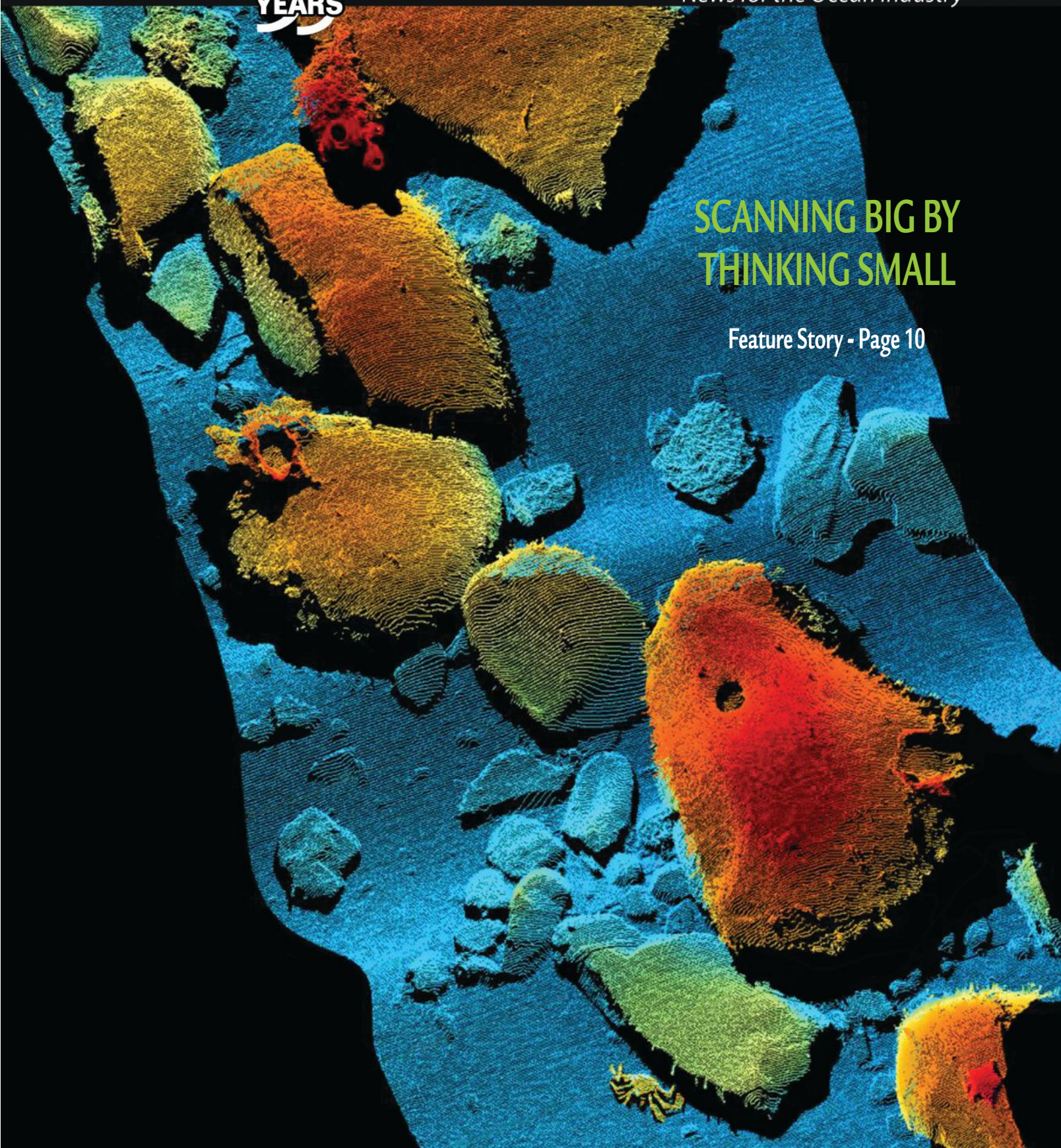
Ocean News & Technology

May 2016 35 YEARS www.oceannews.com

News for the Ocean Industry



SCANNING BIG BY THINKING SMALL

Feature Story - Page 10

VideoRay

Your success drives everything we do. That's why we've engineered every aspect of our ROV systems with you in mind. VideoRay offers affordable, reliable, and robust ROV systems that get the job done right the first time. There's a reason why more customers have chosen VideoRay inspection class ROVs than any other ROV solution on the market. From our unparalleled customer service to our innovative training programs, VideoRay gives you confidence underwater.

www.videoray.com

©2016 VideoRay LLC

Photo Credit: Matt Majors

MacArtney
UNDERWATER TECHNOLOGY

FOCUS 3

Latest generation FOCUS survey solution

Powerful, low-maintenance electric winch system

Cost-effective, high-speed survey platform

Modular design

1000 m depth rating

Flexible and high payload capacity

MacArtney global solutions

Denmark I Norway I United Kingdom I USA I Canada I France
Netherlands I Germany I Australia I Singapore I China

CSA's Environmental Data and Geospatial Services (EDGS) provides clients with data visualization and analysis capabilities that enable timely and well-informed decisions. EDGS uniquely leverages teams of CSA's marine scientists and GIS specialists to unify data analysis, reporting, and visualization through our own optimized geospatial platform.

CSA
CSA Ocean Sciences Inc.

Jodi Harney, Ph.D.
8502 SW Kansas Ave., Stuart, FL 34997
+1 772-219-3022
jharney@conshelf.com
www.csaocean.com/edgs

FLORIDA | LOUISIANA | TEXAS | CALIFORNIA | TRINIDAD | QATAR | BRAZIL | CYPRUS | SINGAPORE | AUSTRALIA

Announcing the New Generation, Man-Portable REMUS 100 AUV

The Perfect Balance of Design & Technology

Our New Generation REMUS 100 AUV provides you with:

- Hydrodynamic, Multi-Functional Design
- Data You Can Trust
- Performance You Can Count On
- Flexible, Modular System
- Open Architecture Platform

HYDROID
A KONGSBERG COMPANY
Intelligent Marine Robots You Can Rely On

To learn more, visit **Hydroid.com/NewGenREMUS**

in this issue

Ocean Industry

Offshore Industry

Feature Story

10 Scanning Big by Thinking Small

Product Spotlight

17 NORTEK

15 Ocean Industry Briefs
18 Maritime Transportation
20 Ocean Science
22 Ocean Energy
26 Defense
33 Offshore Industry Headlines
36 Upstream Oil & Gas
42 Underwater Intervention
50 Maritime Communications
54 Subsea Cables

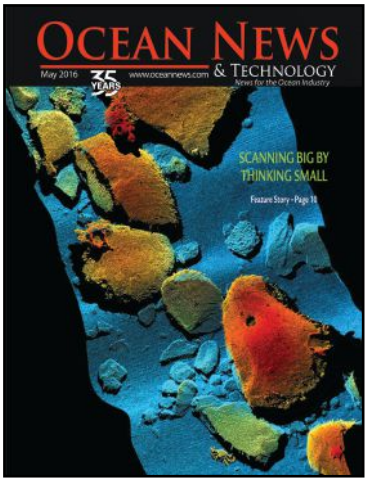
Editorial Focus

30 Benefits and Applications of Micro-Fabricated Atomic Magnetometers

Departments

8 Editorial
59 Offshore Stats and Data
64 Product News
70 People & Company News
72 Calendar & Events
75 Ocean Industry Directory

Cover Photo



3D model of Monterey Canyon. Data obtained by Sonardyne during a deepwater survey using 2G Robotics' ULS-500 underwater laser scanner mounted to an ROV to dynamically scan the seabed.

OCEAN NEWS & TECHNOLOGY
www.oceannews.com

More News, More Technology, More Data

in the next issue

Editorial Focus

- Autonomous Unmanned Vehicles
- Defense & Naval Systems
- Special Focus Section: New Product Profiles

Product Focus

- Tracking & Positioning Systems
- Seismic Monitoring
- Equipment Leasing/Rental Services

TSC Technology Systems Corp.

Ocean News & Technology ISSN# 1082-6106 is published 12 times a year by Technology Systems Corporation, 7897 SW Jack James Dr., Suite A, Stuart, FL 34997, telephone 772-221-7720.

Copyright ©2016 Technology Systems Corp. All rights to editorial content are reserved. No article, photograph, or illustration may be reproduced in whole or part without the written permission of the publisher. Unless otherwise stated in writing by the contributor, all images submitted to TSC may be used in other promotional materials belonging to TSC without permission.

Subscriptions are free to qualified individuals or companies. For all others, call TSC for subscription information.

Printed in the USA. PRINTED WITH SOY INK

MARINE SONIC TECHNOLOGY
Side Scan Sonar Systems

Marine Sonic Technology is a leading provider of ultra high-resolution side-scan sonar systems for any application. Our Sea Scan® product line is one of the most advanced in the world for underwater imaging.

Our systems are suitable for applications in various fields, such as oil and gas, scientific survey, oceanic construction, military and defense, law enforcement & evidence recovery, search and rescue, marine fisheries and any location where accurate high-resolution underwater images are required.

Offering high-definition digital and Adaptive CHIRP models, our systems can be configured for standalone, towed and deep-tow systems, along with AUV and ROV applications.

We offer many transducer packages with frequencies starting at 150kHz, MST has the highest frequency transducer currently on the market at 1800kHz with resolutions up to .5 cm. Our systems are shipped with standard dual frequencies and typical setups are 600kHz / 1200kHz and 900kHz / 1800kHz.

Sea Scan® Survey is our Customizable data collection software package. It is the most intuitive and powerful software package available. With extremely powerful tools and ease of use, it handles almost any task without the need for extensive training. Sea Scan® Survey collects and saves raw data allowing for manipulation without destruction.

If your looking for a cutting edge Ultra High Resolution Side Scan Sonar System with Easy to Use Intuitive software & 24/7 costumer service then contact Marine Sonic Technology today and lets get you Into the Deep!

ATLAS NORTH AMERICA
A company of the ATLAS ELEKTRONIK Group

MARINE SONIC TECHNOLOGY
120 NEWSOME DR (P.O. BOX 1309)
YORKTOWN, VA 23692-1309
1-804-693-9602

ARC SCOUT MKII
SMALLEST AUV SIDESCAN AVAILABLE

AUV / ROV EMBEDDED & TOWED SYSTEMS

MARINESONIC.COM

Greg Leatherman

Engaging in the Blue Economy: An Invitation to Make Yourself Heard to Global Decision Makers

The Blue Economy exists within the nexus of ocean industry and ocean stewardship, and not properly valuing nature and its resources can have tragic consequences when it comes to oceans. For example, maintaining healthy coastlines remains the most efficient way to reduce damage to inland areas during storm surges. Therefore, industry has a critical interest in forming collaborative alliances with other industry partners as well as regulatory bodies on both national and global scales. A common question is what can industry do to be heard by regulatory bodies who are setting the course for the Blue Economy? There are a myriad of ways to be heard—for example, many are proactively participating in organizations representing the industry, responding to calls for input on proposed changes, or publishing opinions in magazines like Ocean News & Technology and ECO.

Consider this your invitation to be heard. ECO magazine would like to know how you think governments should invest, either jointly or unilaterally, to ensure the sustainability of ocean industries and our global environment.

For companies involved in ocean and coastal industries, environmental responsibility does not end with their operations. They also have a responsibility to engage industry partners, government, and other institutions to share knowledge and develop joint approaches and frameworks to ensure the long-term health of our oceans.

In 2016, with regulatory bodies around the world setting parameters for a growing Blue Economy, a unique opportunity exists for industry to engage ocean regulators, be a part of the creation of sustainable policies, and share best practices and lessons learned on how we can all use ocean resources more responsibly. Certainly, an ever-increasing number of industry alliances are doing just that.

For example, the World Ocean Council advocates for sustainable business practices in the context of the United Nations Global Compact and its own collaborative summits, while industry-specific groups like the International Chamber of Shipping, the International Marine Contractors Association, and the Joint Industry Programme continue to inform regulatory decisions based on science, experience, and proven mitigation strategies. Other strategies that companies can adopt include sponsoring conferences focused on sustainability and having employee representatives proactively involved in organizations such as a local chapter of the National Association of Environmental Professionals.

Each summer, ECO prints a special interview edition, and past participants have included top ocean researchers, heads of federal agencies, and industry leaders. Every time we do an interview issue, we hear about policy from the decision makers—but, this year, we want more. So, for the 2016 special edition, we are introducing something new.

As a complement to our regular interview profiles, we are asking a single question and inviting any company involved in ocean business and industry to respond. The question is, "How and where should governments invest to ensure the sustainability of both ocean industries and our global environment?"

If you participate, you will be heard. ECO is read by decision-makers at the highest level of regulatory bodies, especially in Europe and America. For example, ECO is the sole media sponsor of Capitol Hill Ocean Week, the United States' top ocean policy conference, which is held annually by the National Marine Sanctuary Foundation. We also sponsor numerous conferences in the ocean industries, ranging from coastal restoration to dredging to subsea technologies. And, of course, we mail out to multiple industry associations. As a result, you will be heard by like-minded companies, some of whom may seek partners in advancing sustainability initiatives, lobbying governments, and communicating industry accomplishments in this area.

So, if you have an opinion about how governments can best promote sustainability in the ocean industries, send it to editor@ecomagazine.com to be heard.

The deadline for submission on this topic is 24 June 2016, and the issue featuring all responses will be released in mid-July. Responses should be one to two paragraphs long and focus on answering the question. Please include your name, title, and company/organization in your email. While we welcome advertisers, this is not an invitation to market a specific product or service, but rather a chance to let decision-makers know what is important to ocean industry and business. For those companies interested in advertising in this issue, the sales contacts are the same as those for ONT.

Even if you can't find the time to send in your opinion, check out our special interview issue and see what your colleagues had to say on this topic. It promises to be an eye-opening compilation.

