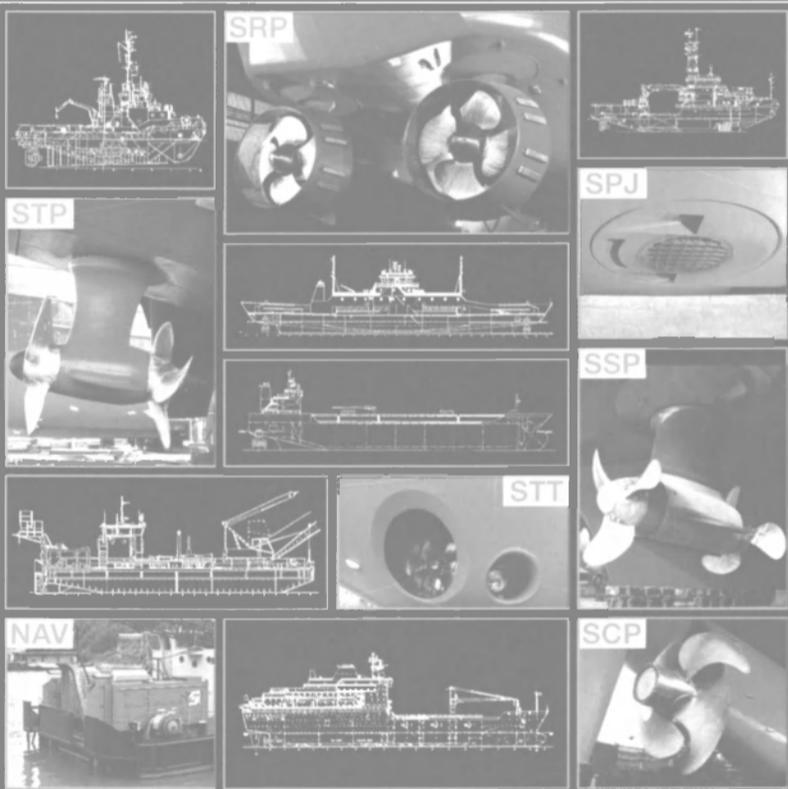


ago, in an attempt to lessen the amount of waste oil entering the ocean from ships, the international community required most ships to install and operate oily-water separators (OWS). An OWS separates oil from the rest of the liquids by means of gravity, centrifugal force, osmosis, or other process or combination of processes. Originally, the devices were designed to operate at 100 parts per million (ppm). Now, they are

Coast Guard Chief Warrant Officer **Ray Cain**, marine safety inspector for Marine Safety Office Puget Sound inspects the engine room of the ferryboat Spokane here. The Spokane travels between Seattle and Bainbridge Island, Wash., and is able to carry 218 cars and 2,500 passengers. The Coast Guard performs routine inspections of the ferryboat to ensure crew and passenger safety.

(USCG photo by PA2 **Jacquelyn Zettles**)

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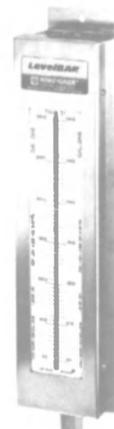
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required to work at 15 ppm - and they often don't work well at this higher standard.

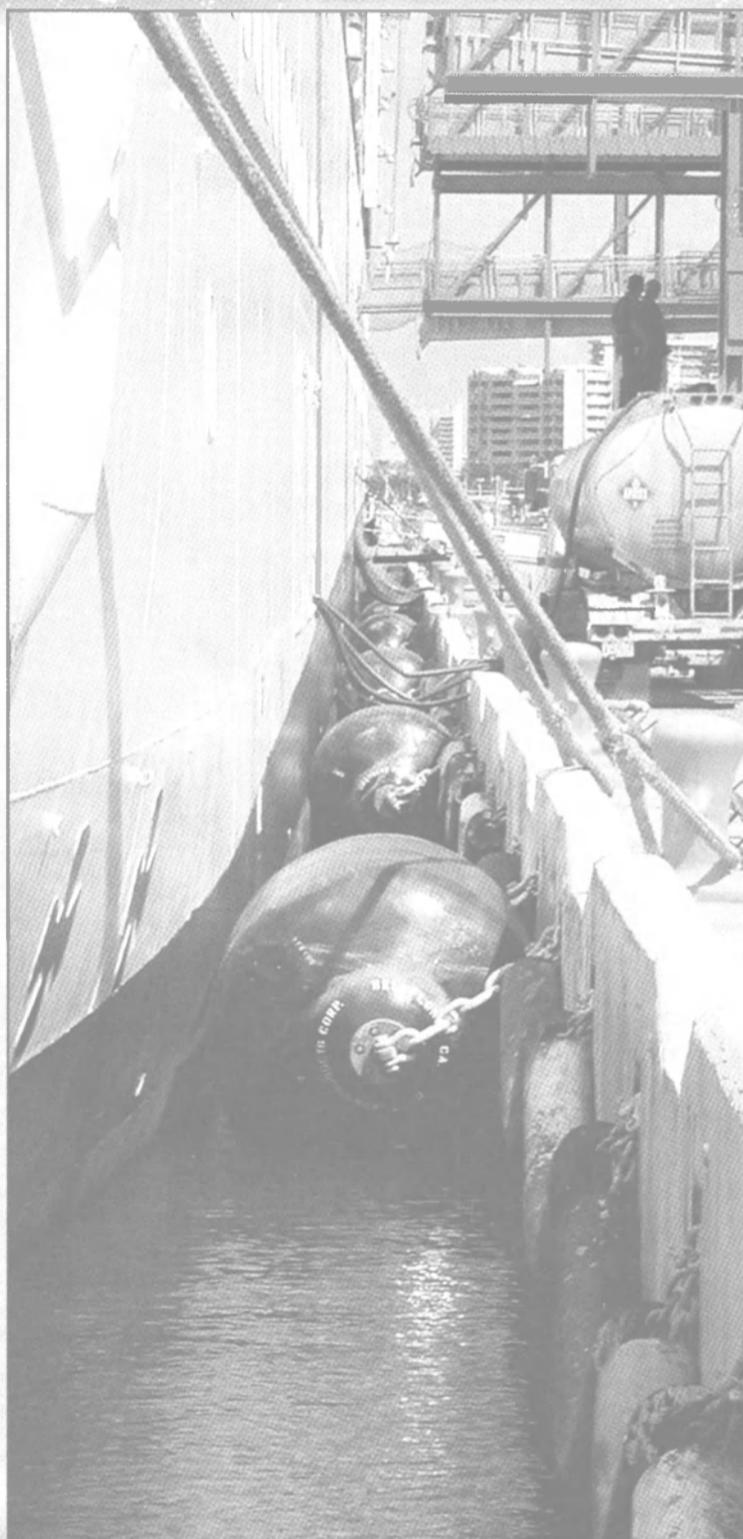
When the requirement for the OWS was developed, the international community also established a requirement that the ship maintain an oil record book. The oil record book is intended to show how much oil is accumulated and how it is disposed. There are three major methods for a ship to legally dispose of waste oil: (1) burning on board, (2) transfer to an appropriate facility ashore, and (3) discharge into the ocean through a properly operating OWS. The oil record book contains detailed entries of oil accumulated and stored, as well as the time, place, and method of any and all disposals. Totals are supposed to match, but this is difficult as measurements, particularly of liquids in storage tanks on a ship at sea, are rough estimates at best.

There are other, more basic problems, though. For many years, governments and ship operators only paid lip service to OWS operation and oil record book entries. Waste oil was routinely discharged at sea and few seemed to care. Chief engineers were under constant pressure to keep operating costs down. One method utilized was to ignore maintenance of the OWS. When the OWS wasn't working properly or when the filter needed replacing, the system would be circumvented. This could be done either through use of a by-pass hose to divert the discharge around the sensor unit or by adding non-oily flush water to artificially reduce the level of oil passing the sensor unit to below 15 ppm. Alternatively, false entries could be made in the oil record book to show that more waste oil was burned on board than was actually the case. It is difficult to falsify the amount of waste oil transferred ashore, since signed receipts (and payment records) are required. As long as everyone played by the same rules, the system (while flawed) was stable.

Everything changed on February 1, 1993, when a routine U.S. Coast Guard air patrol observed a long sheen of oil streaming astern of a cruise ship on the high seas off Florida. Review of the ship's oil record book when the ship arrived in port revealed that no entry had been made relative to this discharge. When the flag state declined to take action, the U.S. government charged with cruise ship operator with making a false statement to a federal official. The cruise ship operator litigated this and a related case, arguing, among other things, that there was no violation of federal law since both the discharge and the oil record book entry were made while the ship was on the high seas. The

Chief Warrant Officer **Stan LeCain** (left), a marine safety inspector from Marine Safety Office Mobile inspects ship documents with Petty Officer 3rd Class **Ryan Mitchell**, also an inspector from the MSO. The two conducted a follow-up examination aboard the motor vessel San Miguel Arcangel, a Panamanian cargo vessel detained in the Theodore Ship Channel in Mobile for deficiencies.

(USCG photo by PA2 Chad Saylor)



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## Government Update

court held, though, that the false statement occurred when the oil record book was presented for Coast Guard examination while the ship was in a U.S. port. After losing the procedural motions, the cruise ship operator settled this criminal charge by payment of \$9 million and, in the related case, by payment of \$18 million. No other ship owner or operator

has litigated an oil record book charge since those highly expensive events.

Under federal law, a false statement consists of (1) making a statement orally or in writing; (2) when the statement is false or misleading; (3) the false or misleading information is material; (4) the statement or concealment was made knowingly; and (5) the statement was

made to a federal official engaged in performance of his or her duty. Here, the statement was made in the oil record book, which the ship is required to maintain and is required to present to the Coast Guard upon request when the ship is in U.S. waters. If the federal government can prove that the chief engineer or another senior person in the ship knew

that one or more entries in the oil record book (which the person in charge of the operation is required to initial) is false and that the false entry was made knowingly, then the company can be held criminally responsible. The individual making the false entry (generally the chief engineer) can also be held criminally responsible.

Because the oil record book bears the initials of the person making each entry and the signature of the master, the document serves the purpose of a signed confession, for which there is almost no defense.

To minimize the likelihood that the chief engineer or another engineering officer on the ship improperly disposes of the waste oil, the company should take positive steps to ensure that the OWS is operating properly and is well maintained. The chief engineer should be clearly informed (preferably in writing) that his or her primary goal in this regard is to properly handle and dispose of waste oil and that the general admonition to minimize expenses does not apply to this goal. Also, personnel should be clearly advised of the requirement that log and record entries are to be made contemporaneously with the event and are to be accurate.

A preferred method of accomplishing both tasks is for the company to institute a maritime compliance program. Federal law provides that, if a company has a compliance program in place and a violation occurs regardless, the company will be entitled to a major reduction in sentence. One major cruise ship company benefited from this provision when it was proven that some of its personnel had engaged in improper discharge of waste oil and falsification of the oil record book. Both the Department of Justice and the Environmental Protection Agency (EPA) have written policies providing that, in appropriate cases, they will forego criminal prosecution for companies with compliance programs. The EPA has exercised such forbearance in the past, although not yet in a maritime context.

The bottom line is that, for a ship owner or operator to avoid handing the federal government a signed confession in the form of an oil record book with false entries, the owner or operator must impress upon its engineering officers that they are to properly maintain and operate the OWS and to make accurate and contemporaneous entries in the oil record book. The engineering officers, particularly the chief engineer, must be given every incentive to do the right thing and no incentive to do the wrong thing.

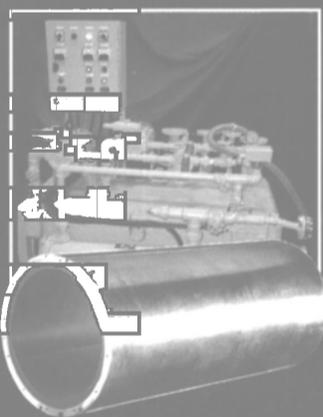
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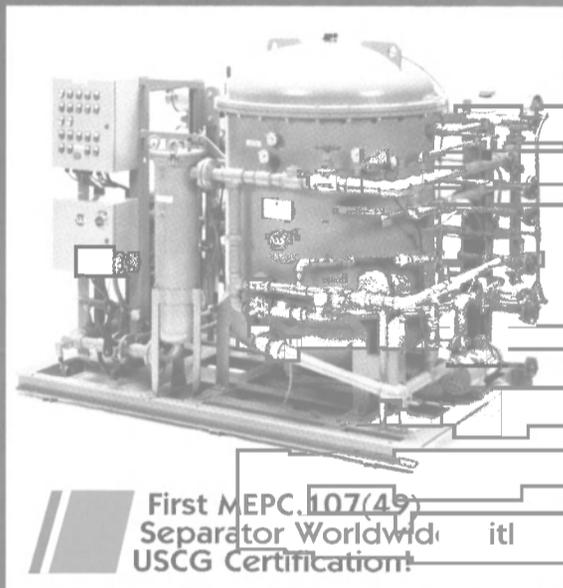
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## OMI to Pay \$4.2M for Waste Oil Dumping

OMI Corporation, was sentenced to pay \$4.2 million for illegally concealing the dumping of thousands of gallons of waste oil and sludge at sea. U.S. District Judge **Katharine S. Hayden** ordered OMI Corporation, to pay a \$4.2 million fine and serve three years of probation.

Judge Hayden also awarded \$2.1 million of the fine to a former OMI crew member who reported the crimes to the government.

In pleading guilty, OMI admitted that it had deliberately discharged waste oil, sludge and oily-water mixtures directly overboard from the oil tanker Guadalupe without the use of an Oil Water Separator. The deliberate dis-

charges were then concealed in a false and fictitious Oil Record Book.

The government learned about OMI's criminal conduct from an individual who once served as a member of the engine room department on the Guadalupe. In September, 2001, when the ship arrived in Carteret, NJ, the ship's 2nd Engineer walked off the ship and directly to the local police .

## Sabine Transportation Sentenced for Illegal Ocean Dumping

Sabine Transportation Company of Cedar Rapids, Iowa, admitted it deliberately dumped waste oil, sludge, and oily mixtures from the S/S Trinity, the S/S Juneau, the S/S Sea Princess, and the S/S Colorado without the use of required pollution prevention equipment, and was sentenced to pay \$2 million fine and three years of probation for illegally dumping thousands of gallons of waste oil, hundreds of tons of diesel-contaminated grain, and plastic wastes at sea. The deliberate discharges were concealed in false Oil Record Books. The government learned about the illegal dumping aboard Sabine ships from crew members who served aboard the S/S Trinity and the S/S Juneau. U.S. District Judge **Mark W. Bennett** awarded \$1 million of the fine to the three former Sabine crew members who reported the crimes to the government.

## Shell Safety Award Shuffles Off to Buffalo



**Sheamus Keehan** and **Marco Galizioli**, Manager Americas, Operation Technical HS&E, SMP U.S. present Shell's "Safety @ Heart" Award plaque to **Pat Studdert**, Pres., Buffalo Marine Service, Inc., Houston.

Shell Marine Products recognized Buffalo Marine Service, Inc., Houston as the recipient of Shell's "Safety @ Heart" Award (2004) in the "Best Barge Contractor" category. The nomination and selection was worldwide in scope. **Michiel Kool**, CEI, Shell Marine Products, extended his personal "thanks for the considerable effort you have expended toward making our industry a safer place to do business." **Pat Studdert**, President, Buffalo Marine Service acknowledged that selection and recognition by Shell Marine Products was an "honor" and recognition that "each day we attempt to do business that in a way that promotes a safer, cleaner and healthier environment in the Marine Industry" by a company such as Shell Marine Products (SMP) is a great "stimulus to all of us at Buffalo to continue our efforts." Buffalo Marine Service is a bunker company operating on the Texas-Louisiana Gulf Coast transporting bunker products for SMP.

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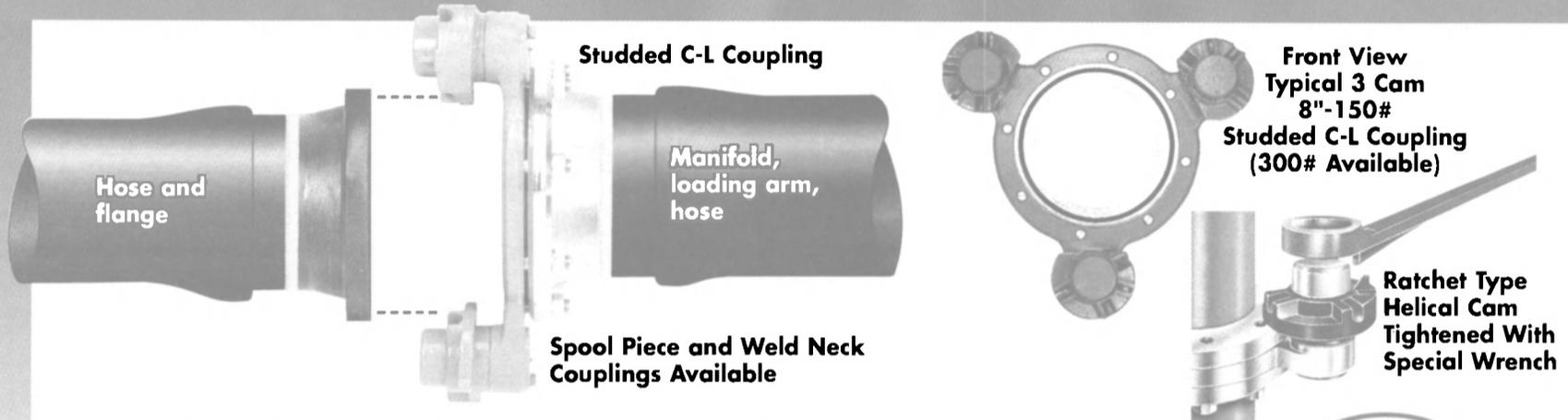
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## NASSCO Delivers Alaskan Frontier



National Steel and Shipbuilding Company (NASSCO) delivered the Alaskan Frontier, the first of four Alaska-class double-hull oil tankers being built for BP Oil Shipping Company, USA. Touted as state-of-the-art ships and environmentally friendly — backed by an innovative diesel-electric propulsion system, with redundant engines, shafts and screws, significantly increases reliability and reduces air emissions and maintenance downtime — the ship has been designed for a life of 35 years with a deck structure designed for a life of 50 years.

The ship uses seawater instead of oil to cool and lubricate their propeller shafts, thus eliminating the possibility of accidental oil leaks. Their cargo piping, normally installed on the deck, is inside the cargo tanks, to reduce the risk of small spills. "NASSCO was acquired by General Dynamics in 1998 and they have invested more than \$120 million since then to improve our shipbuilding technologies and production efficiencies," said **Richard Vortmann**, NASSCO president. "BP is the first customer to fully benefit from this investment." These double-hull ships measure 941 x 164 ft. (287 x 50 m) and boast a capacity of 1.3 million barrels of oil. The design of the tankers in the Alaska Class allows maximum flexibility for oil deliveries from Alaska to West Coast ports, including BP refineries in Los Angeles, Calif., and Cherry Point, Wash. The four ships are scheduled to be delivered between now and the end of 2006. Once completed, the four BP ships will be operated by the Alaska Tanker Company of Beaverton, Oregon, which operates BP-chartered tankers used in the Alaska North Slope trade. Alaska Tanker Company is 25 percent owned by BP.

Circle 24 on Reader Service Card

## Alabama Shipyard to Build Hopper Dredge

Alabama Shipyard has contracted with Manson Construction Co. to build a hopper dredge at its facility in Mobile, Ala. The 12,000-cu.-yd. hopper dredge, designed by Hal Hockema & Associates of Seattle, Wash., will measure 390 x 76 x 30 ft. Engineering and Planning for the

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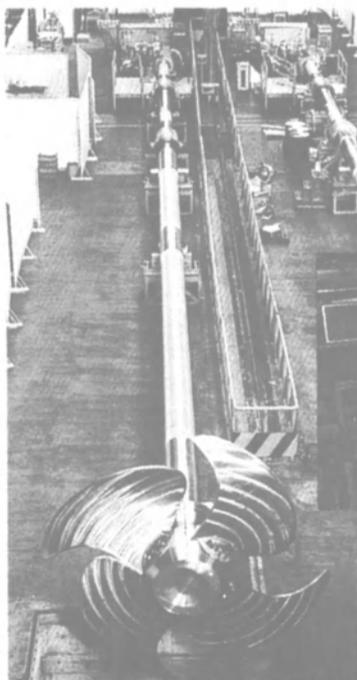
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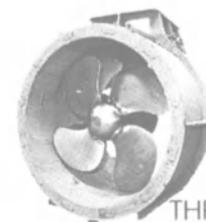
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SIDE THRUSTER

## New & Notable



hopper dredge has begun at the facility on Pinto Island, and steel cutting is set to begin in November 2004. Delivery is slated for October 2005. **Ron J. McAlear**, President of Atlantic Marine, Inc. said, "Manson is a leader in the marine construction industry and we are excited about the opportunity to work

with them on this project."

Manson Construction Co. Chairman of the Board, **Everett "Pete" Paup**, said "We are very excited about our association with Alabama Shipyard and their capabilities in vessel construction. Once complete, the hopper dredge will be the largest in the United States. Since 1978,

Congress has encouraged the development of a private hopper dredge industry to replace older USACOE dredges and Manson again responds with the building of this, our fourth, hopper dredge as the next step in that progression."

Circle 15 on Reader Service Card

## Merwede Tapped for Navy, Commercial Contracts



Multi-Role Vessel for Tenix Defence

Merwede Shipyard has been busy of late, announcing two significant jobs from the military and commercial sectors. On the military side, the company announced a contract for the design, engineering and building of one Multi-Role Vessel, for Tenix Defence of Australia. The vessel will meet or exceed all operational requirements of the New Zealand Ministry of Defense, including those for cargo and troop carriage, speed, endurance, helicopter operations and the secondary role of Exclusive Economic Zone (EEZ) patrol and response. This MRV is part of a total of seven vessels that will be supplied by Tenix Defence to the Ministry of Defence of New Zealand, and the vessel, built to the rules of Lloyd's Register, will take 22 months to build.

### Main Particulars:

The vessel has the following main particulars:  
 Length, o.a. .... 430.4 ft. (131.2 m)  
 Length, b.p. .... 377.6 ft. (115.1 m)  
 Breadth, molded .... 76.6 ft. (23.4 m)  
 Design draft, molded .... 18.8 ft. (5.6 m)  
 DWT .... 2,925  
 Speed, max. .... 19.6 knots

## Merwede Gets First Offshore Vessel Contract



Vessel for Solstad Offshore.

On the commercial side of the ledger, Solstad Offshore ASA signed a Letter of Intent with Merwede Shipyard to build an Ulstein P105 platform supply vessel, which signed a contract with reservations with Ulstein Design AS regarding the delivery of a design and equipment

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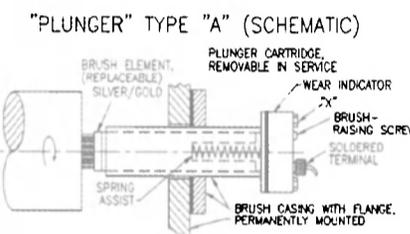
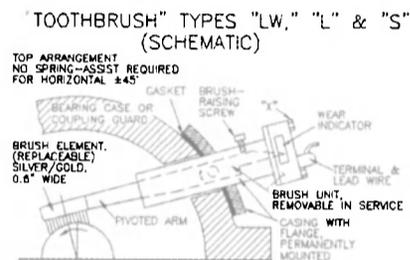
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Circle 228 on Reader Service Card

package worth a total of more than NOK 70 million. "This is Ulstein Design's first contract outside the Ulstein Group and is very important for us," says Ulstein Design's President, **Tore Ulstein**. The first Ulstein P105 platform supply vessel was built in 2003, and earlier this year contracts were signed for two new construction projects and one option. Ulstein Design will deliver the designs, a complete set of supporting drawings and equipment to the shipyard. "Among other things we are going to deliver the propulsion system, engines, cargo system and dynamic positioning system. In addition, through the Ulstein Group's electrical & control system company Ulstein Elektro, we will deliver all the marine electronics, switchboards, consoles and starters," said Ulstein Design's Vice President Market, **Erik Andreassen**. "As Ulstein Design's first foreign contract this is a very important project."

Merwede Shipyard is a new building and repair yard established in 1902, but this is the yard's first offshore vessel reference. To date it has built and delivered a wide variety of vessels, including dredgers, ferries, tankers and cruise ships. Steel will be produced in the Netherlands and the yard will commence work on the construction project in the autumn of 2004. The vessel is to be delivered in September 2005.

Circle 16 on Reader Service Card

### FBM Babcock Wins U.S. Contract



A BEB River Patrol in Iraq.

The U.S. Army's Tank Automotive and Armaments Command (TACOM) awarded FBM Babcock Marine a contract to commence the overhaul and modernization of its fleet of specialist Bridge Erection Boats (BEBs). The contract to upgrade the existing U.S. Army BEBs of Mk1 and Mk2 specification to

Main Particulars - U.S. Army Bridge Erection Boat-M22	
Length, o.a.	28 ft. (8.4 m)
Beam	8.3 ft. (2.5 m)
Draft	1.66 ft. (0.56 m)
Fuel capacity	72 gallons (270 liters)
Payload	4,400lbs (2,000 kg)
Hull	Aluminium alloy
Propulsion	2 x Cummins 210 marine diesel engines
Speed	30 knots

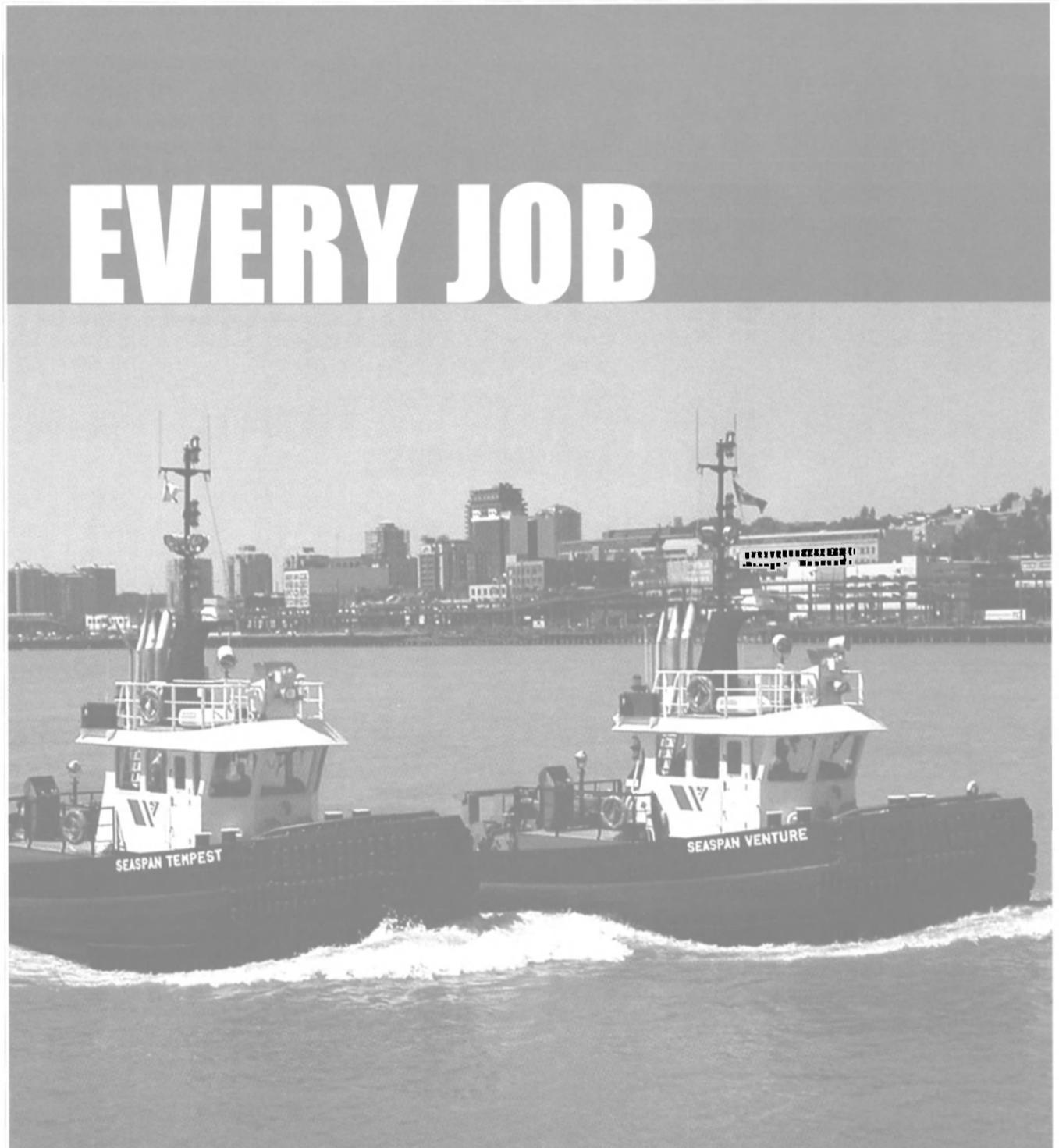
a new BEB-M22 specification will be managed by FBM Babcock Marine from Southampton in the U.K., in conjunction with Silver Ships Inc. of Theodore, Ala. The work to be performed under the modernization program will include condition assessments, structural and coating overhauls, replacement of obsolete equipment including new waterjets,

marine diesel engines and control systems, and the development of a new Integrated Logistics Support (ILS) package. FBM Babcock Marine has selected AM General for the ILS contract which will include new technical manuals, parts breakdown books, operational manuals and training packages.

Circle 17 on Reader Service Card

### New Vessels from VT Halmatic

VT Halmatic expanded its range of hull forms to include the Camarc Ltd. 16m pilot/patrol boat design, already proven in service with Associated British Ports (ABP) Port of Humber and the Port of Tees and Hartlepool. The hull — powered by diesel engines driving



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Circle 229 on Reader Service Card

## New & Notable

propellers or waterjets — features a Camarc design double chine noted for its excellent seakeeping abilities while maximizing crew comfort. Dependent on final specification, it is capable of service speeds up to 40 knots and a range in excess of 400 nm. Also recently available is the Nelson 44 catamaran, a stable, twin round bilge vessel noted for big deck and accommodation space.

A wide variety of superstructures and fit-out options ensure that this vessel is flexible, suited for survey, fishing, personnel and cargo transport, salvage and leisure uses. Twin diesel engines coupled to propeller, sterndrive or waterjet propulsion provide speeds of up to 25 knots and the ability to take to the ground. Finally the 7.7m Seaworker workboat offers an extremely stable

working platform and the ability to transport substantial payloads at speed. These craft are suited to inland waterways, rivers and estuaries, as they have a draft of only 0.4m. The GRP construction boat features power provided by either single/twin outboard motors or a single inboard diesel coupled to an out-drive leg or waterjet.

**Circle 18 on Reader Service Card**

## ABCO Launches Three New Boats

ABCO Industries Limited, Marine Group — located on the waterfront of Lunenburg, Nova Scotia — manufactures welded aluminum boats to 60 ft. The company has served the marine industry for 57 years, and during the past 15 it has developed a comprehensive line of aluminum boats. Three recent deliveries include:



### Pointe Caveau

Delivered in April, Pointe Caveau is a 48 x 16 ft. welded aluminum patrol boat for Canadian Coast Guard, propelled by twin Volvo D6 diesels through Ultrajet 376 waterjets to speeds of 33 knots



### ABCO 8m RIB

Delivered in May, this 26 x 10.5 ft. welded aluminum RIB for Ocean Exploration Whale Cruises is propelled by twin 130 hp outboards.



### Garret Cotter

Delivered July 27, 2004, this is a 32 x 10.5 ft. welded aluminum harbor patrol vessel for Halifax Port Authority. It is powered by a pair of 5.9l Cummins driving Ultradynamics 305 waterjets, and includes a Raytheon integrated electronics package; a walkaround deck to allow easy access to the bow, and exceptional performance and maneuverability, with speeds in excess of 39 knots.

It is currently in service in Halifax Harbor.

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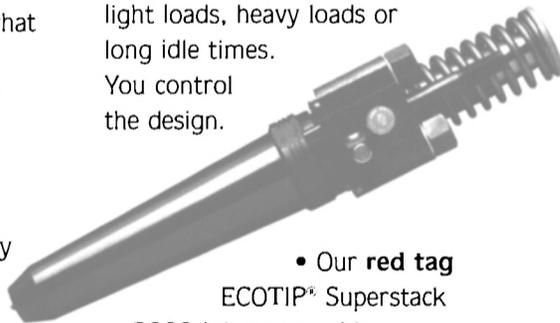
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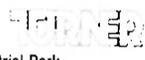
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## Willard Delivers New Hawaiian Tour Boat

Willard Marine Inc. delivered the Makaha Explorer, a Sea Force 730 capable of speeds over 40 mph, to Capt. John Charleston for his Hawaiian Tour Boat Company. The boat is a version of the standard U.S. Navy 7m/24-ft. RIB which has over 350 references. It was customized for Capt. Charleston and includes an extended canvas T-Top, centerline back-to-back seating for passengers as well as an enclosed self-contained head underneath the console. It was built and tested to meet USCG

Certification for a passenger-carrying vessel. The Makaha Explorer is propelled by twin Honda 130 hp engines mounted on an engine bracket to allow maximum usable inboard space for passengers.

Circle 23 on Reader Service Card



## China Shipping Choses C-Map

China Shipping Container Lines Co. Ltd., a subsidiary of China Shipping Group, is one of the largest Shipping companies in China, with a fleet of 103 containerships. In the beginning of 2003, when the construction of its new Xin Series began, it was decided to equip the 5,600-TEU vessels with Litton Sperry VMS ECDIS and the 4,200-TEU vessels with KH ECDIS. Both of these systems can read C-MAP charts, as well ARCS and 7Cs charts. China Shipping Container Lines Co. Ltd has made the decision to use C-MAP after extensive investigation and evaluation of different chart suppliers.

Circle 49 on Reader Service Card

## Globe Wireless Reorganizes

Globe Wireless appointed Frank Christophersen as its new Vice President of European Sales.

Christophersen joins Globe from Sperry Marine Systems. After seven years of leading the European Sales organization, Mike McNally will take the helm as the Vice President of Americas Sales. The Americas sales organization will be growing in the weeks ahead. Walter Kane, the current VP of Americas, will be transitioning into the new Product Management group. The Product Management team is comprised of Globe's best in sales, engineering, and customer and technical support. Shane Rossbacher has recently been promoted to Vice President and will lead this team.

## New Vietnam ShipConstructor Dealer

Albacore Research Ltd. (ARL) signed on Vinashin Engineering and Technology Joint Stock Company (Vinashin E&T) as the dealer for its flagship ShipConstructor software product for the Vietnam market.

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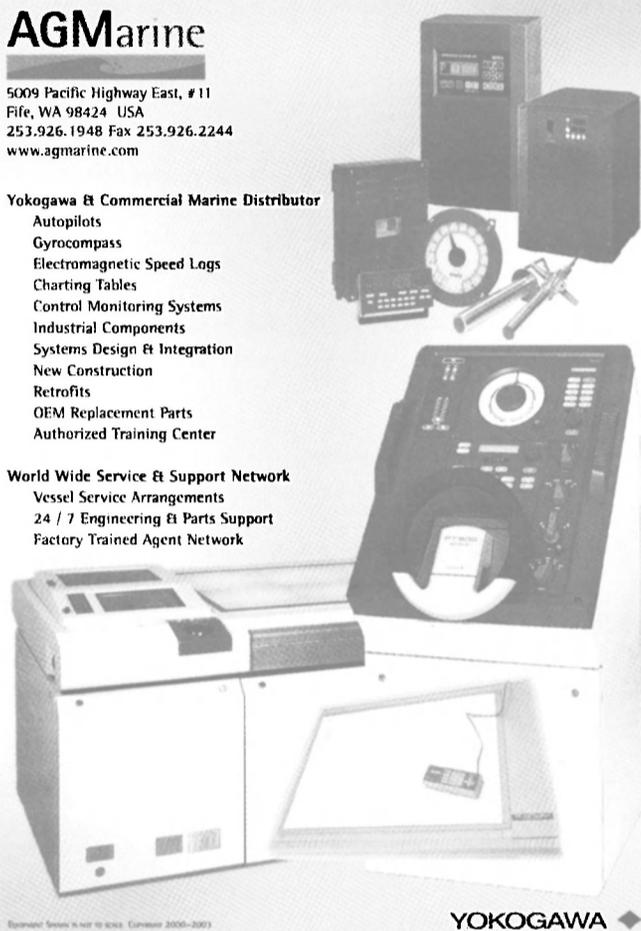
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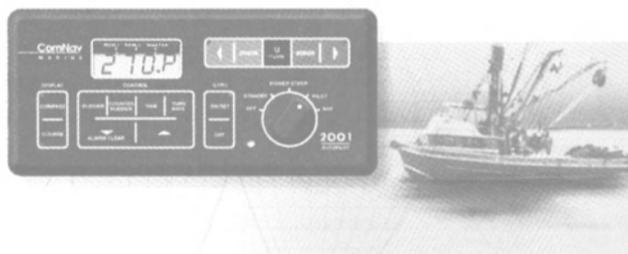
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## IR Generates \$64M in Orders

Ingersoll-Rand said its Climate Control Sector, a provider of solutions to transport, preserve, store and display temperature-sensitive products, has received approximately \$64 million in

orders in recent months for Thermo King-branded maritime transport containers and related technologies. The orders were placed by seven of the world's leading shipping companies, including Orient Overseas Container Line Limited (OOCL). More than half of the orders were placed for the

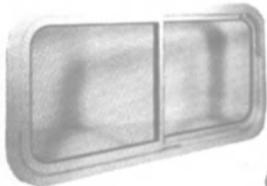
Thermo King MAGNUM container refrigeration unit, which is a refrigeration technology for seagoing containers with the ability to generate and maintain a temperature of minus 31 degrees F (minus 35 degrees C.)