OCEAN NEWS & TECHNOLOGY
www.oceannews.com

EDITOR IN CHIEF
Ladd Borne

SUBMARINE CABLE EDITOR
John Manock

PRODUCTION COORDINATOR
Suzanne Short

ART DIRECTOR
Suzanne Short

COPY EDITOR
Robyn Schuricht

CIRCULATION
Jessica Lewis
Jlewis@tscpublishing.com

ADVERTISING SALES

NORTH AMERICAN AD SALES:
Lisa Chilik
Tel: +1 (574) 261 4215
Fax: +1 (772) 221 7715
Lchilik@tscpublishing.com

INTERNATIONAL AD SALES:
Mimi Shipman
Mob: +44 (0) 777 6017 564
Ph: +44 (0) 1460 242 060
mshipman@tscpublishing.com

ADVISORY BOARD

PHILIPPE PIERRE COUSTEAU
Washington, D.C.

KEVIN HARDY
San Diego, California

DR. PHIL HART
Pennington, New Jersey

DAN WHITE
Stuart, Florida

eco

environment coastal & offshore

The only magazine reaching the coastal and offshore environmental markets

Published nine times a year and available in print and digital formats, eco brings in-depth articles and the latest industry developments to professionals around the world.

Science • Technology • Economics • Regulation & Policy • HSSE

Learn how eco can help your company expand its market reach!
Contact an advertising representative today

TSC

North America: Lisa Chilik • +1 (574) 261 4215 • Lchilik@tscpublishing.com
International: Mimi Shipman • +44 (0) 777 6017 564 • mshipman@tscpublishing.com

www.ecomagazine.com

GULF of MEXICO FOUNDATION™

The official publication of the Gulf of Mexico Foundation

SCANNING BIG BY THINKING SMALL

By: Regan Lipinski
Training Manager,
Marine Sonic Technology, Ltd.

ARC Scout image of YO88, "Old Betsy", York River, VA (1800 kHz @ 30m range).

In a world where everything needs to be "Huuuge" a philosophy has crept in over the last several decades that quality depends on how big the box is and how much you spent on it. Like a kid running to the biggest box under the Christmas tree or your teenager wanting that ever larger and pricier smart phone, it seems the size and cost of an object fascinates us. Some people are starting to realize that bigger is not always better. What you normally end up with is that depressing, freshly opened potato chip bag that is only half full and filled with air. This is an analogy that fits a lot of technology available today. You have a bright shiny big box that doesn't exactly do what you thought it was going to do, but you deal with it because you conned your purchasing department into spending big on what turned out to be mostly hot air.

On the bright side, not all technology companies fit this bill. One in particular is taking a different approach when it comes to embedded side-scan sonar. Marine Sonic Technology (MST), a brand of Atlas North America, has dropped the term "Big Box" from its vocabulary. With revolutionary breakthroughs in technology, MST's engineers have developed the smallest and one of the most powerful embedded side-scan sonars available on the underwater imaging market.

It started a few years ago when Alex Berelovich, chief engineer at MST, set his goals on updating the aging SSPC analog embedded system, which was the market standard and a staple for many commonly used AUVs used in military to oceanic survey operations. He spoke with several of his customers who expressed the challenge of accommodating ever increasing payload dependencies. On-board payload space comes at an extremely high premium as various sensors and control systems compete for a very limited space—and having demands of a limited, finite power supply. His challenge was set: create the smallest and least power consuming embedded side-scan sonar available without any degradation in quality. If that wasn't enough, he wanted to include the new advancements in Compressed High Intensity Radar Pulse (CHIRP) and Embedded Processing, also.

Common embedded side-scan sonars of that time were large—that time being the not too long ago year of 2012. The average size of the internal electronics was between 16 to 20 in. with exterior transducers reaching upwards of 22 to 25 in. That wasn't bad in that era. AUVs were big, even "HUUUGE," if you don't mind the pun. They also consumed massive amounts of power. Between the electronics and the transducers, you could easy eat up 30 to 45 watts or more of power. This greatly impacts AUV endurance.

However, today's AUVs and UUVs are getting smaller—much smaller! With the recent introduction of the new, highly versatile Micro AUVs, the typical embedded side-scans would never fit. This creates a paradox for the Micro AUVs. How do we build small if the sensors we need

The ARC Scout Lite in completion, adapted for the ARC Scout MKII with transducers..

The ARC Scout MKII showing Network & Power ports.

won't fit? The new missions these little guys are going on require them to be small, some even incredibly small. They will be used in situations never thought of for use with AUVs in the past, such as extremely remote areas where they will have to be brought in by backpack, in pipelines, and police and fire agencies for victim and evidence recovery in small lakes and tributaries. They will be adapted with smart technology to locate and then neutralize naval mines in contested waters, and even used with hive and swarm technology where multiple AUVs will collectively work together to conquer all kinds of tasks.

Yet all of this will come at a price. Not a financial one, but a cost in available, already highly limited payload space. Most current sensors just won't fit, not to mention the power draw. This was the problem that had to be solved and the technology just wasn't there.

In 2013, MST introduced the ARC Scout side-scan sonar for AUVs. The Scout was based on a new, highly secretive technology called ARC or Adaptive Resolution CHIRP. It incorporated superior front-end filtering, embedded processing, and an innovative transducer design. The Scout was able to accomplish something no other embedded side-scan was able to do: conquer the size and power barrier. It became the smallest, most compact, yet extremely powerful system to date. Measuring 3.9 x 3.7 x 2.2 in. and weighing in at only 1.6 pounds, this ultra-high resolution, dual simultaneous frequency CHIRP system is capable of drawing a maximum of 18 watts of power. In the variable power mode during normal operations it would only draw between 9 and 12 watts. This performance put it light years ahead of its cumbersome counterparts.

"However, this was not the end, nor was it the beginning of the end, it was only the end of the beginning..." to quote Sir Winston Churchill. Berelovich and his team of engineers still felt they had more work to do. The Scout just wasn't small enough for future AUV applications, so they took the lessons they learned and spent the next 2 years refining it, making it better, stronger, faster like Steve Austin without the six million dollar price tag.

In early 2015, MST began with a prototype unit affectionately called the ARC Scout Lite. It was going to be a single frequency version of the ARC Scout, but by the time it is was complete the Scout Lite was overwhelmingly better engineered, more technologically advanced, and far less expensive than the Scout. The Scout Lite measured only 5.02 x 2.32 x 0.9 in., weighed a mere 0.386 lbs., and power consumption ranged from 1.5 watts in sleep mode to a max of 9 watts using 28VDC. Inputs of voltage are 12VDC-4w, 18VDC-5w, 20VDC-6w, 24VDC-7w, 28VDC-9w, and 30VDC-8w.

There are currently four available frequencies, with more to come. The new innovative transducer design is rated between 200 and 1,000 m and is made from PVC and stainless steel. What's inside that makes the magic happen is still a closely guarded secret. The currently available frequencies and ranges are 600 kHz @ 130 m, 900 kHz @ 80 m, 1,200 kHz @ 45m, and 1,800 kHz at 25m. A 300 kHz is now available, with possibly lower and even higher frequencies to come within the next year or so.

That brings us to spring of 2016. MST is now proud to introduce the ARC Scout MKII. In pursuit of constant improvement, MST took the best of both worlds and created a dual frequency Scout with the size and technological advancement of the Scout Lite.

The Scout MKII is a modular, expandable, adaptive CHIRP side-scan sonar system that can fit in the smallest of AUVs with embedded processing and superior front-end filtering using highly integrated circuitry. You can use just one sonar module for single frequency applications or link multiple modules together, giving it dual, triple, or even quadruple simultaneous frequency transmit capability.

The ARC Scout MKII showing Transducers ports.

The future of embedded side-scan sonar is now. The Scout MKII is the next evolutionary leap in technological advancement. It's the smallest, lightest, fastest, and, quite possibly, the least expensive side-scan sonar on the market. Its design gives AUVs precious payload space while still rendering the most beautiful images of up to 0.4 cm of resolution!

If you are interested in reclaiming that much needed payload space and reducing your power consumption please let MST show you how you can do it, without breaking the bank. For more information on the ARC Scout MKII please contact Marine Sonic Technology at MarineSonic.com or the old fashioned way by calling 1-804-693-9602. Marine Sonic Technology is a brand of Atlas North America.

- High Resolution
- Highly Robust and User Friendly
- Highly Cost-Effective Swath Bathymetry System

EchoSweep Multibeam Echosounder

- Number of Beams: 140
- Range: up to 280 m
- 140° Swath Coverage
- Free Software for Real-time Operation and Post-processing

- Highly Robust and Accurate Acoustic Doppler Technology
- Significantly Longer Range
- Highly User Friendly And Cost Competitive

FlowQuest Acoustic Current Profilers

- Range: up to **900 m**
- Depth: up to 6,000 m
- Accuracy: up to 0.25% ± 2.5 mm/s
- Data Fusion and Acoustic Modem Options

- The World's Smallest DVL
- Ideal For Underwater Precision Navigation
- Significantly Longer Range
- Smallest Minimum Altitude

NavQuest Doppler Velocity Logs (DVL)

- Range: up to **300 m**
- Minimum Altitude: 0.3 m
- Depth: up to 6,000 m
- Accuracy: up to 0.2% ± 1 mm/s

- The Best Selling USBL Systems In The World
- Broadband Acoustic Spread Spectrum Technology
- Highly Accurate, Robust and Cost Effective

TrackLink USBL Tracking Systems

- Range: up to 11,000 m
- Depth: up to 7,000 m
- Targets: up to 16
- Accuracy: up to 0.15 degree
- Price: from $15,000

- The Best Selling Acoustic Modems In The World
- Broadband Acoustic Spread Spectrum Technology
- Transport 95% of The World's Acoustic Communication Data

High Speed Underwater Acoustic Modems

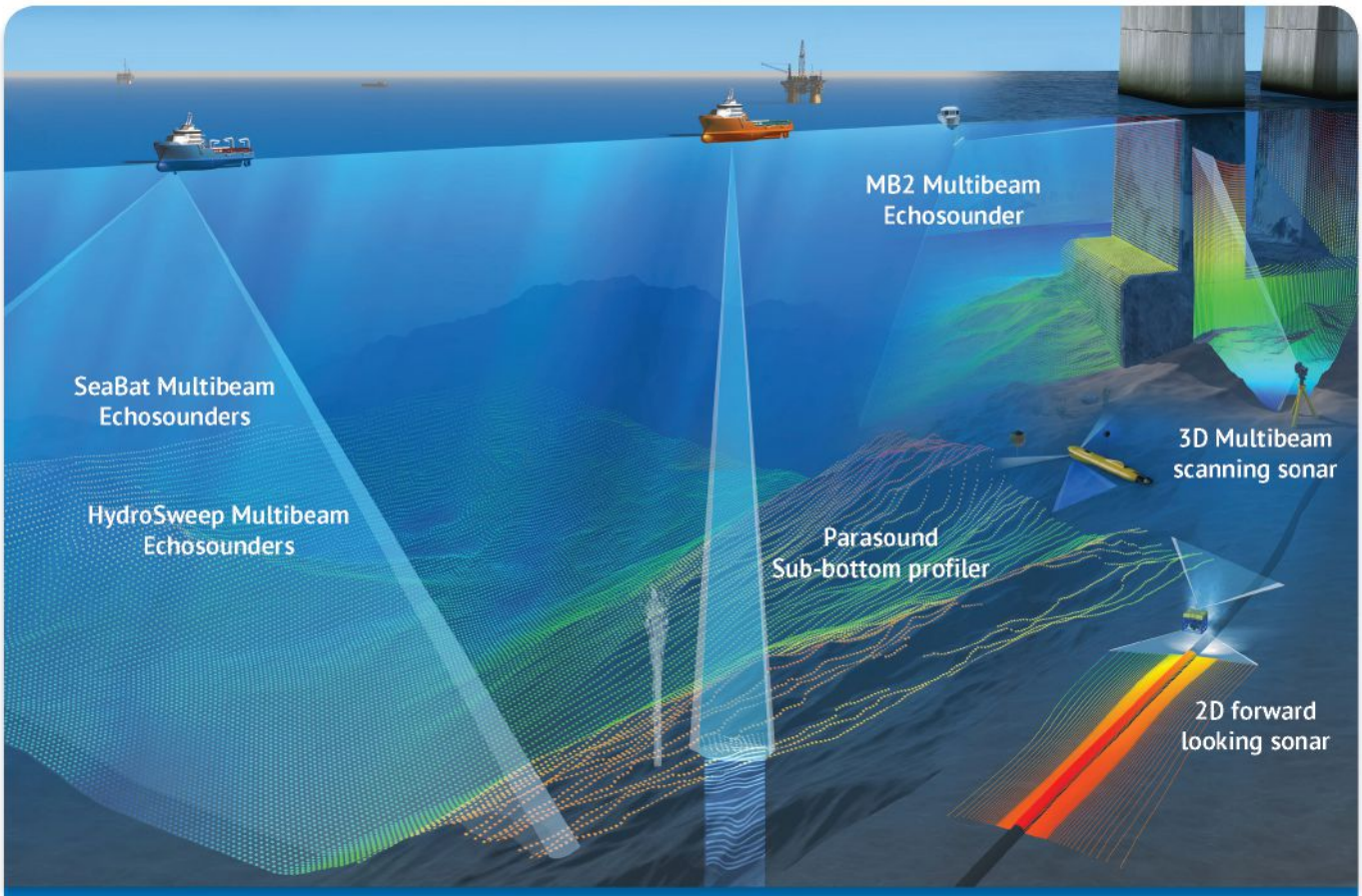
- Data Rate: up to 38,400 baud
- Bit Error Rate: $< 10^{-9}$
- Range: up to 10,000 m
- Depth: up to 7,000 m

LinkQuest Inc. www.link-quest.com

Tel: (858) 623-9900, 623-9916 Fax: (858) 623-9918
6749 Top Gun Street, San Diego, CA 92121, USA
Email: sales@link-quest.com

Teledyne Marine

All the sonars you need, in one place



Hydrography
Seafloor mapping
Sub bottom profiling
Marine research

Defense & security
Terrain mapping
MCM and Obstacle Avoidance
Diver detection

Civil engineering & dredge
Dredge guidance
Construction support
Bridge, Dam and Harbor inspection

Offshore
Pipeline surveying
Leakage detection
Obstacle avoidance

Take advantage of the collective expertise of how our combined underwater acoustic imaging technologies deliver far-reaching support for your business. We operate out of six worldwide locations and are closer to you than ever before supported by a global network of service partners. Contact our skilled team for an in-depth look at our pioneering products and customized solutions.