Orders also were placed for the Thermo King CRR, a container refrigeration

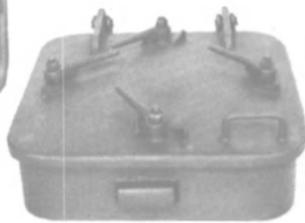
unit that provides advanced temperature control and energy efficiencies, and for Thermo King microprocessor-controlled generator sets. "Thermo King's new MAGNUM technology, combined with OOCL's service network, is enabling OOCL to create new markets for our customers," said Alfred Cheung, director, Reefer Trade, OOCL. **Circle 27 on Reader Service Card**

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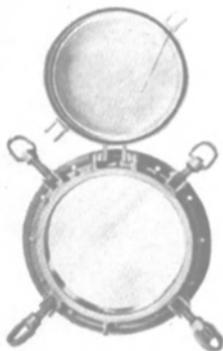
Sliding Window



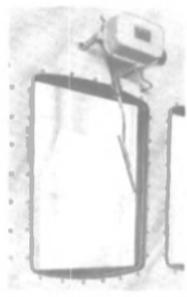
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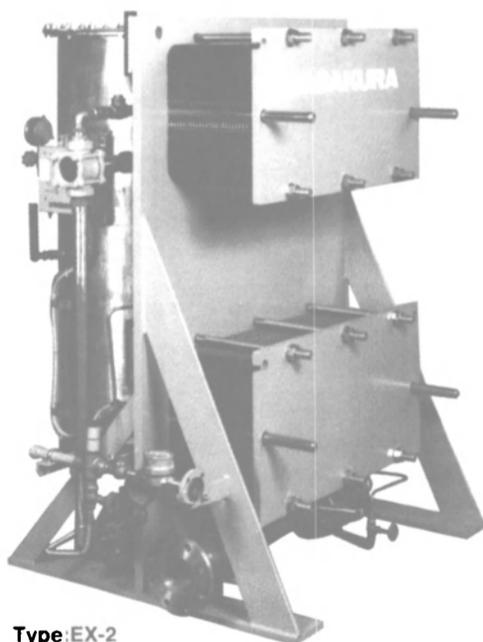
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## Austal, Raytheon Team for \$2B Ship Bid

Austal Limited teamed with Raytheon Australia to bid for the upcoming Australian Government tender to build two amphibious ships, which is due to be issued in early 2005. "By combining Austal's impressive track record of on time, on budget shipbuilding with Raytheon's expertise in electronic systems, we have created a powerful team to build and support the new amphibious vessels, along with considerable potential to bid for other naval contracts in the future," said Austal's Managing Director, Bob McKinnon.

The amphibious vessel project has an indicative cost of \$1.5 to \$2 billion. The preferred tenderer is likely to be identified by late 2005, with in-service delivery planned between 2010 and 2014.

## France Telecom Signs BGAN Agreement

On August 18 France Telecom Mobile Satellite Communications and Inmarsat signed the first distribution agreement for the new BGAN (Broadband Global Area Network) service. On its launch in H2 2005, BGAN will be the first mobile satellite communications solution to offer global coverage with data rates of up to 432 Kbps. Initially developed for land-based markets, maritime and aero versions of BGAN are currently planned for commercial launch in 2007. The service will be available via a portfolio of small, portable terminals, offering guaranteed throughputs at various speeds. Voice communications and data transfer via a 64 Kbps ISDN channel will also be possible.

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## IPS Delivers for Reinauer

The Marine Division of Industrial Power Systems has completed ABS inspections, functional testing, and delivery of the Main and Emergency Switchboards for the Reinauer Transportation ATB Tug, Meredith C. Reinauer. The Meredith C is the latest of three new tug and barge combinations built by Alabama Shipyard and Atlantic Marine. IPS Marine has provided the switchboards for all three projects.

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# Sideways to Swimmers: Unusual Tank Testing

Offshore supply vessels, passenger vessels, yachts. How much power is required and how will they ride in seas? These are the questions **Gerry Stensgaard**, P.Eng, and the staff at the Ocean Engineering Centre (OEC) of Vizon Scitec (formerly BC Research) usually answer. But over the years naval architects and others have asked for answers to some unusual questions. "They are open minded about special testing," says **Tim Nolan**, P.E., Naval Architect at Tim Nolan Marine Design, PC.

Special testing might mean a peculiar test of a typical craft. Or it might be basic resistance and seakeeping tests for an unusual craft; which might seem easy, but the test setup can become difficult. "We are solution oriented," says Stensgaard. "If someone has a problem, we try and come up with a setup that will give the answers."

Located in Vancouver, Canada, the OEC consists of a 220 by 12 ft. wide towing tank, whose carriage has a maximum speed of 19.7 ft./sec. Though most of the testing takes place in this tank, there is also an 8,700 sq. ft. wave basin with wavemakers. It is one of the few commercial towing tanks in North America.

A good example of unusual testing was for the new 50 x 22 ft. cable ferries replacing the 50 x 18 ft. ones already operating on the Missouri River in three locations near Great Falls, Montana.

Each ferry is attached to two cables across the river. One is the overhead trolley cable, which keeps the ferry from being carried downstream, and the other is the power cable, which pulls the ferry across the river. As **Mike Complita**, P.E., Project Engineer at Elliot Bay Design Group (EBDG) explains, "we needed to understand the load put on the cable system at all river flows. The only design literature we could find, remotely similar, was on offshore mooring systems. But the numbers we were getting for cable size were way too large compared to what's been in operation for 100 years."

To answer their questions they wanted to tow the models of the old and new ferries sideways to simulate the river current. Stensgaard reports towing the models sideways as opposed to lengthwise wasn't easy, "there was a suction force on the upstream side of the model, which with the normal testing setup, was pulling it under water. In real life the overhead cable prevents that, so we had to model them with load cells on wires to measure resistance."

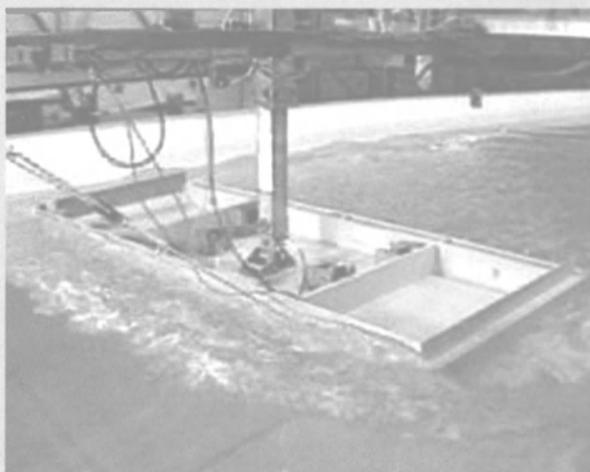
Another peculiar test involved pulling a model of the Puget Sound Pilot Boat beside a sheet of plywood. The boat is a 74 x 19 ft. waterjet propelled craft operating out of Port Angeles, Wash. According to **Ed Hagemann**, P.E., of Hage-Marine, Inc. (which collaborated on the design with Tim Nolan Marine Design), "We wanted to have a level



Testing a high performance swimsuit. (Courtesy Nike, Inc.)

boat, that is with zero roll attitude when along side, because the whole purpose of the pilot boat is to come along side a ship safely. The test set up duplicated the forces and moments from the waterjet and though not an exact representation, the plywood simulates the circumstance of being along side. The tow tank promised a boat that wouldn't roll and that's how it turned out. In fact, the transfer speed went from 8 knots with the old boat to 12 knots with ours."

Sometimes the answer the tank gives is not the one the naval architects want to hear. The M/V Empress of the North, is a Guido Perla & Associates, Inc (GPA) designed 360 ft., 235-passenger, coastal paddlewheel vessel for use in Alaska; which means it sees open water, not standard fare for what is typically a river boat design. As such, GPA did seakeeping tests on the hull design. "We flunked the first time," admits **Dave Pasciuti**, P.E., Vice President at GPA.



Pulling a model of the cable ferry sideways. Note the yellow cords simulating the cables to the trolley. (Courtesy Vizon Scitec with permission)



Seakeeping test of the coastal paddlewheel M/V Empress of the North. (Courtesy Guido Perla & Associates, Inc.)



Test set-up for simulating Puget Sound Pilot Boat along side a ship. The sheet of plywood (with bootstripe) simulates the side of the ship. (Courtesy Vizon Scitec with permission)

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## SNAME Annual: Ship Design & Testing

"With the open deck structure we found we had some real problems. We had to modify the hull shape in the main deck area to make it more ocean-going-like."

Another example shows that testing can be used in retrofit situations and, even with computer modelling now readily available, tank testing is still needed. EBDG was asked to improve

the performance of the Spirit of Endeavour, a 217 ft. x 37 ft. small cruise ship. They suggested three options: a stern extension, a bulbous bow, or both. Testing was done on the base hull, each improvement separately, and in combination. From the tests, "it was surprising how much the stern extension improved performance," says **Doug**

**Wolfe**, P.E., Vice President at EBDG.

The bulb selection and testing was interesting in itself. According to Stensgaard, "Elliot Bay wanted to try a new bulb optimization computer program just out of academia. So they had an 'optimum' bulb designed for retrofitting onto this vessel. Then we checked the resistance in our tank and found the

bulb successfully increased the resistance by over 10%. So we went to work to change the shape of the bulb based on our previous testing experience and managed to reduce the resistance to below the baseline."

Compared to other tanks around the world, the OEC is on the small side. "It can't do large stuff or manouevering," says Wolfe. Pasciuti adds, "It's too small to do self propelled tests." Stensgaard admits, "if nothing else we're honest. We'll tell somebody when we're not appropriate. I think as a result, many of our customers are repeat customers." And even though they can't do direct quantitative tests of larger vessels, Stensgaard points out, "we can still quickly do comparative and qualitative tests." He cites water-on-deck studies for both BC Ferries and Alaska State Ferries as examples.

Boats and ships aren't the only things the OEC has tested. "We've tested fishing nets, log booms, seaplane floats, hovercraft, SWATHs, articulated tug-barges, even a planing armoured personnel carrier," reports Stensgaard. In fact by attaching a full scale mannequin to the towing carriage, Aerosports Research, an aero/hydrodynamic consultancy that works with Nike, has used the towing tank to test the drag of swim suits. According to Len Brownlie, President of Aerosports Research, "we've found different fabrics have as much as a 6% difference in drag between the best and worst, even for the same fit and cut." Brownlie likes the tank because compared to other facilities like swimming flumes, "it offers precise velocity control and excellent repeatability on drag measurements."

Hagemann summarizes the facility, "even though it's a fairly straightforward tank, that makes it affordable. So with ingenuity and forethought one can design a test off the beaten path and walk away having learned something or verified something."

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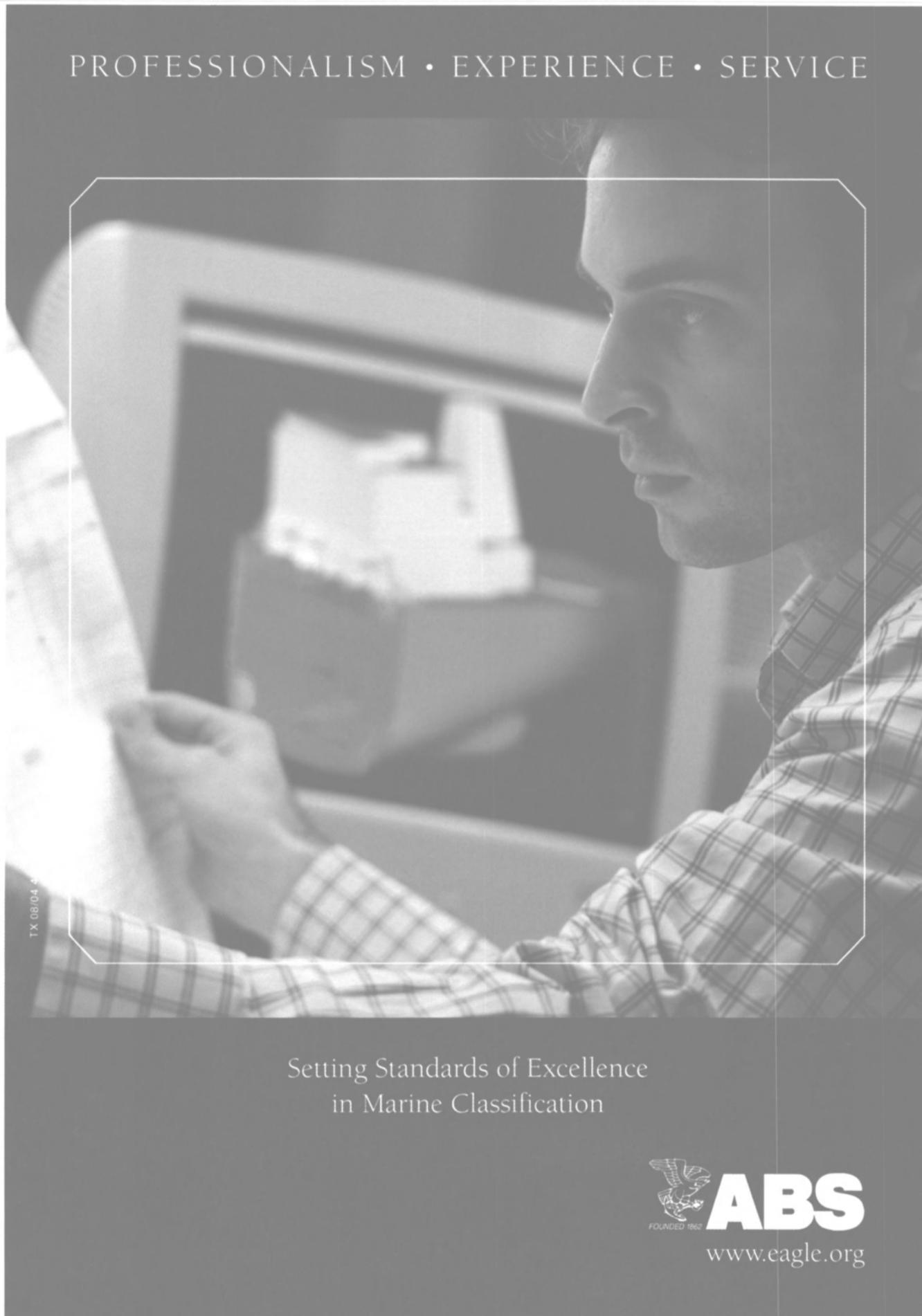
### Mark Your Calendars

The SNAME Annual Conference & Exhibition is scheduled to take place from September 30 to Oct. 1 in Washington, DC.

SNAME will once again offer a technical program second to none, packed with interesting papers covering a wide spectrum.

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Turn to page 83 for full details.

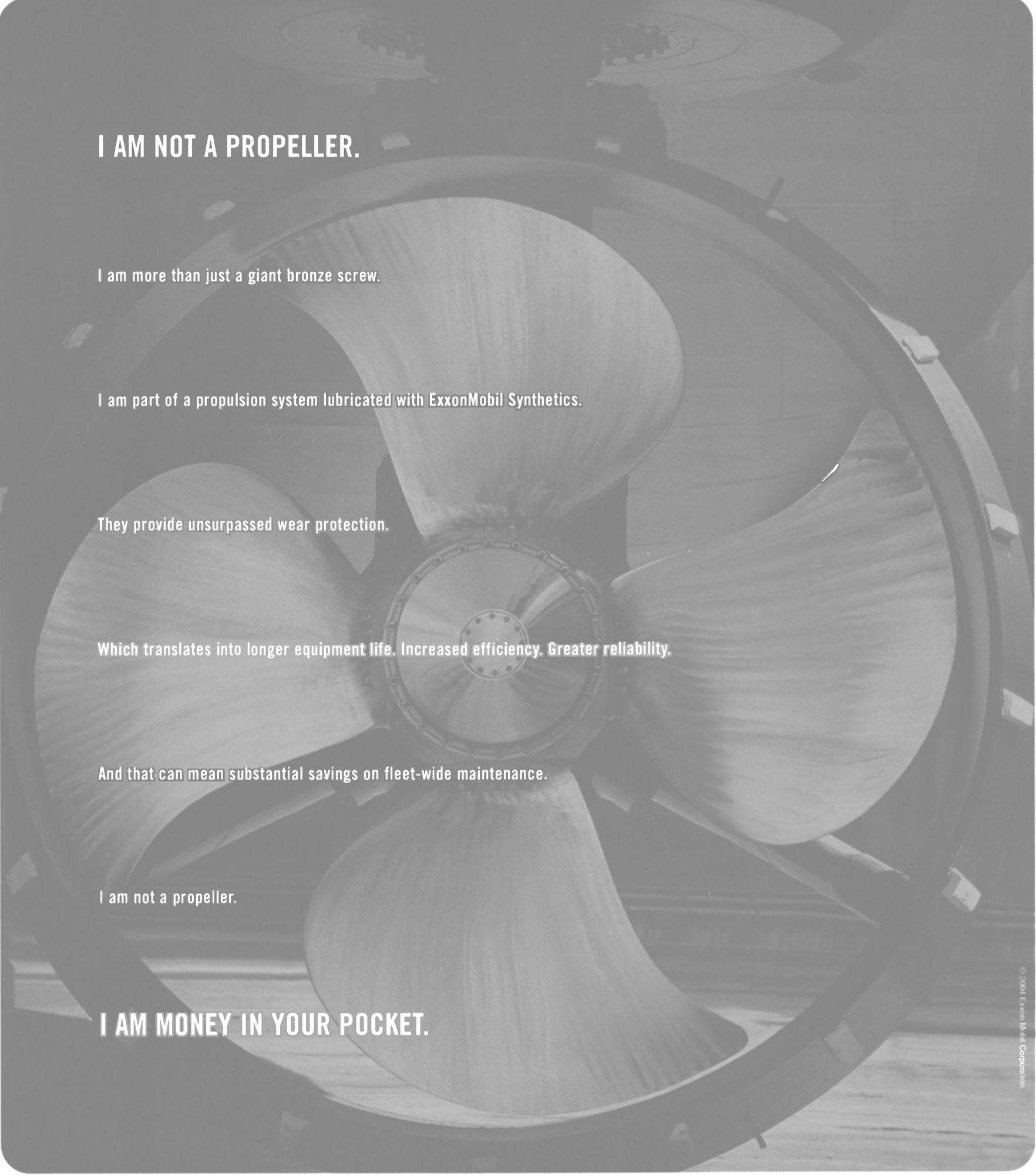


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*moving AHEAD*

# Current Uses of FEA in Shipbuilding

By Tony Abbey, Technical Manager,  
Noran Engineering, Inc.

Finite Element Analysis (FEA) was developed in the Aircraft Industry in the late 1950's as a way of handling the more complex structures that were evolving. Finite Element analysis has been used in the maritime industry for many years. Lloyds Register and other certification authorities were very early adopters of the technique.

The NASTRAN FEA code was developed by NASA in the early 1960's to standardize FEA methods across contractors for the major Aerospace projects such as the Moon program and F-111. It was commercialized in the early 1980's. NE NASTRAN was introduced in the mid 1990's with the emphasis on the PC environment to avoid the expense of the mainframe computing bottlenecks that many large contractors were experiencing.

Since then NE Nastran has gone from strength to strength and has achieved great success in the Maritime marketplace.

The maritime environment can be very harsh and unforgiving to designs that are not able to absorb the punishment meted out. Typical challenges include:

## Stiffness

A high performance yacht mast designed for the Americas Cup or a warship communications mast must both be

able to withstand the high wind and inertia loads without being overly flexible.

Failure to achieve required stiffness will result in performance degradation and even promote other failure modes. Noran Engineering has been involved in non-linear analysis for these vessels where the effect of tension stays is vital to the design.

## Strength

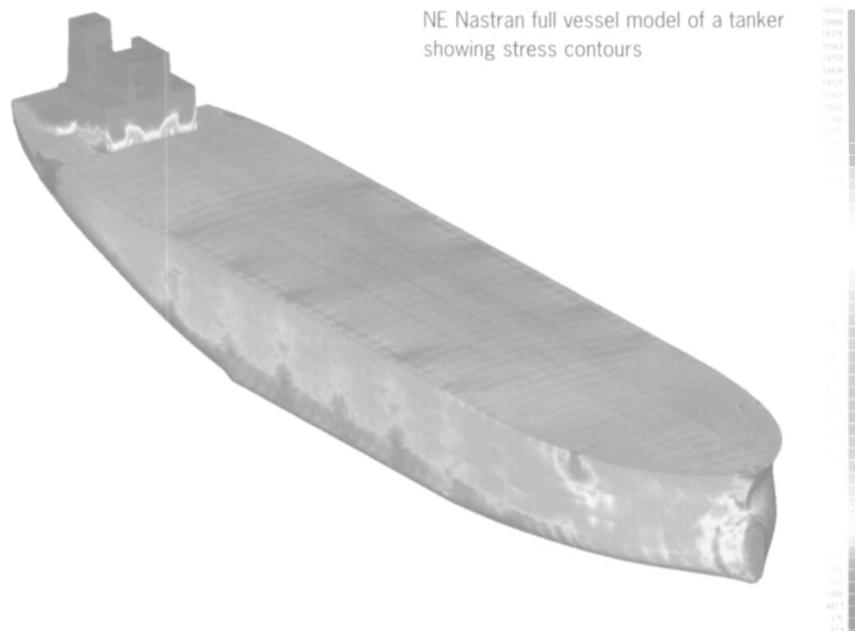
This is a primary concern in all designs. NE Nastran has been used to investigate the strength of all classes of vessels under sea loading, from hogging and sagging of tankers spanning adverse wavelengths to the structural integrity of high-speed patrol boats. One of the key advantages of the FEA method is that a whole vessel model can be created relatively quickly and then a wide range of loading conditions can be studied. The survey techniques using contour plots in the NE Nastran post processor allow rapid assessment of design or modification suitability.

## Vibration

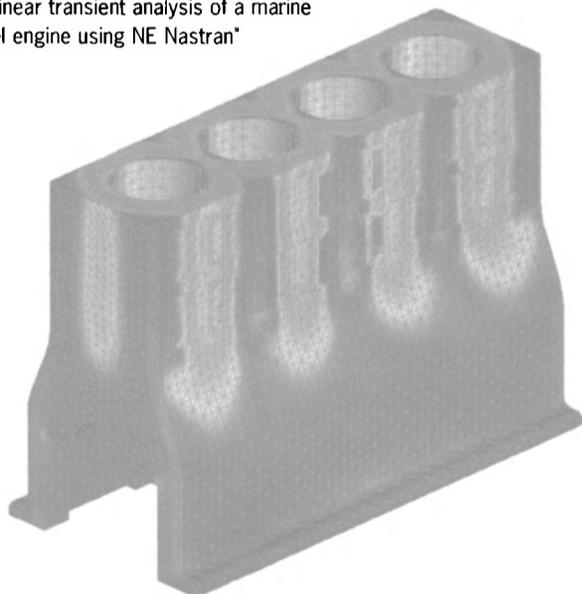
The ocean is a dynamic environment and the propulsion and transmission systems of vessels are often complex in nature. It is important to be able to predict the natural frequencies of the vessel to avoid resonance, both to avoid structural complications and to improve the operating environment for both crew

and passengers. NE Nastran is regularly used to carry out complete modal surveys of whole ship models. The size of these is often very large, up to 5 million degrees of freedom, and requiring over 500 natural frequencies to be found. The last two releases of NE Nastran have focused heavily on improving the speed and efficiency of these techniques. The Post processor has been dramatically improved to ease visualization of what are the important structural modes, and separating them from the 'clutter'. Database storage techniques and Mode selection tools have all added to the improvement in productivity.

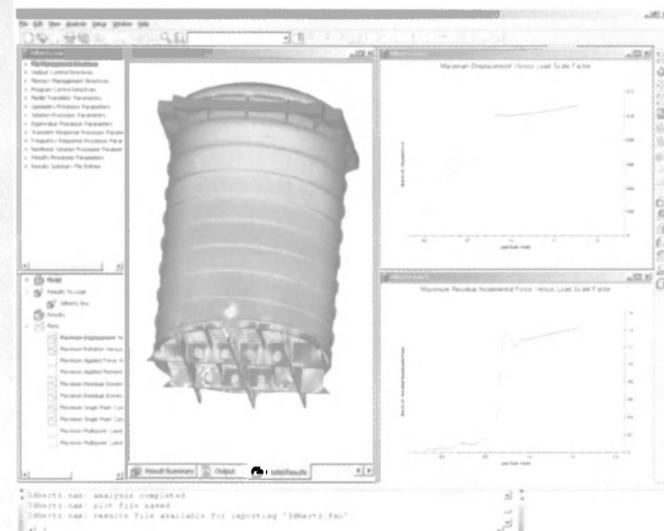
NE Nastran full vessel model of a tanker showing stress contours



Non-linear transient analysis of a marine diesel engine using NE Nastran



Section down the centre line of an NE Nastran full vessel model of a tanker, showing stress contours



NE Nastran non-linear analysis of a liquid container located inside a ship. The NE Nastran Editor shows a contour plot and the analysis history

of setting these analyses up are very straightforward using the integrated pre-processor. The DDAM interface in particular has been widely praised for its simplicity and convenience when dealing with confidential data.

Impact due to ship collision or slamming of high speed craft can be studied using the nonlinear capabilities of NE Nastran. Key here is the ability to define general 3D contact surfaces between structural components or sea surface.

**Fatigue**

The survival of a vessel or offshore structure throughout its life is evaluated by conducting a fatigue analysis using NE Fatigue. The important ingredients here include defining the S-N curve applicable to the steels being used. This comes down to aligning the S-N curve to the steel classification levels, both for commercial vessels working to Certification Codes and Naval vessels working to naval requirements. The other data needed is the loading history of the vessel. This is very complex for a vessel which travels across a range of oceans. NE Fatigue allows the creation and matching of loading spectra or time history events that match the various definitions.

Where critical sites are to be investigated such as early cracking zones, weld failures etc., NE Nastran Fracture Mechanics is used to evaluate the stability of the crack to see if there is likelihood of propagation.

**Composite**

Most maritime applications involve ferrous materials, however lighter patrol vessels, surface effect vessels and yachts use a large composite content. NE Nastran is able to model complex ply lay-ups, using real draping techniques if required, to map accurately the characteristics of the composite structure and its response. Composite failure criteria can be used to assess the strength of the structure and visualize the stress or strain on a layer by layer basis. A design 'ply book' can even be created if required.

**Naval D-Dam**

For U.S. Navy vessels subject to severe shock loading, the Dynamic Design Method is a well proven technique. NE Nastran fully supports this method with a very simple and elegant interface which allows the user to maintain the integrity of any sensitive data. The training classes given by Noran Engineering in support of this product have been highly acclaimed as giving engineers a real insight into the process.

**Where Does NeiNastran Fit?**

NEiNastran can be used for early design evaluation, often utilizing a large 'Macro' model. Structures can be created rapidly and material properties and loading applied. As the design becomes more refined, the structure can be split into zones and the fidelity of the FEA mesh increased to capture more local details. A local model can be developed

which allows the influence of the surrounding structural stiffness and loading to be mapped from the macro model. Design iterations can be tried out rapidly using this technique. Finally NE Nastran can be used to carry out a full detailed analysis of the final design. The database methods used in the NEiNastran modeler are powerful enough to handle the housekeeping

involved with many millions of degrees of freedom, assemblies and parts. Noran is working with several specialist ship-building suites such as MAESTRO from Proteus Engineering to allow even more powerful creation of whole ship models in a rapid and accurate manner.

**CAD**

NEiNastran Modeler can import a

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## SNAME Annual: Software Solutions

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### Skill Level: Networks

A very recent and exciting development has been the introduction of

NEiWORKS which is an embedded Solidworks tool, allowing the design engineer access to the power of NEiNastran through a very comfortable user interface.

For any design or manufacturing organization using Solidworks, this

opens up enormous potential in being able to carry out advanced analysis and, very importantly interchange analysis data and results with mainstream Nastran users, including NE, NX, MSC etc.

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## BMT Aims to Improve Vessel Evac

Trials measuring the ship evacuation performance of passengers in conditions including smoke and rolling motion are being conducted as part of a research project led by British Maritime Technology Ltd. (BMT) and co-funded by the European Union. The goal: produce a FIRE-EXIT simulation tool that will equip the marine industry with a ship evacuation, fire and abandonment simulation tool that is a significant improvement over the level of reliability, realism and design utility available from existing systems. The software will enable the design of safer vessels, optimization of ship layout and emergency procedures and will also assist in ensuring that, in the event of a fire, passengers move as quickly and safely as possible to their assigned lifeboat stations.

For the first time a large-scale, smoke-filled test facility capable of dynamic motion superimposed over an angle of heel is being used with volunteer "passengers" for live trials. This follows major enhancements to the Ship Evacuation Behaviour Assessment (SHEBA) facility that provides a uniquely realistic insight into the evacuation process. Full-scale abandonment trials are also being conducted in Canada. Volunteers are timed and behaviour videotaped as they escape from muster stations via inflatable slides and vertical chutes as they cross a collection platform and enter life rafts and lifeboats. Model tests have been performed to measure lifeboat launching performance in high sea states. Data collected from these trials is being incorporated within the maritime EXODUS ship evacuation software and the fire simulation software SMARTFIRE, both of which are developed by the Fire Safety Engineering Group (FSEG) of the University of Greenwich, which is also part of the research consortium.

The FIRE-EXIT consortium also includes the University of Greenwich, AVEVA AB, BMT Fleet Technology Ltd, and the Institute for Ocean Technology at the National Research Council of Canada.

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Maritime Reporter & Engineering News

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IT SOLUTIONS AT SEA AND ASHORE

Circle 306 on Reader Service Card

## SNAME Annual: Software Solutions

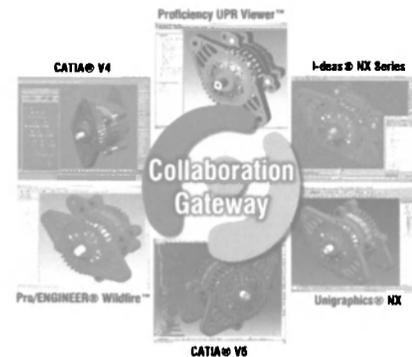
### Proficiency Provides Collaboration Tool

Proficiency's Collaboration Gateway software is designed to allow OEMs, suppliers and partners to collaborate on the design of complex products regard-

less of CAD format. The web-based application provides feature-based data exchange between the major mechanical CAD applications including Dassault Systemes' CATIA v4 and CATIA v5, PTC's Pro/ENGINEER and Pro/ENGI-

NEER Wildfire, and UGS' Unigraphics NX and I-deas NX Series.

Proficiency's automated approach provides customers, such as Wartsila Switzerland, with a sophisticated level of CAD interoperability through the



sharing of "design intelligence," including features, dimensions, history, assemblies, meta data and other information.

Circle 68 on Reader Service Card

### Seagull Releases CES V4.2

Seagull released its CES version 4.2, a screening tool for evaluating competency and verifying the knowledge of candidates or new hires. Enhancements from the previous version include essential knowledge relating to the ISPS security code. The CES security code upgrades compliment Seagull's Ship Security Officer Training Program, approved and endorsed by numerous international maritime authorities. CES V4.2 will be provided to current customers as an automatic upgrade under their subscription agreement.

Circle 69 on Reader Service Card

### Advance in Planned Maintenance Systems Approved



DNV approved MAINTelligence from Design Maintenance Systems Inc., a Planned Maintenance System (PMS) that is designed to offer significant advance to the marine industry. MAINTelligence is designed to allow all ship maintenance requirements to be managed by a single system using a single database, helping to simplify the process that ship operators must follow to avoid opening up components for class survey.

"This is truly a significant advance in marine condition monitoring," said Paul Jamer, MarEng, VP Technical & Product Development, AKA Group. "Marine companies that use

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## When we finished our latest OSV, some people thought we had our math wrong.

### ONE YEAR'S PRODUCTION



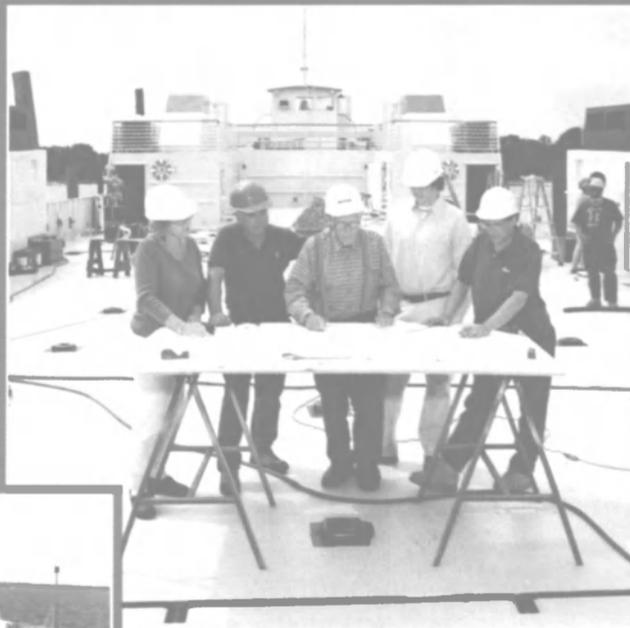
Hull 312: Atlantic 130 Crowther-designed aluminum catamaran 442 passengers 35 knots. Delivery: July 2003



Hull 316: Harbor Queen, 84' upscale two-deck 149-passenger dinner boat. Delivery: October 2004



Hull 315: Isleño, 35' 3200hp, 14-18 knots, quad-screw shallow draft (7'-6" max), 400 LT capacity, 200 passengers, 4 trailers or 40 cars, ocean-route OSV-type vessel. Delivery: August 2004



Blount Boats' recently-launched 155' OSV *Isleño* came in at a total cost that was about half that of a similar OSV-type ferry built elsewhere. How was this possible? Founder Luther Blount maintains a simple and straightforward approach to boat-building that combines quality craftsmanship with proven designs. It's a philosophy that has paid off for three generations of Blount-built boats—delivering durable, classic vessels while providing remarkable savings.

So after fifty years, it's no surprise that nearly every one of the 316 Blount boats remains in service.

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MAINTelligence can now more easily leverage their programs to assist in reducing the costs associated with class inspections." Users of MAINTelligence may apply to DNV for a PMS Implementation Survey where machinery components are assessed based on the documented maintenance history contained in MAINTelligence, rather than through mandatory physical inspection.

This gives an approved tool for simplifying the process of class surveys, planning the maintenance management functions and implementing a predictive maintenance program all in one system and in one database. MAINTelligence can also manage engine room data logging requirements, using intrinsically safe handheld computers.

Circle 66 on Reader Service Card

### Emmi Network Launches Shipcontrol.com

ShipControl, designed for the management of shipping companies, shipowners, maritime transport and merchant marine, offers a range of applications and flexibility. Shipping companies can control their fleets from the site [www.shipcontrol.com](http://www.shipcontrol.com) through the new positioning system from an Internet-enabled computer. They will obtain in real time the position, course and speed of the vessel represented on an elaborate marine chart. Emmi Network develops customized applications for the different shipping companies as has been done with the Spanish firm Transmediterranea one of the first companies to use the tracking system.

Circle 70 on Reader Service Card

### Kongsberg Launches New Simulation Software

Kongsberg Maritime launched Polaris 4.4.0, the latest version of its Polaris bridge simulation architecture. The fully scaleable Polaris 4.4.0 software forms the basis of either PC based desktop simulation systems or multi-channel full mission simulators based on real-life bridge consoles and layouts. New communication functionality of Polaris 4.4.0 on both desktop and full mission systems includes: Communication system



(Voice on LAN) - Intercom, VHF, MF/HF, UHF, Inmarsat B and Inmarsat C: VHF - Military VHF channels 39, 90 are implemented in the VHF station: Loran-C - New Man Over Board (MOB), signal strength and circular error probability functions.

New or upgraded navigation functionality includes: Bird's eye view - Lighthouse and fairway are implemented as symbols on bird's eye view on the instructor graphics: Navigation Conning - new parameters, barometer, dew point and humidity: Radar overlay on ECDIS

- choose which radar slave you want to display radar overlay from: Radar-side lobe - target changes in size and bearing, when this function is activated.

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(Continued on page 79)

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## NAVIGATION / GMDSS

Maritime simulators and training concepts



The Poseidon Borealis Simulator is a modular system that can be extended from a stand-alone Radar/ARPA simulator on a single PC to a complete bridge set up with ship manoeuvring levers and 360 degrees visual simulation.

Engine room simulator and fishery simulator can be optionally integrated in the bridge simulator set-up.

The Poseidon GMDSS Simulator system has for years been the world-leading tool for GMDSS GOC/ROC training.