To know more, contact us at:

www.teledynemarine.com

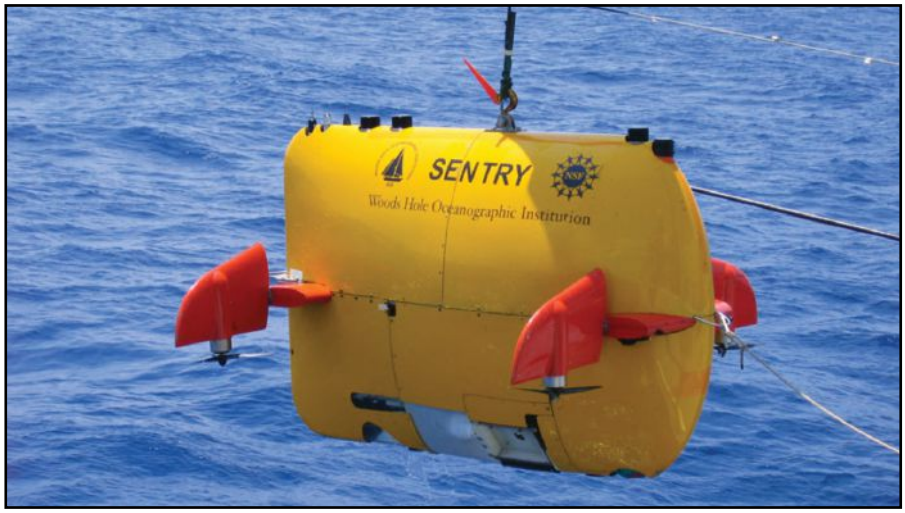
TELEDYNE MARINE
Everywhere**you**look™
RESON • BlueView • Odom Hydrographic

OCEAN INDUSTRY

in this section

Ocean Industry Briefs 15
Maritime Transportation 18
Ocean Science 20
Ocean Energy 22
Defense 26

WHOI assists in locating El Faro voyage data recorder



(Photo by Walter Cho, Woods Hole Oceanographic Institution)

A team of scientists and engineers from the NTSB, Coast Guard and Woods Hole Oceanographic Institution (WHOI) have located the voyage data recorder (VDR) of the sunken El Faro cargo ship.

The U.S. flagged El Faro sank during Hurricane Joaquin on 1 October 2015. All 33 of the El Faro's crew perished in the accident.

"We are extremely pleased to have assisted the NTSB in locating the VDR through the use of our advanced undersea robotic tools," said Andy Bowen, the WHOI expedition leader onboard the RV Atlantis. "We hope that what is learned from the VDR and the examination of the wreckage will help NTSB learn more about how El Faro and her crew were lost, and perhaps provide some resolution for the crew's families and friends."

The VDR was located at approximately 2 a.m. 26 April in the waters between Florida and the Bahamas at a depth of approximately 4,600 m (15,000 ft). The team used a tandem system of unique vehicles to locate the coffee can-sized recorder: The AUV Sentry, a one-of-a-kind vehicle designed and built by WHOI with funding from the National Science Foundation for oceanographic research; and a towed, fiber optically-controlled vehicle called Camper to collect video imagery around the site.

The VDR was originally attached to the vessel's mast, which was found on the seafloor several hundred meters from wreckage of the ship's hull.

The search team is working from the research vessel Atlantis, which is owned by the U.S. Navy and operated by WHOI. Now that the VDR has been located, the WHOI team is using detailed photographs from Sentry to make photo mosaics of the location to plan the eventual recovery of the VDR. The team also continues to conduct extensive and detailed surveys of the shipwreck, to aid investigators who will determine exactly why and how the ship sank.

For more information, visit www.whoi.edu.

Kongsberg Maritime uncovers Nessie

Time after time the search has been made, and time after time, they've all come back empty handed. However, recently, Kongsberg Maritime Ltd, the UK division of Kongsberg Maritime, has achieved the unimaginable and uncovered the elusive Nessie. That is, the long lost model of Nessie that was used during filming of 1970's "The Private Life of Sherlock Holmes."

The discovery was made during a survey of Loch Ness, led by Kongsberg Maritime Ltd and supported by The Loch Ness Project and VisitScotland.

Teledyne to Acquire CARIS

Teledyne Technologies Incorporated and CARIS jointly announced that the CARIS business and its international affiliates have agreed to be acquired by a wholly-owned subsidiary of Teledyne. CARIS, headquartered in Fredericton, New Brunswick, is the leading developer of geospatial software designed for the hydrographic and marine community. Terms of the transaction were not disclosed. The closing of the transaction, which is subject to customary conditions, is anticipated to occur in the second quarter of 2016.

While it will complement Teledyne's marine instrumentation companies and Teledyne PDS, CARIS will become part of Teledyne's Digital Imaging segment. CARIS will maintain and expand its advanced software solutions and support for a wide range of sensor platforms, data formats and acquisition software across the industry.

Oceanology International 2016

Oceanology International 2016 (OI2016) held 15-17 March at London's ExCeL attracted 7,836 unique attendees from 79 countries, with many revisiting on consecutive days to provide an overall show attendance of 14,161.

"We are absolutely thrilled with how OI2016 has gone," says Event Director Jonathan Heastie of Reed Exhibitions. "With many of our participants active in the oil and gas industry, it's fair to say that their expectations were lowered pre-show in light of the market challenges faced… but the feedback we received from our exhibitors all week was tremendous. They told us consistently that the quality of the visitors they met has risen sharply, with key decision-makers and senior technologists on-site from a multitude of industries, not just oil and gas and, most importantly, that these important attendees are looking to buy both now and into the future with numerous orders taken during the show.

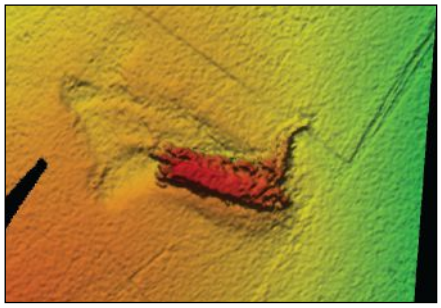
The OI2016 exhibition was the largest ever in the show's 47-year history with over 8,500 sq. m occupied by 520 exhibiting companies from 33 countries. Already over 3,000 sq. m of space has been booked or reserved for OI2018.

Once again the vessels moored immediately outside the OI2016 exhibition halls in the Royal Victoria dock, proved a draw with visitors. The 11 vessels, varying in length from 12.5 m to 53 m, that came to OI2016 had a busy time with 1,107 people going aboard for one of the 93 trips in the five giving demonstrations; and 847 visiting the vessels moored alongside as reception and exhibition bases. 142 people attended the dock side demos in the specially sited portacabin from which the demonstrations and all underwater activity could be viewed.

Operation Groundtruth is the first survey of its kind in Scotland, making use of Kongsberg Maritime Ltd's recently-launched Munin AUV. The highly accurate underwater vehicle features groundbreaking sonar and camera equipment, which provide the ability to map vast areas up to a depth of 1,500 m at incredibly high resolution.

As Loch Ness has a reputation of being incredibly difficult to survey, the state-of-the-art Munin will undoubtedly reveal brand new information regarding the Loch. Uncovering the 46 year old Nessie model was just the beginning…

Craig Wallace, senior subsea applications engineer at Kongsberg Maritime Ltd is excited to be back at a favourite location: "Kongsberg Maritime Ltd began surveying Loch Ness with some of the world's first multibeam sonar back in 1987. Over the years, the company has returned many times, bringing the latest technology to uncover the Loch's mysteries." The MUNIN AUV, which was recently added to Kongsberg Maritime Ltd's Aberdeen-based rental pool, offers significant benefits in terms of low utilization costs, high reliability, an excellent standard of



data quality and easy deployment.

Video visualization of the survey's findings can be found at: https://www.youtube.com/watch?v=WLubopbKSZ4&feature=youtu.be.

Bronze bell recovered from World War II aircraft-carrying submarine off Oahu coast

During a test dive last week, the Hawai'i Undersea Research Laboratory (HURL) recovered a bronze bell from the I-400—a World War II-era Imperial Japanese Navy mega-submarine, lost since 1946 when it was intentionally sunk by U.S. forces after its capture.

Longer than a football field at 400 ft, the I-400 was known as a "Sen-Toku" class submarine—the largest submarine ever built until the introduction of nuclear-powered subs in the 1960s. The I-400 is now protected under the Sunken Military Craft Act and managed by the Department of the Navy.

The recovery was led by veteran undersea explorer Terry Kerby, HURL operations director and chief submarine pilot. Kerby was joined by Scott Reed, Chris Kelley and Max Cremer (all with HURL) on the dive. The team used both of HURL's human-occupied submersibles, Pisces IV and Pisces V. Teamwork between the two subs was instrumental in recovering the bell.

Since 1992, HURL has used its submersibles to search for historic wreck sites and other submerged cultural resources as part of the NOAA maritime heritage research effort. Heritage properties like historic wreck sites are non-renewable resources possessing unique information about the past. This recovery effort was possible because of a collaboration between the University of Hawai'i School of Ocean and Earth Science and Technology, California State University-Chico (CSU-C), Naval History and Heritage Command and the USS Bowfin Submarine Museum.

Enabling novel design and operational efficiency for offshore installations in Trinidad and Tobago

NORTEK
www.nortek.no

The often threatening current and wave conditions off the east coast of Trinidad—the North Brazil Current Rings—can be strong and can affect rig moves, drilling operations and riser designs. Why did environmental consulting firm Coastal Dynamics Limited choose Nortek instruments when they needed to observe these conditions?

Environmental consulting firm Coastal Dynamics chose Nortek instruments to obtain reliable current and directional wave data off the coast of Trinidad.

Recently, a renowned energy company contracted environmental consulting firm Coastal Dynamics to obtain reliable current and directional wave data to improve their numerical models.

These data were also important in investigating environmental conditions that adversely affect drilling operations. It was essential to incorporate these into project planning.

Setting up a functional solution

Here, Coastal Dynamics chose Nortek's Signature55 to collect high-resolution current data in the water column as well as the Nortek AWAC with patented SUV wave processing for near-surface currents and directional waves. Both are robust systems, optimized for operational users, which also produce scientific quality data.

"In this project, Nortek provided us with a complete solution: from the sourcing of acoustic releases and flotation to important contact with mooring experts to advise on all details for the mooring," says Nazeer Gopaul, director at Coastal Dynamics Limited in Trinidad and Tobago.

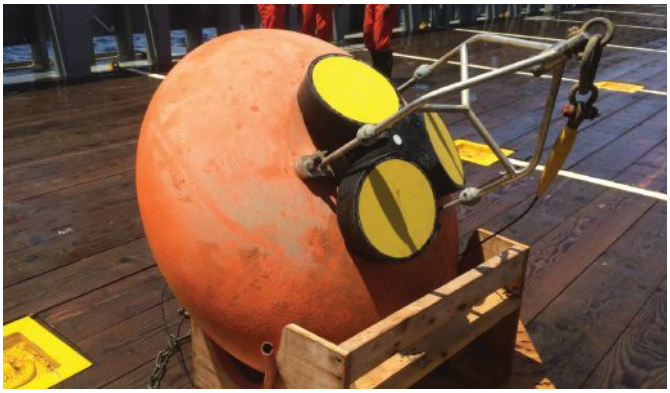
Coastal Dynamics was able to satisfy the specific needs of their client by placing a higher frequency AWAC near the sea surface and an Aquadopp Profiler down-looking in the near-bed Signature55 buoy to obtain waves, near-surface currents, and bottom conditions. Most users often give up measuring currents close to the surface and bottom due to operational and instrument limitations. But Nortek's form factor and patented data processing of the Aquadopp Profiler and AWAC allowed them to easily capture this often missed data for their client.

"We were able to collect high resolution water column [current] profiles which not only provided excellent information for our client but simultaneously gathered very useful scientific data that could be used to glean further information on a previously undocumented water column structure," says Nazeer Gopaul.

"The deployment was successful and the data gathered from the field campaign provided excellent data quality for our study," Gopaul adds.

A reliable system delivering high-quality data

The Signature55 is a dual frequency, broadband instrument. This means that the user may select 75 kHz, 55 kHz, or alternate both, providing high-resolution measurements near the instrument, and larger cell average currents out to >1,000 m.



The Signature55—a dual frequency current profiler—on deck following a deployment.

The dual-frequency nature of the instrument is inherent to all Signature55 systems, so users do not have to choose which frequency to use at time of purchase, thus giving them the flexibility to adapt to different conditions based on the project at hand.

In this shallower location, Coastal Dynamics opted to utilize only the 75 kHz mode, taking advantage of the high resolution data at incredibly low power.

"The Ethernet connection allows us to download data rapidly so that we can deploy on tight schedules in deeper water deployments. We are also able to obtain full water column profiles with high resolution data that can then be used for several applications such as dispersion studies, environmental assessments, operational oceanography and research," Nazeer Gopaul explains.

Winning projects and expanding capabilities through knowledge sharing

Nazeer Gopaul emphasizes that Nortek's willingness to share technical knowledge and assist his organization in making decisions has helped Coastal Dynamics win projects for deployments in deeper waters.

"We are now exclusively using Nortek ADCPs mainly because of the extensive support we receive and the connections to Nortek's partners. The referrals and contacts we establish through Nortek have allowed us to offer our clients the best available technology while being cost effective," Nazeer Gopaul adds.

GE continues to provide advanced maritime training with new accreditation

GE's continuous efforts to help increase marine industry safety standards for operators recently resulted in the endorsement of The Nautical Institute's (NI) accreditation for GE to conduct a dynamic positioning (DP) sea time reduction (STR) course in its modern DP training center in Houston. With this accreditation, GE's Marine Technical Training Center has joined an exclusive list of only 13 DP schools worldwide that are accredited to provide STR courses.

The accreditation allows trainee DP operators (DPOs) to receive credit of 30 days of DP sea time when they complete 5 days of intensive training in the DP simulator. Using GE's advanced DP simulator, the company can provide the trainees with a selection of scenarios that help prepare the DPOs for a multitude of possible situations that they may encounter when engaged in DP operations.

GE's Marine Solutions' DP simulator received the NI's Class A Certification in June 2015. Together with the DP training program, GE's Marine Technical Training Center in Houston provides the operators with a suite of following training courses:

Nautical Institute-accredited courses for licensed deck officers:

1. DP Induction (basic)
2. DP Simulator (advanced)
3. DP Sea Time Reduction

GE product courses for engineering officers, electronic technicians:

1. MV7000 & MV3000 (VFD)
2. DP Maintenance
3. Automation Familiarization and Basic Maintenance.
4. Advanced Automation and Power Management Maintenance
5. DP Software Familiarization (A-Series, C-Series, SeaStream)

For more information, visit www.gemarinesolutions.com.

Wärtsilä and CSSC to establish new electrical and automation joint venture in China

Wärtsilä and China State Shipbuilding Corporation (CSSC) have signed a Letter of Intent to establish a new joint venture company. The new joint venture will focus on China's growing market for electrical & automation (E&A) solutions for marine applications.

The Letter of Intent was signed by Wärtsilä CEO Jaakko Eskola and Mr. Wu Qiang, president of CSSC at a ceremony in Shanghai on 16 March. The planned activities of the JV will include sales, marketing, engineering and project management for the E&A market. However, following the signing of the Letter of Intent, the full scope of the company's operations will be further defined. The joint venture company is expected to be operational at the beginning of 2017.

Wärtsilä and CSSC are already partners in three joint venture companies. In 2004, they jointly formed Wärtsilä CME Zhenjiang Propeller Co Ltd (WCME), a company producing fixed and controllable pitch ship propellers. In 2014, CSSC Wärtsilä Engine (Shanghai) Co Ltd (CWEC) was established for the local production of medium and large bore, medium speed, diesel and dual-fuel Wärtsilä engines. In 2015, the two companies formed Winterthur Gas & Diesel (WinGD). WinGD has taken over the technical development and sales of Wärtsilä's range of 2-stroke, low speed marine engines.

For more information, visit www.wartsila.com.

Shipping losses declined in 2015

According to the Allianz Corporate and Specialty Safety and Shipping Review 2016, the maritime shipping industry saw the total number of losses decline slightly to 85. This is the lowest total for a decade and the second year in a row that annual losses fell below 100.

Regional disparities remain with more than a quarter of all losses in 2015 occuring in the South China, Indochina, Indonesia and Philluoines regions.

For the full report, please visit www.agcs.allianz.com.

Crowley takes delivery of Louisiana, third Jones Act tanker with LNG capability

Crowley Maritime Corp. took delivery of Louisiana, the third of four new, Jones Act product tankers being built for the company by Philly Shipyard, Inc. (PSI), the sole operating subsidiary of Philly Shipyard ASA. The delivery marks another highpoint for Crowley's petroleum services group as its tankers are at the forefront of the industry for their potential future conversion to LNG propulsion.

Louisiana, which is 50,000 dead-weight-tons (dwt) and capable of carrying 330,000 barrels of product, is scheduled to be christened in New Orleans on 5 May. Crowley's fourth product tanker is under construction at PSI, and delivery is planned for third quarter 2016.

Louisiana joins sister ships Ohio and Texas, which were received by Crowley in 2015 as the first-ever tankers to receive the ABS LNG-Ready Level 1 approval. The approval allows Crowley to convert the tanker to LNG propulsion in the future.

The new 50,000-dwt product tankers are based on a proven Hyundai Mipo Dockyards (HMD) design that incorporates numerous fuel efficiency features, flexible cargo capability and the latest regulatory requirements. The vessel is 600 ft long and capable of carrying crude oil or refined petroleum products, as well as various chemical cargoes.

For more information, visit www.crowley.com.

Damen's answer to reduced oil prices lies in conversion support

Damen Shipyards Group has developed a committed response to the increasing number of laid up Platform Supply Vessels (PSVs) resulting from the current predicament facing the offshore oil and gas industry. The Dutch company's solution involves converting idle PSVs into vessels capable of taking on roles in alternative sectors such as aquaculture, shipping and defense.

The situation that the offshore oil and gas industry is experiencing is having serious consequences throughout the sector. Compounding factors include historically low oil prices, halted exploration projects and reduced production. This vicious circle is completed by a substantial drop in support vessel day rates.

Damen has a solution to get these vessels active and profitable once again. "Our design teams have come up with

workable ideas across several industries. For example, we can convert a laid up PSV into a profitable Container Feeder or, for naval operations, a Logistic Support Vessel," informs Damen sales manager Remko Hottentot. "The possibilities are numerous. It will also be possible to transform a PSV into an accommodation and O&M vessel"

One example of an already developed proposal is the Damen Live Fish Carrier 8916 for the aquaculture industry. "Here, the concept of using the existing PSV platform is ideal, yielding many advantages for live fish carrying situations."

For more information, visit www.damen.com.

VSTEP supplies multiple NAUTIS Simulators

The Independence Seaport Museum in the U.S. has acquired two NAUTIS Museum Simulators, offering their visitors the chance to experience historical events on the Delaware River.

In addition, HELMEPA purchased a NAUTIS DNV Class A FMB Simulator and Instructor Station for training of its fleet members. The simulator was delivered and installed by VSTEP at HELMEPA premises in Athens, Greece.

Also, Unitra Maritime Manila Inc. (UMMI) in the Philippines has selected VSTEP for the supply of a simulator classroom to train its trainees in accordance with the latest IMO requirements and model courses.

For more information, visit www.vstepsimulation.com.

Fincantieri to build cruise ships for Carnival Corporation

Following the historical agreement of March 2015 and the memorandum of agreement last December, Fincantieri, leader in cruise ship design and construction, and Carnival Corporation & plc, the world's largest cruise company, have finalized the contracts for the construction of five next-generation passenger ships.

The historical contracts envisage one further unit compared to the memorandum of agreement of December and mark the most important goal reached by the two Groups in the last years, having a total value exceeding 3 billion euros.

Crucial, once more, for the finalization of the agreement, the supporting of the export credit system lead by Cassa Depositi e Prestiti (Cdp). This support represents for Fincantieri, like for every Italian exporter, an essential element for the efficiency of the "Italian system."

Two of the new ships will be built for the Costa Crociere brand Costa Asia, other two for Princess Cruises and one for P&O Cruises Australia. They will all be built at the shipyards in Monfalcone and Marghera between 2019-2020, and will operate on the emerging cruise markets, among which China, Australia and others, once entered in their respective fleets.

For more information, visit www.fincantieri.it.

Successful sea trials for giant piston corer for JAMSTEC

OSIL engineers have recently returned from Japan following the successful completion of sea trials for a 42 m stainless steel giant piston corer in conjunction with local agents Kyokuto Boeki Kaisha Ltd.

The 42 m giant piston corer and handling system forms a major part of the suite of equipment on board the new state-of-the-art research vessel Kaimei supplied to JAMSTEC.

The giant piston corer from OSIL is a rugged and reliable system, that can achieve up to 60 m core samples in soft cohesive sediments and muds. The system is a modular construction with a unique integral piston, that reduces internal friction and prevents plugging. The corer can be manufactured from carbon steel or stainless steel, and is a much sought after tool for the study of marine sediments.

OSIL have a vast wealth of knowledge and experience in designing, planning and installing customized coring systems, and can pair the system with a variety of different handling systems to suit the existing vessel layout, equipment and available deck space.

For more information, visit www.osil.co.uk.

Update on the uncabled bio-acoustic sonar instruments of Ocean Observatories Initiative

ASL Environmental Sciences Inc. (ASL) is expected to supply the last of the Un-Cabled Bio-acoustic Sonar Instruments for the National Science Foundation-funded Ocean Observatories Initiative (OOI) Coastal and Global Scale Nodes by the middle of 2016. Under the terms of the contract, ASL will have supplied 16 Acoustic Zooplankton and Fish Profiler (AZFP) instruments for the Coastal Arrays and 20 individual instruments for the Global Arrays. The two Coastal Arrays use a single bottom-mounted instrument while the four Global Arrays use one upward-looking and one downward-looking instrument mounted on the mid-water platform of the Apex Profiler Mooring.

The image below shows part of the OOI Woods Hole Oceanographic Institution (WHOI) team in front of MultiFunction Node (MFN) bottom frame destined for the Coastal Pioneer Array, about 80 mi off Martha's Vineyard, Massachusetts, at the edge of the continent shelf. The MFN holds a variety of chemical, biological and physical oceanographic sensors including an ADCP, CTD sensor, oxygen sensor and CO_2 sensor. The acoustic transducers for the internally powered, internally recording AZFP echosounder with 38, 125, 200 and 455 kHz channels are shown in the lower right of the picture.

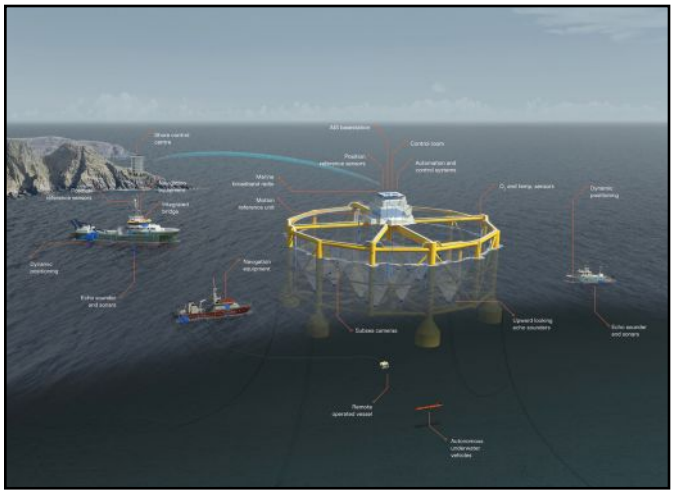
In the fall of 2015, 7 AZFPs instruments that had been deployed on the Coastal Arrays were returned to the factory for calibration verification by WHOI and Oregon State University (OSU). All seven instruments had a 100% data recovery rate and a minor adjustment was made on the acoustic calibration of one channel of one of the instruments.

In 2016, the first AZFP instruments with 38, 70, 125, and 200 kHz channels will be deployed on the Global Arrays. These include the Argentine Basin, Station Papa, Irminger Sea, and Southern Ocean Arrays.

For more information, visit www.aslenv.com/AZFP.html.

Sheri White (team leader), Aidan Alai and Jennifer Batryn (from right to left) of Woods Hole Oceanographic Institution in front of a Coastal Multi-Function Node bottom frame.

World's first offshore aquaculture development project gets green light



The Norwegian Ministry of Trade and Fisheries has approved Norway's first development concession enabling Ocean Farming AS, supported by Kongsberg Maritime AS, to build the world's first automated 'exposed' aquaculture facility. Situated outside of Trondheim, this innovative new facility introduces a paradigm shift in salmon farming now, and other fish types in the future and is a significant step in Norway's efforts to deliver technical solutions to address the impending global food gap challenge.

The Ocean Farming facility is a new and innovative design, developed to overcome the challenges of more traditional inshore fish farming facilities by being located in deeper waters, further from the coast. The submerged, anchored fixed structure will float steady in the exposed ocean and is suitable for water depths of 100 to 300 m, where the aqua biological conditions are more ideal for aquaculture on "the fish's terms." The benefits of offshore fish farms are numerous, with conditions more suited to nurturing healthy fish, such as steady currents that limit exposure to sea lice infection. The facility is fully automated with normal operation requiring a crew of just three to four people. It can also be remotely operated.

The project combines the best of existing technology and solutions from the Norwegian fish farming industry and the offshore oil and gas sector. Kongsberg is playing a key role by leveraging its position as a turnkey supplier of technology and engineering services for complex oil & gas production units, offshore vessels, fisheries and sensor systems for oceans research and environmental monitoring. In addition to technology integration Kongsberg is providing EIT engineering services, including delivery and installation of the gensets and aqualight systems.

The Kongsberg Maritime technology scope of supply for the fish farm itself includes the K-Chief 600 automation system controlling a large number of different systems. Other highlights include an extensive telecoms and positioning package, covering a range of products such as the Maritime Broadband Radio (MBR) for communication between offshore sites and to shore and precise Motion Reference Units (MRU). In addition, Kongsberg is responsible for the AIS requirements of the project, through delivery of the AISBS610 system and associated AIS infrastructure.

For more information, visit www.km.kongsberg.com.

Gulf of Mexico perinatal dolphin deaths likely result of oil exposure

The increased number of stranded stillborn and juvenile dolphins found in the Gulf of Mexico from 2010 to 2013 was likely caused by chronic illnesses in mothers who were exposed to oil from the Deepwater Horizon spill, scientists said.

The paper, published in the journal Diseases of Aquatic Organisms, is part of an effort to explain the unusual mortality event in the Gulf involving bottlenose dolphins between early 2010 and continuing into 2014. The investigations into both the fetal dolphin deaths, and the overall effects of the oil spill are continuing. The long-term effects of the spill on dolphin reproduction are still unknown.

"Our new findings add to the mounting evidence from peer-reviewed studies that exposure to petroleum compounds following the Deepwater Horizon oil spill severely harmed the reproductive health of dolphins living in the oil spill footprint in the northern Gulf of Mexico," said Dr. Teri Rowles, veterinarian, co-author on the study, and head of NOAA's Marine Mammal Health and Stranding Response Program, which is charged with determining the causes of these events.

Scientists saw higher numbers of stranded stillborn and juvenile dolphins in the spill zone in 2011 than in other years, particularly in Mississippi and Alabama. "The young dolphins, which died in the womb or shortly after birth, were significantly smaller than those that stranded during previous years and in other geographic locations," said Dr. Stephanie Venn-Watson, study co-author and veterinary epidemiologist from the National Marine Mammal Foundationoffsite link.

For more information, visit www.noaa.gov.