In addition to the IMO STCW'95 compliant GMDSS simulator, Poseidon offers comprehensive teaching aids, instructor training and consultancy.

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Circle 232 on Reader Service Card

# Flensburg Makes its Mark Again

By David Tinsley, Technical Editor

In a further display of hard-earned competitiveness tempered by pure industrial will, Flensburger Schiffbau-Gesellschaft has brought another export shipbuilding contract to Germany at a time of ever-more determined incursions by oriental yards into the European market. The Flensburg yard's sealing of a deal with Belgian shipping and logistics company Cobelfret for two container/RoRo (ConRo) vessels has strengthened its standing as a builder of large, RoRo equipped vessels for demanding shortsea trades.

The Cobelfret newbuilds have been dubbed the Humbermax type, having been optimized for North Sea service linking the company's new Killingholme terminal on Humberside, in eastern England, with Zeebrugge and Rotterdam in the Low Countries. The five-deck design offers a RoRo stowage



Flensburger has significant experience in delivering advanced combined carriers, as evidenced by its RoRo 2700, a 13,300-dwt, 22-knot, 2,700 lane meter ship.

of about 3,900 lane-m, corresponding to about 258 trailers, and a container intake of 848-TEU on four of the cargo decks. The capacity and flexibility of the design is intended to allow Cobelfret to meet forecast traffic growth.

The RoRo volume is akin to that of the new generation of DFDS Tor Line trailerships of the Tor Magnolia class. Flensburger's success in landing the Belgian order has been preceded this year by a commitment by DFDS to a

sixth example of the Tor Magnolia type, and by the award of a repeat contract from Turkish Client UN RoRo (formerly UND Ro-Ro) for two RoRo freight vessels of 3,700 lane-meters.

In cementing the deal with Cobelfret, the Flensburg shipyard has achieved a remarkable sales tally of 25 RoRo equipped vessels since the end of the 1990s. Its modest facilities at the head of Flensburg fjord, centered on a single, fully-enclosed slipway building berth, belie its standing as Europe's most prolific producer of large ro-ro tonnage, and attest to a preoccupation with yard organization, build practice and design added-value.

The latest contract takes the delivery program into the second quarter of 2007 and, at the time of writing, the yard was understood to be chasing a Canadian ferry project.

Circle 38 on Reader Service Card

## SMM 2004: Ready for the World

**SMM 2004 - 21st International Shipbuilding Fair in Hamburg, September 28 -October 2, 2004**

SMM 2004, arguably the largest and most influential gathering of the marine industry in the world, is set to convene again in Hamburg, and according to many indicators, the exhibition should be a larger success than ever.

World shipbuilding figures are hitting record heights in the run-up to the the 21st Shipbuilding, Machinery & Marine Technology, International Trade Fair Hamburg, which is scheduled to be held at the Hamburg Fair site from September 28 to October 2, 2004. According to the statistics of Clarkson Research, the shipyards delivered 1,034 newbuildings worldwide, with a total of 36 million GT and 21.7 million CGT (Compensated Gross Tons.)

Asia underscored its position in international shipbuilding, with a total of 16.7 million CGT, equivalent to the total newbuilding tonnage of the previous year. South Korea's shipbuilding industry completed 229 vessels with 6.9 million CGT. Thus South Korea accounted for 31.8% of world production in 2003, and reaffirmed its leadership a little ahead of Japan, whose yards produced 325 newbuildings with 6.8 million CGT (31.3%).

The duel between these two leaders could soon become a three-way contest, as demonstrated by further growth in China's market share. The shipyards of the People's Republic had an output last year of 142



newbuildings with 2.4 million CGT, a share of 11.1%. They were followed a long way behind by the Europeans Germany (4.1% CGT market share), Italy (3.7%), France (2.3%) and Spain (1.8%).

Among the newbuildings delivered in 2003, crude oil tankers were in greatest demand, with 159 newbuildings and 13.3 million GT/4.9 million CGT, that is a share of 22.6% measured in CGT. There were 179 containerships with 6.2 million GT/4.4 million CGT, that is 20.3% of CGT tonnage, followed by product/chemicals tankers (3.1 million CGT/14.4%), bulk carriers (3.0 million CGT/13.8%) and passenger ships and fer-

ries (2.0 million CGT/9.2%).

In terms of orders received by shipyards in the past year, Korea increased its lead with 531 newbuilding orders/17.6 million CGT, to a market share of 41.2%. Japan's shipyards received orders for 526 units with 12.5 million CGT, a share of 29.3%. China moved closer with 352 newbuildings/5.9 million CGT and a market share of 13.8%.

German shipbuilders received orders for 83 ships with 1.5 million CGT (3.5% market share). Taiwan rounds out the Top Five, taking 32 newbuilding orders with 0.9 million CGT (2.1%).

The newbuilding orders are also characterized by an unbroken boom in containerships, which lead the order lists by far with 499 units and 15.7 million CGT (36.8%). They are followed by crude oil tankers (272 ships/7.8 million CGT/18.3%), bulk carriers (377 ships/6.8 million CGT/15.9%) and product/chemicals tankers (353 ships/ 5.0 million CGT/11.7%).

The SMM 2004 in Hamburg is expecting more than 1,400 companies from over 50 nations, and 40,000 trade visitors from all over the world. The SMM 2004 is the premier fair for the world's shipbuilding industry, with a comprehensive range of maritime high-tech. It is the platform for innovations and knowledge transfer in all areas of the maritime industry.

For more information visit [www.smm2004.com](http://www.smm2004.com)

## Voith to Exhibit VWT Baut at SMM

At this year's SMM in Hamburg, Voith Turbo (Hall 5, Stand 212) will highlight the new Voith Water Tractor (VWT) Baut (pictured right) which has been put in service by Bukser og Berging A/S in Oslo. It is the fifth VWT of the Bukser fleet, but the first fitted with optimized blades. In addition to Baut, the largest ferry currently in service on Lake Constance will be shown, attracting attention by its unusual design.

The company's R&D team will introduce the latest developments of the

Voith Schneider Propeller. The new, modified blades and optimized kinematics improve the overall performance of the propeller. A new Voith Schneider Propeller generation has been created.

From its Power Transmission Division, Voith Turbo will present its range of constant-fill and fill-controlled

Voith Turbo couplings. They are designed to provide better sailing comfort and easier handling, while protecting against overloads and failures. Areas of application are main marine and auxiliary drive systems, for example on transport and cargo vessels, tug boats, administration-owned ships and special



## German Shipyards Propose Merger

On May 16, 2004 ThyssenKrupp and One Equity Partners (OEP) signed a non-binding letter of intent to combine ThyssenKrupp Werften and Howaldtswerke-Deutsche Werft (HDW) in a new group under the control of ThyssenKrupp Werften GmbH. The alliance will create a systems house with strong positions in the naval shipbuilding sector.

"Under the new structure all existing locations will be retained," says Dr. **Olaf Berlien**, Chairman of the Executive Board of ThyssenKrupp Technologies AG. Based on the existing key activities of the individual shipyards, the new group will concentrate on four product areas: submarines, naval ships, civilian ships and repairs. The locations Hamburg, Emden and Kiel will each be developed into centers of excellence with clearly defined product responsibility. This will safeguard the locations long-term and create a balanced development perspective. The Hamburg location will concentrate on naval surface ships and mega yachts as well as the repair business. Emden will be the location for naval and merchant surface ships, while the submarine activities will be concentrated in Kiel.

It is envisioned that the new structure offers decisive advantages for project management compared with the current common practice of work sharing for submarines and naval ships. In addition, the concentration of each activity at one main location will reduce logistics expense in the future.

The merger agreements are to be signed until the end of September. Subject to the approval of the relevant supervisory bodies of both partners and the competent authorities, the merger is expected to be completed until the end of December.



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## Germany • SMM Preview

marine vessels.

Another highlight is the new compact Hycon connecting coupling by Voith Turbo Safeset.

Especially in the shipbuilding industry, low weight is of highest relevance to obtain manoeuvrability and higher speeds. Thanks to a friction factor that is

substantially higher than that of conventional couplings, Hycon couplings enable operators to achieve higher transmittable torques with a smaller component. They can be found in the drivelines of ships between engine and propeller and/or jet.

Circle 36 on Reader Service Card

## Blohm + Voss Repair Wins Business

Earlier this year, the Black Prince of the Fred. Olsen Cruises Line shipping company docked into Dock 10 of Blohm + Voss Repair GmbH. The cruise liner was originally constructed in such a way that it was able to be employed on the

one hand as a passenger liner and cargo ship, and on the other as a passenger and car ferry. The Black Prince was converted into a pure passenger liner in 1986.

A maximum of 451 passengers can go on a cruise in the 241 cabins of the Black Prince. The last full renovation took place in 1999. The 464.6 x 66.5 ft. (141.6 x 20.3 m) ship, with a draft of 21 ft. (6.4 m) is now receiving a new crankshaft on the port side at Blohm + Voss Repair. Moreover, some paint work has to be carried out in addition to retouch work on the engine plant.

## MS Europa

The MS Europa five-star-plus luxury cruise liner from the Hapag Lloyd Kreuzfahrten GmbH was expected to arrive at the dock of the Blohm + Voss Repair GmbH on August 31, 2004. Extensive modernization will be carried out on the 651.5 x 78.7 ft. (198.6 x 24 m) cruise liner by September 14, 2004. The MS EUROPA is the flagship of Hapag Lloyd's fleet of cruise liners and offers the utmost in comfort for up to 408 passengers.

Modernization works include the installation of a new fitness room, conversion of the "Lido Cafe" and completion of the new stern-side "Sansibar" which will be connected to the "Lido Cafe" via a stairwell.

Following its modernization, the former golf center will house a large play area for children. A new air-conditioning system will also be installed for the whole of the newly-created passenger areas.

Furthermore, the storage spaces for the Zodiac rubber dinghies located on board including the accompanying storage rooms and the disembarking cranes are being renewed/re-designed.

Circle 37 on Reader Service Card

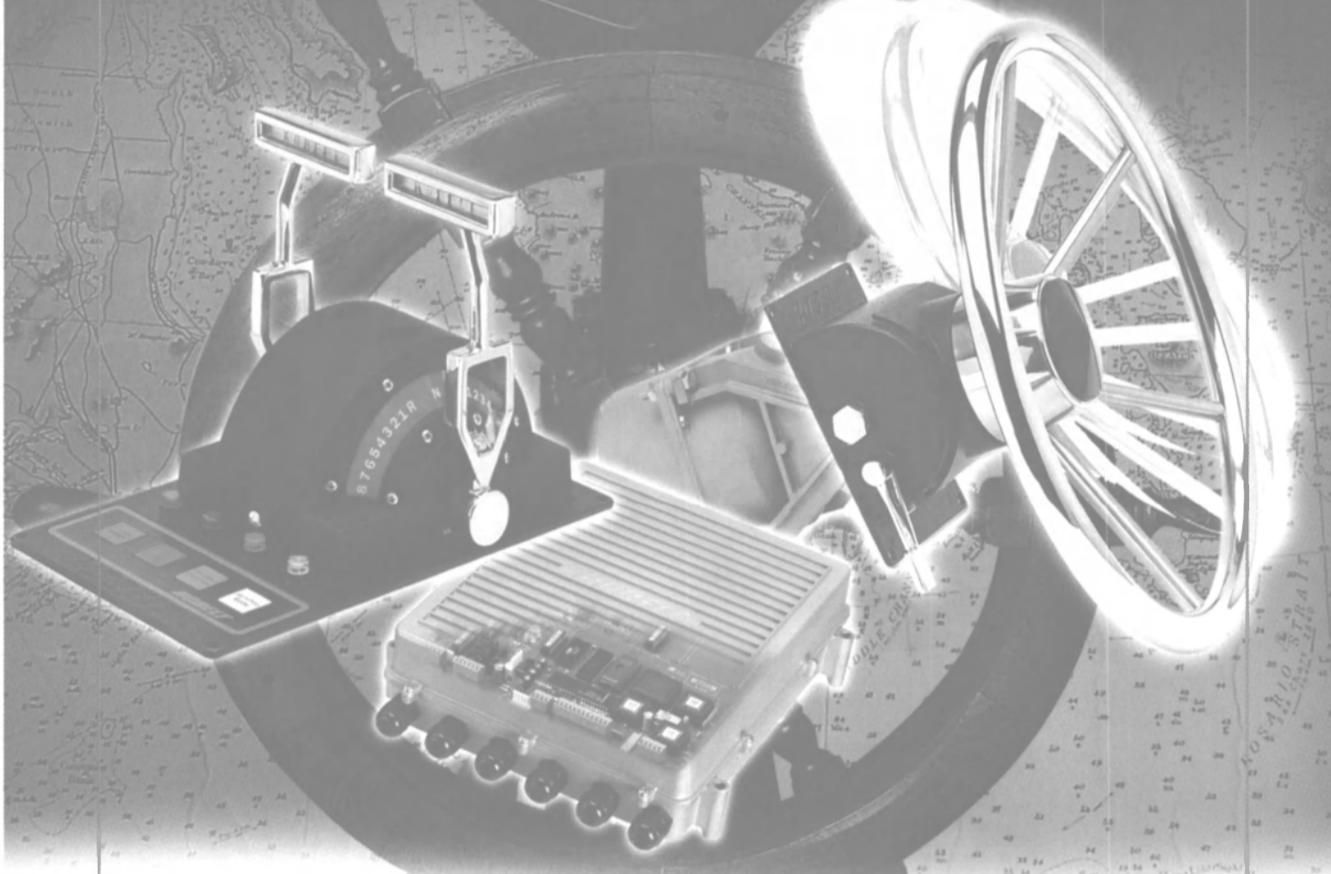
## First Multibeam to be Installed on Submarine

Kongsberg Maritime in Germany hosted a two days seminar for representatives of the German waterway authorities and commercial customers in Berlin.

Kongsberg Maritime Deutschland together with the Hydrographic sales department from Horten introduced the new multibeam echosounder EM 3002 with the QINSy survey software, the multichannel system EA MCU, the ConCat, the Seapath product family from Kongsberg Seatex in addition to the newest developments in fishery research equipment with the EK 60 research echo sounder.

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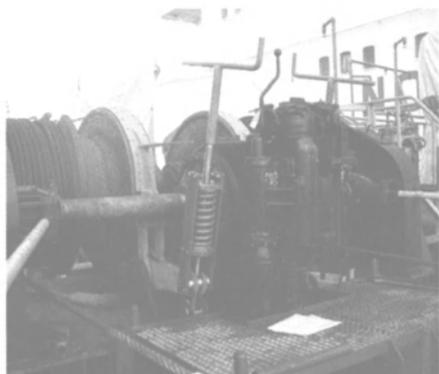
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# Methane Arctic Benefits from German Technology



The 768.8 x 111.7 x 32.8 ft. (234.3 x 34 x 10 m), 48,454 dwt LNG tanker Methane Arctic visited Blohm + Voss Repair dock in the late spring. Besides general overhaul work to the tanker, the cargo tanks were serviced and checked for consistence, the discharge pump controlled, as well as the mooring winches and capstans overhauled.

The ship, operated by BG LNG Services, Houston/USA and managed by Ceres Hellenic Shipping, Piraeus/Greece was built in 1969 at Kockums, Sweden. The 35-year-old ship underwent dry-docking in order to bring it into line with latest rules and recommendations. One modifications was to update the deck machinery to meet OCIMF requirements. The mooring equipment was designed for a nominal pull of 150 kN and a static brake holding load of 600 kN. The customer contracted Hatlapa to redesign and modify the existing mooring winches, all within the dry-docking period of 30 days. The task was to increase the rope capacity that by adding another six winch drums to the existing 10 winch

drums. Hatlapa connected the additional (declutchable) drums to the single-drum mooring winches, thereby allowing the existing winch drives to be retained.

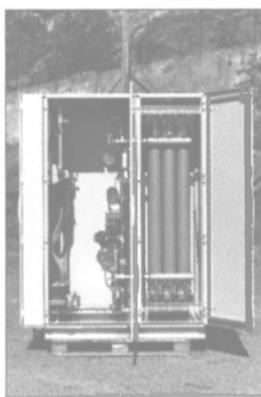
In addition, all 16 spindle brakes of the

winch drums had to be renewed according to OCIMF recommendation to a spring-loaded brake design that allows adjustment the brake force to between 60 and 80 percent of the rope breaking

load. The completion of this significant modification on time allowed the ship to leave the yard successfully and in proper condition for new challenges.

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## AIR PRODUCTS



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## THE BUBBLER



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### CAE Tech on German Navy Ships

CAE signed new contracts to provide integrated bridge systems (IBSs) for a land-based test facility for the German navy's F-124-class frigates. CAE also finalized the contract for the German navy's K130 corvette program. The new contract with the German navy calls for CAE to provide an F-124 land-based test facility to support CAE's integrated machinery control system (IMCS) already aboard the navy's new F-124 class frigates. The F-124 IMCS is a comprehensive platform management system with advanced features, such as an on-board training system, battle damage control system, and an integrated controller for the gas turbine engine. CAE has concluded the contract with the ARGE K130 consortium (consisting of three shipyards: Blohm+Voss, Nordseewerke, and Friedrich Lurssen Werft) for the supply of IMCS with increased scope for five K130 corvettes, and a contract amendment for the control system for the Indian navy's landing ships.

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## Becker Kort Rudder Nozzles for Improved Maneuverability

Becker Kort nozzles are designed to give increased propulsive efficiency from the propeller that is surrounded by the nozzle. This results from the water being directed towards the propeller in a more uniform stream. Compared with what happens with a free propeller, the static pull can be up to 45 percent greater, with the result that a smaller main engine can be used. Furthermore, the nozzle structure of the Kort system protects the propeller from damage.

In order to improve the steering capability of the vessels, Becker Marine Systems has equipped its Kort nozzles with a movable flap at the nozzle outlet.

Because of the movable Becker flap at the end of a rudder nozzle, the transverse force produced is on average up to 45 percent more than with fixed fins, resulting in an increase in vessel steering capacity.

The Becker flap, designed for very high performance, has a high transfer ratio, contributing to the fact that only small rudder angles are necessary to produce large transverse forces. At cruising speed helm angles can be reduced by up to 50 percent, compared with the fixed fin. The average turning circle is reduced and manoeuvrability improved

since the nozzle thrust is not set to "propulsion". With tip clearances remaining the same, smaller rudder angles produce a better propeller environment, resulting in reduced vibrations. In addition, there is also optimum water inflow, achieving an even greater level of efficiency. The life expectancy of the nozzles is thus increased and fuel savings result.

### Practical Use

The Becker Kort nozzles are mainly used for vessels with a top speed of up to 16 knots. But Kort nozzles are also advantageous in the case of faster vessels that, for example, fish at a lower speed on reaching their destination. As the vessels can turn more quickly it becomes easier for them to pursue shoals of fish. In particular, heavily laden ships with full sterns can profit from the short design of the Becker nozzle, since the restricted aft-end space does not have to be filled with a nozzle and an additional rudder. When the nozzle and the rudder are set too closely together, this results in poor nozzle inflow, reduced efficiency and increased vibrations, as well as greater wear.

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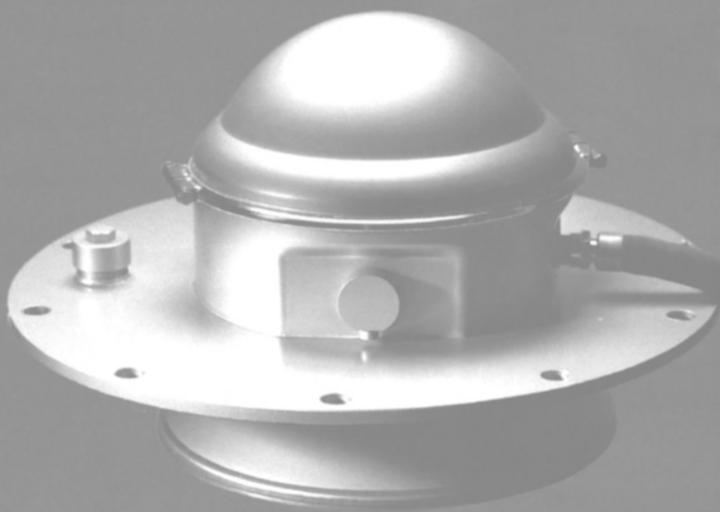
## MTU Celebrates Historic Date

MTU Friedrichshafen celebrated the 125th birthday of its company founder, **Karl Maybach**, with a commemorative celebration in Factory 1 on July 6, 2004. Maybach is one of the founding fathers of the Maybach Motorenbau engine manufacturers, the predecessor company of MTU Friedrichshafen. Thus, essentially, Maybach as inventor and designer gets the credit for the high-performance, diesel engines that are built in Friedrichshafen. "The factory that Karl Maybach established here in 1912 has continuously grown and has brought Friedrichshafen and the surrounding area more and more jobs," said **Irmgard Schmid-Maybach**, daughter of Karl Maybach and Supervisory Board member of MTU Friedrichshafen.

**Dr. Rolf A. Hanssen**, Chairman of MTU's Board of Management and head of DaimlerChrysler OII-Highway, said, "Karl Maybach considerably expanded the product range of Maybach Motorenbau in the diesel engine sector. These engines were used for a number of applications, above all in the marine and railway sectors. Thus, Karl Maybach established the foundation for further development that led to the creation of MTU and our drive systems for the navy, electric power generation, industry, railway, and military vehicles."

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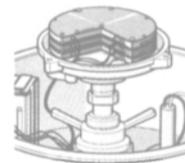
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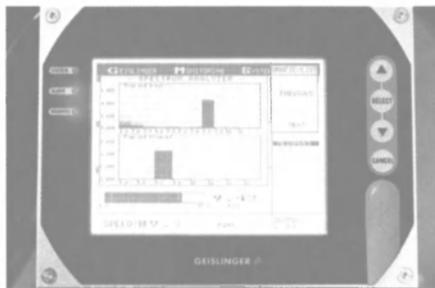
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### Geislinger to Display Innovative Couplings

Geislinger is a company specialized in solving torsional vibration and misalignment problems.

During SMM 2004, it will show from booth 222 in Hall 5 its main products: the Geislinger Coupling; the Geislinger

Damper; and the ultra lightweight fiber reinforced Gesilco Coupling.

The company will also distribute its new Geislinger CD-ROM (2004 Edition), which contains updated product catalogs.

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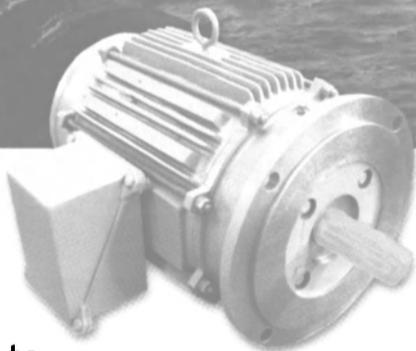
### Wynn to Launch New Wiper System

Wynstruments Ltd., now merged with B. Hepworth & Co. Ltd., will launch updated versions of its best-selling Straight line window wiper and a brand new digital control system at the SMM 2004 exhibition. The company will be in



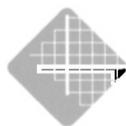
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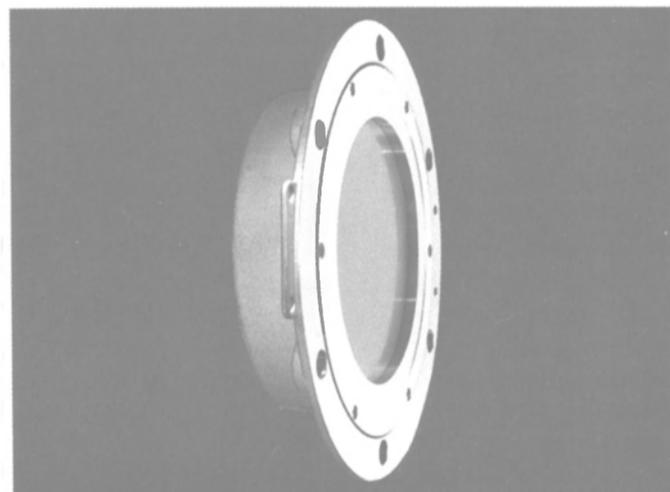
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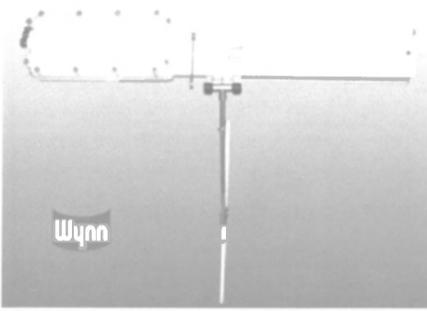
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41

## Germany • SMM Preview



Hall 7, booth 07.EG.500/8. The Type D MKIV Straight line wiper, is based on the highly successful Type D MKIII wiper.

Circle 76 on Reader Service Card

### Lilley & Gillie to Display Product Line

Lilley & Gillie today is a very different company from the one that exhibited two years ago at the SMM exhibition in Germany. The company has expanded drastically in the last two years, acquiring Thomas Walker & Son Ltd. of Birmingham, incorporating the Walker Marine, Chernikeeff and Neco brand names, and more recently acquired 50 percent of PC Maritime, a leading devel-

oper and supplier of software, electronic charts and associated hardware to marine markets worldwide.

In another recent development, Lilley & Gillie was in June appointed as a distributor of all North of England P&I Association publications to non-members throughout the marine industry. The North of England P&I Association insures a 50 Million GT fleet of ships entered by members from throughout the world and is a maritime industry leader in loss prevention. The agreement will see Lilley & Gillie distribute all publications from the North of England P&I Association to non-members, mainly shipowners and ship-managers.

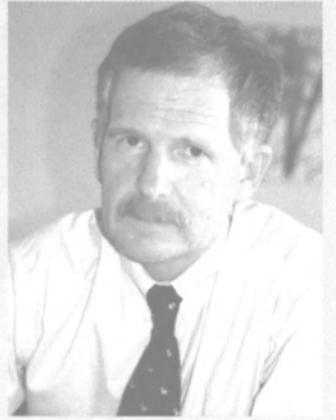
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### Hamann Presents Sewage Solutions

Hamann AG (formally known as Hamann Wassertechnik GmbH) will exhibit its full range of products from its five divisions ranging from the compact sewage treatment plants like the SuperMini (specially developed for the yachting industry), to Reverse Osmosis equipment for freshwater production and exhaust gas cleaning systems.

### Payer Presented Cross of the Order of Merit

Dr. Hans G. Payer was recently presented with the Federal Republic of Germany's Cross of the Order of Merit by Hamburg's Senator for Economy and Labor, Gunnar Uldall. The award recognizes Dr. Payer for his distinguished services, sustained over many years, to the cause of improvements in ship safety. Dr. Payer built a career around the development of the highest safety standards in shipbuilding and ship designs that accommodate both the increasing emphasis on safety and the economic demands of modern ship operations. Throughout his career, Dr. Payer consistently directed his efforts towards both the advancement of technology and a growing awareness for quality in shipping.



The Austrian-born Payer was in the service of Germanischer Lloyd (GL) for 27 years, last of all as Member of the Executive Board, until his retirement at the end of 2003. In his honorary positions as President and Vice-President of the International Association of Classification Societies (IACS), President of the European Association of Classification Societies (EurACS), and also Chairman of the "Tanker Structures Co-operative Forum," Dr Payer advocated and promoted an intensification of the international dialogue on the technical safety of ships. The Order of Merit of the Federal Republic of Germany ('Cross of Merit') was endowed by the Federal President Theodor Heuss in 1951. It is the highest distinction awarded by the Federal Republic of Germany for services to the public good. It is bestowed upon both German and foreign citizens for outstanding political, socio-economic and intellectual achievements.

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Circle 292 on Reader Service Card

Furthermore, two new developments will be presented: a High-Load Bio Reactor (HL-BR) for the treatment of black water and grey water and an in-line ballast water treatment during uptake (SEDNA).

Circle 80 on Reader Service Card

## Baltic Sea Ferries Enter Blohm + Voss Repair



On August 17 the 152 x 23.12 x 5.64 m Danish Baltic Sea ferry Prins Joachim was floated into Dock 16 of Blohm + Voss Repair GmbH. In the course of the docking period, the ferry of Scandlines Denmark will be equipped with more powerful engines — six MAK main engines with a total power of 23,000 kW — allowing the ferry to reduce its crossing time on the Rostock to Gedser (DK) from 120 to 105 minutes.

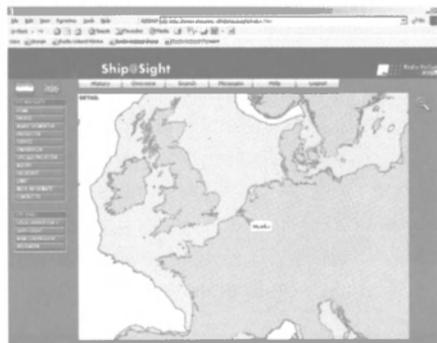
In addition, two new Flender gearboxes and a waste heat boiler will be installed and the pipe and supply systems will be renewed as well.

To increase the power supply on board, the ferry will be provided with a new generator with a capacity of 1,500 kW. In addition to the extension of the monitoring and alarm system IMACS, the bridge equipment will also be modernized. Finally, the paint work of the hull will be renewed.

The second ferry, the Kronsprins Frederik will arrive at Blohm + Voss Repair in October.

## Radio Holland Group at SMM

A cross section of Radio Holland's worldwide management, sales and service personnel worldwide will be present at SMM, focusing on the international service capabilities of the Group, as well



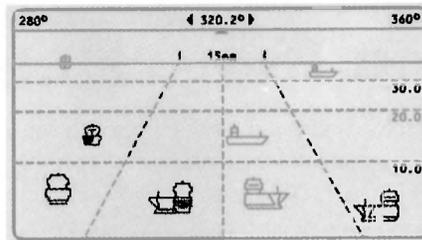
September 2004

as the various service contract possibilities.

Circle 79 on Reader Service Card

## Nauticast Launches 3-in-1 Graphic Display

AIS specialist Nauticast Navigationssysteme GmbH is launching an innovative 3-in-1 graphical display



solution for their X-Pack DS Class A AIS Transponder. The new display not

## Germany • SMM Preview

only offers an alphanumeric, as well as a radar view, it also has a built-in "Fairway View" option. This three-dimensional representation of the surrounding traffic scenario is a completely unique way of capturing and representing vessel data (worldwide patent pending).

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## The easy maritime email standard for you and your crew

Captains know the importance of having a reliable, hassle-free email system. As Outlook is the standard email interface in offices, so AMOS Connect is the messaging tool of choice on today's seagoing vessels. The sophisticated software behind this super-stable system is proven in practice on nearly 6000 ships. It ensures you no longer have to put up with connection breaks or long waiting times for incoming emails. What's more, AMOS Connect is so easy to install and use that you'll need no major training to master its operation. And because the system is already fitted on so many vessels, more than 100,000 potential new officers and crew are already familiar with AMOS Connect software and many are used to having their own email box. With optional notification via Inmarsat-C removing the need to check for emails, plus a host of other smart solutions, you'll find AMOS Connect as easy as emailing at home.

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## Smart Communication Solutions



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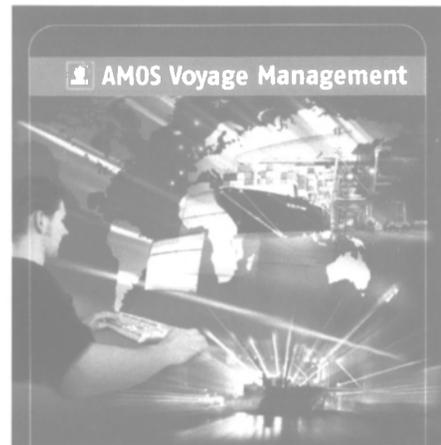
# Xantic: Focus on Integrated Solutions

Long gone are the days when companies could profitably compete with a single service or product. Today's evolved satcom provider is not simply selling airtime, rather the trend is to

offer a suite of tailored business solutions unique to the maritime business. In this regard, Xantic has clearly blazed a path, staying ahead of the competitive curve via customer-driven R&D and

timely acquisitions.

"Everyone is focusing on the integration of systems," said **Arthur C. Hendriks**, AMOS Director of Marketing. "We want to cover the full



business processes of our customers."

Proving the company's commitment was its recent announced strategic alliance with Veson Nautical, a provider of integrated management systems for the shipping industry. Xantic and Veson Nautical will produce and distribute AMOS Chartering & Operations, a software product that takes an innovative approach to organizing and managing a shipping company. AMOS Chartering & Operations will be suitable for operators of dry bulk, tank, parcel and general cargo vessels. Xantic's network of regional offices will provide consulting and support for AMOS Chartering & Operations. The new product will be integrated with the rest of Xantic's AMOS Business Suite so that information is shared seamlessly between ship and shore.

### The New AMOS Business Suite

To maintain top of the line software, AMOS is continuing to invest heavily in R&D. Many new and known AMOS products have been seamlessly integrated into the new AMOS Business Suite. All modules in the AMOS Business Suite share the same AMOS framework, same single database and same technology. Plus they're fully integrated, providing comprehensive functionality and reducing complexity. Data can be easily shared between AMOS modules and across departments, eliminating re-entry and errors. The modules in AMOS Business Suite now share the same look-and-feel. Users familiar with one of the AMOS products will require minimal training to start using the full suite. Along with the new AMOS software: Voyage Management, Personnel, and Quality and Safety; the Business Suite will also feature AMOS Maintenance & Purchase and Mail. Planning voyage and cargo activities, keeping track of actual voyage execution and progress, and monitoring events that effect operational efficiency are all parts of the newly integrated Voyage Management software, an essential tool for all shipping companies.

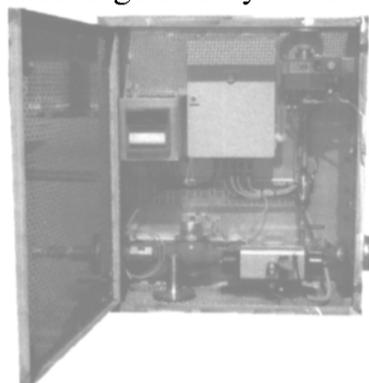
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# A Benchmark in Electronic Fuel Injection

## MAN B&W Debuts 32/40CR Engine

Common rail diesel technology is designed to be reliable, clean, economic, durable — and in the MAN Group it is now available for the engine of a small truck up to a large marine diesel. For service on the high seas the electronic injection system has again been improved. "Now this technology is where we wanted to have it," says **Fritz Pape**, Member of the Executive Board of MAN B&W. This in-house development combines conventional components of existing MAN injection systems with up-to-date hydraulic and electronic elements that have been developed further. "It was a strategic decision to develop common rail for our engines ourselves in order to do better than what would have been possible with existing, external systems," said Pape. The result is the new engine type 32/40CR that is now being presented in Saalfelden, Austria.

Smoother performance, lower emissions, lower consumption, flexible application in the respective area of usage: These are the most important advantages of common rail technology. Now this MAN technology that is well-established in the truck sector is also available for MAN B&W's four-stroke engine range. "In developing our injection systems we have been able to build on many years of experience," said the Head of Research & Development, **Dr. Ralf Marquard**. Already in 1979 the company had begun to develop common rail engines that went into serial production. Marquard and his team have studied the different systems and have adapted and optimized the technology with regard to the size of the engines and the particular demands of maritime usage.

At MAN Nutzfahrzeuge AG, a sister company, common rail technology has been successfully applied for just over two years: approximately 9,000 MAN trucks are already on the road with this modern injection system.

In common rail diesel engines fuel is injected into all the cylinders via a "common rail". The generation of pressure and injection of fuel are not interconnected in a common rail system. Unlike in conventional systems, the injection pressure is independent of the engine speed. Thus there is always full pressure available. The fuel is first stored in the fuel line and then, when a signal is given by the engine controls to the magnetic valves, it is injected into

the cylinders. This creates an extremely fine fuel-air mixture that is designed to burn particularly efficiently. The challenge was to apply this injection system to large marine engines, and to adapt it for operation on heavy fuel oil, which means dealing with a fuel heated to approximately 150°C. The MAN injec-

tion system is based on conventional pressure-controlled injection. In usual stroke-controlled systems there is a permanently high pressure of 1,600 bar, for example, at the needle seat near the combustion chamber. In the MAN B&W system, the pressure on the valve needle is released by means of the solenoid

valve controls that is located away from the cylinder head, at the common rail accumulator. As a result there is not permanently full pressure on the valve needle seat next to the combustion chamber and the electronic components are protected.

(Continued on page 47)

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# Q&A with Wärtsilä CTO Matti Kleimola

Prof. **Matti Kleimola**, Chief Technology Officer (CTO) for Wärtsilä Corporation, was recently elected as President of CIMAC. He is a member of Wärtsilä Board of Management, Technology and Environment, and Head of Corporate Technology, including R&D. MR took a few moments to discuss with him emerging trends in the marine propulsion market.

**Q What is your area of responsibility as the new president of CIMAC.**

**A** The aim of CIMAC is to promote exchange of technical and scientific knowledge, to improve understanding between manufacturers, users and suppliers, to promote the work and activities of national associations in the field of combustion engines technology (piston engines and gas turbines) in marine/ship propulsion, power generation, rail traction and industrial applications. The President is the chief officer of CIMAC and presides over meetings of the CIMAC Council and the CIMAC Board. The President is elected by the Council at the meeting held during the period of the Congresses and is selected from present or past Vice-Presidents. CIMAC Board has a responsibility for the provision of management direction. The Council consists of representatives from the NMAs, NMGs and CMs and is responsible for the technical, financial and administrative policy of CIMAC.