Leading ocean scientists recommend immediate, coordinated action plan to combat changes to West coast seawater chemistry

Global carbon dioxide emissions are triggering permanent changes to ocean chemistry along the North American West Coast that require immediate, decisive action to combat.

That action includes development of a coordinated regional management strategy, concluded a panel of scientific experts including Andrew Dickson, a professor of marine chemistry at Scripps Institution of Oceanography at UC San Diego.

A failure to adequately respond to this fundamental change in seawater chemistry, known as ocean acidification, is anticipated to have devastating ecological consequences for the West Coast in the decades to come, the 20-member West Coast Ocean Acidification and Hypoxia Science Panel warned in a comprehensive report unveiled April 4.

"Increases in atmospheric carbon dioxide emissions from human activities are not just responsible for global climate change; these emissions also are being absorbed by the world's oceans," said Alexandria Boehm, co-chair of the panel and a professor of civil and environmental engineering at Stanford University. "Our work is a catalyst for management actions that can address the impacts of ocean acidification we're seeing today and to get ahead of what's predicted as ocean chemistry continues to change."

For more information, visit www.scripps.ucsd.edu.

R/V Neil Armstrong arrives in Woods Hole

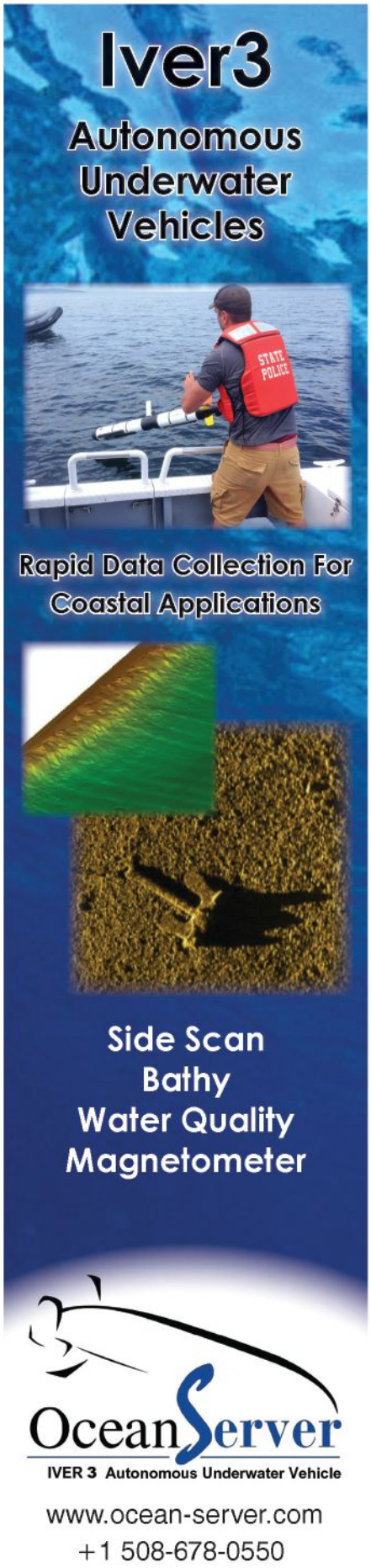
The research vessel Neil Armstrong was met by a jubilant crowd at the Woods Hole Oceanographic Institution (WHOI) dock as it arrived to its home port for the first time, escorted by the WHOI coastal research vessel R/V Tioga, two Coast Guard boats and fireboats from neighboring towns.

Six years ago, the U.S. Navy announced plans to construct two ships in a new Ocean Class of research vessels and, in 2010, awarded WHOI the no-cost lease to operate the first of the ships. Two years later, the Navy announced the first ship would be named Neil Armstrong and its sister ship, to be operated by Scripps Institution of Oceanography, would be named Sally Ride. The 238-ft Neil Armstrong is the newest ship in the U.S. academic fleet, and one of just seven in that fleet capable of accessing all but ice-covered areas of the global ocean.

The R/V Neil Armstrong is the most technologically advanced ship in the U.S. academic fleet. The ship contains two multi-beam echo sounders designed to operate at different depths, making Neil Armstrong and, when completed, Sally Ride, the only ships in the UNOLS fleet equipped to conduct high-resolution seafloor surveys almost anywhere the ship can sail.

The ship's three ADCPs can scan the water column at different frequencies to reveal the invisible structure of water at varying depths and resolutions, and a multi-beam, multi-frequency echosounder, the EK-80, can not only detect the presence and abundance of marine life beneath the ship, but also offers the potential to differentiate among species of fish and other marine life hidden beneath the surface.

For more information, visit www.whoi.edu.



Fugro to perform seabed survey at world's biggest offshore wind farm

DONG Energy has appointed Fugro to perform offshore pre-construction surveys at the Walney Extension offshore wind farm off the UK's Cumbria coast.

The pre-construction and engineering survey will provide detailed information to the Walney Extension project team, including additional geophysical data to ensure the seabed is clear of obstructions, including unexploded Second World War ordnance (UXO).

Fugro will use three of its specialist vessels including the 41-m Fugro Helmert, which will survey the main wind farm site, located in the Irish Sea. The RV Discovery and Fugro Valkyrie will also be deployed at the wind farm site as well as on the export cable route.

Nick Simmons, deputy geophysics business line manager at Fugro EMU, added, "We are looking forward to applying our specialist skills and resources in UXO detection at this significant site and are pleased that our extensive experience continues to contribute to Fugro's strong relationship with DONG Energy."

The 660 MW Walney Extension offshore wind farm is expected to be fully commissioned in 2019, at which time it will be the biggest offshore wind farm in the world, surpassing the 630 MW London Array Offshore Wind Farm that was commissioned in 2014 by DONG Energy and its partners.

For more information, visit www.fugro.com.

DEME invests in Atlantis Resources

Tidal power developer Atlantis Resources has agreed to sell a minority stake in Atlantis's Scottish tidal development company, Tidal Power Scotland Limited (TPSL) to DEME for cash consideration, subject to satisfaction of certain conditions precedent (including procurement of third party consents and agreement with DEME of commercial arrangements in relation to offshore construction works) that are scheduled to be achieved during the coming weeks.

DEME has agreed to pay Atlantis £2 million in cash consideration for a 2% stake in TPSL and a right to contribute equity funding to the Sound of Islay project. As part of the transaction, Atlantis and the DEME group intend to develop (subject to necessary consents and agreement of documentation) a partnership for offshore construction works to draw on the experience and expertise of the DEME group in the offshore renewables sector for the benefit of the company's Scottish portfolio build out.

This follows TPSL's agreement with ScottishPower Renewables (UK) Limited (SPR) in December 2015 to acquire the 10 MW Sound of Islay project and 100 MW Ness of Duncansby project in exchange for a 6% shareholding in TPSL. Following the completion of the DEME and SPR transactions, Atlantis will retain a 92% stake in TPSL.

The DEME group is an existing investor in marine energy projects through DEME Blue Energy NV, a partnership between DEME and PMV (ParticipatieMaatshappij Vlaanderen).

For more information, visit www.atlantisresourcesltd.com.

GE and Deepwater mark progress on first-ever U.S. offshore wind farm

GE said that it continues to make progress with the assembly of the first part of towers that will be used to support the wind turbines that will comprise the Block Island Wind Farm. This project, which will use state-of-the-art GE wind turbines, is America's first offshore wind farm. It is expected to be completed by the end of 2016.

Led by Deepwater Wind, the Block Island wind farm will use five 6-MW GE "Haliade" turbines to generate 30 MW of power, enough to produce around 125,000 MWh of electricity, thus meeting approximately 90% of Block Island's electricity demand. The Haliade turbines that will be located roughly 3 mi off the coast of Block Island are some of the largest wind turbines in the world. With a capacity of 6 MW each, they are capable of supplying electricity for the equivalent of 5,000 households per annum and can save over 21,000 metric tons of CO_2 during the turbine's life time. Its height (170 m/ 560 ft.) is twice as high as the Statue of Liberty and it has a diameter (150 m/ 490 ft.) that doubles the size of a 747 Jumbo jet wingspan.

This project continues to achieve important milestones with progress on the first section of the towers in ProvPort, Providence, R.I., and the assembly of the first direct drive permanent magnet generator in the nacelle assembly line in Saint-Nazaire. The remaining components of the turbines (towers, other sections, blades, and nacelles) will be shipped from Europe and assembled on site, for commercial operation, planned for the fourth quarter of 2016.

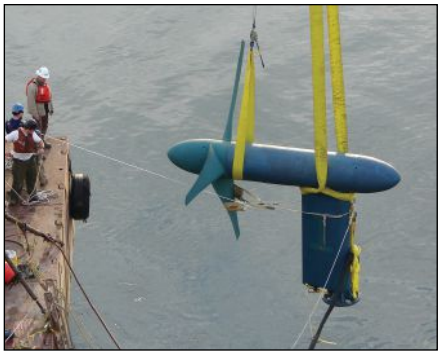
Block Island Wind Farm is GE's first offshore wind project since the acquisition of Alstom Power & Grid and the creation of the new GE Renewable Energy business. The project demonstrates the capabilities of the new business by bringing together large-scale project capability with state-of-the-art wind technology and a global supply chain.

For more information, visit www.ge.com.

Verdant Power partners with Belleville Duggan on tidal energy projects

Verdant Power, Inc. and Ireland's Belleville Duggan Renewables Ltd. have partnered to establish Verdant Isles Ltd.–a joint venture to develop tidal energy projects in Ireland and the United Kingdom.

Sustainable Energy Authority Ireland (SEAI) studies have demonstrated tidal current energy's potential in Ireland as an economic driver and source of clean energy. SEAI has



projected "viable" tidal current energy resources of some 900 GWh per year to be developed in Irish waters. Verdant Isles expects to be in the vanguard in meaningfully leveraging this resource. Development of just half of this would mean an investment of more than €150 million, plus the potential to create up to 250 Irish jobs in the resulting global supply chain.

Ireland plans to be at the forefront of this development, particularly because of the natural energy resources the country has available. In parallel with developing sites in Ireland and the UK, Verdant Isles plans to establish a manufacturing base in the region that will become part of a global supply chain for marine energy devices. Further research into Ireland's accessible energy resources will be an integral part of the joint venture. With these combined capacities, Verdant Isles represents an opportunity to further propel Ireland as a leader in the deployment of tidal and marine renewable energy projects.

For more information, visit www.verdantpower.com.

DNV GL issues Statement of Feasibility for StingRAY wave energy device

DNV GL, the world's largest resource of independent energy experts and certification body, has been working with Columbia Power Technologies, an innovative developer of the StingRAY wave energy converter, on the first steps towards Prototype Certification. Columbia Power Technologies is based in Oregon and with the support of the U.S. Navy will be deploying in the new wave energy test center in Hawaii.

Columbia Power is following the DNV GL certification process outlined in the industry recognized specification for the certification of wave and tidal devices 'DNV-OSS-312.' The first milestone in this process has been achieved and the Statement of Feasibility issued to Columbia Power. This successfully completes the first stage of the process and DNV GL will now continue to support them with the next steps towards prototype certification.

The Statement of Feasibility involved Columbia Power and DNV GL completing a full risk assessment of the technology and agreeing actions to mitigate the risk of failure. This ensures a fully transparent approach to risk that is appreciated by the interested stakeholders, such as the U.S. Navy, DOE and potential customers, who are able to have a clear snapshot of the device progress.

DNV GL will now work with Columbia Power to review and approve design documents before heading towards the fabrication stage, including manufacturing quality and equipment testing and surveillance of the installation and commissioning. Final Prototype Certification of the StingRAY technology will follow the successful close out of the actions agreed upon during the Statement of Feasibility stage.

For more information, visit www.dnvgl.com.

Ocean Sensor Systems

For Details Visit Us on the web or call 954-796-6583 USA

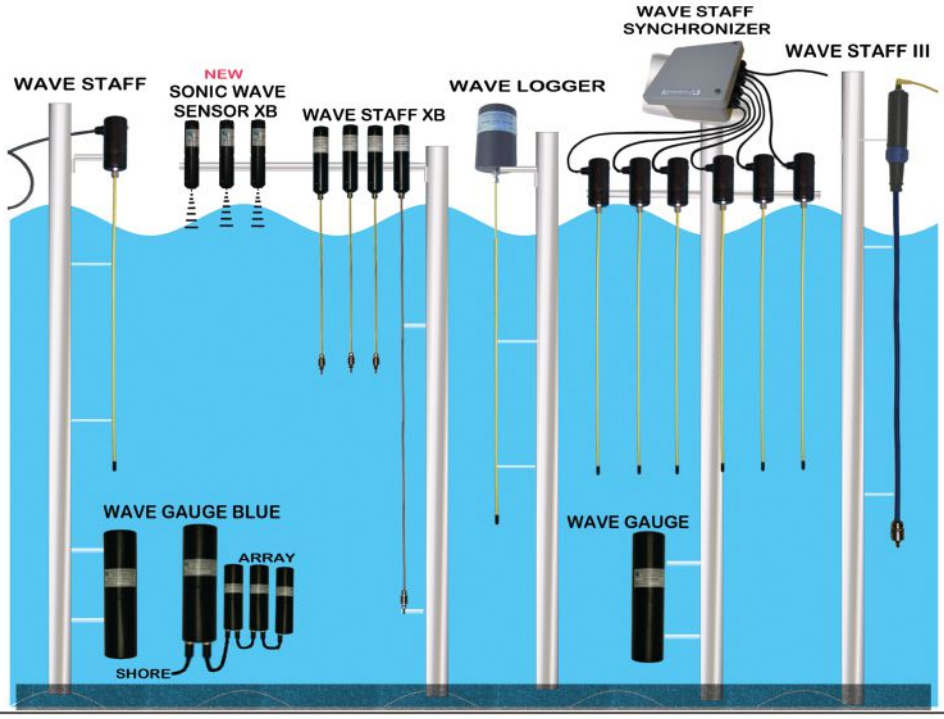
WWW.OCEANSENSORSYSTEMS.COM

SENSORS FOR:
Ocean, Harbors
Intracoastal
Lakes, Ponds
Wave Tanks

MEASURE:
Waves
Tides
Levels

DATA VIA:
Cable
Logger
Wireless

WE SUPPLY:
Tech Support
Software
Accessories
Custom Work



Study says near shore wind farms would impact NC coastal tourism

A study by economists at North Carolina State University finds that most people are unwilling to rent vacation homes that have a view of offshore wind turbines–and that those who will rent expect steep rental discounts unless the turbines are more than 8 mi offshore.

"We wanted to know what the impacts of wind farm installations would be on North Carolina coastal tourism, though our findings are also likely relevant for similar coastal vacation spots," says Laura Taylor, author of a working paper on the study and director of NC State's Center for Environmental and Resource Economic Policy.

"We found good news and bad news," Taylor says. "There was a lot of support for wind energy, but no one was willing to pay more to see wind turbines from the beach by their vacation rental property. And if turbines are built close to shore, most people said they would choose a different vacation location where they wouldn't have to see turbines. However, the good news is that our results also show that if turbines are built further than 8 mi from shore, the visual impacts diminish substantially for many survey respondents and it is unlikely the turbines would negatively impact coastal vacation property markets."

To explore the economic impact of offshore wind farms, the researchers surveyed 484 people who had recently rented homes on the North Carolina coast in areas where the state has offshore leases available for wind farm development. Fifty-six percent of the study participants had rented vacation homes every year for the previous 5 years, and one-third of that 56% had rented the exact same house every year.

In the survey, study participants were asked to consider renting the same vacation house they had just rented, but with one change: the view would include wind turbines off the coast.

Participants were shown various sets of photographs. Two control photographs were of a view from the beach looking over the ocean–one taken at night, one during the day. The same photos were then altered to include up to 144 wind turbines at 5, 8, 12 or 18 mi offshore. Some participants were told they would get a discount on their rental price if wind turbines were present; some were told they would pay more; and some were told there would be no change in rental cost.

The results showed that study participants were split into three groups.

Fifty-four percent said they would not rent a vacation home if turbines were in view at all, no matter how large a discount was offered on the rental price.

Twenty percent would be willing to rent homes if turbines were 8 mi or closer to shore, but only if there was a discount–and the closer the turbines were to shore, the steeper the discount needed to be. The average discount needed to be about 5%. If turbines were 12 mi or further from shore, the turbines would not impact this group's rental decisions. The number of turbines in the wind farm made some difference if the turbines were 8 mi from shore or closer, but didn't appear to make a difference once the wind farm was 12 or more mi offshore.

The remaining 26% of participants made more nuanced tradeoffs. They needed rental discounts if wind farms were as far as 12 mi offshore–and the discounts they needed if turbines were closer than 12 mi were so high as to be completely unrealistic.

The working paper, "The Amenity Costs of Offshore Wind Farms: Evidence from a Choice Experiment," is available online. The paper was coauthored by former NC State Ph.D. student Sanja Lutzeyer and Daniel Phaneuf, a former faculty member at NC State now at the University of Wisconsin-Madison.

For more information, visit www.ncsu.edu.

BOEM approves Virginia's offshore wind research activities plan

BOEM has announced its approval of the first wind energy Research Activities Plan (RAP) for a facility to be located in U.S. federal waters.

Last year, BOEM awarded a research lease to the Virginia Department of Mines, Minerals and Energy (DMME) on the Outer Continental Shelf off the coast of Virginia. BOEM's latest action clears the way for the installation and operation of two 6-MW turbines and associated cabling to shore, pending final engineering review of the project. The electricity generated by these turbines could power 3,000 homes.

The RAP was developed by DMME's operator, Virginia Electric and Power Company (dba Dominion Resources, Inc.) and describes the proposed construction, operation, maintenance, and eventual decommissioning of the Virginia Offshore Wind Technology Advancement Project (VOWTAP).

"Data collected under this research lease will help us better understand the wind potential, weather and other conditions relevant to generating power from wind offshore Virginia," said BOEM director Abigail Ross Hopper. "It will also allow us to gain experience with new offshore renewable energy technology, which is not only valuable to Virginia and BOEM, but also to other government agencies, the offshore renewable energy industry, and other stakeholders."

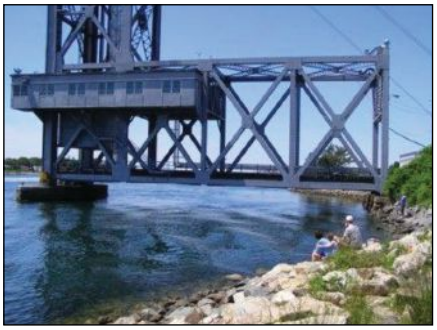
For more information, visit www.boem.gov.

MRECo funded for first U.S. tidal test site

The Marine Renewable Energy Collaborative (MRECo) announced that it received funding from the Massachusetts Seaport Economic Council to develop a tidal energy test site in the Cape Cod Canal. As a fixed test structure, the Bourne Tidal Test Site (BTTS) would be the first permanent test stand for tidal energy in the U.S.

The Seaport Economic Council was established by the Baker Administration to provide funding for projects that will improve the economies of the 78 seaport communities. BTTS will benefit Bourne by making it a center for tidal energy development and, in particular, increasing business in the Buzzards Bay district, adjacent to the test site.

The BTTS is a uniquely suited location for tidal testing. Most devices require 4 kts of water velocity to be effective and BTTS gets up to 7 kts.



The water in the canal has relatively low turbulence or wave action, and the site is close enough to shore to allow devices to be installed by crane, again lowering risk and cost. Managed by MRECo, this site will be available to qualified entities. The site will be equipped to provide power monitoring, electrical loads, and a full sensor suite for hydrokinetic and environmental monitoring.

For more information, visit www.mreconewengland.org.

EnBW announces partners for the tender procedure for Kriegers Flak

The German utility company EnBW Energie Baden-Württemberg AG enters the next round of the tender procedure for the Kriegers Flak offshore wind farm with two strong partners. DEME Concessions Wind and Siemens Financial Services join the project company Kriegers Flak ApS that has been founded by EnBW for participating in the tender procedure. According to the agreement that has been signed yesterday, Siemens Financial Services acquires 32.5% and DEME Concessions Wind 17.5% of the shares, the shareholding held by EnBW in the project company will thus be reduced to 50%.

The Kriegers Flak offshore wind project has a capacity of between 590 and 610 MW. In the first stage, interested parties were required to prequalify for the tender procedure and demonstrate their required financial capacity and experience in the realization of offshore wind projects. The Danish Energy Agency (DEA) prequalified the Kriegers Flag ApS project company on 28 October 2015.

The project company submitted an indicative offer on 5 April–as was stipulated by the Danish government in the tender procedure. This represents a non-binding first offer submitted by tenderers during the dialogue phase of the tender procedure. On the basis of these offers and the requirements of the Danish Energy Agency, the contractual conditions for the submission of a binding offer will then be defined by the Danish Energy Agency in collaboration with the tenderers. The final binding offer must be submitted by 8 November 2016. The successful tenderer should be awarded the concession by the end of the year. Subject to the approval of the antitrust authorities, the construction and commissioning of the wind farm will follow in the period up to 2021.

For more information, visit www.enbw.com.

Offshore works underway for Scottish wind center

UK Offshore works have started off Aberdeen Bay in preparation for full construction of the European Offshore Wind Deployment Centre.

The geotechnical site investigation takes place at each of the European Offshore Wind Deployment Centre's (EOWDC) 11 turbine locations to assess the seabed to inform the final design and micro-siting of the turbine foundations. Full offshore construction is scheduled to start in late 2017 or early 2018, after an investment decision later this year.

The EOWDC facility which will have an installed capacity of up to 100 MW is a joint venture between Vattenfall and the Aberdeen Renewable Energy Group (AREG).

Andy Paine, head of UK offshore wind development for Vattenfall, said, "The pioneering EOWDC will help establish the north east as a global center of innovation for the offshore wind industry. It is through tests and demonstration of next generation products and services that offshore wind will become a low cost sector. The preparatory works being carried out helps keep the project on schedule ahead of an investment decision later this year and first power in 2018. The partners are currently working on the basis of fully financing the more than £230 million scheme and want to see the project come to fruition."

Geotechnical and geophysical survey specialist Fugro is carrying out the site investigation. The company will mobilize one of its dynamically positioned geotechnical drilling vessels, the Bucentaur, to the EOWDC site about 2 to 5 km off Aberdeen's coast. The work is due to be supplemented with geophysical surveys later this year.

For more information, visit www.vattenfall.com.

Shetland Tidal Array first turbine goes live

Nova Innovation and ELSA announce that first power has been exported to the grid from the Shetland Tidal Array project. The first Nova M100 turbine of the array delivered power to the Shetland grid following a successful winter of operations and testing.

The Shetland Tidal Array is a joint enterprise between Nova Innovation and ELSA. Phase 1 of the array consists of three 100 kW Nova M100 turbines, with more turbines planned in following phases. With the help of Scottish Enterprise, Nova Innovation has delivered a project with over 80% Scottish supply chain content and over 25% of the spend in Shetland alone.

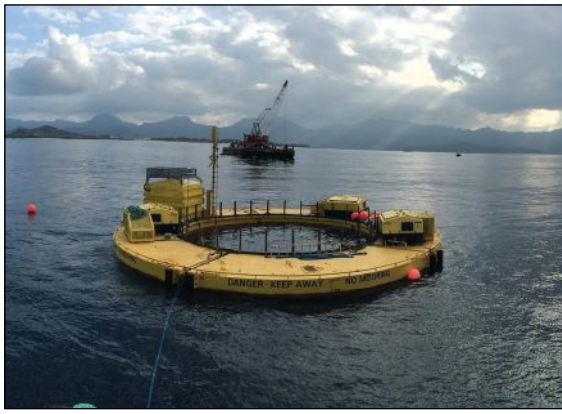
For more information, visit www.novainnovation.co.uk.

Sound & Sea Technology, Inc. successfully deploys wave energy testing device for Navy

After several months of assembly, testing and integration, Sound & Sea Technology, Inc. (SST) successfully installed the Lifesaver Energy Platform (LEP) at the Navy's Kaneohe Bay Wave Energy Test Site (WETS) in Hawaii, an offshore infrastructure that was established and is managed by the Naval Facilities Engineering Command, Expeditionary Warfare Center. The Lifesaver Energy Platform is the first Wave Energy Conversion (WEC) device to be deployed at one of the new WETS deepwater test berths and supports the Navy's interest in advancing renewable energy for Department of Defense applications.

The Lifesaver Energy Platform will be tested in ocean conditions and evaluated for reliability and power output performance relative to wave height over approximately 6 months. The Platform is an advanced electromechanical point absorber WEC platform that uses unique hull and leading-edge power take-off (PTO) configurations. Sound & Sea Technology, Inc. is the prime contractor for WETS and has provided engineering support services to the Navy to upgrade and expand WETS since 2012.

For more information, visit www.soundandsea.com.



Ingalls Shipbuilding awarded contract to build DDG 123

Huntington Ingalls Industries' Ingalls Shipbuilding division has received a $618 million contract modification to fund construction of the Arleigh Burke-class (DDG 51) guided missile destroyer DDG 123 for the U.S. Navy. The ship is the fourth of five destroyers the company was awarded in June 2013. Ingalls previously was awarded $55 million in advance procurement for DDG 123, making the full contract $673 million.

"This will be the 34th Arleigh Burke destroyer built at Ingalls, and we thrive on this experience," said George Nungesser, Ingalls' DDG 51 program manager. "Maintaining the same shipbuilding teams from ship to ship is paying dividends to our learning curve. The U.S. Navy sailors manning this future DDG deserve the best quality, and our shipbuilders will provide that in a way that is the most cost effective."

The five-ship contract, part of a multi-year procurement in the DDG 51 program, allows Ingalls to build ships more efficiently by buying bulk material and moving the skilled workforce from ship to ship. With this contract, Ingalls will be building destroyers through 2023.

For more information, visit www.huntingtoningalls.com.

Elbit's Seagull USV with Klein 5900 mine hunting sonar exhibits outstanding performance

Klein Marine Systems, Inc. has teamed with Elbit Systems, Ltd. to conduct structured mine countermeasure exercises in the Mediterranean Sea. Klein's advanced, state-of-the-art, 5900 mine hunting side-scan sonar, integrated onboard Elbit's Seagull USV not only successfully detected and classified all detectable moored and bottom mine like objects but did so in one-third the allotted time period for each exercise.

During the trials that were conducted in various depth up to 85 m, the 5900 sonar enabled MCM area survey at 8 to 9 kts with high performance and high area coverage rate.

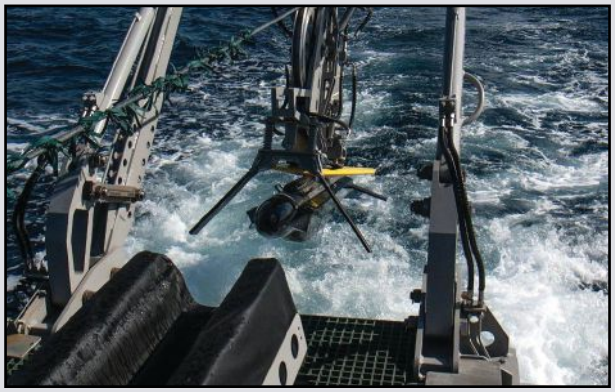
In addition to the controlled trial, the 5900 was operated by Seagull in various survey operations providing high resolution imagery and exhibiting its utility as a sub-sea survey asset as well as an MCM sonar.

The 5900 from Klein Marine systems, Inc. is a high resolution, dynamically focused, multi-beam, side scan sonar designed specifically for small object detection with 100% bottom coverage, while being towed at speeds up to 14 kts.

The system employs advanced signal processing techniques, motion compensation and superior acoustic design to provide exceptional constant high-resolution, motion tolerant imagery performance. Remote control software, swath bathymetry and a nadir gap filler capability are subsystem options available on the 5900 System.

The Seagull USV from Elbit Systems, Inc. is a newly introduced 12-m Unmanned Surface Vessel (USV) designed with replaceable mission modules. Two Seagull vessels are capable of being operated and controlled in concert using a single Mission Control System (MCS) from manned ships or from the shore.