**Q Briefly discuss the importance of CIMAC in the advancement of propulsion technologies.**

**A** CIMAC provides a forum for technical interchange with all parties concerned with piston engines and gas turbines. The organization promotes the development of combustion engines and their applications. Congresses are held every three years and that activity has been ranked very important and valuable for delegates (engine manufacturers, users, scientists etc.). The Working Groups are established by the Council to prepare recommendations and actual reports on subjects of combustion engine technologies. Some examples of working areas will be: Emissions, Fuels, Automation, Classification, Lubrication,



Users etc. The activity will give direct benefits to manufacturers and engine users.

**Q What are the top three or four issues that have, in your opinion, had the most significant impact in driving marine propulsion development?**

- A**
1. The rising fuel oil prices during 70's and 80's speeded up the engine efficiency development and development of heavy fuel engines dramatically;
  2. Ship sizes have shown a tendency for tremendous growth and that has created the market for largest two-strokers and trend is continuing;
  3. Customer need for smokeless operation in cruise business initiated the fast development of 4-stroke common rail engines;
  4. The emission legislation has been one of the main driver to develop clean engines.

**Q What technologies do you count as having the most significant positive impact on marine propulsion in the last decade?**

**A** Focus on the environment has encouraged the development of novel technologies for fuel injection and combustion development. Electronic control systems will become standard and the common rail technology is optimized for new two-stroke and four-stroke engines. The common rail technology

has established clear performance benefits for ship-owners like smokeless operation, reduced fuel consumption, lower noise and lower, stable running speeds. The engine industry will work actively to develop products of modern design in order to comply with the increasing demand for reduced emissions. Additional devices and processes are needed to reduce NOx emissions. The introduction of Miller cycle was very efficient in decreasing the NOx content of exhaust gases and that technology has been implemented widely. The CASS and HAM technologies and Direct Water Injection, where water is added into the intake until the air is saturated or into combustion chamber, have been found very efficient by reducing NOx emissions.

The anti polishing ring technology efficiently removes any onsets of deposits formation from the piston top land. The technology will reduce dramatically the wear of cylinder liner and piston rings and prolong the life time of components. The solution has been implemented in modern heavy fuel engines.

**Q In comparing marine propulsion to other markets, what are the challenges unique to this business?**

**A** Shipyards around the world will concentrate on their core know-how and business. This is the result of tough competition, because there is more ship-

building capacity than demand for new tonnage. There is a clear demand from shipyards for partners who can provide complete functional systems. Ship-owners are also increasingly asking for long-term relationships with their main suppliers. The suppliers must cover the full range of systems on board. The partnership requested includes everything from advice on the optimal solutions for a specific ship business concept to maintenance and service throughout the lifetime of the ship in all over the world. This means that strong presence, confidence and responsibility are crucial factors for a long-range partnership.

**Q What do you consider to be the top challenges facing the marine propulsion industry?**

**A** Our long term investigations through year 2030 show that reciprocating engines will continue to dominate with more than 90 percent of all vehicles on land and at sea. There is no other prime mover technology that could override piston engines in marine use. The success of diesel engines is based on very good efficiency and the ability to burn fuel of poor and high quality. The big challenge will be to comply with the continuous trend to reduce the exhaust emission. The fact is that in the coming decades more than 80 percent of energy needed in the world will continue to be based on conventional fossil fuels like oil, gas and coal.

**Q How is Wärtsilä preparing now to meet those challenges?**

**A** Wärtsilä Corporation is a leading supplier of machineries and total ship-power packages for our customers. We have a strong network service outlets and offices in more than 60 countries throughout the world. We will continue to bring new products and new technologies to the market while at the same time improve performance of the old ones. We are also a leading supplier of common rail engines, both 2-stroke and 4-stroke. Wärtsilä has good know-how and resources to develop engines to comply future emission standards and outstanding performance. In addition to that we can offer the first-class service for our customers in all over the world.



MAN B&W debuted the 32/40CR engine earlier this year in Austria.

(Continued from page 45)

#### Field Tests

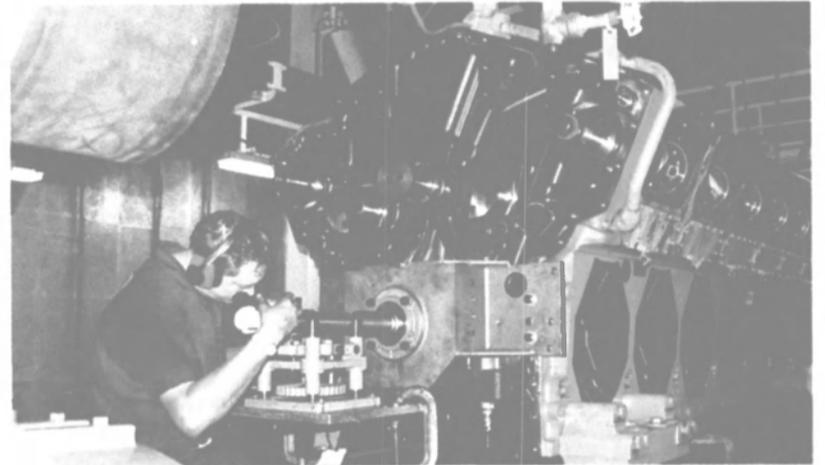
Extensive practical testing of the new MAN B&W common rail technology has commenced since the beginning of the year. One of the five auxiliary engines of the Cornelia Maersk, a 6,600-TEU containership of the A.P. Moeller Group, is equipped with the new tech-

nology. "The engine has been performing with convincing results for more than 1,200 operating hours," said **Stephan Haas** who is assisting in the field trial from the development engineering side. The 32/40CR series engine will be available from 2005 onwards, with larger and smaller types in the pipeline.

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## CRANKSHAFT GRINDING

While Installed in Engine



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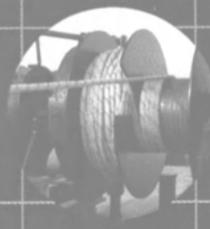
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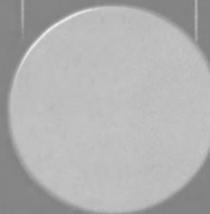


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## New GM at ZF Masson

Michel Fétiveau (pictured) took over the position of General Manager at ZF Masson in Saint Denis les Sens, France, replacing Francesco di Paola



who has retired after many years' service with ZF Masson and ZF Padova.

## Currence, Jr. Named VP at Rigdon

Richard M. Currence was promoted to Vice President, Operations, at Rigdon Marine, LLC, responsible for the company's vessel operations, vessel con-

struction, conversions, repair and maintenance, purchasing, and sub-contract management.

## Vineberg Joins Scandinavian Shipping

Scandinavian Shipping Agencies AB (SSA) appointed Niclas Vineberg to the position of Business Manager with spe-

cific responsibilities for the Swedish activities of the leading Norwegian RoRo operator HUAL. He will be located in SSA's Gothenburg office. SSA, a member of the Bjork.Eklund Group, has represented HUAL since February 2002.

## Telenor Buys GMPCS Personal Communications

Telenor Satellite Services, a subsidiary of Telenor of Norway purchased GMPCS Personal communications, Inc., based in Pompano Beach, Fla. Founded in 1996, GMPCS Personal Communications is a full service provider of global mobile personal communications via satellite.

## MOL (America) Inc. Welcomes New Manager

MOL (America) Inc. appointed Akira Kunimatsu to the position of Senior Manager, International Sales, Midwest region. Mr. Kunimatsu, who is based in Elmhurst, IL, is responsible for managing all aspects of MOL's international sales activity in the U.S. Midwest.

## Natansohn Named Seabourn President

Deborah L. Natansohn was named president of Seabourn Cruise Line. She most recently was senior vice president of sales and marketing for Cunard Line Ltd., where she spearheaded the launch of the Queen Mary 2 and the rebranding of the line.

## Samson Receives Type Approval

Samson, a leader in the supply of cordage, has met DNV Type Approval requirements to receive Marine Equipment Directive certification for six of its high tech Commercial Marine products. Certified products are: AmSteel-Blue; Neutron-8; Force 8; DPX-75; EPX-75; and Proton 8.

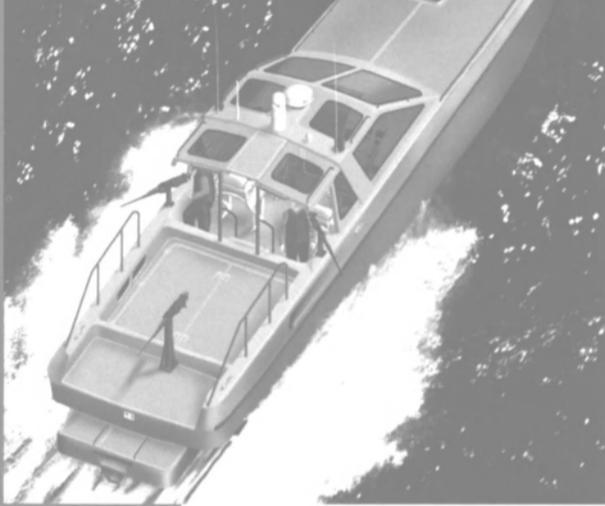
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## Rowan Wins Deep Drilling Contract

Rowan Companies, Inc. won a drilling contract by a major integrated oil and gas company to drill an ultra deep well on the outer continental shelf in the Gulf of Mexico. This one-well assignment should commence in December 2004 or January 2005 and is expected to last about one year. Rowan has committed its newest rig to the project, the Tarzan Class Scooter Yeargain, subject to availability, or one of three other specialized jack-ups. Rowan estimates revenues from this contract will range from approximately \$28 million to as much as \$35 million.

Maritime Reporter & Engineering News

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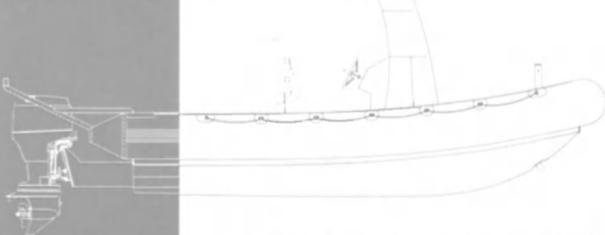
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**Application:**

# Seacor Crewboats "Eliminators" Some Maintenance Costs

A crewboat is designed to transport supplies and personnel to offshore oil rigs. Loading the cargo must be quick and efficient. The last thing the crew wants to worry about is whether they have enough storage space for the engine lube oil filters. Furthermore, they don't need the hassle of disposing of used lube oil filters while at the docks.

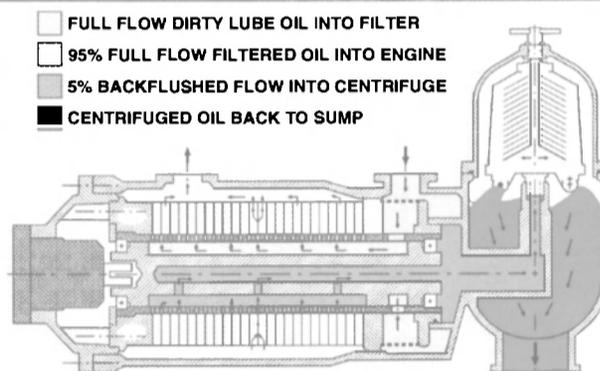
Seacor Smit Inc. found that Alfa Laval's Eliminator, an automatic self-cleaning filter system, helps to save time and money by eliminating the need for spin on cartridge filters, while also saving the crew the messy off-hour work. Seacor started using the Eliminator filter about four years ago on KV50 engines. Today, the company has 25 KV50 engines and five KV38 engines, all equipped with the Eliminator filter.

The most significant benefit to Seacor is the elimination of the cartridge filters; crucial for ships operating in remote areas such as Africa and South America. "The logistical challenges to get filters to these vessels are enormous. The Eliminators allow us to cut the amount of filters shipped to the vessels by about 25-30 percent" said **Joe McCall**, Operation Manager, Seacor Marine Inc.

Standard cartridge filters for a KV engine will cost \$3,200 per engine per year. Combined with cartridge disposal costs of approximately \$1,250 per year per vessel, the savings with the Eliminator become very



Seacor Smit installed Eliminator — an automatic self-cleaning filter system — on the crewboat Seth McCall.



tangible. With 30 engines equipped with the Eliminator, Seacor has reduced the money spent on cartridge filters by \$96,000 per year.

Another source for savings is reduced maintenance hours. Instead of replacing six or seven cartridge filters (typical on a Cummins KV engine), the maintenance crew has to replace only a sludge collecting paper in the Eliminator centrifuge. The filter replace-

ment time is reduced from 1 hour to 15 minutes per engine. While the cartridge filters had to be replaced after 250 hours of service, the centrifuge maintenance interval is 1,000 to 1,500 hours. This reduces the labor required per engine for filter maintenance from 20 hrs/year with cartridges to just over 1 hr/year.

**The Design**

The Eliminator consists of an Alfa Laval Moatti automatic, self-cleaning filter and an Alfa Laval disc-stack centrifuge in a single, compact integrated housing. These two sections comprise a complete engine-mounted oil cleaning system. The full-flow section utilizes a series of stainless steel mesh elements to filter the oil and protect the engine. A small portion of the filtered oil is used to backflush sections of these elements to prevent dirt from accumulating on the screen.

The backflushed oil containing the impurities is then fed to the separator section of the Eliminator, which is a very efficient disc-stacked centrifuge that cleans oil down to the two micron level. All dirt removed in the full-flow section eventually is deposited in the centrifuge sludge where it is removed. The only maintenance required is replacement of the sludge collection paper in the separator.

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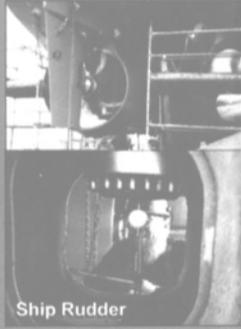
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# (Fuel) Cells of Endeavor

By David Tinsley, Technical Editor

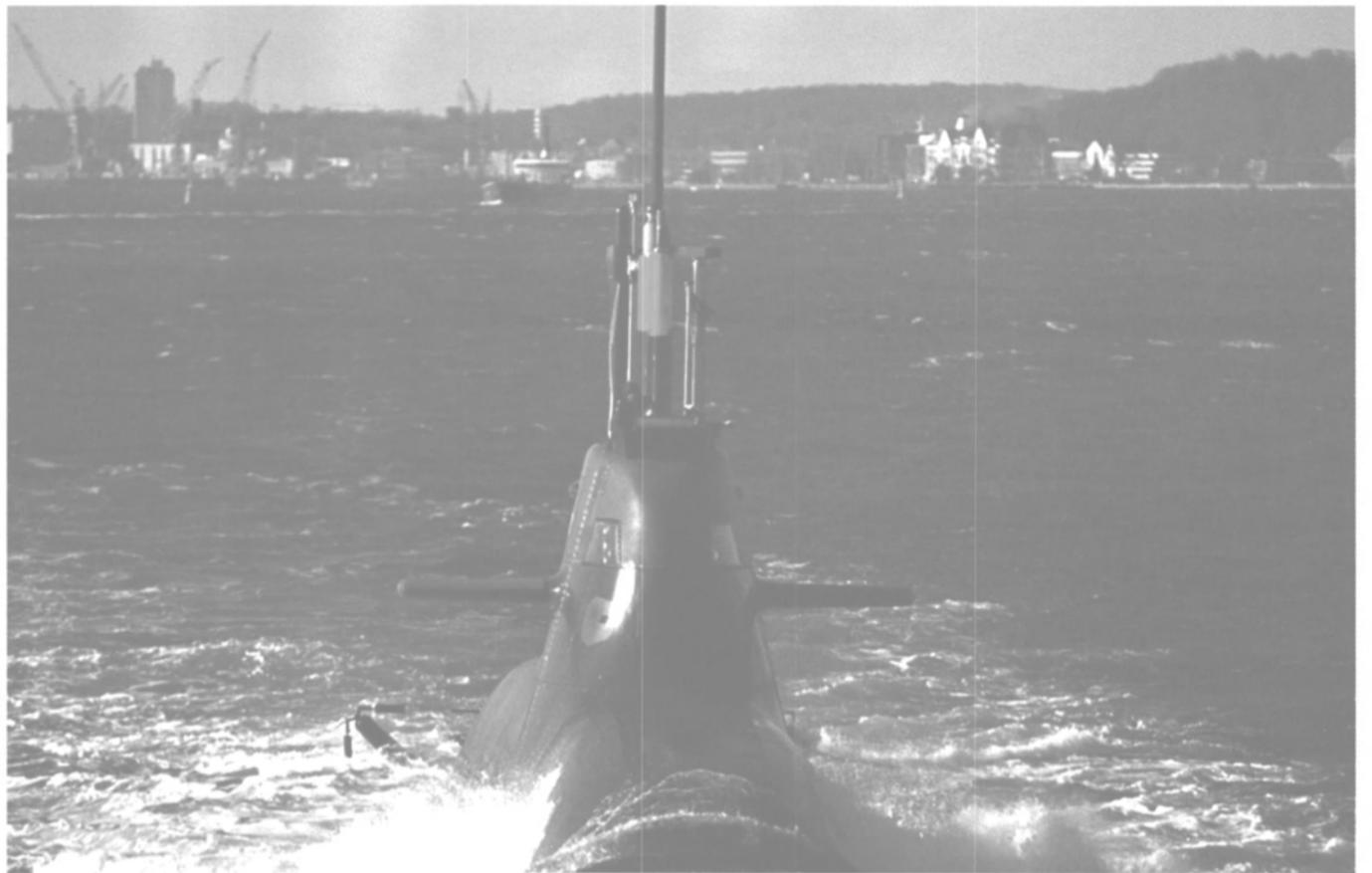
German industry is doing much to advance the development and application of fuel cell technology, and is responsible for many of the initiatives launched so far in the marine sector. Although skeptics in the commercial shipping domain discount the chances of a substantial uptake of fuel cell power aboard mercantile traders in the foreseeable future, there is a growing realization of the long-term possibilities offered by the technology, albeit in specialized areas. Use in auxiliary plant may hold out certain opportunities in some types of vessel.

Minimal environmental impact, due to an absence of the noxious emissions produced by internal combustion engines, plus quiet, vibration-free running and high thermal efficiency are characteristics of fuel cells that are of interest to sectors of the marine market.

In the meantime, Howaldtswerke-Deutsche Werft (HDW) has been commercially vindicated in its bold move to adopt fuel cell technology as the basis for the air-independent propulsion (AIP) system in a new generation of submarines. The newly-built U31, the first of four 212A-class boats ordered by the German Navy, is the world's first submarine incorporating a fuel cell plant for silent, submerged propulsion, complementing the main, conventional diesel-electric propulsion system. The AIP consists of nine PEM (polymer electrolyte membrane) fuel cells, providing between 30-kW and 50-kW apiece, with oxygen and hydrogen storage.

Although U31 is only just coming into commission, the hybrid powering concept using fuel cells has already drawn wide approbation, to the extent that contracts have now been secured for fuel cell-equipped, newbuild submarines for the Italian, Greek, South Korean and Portuguese navies, along with retrofit installations in an existing series of Greek boats.

The quiet-running hydrogen fuel cell-based, atmospheric air-independent propulsion system not only makes it more difficult for the submarine to be detected, but also enables the boat to stay submerged for longer periods. Development and construction of the



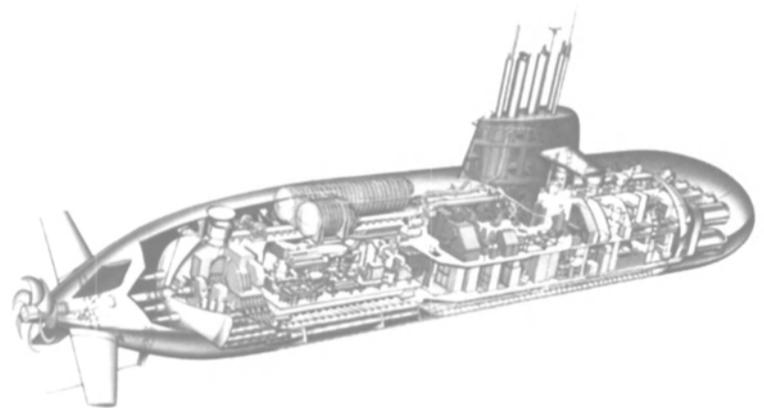
Howaldtswerke-Deutsche Werft (HDW) has been commercially vindicated in its bold move to adopt fuel cell technology as the basis for the air-independent propulsion (AIP) system in a new generation of submarines. HDW has a long history providing advanced submarines, including this Deutsche Marine Klasse 212 A ("S 181"), delivered in 2004.

212A-class, following on from the successful 209 type, was entrusted by the German navy to HDW and Emden builder Nordseewerke, two of the three partners in the German Submarine Consortium.

Cooperation between the German and Italian defense ministries in submarine procurement has led to the design being licensed to Fincantieri for two 212A newbuilds for the Italian Navy. In addition, the convincing benefits of fuel cell-propulsion have led to orders for a follow-on design, the Type 214,

from Greece and Korea. The first of four Greek 214s was launched in April this year at HDW's Kiel premises, and the subsequent three newbuilds have been entrusted to Hellenic Shipyards, HDW's Greek subsidiary. Three Type 214s for service with the South Korean Navy are to be built by Hyundai Heavy

Industries. The performance of the AIP system in the 214 design has been increased with two Siemens PEM fuel cells producing 120-kW per module. The German Submarine Consortium,



which includes Ferrostaal of Essen besides HDW and Nordseewerke, has also this year landed a contract calling for two 209PN-class submarines, plus an option on a third vessel. As with the 212A and 214 types, the 209PN employs air-independent propulsion arrangements founded on fuel cells.

In addition, HDW has opened the way to retrofitting class 209 conventional submarines with fuel cell propulsion. The Greek Navy has seized the opportu-

nity, and has entrusted refitting of such a system to four of its fleet of eight 209 vessels to Hellenic Shipyards. The project encompasses the supply of Siemens PEM fuel cell modules and the electrical equipment for integration with each boat's existing propulsion system. The modernization project is intended to put the submerged range of the four 209-class submarines, dating from the late 1970s, on a par with that of newbuilds.

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## Containerships: When Will One Engine Not Be Enough?

There is certainly no let-up yet in the containership ordering spree as charter rates scale new heights, carriers continue to report record results. The Howe Robinson Container Charter Index has climbed to a new record of 1588.4, up by just over 252% since its January 2002 low point of 451. Records are being broken on a weekly basis as liner companies extend their investment programs, ordering new and ever larger ships many of which will not now deliver until 2007 or 2008.

Among leading lines believed to be contracting or at least discussing new tonnage in recent days are CMA CGM, Evergreen, Mitsui OSK and Orient Overseas Container Line. The French line is believed to have ordered another four panamax vessels at Hyundai Heavy Industries whilst Orient Overseas is thought to have booked four 4300 teu units at Samsung in Korea. Meanwhile Evergreen is reported to be in discussions with various Far Eastern builders including China Shipbuilding and Mitsubishi Heavy Industries about possible new tonnage and is also consider-

ing increasing the size of some eight vessels it already has on order at Samsung. According to newbuilding statistics, both Mediterranean Shipping Company (MSC) and China Shipping have 9,200 TEU ships on order: MSC has nine such units under construction at Samsung, with delivery dates extending between August next year and April 2007 while China Shipping has three 9200 teu ships due to deliver in 2006 and five 9,580 TEU vessels scheduled to be commissioned during the first half of 2007, all from Samsung.

However, as container ships become larger and faster and newbuilding prices continue to rise, there is concern amongst some analysts about their economics. Ultimately the quest for economies of scale will come to a dead

end, they reason, as the largest vessels will only be able to call on a handful of megaports with appropriate back-up infrastructure. In the same way, the owners of such vessels would have only a handful of ship repair facilities to

choose from and presumably such yards could charge for their services accordingly.

Already some construction yards are working on designs for vessels in the 10-12,000 teu range and some designers are even talking of

"Malacca-max" units that could have double the capacity of some of the largest container units under construction today. So far as the economics are concerned, there are issues both afloat and ashore.

Under the present construction standards of ISO containers, for example, it

is not safe to load more than nine high and therefore giant container carriers must become broader and/or longer. This has an impact on maneuverability in access channels as well as berth space in the terminals themselves.

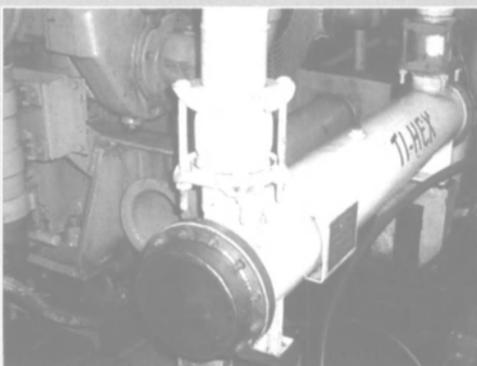
Meanwhile the issue of propulsion units, the required diameter of propellers and the threat of cavitation become critical factors. Today's largest vessels are approaching the power limits of single engines driving single propellers. If container vessels get much larger, they will have to have twin propulsion units driving twin propellers and, although faster, there will be a price to pay both in terms of first cost and fuel consumption over a ship's lifetime.

Perhaps the most worrying aspect of today's container boom, however, is the fact that ships are already subject to some delays as congested ports in some areas simply cannot cope. And with the fleet expanding at the current rate, observers are worried that port hold-ups will simply get worse. That makes shipping less efficient, leads to longer transit times and ultimately drives up costs.

... as container ships become larger and faster and newbuilding prices continue to rise, there is concern about their economics.

## AquaMarine Engineering Company

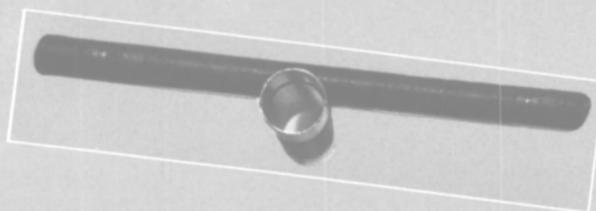
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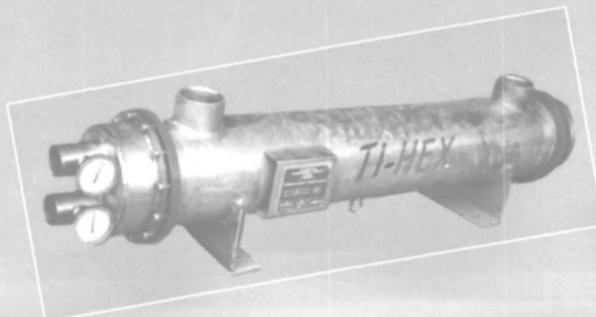
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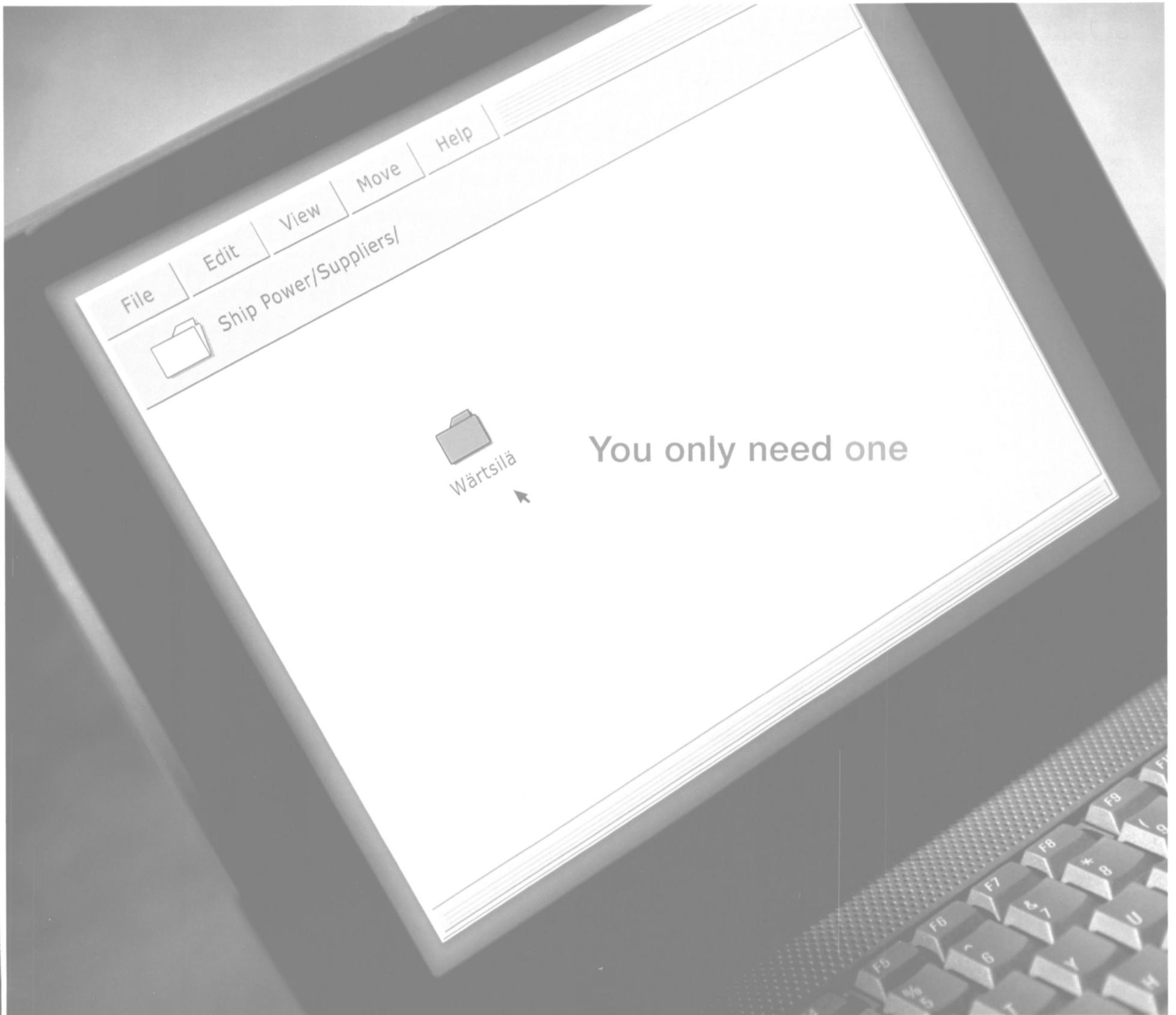
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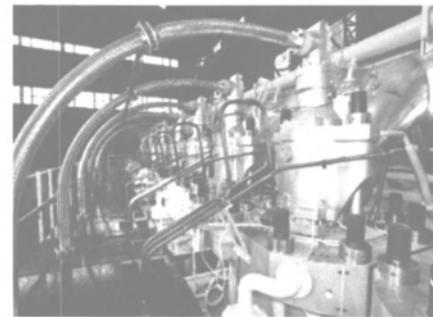
## Propulsion Annual

### Most Powerful Common-Rail Engine Passes Test

The first 12-cylinder Sulzer RT-flex96C low-speed marine engine developed by Wartsila Corporation has successfully completed its official shop test. With a maximum continuous power output of 68,640 kW (93,360 bhp) at 102

rpm, it is reported to be the most powerful engine so far to employ common-rail technology. The engine is one of four ordered in 2003 for the propulsion of four 7,700 TEU Post-Panamax container liners contracted by Blue Star Reederei, a subsidiary of P&O Nedlloyd BV, with the Japanese shipbuilding group IHI Marine United Inc.

After the initial adjustments and running-in, the engine has been subjected to an extensive series of tests. Optimization of the Sulzer RT-flex system with this size of engine was completed with an eight-cylinder Sulzer RT-flex96C during March/April at another licensee HSD Engine Co. Ltd. in Korea. Further tests, however, have been made



with the 12-cylinder engine into the performance of the engine with its common-rail systems.

The improved quality of combustion achieved in RT-flex engines which allows such low, stable speeds, together with smokeless operation across the speed range, has proved in service to leave RT-flex engines very clean with consequent benefits for maintenance.

To date, confirmed orders have been placed for a total of 110 RT-flex engines aggregating 4,633 MW (6.30 million bhp). In addition to the 64 Sulzer RT-flex96C engines, the engines in service and on order include seven Sulzer RT-flex84T-D engines for VLCCs, two Sulzer RT-flex68T-B engines for Aframax tankers, 17 Sulzer RT-flex60C engines and 15 Sulzer RT-flex58T-B engines for various ship types, and five Sulzer RT-flex50 engines for bulk carriers. The Sulzer RT-flex96C is adapted from the well-established Sulzer RTA96C engine, the most powerful Sulzer low-speed marine engine type. This is a popular prime mover for the world's largest types of container liners. There are 226 Sulzer RTA96C and RT-flex96C engines in service or on order with an aggregate power output of 13,130 MW (17.86 million bhp).

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### Clean Concept for Broström Tankers

MAN B&W Diesel A/S, Alpha, Denmark won the contract to supply a twin medium speed main engine package to drive AziPull propellers for a series of 14,500 DWT Oil Products and Chemical tankers. MAN B&W Holeby GenSets will be supplied by a Chinese licensee. The vessels are under construction for Broström Tankers AB, Goteborg, Sweden. Four vessels will be built by Jinling Shipyard, Nanjing, China, scheduled for delivery during 2006 and 2007. Together with Broström Tankers AB, the naval architects and designers Skipskonsulent A/S, Bergen from the Vik & SandVik Group, Norway, have been in charge of this shortsea tanker concept, optimized for North European trade.

The propulsion plant is based on twin, seven cylinder, MAN B&W L27/38

Maritime Reporter & Engineering News

main engines and AziPull thrusters. Auxiliary power is generated by four MAN B&W 6L16/24 GenSets. A total main engine output of 4,760 kW (6,470 bhp) will supply the propeller thrust, for a ship service speed of around 13 knots.

Main engines and GenSets will, from their turbochargers, lead the exhaust gasses to individual Munters SCR Converters/Silencers. The SCR converters are activated by injection of a solution of urea and water. Imperative for the SCR converters' full NOx reduction efficiency, which are specified to a NOx outlet content of max. 2g/kWh, is a relatively high and steady exhaust gas inlet temperature. For the main engines' load range, with variable operation according to the propeller curve, a special turbocharger matching will be applied to control the exhaust gas outlet temperatures. For controlling the SCR process, including the injection of the urea/water solution at variable engine loads, the engines' electronic speed and fuel index signals are used as input to Munters NO-analyser circuit.

Brostrom Group operates 65 product and chemical carriers from 4,000 to 80,000 dwt, with an average age of seven years. It employs 37 tankers in European trade and transports more than 20 million tonnes of oil products per year. "By this new investment, Brostrom secures the position as being the largest provider of transportation services to customers in the European trade. Brostrom's capacity in product tanker shipping is covered, to a great extent, by Contracts of Affreightment. The design of the new ships and choice of features give Brostrom a competitive edge," said Brostrom CEO **Lennart Simonsson**.

Circle 35 on Reader Service Card

#### Principal Particulars

Length	479 ft. (146 m)
Breadth	72 ft. (22 m)
Draft	26.2 ft. (8 m)
DWT	14,500 tons
Cargo capacity	18,700 cu. m.
Speed	13 knots
Main engines	2 x MAN B&W 7L27/38
GenSets	4 x MAN B&W 6L16/24

#### USN Certification for LM2500+

GE Transportation's marine business received United States Navy certification for its LM2500+ aeroderivative gas turbine. The LM2500+ has been certified by the U.S. Navy for 35,000 brake horsepower (bhp) for mechanical drive applications. The LM2500+ received the certification for use powering the U.S. Navy's eighth LHD and follow-on ships in the WASP (LHD 1) class of large-deck, multipurpose amphibious assault ships.

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## Canadian Towing Firm Refits for the Future

"It is exciting to see our vessels coming and going through the harbor. I particularly enjoy that fact that we appear to be one of the busiest, and best looking

fleets on the water," says Island Tug and Barge Ltd. President **Bob Shields** of the view from his harbor side office in Vancouver, BC. Capt. Shields has built a

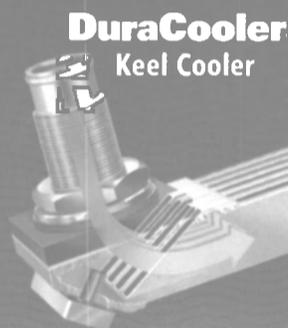
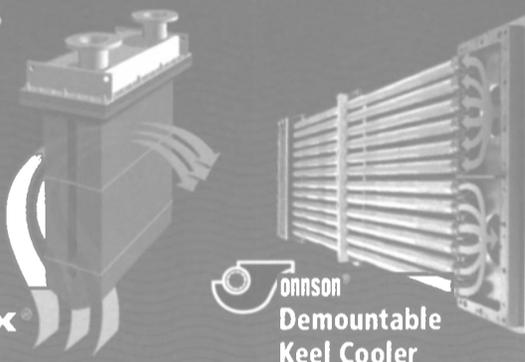
reputation as an innovator in an innovative British Columbia towboating market. This reputation was enhanced last year when Shields and his partner, Capt.



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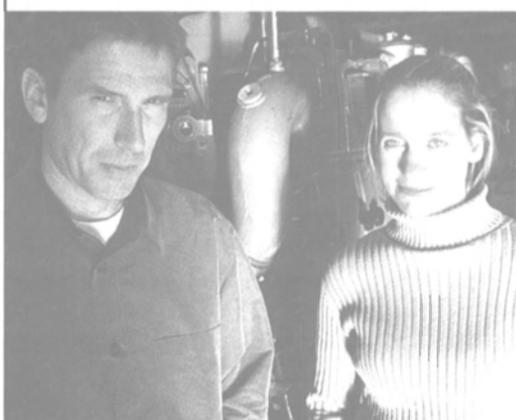
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Ulrich Freudenberger, Managing Director at Inter Seas Services and Trading GmbH, NORDERSTEDT, GERMANY

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**Jack Davies**, retrofitted an Intercon connector to their 41.5 by 9.8-m, 3,000-hp twin-screw tug Island Monarch. Now, a year later, Vancouver waterfront watchers are seeing the company repower its classic raised-focle style Island Crown with a pair of Cummins KTA38.

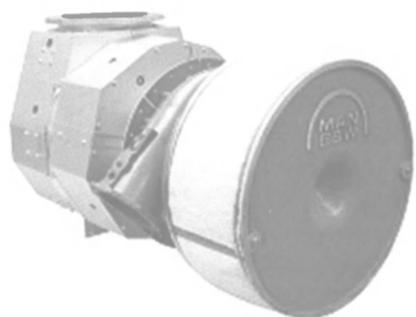
The 23.7 x 7.3-m Island Crown is one of those distinctively Canadian tugs whose raised focle design resulted from a requirement that all crews' quarters must be above the waterline. Built in 1974 to a Robert Allan design, she was first christened the Gulf Julia. Later, renamed the Seaspan Defender she has more than earned her keep over the past three decades towing along the Pacific coast. But this was a well designed and well built boat and her owners felt secure in doing a routine re-power to extend her life. An old pair of 725 hp engines pulled out and replaced with the new Cummins KTA38M0 engines. The new engines have been de-rated to 500 hp each at 1,600 rpm but are designed capable of 800 hp each at 1,800 rpm. The existing Twin Disc TD540 7:1 marine gears were sent out for rebuilding and were reinstalled. The three-blade propellers in nozzles were kept to their original 74 x 78-in. dimensions.

"We had Robert Allan Ltd. do a complete engineering study for us on the re-powering and were amazed to discover that the propellers were an absolute perfect match for the two ratings of the Cummins engines," Shields said. "We didn't do a bollard pull test, but believe we are getting slightly better performance than prior to the re-power. We estimate the bollard pull at 36,500 lbs at the 500 hp rating and 57,750 lbs at the 800 hp rating." While the engine selection and preparation was a detailed and intense process, the actual lowering of the two 9,000 pound engines was accomplished in a solid morning of work. A well-coordinated team that worked with a rented crane to lower the machinery through a hatch in the top of the fiddle. The engines, lifted with a specially designed jig, were stood on their head to fit through the hatch with inches to spare. The gears followed and were mated to the engines and shafts.

Circle 28 on Reader Service Card

# TCR: The Next-Generation Turbocharger

Following the introduction of the TCA axial turbocharger two years ago, MAN B&W Diesel Group announced an expansion of the range to include a completely new radial turbocharger. The TCR turbocharger will replace the current NR series that has been in production for nearly 50 years culminating in the current NR/S design. The new TCR



series has a compressor pressure ratio of 4.7; but capable of up to 5.2 when built as a special version. Aimed specifically at the medium and high-speed diesel and gas markets, six different models are able to cover a wide range of outputs from 400 to almost 6,000 kW.

The TCA and TCR are the first MAN B&W Diesel turbochargers to be completely designed using a 3D-CAD system, a move which simplified and reduced development work by integrating innovative software tools during the CFD (flow) and FEA (strength) analysis.

With regard to the rotor support, the MAN B&W engineers came up with something special: The axial bearing was located between the two radial bearings which permitted minimization of the bearing space requirements. The sealing system was also designed to be as compact as possible and without any

additional sealing air requirement. The piston ring gasket, combined with a labyrinth seal, was thoroughly tested and proved to provide optimum sealing capacity both in operation and at standstill. Flow calculations played a major part in the development of the new tur-

bine in order to create a shape with high efficiency on the one hand and a wide application range on the other. Consequently the new turbine is designed to provide optimum values in part load and full load operation and the manufacturer reports that it is equally

suitable for constant and pulse pressure turbocharging. Development work also concentrated on the noise level by the introduction of a completely new intake silencer, which reduces the turbocharger noise.

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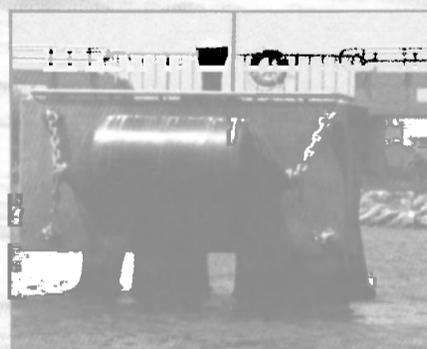
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## Duramax Marine Creates Largest Ever DuraCooler

Duramax Marine LLC created a DuraCooler of seismic proportions with its largest keel cooling system to date. Created for Astromaritima's supply vessel, the Astro Vermelho, the DuraCooler

measures 32 tubes wide by 16 ft. long. A first of its size for Duramax Marine; the previous largest DuraCooler was 24 tubes wide. Headquartered in Rio de Janeiro, Brazil, Astromaritima owns and

operates supply vessels for the oil company Petrobras.

Modifying the Astro Vermelho was more complicated than the previous modification of the Astro Pargo.

Taking into consideration the cooling requirements and available hull space, the specified DuraCooler was configured at a width of 32 tubes. New production equipment was configured and built, and a series of four DuraCoolers were successfully manufactured, delivered and installed on time. Results of the first 32 tube Duracooler installation on the Astro Vermelho were so good it prompted Astromaritima to install DuraCoolers for the modification of their next two supply vessels: the Astro Enxova and the Astro Guaricema.

This project is currently under construction at Transnave shipyard. The DuraCooler's success is the result of a research and development program Duramax Marine initiated in 1997 to identify areas of improvement for the square-headed outboard keel cooler. Flow pattern studies determined that the outside tubes in traditional keel cooler designs could be improved to increase flow efficiency.

Duramax engineered a DuraCooler featuring a new streamlined header designed to further enhance interior and exterior flow patterns and, at the same time, reduce the overall pressure drop within the keel cooler unit. In the new header, engine coolant is directed more efficiently to tubes increasing the heat transfer efficiency of the DuraCooler. Based on actual testing, coolant flow distribution in the outer tubes reportedly increased 35 percent after the modifications and heat rejection in the outer tubes jumped 45 percent. The company reports that overall heat transfer in the DuraCooler increased 17 percent over a traditionally designed unit of equal size. Made of 90/10 cupro-nickel tubing, the DuraCooler is resistant to flow erosion and has antifouling properties as well. DuraCoolers are designed to be easy to install and available with through-hull type fittings or non-through-hull flange mounts.

The Astro Vermelho's DuraCoolers were installed at the Transnave shipyard in Rio de Janeiro, Brazil. Originally built in the mid-1980s, the Astro Vermelho was cut and its overall length increased by 9.1 m to its current length of 57.16 m. The vessel was repowered from 2,600 hp to 4,660 hp with brand new MAK Caterpillar diesel engines. The ship's bow thrusters were replaced with two variable pitch bow thrusters and one variable pitch stern thruster. The conventional drive shaft line was replaced with two CPP shaft lines

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### Wartsila Sells High-Speed Engine Rights to Dresser

Wartsila sold the product rights of the high-speed Wartsila 200 and 220 product family to Dresser Inc.'s Waukesha business unit. Wartsila will continue to provide service for the engine base.

Wartsila is also negotiating the transfer of its production in Mulhouse, France, to another company. Wartsila's production in Mulhouse ceases at the end of 2004. This transaction is part of Wartsila's ongoing restructuring program and the company's aim to focus on its strong products. The main products in Wartsila's engine portfolio are medium-speed and low-speed engines.

### Transas Introduces the Virtual Ship Concept



Transas launched the Virtual Ship Simulation Concept. The core benefits of the system are based on joint operation of the Transas Engine Room Simulator ERS 4000 with Navi-Trainer 4000 Full Mission Bridge Simulator, including GMDSS and Liquid Cargo Simulator as well as the latest Transas 3-D visualization technology. The open architecture and modular design structure of the ERS 4000 allows for integration into a single interactive training environment as well as a high level of customization. Such integrated Navigation/Engine Room simulator training is increasingly demanded by Maritime training centers and schools, looking for more opportunities for different types of training, as well as for team-training. The 3D Virtual Reality Engine Room is designed as an innovative module allowing for familiarization support, system Mnemonic diagrams and local control places, as well as Standard and Advanced operation, including troubleshooting and familiarization with sound.

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### Siemens Selects G.R. Bowler

G. R. Bowler, Inc. was selected as a Siemens Energy & Automation Marine Solution Provider. Siemens Solution Providers are carefully selected and

undergo constant training to ensure that the shipowner can find a competent provider of systems who is working at the cutting edge of technology. G.R. Bowler, Inc. provides engine room and cargo control systems for LNG and other vessels based on Siemens Energy & Automation Type approved systems hardware and software.

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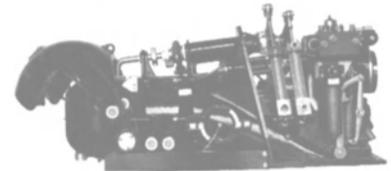
### Castoldi's New Waterjet

Italy's Castoldi has introduced a new waterjet model - TD 238 HC - which features a Hydraulic Clutch (hence the "HC"), an exclusive feature of this model consisting in a multi disc hydraulic clutch, electrically controlled in order to engage and disengage the jet's impeller with engine idling.

An exclusive feature on all Castoldi

units is the integrated gear box which is designed to allow the perfect matching to the engine while saving cost and weight of a marine transmission.

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## ABS: Large Ship Hull Deflections Impact the Shaft Alignment

A report issued earlier this year from ABS indicates that larger ships, driven by the latest generation of very high-powered diesel engines, are particularly

susceptible to alignment problems on the bearings supporting the propulsion shafting as well as the main engine bearings. Hull girder deflection is one of the

major reasons for the increased number of propulsion shafting and the main engine bearing failures and damages that are being reported. Hull deflec-

tions are quite pronounced on large vessels where discrepancy between the flexibility of the hull and the shafting results in high sensitivity in the alignment dependent upon the vessel's loading condition.

Responding to industry need, ABS has investigated the hull deflections effect on the shaft alignment, conducting measurements on a large number of vessels and using the information to develop a state of the art alignment optimization software. ABS has also released Guidance Notes on Propulsion Shafting Alignment to provide detailed information on propulsion shafting alignment design procedure and to improve the design review process and survey.

ABS research indicates that the alignment related damages are mostly attributable to inadequate analysis and design of the alignment, inadequate construction practices and lack of proper guidance.

Ship hull structures have become more flexible with scantling optimization and with an increase in ship's length. As the powering requirements increased with the increase in the ship's size, shafting

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diameters become larger and the shafts stiffer. This is particularly true for VLCCs, ULCCs, large bulk carriers and containerships. As a result, the propulsion shafting alignments are increasingly more sensitive to disturbances affecting vertical offset of the bearings. These disturbances primarily result from hull deflections and temperature change.

As the alignment analysis is the first step in the alignment process, it is of paramount importance to clearly define the criteria and determine a robust alignment that will have a sufficiently low sensitivity to disturbances affecting the propulsion shafting and the main drive. Accounting for hull girder deflections is one of the most important issues in that process. However, hull deflections are not of constant magnitude, but rather a function of different vessel loading conditions as well as the sea conditions affecting the vessel on passage. To define satisfactory alignment for all expected operating conditions, design engineers need to optimize the bearing offset to satisfy all expected disturbances.

Advanced knowledge of hull deflections is of critical importance in this process. ABS conducts hull deflection measurements to obtain information on expected behaviors of the hull structure

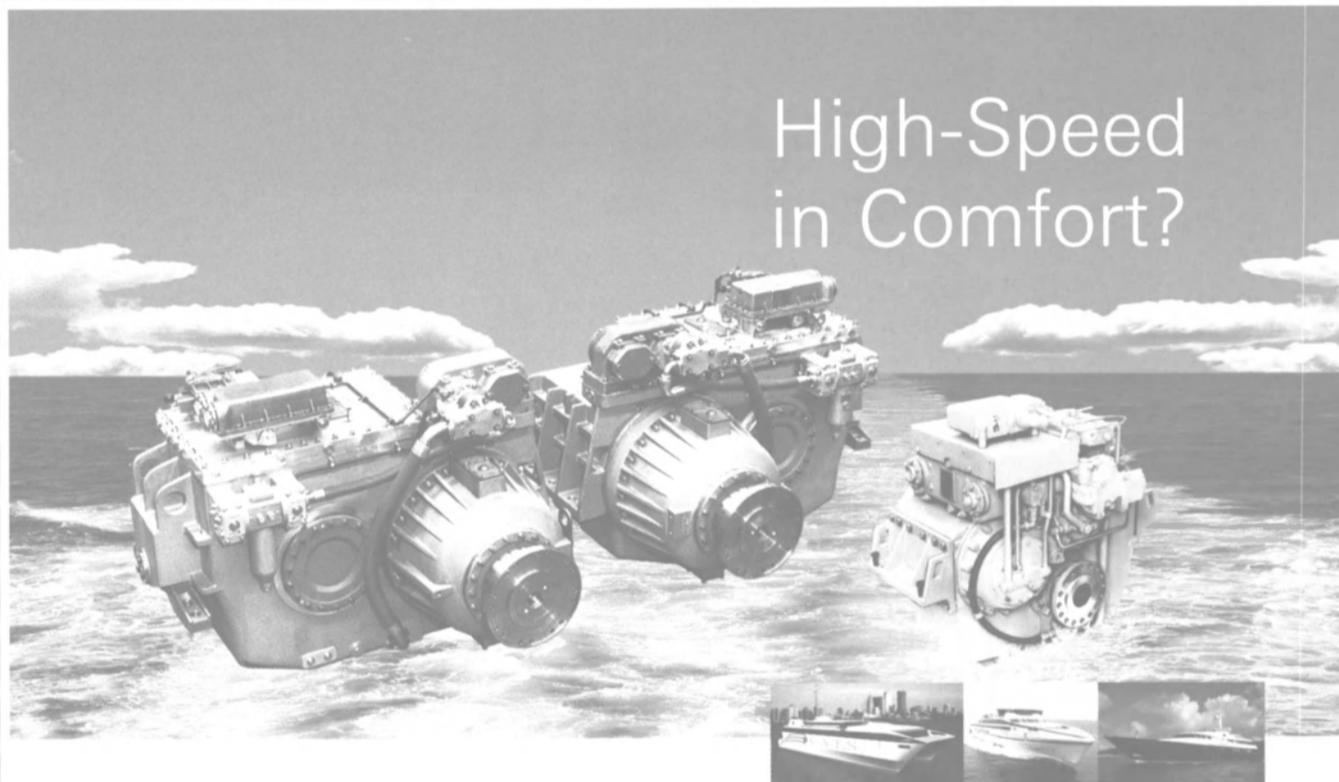
under different sea conditions and inputs the data into the shaft alignment optimization software.

*End Note: A free downloadable copy of the ABS Guidance Notes on Propulsion Shafting Alignment is available from the ABS web site at: <http://www.eagle.org/rules/downloads/128-ShaftAlign.pdf>*

### Rolls-Royce MT30 Completes USN Milestone

The Rolls-Royce MT30 completed a major milestone required for operation by the U.S. Navy. The 36MW marine gas turbine has completed endurance test running for American Bureau of Shipping (ABS) certification. **Patrick J. Marolda**, President - Rolls-Royce Naval Marine Inc., said, "This is an excellent achievement which confirms the MT30 can satisfy all U.S. Navy requirements. It puts us in a great position."

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The world's largest bulk carrier, *Berge Stahl*, was recently in for a stern tube alignment job, completed with the help of Machine Support B.V. *Berge Stahl* is a 1,125-ft. (343 m) ship that can carry 360,000 tons of iron ore, and is powered by a three story high Hyundai B&W 7L90MCE.



September 2004

Driveline and Chassis Technology



Circle 318 on Reader Service Card

## AMOT Introduces Programmable Logic Controller

AMOT introduced the TomaHawk model 8635A combining the power of a PLC with the ease of use of an embedded controller. With 120 I/O points, two ModBus communications ports, a tachometer input, a four-line 80-character backlit display and a tactile keypad, the TomaHawk is suitable for use with engines, turbines, compressors, generators and other equipment in the most demanding hazardous area applications. AMOT offers a complete line of sensors for temperature, pressure, vibration, impact and liquid level as well as complete range of actuated control valves that directly interface with the TomaHawk.

Circle 51 on Reader Service Card

## T-Drill's Rotary Tube Cut-Off Machine



Many of T-DRILL's tube cut-off machine customers are considering the use of the large diameter coils. By pulling the tube from the center of the coil through the so called "eye in the sky" handling system, the tube can be fed from the coil and allowed to naturally orient prior to entering the system straightener.

Circle 1 on Reader Service Card

## New Guided Wave Radar Level Transmitter

K-TEK introduced the new MT2000 Wave Guide Model C9P81, a unit which uses guided wave radar to make measurements. A waveguide directs the microwave pulses, eliminating potential beam divergence problems. The new C9P81 Waveguide is designed specifically for saturated steam applications.

The MT2000 level transmitter features the industry's largest selection of probe materials, including 316 Stainless Steel, 304 Stainless Steel, Hastelloy, Monel, and Titanium.

The MT2000 Guided Wave Radar Level Transmitters are available for immediate shipment. Prices start at \$1325. The C9P81 Waveguide option is priced at \$1000.

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## Viking Lid-Ease Strainers

Viking Pump's Lid-Ease strainers are designed to protect any pumping system by preventing solids or foreign materials from entering the pump. High differential pressures are accommodated by a perforated stainless steel basket with maximum hoop strength that supports an inner stainless steel screen. Differential pressure indicators that show when the basket needs to be cleaned are optional. To stop entrained solids and foreign materials, the strainer basket comes in numerous options from 10 to 100 mesh screens, or no screen (basket openings 0.188" dia.).



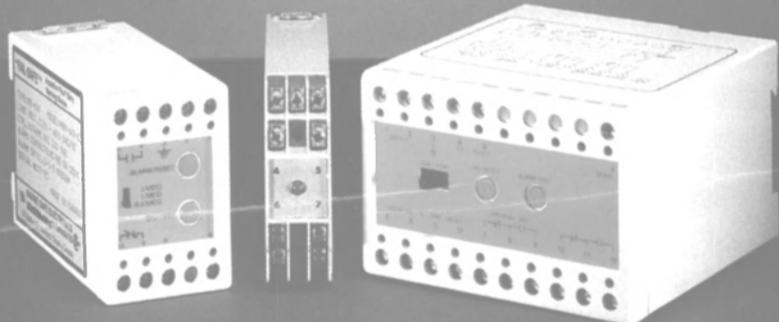
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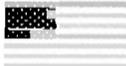
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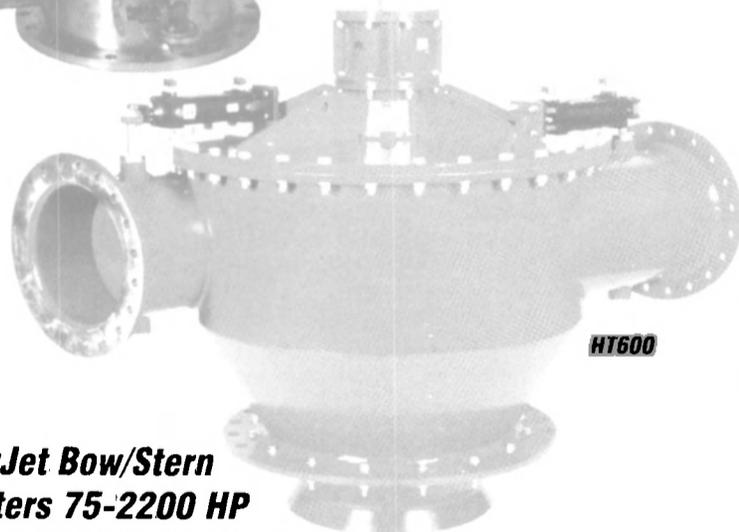


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## Navy Orders Advanced Control and Monitoring

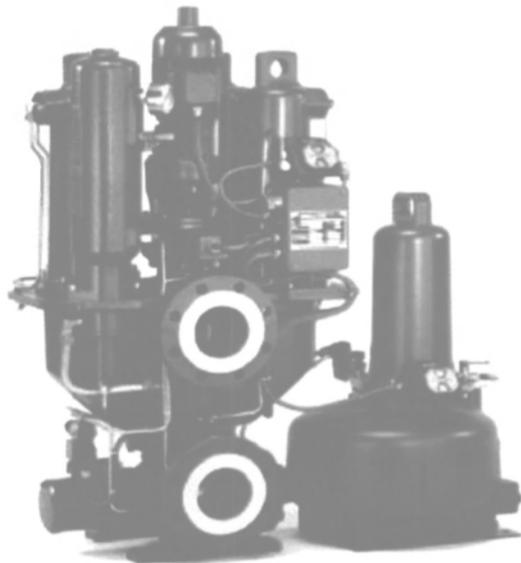
In co-operation with Kongsberg Maritime, Norwegian automation specialist Data Process Automasjon won an order for the delivery of a new platform management system to the Royal Norwegian Navy. The contract includes



systems for eight Oksnøy and Alta class Mine Counter Measure Vessels (MCMVs). The delivery is based on the Kongsberg Maritime DataChief C20 automation system and contains new systems for management of all platform systems on board, including propulsion, water jets and power generation.

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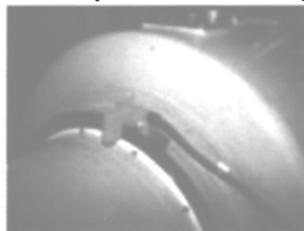
Displays:

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- Torque
- Horsepower
- Total shaft horsepower hours
- Total shaft revolutions
- Total engine running time
- Fuel efficiency when interfaced to existing fuel flow meter

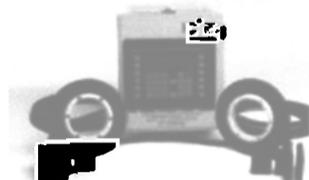
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Above: The multiple slot interrupter (black) is passing through the fiber optic sensor (orange).



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- Total shaft revolutions
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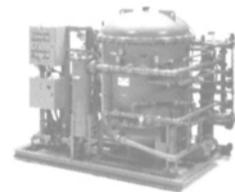


## CWWS ULTRA-SEP Bilge Water Separators

Coffin World Water Systems (CWWS), ULTRA-SEP Bilge Water Separators are reportedly the first systems in the world certified by the United States Coast Guard (USCG) to the demanding standards of IMO's new resolution MEPC.107(49).

USCG certifies of approval issued to all eight available ULTRA-SEP models are based on USCG testing in accordance with the resolution's requirements for reducing both free and emulsified oils in bilge water to less than 15 ppm. The approved CWWS systems range from model ULTRA-SEP 250 to model ULTRA-SEP 10000 providing .25 to 10 cu. m./hr. capacity, respectively.

Circle 5 on Reader Service Card



## Cygnus Debuts Thickness Gauge

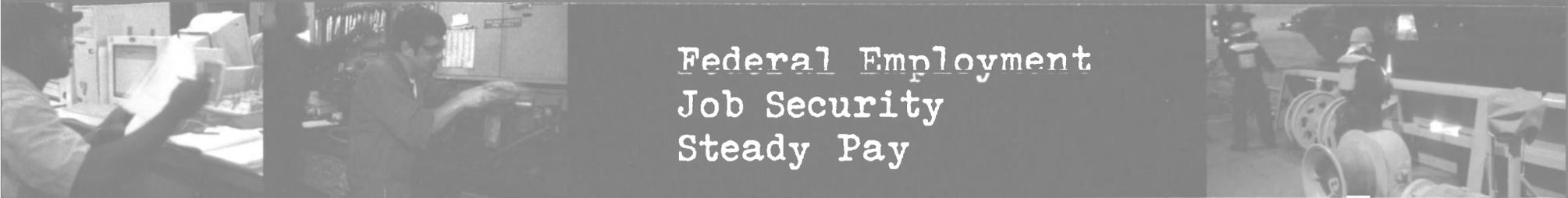
Cygnus Instruments introduced the Cygnus 3 Data Logger ultrasonic thickness gauge. The gauge uses the true Multiple Echo technique where coatings, such as paint

or epoxy, do not have to be removed to obtain an accurate, verified measurement of just the metal. The Windows style data logger and CygLink PC software are designed to be simple to use.

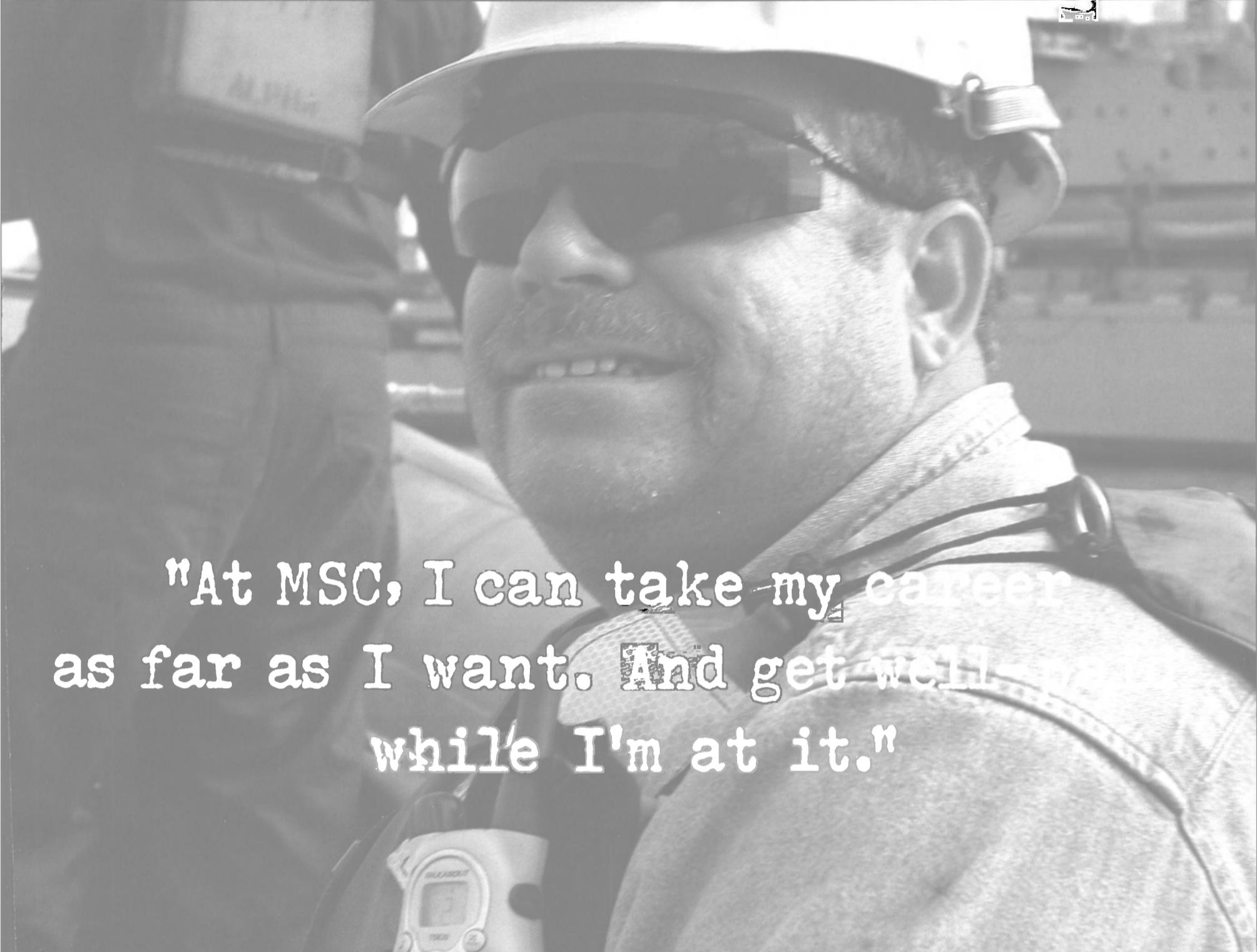
Up to 200,000 measurements can be collected in five different templates and 8.5 x 11-in. reports with corrosion analysis can be printed. Dual displays provide ease of use especially while climbing on structures and in awkward positions.

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## Maritime Security

### The Implementation of MTSA:

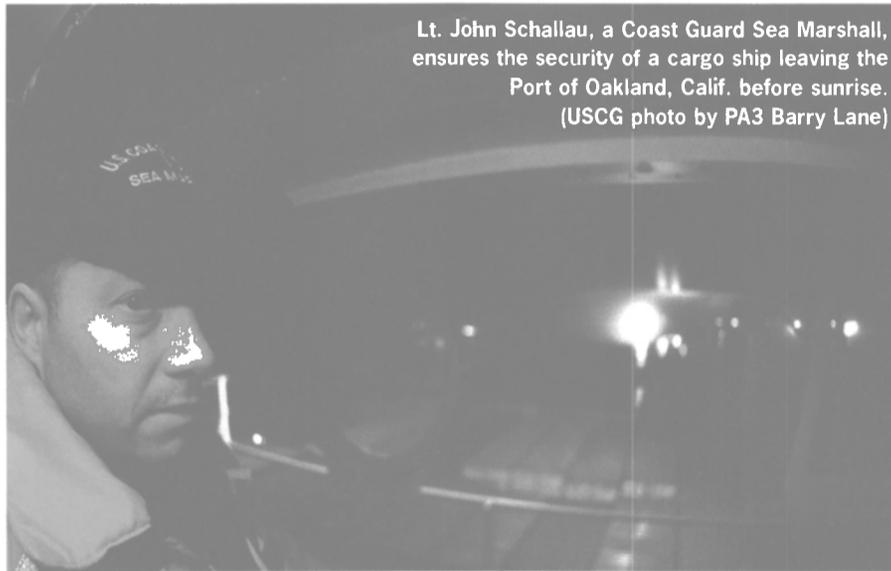
# The Great Maritime Disruption... that Never Happened

By Joe DiRenzo III and Chris Doane  
Y2K.

Remember the dire warnings four years ago as the world raced towards the stroke of midnight ushering in 2000?

Editorials screamed that computer systems everywhere would fail making bank accounts inaccessible, traffic lights inoperable and the whole air traffic control system would come to a screeching halt leaving airplanes without guidance. Y2K disaster preparation "kits" were sold over the Internet as survivalists worried about governments all over the world failing and universal chaos occurring.

Despite all these dire predictions from experts and average citizens alike governments, working in partnerships with industry (both large and small), took a very proactive approach, developed solutions and the great cyber meltdown never occurred. In fact, for days after



Lt. John Schallau, a Coast Guard Sea Marshall, ensures the security of a cargo ship leaving the Port of Oakland, Calif. before sunrise. (USCG photo by PA3 Barry Lane)

Y2K many of the same experts that stirred public concern praised the joint public-private preparation effort that resulted in a smooth entry into the new millennium.

The experience of Y2K provides in many ways an ideal analogy for the rapid build up to the July 1st implementation of the United States' new Maritime Transportation Security Act

(MTSA) and its' international counterpart, the International Maritime Organization (IMO)'s International Ship and Port Facility Security (ISPS) code. Intended to be the solid underpinnings for safe and secure maritime trade, many saw implementation of these laws as a recipe for disaster that would chop international trade at the knees.

All around the globe, members of industry and media, especially some international trade publications and trade groups, proclaimed that the implementation of these new measures would create a massive interruption to maritime commerce that would bring the international Maritime Transportation System (MTS) to a standstill wreaking economic havoc to industry and national economies alike. Some painted pictures of large numbers of merchant vessels, their holds filled with every possible

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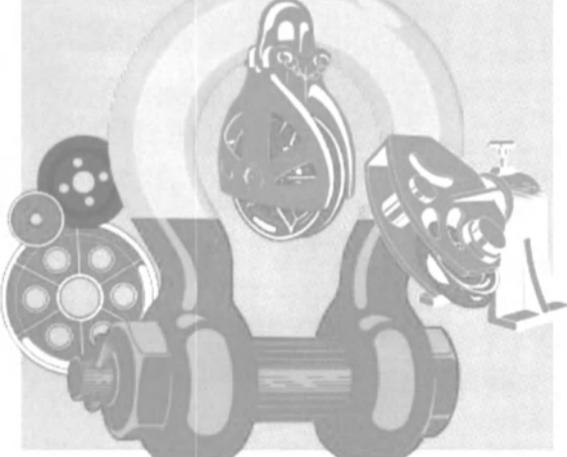
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commodity or natural resource, held up from entering ports due to bureaucratic red tape. Once pier-side further international requirements would delay the normally rapid unloading process and owners and operators in today's "just in time delivery" business system would be significantly impacted. Millions of dollars would be lost forever. The maritime industry and the economies of all nations, so dependent upon maritime trade, would be dealt a significant, perhaps crippling, blow.

In the United States, with its 361 ports and massive dependency upon maritime trade, the Coast Guard was charged with implementing the MTSA and ISPS code. The Coast Guard using its expertise developed from a long history of close interaction with the maritime community quickly built an extensive outreach program with industry as well as federal, state and local government partners to meet the July 1, 2004 implementation deadline. The Coast Guard, at all levels from the local Captains of the Port, to its District Commanders, to the two Area Commanders (located in Portsmouth, Virginia and Alameda, California) and the Commandant instituted an aggressive communications program with the many domestic and international owners and operators of the thousands of vessels and waterfront facilities impacted by these new regulations.

The Coast Guard sought public comment then published regulations on how it intended to implement the MTSA. Coast Guard personnel issued Navigation and Vessel Inspection Circulars (NVICs) to further advise industry and its own members alike on the regulations, conducted training for industry and service members and instituted multi-phase review and approval processes for required vessel and facility security plans. They also provided for rapid feedback to owners and operators whose plans required additional work. The service conducted pre-July 1st visits to facilities and vessels, particularly foreign-flag vessels, to ensure the regulations were understood, that all involved knew that the service was serious in its intentions to enforce these regulations, and to identify facilities and vessels already in compliance in order to reduce the workload on July 1st. All of this required many in the Coast Guard and industry to have a second or third cup of coffee working overtime during the busy winter, spring and early summer.

Despite these Herculean efforts and reassuring statements from the Coast Guard, many were still predicting that maritime commerce would be brought to a virtual stand still on July 1st with

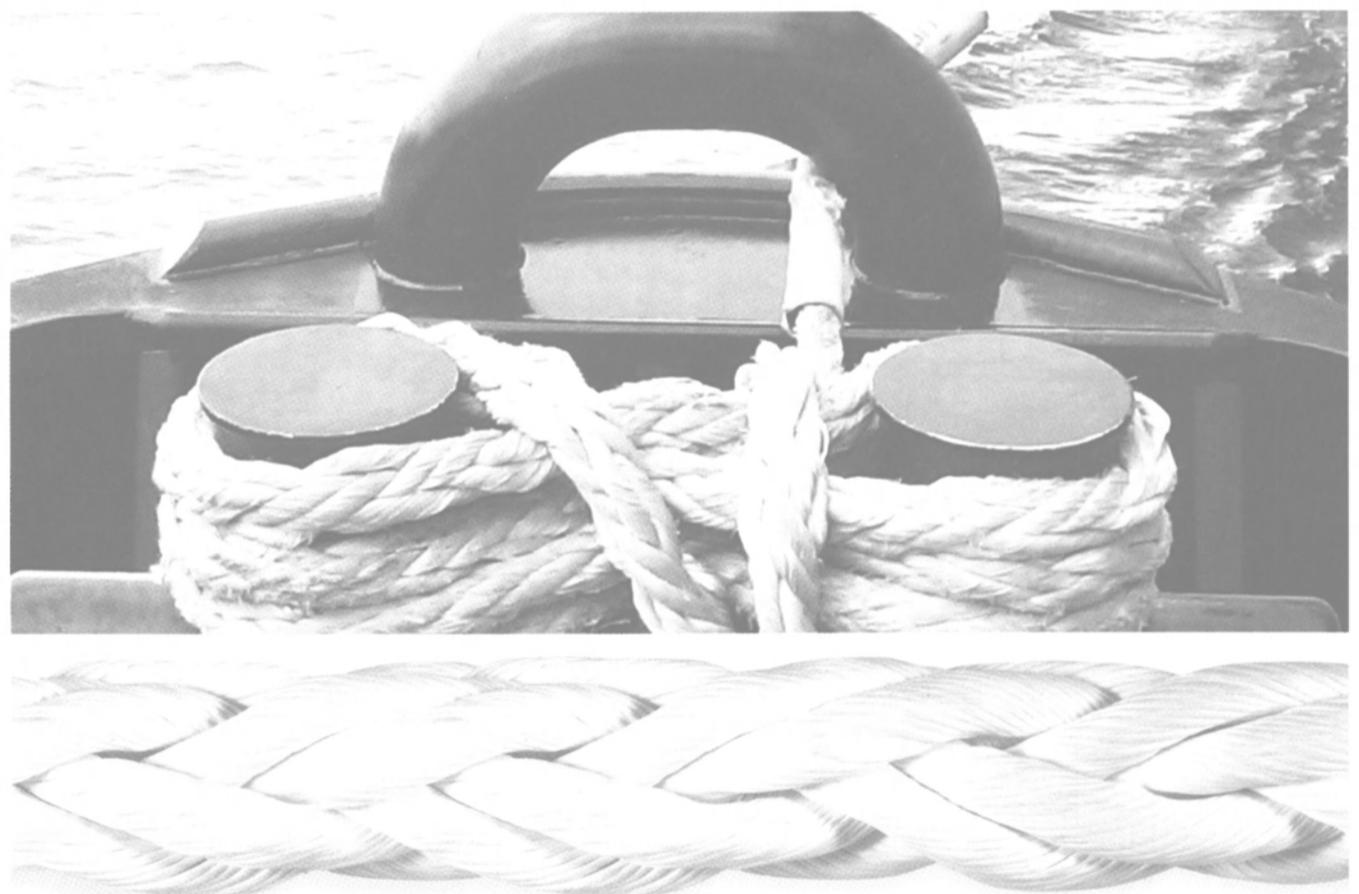
marine facility shutdowns and large numbers of vessels denied entry or trapped in vessel traffic jams waiting to pass through security screenings to enter port. However, on July 1st, the new security measures were enforced and maritime commerce continued to flow smoothly with barely a hiccup. The reasons why the implementation of MTSA

was a non-event are the same reasons why Y2K was a non-event, preparation and prompt action. On the maritime industry side, they recognized the need for enhanced security and heeded the governmental warnings that enforcement would be stringent. By July 1, over 99 percent of all U.S. facilities and vessels subject to the MTSA had submitted

their security plans to the Coast Guard and had received at least sufficient approval to continue to operate.