For more information, visit www.KleinMarineSystems.com.



Navy funds additional LCS

Austal Limited has announced construction of one additional Littoral Combat Ship has been funded by the U.S. Navy.

LCS 26 will be the eleventh Independence-variant Littoral Combat Ships built by Austal as prime contractor, with the U.S. Navy exercising an option in addition to Austal's existing 10-vessel block-buy contract. Funding for LCS 26 has been confirmed by the US Navy as not to exceed the congressional cost cap of US$564 million, increasing Austal's order book to approximately $3 billion.

Austal chief executive officer Andrew Bellamy, said, "It is pleasing to see the Navy's ongoing confidence in Austal's ability to produce these high quality vessels. We are working hard to increase production efficiencies and reduce costs as the program matures and look forward to constructing the newly funded ship, which secures work at our U.S. shipyard through to CY2021."

Austal has seven LCS at various stages of construction at its shipyard in Mobile, Alabama, under a 10 vessel, US$3.5 billion contract the U.S. Navy awarded to Austal in 2010. With the U.S. Navy also exercising its option to fund LCS 26, the total Independence-variant LCS constructed by Austal will be 13 ships: 2 as subcontractor (LCS 2 and LCS 4) and 11 as the prime contractor (LCS 6 onwards). Three LCS have been delivered.

Meanwhile, Austal is also progressing well under its $1.6 billion contract to construct ten 103-m Expeditionary Fast Transport (EPF) vessels for the U.S. Navy. Six EPF have been delivered, with the remaining vessels under construction at Austal's U.S. shipyard. Austal is also procuring long-lead materials for EPF 11 under an additional contract with the U.S. Navy.

For more information, visit www.austal.com.

BAE to build amphibious vehicles for Japan

BAE Systems has been awarded a $149 million contract to produce new Assault Amphibious Vehicles (AAVs) for the Japanese Ministry of Defense. This contract supports the ongoing development of an amphibious capability within the Japanese Ground Self Defense Force.

BAE Systems will provide 30 new AAV7A1 Reliability, Availability, and Maintainability/Rebuild to Standard (RAM/RS) vehicles, plus supply tools and test equipment to support maintenance. The company will also provide training aids for the vehicles to the Japanese military.

The AAV7A1 RAM/RS variant provides a more powerful engine and drive train as well as an upgraded suspension system, allowing the new vehicles to meet or exceed original AAV7A1 performance. The variant also provides improved

mobility, command, control, and repair capabilities while transporting troops and cargo from ship to shore.

Work on the contract will take place at BAE Systems' York, Pennsylvania, facility. Production is expected to begin in August with vehicle deliveries beginning one year later. Final delivery to Japan is expected to take place by the end of 2017.

For more information, visit www.baesystems.com.

DARPA christens ACTUV prototype vessel

DARPA on 7 April held a christening ceremony for the technology demonstration vessel it has designed, developed and built through the Agency's Anti-Submarine Warfare (ASW) Continuous Trail Unmanned Vessel (ACTUV) program.

Taking place in Portland, Oregon, the event marks several recent successes in a program that seeks to develop an entirely new class of ocean-going vessel—one able to traverse thousands of kilometers over the open seas for months at a time, all without a single crew member aboard while still remaining under human supervision at all times.

ACTUV is a 130-ft twin-screw trimaran, designed for enhanced stability in all kinds of weather. It has a number of unusual features because it does not need to accommodate people. For example, interior spaces are accessible for maintenance but aren't designed to support a permanent crew.

But of broader technical significance is that ACTUV embodies breakthroughs in autonomous navigational capabilities with the potential to change the nature of U.S. maritime operations. Through at-sea testing on a surrogate vessel, ACTUV's autonomy suite has proven capable of operating the ship in compliance with maritime laws and conventions for safe navigation—including International Regulations for Preventing Collisions at Sea, or COLREGS.

Ingalls christens Ralph Johnson

Huntington Ingalls Industries' Ingalls Shipbuilding division christened the company's 30th Arleigh Burke-class (DDG 51) Aegis guided missile destroyer, Ralph Johnson (DDG 114), on 2 April.

Ingalls has delivered 28 Arleigh Burke-class destroyers to the Navy. Other destroyers currently under construction at Ingalls are John Finn (DDG 113), Paul Ignatius (DDG 117), Delbert D. Black (DDG 119) and Frank E. Peterson Jr. (DDG 121).

Arleigh Burke-class destroyers are highly capable, multi-mission ships that can conduct a variety of operations, from peacetime presence and crisis management to sea control and power projection, all in support of the United States' military strategy. DDGs are capable of simultaneously fighting air, surface and subsurface battles. The ship contains myriad offensive and defensive weapons designed to support maritime defense needs well into the 21st century.

For more information, visit www.huntingtoningalls.com.

BUILT IN THE USA | www.tecnadyne.com | TECNADYNE™ THE LEADER IN SUBSEA PROPULSION

ROK Navy's seventh Class 214 submarine launched

Hyundai Heavy Industries (HHI) has launched South Korea's seventh KSS-II 1,800-ton submarine, Hong Beom-do, at its Special & Naval Shipbuilding Division in Ulsan, South Korea. The launching ceremony of the Class 214 diesel-electric air independent propulsion (AIP) submarine was attended by Admiral Jung Ho-sub, chief of naval operations of the ROK Navy; Mr. Kwon Oh-gap, president and CEO of HHI; and other guests.

The Class 214 AIP submarine, measuring 65 m in length and 7 m in width, can sail at a maximum speed of 20 kts with a crew of 40. With a 1,800-ton displacement capacity, South Korea's largest submarine made of high yield steel can dive up to 400 m deep and last for two weeks under water with fuel cells. The submarine is loaded with long-range submarine-to-ground cruise missiles developed by Korea's own technology, torpedoes and mines featuring an automatic simultaneous target tracking system and a torpedo guidance and detection system.

The submarine was named after Hong Beom-do, a commander-in-chief of Korean Independence Army, who achieved the most splendid victory during the colonial period. HHI undertook the duty to build six of nine 1,800-ton submarines procured by ROK Navy under the KSS-II Project. The ninth submarine is under construction from February 2014 at the Special & Naval Shipbuilding Division.

The ROK Navy's seventh submarine will be delivered to the Korean Navy by July 2017 after seaborne operational trials.

For more information, visit www.hyundaiheavy.com.

UK Government extends commitment to Royal Navy's Type 26 program

The UK Ministry of Defence has awarded BAE Systems a £472 million contract to progress the Type 26 Global Combat Ship program following the UK Government's commitment in the Strategic Defence and Security Review to buy eight of the advanced anti-submarine warfare ships.

The announcement continues the UK Government's investment in Type 26, reflecting its commitment to the UK's strategic warship building industry and the program to deliver the Royal Navy's next generation warships. Effective from April 2016, the 15 month contract extends the current demonstration phase ensuring continued momentum to further mature the detailed design of the Type 26 ships and to manufacture key equipment for the first three ships.

Defence Secretary Michael Fallon said, "These highly advanced ships will help keep Britain safe and support our shipbuilding industry. Investing in them is part of our plan to increase defense spending so our armed forces have the most modern equipment they need."

Geoff Searle, Type 26 Programme Director at BAE Systems, said, "This is a significant investment in the program and an endorsement of the Government's commitment to sustain this important national capability. The Type 26 program is progressing well and over the coming months more of our partners in the supply chain will start to manufacture equipment for the first three ships as we continue to progress towards the manufacturing phase. We are committed to working with the Ministry of Defence and wider industry to ensure the Royal Navy has the capability it needs to protect national interests, whilst ensuring value for money for UK taxpayers. Through the Type 26 program, we are transforming the way we design and manufacture warships with innovative new technologies, systems and processes to ensure we continue to deliver the highest quality equipment at the lowest possible cost."

To date, there are 27 companies across the maritime supply chain working with BAE Systems to deliver the Type 26 ships, including seven firms with contracts underway to manufacture key equipment for the first three ships. This includes manufacturing contracts with Babcock for the ships' air weapons handling systems, GE Power Conversion for the electric propulsion motor and drive systems and Rolls-Royce for the gas turbines, the first of which passed its factory acceptance test in January.

Under the extended demonstration phase, BAE Systems expects to award manufacturing contracts to a total of approximately 50 companies, helping to support a vibrant maritime industry. Key equipment to be delivered includes the Combat Management System and the Shared Infrastructure IT system developed by BAE Systems. This innovative hardware solution will allow the crew to access all software, such as navigation, communications and sonar needed to operate a ship's combat systems through a single console.

The Type 26 Global Combat Ship will be a world-class anti-submarine warfare ship and will in time replace the Type 23 frigates. Globally deployable, it will be capable of undertaking a wide range of roles from high intensity warfare to humanitarian assistance, either operating independently or as part of a task group.

For more information, visit www.baesystems.com.

Three additional vessels for the Philippine Navy arrive

Three Landing Craft Heavy (LCH) vessels that will add up to the growing fleet of the Philippine Navy (PN) arrived in Liloan, Cebu, Philippines, from Australia on March 26.

LCH 3, 4 and 5 are the decommissioned vessels of the Royal Australian Navy (RAN) formerly named as Her Majesty's Australian Ship (HMAS) Balikpapan (L126), HMAS Wewak (L130) and HMAS Betano (L133). They were transported by a cargo ship from NTG Shipping traversing the waters from Darwin, Australia, via Cairns, before heading to the Philippines.

They will be moved from Cebu to the PN shipyard in Cavite in the middle of May in preparation for their christening and commissioning tentatively scheduled on 25 May 2016 in time for the PN anniversary celebration.

With their capability of moving large amounts of cargo, personnel and equipment, these vessels will bolster the PNs humanitarian assistance and disaster relief (HADR) operations. They will also be useful in transporting troops from one operational area to another especially during amphibious operations.

Correspondingly, the PN initiated necessary preparations and other training activities last year to ensure the competent crewing of these ships which will be validated once they assume their posts. The operational readiness training is deemed to be dynamic and adaptable to changes. At present, more or less 30 PN personnel are assigned aboardship while the vessel will undergo minor repairs and refurbishment.

These three LCH vessels amounting to approximately PhP 270 million in total are the supplementary assets procured by the government in conjunction with the two vessels of the same kind that were donated by the Australian Government and subsequently turned

over to the PN on July 23, 2015.

The acquisition of additional capabilities of our Navy further translates into offering better service to our maritime nation as we continue to protect our country, step up commitment for HADR and its continuing pledge to provide assistance to our Filipino people in all corners of the archipelago.

For more information, visit www.navy.mil.ph.

U.S. Coast Guard, Japan partner to improve Port Security

A U.S. Coast Guard International Port Security team completed a bilateral engagement with Japanese officials during the second week of March.

This engagement involved sharing best practices and visiting with the Ministry of Land, Infrastructure, Transport and Tourism's Ports and Harbors Bureau to observe the implementation of the International Ship and Port Facility Security Code at two port facilities in Hakata, Japan: the Hakata Chuo passenger wharf and the Hakata island city area container terminal.

"Everyone has security responsibilities in our global economy. The Coast Guard appreciates Japan's invitation and their commitment to improving port security." said Lt. Cmdr. Scott Barton, ISPS Program liaison officer, U.S. Coast Guard Activities Far East Division.

In 2003, the U.S. Coast Guard developed the International Port Security Program to reinforce the implementation of the ISPS Code. The ISPS Program seeks to reduce risk to U.S. maritime interests, including U.S. ports and ships, and to facilitate secure maritime trade globally.

Under the auspices of this program, a U.S. Coast Guard International Port Security team conducts an annual visit to assess the effectiveness of seaport anti-terrorism measures and provides recommendations and share best practices with government officials to reduce the risk of a maritime security incidents and impacts to the global supply chain. The ISPS program is designed to assist seaports overcome security challenges in a dynamic and ever changing threat environment.

In the Asia-Pacific region, the U.S. Coast Guard's Activities Far East unit coordinates with over 40 countries to execute these bilateral engagements. The U.S. Coast Guard is committed to promoting and facilitating safe and secure maritime trade.

HMAS Canberra returns from Operation Fiji Assist

HMAS Canberra returned to Fleet Base East, Sydney, on April 1 to the mark the end of her first operational deployment after a month-long commitment to Operation Fiji Assist.

Following a request from the Fijian Government, Canberra and Royal Australian Air Force aircraft transported humanitarian aid and assistance in the wake of Tropical Cyclone Winston.

The amphibious ship departed Brisbane on 26 February with 60 tons of emergency relief supplies, three MRH-90 helicopters and around 760 Australian Defence Force personnel including engineers, carpenters, electricians and plumbers. Australian forces worked closely with Fijian authorities to conduct recovery efforts and engineering assessments.

The Canberra returned one week before the Australian Navy's newest and largest warship, HMAS Adelaide, began training for similar operations. Arriving in Jervis Bay on April 8, the Adelaide will conduct training to provide humanitarian aid and disaster relief, readying her for similar missions to the one the Canberra just completed.

For more information, visit www.navy.gov.au.

Austal celebrates keel-laying for EPF 8

Austal celebrated the keel-laying milestone for the Expeditionary Fast Transport vessel Yuma (EPF 8) here today with a ceremony marking a significant milestone in the ship's construction. This ship is the eighth EPF built at Austal under the 10-ship, $1.6 billion block-buy contract awarded to Austal in 2008.

Laying the keel is the formal recognition of the start of a ship's construction. The keel runs lengthwise down the middle of the ship serving as the basic foundation or spine of the structure, providing the major source of the hull's strength.

The EPF program at Austal is progressing rapidly. USNS Brunswick (T-EPF 6) was delivered in mid-January and there are three other EPFs under construction at Austal USA's headquarters and ship manufacturing facility in Mobile, Ala. Of the ships already delivered to the Navy, USNS Spearhead (T-EPF 1) is in Africa on its third deployment and recently took part in a successful anti-piracy operation. USNS Choctaw County (T-EPF 2) and USNS Millinocket (T-EPF 3) are also currently deployed supporting U.S. Navy fleet operations, including many international exercises.