Beginning on July 1st, the Coast Guard began screening every vessel arriving at its first U.S. port of call to ensure compliance with the MTSA and ISPS Code. With, on average, over 250 vessels arriving at the U.S. daily, this

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## Maritime Security

workload could have overwhelmed the Coast Guard's limited resources creating the predicted vessel traffic jams off our ports. This did not occur thanks to the proactive efforts by many vessels engaged in foreign trade to obtain their International Ship Security Certificate

(ISSC) from their country of registry, certifying compliance with ISPS well in advance of the July deadline. This allowed the Coast Guard to conduct pre-July 1st ISPS examinations, which identified the ISPS compliant vessels that were subsequently allowed to enter port

after July 1st without a security examination. All in all, this reduced the Coast Guard's first day workload by nearly 25 percent.

According to Coast Guard Headquarters, also as of July 13, only 21 foreign vessels, out of 3,420 have been

denied entry or expelled from port because of non-compliance with ISPS, with a mere 45 vessels detained or restricted in port.

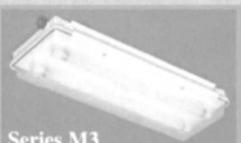
Similar numbers were found domestically regarding MTSA compliance within the United States. Forty-six vessels have been restricted and 22 facilities closed or restricted out of approximately 10,000 vessels and 5,000 facilities required to meet MTSA standards. The numbers speak for themselves; in all cases less than two percent of facilities and vessel were impacted.

The great disaster to maritime commerce never materialized and governments and the maritime industry are settling into a new rhythm of maritime trade with a transportation system that is more secure.

The implementation of the MTSA and ISPS Code has been a dramatic and successful first step toward increasing the security of our maritime transportation system. There remains, however, much more work to be done by all stakeholders to improve the security of vessels and facilities around the world. Vessel and facility security plans must be refined and improved as we continue to learn what is needed for security in our ports. Government agencies, such as the U.S. Coast Guard, must continue to aggressively inspect vessels and facilities to ensure that they continue to implement the measures in their security plans. However, both industry and the government can take some satisfaction that the "massive disruption" never took place and congratulate themselves for a job well done!

*About the Authors: Frequent contributors to the Maritime Reporter & Engineering News; Maritime Security Sourcebook; and Marine News, Joe DiRenzo III is Coast Guard's Atlantic Area's Anti-Terrorism Coordinator. Chris Doane is Atlantic Area's Chief of Response and Port Security. Both are retired Coast Guard officers, who write and speak often on Maritime and Port Security issues.*

### Tough Lights for Rough Seas

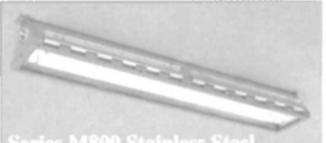


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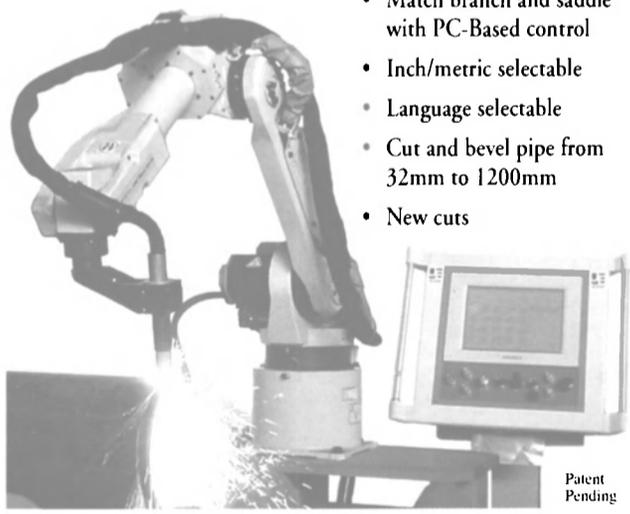
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## Danish Interior Opens Florida Office

Danish Interior opened a branch office at 2300 Las Olas Blvd. Suite 2, Ft. Lauderdale, FL. "We have opened our office in Ft. Lauderdale to support our activities and better serve our Cruise Line clients and provide them with onsite, fast response to their needs" said **Finn Hjelm**, Managing Director of Danish Interior. "We hope that the Cruise Line Companies see this as our commitment to build a strong partnership with them."

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## W&O Supply to Stock ASCO Valves

W&O Supply was chosen as a master stocking distributor for ASCO Valve's line of Navy solenoid valves. ASCO Valve also selected W&O Supply as a full-line factory authorized distributor of valve products and valve monitoring systems focusing on Navy, commercial marine and cruise line industries. "By linking the highest quality valve manufacturer in the world with the maritime industry's leading supplier of pipes, valves and fittings, we will provide exceptional products as well as one point of contact, world-class expertise and an unparalleled support network." said **Jonathan Haigh**, ASCO's manager of channel development.

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## JRC Debuts New Radar Series

JRC introduced the JMA-5300 series radars; the first of a new line of high performance radars built around a new proprietary JRC ASIC (Application Specific Integrated Circuit) architecture. These new systems use processors that are specifically designed to enable parallel processing using multiple ASIC's for lightning fast operation of every feature. The JMA-5300 series will be available in five power outputs; 10kW, 25kW, 50kW X-Band plus 30kW and 60kW S-band, with antenna arrays of 6 ft., 7 ft. or 9 ft. for X-Band and 8 ft. or 12 ft. for S-Band. Some exclusive features include:

- **Constaview** - A display enhancement that refreshes the radar picture every 16ms giving the radar operator a real-time presentation.
- **TEF** - A multi-level Target Enhancement Feature that analyzes each echo and enhances the visual presentation of the target.
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## AGMarine Relocates

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## IMSSCO Names Libya Distributor

IMSSCO Corp. of Fort Lauderdale, Fla., has appointed Point Blank Services Ltd as its exclusive PFA-95 Distributor for Libya. **John Naudi**, Managing Director of Point Blank Services (PBS) whose headquarters are based in Malta lead the first PFA-95 marketing and sales mission to Libya a few days after the U.S. Department of Commerce and U.S. Treasury lifted trade sanctions for this country. The PFA-95 is special purpose A-FFF foam fire fighting equipment for Class A & B fires, used by

Rapid Response Teams and manufactured by IMSSCO Inc.

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### EMMF Enhances Services

ExxonMobil Marine Fuels (EMMF) is expanding and further enhancing its services in the Mediterranean region. An additional chartered barge at Suez, ex-pipe capability at Fos and improved product availability at Augusta are the impetus behind this drive.

Circle 57 on Reader Service Card

### Spurs Wins HAL Installations

Holland America Line installed Spurs Marine's line and net cutter system on both CP propellers of its cruise ship Volendam. This follows a similar installation on the sister vessel Veendam in May, this year.

Circle 56 on Reader Service Card

### Vestdavit Provides Missing Piece for BP

Vestdavit secured the contract for supplying all the davits to BP's Project JIGSAW, which is a totally new concept for offshore rescue and recovery operations in the North Sea. The first ships are under construction at the shipyard. BP is building four regional support vessels, each carrying two Autonomous Rescue and Recovery Crafts (ARRC), and two Fast-Rescue Crafts (FRC). Vestdavit are contracted to deliver eight large two-point davits for the ARRC's and eight single point telescopic davits for the FRC's. The ARRC davits are fitted with both shock absorbers and dual winch system including individual tension system, automatic self-leveling system. The davit is the first to use fiber rope.

Circle 58 on Reader Service Card

### L-3 Henschel Wins Sub Contract

L-3 Communications SPD Technologies group said its Henschel business unit has been awarded a contract to provide the integrated communication system (ICS) for the next six Virginia class (SSN774) submarines. "The integrated communication system award builds on our strong relationship with General Dynamics Electric Boat Division," said Don Roussinos, president of L-3 Communications Henschel. "The multi-year contract ensures we provide Electric Boat the best value."

Circle 59 on Reader Service Card

### Schat-Harding Expands into Asia

Schat-Harding has taken over the Chinese Beiyang Boatbuilding Co

lifeboat manufacturing range and plant as part of a strategy to expand its market share in cargo ships built in Asian yards. The lifeboat factory, at Qingdao, currently produces a range of five models and 100 boats annually. Schat-Harding will supply 250 boats from China annually, in sizes from six to 38 persons.

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### Northrop Grumman Wins U.S. Navy Contracts

Northrop Grumman Corporation won a contract by the Naval Sea Systems Command to supply navigation radar sets and associated systems engineering for 10 U.S. Navy submarines. The company's Sperry Marine business unit will deliver AN/BPS-16 (V) 4 navigation

radar sets for six Virginia-class attack submarines and four guided-missile submarines.

The company also announced that it won contracts to supply the Navy with steering systems for three new USS Arleigh Burke DDG 51-class guided missile destroyers.

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The AIS Company.

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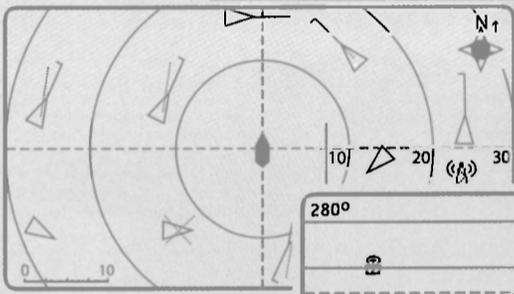
**The new 3 in 1 graphical display: More value for the same price!**

**Alphanumeric View**

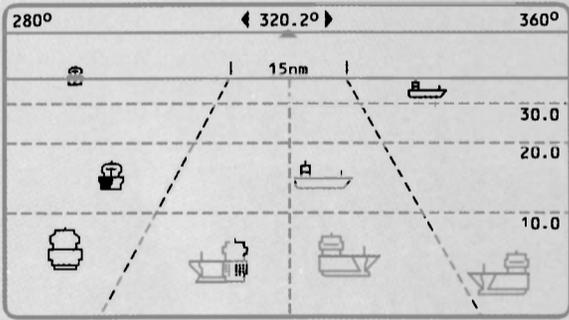
```
LAT: N 48-15'58" SOG:0.0kn      17-09-2002
LON: E 16-25'22" COG:0.0      UTC11:21.28
GPS: 3D-INT-----Ships:4----AIS1

***** Ship Settings *****
IMO No.   : 3031741
CallSign : D00
Ship Name : Europa
Length   : 220m
Beam     : 43m
RefPoint : 33m, 20m
Ship Type: <Search and re
```

**Radar View**



**Fairway View**



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**Class A - SOLAS Transponder:**  
**XS in size and XL in functions**

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## Marine Propulsion: Spares & Repairs

The following directory is the result of an e-mail survey conducted in August 2004. To register your company for this free editorial listing, please visit <http://www.marinelink.com/weblisting04/directory/add2dir.asp?lssueld=9>. Publisher not responsible for errors or omissions.

**Aalborg Industries A/S (Boilers)**  
Gasvaerksvej 24, P.O. Box 844  
Aalborg, 9100 Denmark  
www.aalborg-industries.com  
Rene Fich Jespersen  
tel: +45 9930 4000  
fax: +45 9816 8316  
email: aal@aalborg-industries.dk  
Products: Marine Diesel Engines, Gas Turbine

**ABB Turbo Systems Ltd**  
Bruggerstrasse 71a  
Baden, CH-5401 Switzerland  
www.abb.com/turbocharging  
Hanspeter Zingg  
tel: +41 58 585 4037  
fax: +41 58 585 5144  
email: info.turbochargers@ch.abb.com  
Products: Turbocharger

**ABB Inc., BU Turbocharging - Miami**  
10004 Premier Parkway,  
Miramar Park of Commerce  
Miramar, FL 33025  
www.abb.com/turbocharging  
Mark Churchill  
tel: 954 450 9544  
fax: 954 450 8957  
email: mark.churchill@us.abb.com  
Descr: ABB Turbocharger Sales & Service  
Products: ABB Turbocharger spare parts, service, and new turbocharger sales.

**ABB Inc., BU Turbocharging - NY/NJ**  
1460 Livingston Ave  
North Brunswick, NJ 08902  
www.abb.com/turbocharging  
Joseph Kersulic  
tel: 732-932-6103  
fax: 732-932-6378  
email: turbo@us.abb.com  
Descr: ABB Turbocharger Sales & Service  
Products: ABB Turbocharger spare parts, service, and new turbocharger sales.

**Air Cooled Engine Service Ltd.**  
1153 Topsail Rd.  
St. John's, NL A1N5G2 Canada  
www.customgenerators.com  
Gerry/John Parsons  
tel: (709) 364 6545  
fax: (709) 364 6525  
email: sales@customgenerators.com  
Products: Marine Diesel Engines, Medium Speed Diesel Engines, High Speed Diesel Engine

**Allen Gears Ltd**  
Atlas Works, Station Road  
Pershore, WR10 2BZ UK  
www.allengears.com  
Samantha Griffith  
tel: +44 (0)1386 552211

fax: +44 (0)1386 554491  
email: sales@allengears.com  
Products: Gears

**AmBoss Corp**  
427 Honeyspot Road  
Stratford, CT 06615  
www.ambosscorp.com  
Bryan Wilson  
tel: 203 380-2466  
fax: 203 380-2522  
email: ambosscorp@msn.com  
Descr: Distributor of Diesel Engine Parts & Accessories  
Products: Pistons, Liners, Crankcases, Crankshafts, Camshafts, Connecting rods, Bearings, Starter Motors, Alternators, etc.

**American Superconductor Corporation**  
121 Flanders Road  
Westborough, MA 01581  
www.amsuper.com  
Matthew O'Connor  
tel: 508 621-4129  
fax: 508 621-4321  
email: mo\_connor@amsuper.com  
Products: Electric Drive

**Applegate Industrial Materials, Inc.**  
P.O. BOX 428  
Baton Rouge, LA 70821-0428  
www.the-flex.com  
BOB APPLGATE  
tel: 225 336-4116  
fax: 225 336-4317  
email: INFO@THE-FLEX.COM  
Descr: MARINE EXHAUST COMPONENTS MFR.  
Products: STAINLESS STEEL MUFFLERS, FLEXES, THERMAL INSULATION BLANKETS

**Arctic Diesel & Equipment**  
2823 E Tudor Rd  
Anchorage, AK 99507  
tlprekaski@gps.com  
Anthony L Prekaski  
tel: 907 229 5678  
email: pacificdiver@hotmail.com

**Benjin. R. Vickers & Sons Ltd**  
Airedale Mills, 6 Clarence Road, Hunslet,  
Leeds, LS10 1ND UK  
www.vickersoil.com  
Sarah Ojeade  
tel: +44 (0) 113 386 7654  
fax: +44 (0) 113 386 7676  
email: inbox@vickersoil.com  
Products: Propellers, Gears, Shafts, Bearings Thrusters, Rudder

**Bollinger Shipyards, Inc.**  
P. O. Box 250  
Lockport, LA 70374

www.bollingershipyards.com  
Robert A. Socha  
tel: 985-532-2554  
fax: 985-532-7225  
email: sales@bollingershipyards.com  
Products: Propeller

**BRUNVOLL AS,**  
Strandgata 4-6, N-6415 Molde, Norway  
tel: + 47 71 21 96 00  
Fax: +47 71 21 96 90  
www.brunvoll.no  
E-mail: office@brunvoll.no

**Centa Corporation**  
815 Blackhawk Drive, Westmont, IL 60559  
www.centa.info  
Kurt Niederpruem  
tel: (630) 734-9600; fax: (630) 734-9669  
email: kurtn@centacorp.com  
Descr: Global OEM  
Products: Torsional Couplings, Clutches and Shafting

**Ciserv CGL Industries Ltd**  
1771 Savage Rd, Richmond, BC V6V 1R1 Canada  
www.ciserv.com  
Vincent Huber  
tel: +1 604 244 8181; fax: +1 604 244 1181  
email: vincent.huber@ciserv.com  
Descr: CISERV CGL is a global leader in developing cost effective techniques to recondition parts to the latest OEM specifications and modifications.  
Products: Reconditioning of Cylinder Covers, Piston Crowns, Piston Skirts, Piston Rods, Connecting Rods, Babbitt Bearings, Cylinder Liners, Cylinder Heads, and Exhaust Valve Spindles

**Ciserv**  
2140 Technology Place, Long Beach, CA 90810  
www.ciserv.com  
Arnaud Filancia  
tel: +1 562 491 2000; fax: +1 562 491 2017  
email: ciserv.usa@ciserv.com  
Descr: Ciserv is a new multi-location network of entrepreneurial companies, lean and mean, available round-the-clock, with a dynamic and proactive Customer Oriented business approach, supplying Products and Services for multiple brands.  
Products: Ciserv is specialized in ship service for any kind of equipment or engine brands, we deliver in-situ field services for maintenance or repair, turbo charger maintenance.

**Cooper Bearings**  
5365 Robin Hood Road, Suite B  
Norfolk, VA 23513  
CooperBearings.com  
Debbie Milledge  
tel: 757 460 0925 ex 100

fax: 757 464 3067  
email: dmilledge@kaydon.com  
Products: Bearing

**DAIHATSU DIESEL (AMERICA), INC.**  
180 Adams Ave., Hauppauge, NY 11788  
www.dhtd.co.jp  
tel: 1-631-434-8787; fax: 1-631-434-8759  
email: dda@ddany.com  
Descr: Subsidiary of Japanese Engine Manufacturer  
Products: Diesel Engine ranging 500ps through 8000ps and its after services.

**Daros Piston Rings AB**  
Box 138, Molnlycke, SE 345 23, SWEDEN  
www.daros.se  
Niklas Falkmer  
tel: +46 31 338 40 74  
fax: +46 31 338 40 40  
email: sales@daros.se  
Descr: Manufacturing Company  
Products: Piston Rings for Marine Industry

**Dayton T. Brown, Inc.**  
1175 Church Street, Bohemia, NY 11716  
www.dtb.com  
Nunzio Prato  
tel: 631-244-6358;  
fax: 631-567-8540  
email: nprato@dtb.com  
Products: Technical Publications, Technical Documentation, Full Manual Support, ILS, Precision Sheet metal, Engineering & Test, Contract Assembly & Test Systems

**DEANGELO MARINE EXHAUST**  
3330 SW 2 AVE  
FORT LAUDERDALE, FL 33315  
WWW.DEANGELOMARINE.COM  
Mariano Soto  
tel: 954-763-3005  
fax: 954-467-8133  
email: sales@DEANGELOMARINE.COM  
Descr: MARINE EXHAUST SYSTEMS  
Products: CUSTOM DESIGN AND FABRICATION OF EXHAUST SYSTEMS, REPLACEMENT COMPONENTS, AND ACCYS

**Depco Power Systems**  
8123 Hillsboro Avenue  
Houston, TX 77029  
www.depco.net  
Dick Davis  
tel: 713 675-6100, 800-723-3726  
fax: 713 675-6600  
email: sales@depco.net  
Descr: Diesel Engines and Generators, Parts, Sales and Service  
Products: Rebuilt and Used Caterpillar, Cummins, Detroit Diesel Engines and Generators, Twin Disc Marine Gears, Parts, Service. We rebuild, buy and

sell equipment.

**Design Power International**  
5515 Harvey Wilson Dr.  
Houston, TX 77020  
www.Design-Power.com  
Sam Bourmias  
tel: 713-675-4262  
fax: 713-675-4688  
email: dpi-usa@att.net  
Descr: Diesel Engine Sales Parts & Service  
Products: EMD

**Deutz Corp.**  
3883 Steve Reynolds Blvd.  
Norcross, GA 30093  
www.deutzusa.com  
Ragnar Radtke  
tel: 770-564 7130  
fax: 770-564-7116  
email: radtke.r@deutzusa.com  
Products: Marine Diesel Engines, Medium Speed Diesel Engines, High Speed Diesel Engine

**DIESEL POWER TRADE CORP.**  
1720 CLEVELAND AVENUE  
NATIONAL CITY, CA 91950  
www.Dptcorp.com  
ROGER VIOLANTE  
tel: 619-474-1045  
fax: 619-474-1507  
email: dptcorp@att.net  
Descr: Wholesaler of new, used, and rebuilt marine diesel engines, components, and spare parts.  
Products: Sales and Service of All major manufacture diesel engines and components, Fuel injection, Turbos, marine transmissions, gearboxes, controls, pumps and cooling systems.

**Diesel Propulsion Services**  
5304 West Orlando Circle  
Broken Arrow, OK 74011  
www.dieselpropulsion.com  
Karl Johan Tomren  
tel: 918-361-3860  
fax: 918-459-6612  
email: info@dieselpropulsion.com  
Descr: Marine Diesel Engine, Sale, Service, Parts.  
Products: Volvo Penta, Yanmar, Mitsubishi, Daihatsu, Bergen Diesel, Norsafe, Norpower.

**DIESEL CRAFT FLUID ENGINEERING**  
PO BOX 7670  
AUBURN, CA 9604  
www.dieseldcraft.com  
John T. Nightingale  
tel: 877-823-7075  
fax: 530-823-7078  
email: sales@dieseldcraft.com  
Descr: Diesel fuel purification systems and filtration  
Products: Fuel filters, separators and stabilizers

**Duramax Marine**  
17990 Great Lakes Parkway  
Hiram, OH 44234  
www.DuramaxMarine.com  
Mike Schonauer  
tel: 440 834 5400  
fax: 440 834 4950  
email: mschonauer@duramaxmarine.com  
Descr: Manufacturer  
Products: Bearings, Heat Exchangers, Fendering, Sealing Systems

**Fairbanks Morse Engine**  
701 White Avenue  
Beloit, WI 53511  
www.fairbanksmorse.com  
Pat Bussie  
tel: 608 364 8119  
fax: 608 364 8444  
email: pat.bussie@fairbanksmorse.com  
Products: Marine Diesel Engines, Medium Speed Diesel Engines, Gas Turbine

**GasTOPS**  
1011 Polytek Street  
Ottawa, ON K1J 9J3 Canada  
www.gastops.com  
Andrew German  
tel: 613-744-3530  
fax: 613-744-8846  
email: jkotrecova@gastops.com  
Descr: Leading provider of advanced products and engineering services for machinery control, protection, condition monitoring and assessment, and maintenance optimization.  
Products: MetalSCAN, FilterCHECK, Lube Analyst, ChpSCAN

**GE Transportation/Marine**  
2901 East Lake Road, Building 12-2  
Lawrence Park, PA 16531  
www.getransportation.com  
Lori Kieklak  
tel: 814-875-5170;  
fax: 814-875-5113  
email: lori.kieklak@trans.ge.com  
Descr: Manufactures and repairs medium speed diesel engines  
Products: Medium speed EFI diesel engines 8, 12, 16 cylinder ranging from 1600 to 4000 shaft horsepower

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**TURBO USA, INC.**  
Turbocharger Service Repair And Parts Supply  
[www.turbo-usa.com](http://www.turbo-usa.com)

Tel: +1 954-767-8631  
Fax: +1 954-767-8632  
Toll free: 877-887-2687  
[info@turbo-usa.com](mailto:info@turbo-usa.com)

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**General Thermodynamics Corporation**  
65 Drinkwater Road, Hampton Falls, NH 03844  
generalthermo.com  
Charles Leto  
tel: 603-772-9800  
email:cleto@comcast.net  
Descr: Manufactures and distributes BMEP Engine Cylinder Balancer  
Products: BMEP Engine Cylinder Balancer

**Governor Control Systems Inc**  
3101 SW 3rd Avenue, Ft. Lauderdale, FL 33315  
www.govconsys.com  
Lynn Bell  
tel: (954) 462-7404; fax: (954) 761-8768  
email:contact@govconsys.com  
Descr: Authorized distributor Woodward Industrial Controls, Dynalco Products and TDI Air Starters.  
Products: Woodward, Dynalco and TDI

**Hans Jensen Lubricators A/S**  
Smedevaenget 3, Hadsund, 9560 Denmark  
www.hjulubri.dk  
Thomas Jensen  
tel: +45 98 57 19 11; fax: +45 98 57 13 87  
email:hj@hjulubri.dk  
Descr: development and production of cylinder lubrication for 2-stroke diesel DEs  
Products: Cylinder Lubrication equipment, hereunder SIP Lubrication system

**HAWBOLDT INDUSTRIES (1989) LTD.**  
PO BOX 80, CHESTER, NS BOUJIO CANADA  
WWW.HAWBOLDT.CA  
RICHARD MAC LEOD  
tel: 902-275-3591; fax: 902-275-5014  
email:richard.macleod@hawboldt.ca  
Products: Propellers, Shafts, Bearings, Thrusters, Rudder

**HRP, Inc.**  
1010 C.M. Fagan Drive, Suite 106, Hammond, LA 70403  
www.hrp.nl  
Hank Morgan  
tel: 985-419-1705; fax: 985-419-1383  
email:hrpusa@bellsouth.net  
Products: Thruster

**IND-MAR Industries**  
5105 Buffalo Ave., Jacksonville, FL 32206  
www.ind-mar.com  
David Kiraly  
tel: 904-355-5421; fax: 904-358-6028  
email:imioffice@aol.com  
Products: Marine Diesel Engines, Propellers, Gears, Shafts, Bearings, Rudders, Turbocharger

**In-Place Machining Company**  
3811 North Holton Street, Milwaukee, WI 53212  
www.inplace.com  
Jonathan Eder, President  
tel: 414 562 2000; fax: 414 562 2932  
email:help@inplace.com  
Descr: crankshaft refurbishing and line boring in-situ  
Products: In-Place on-board machining of all types

**ITW Philadelphia Resins**  
130 Commerce Drive, Montgomeryville, PA 18936  
www.chockfast.com  
Stanley Nelson  
tel: 215 855 8450; fax: 215 855 4688  
email:sales@itwprc.com  
Descr: Manufacture Epoxy compounds  
Products: Chockfast, Phyllyclad and Phillybond

**John Deere Power Systems**  
3801 W. Ridgeway Ave., Waterloo, IA 50701  
www.JohnDeere.com/marine  
Tom Withers  
tel: 800-533-6446; fax: 319-292-5075  
email:jdpower@johndeere.com  
Descr: Manufacturer  
Products: Diesel Engines

**KAPLAN & ASSOCIATES, INC.**  
7847 DETROIT BLVD, WEST BLOOMFIELD, MI 48323-1028  
www.alkaplan.com  
AL KAPLAN  
tel: 248-366-0570; fax: 248-366-0828  
email:ALANKAPLAN@AOL.COM  
Products: Marine Diesel Engines, Propellers, Gears, Shafts, Bearings, Electric Drives, Thrusters, Rudder

**KGW Schweriner Maschinenbau GmbH**  
Wismarsche Str. 380, Schwerin, 19055 Germany  
www.kgw-schwerin.de  
Mr. Helmut Welle  
tel: +49-385-5731 253; fax: +49-385-56 51 26  
email:sales@kgw-schwerin.de; h.welle@kgw-schwerin.de  
Products: Rudder

**L-3, Klein Associates, Inc.**  
11 Klein Drive, Salem, NH 03079  
www.kleinsonar.com  
Deborah Durgin  
tel: 603-890-1304; fax: 603-890-9796  
email:ddurgin@kleinsonar.com  
Products: Bearings, Rudder

**Laborde Products.com**  
74257 Highway 25, Covington, LA 70435  
www.labordeproducts.com  
Chris Cerullo  
tel: 985-892-0107 ext 212; fax: 985-898-5824  
email:ccerullo@labordeproducts.com  
Products: Marine Diesel Engines, High Speed Diesel Engines, Waterjet

**Lemag, Inc.**  
PMB 182, 250 "H" Street, Blaine, WA 98230-4033  
www.lemag.de  
Todd Haff

tel: 604-980-1281; fax: 604-980-1341  
email:lemaginc@shaw.ca  
Descr: Distributor of Lehmann & Michels engine analysis equipment  
Products: Premet electronic engine indicators, Peak Pressure Indicators, Online systems for permanent cylinder monitoring, crankshaft deflection indicators, Slashtpol water in fuel system

**Lufkin Industries, Inc.**  
P.O. Box 849 - 407Kiln St., Lufkin, TX 75902-0849  
www.lufkin.com  
Terry Orr  
tel: 936-637-5612; fax: 936-633-3916  
email:terryorr@lufkin.com  
Products: Gear

**Mack Boring & Parts Company**  
2365 Route 22, Union, NJ 07083  
www.mackboring.com  
Stacy Dersh  
tel: 800 MACK ENG; fax: 800 MACK FAX  
email:sdersh@mackboring.com  
Descr: Mack Boring is proud to provide the best sales, parts, and service in the industry regardless of your product needs. Mack Boring covers the Northeast, Mid-Atlantic, Great Lakes, and the Carolinas for Yanmar Marine Diesels.  
Products: Yanmar Marine Diesel Engines, Diesel Generators, Diesel Pumps, Isuzu Generators

**MACSEA Ltd**  
163 Water St., Stonington, CT 06379  
www.DexterAgents.com  
James Marino  
tel: 1-(860)-535-3885  
email:jmarino@macsea.com  
Products: Marine Diesel Engines, Low Speed Diesel Engines, Medium Speed Diesel Engines, High Speed Diesel Engines, Gas Turbines, Podded Propulsion, Propellers, Gears, Shafts, Waterjets, Bearings, Electric Drives, Thrusters, Turbocharger

**MAN B&W Diesel Ltd**  
Bramhall Moor Lane, Hazel Grove, Stockport, SK7 5AQ UK  
www.manbw.com  
Cliffe Burrows  
tel: + 44 161 426 4569; fax: + 44 161 487 1465  
email:cliffe.burrows@manbwitd.com  
Descr: Diesel Engine Manufacturer  
Products: Diesel Engines

**Marine Diagnostics / Frank & Jimmie s Propeller**  
200 SW 6 Street, Ft Lauderdale, FL 33301  
www.fjprop.com  
Wayne Wingate  
tel: 954-467-7723; fax: 954-467-1159  
email:wayne@fjprop.com  
Products: Propellers, Shaft

**Maritime Marketing Alliance / Enman & Associates**  
10920 Baymeadows Road - Suite 27, PMB 304  
Jacksonville, FL 32256  
www.davidenman.com  
David Enman  
tel: 904-519-0469; fax: 904-519-8580  
email:dave@davidenman.com

**Michell Bearings**  
Scotswood Road, Newcastle Upon Tyne, NE156LL UK

www.michellbearings.com  
Iain K. Richardson  
tel: +44 (0)191 2565384; fax: +44 (0)191 2727287  
email:sales@michellbearings.co.uk  
Products: Bearing

**Motor-Services Hugo Stamp, Inc.**  
3190 S.W. 4th Avenue, Ft. Lauderdale, FL 33315  
www.mshs.com  
Torsten Schmitt  
tel: (954) 763-3660; fax: (954) 763-2872  
email:torsten.schmitt@mshs.com  
Products: Marine Diesel Engines, Low Speed Diesel Engines, Medium Speed Diesel Engines, High Speed Diesel Engines, Gears, Electric Drives, Thrusters, Turbocharger

**NautiCAN Research & Development Ltd.**  
PO Box 428 115 Kelvin Grove Way  
Lions Bay, BC V0N 2E0 Canada  
www.nautican.com  
Josip Gruzling  
tel: 604-921-1920; fax: 604-921-1925  
email:josip@nautican.com  
Products: Propellers, Rudder

**Neuenhauser Kompressorenbau GmbH (NK)**  
Ladestr. 5, Neuenhaus, 49828 Germany  
www.neuenhauser.de  
Harm Harders  
tel: +49-4955-936 325; fax: +49-4955-936 327  
email:harm.harders@neuenhauser.de  
Descr: Neuenhauser Kompressorenbau GmbH was founded in 1986. The company is situated in Neuenhaus, Germany. NK Compressed Air System are used primarily for starting Diesel and Gas engines and for working- and control air on ships and industrial firms.  
Products: Compressors, Air Receivers, TDI TURBOTWIN Engine Air Starters, Bulkhead Penetrations

**NIU Nyland AS**  
Servicebox 726, Arendal, NO-4808 Norway  
www.nyland.com  
Tom Erik Johnsen  
tel: +4737087200; fax: +4737082920  
email:nyland@nyland.com  
Descr: Manufacturer of spare parts for slow speed marine diesels  
Products: Cylinder liners, cylinder covers, piston upper and lower parts, exhaust valve spindles and -seats + 10000 miscellaneous small parts

**North American Marine Jet Inc.**  
PO Box 1232, Benton, AR 72018  
www.marinejet.com  
Jason T. Hill  
tel: 501-778-4151; fax: 501-778-6381  
email:jason@marinejet.com  
Products: Waterjets, Thruster

**O&M Propeller Service Inc.**  
101-F, Ellis Street, Staten Island, NY 10307  
Richmond  
WWW.ONMPPROPELLER@AOL.COM  
Robert Weaver  
tel: 718-981-3969; fax: 718-981-5891  
email:www.ONMPPROPELLER@AOL.COM  
Products: Propellers, Shaft

**Outboard Propulsions Systems, LLC**  
1815 N US Hwy 1, Ormond, FL 32174  
www.jetpac.us  
Michael Moses  
tel: 386/676-7685; fax: 386/676-0164  
email:mmoses@opsjet.com  
Products: Marine Diesel Engines, Waterjet

**Polmar Engineering B.V.**  
Heijplaatstraat 21, Industrial Area Heijplaat  
Rotterdam, 3089 JB  
The Netherlands  
www.polmarengineering.nl  
Mr. Albert van der Mannen  
tel: +31 10 4287111; fax: +31 10 4287110  
email:post@polmareng.nl  
Descr: Ship Repair and supplier of spare parts of all kinds of engines  
Products: Reconditioning of spare parts, supply of engine spare parts, electronic repairs, etc.

**PTC DIESEL POWER**  
2822 JUNIPER STREET, FAIRFAX, VA 22031  
www.ptcpower.com  
RICHARD WILSON  
tel: 7036410400; fax: 7036410021  
email:sales@ptcpower.com  
Descr: MARINE ENGINE PARTS DISTRIBUTOR  
Products: MARINE ENGINE PARTS AND EXHAUST PARTS

**puradYN Filter Technologies Inc.**  
2017 High Ridge Rd., Boynton Beach, FL 33426  
www.puradyn.com  
Pris Neulander  
tel: 561-547-9499; fax: 561-547-8629  
email:info@puradyn.com  
Descr: Manufacturer of bypass oil filtration systems  
Products: Bypass oil filtration systems

**Ram Turbos Inc.**  
790 #40 Mullet Rd., Port Canaveral, Fla 32920  
ramturbo@bellsouth.net  
Dwight a. Ramirez  
tel: 321 868-2920; fax: 321 868-2921  
email:ramturbo@bellsouth.net  
Descr: Maritime Parts & Turbocharger Exchange  
Products: TURBOCHARGERS

**Rice Nozzles**  
Av. Puerto de Ensenada No.3, Mazatlan, 82050 Mexico  
www.ricenozzles.com  
Octavio Contreras  
tel: +52 669 9823000; fax: +52 669 9826020  
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## New Tech for AUVs

EdgeTech introduced a new combined Side Scan Sonar and Sub-Bottom Profiler for small Autonomous Underwater Vehicles (AUV). The new 2200-S AUV Sonar System is a combined side scan sonar and sub-bottom profiler specifically designed for small, limited power budget AUVs. The 2200-S contains a Full Spectrum ("chirp") dual frequency 120/410 kHz side scan sonar with a swath coverage of 800+ meters. The 2200-S processor transmits long, wide bandwidth pulses that result in higher resolution images and greater Signal to Noise Ratio resulting in extended range.

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## New Foam Sample Test Kit



Drew Marine introduced a new program to analyze firefighting foam in fixed extinguishing systems, an extension of its marine products and services to help keep marine operators in compliance with international regulations that require firefighting foam to be periodically analyzed and certified.

The Foam Sample Kit with Analysis includes everything needed to collect and send a foam sample from anywhere in the world to Drew Marine's certified labs. Results are generally available one week after receipt, and certificates can be sent electronically, allowing both the vessel and home office to quickly receive the required documentation.

Circle 9 on Reader Service Card

## Furuno Launches New IMO Radar Series

Furuno has launched new radar technology combined with a new compact and aesthetically appealing console design, harmonizing with the new Voyager-Style IBS (Integrated Bridge System). The new Radars come in two series: The FAR-21x7 series with a 20.1-in. high resolution Flat Panel Multi-Color LCD, complying with SOLAS carriage requirements for ships

below 10,000 gt, and the FAR-28x7 series with the 23.1-in. equivalent display for all SOLAS vessels.

The new Black Box Configuration with separated Processor Units, Display Units and Control Units, including optional remotes,



allows for maximum flexibility and interswitching capability using 100Base-T Ethernet. Up to four Radars can be inter-connected via an Ethernet Hub, integrating up to four X- or S-band antennas, four Processor Units serv-

ing four display units with interswitchable information.

Mixing radar pictures is also possible, where radar images from multiple radar systems can be shown in user-determined segments or sectors simultaneously.

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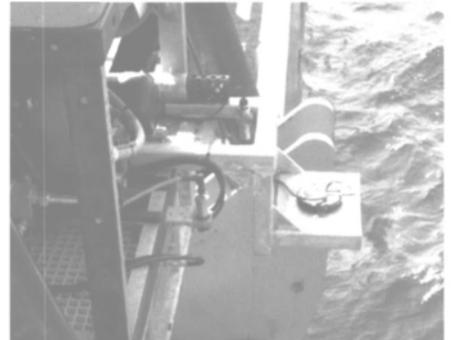
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## New Positioning Technique Helps Cut Costs in Deepwater GOM

During a recent 10-day project in the Gulf of Mexico for a major E&P company, the use of inertial navigation technology reportedly reduced vessel time by three to five days over the course of the deployment and positioning of seismic data acquisition modules. Prior to this sea-trial, precise underwater positioning was achieved by dropping and calibrating an array of acoustic beacons on the seabed - a time-consuming process that requires deployment, calibration and later recovery of the beacons.

"A significant increase in productivity and reduced safety risk was achieved using the Kongsberg Maritime Hydroacoustic Aided Inertial Navigation (HAIN) system, while maintaining the accurate placement and positioning of the modules," said **George Buhler**, Positioning & Navigation Consultant for C&C Technologies, one of three service providers on the project, together with Fairfield Industries and Sonsub. "The



equipment was mounted on a remote operated vehicle (ROV) and was ready to work as soon as it arrived onsite. Furthermore, the positioning accuracies we achieved were comparable to those of traditional technologies throughout a range of water depths." By using an inertial system as the primary method for ROV navigation and positioning, the team determined that inertial technology can be used to replace an array of acoustic beacons as the primary source of navigation and positioning for a variety of seabed operations that require precise navigation and positioning. With fewer points of failure and a lower safety risk due to a significant reduction in back deck operations; this successful sea-trial was a first step in introducing this new technology to deepwater oil and gas ROV operations.

The seismic data acquisition modules were Fairfield Industries' Deep Z Pods, a self-contained, 4C recording sensor for Azimuth Long Offset, full-wave seismic data acquisition in deepwater. The project took place in water depths ranging from 4000 to 7000 feet using a Sonsub Innovator ROV deployed from the support vessel HOS Innovator.

Circle 11 on Reader Service Card



## Flooring Takes on Rigors of Rig Life

More than 12,000 sq. ft. of EnSCO Rig 7500 interior decking was recently replaced with PolySpec Flex-IMO Vinyl Chip Flexible Seamless flooring, bringing the rig in compliance with safety regulations and replacing a floor that had worn out in only four years. Polyspec's Flex-IMO system is an ABS and IMO/SOLAS approved seamless floor system, designed for ease of installation and long life.

Circle 12 on Reader Service Card

## Wheelabrator Helps Process Steel for Ships

Metals USA, a leading provider of large sheets of steel for shipbuilding from its facilities in Mobile, Ala., and New Orleans, La., utilizes a Wheelabrator blast and paint line system to enhance efficiency and profitability.

The line was installed in the Mobile facility in late 2003, designed to blast 12-foot wide raw steel plates and small structural shapes. Only one operator is required to run the unit, as plates and shapes are loaded onto the blast and paint line's roll conveyor by magnet or vacuum cranes. With the system, plates up to 50 ft. long can be blasted, and the machine runs at a speed of five to 10-ft. per minute.



Circle 13 on Reader Service Card

Maritime Reporter & Engineering News

# U.S. Ferry Market Prospects Looking Up

The proliferation of sleek, unique and fast ferries on U.S. waterways is slowly becoming the reality that has been much discussed for decades. While the country does not have an innate "ferry mentality" that is so prevalent in the European culture, in part due to the vastly different geographic challenges, many parts of the country, particularly the heavily congested Northeast corridor, are starting to accept the advantages of relatively fast and efficient water transport.

According to a survey conducted by the Volpe National Transportation Systems Center in Cambridge, Mass., high-speed ferries account for only 10 percent of the overall national U.S. ferry fleet. With the option of taking cars, buses and trucks on board, more and more coastal and waterway communities will demand fast ferry transportation to keep traffic afloat.

High speed car ferries in the U.S. are starting to emerge, with the Great Lakes, Hawaii and areas around large cities the primary targets for these vessels.

To that end, there are a number of significant projects to update.

At press time Bay State Cruise Company took delivery of a 149-passenger high-speed ferry from Gladding-Hearn Shipbuilding, Duclos Corporation, for service between Boston and Provincetown, Mass. The new, all-aluminum ferry, designed by Incat Designs, is 98 ft. (29.75 m) long, 29.5 ft. (9.1 m) at the beam, and draws 6 ft. (1.8 m). It is powered by a pair of Cummins KTA38M2 diesel engines, each delivering 1,350 Bhp at 1,950 rpm. The engines turn twin Brutons 5-blade nickel-aluminum-bronze propellers via ZF2550 reverse-reduction gearboxes. The ferry's top speed is 30 knots.

Gladding-Hearn is of course no stranger to the ferry business, having built an enviable reputation building for many of the top operators around the country. Recently New York Water Taxi, whose bright yellow water taxis shuttle passengers between locations on the New York Harbor, ordered two new vessels to add to its six-boat fleet.

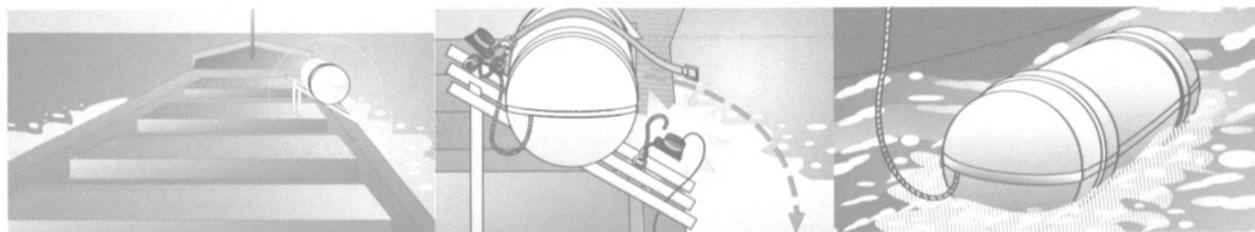
Next spring, it will take delivery of two 72-ft. catamarans, under construction at Gladding-Hearn Shipbuilding, Duclos Corporation. The new vessels are classic Incat Designs-designed ferries -- offering simplicity and efficiency, reliability, low sound level, and low



## New Fast Ferry Delivered to Bay State Cruise

Bay State Cruise Company took delivery of a 149-passenger high-speed ferry from Gladding-Hearn Shipbuilding, Duclos Corporation, for service between Boston and Provincetown, Mass. The new, all-aluminum ferry, designed by Incat Designs, is 98 ft. (29.75 m) long, 29.5 ft. (9.1 m) at the beam, and draws 6 ft. (1.8 m). It is powered by a pair of Cummins KTA38M2 diesel engines, each delivering 1,350 Bhp at 1,950 rpm. The engines turn twin Brutons 5-blade nickel-aluminum-bronze propellers via ZF2550 reverse-reduction gearboxes. The ferry's top speed is 30 knots.

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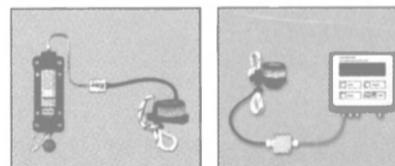
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Hammar H20 remote release unit. When the unit is activated a sharp stainless steel knife cuts the rope sling holding the liferaft that should be released.

The system is suitable for installation up to 50 meters in length.



### ERRS – Effective management for evacuation of passengers

The Hammar electronic remote release system (ERRS) is operated via an electronic control panel that activates one or several electric Hammar H20 remote release units. The ERRS system is easy to operate and install, saves space and is very flexible thus giving an effective management for fast evacuation of a large number of passengers. This system has no limitation in installation length.

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## U.S. Ferry Market

wake. The water taxis are designed to reach the same 26-knot speed and with the same crew size as New York Water Taxi's current vessels, but will have twice the interior passenger capacity.

The all-aluminum water taxis measure 72 ft. (22 m) long and 27.3 ft. (2.3 m) abeam, and draw 4 ft. (1.3 m), and each

will carry 99 passengers. Each vessel will be powered by two U.S. EPA Tier 2-compliant Cummins QSK 19-M diesel engines, each rated at 800 Bhp at 2100 rpm. The engines will drive 5-bladed Ni-BR-Al (nickel-bronze-aluminum) Bruntons propellers via Twin Disc MGX 5145SC "Quick Shift" gearboxes and

EC-300 control systems to improve the vessel's maneuverability and safety when bow landing.

While there have been many significant new ferry deliveries this year: Fairweather built by Derektor for the Alaskan Marine Highway System; Lake Express built by Austal USA for service



on Lake Michigan; and the aforementioned entries, arguably the most significant U.S. ferry newbuild of the year is the Spirit of Ontario, delivered to Canadian American Transportation System for the commuter route between Rochester, NY, and Toronto, ON.

Built by Austal Ships, the RoPax ferry is truly in a different league. Based on the Auto Express 86 design, a 284-ft. (86.6 m), 774-passenger, 238-vehicle vessel capable of carrying its full load at 45.6 knots.

MTU powerplants help make this vessel special, as four of its state-of-the-art MTU 20V 8000 M70s, generating a cumulative 44,000 hp (32,800 kW) at a rated speed of 1150 rpm, is a core component of its success. Power without performance is useless in the commercial market, so it is worthy to note that fuel consumption is below 195 g/kWh across a very broad power range and less than 190g/kWh at the most economical point, while keeping NOx emissions below the limits required by IMO.

In 2004, two American flagged fast ferries and two carrying foreign flags are working in the USA. The Alaskan Marine Highway System has put the Fairweather in service between the Alaskan ports of Juneau and Sitka. Built by Derektor Shipyards, Bridgeport, Con., the 232-ft. by 60-ft. auto/passenger ferry can carry 32 vehicles and 250 passengers at 32 knots. Derektor is building a second vessel for use in Prince William, Sound.

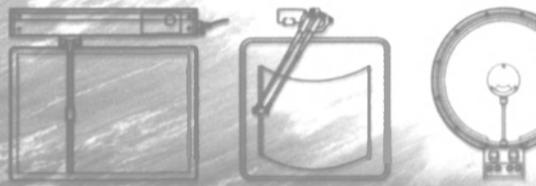
The Austal USA-built the Lake Express is a 192-ft. by 57 ft. auto/passenger ferry capable of holding 253 passengers and 34 vehicles. This vessel will inaugurate cross Lake Michigan service from Milwaukee, Wisc. to Muskegon, Mich.

As more and more fast ferries log significant operating hours on U.S. waters, common thought maintains that ferry systems evaluating the new units will be able to judge for themselves the applicability of this ferry concept for their operations, and these evaluations will lead to more construction of these vessels.



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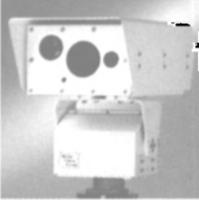
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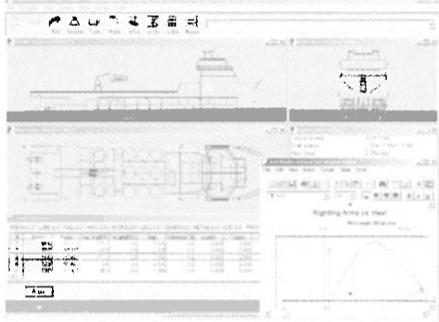
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### Autohydro: An Exciting Future

The early 1980s witnessed the birth of the first generation Autohydro by Coastdesign Inc. (now called Autoship Systems Corporation (ASC)). Autohydro was one of a very few PC-based first principles stability and longitudinal strength programs available on the market of the day. Running in DOS, Autohydro quickly became world-renowned as a robust, dependable design and analysis tool for the creation of trim and stability books. Even today, some users of these early versions of Autohydro call ASC asking for advice. Since those early times, ASC has continued to improve Autohydro. The most recent release, Autohydro 6.0, includes many new features that hundreds of naval architects around the world rely on for their hydrostatic and strength calculations.



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### Tideworks Technology Acquires Sonu Software



Tideworks Netherlands BV, a wholly-owned subsidiary of Tideworks Technology, has acquired Netherlands-based Sonu Software Solutions. The acquisition of Sonu products for managing transport logistics will strengthen the introduction of Tideworks products and services in Europe. Tideworks plans to support the expansion of existing Sonu products in Europe and will also offer the Sonu products in the United States and Latin America. Sonu offers two fully-integrated WISE product lines. One product line includes solutions for managing bulk, break-bulk and RoRo cargo terminals; warehousing with complete inventory control and tracing functions; container freight station (CFS) operations; and forwarding. The other offers container terminal and depot functions for moderately-sized operators and container trading and leasing. Sonu products offer integrated information services

to logistics service providers for financial and operational management of their business.

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### Hydrocomp: Evolving with the Times

*Late, expensive, and frequently, wrong.* Hardly a testament to good engineering, but it was definitely the stimulus that launched one of the industry's most recognizable names in vessel performance. In the early 1980s, shipyards and designers were commonly using computer service companies for many of their naval architectural calculations, such as hydrostatics and stability. The more "exotic" calculations - particularly in the area of hydrodynamics, including propellers and powering - were either left in the hands of a few specialists or were simply ignored.

Two people, **Jill Aaron** [Managing Director] and **Donald MacPherson** [Technical Director] saw an opportunity, and formed HydroComp in 1984. This partnership continues to direct HydroComp's evolution and growth to this day, resulting in a consultancy known for its software and services.

During their first years in business, HydroComp provided a broad range of contract computer services to designers and shipbuilders. However, given MacPherson's education at the Webb Institute of

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## Software Solutions

Naval Architecture (including his thesis on marine power plants) and his subsequent professional experience in resistance and propulsion, the company began to move away from general computer services and focus on providing hydrodynamic calculations. HydroComp filled this niche as a propeller and powering specialist. Responding to the growth in desktop computing during the mid-1980s, HydroComp intro-

duced the first version of the NavCad performance prediction software in 1987. NavCad is still HydroComp's flagship product, with users in all corners of the world from design to construction to academia. In addition to NavCad, HydroComp's software products grew to include PropExpert, PropCad, SwiftCraft, and SwiftTrial - programs for propeller sizing & analysis, propeller CAD, resistance and powering, and sea-trial documentation & analysis.

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### Rolls-Royce Advances Shiplift Control

New software that claims to advance shiplift control and operation technology was launched by Syncrolift, Inc., a Rolls-Royce company. ATLAS DockMaster is the new flagship control software. ATLAS DockMaster allows operators to 'tailor' docking load profiles automatically and intelligently; enhanced docking capability for vessels requiring an interrupted blocking system; and new asset protection systems to monitor the status of loads transmitted to and from the vessel being docked.

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### SeaWave Releases NavSeries

SeaWave launched the SeaWave NavSeries, designed as a cost-effective voice and data communications system with built in satellite, cellular and GPS modems that ensure reliable and economical voice and data communications. The NavSeries harnesses SeaWave's Throughput Technology Software (TTS) to enhance transmission speeds and make communications a more land-like experience. The NavSeries uses global satellite service and combines it with the coastal coverage of cellular (GSM). As a vessel moves out of cellular range the NavSeries will seamlessly continue transmission over satellite.

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### Joint Service Agreement Signed

AP&M Field Service and Rolls-Royce Naval Marine entered into a Teaming Agreement to focus efforts on supporting Ship Transfer programs for the U.S. Navy. The program will combine the experience of Rolls-Royce Naval Marine in servicing of shipboard Allison 501 generator sets and propeller propulsion systems with AP&M Field Services LM2500 shipboard service capabilities.

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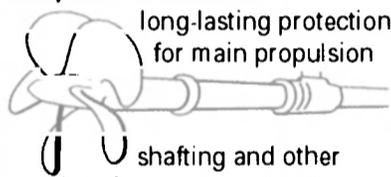
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## SNAME Book Review:

# "Ship Design and Construction"

SNAME publishes many good textbooks on naval architecture. All the more we can welcome the completely revised new edition of "Ship Design and Construction" published by the Society of Naval Architects and Marine Engineers.

In 1980, the "Taggart" (editor) third edition became quickly a standard reference for naval architects. Now, with three years delay, a new edition is available, compiled and edited by Professor Thomas Lamb of the University of Michigan. The purpose of the book, as summed up by Lamb in his introduction chapter, is

to assist ship designers and shipbuilders make better design decisions by providing the required knowledge in one relatively easily accessible source, provide a book that can be used by naval architecture students to learn about ship design and construction, and serve as a reference when they enter the marine industry.

Lamb succeeded marvelously in this endeavor. Differing from the earlier editions, this time a pool of international experts was compiled to write the book. Although naturally the majority of authors are from the U.S., contributions by internationally renowned authors from Australia, Belgium, Canada, Denmark, Finland, France, Germany, Great Britain, Italy, Japan, Korea, and Norway add competence and experience in a wide range of aspects.

The first 16 chapters give an overview of

the industry (its interaction between customers and suppliers), design methodology and relevant elements and tools. Ship hydrodynamics are virtually excluded which can be accepted in view of existing textbooks dedicated to ship hydrodynamics and its interaction with design. Chapter 14 covers the integration of design and production, preparing the ground for the subsequent chapters 17 to 26, which cover various aspects of ship structural design and construction. Chapters 27 to 55, i.e. half of the book, are dedicated to the design of individual ship types, from tankers and bulk carriers to fishing vessels and dredgers. The descriptions gives historical development and typical general arrangement plans, sometimes even lines, of the various ship types, but falls short of supplying individual design estimation formula, perhaps in view of the increasingly advocated and described first-principle design. Also Chapter 10, Parametric Ship Design provides such formulae, which can be adapted to

the different ship types. In sum, we have here a compact textbook closing internationally a gap for modern ship design and construction of commercial and naval ships. Literature references (again usually reflecting modern state of the art) in the individual chapters allow dedicated further studies of the individual aspects covered. Thomas Lamb and the chapter authors, are to be congratulated for a job well done. The book should be on every naval architect's and shipbuilder's bookshelf.

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## CORROSION CONTROL

Apex Engineering Products, 1241 Shoreline Dr., Aurora, IL 60504  
Furuno USA Inc., 4400 NW Pacific Rim Blvd, Camas, WA 98607  
Gardner Denver Water Jetting Systems, 12300 N. Houston Rossly Road, Houston, TX 77086  
Ultra Strin, 3515 SE Lionel Terrace, Stuart, FL 34996

## COUPLERS- TUG & BARGE

Intercontinental Engineering, PO Box 9055, Kansas City, MO 64168

## COUPLINGS

American Vulkan, 2525 Dundee Rd, Winter Haven, FL 33884  
Centa Corp., 815 Black Hawk Drive, Westmont, IL 60559  
Mapeco Products, 91 Willenbrock Rd., Unit B, Oxford, CT 06478  
MMC International, 60 Inip Dr, Inwood, NY 11096

## CRANE - HOIST - DERRICK - WHIRLEYS

Bisso Marine Co., P.O. Box 4113, New Orleans, LA 70178  
CS Controls Inc., 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, [info@cscontrols.com](mailto:info@cscontrols.com), Contact: Paul Srigley, [www.cscontrols.com](http://www.cscontrols.com)  
DMW Marine, LLC, 1123 Street Matthews Road, Chester Springs, PA 19425  
E. Crane, 241 Executive Dr., #3, Marion, OH 43302

## CRANKSHAFT REPAIR

In-Place Machining, 3811 N. Holton St., Milwaukee, WI 53212  
Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

## CUTTING & WELDING MACHINES

Bug-O-Systems, 3001 W. Carson St., Pittsburgh, PA 15204

ESAB Cutting Systems, 411 South Ebenezer Road, Florence, SC 29501

## DECK MACHINERY- CARGO HANDLING EQUIPMENT

Coastal Marine Equipment, Bldg 9114 MISAAP Ind. Complex, Stennis Space Center, MS 39529  
Coastal Marine Equipment Inc., BLDG. 9114 MISAAP Industrial Complex, Stennis Space CTR., MS 39529, 228-813-1700, 228-813-1709, [sales@coastalmarineequipment.com](mailto:sales@coastalmarineequipment.com), Contact: Ralph Waguespack, [www.coastalmarineequipment.com](http://www.coastalmarineequipment.com)  
CS Controls Inc., 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, [info@cscontrols.com](mailto:info@cscontrols.com), Contact: Paul Srigley, [www.cscontrols.com](http://www.cscontrols.com)  
DMW Marine, LLC, 1123 Street Matthews Road, Chester Springs, PA 19425  
Hyde Marine Inc, 28045 Ranney Parkway G, Cleveland, OH 44145-1144  
Intercontinental Engineering, PO Box 9055, Kansas City, MO 64168  
Markey Machinery, P.O. Box 24788, Seattle, WA 98124

McElroy/Catchot Winch Company, Inc., P.O. Box 4632, Biloxi, MS 39535-4632, 228-875-6327, 228-872-7880, [hcatchot@bellsouth.net](mailto:hcatchot@bellsouth.net), Contact: Harold Catchot, [www.mcelroycatchotwinch.com](http://www.mcelroycatchotwinch.com)  
Norwegian Maritime Equipment AS, BOX 244, NO-5480 HUSNES, Norway  
Rapp Hydemar, 4433 27th Ave. West, Seattle, WA 98199  
Skookum, P.O. Box 280, Hubbard, OR 97032  
Smith Berger Marine, 7915 10th Ave. S., Seattle, WA 98108  
Superior Lidgerwood Mundy, 1101 John Ave., Superior, WI 54880

## DEEPWELL PUMPS

Marflex Deepwell Pumps, Louis Pasteurstraat 12, 3261 LZ Oud-Beijerland, Netherlands

## DEHUMIDIFIERS

EBAC Industrial Products, 704 Middle Ground Blvd, Newport News, VA 23606, 800-433-9011, 757-873-3632, [sales@ebacusa.com](mailto:sales@ebacusa.com), Contact: Gray Coughlan, [www.ebacusa.com](http://www.ebacusa.com)

## DESALINATION - REVERSE OSMOSIS

Exstar International, 6709-B Netherlands Drive, Wilmington, NC 28405  
Reverse Osmosis of South Florida, Inc., 150 S.E. 29th St., Fort Lauderdale, FL 33316

## DETECTOR DOG TEAMS

American Detection Technologies, Inc., 415 Main St (3rd flr), Worcester, MA 01608

## DIESEL CYLINDER INDICATORS

General Thermodynamics Corp., PO BOX 642, Hampton Falls, NH 03844  
Kiene Diesel, 325 S. Fairbanks St., Addison, IL 60101

## DIESEL ENGINE OVERHAUL

Detroit Diesel Corporation, 13400 Outer Drive West, Detroit, MI 48329-4001  
Motor-Services Hugo Stamp, 3101 S.W. 3rd Ave., Ft. Lauderdale, FL 33315

## DIESEL ENGINE- SPARE PARTS & REPAIR

Alma Impex, Inc., 4000 Brodertown Ave., Suite 15, Sayreville, NJ 08872  
Chris Marine AB, Box 9025, 200 39 Malmo, Sweden  
Cummins Marine, 4500 Leeds Ave., Ste 301, Charleston, SC 29405  
GUASCOR Inc, 7220 NW 36TH ST #310, MIAMI, FL 33166  
Man B&W Diesel, 17 State St., NY, NY 10004  
Man B&W Diesel A/S, Teljeholmsgade 41, Copenhagen SV DK-2450, Denmark  
Man B&W Diesel AG, Stadtbachstrasse 1, Augsburg D-86153, Germany  
Marine Exhaust Systems of Alabama, P.O. Box 698, 757 Nichols Ave., Fairhope, AL 36533  
Marine Turbo & Diesel Inc., 1090 7th St., Richmond, CA 94801  
Motor-Services AB, Box 2115, Ronninge S-144 04, Sweden  
Motor-Services Hugo Stamp, 3101 S.W. 3rd Ave., Ft. Lauderdale, FL 33315  
Scardana Americas Bkg., 502 Empire St., Greenfield Park J4V 1V7, Canada  
Wartsila Diesel, 201 Defense Hwy, Annapolis, MD 21401  
Wartsila North America, Inc., 16330 Air Center Boulevard, Houston, TX 77032

## DIESEL FUEL DECONTAMINATION

Algae X International, P.O. Box 4011, Fort Myers Beach, FL 33932

## DIGITAL TORQUE METER SYSTEMS

Instruments, Computers & Controls, 78 Londonderry Tpke, Hooksett, NH 03106

## DISPLAY TECHNOLOGY

Data Modul Inc, 1751-46 Veterans Memorial Hwy, Islandia, NY 11749

## DIVING & SALVAGE

Bisso Marine Co., P.O. Box 4113, New Orleans, LA 70178  
Muldoon Marine Services Inc., P.O. BOX 41340, Long Beach, CA 90853

## DOORS- MARINE & INDUSTRIAL

Deansteel Mfg., 111 Merchant St., San Antonio, TX 78204  
Joiner Systems, 1925 52nd Avenue, Lacine, Quebec H8T 3C3, Canada  
Juniper Industries Inc, 72-15 Metropolitan Avenue, Middle Village, NY 1379, 718-326-2546, 718-326-3786, [marinesales@juniperindustries.com](mailto:marinesales@juniperindustries.com), Contact: Sales, [www.juniperindustries.com](http://www.juniperindustries.com)  
Juniper International, 72-15 Metropolitan Ave., Middle Village, NY 11379  
Manly Marine, P.O. Box 86788, N. Vancouver, BC V7L 4L3, Canada  
Mapeco Products, 91 Willenbrock Rd., Unit B, Oxford, CT 06478  
Nabraco Marine Products, 1050 Trinity Road, Ashland City, TN 37016  
Pacific Coast Marine, 4314 Russell Road, Mukiteo, WA 98275  
USA Sliding Doors, Inc., 801 Hosmer Road, Churchville, NY 14428, 585-538-4160, 585-538-2806, [info@usaslidingdoors.com](mailto:info@usaslidingdoors.com), Contact: Mr. Robert Weiland, [www.usaslidingdoors.com](http://www.usaslidingdoors.com)  
Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

## DRIVES

Allied Systems, 2300 Oregon St., Sherwood, OR

## DRIVESHAFTS

The Cline Company, 600 Buncombe St., Greenville, SC 29602

## DRUG TEST KITS

Sun State Specialty K-9s, 1500 Beville Road, Daytona Beach, FL 32114

## DRY DOCKS- DESIGN

Heger Dry Dock, Inc., 13 Water St., Holliston, MA 01746

## ELASTOMER PIPING PRODUCTS

Elasto Valve Rubber, 1691 Pioneer Road, Sudbury, ON PG3 1R2, Canada

## ELECTRIC & CONTROL SYSTEMS

Geniro Systems Inc., 1885 Boul Dagenais West, Laval, QC H7L 5A3, Canada, 450-622-7575, 450-622-8484, [stefan@genirosys.com](mailto:stefan@genirosys.com)

## ELECTRICAL EQUIPMENT

MMC International, 60 Inip Dr, Inwood, NY 11096  
Olson Electric Corporation, 10901 Commercial Street, Richmond, IL 60071-0001

## ELECTRONIC CHARTS

C-Map Commercial, 133 Falmouth Rd, Mashpee, MA 02649

## EMERGENCY DISTRESS SIGNAL

Greatland Laser, LLC., 4001 West International Airport RD, Anchorage, AK 99502, 907-245-4475, 907-245-4599, [laser@alaska.net](mailto:laser@alaska.net), Contact: Jim O' Meara, [www.greatlandlaser.com](http://www.greatlandlaser.com)

## EMPLOYMENT

All American Marine, P.O. Box 191237, Tillman's Corner, AL 33619

## ENGINES

DEUTZ Corporation, 3883 Steve Reynolds Blvd, Norcross, GA 30093  
FDGM, Inc., 800 Principal Court, Suite C, Chesapeake, VA 23320  
Giro Engineering Limited, Talisman, Duncan Road, Park Gate, Southampton, Hants SO31 7GA, UK

## ENVIRONMENTAL SOLUTIONS

Hyde Marine, 28045 Ranney Parkway G, Cleveland, OH 44145-1144

## EVAPORATORS

Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974  
Sasakura Engineering, 7-32 Takeshima, 4-Chome, Nishiyodogawa KY Osaka555, Japan

## EXHAUST

American Vulkan, 2525 Dundee Rd, Winter Haven, FL 33884  
Marine Exhaust Systems of Alabama, P.O. Box 698, 757 Nichols Ave., Fairhope, AL 36533

## EXPANSION JOINTS

Elasto Valve Rubber, 1691 Pioneer Road, Sudbury, ON PG3 1R2, Canada  
Silex Inc., 6659 Ordan Dr., Mississauga, ON L5T 1K6, Canada

## EXTRUDED RUBBER PRODUCTS

Clean Seal Inc., PO Box 2919, South Bend, IN 46880

## FASTNERS

Superbolt, PO Box 683, Carnegie, PA 15106

## FENDERING SYSTEMS/ BUOYS - DOCK & VESSEL

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950, Contact: Richard Spangler

## Fender Care Americas Inc C/O-BCC Shipping Inc..

7611 Lake Road South Mobile, Mobile, Middle Bay Port Building 305., AL 36605, +44 78029 65765, [wendy.stephan@fendercare.com](mailto:wendy.stephan@fendercare.com), Contact: Wendy Stephan, [www.fendercare.com](http://www.fendercare.com)

## GALLEYS

Deansteel Mfg., 111 Merchant St., San Antonio, TX 78204

## GANGING & SAMPLING

Hermetic Inc., 4522 Center St., Deerpark, TX 77536

## GANGWAYS

WACO, 1330 KNECHT AVE, BALTIMORE, MD 21229

## GAS GENERATION SYSTEMS

Air Products AS, Box 8100, Vagsbygd, NO-4675 Knstansand S, Norway

## GEARS & GEAR REPAIR

Falk Corporation, 3001 West Canal St, Milwaukee, WI 53208-4200

Karl Senner Inc., 25 W Third, Kenner, LA 70062

## GENERATOR CONTROLS

Detroit Diesel Corporation, 13400 Outer Drive West, Detroit, MI 48329-4001

## GENERATOR PARALLELING EQUIPMENT

Selco USA, 2508 Lake Brook Court, Atlanta, GA 30360

## GOVERNORS

Governor Control Systems, 3101 SW 3rd Avenue, Ft. Lauderdale, FL 33315

## GPS

MX Marine, 23868 Hawthorne Blvd., Torrance, CA 90505

## GROUNDINGS

Sohre Turbomachinerv, 132 Gilbertville Rd., P.O. Box 889, Ware, MA 01082-0889

## HATCHES & DOORS

Juniper International, 72-15 Metropolitan Ave., Middle Village, NY 11379

Manly Marine, P.O. Box 86788, N. Vancouver, BC V7L 4L3, Canada

## HEAT EXCHANGERS

Alfa -Laval Separation, Inc., 955 Meams Rd., Warmminster, PA 18974

Alfa Laval Tumba AB, 147 80, TUMBA, Sweden

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950,

Contact: Richard Spangler  
Tranter, Inc., P.O. Box 2289, Wichita Falls, TX 76307, 940-723-7125, 940-723-1131, www.tranterphe.com

## HEAVY FUEL TREATMENT

Alfa Laval Tumba AB, 147 80, TUMBA, Sweden  
Algae X International, P.O. Box 4011, Fort Myers Beach, FL 33932

## HIGH SPEED FERRY BUILDERS

Incat Australia Pty. Ltd, 18 Bender Manne, Hobart 7009, Australia

## HMI CONTROLS DISPLAY

Azonix-Dynalco, 3690 NW 53rd St., Ft. Lauderdale, FL 33309

## HOISTS

Coastal Marine Equipment, Bldg 9114 MISAAP Ind. Complex, Stennis Space Center, MS 39529

## HORNS/WHISTLES

Archime Manufacturing Co., 5478 267th St., Gloucester Industrial Estate., Langley, BC V4W 3S8, Canada  
Kahlenberg Brothers Co., P.O. Box 358, Two Rivers, WI 54241  
Kockum Sonics LLC, 933 Industry Road, Suite 105, Kenner, LA 70062

## HOSES/HOSE FITTINGS

JGB Enterprises, Inc., 115 Metropolitan Dr., Liverpool, NY 13088

## HYDRAULIC SYSTEMS

Allied Systems, 2300 Oregon St., Sherwood, OR  
Anchor Lamina, 38565 Country Club Drive, Farmington Hills, MI 48331

## INFRARED IMAGING EQUIPMENT

Fir Systems, 16505 SW 72ND AVE, Portland, OR 97224

## INSPECTION EQUIPMENT

Staveley Instrument, 421 N. Quay St., Kennewick, WA 99336

## INSULATION

Mascoat Products, 10890 Alcott, Unit 12, Houston, TX 77043  
Shannon Enterprises of W.N.Y., Inc., 162 Sweeney Street, PO BOX 199, North Tonawanda, NY 14120-0199  
Superior Energies Inc., 3115 Main Ave., Groves, TX 77619

## INSURANCE SERVICES

WQIS, 80 Broad St., 21st Floor, New York, NY 10004

## INTERIORS

Directions In Desion, Inc., 1849 Craig Road, St. Louis, MO 63146, 314 205-2010, 314 205-0889, May-Zinsers@didinc.com, Contact: Sharon May-Zinser, www.didinc.com

Jameson Metal Marine Sales, Inc., 4710 Northwest 2nd Ave., Boca Raton, FL 33431  
Lit Industries, 516 Costner School Rd., Bessemer City, NC 28016-9801

## JOINER- WATERTIGHT DOOR-PANELING-CEILING SYSTEM

Joiner Systems, 1925 52nd Avenue, Lacine, Quebec H8T 3C3, Canada  
Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

## K-9 DETECTION

Sun State Specialty K-9s, 1500 Beville Road, Daytona Beach, FL 32114

## KEEL COOLERS

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950, Contact: Richard Spangler

## LASER ALIGNMENT

Ludeca, Inc., 1425 NW 88th Ave, Miami, FL 33172

## LEAK REPAIR

Indumar Products Inc., 2500 Tanglewilde, Suite 260, Houston TX 77063

## LIFEBOAT TESTING

Water Weights, Inc., 5139 Brook St., Suite E, Mont Clare, CA 91763

## LIFEBOATS/DAVITS

Umoe Schat-Harding, Inc., 912 Hwy 90 East, New Iberia, LA 70560

## LIFEBOATS/RAFTS

DBC Marine Safety Systems, 101-3760 Jacombs Rd., Richmond, BC V6V 6T3, Canada  
Viking Life Saving Equipment, 1625 N. Miami Ave., Miami, FL 33136  
Willard Marine Inc., 1250 N. Grove St., Anaheim, CA 92806

Wolong International, 151 Chin Swee Road #03-14, Manhattan House, 169876, Singapore

## LIFESAVING EQUIPMENT

C.M. Hammar AB, August Barks Gatan 15, 421 32 Vastra Frolunda, Sweden  
Umoe Schat-Harding, Inc., 912 Hwy 90 East, New Iberia, LA 70560

Viking Life Saving Equipment, 1625 N. Miami Ave., Miami, FL 33136

## LIFT EQUIPMENT TESTING

Water Weights, Inc., 5139 Brook St., Suite E, Mont Clare, CA 91763

## LIGHTING PRODUCTS

Phoenix Products Co., Inc., 8711 West Port Avenue, Milwaukee, WI 53224

## LIGHTING SYSTEMS/ EQUIPMENT

ACR Electronics Inc., 5757 Ravenswood Rd., Ft. Lauderdale, FL 33310-5247

L.C. Doane, P.O. Box 975, Essex, CT 06426

Maritime Associates, P.O. BOX 1788, Crystal Bay, NV 89402, 775-832-2422, 775-832-2424,

maritimeas@charter.net, Contact: unknown,

www.marinesigns.com

## LINE & NET CUTTERS

Spurs Manne, 201 S.W. 33rd St., Ft. Lauderdale, FL 33315

## LUBRICANTS/LUBRICATION SYSTEMS

Benjamin R. Vickers & Sons Ltd., Airedale Mills, 6 Clarence Road, Leeds, W. Yorkshire LS10 1ND, UK

## MACHINERY MAINTENANCE, REPAIR & TESTING

Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851

## MANEUVERING EQUIPMENT

Schottel GMBH & Co. KG, Mainjer Str 99, D-56322-Spay/Rhine, Germany

Van der Velden Manne Systems, Birkenweg 11, D-21465, Rembek, Germany

## MARINE & OFFSHORE SIGNAGE

Maritime Associates, P.O. BOX 1788, Crystal Bay, NV 89402, 775-832-2422, 775-832-2424,

maritimeas@charter.net, Contact: unknown,

www.marinesigns.com

## MARINE DECKING & FLOORING

Lonseal Flooring, 928 East 238th Street, Carson, CA 90745

## MARINE DIESEL ENGINES

Wartsila North America, Inc., 16330 Air Center Boulevard, Houston, TX 77032

## MARINE ELECTRONICS

ACR Electronics Inc., 5757 Ravenswood Rd., Ft. Lauderdale, FL 33310-5247

Comark Marine, 93 West Street, Medfield, MA 02052, 800-280-8522, 508-359-2267,

sales@comarkcorp.com

DHS Technologies, 5 Sylvan Way, Parsippany, NJ 07054

Hatteland Display, Bogstadveien, 19., N-0355 Oslo, Norway

Jotron Electronics, Box 85., NO-3280T Jodalving Norge, Norway

Manne Electronic Solutions, 1522 Crabapple Cove, Jacksonville, FL 32225

Midwest Instrument, 6500 Doby Dr., Sterling Heights, MI 48314

Saab Manne Electronics, Box 13045, 402 5Goteborg, Sweden

## MARINE ENGINEERING

Elliot Bay Design Group, 5301 Shishole Ave. NW, Ste. 200, Seattle, WA 98107

Heger Dry Dock, Inc., 13 Water St., Holliston, MA 01746

Ocean Crest, 2 Pidgeon Hill Dr., Sterling, VA 20165

## MARINE EQUIPMENT

Rasmussen Equipment Co, 8727 5th Ave S, Seattle, WA 98108

Scardana Americas Bkg., 502 Empire St., Greenfield Park J4V 1V7, Canada

Waterman Supply, P.O. Box 596, Wilmington, CA 90748

## MARINE FURNITURE

Deansteel Mfg., 111 Merchant St., San Antonio, TX 78204

## MARINE GLASS

ProCurve, 3535 Davisville Rd., Hatboro, PA 19040

## MARINE HARDWARE

HMS Marine Hardware, 333 W. Mernck Road, Valley Stream, NY 11580-5219

## MARINE HAZARD RESPONSE

Manne Respose Alliance LLC, 1102 SW Massachusetts St., Seattle, WA 98134-1030

## MARINE LIGHTING & ELECTRICAL SUPPLIES

Manning Electric Inc., 154 27th Street, Brooklyn, NY 11232, 718-832-2488, 718-832-2493, info@manning-electric.com, Contact: Anthony Menditto,

www.manning-electric.com

## MARINE MANAGEMENT

Hornblower Manne Services, P.O. Box 112476, Campbell, CA 95011-2476

## MARINE POWER PLANT SYSTEMS

Auramarine Ltd., Box 849, FI-20101 Turku, Finland

Wartsila North America, Inc., 16330 Air Center Boulevard, Houston, TX 77032

## MARINE SERVICES

International Shipping Agency, Freeport Harbour Complex, Bldg. #2, Ste. #9, Freeport F41109, Bahamas

## MARINE VENTILATORS

Tuthill Energy Systems, PO Box 8000, milbury, MA 01527

## MARITIME TRAINING & SCHOOLS

Maine Maritime Academy, MMA, Castine, ME 04420-5000

Manne Safety International, Manne Terminal, Laguardia Airport, NY 11371

## METALIZING

Climax Portable Machine, 2712 E. 2nd St., NEWBERG, OR 97132

Cutting Edge Metal Processing Inc, Po Box 42, Mobile, AL 36601

DMC Clad Metal Division, Po Box 680633, Houston, TX 77266

International Metalizing & Coatings, PO Box 201, Cherry Hill, NJ 08003

## MONITORING ALARM/CONTROL

Marine Electric Systems, Inc., 33 Route 17 South, East Rutherford, NJ 07073, 201 531-8600 Ext 231, 201 531-8606, info@marineelectricsystems.com, Contact: Gary Mandell, www.Marineelectricsystems.com

## MONITORING SYSTEMS

American Vulkan, 2525 Dundee Rd, Winter Haven, FL 33884

Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851

Prime Mover Controls, 3600 Gilmore Way, Burnaby, BC V5G 4R8, Canada

## MOORAGE FACILITY

Sea Ark Marine, P.O. Box 210, Monticello, AR 71655-0210

## MOTION CONTROL SYSTEMS

Seastate Ply.Ltd., 2 Egmont Road, Henderson WA 6166, Australia

## MOTOR PROTECTION

Marne Safe Electronics, 261 Milway Ave. #12, Concord, Ontario L4K 4K9, Canada

## NAV/COMM EQUIPMENT

C-Map Commercial, 133 Falmouth Rd, Mashpee, MA 02649

Charco, New North Road, Hainault, Ilford Essex 166 2UR, UK

Electronic Manne Systems, 800 Ferndale Pl., Rahway, NJ 07065

Furuno USA Inc., 4400 NW Pacific Rim Blvd, Camas, WA 98607

Hose-McCann Telephone Company, 1241 W. Newport Center Drive, Deerfield Beach, FL 33442, 954-429-1110, 954-429-1130, mchip@hosemccann.com

Mackay Communications, 2721 Discovery Dr., Raleigh, NC 27616-1851

## NAVAL ARCHITECTS, MARINE ENGINEERS

A K. Suda, Inc., 3004 19th St., Metairie, LA 70002-4989

Arthur D. Darden, Inc, 3200 Ridgeway Dr., Suite 403, Metairie, LA 70002

Band, Lavis, & Associates, Inc., 900 Ritchie Hwy, Suite 203, Severna park, MD 21146

Bay Engineering, 253 N. First Ave., Sturgeon Bay, WI 54235

Bristol Harbor Group, Inc., 103 Poppasquash Road, Bristol, RI 02809

C. Baxter & Associates, P.O. Box 9006, Mobile, AL 36609

CDI Marine Co., 9550 Regency Square Blvd, Ste 400, Jacksonville FL 32222

Computer Sciences Corporation-Advance Marine Center, 1201 M St. SE., Washington, DC 20003

Elliot Bay Design Group, 5301 Shishole Ave. NW, Ste. 200, Seattle, WA 98107

GTR Campbell Manne, 24 Lambton Street, Ormstown, Quebec JOS 1A0, Canada

Guarino & Cox, 639 Lotus Drive, N., Suite 3, Mandeville, LA 70471

Jameson Marine Service, 1084 Shennecossett Rd., Groton, CT 06340

John J. McMullen Associates, 4300 King St., Suite 400, Alexander, VA 22302

KVAERNER MASA MARINE, 1818 CORNWALL AVE, VANCOUVER, BC V6J 1C7, Canada

Kvaerner Masa Manne Inc., 201 Defense Highway, Ste 202, Annapolis, MD 21401

MCA Engineers, Inc., 2960 Airway Ave., #A-103, Costa Mesa, CA 92626

McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454

MLL Systems, 200-1150 Monson Drive, Ottawa, Ontario K2H 8S9, Canada

Nautical Designs, Inc., 2101 S. Andrews Ave., Ste 202, Fort Lauderdale, FL 33316

The Glostien Associates Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle, WA 98104

VUYK Engineering, P.O. Box 204., 9700 AE Groningen, Netherlands

Washburn Doughty, P.O. Box 296, E. Boothbay, ME 04544

## NAVIGATION

ComNav Manne Ltd., 13511 Crestwood Pl., Ste 15 15, Richmond, BC V6V 2G1, Canada

D & B Technologies, 1458 OCEAN SHORE BLVD #132, ORMOND BEACH, FL 32176-3613

Klein Navigation, 11 Klein Drive, Salem, NH 03079, 603 890-1304, 603 890-9796,

mail@kleinnavigation.com, Contact: Deborah Durgin, www.kleinnavigation.com

Nauticas AG, Manahiler Strasse 50/211, A-1070 Vienna, Austria

Scandinavian Micro Systems, 1001 South Andrews Avenue, Suite 120, Fort Lauderdale, FL 33316

## OIL SPILL RESPONSE

Donjon Manne, 1250 Liberty Avenue, Hillside, NJ 07205

MARINE PRESERVATION ASSOCIATION, 877 N GAINES CENTER DR, SCOTTSDALE, AZ 85258

Manne Response Alliance, 1102 SW Massachusetts St, Seattle, WA 98134-1030

Manne Spill Response Corporation, 220 Spring Street, Suite 500, Herndon, VA 20170

## OIL/WATER SEPARATORS

Alfa -Laval Separation, Inc., 955 Meams Rd., Warmminster, PA 18974

Alfa Laval Tumba AB, 147 80, TUMBA, Sweden

MMC International, 60 Inip Dr, Inwood, NY 11096

## PAINT APPLICATOR

Mr Longarm, Inc., P.O. BOX 377, Greenwood, MO 64034-0377

## PAINT MARKERS

Sakura of America, 30780 San Clemente St., Hayward, CA 94544, 800-776-6257, 510-475-0973

## PARTS LOCATOR SERVICE

Inventory Locator Service, 3965 Mendenhall Rd., Memphis, TN 38115

PIPE FITTINGS/CUTTINGS/CONNECTING/ SYSTEMS

RAMCO Manufacturing Co., 365 Carnegie Ave., Kenilworth, NJ 07033

W & O Supply, 3485 Evergreen Ave., Jacksonville, FL 32208

## PIPE LEAK REPAIR

CSD North America, 880 Candia Rd., Unit 10, Manchester, NH 03109

## PLANNED MAINTENANCE SYSTEMS

Design Maintenance Systems, Inc., 340 Brooksbank Ave, Ste 100, North Vancouver, BC V7J 2C1, Canada

## PNEUMATIC LINE THROVERS

## SATELLITE COMMUNICATIONS

EMS Satcom, Green Lane, Tewkesbury, Gloucestershire GL20 8HD, UK  
Eurocom Industries AB, Box 7071, DK-9200 Aalborg SV, Denmark  
France Telecom Mobile Satellite Communications, 16.bvd du Mont d'Est-BP 14-93161, Noisy le Grand, France, +33556223231, mobilesat@francetelecom-mobilesat.com, Contact: unknown, www.francetelecom-mobilesat.com

Furuno USA Inc., 4400 NW Pacific Rim Blvd, Camas, WA 98607  
KVH Industries Inc., 50 Enterprise Center, Middletown, RI 02842  
Land Sea Systems, 509 Viking Drive, Suites K.L.M. Virginia Beach, VA 23452  
MX Marine, 23868 Hawthorne Blvd., Torrance, CA 90505  
Nera Satcom AS, Box 91, NO-1375 Billingstad, Norway  
Petrocom, 5300 West Sam Houston Parkway North, Houston, TX 77041, 1-800-PETROCOM, 713-580-4150, sales@petrocom.com

Stratos, 1501 Metcalfe St. Ste 1900, Ottawa, Ontario K2P 1P1, Canada  
Telenor Satellite Services-Marlink, NO-1331, Fornebu, Norway  
Thrane & Thrane A/S, Lundtoftegardsvej 93D, DK-2800 Lyngby, Denmark

## SCARIFIERS

Desmond-Stephan, P.O. Box 30, Urbana, OH 43078

## SEALS

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234

Kobelco Eagle Marine, Inc., 366 Fifth Avenue, Suite 312, NY, NY 10017, 212-967-5575, 212-967-6966, hawkins@kobelco-eagle.com

Orkot Composites, 2535 Prairie Rd. Unit D., Eugene, OR 97402

## SEATING

H.O. Bostrom, 818 Progress Ave., Waukesha, WI 53186

## SECURITY

Control Screening, 2 Gardiner Rd, Fairfield, NJ 07004  
GE Ion Track, 205 Lowell Street, Wilmington, MA 01887  
Loronix Video Solutions, 1120 W. 122nd Ave. Suite 200, Denver, CO 80234

Smiths Detection, 30 Hook Mountain Road PO Box 410, Pine Brook, NJ 07058, 973 830-2131, 973-830-2200, susan.cooper@smithsdetection.com, Contact: Susan Cooper, www.smithsdetection.com  
Vingcard Marine, Bryan Oaks Business Park 1500 N.W. 1st Street, Dania, FL 33004

## SECURITY BARRIERS

Seacor Environmental Products, P.O. Box 3535, Seattle, WA 98124

## SECURITY CONSULTANTS

Solutions Group, 9663 Santa Monica Blvd. Ste 175, Beverly Hills, CA 90210

## SENSORS

3 Point Solutions, 810A Tradesmans Park Loop, Hutto, TX 78634  
Electronic Marine Systems, 800 Ferndale Pl., Rahway, NJ 07065

## SHAFT SEALS

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234

## SHAFTS

American Vulkan, 2525 Dundee Rd, Winter Haven, FL 33884  
Centa Corp., 815 Black Hawk Drive, Westmont, IL 60559

## SHIP MANAGEMENT

Crowley Maritime, 9487 Regency Sq Blvd, Jacksonville, FL 32225  
Eurasia Group, 22A Floor Chinachem Exchange Sq., 1 Hoi Wan St., Quarry Bay, Hong Kong  
OCEAN TECHNICAL SERVICES, MILITARY OCEAN TERMINAL BAYONNE UNIT #8-FOOT OF 32ND STREET, BAYONNE, NJ 07002

## SHIP REPAIR

HALIFAX SHIPYARD, 3099 BARRINGTON ST, HALIFAX, NS, Canada  
Manitowoc Marine Group, 1600 Ely St., Marinette, WI 54143-2434  
NORSHIPCO, PO BOX 2100, Norfolk, VA 23501-2100  
Trident Technologies, 4011 C Highway 377 S., Fort Worth, TX 76109  
United Marine Enterprises Inc., P.O. Box 22077, Beaumont, TX 77720

## SHIP SIMULATORS

Kongsberg Maritime AS, PO Box 1009, 3194 Horten, Norway

## SHIPBUILDING-REPAIRS, MAINTENANCE, DRYDOCKING

American Ship Repair, 1011 38th St, Brooklyn, NY 11219  
Atlantic Marine, Inc., P.O. Box 3202, mobile, AL 36652  
Austal USA, 100 Dunlap Dr., Mobile, AL 36633  
Blount Marine, 461 Water St., Warren, RI 02885  
Bollinger Lockport & Larose, P.O. Box 250, Lockport, LA 70374  
Curacao Drydock Co., Box 3012, Willemstad, Curacao, Netherlands Antilles  
Damen Shipyards, P.O. Box 1 Gorinchem, 4200AA Holland, Netherlands  
Enavi Reparos Navais Ltda, 169 Barreto., Niteroi, RJ 24110-200, Brazil  
Financieri Canterien Navali Italiani Spa, Merchant Shipbuilding Div., 34123 Trieste, Italy  
Gladding Hearn, 1 Riverside Ave., Somerset, MA 02725  
Grand Bahama Shipyard, PO BOX F-42498-411, Freeport, Bahamas  
GTR Campbell Marine, 24 Lambton Street, Ormstown, Quebec J0S 1A0, Canada  
In-Place Machining, 3811 N. Holton St., Milwaukee, WI 53212  
Leevac Industries, LLC, P.O. Box 1190, Jennings, LA 70546  
Motor-Services AB, Box 2115, Ronninge S-144 04, Sweden  
NASSCO, 2798 E HARBOR DR, SAN DIEGO, CA 92113  
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607

Signal International LLC, 1011 S.Hwy 6, Ste 108, Houston, TX 77077  
United Defense, 1525 Wilson Blvd., Ste 700, Arlington, VA 22209-2444  
United Marine Enterprises Inc., P.O. Box 22077, Beaumont, TX 77720  
Washburn Doughty, P.O. Box 296, E. Boothbay, ME 04544  
VT Halter, PO Box 3029, Guilford, MS 39505  
Willard Marine Inc., 1250 N. Grove St., Anaheim, CA 92806

## SHIPYARDS

Alabama Shipyard, P.O. Box 3202, Mobile, AL 36652  
Atlantic Marine, Inc., P.O. Box 3202, mobile, AL 36652  
Bollinger Shipyards, 8365 Hwy 308 South, Lockport, LA 70374, 985 532-2554, 985 532-7225, RobertS@bollingershipyards.com, Contact: Robert A. Socha, www.bollingershipyards.com  
Bradford Marine, 3051 State Rd 84, Fort Lauderdale, FL 33312  
Derecktor Shipyard, 311 E. Boston Post Rd., Mamaroneck, NY 10543  
Jeffboat, 1030 E.MARKET STREET, JEFFERSONVILLE, IN 47130  
Kvaerner Masa-Yards Oy, BOX 132, FI-00151, Helsinki, Finland  
Leevac Industries, LLC, P.O. Box 1190, Jennings, LA 70546  
Offshore Inland, 3521 Brookdale Dr. S., Mobile, AL 36618  
United Defense, 1525 Wilson Blvd., Ste 700, Arlington, VA 22209-2444

## SILENCERS

Silex Inc., 6659 Ordan Dr., Mississauga, ON L5T 1K6, Canada

## SIMULATION TRAINING

Marine Safety International, Marine Terminal, Laguardia Airport, NY 11371  
Maritime Institute of Technology, 5700 Hammonds Ferry Rd., Linthicum Heights, MD 21090  
Poseidon Simulation AS, Box 89, NO-8370 Leknes, Norway  
Transas Marine Overseas Ltd., 12 Obukhovskoy, Oboron, St Petersburg 193019, Russian Federation

## SKILLED LABORERS

MK Production Resources Inc., 1610 Reynolds Street, Brunswick, GA 31520

## SLIDING DOORS

Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

## SOFTWARE

Autoshop Systems Corp., 611 Alexander Street, Suite 312, Vancouver, BC V6A 1E1, Canada, 604-254-4171, 604-254-5171, sales@autoshop.com, Contact: Samantha Lucas, www.autoshop.com  
Creative Systems Inc., P.O. Box 1910, Port Townsend, WA 98368  
Design Maintenance Systems, Inc, 340 Brooksbank Ave, Ste.100, North Vancouver, BC V7J 2C1, Canada  
Loadmaster International, St. Vavsgarten 11B SE, 211 19 Malmø, Sweden  
Resurgence Software Inc., 2021 Lakeshore Dr., Ste 21D, New Orleans, LA 70122

## STEERING GEARS/ STEERING SYSTEMS

A. Van der Velden B.V., Dorpsstraat 67a, PO Box 2061, 2930 AB Krimpen a/d Lek, Netherlands  
CS Controls Inc, 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, info@cscontrols.com, Contact: Paul Srigley, www.cscontrols.com  
Jastram Engineering, 467 Mountain Hwy, North Vancouver, BC V7J 2L3, Canada  
Kobelt Manufacturing Co., Ltd, 8238-129 Street, Surrey, BC V3W0A6, Canada  
Offshore Inland, 3521 Brookdale Dr. S., Mobile, AL 36618

## STERN TUBE BEARINGS/ BUSHES

Duramax Marine LLC, 17990 Great Lakes Parkway, Hiram, OH 44234, 440-834-5400, 440-834-4950, Contact: Richard Spangler  
Orkot Composites, 2535 Prairie Rd, Unit D., Eugene, OR 97402  
Thordon Bearings Inc., 3225 Mainway, Burlington, Ontario L7M 1A6, Canada

## STERN TUBE SEALS

Superbolt, PO Box 683, Carnegie, PA 15106

## STRAINERS

Hellan Strainer, 3249 East 80th St., Cleveland, OH 44104

## SUN PROTECTION SYSTEMS

Solar Solve Marine, 7 St. Hilda Industrial Estate, South Shields NE33 1RA, UK, +44 191 454 8595, +44 191 454 8692, info@solasolv.com, Contact: Paul Hopkins, www.solasolv.com

## SURFACE PREP TOOLS

Aurand Mfg., 1210 Ellis St., Cincinnati, OH 45223  
Dalseide Shipping Services, NO-5397, BEKKJARVIK, Norway  
Fiow International Corp., 23500 64th Ave., South Kent, WA 98059  
NLB Corp., 29830 Beck Road, Wixom, MI 48383, 248-624-5555, 248-624-0908, nlbmtg@nlbusa.com, Contact: Jenna Eads, www.nlbcorp.com

## SURVIVAL EQUIPMENT

Brookdale International, 1--8755 Ash St., Vancouver, BC V6P 6T3, Canada

## SWITCHBOARDS

Industrial Power Systems, 3010 Powers Avenue Unit 16, Jacksonville, FL 32207, 904 731-8844, 904 731-0188, marine@ipsjax.com, Contact: Glenn Beaupre, www.ipsswitchgear.com

## TANK LEVELING INDICATORS

Ian Conrad Bergan, 3119 North Davis Highway, Pensacola, FL 32503, 850-434-1286, 850-434-1246, sales@icbergan.com, Contact: Ron Monell, www.icbergan.com  
King Engineering Co. PO Box 1228, Ann Arbor, MI 48106  
Kockum Sonics LLC, 933 Industry Road, Suite 105, Kenner, LA 70062  
Saab Marine Electronics, Box 13045, 402 5Goteborg, Sweden  
Technical Marine Services, 6040 North Cutter Circle, Portland, OR 97217

## TESTING SERVICES

Wyle Laboratories, 7800 Govern's Dr. S.W., Huntsville, AL 35807

## THICKNESS GAUGES

StressTel Ultrasonic Testing, 2790 West College Avenue, State College, PA 16801-260

## THRUSTER SYSTEMS

Omnithruster, 30555 Solon Industrial Parkway, Cleveland, OH 44139, 440 542-9260, 440 542-9265, widmer@omnithruster.com, Contact: Kurt Widmer, www.omnithruster.com

Thrustmaster of Texas, Inc., 12227 FM-529, Houston, TX 77041, 713 937-6295, 713 937-7962, info@thrustmastertexas.com, Contact: Bert Ault, www.thrustmastertexas.com

## TRAINING

International Maritime Training, 910 SE 17th St., Ste 200, Fort Lauderdale, FL 33316  
SUNY Maritime College, 6 Pennyfield Ave, Bronx, NY 10465-4198  
USMMA- Global Maritime and Transportation School, 300 Steamboat Rd., Kings Point, NY 11024

## TRAINING VIDEOS

Coastal Training Technologies Corp., 500 Studio Drive, Virginia Beach, VA 23452  
Moxie Media, PO Box 10203, New Orleans, LA 70181

## TRANSMISSIONS

Karl Senner Inc., 25 W Third, Kenner, LA 70062

## TRAVEL SERVICES

MotorTravel Services, 200 Golden Oak Court, Suite 120, Virginia Beach, VA 23452

## TURBOCHARGERS

ABB Turbo Systems AG, CH 5401, Baden, Switzerland

## TURBOCHARGERS- REPAIRS

Motor-Services Hugo Stamp, 3101 S.W. 3rd Ave., Ft. Lauderdale, FL 33315  
Napier Turbochargers, P.O. Box 1, Waterside, South Lincoln LN5 7FD, UK

## ULTRA HIGH MOLECULAR WEIGHT MARINE FENDERING

Ultra Poly, Inc., 2926 So.Steele Street, Tacoma, WA 98409

## ULTRASONIC TESTING

M.A.C.E. 5910 NE 15th Ave., Fort Lauderdale, FL 33331

## ULTRATHIN (UHMW) NON-SKID DECKING

Ultra Poly, Inc., 2926 So.Steele Street, Tacoma, WA 98409

## UNDERWATER SURVEILLANCE SONAR

C-Tech LTD, P.O.Box 1960, Cornwall Ontario K6H6N7, Canada

## VACUUM EQUIPMENT

Industrial Vacuum Equipment Corporation, N8091 Maple Street, Ixonia, WI 53036, 800-331-4832, 920-261-7117, randy@industrialvacuum.com

## VACUUM TOILET SYSTEM

Envirovac Inc, 1260 Turret Dr., Rockford, IL 61111  
Jets Vacuum Sewage System, P.O. Box 14, N-6060 Hareid, Norway

## VALVES & FITTINGS

Leslie Controls, 12501 Telecom Dr., Tampa, FL 33637  
William E. Williams, 38-52 Review Ave, Long Island City, NY 11101

## VENTILATION SYSTEMS / PRODUCTS

Delta T Systems, 858 West 13th Court, Riviera Beach, FL 33404  
Dry Air Technology, 313 North Oak St., Burlington, VA 88233  
Jon M. Liss Associates, PO Box 5005-73, Rancho Santa Fe, CA 92067

## VIBRATION ANALYSIS

Ludaca, Inc., 1425 NW 88th Ave, Miami, FL 33172  
Maritech, LLC, 100 Powermill Rd., Acton, MA 01725

## VISCOMETERS

Cambridge Applied System, 196 Boston Ave., Medford, MA 02155

## VOYAGE DATA RECORDERS

Rutter Technologies Inc., 22 Pearl Place, P.O. BOX 427, St. John's NL A1C 5N8, Canada

## WASTE WATER TREATMENT

FAST@Systems, 8229 Brentwood Industrial Drive, Brentwood, MO 63144, 314-645-6540, 314-645-6131, solutions@marinetast.com, Contact: Alan Fleischer, www.marinetast.com  
Marine Environmental Partners, 3874 Fiscal Ct, Suite 200, West Palm Beach, FL 33404  
RWO, Leerkampe 3, D-28259 Bremen, Germany

## WATER JET CLEANING

Flow International Corp., 23500 64th Ave., South Kent, WA 98059  
Gardner Denver Water Jetting Systems, 12300 N. Houston Rosslyn Road, Houston, TX 77086  
NLB Corp., 29830 Beck Road, Wixom, MI 48383

## WATER PURIFIERS

Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974  
Everpure, 502 Indiana Avenue, Sheboygan, WI 53081, 866-873-7506, 866-203-7361, customerservice@plymouthwater.com, Contact: Jerry Letcher, www.everpure.com  
Gardner Denver Water Jetting Systems, 12300 N. Houston Rosslyn Road, Houston, TX 77086

## WATERTIGHT CLOSURES

Waltz & Krezner, 91 Willenbrock Rd., Oxford, CT 06478

## WELDING PRODUCTS & POWER EQUIPMENT

ESAB Welding and Cutting Products, 411 S. Ebenezer Rd, PO Box 100545, Florence, SC 29501, 843-664-4411, 843-664-4258, dterry@esab.com, Contact: Donna Terry, www.esabna.com

## WINCHES & FAIRLEADS

Coastal Marine Equipment, Bldg 9114 MISAAP Ind. Complex, Stennis Space Center, MS 39529  
Coastal Marine Equipment Inc., BLDG. 9114 MISAAP Industrial Complex, Stennis Space CTR., MS 39529, 228-813-1700, 228-813-1709, sales@coastalmarineequipment.com, Contact: Ralph Waguespack, www.coastalmarineequipment.com  
CS Controls Inc, 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, info@cscontrols.com, Contact: Paul Srigley, www.cscontrols.com  
Intercontinental Engineering, PO Box 9055, Kansas City, MO 64168  
Jeamar Winches, 1051 Clinton St., Buffalo, NY 14206  
Markey Machinery, P.O. Box 24788, Seattle, WA 98124  
McElroy/Catchot Winch Company, Inc., P.O. Box 4632, Biloxi, MS 39535-4632, 228-875-6327, 228-872-7880, hcatchot@bellsouth.net, Contact: Harold Catchot, www.mcelroycatchotwinch.com  
MMC International, 60 Inp Dr, Inwood, NY 11096  
Nabrico Marine Products, 1050 Trinity Road, Ashland City, TN 37016  
Skookum, P.O. Box 280, Hubbard, OR 97032  
Smith Berger Marine, 7915 10th Ave. S., Seattle, WA 98108  
Superior Lidgerwood Mundy, 1101 John Ave., Superior, WI 54880  
Timberland Equipment Ltd & Almon Johnson, 459 Industrial Ave., Woodstock, ON N4S 7Z2, Canada

## WINDLASSES (ANCHORS)

Coastal Marine Equipment, Bldg 9114 MISAAP Ind. Complex, Stennis Space Center, MS 39529  
Coastal Marine Equipment Inc., BLDG. 9114 MISAAP Industrial Complex, Stennis Space CTR., MS 39529, 228-813-1700, 228-813-1709, sales@coastalmarineequipment.com, Contact: Ralph Waguespack, www.coastalmarineequipment.com  
CS Controls Inc, 101 Dickon Road, Houma, LA 70363, 985-876-6040, 985-876-0751, info@cscontrols.com, Contact: Paul Srigley, www.cscontrols.com  
McElroy/Catchot Winch Company, Inc., P.O. Box 4632, Biloxi, MS 39535-4632, 228-875-6327, 228-872-7880, hcatchot@bellsouth.net, Contact: Harold Catchot, www.mcelroycatchotwinch.com

## WINDOWS

Deansteel Mfg., 111 Merchant St., San Antonio, TX 78204

## WINDSCREEN & WINDOW WIPERS

Bae Systems, 550 South Fulton St., Mt. Vernon, NJ 10550  
Hepworth Marine International, Hepworth House, Brook St., Redditch, Worcestershire B98 8NF, UK  
Wynn Marine, Ltd., Wynn House, Lansdown Estate, Cheltenham, Gloucestershire, UK

# INFORMATION

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## Products



### Anchor Lamina

Versatile hydraulic drill system is portable like electric drills, but lasts longer (typically 10 to 20 years) with little maintenance. It drills or taps up, down and sideways, even underwater. Six interchangeable heads, with a variety of quick-change tools and simple, convenient controls. Meets NEMA, CE and other global standards.

**Circle 101**



### Alstom

Chantiers de l'Atlantique is a specialist in the construction of cruise ships. Since 2000 and the delivery of Millennium, Alstom Marine has distinguished itself by the building of a new class of ships. It is the first to be ecologically sound. With the order for the QM 2 in November 2000, they have become supplier to the largest cruise shipowners in the world: Carnival, RCCL and P&O.

**Circle 102**



### CSSC

China State Shipbuilding Corporation is a state-owned jumbo enterprise and state-authorized investment institution directly administered by the central government of China. CSSC's present building capacity has reached 3 million tons annually, hallmarking a capability of building ships of the 300,000 dwt category.

**Circle 103**



### DieselCraft

Fluid Engineering of Auburn, Ca. has developed a new Two Stage Diesel Fuel Purification System. Stage one is a high-speed centrifuge separator that removes 99.9% of water and 95% of solid contaminants in diesel fuel. Stage two will address degradation, oxidation and repolymerization in fuel.

**Circle 104**



### Autoship Systems

Autoload 6.0 is the latest 3D-based onboard stability and simulation monitor software from Autoship. Autoload is very user-friendly and reliable, yet is the most advanced system available. BP bought Autoload 6.0 for Thunderhorse. Why not you?

**Circle No. 105**



### Driveline

Since 1974, Driveline Service of Portland has been designing, building and repairing drivelines for customers throughout North America. The systems they've developed and the patented machinery used to assemble and balance the drive shafts result in superior products. Driveline Service is a warehouse distributor for many manufacturer of universal joints.

**Circle 107**

### Duluth Seaway Port Authority



Some 2,340 miles from the open sea, Duluth-Superior is the Atlantic Oceans' most westerly inland port. The port's proximity makes it among the busiest crossroads of trade in North America.

**Circle 107**



### Elinoil

Elinoil began supplying vessels with marine lubricants in 1989. They offer cutting-edge products, supply and service in every Greek port as well as in Asia's leading port with minimum notice. Apart from Greece and Singapore, Elinoil supplies its clients with marine lubricants from carefully selected companies in every port around the world.



### Europort

Since the development and exchange of knowledge is so important to the maritime industry, platforms such as Europort are crucial. This exhibition highlights the versatility and skills present in all areas of the maritime industry, focusing on contemporary and future design, new developments and production.

**Circle 109**



### Hoffer Flow

Hoffer Flow Controls, Inc. has introduced the Nova-Flow Batch Controller, one in a series of new Aplug-n-flow@computers now available at Hoffer. The Nova-Flow Batch Controller is suited for flow applications where precise measurement and control of batch quantities is required. The unit provides local display and transmits flow data for control capability.

**Circle 110**



### Fernstrum

Fernstrum Gridcooler keel coolers are ideal for marine applications requiring custom cooling systems. Gridcooler units can be factory customized in many different ways. The I. Series support plates are designed to eliminate intermediate support bolt hull penetrations. The E.I. Series units place the zinc anodes and drain bosses on the end.

**Circle 111**



### Fluoramics

Fluoramics has received certification of its thread sealants, Formula-8 and Lox-8 Paste as well as Lox-8 Grease from the Federal Institute for Materials Research and Testing, also known as BAM in Berlin, Germany. These three products have been certified for use with both gaseous and liquid oxygen.

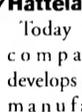
**Circle 112**



### GE

With GE gas turbines powering more than 500 vessels around the world - military, aircraft carriers, patrol boats, fast ferries and cruise ships - GE's gas turbine technology is renowned for its reliability. The compact size, high power-to-weight ratio, high efficiency, environment compatibility with ports around the world and lower operation and maintenance requirements.

**Circle 113**



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### MWH

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**Circle 116**



### Hydrocomp

HydroComp Inc., is the international source for performance prediction software and consulting services. HydroComp's offerings include resistance and propulsion prediction NavCad and SwiftCraft CAD propeller design PropCad propeller sizing PropExpert, and sea trial analysis SwiftTrial. HydroComp also provides customized consulting projects. Users worldwide total over 500.

**Circle 117**



### Gavia

Hafmynd and Gavia AUV Corp. announce that the University of British Columbia has placed an order for a Gavia AUV. The 500 meter depth rated autonomous underwater vehicle will be outfitted with a suite of scientific sensors including the SeaBird SBE 49 FastCAT CTD and Wetlabs ECO-BB3 Optical Backscatter sensor.

**Circle 118**



### Kohler

Kohler marine generators now feature improved sound shields and new, quieter engines. The enhanced Kohler sound shield designs utilizes loaded vinyl barrier foam, acoustically superior to standard foam in absorbing sound energy. A new quarter-turn fastener and pin roof allow the boat owner ready-access for regular maintenance.

**Circle 119**



### Wartsila

Wartsila designs waterjet propulsion systems for the commercial, military and superyacht market. A unique welded modular jet construction is used that makes it possible to offer competitive solutions in stainless steel as well as custom solutions in every power range and in every form and execution.

**Circle 120**



### Perkins Sabre

The latest addition to the Perkins Sabre genset engine range is the new 415GM, which extends the lower end of the Perkins Sabre line-up that now offers a choice of seven models with net engine power outputs spanning from 13.5kWm to 161KWm. The turbocharged, charge aircooled 6TWGM is based on the Perkins 1000 Series engine range.

**Circle 121**



### Indeeco

Indeeco has released its latest catalog showcasing its electric heaters and naval and marine applications. Shortly after they were founded in 1929, heaters for naval and marine use were added to their product line.

**Circle 122**



### Thrustmaster

Thrustmaster of Texas, Inc. is a privately-owned corporation based in Houston, Texas. Thrustmaster manufactures marine propulsion equipment, including deck-mounted propulsion units, through-hull azimuthing thrusters, retractable thrusters, tunnel thrusters, and portable DP systems.

**Circle 123**



### Westad

Westad is a supplier of high performance valves for shipbuilding, offshore and LNG. Westad started more than a century ago and still exists in the same location in Geithus, Norway. The products are butterfly valves and ball valves for applications in corrosive fluids, cryogenic temperatures and other duties.

**Circle 124**



### Samson

Samson has published a new catalog showcasing its rope products for commercial marine applications. The catalog offers customers a preview of the development of their new fibers, coatings and constructions for commercial marine use. Highlights include, the AmSteel Blue, Newutron-8 and Force-8.

**Circle 125**

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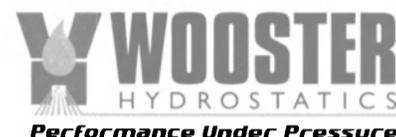
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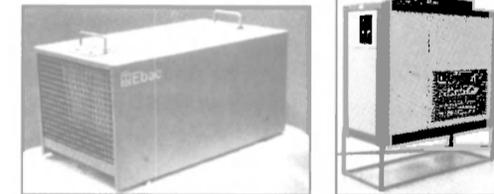
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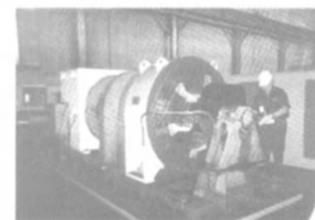
  
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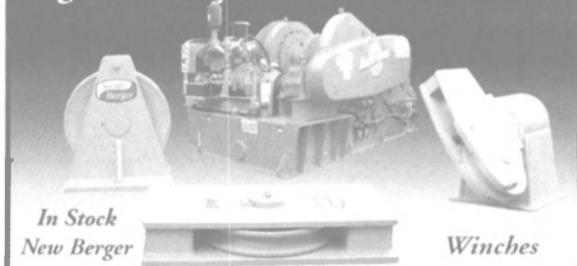
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