Austal is also under a 10-ship block-buy contract worth over $3.5 billion for the U.S. Navy's Independence-variant Littoral Combat Ship (LCS) program. The company has delivered three LCS with another seven currently under construction. The future USS Montgomery (LCS 8) is scheduled for delivery later this year.

For more information, visit www.austal.com.

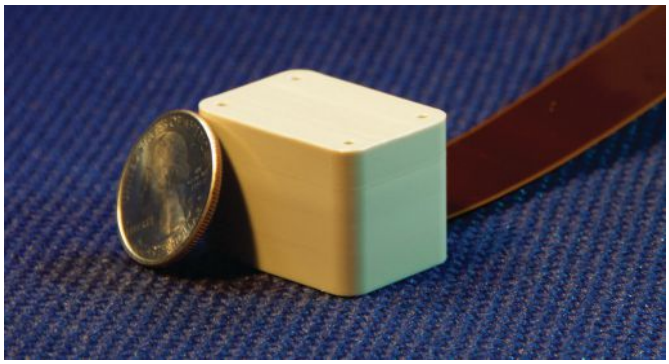
Benefits and Applications of Micro-Fabricated Atomic Magnetometers

By: Naiema Jackson, Rahul Mhaskar, and Gretchen C. Schmauder,
Geometrics, Inc., San Jose, CA

Recent high-profile situations, including the search for missing MH370 and data "black box" recovery missions to the search for American cargo ship *El Faro*, illustrate the importance of highly reliable marine magnetometers. Geometrics Inc. introduced its first cesium marine magnetometer in 1997, and researchers and investigators have performed thousands of surveys with them every year since. However, Geometrics' main marine magnetometer, the G-882 (aka "fish") does have limitations that may impact a survey. Chief among these is the instrument size and its 30-W power consumption.

We recognized the need for smaller, less energy consumptive products and have completely redesigned the magnetometer to meet this need. Our new device, the micro-fabricated atomic magnetometer (MFAM) uses an order of magnitude less power and weighs less than 250 g. These modifications will greatly increase the applications for which magnetometers may be used.

Total field magnetometers are widely used in geophysical and other surveys where the magnetic field gives an indication of the properties of the subsurface. This includes applications for oil and mineral exploration, unexploded ordnance (UXO) detection and discrimination, and pipeline and cable route surveying. Geometrics is well known for building high-performance, rugged, and long-lasting magnetometer systems. We are continuing this trend with our new MFAM sensor.



A single MFAM sensor; 15 cm³.

The MFAM

A single MFAM sensor is 15 cm³ and its electronics module is 200 cm³. Together the sensor and electronics module weigh less than a pound. Each sensor has 2.5-W power operation and only a single dead zone, which is a polar dead zone of ±30°. The resolution will be outstanding at 1 pT/√Hz and 1 ksps sample rate (1,000 Hz). When two sensors are operated in close proximity, there is no cross-talk interference between the magnetometers. Internal IMU (Inertial Measurement Unit) sensors will provide information on tilt, roll, and survey direction.

One factor limiting the usefulness of magnetometers is that it is not possible to identify an anomaly's source location from a single reading. This limitation is due to the properties of magnetic fields themselves, especially those that are dominated by the Earth's field. However, sensor arrays provide far more information about an anomaly, and such information may be used to determine a target's size and location. This is the principle of magnetic surveying—painstakingly scanning an area with a single sensor, mapping the data, and finally analyzing it. This process is dramatically shortened if researchers collect data using a sensor array, which allows for multiple, simultaneous readings and immediate analysis.

The MFAM's small size and low power consumption allows surveyors to deploy numerous sensors, reducing the overall survey cost. Additional cost savings are realized through the reduction of crew and ship size. The MFAM sensor is so small that many sensors can be deployed quickly and easily by a minimal number of people and from a vessel of opportunity. Decreased sensor size also allows researchers to tow in a deeper water column and using a thinner tow cable. Cutting down the survey time, as well as the post-processing time, greatly reduces cost. This opens up an enormous range of new opportunities for magnetometer sensors, as target information can be available on the spot.

The MFAM's application interface module takes many forms, and the ease of use and versatility will allow the surveyors to use their imaginations about ways to integrate their MFAM sensor with other geophysical equipment. Over the next few years, Geometrics will incorporate the new MFAM sensors into all of our magnetometer systems. Customer upgrade kits will be available, permitting customers to upgrade their current sensors to MFAM sensors.

The future of magnetometer surveys

We anticipate that the MFAM will revolutionize geophysical surveying. We've partnered with Texas Instruments to produce sensors in high volume, allowing us to pass on the cost savings. Lower prices will give customers an opportunity to purchase multiple sensors at one time. Academic institutions, smaller companies, and individuals will be able to afford a high performance magnetometer sensor for a fraction of the current system's price. MFAM-equipped drones will become the norm for geophysical work, and we are in the development stage for a drone assembly. This assembly includes a three-point suspension and weighs less than 2 lbs, complete with internal batteries, data logging, and Wi-Fi capabilities.

MFAM Electronics Module; 200cm³.

An up-and-coming area of development in subsea magnetic surveys concerns a collaborative swarm of small, low-power, low-cost, long range AUVs. Such multi-element sensing systems can cover a wide area while simultaneously providing for detailed surveys of local anomalies through intelligent inter-AUV communication. However, such systems require small, low-power, low-cost sensing payloads. In addition to the proposed integration of magnetometer and IMU, realizing such a system requires progress on several fronts, such as low-power, long-range AUVs, underwater communication and real-time decentralized processing and decision-making. It's encouraging to see rapid progress being made on all these fronts, with our sensors poised to take advantage of other fascinating work in robotic platforms.

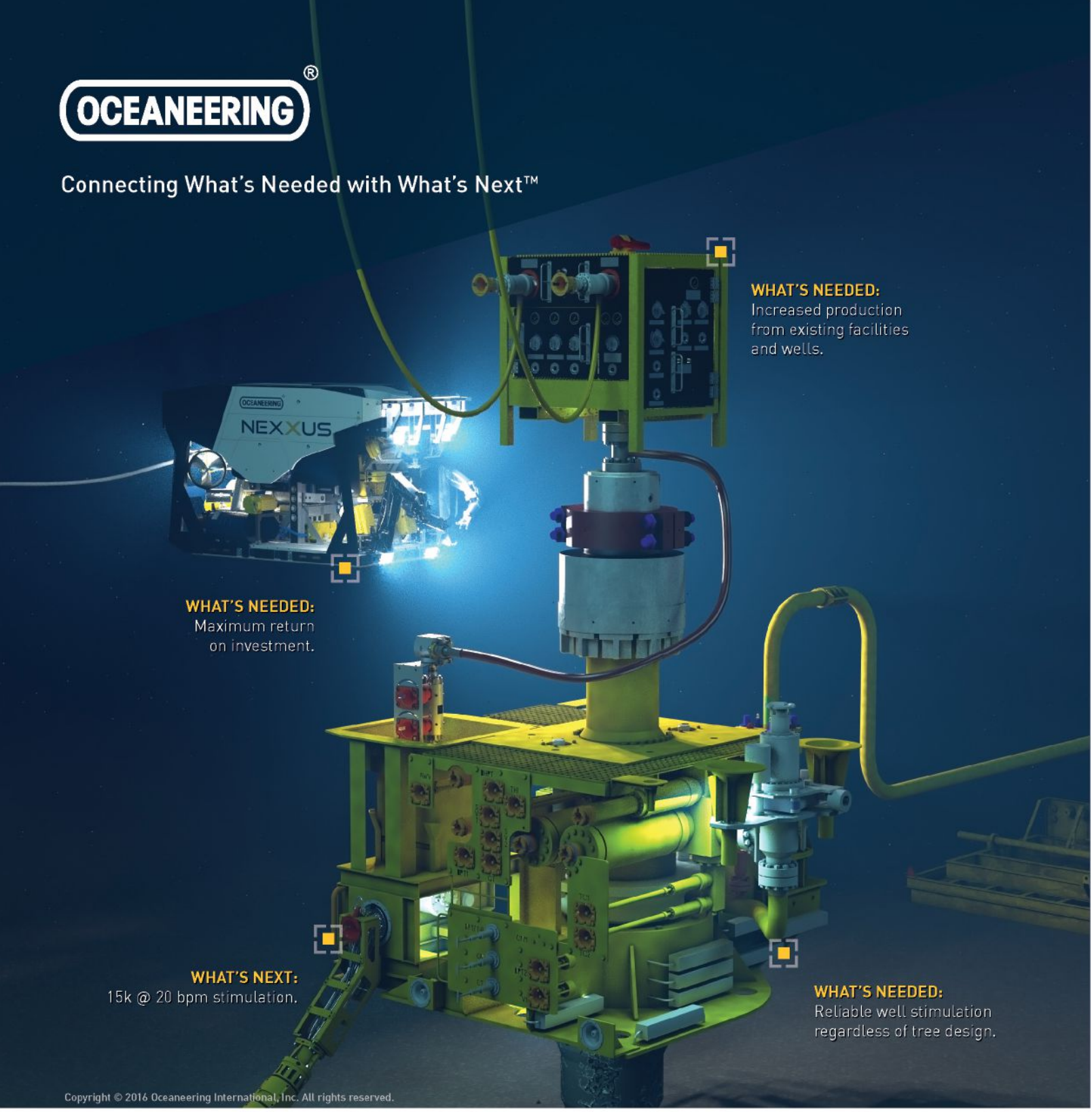
Additional applications made feasible by these new devices are security and monitoring applications using real-time data analysis from fixed sensor locations. Data are gathered from arrays large enough to differentiate signals of interest from false alarms.

Conclusion

Micro-fabricated atomic magnetometers, made possible by recent developments in lasers and miniature fabricating technologies, are opening an exciting new realm of application possibilities. Utilized in arrays, data can be analyzed in real-time for a range of applications. The MFAM sensor is not commercially available today. What we currently offer is an evaluation kit to give engineers and developers an opportunity to assess the technology in their specific application. Geometrics is actively looking for beta testers to research and test the MFAM system in their specific application. If you would like to talk with us about your application or learn more about beta testing our revolutionary MFAM technology, please give us a call (408-954-0522) or e-mail us at sales@geometrics.com.

OCEANEERING®

Connecting What's Needed with What's Next™



Copyright © 2016 Oceaneering International, Inc. All rights reserved.

As the trusted subsea connection specialist, we focus intently on the many challenges that global offshore operators face—from routine to extreme. To solve beyond the status quo, our integrated rigless hydraulic well-intervention solution provides a safe flow path from the well into the reservoir to enable formation damage remediation and ultimately increase production. The result of this cost-effective rigless intervention is a faster production-enhancement solution that maximizes our clients' return on their investments.

Connect with what's next at **Oceaneering.com/WhatsNext**

OFFSHORE INDUSTRY

in this section

Offshore Industry Headlines 33
Upstream Oil & Gas 36
Underwater Intervention 42
Maritime Communications 50
Subsea Cables 54

ExxonMobil starts production at the Julia oilfield in Gulf of Mexico

Oil production has started under budget and ahead of schedule at the Julia oilfield in the Gulf of Mexico, Exxon Mobil Corporation (NYSE:XOM) announced on 19 April. The first production well is now online and a second well will start production in the coming weeks.

The Julia development is located approximately 265 mi southwest of New Orleans in water depths of more than 7,000 ft. The initial development phase uses subsea tie-backs to the Chevron-operated Jack/St. Malo production facility, reducing the need for additional infrastructure and enhancing capital efficiency. Technology has also played a key role in the Julia development including the use of subsea pumps that have one of the deepest applications and highest design pressures in the industry to date.

"Successful deepwater developments like Julia, located more than 30,000 ft below the ocean's surface, benefit from ExxonMobil's disciplined project execution capabilities and commitment to developing quality resources using advanced technology," said Neil W. Duffin, president of ExxonMobil Development Company.

The Maersk Viking drillship is currently drilling a third well, which is expected to come online in early 2017.

Production results will assist in the evaluation of additional wells included in the initial development phase, which has a design capacity of 34,000 barrels per day of oil.

Photo credit: Maersk.

"This initial production will provide ExxonMobil with insight into the potential future development of the reservoir," said Duffin.

Discovered in 2007, the Julia field comprises five leases in the ultra-deepwater Walker Ridge area of the Gulf of Mexico. ExxonMobil, the operator, and Statoil Gulf of Mexico LLC each hold a 50% interest in the Julia unit. Over the past decade, ExxonMobil has drilled 187 deepwater wells worldwide in water ranging from 2,100 ft to 8,700 ft.

ExxonMobil is on track to start up 10 new Upstream projects in 2016 and 2017, adding 450,000 oil-equivalent barrels per day of working-interest production capacity. The company is enhancing resource value through production optimization, technology application and cost management.

For more information, visit www.exxonmobil.com.

Collaboration is key for new well decommissioning offering

Well management and performance improvement specialist Exceed has bolstered its decommissioning credentials through a strategic alliance with international oil and gas service company, Weatherford.

The collaboration will offer an end-to-end solution for well decommissioning, using an integrated team that brings together extensive technical and commercial capabilities.

Exceed brings a proven track record in well management to the partnership which will ensure lessons are learned, knowledge is shared and the performance improvement curve is significantly accelerated, while Weatherford boasts extensive global plug and abandonment experience, field proven tools and technology and a global footprint.

The expertise brought from both companies means that commercial models can be flexible and tailored to meet client requirements. Significant value is added through cost savings to operator groups through bulk purchases, shared equipment and resources, and improved safety and operational performance through an incentivized approach.

The collaboration also opens up potential to create a project-wide EPC approach through the appointment of further partners. Global agreements have already been established with a number of internationally recognized service providers to expand the service portfolio as and when required.

The collaboration follows Exceed's recent plug and abandonment contract win with Fairfield Energy, which will see the firm support a campaign that covers 45 platform wells and 16 subsea wells, and recognizes the Exceed team's strong track record in decommissioning.

John Anderson, commercial director at Exceed, said: "This alliance is a major step forward in demonstrating what collaboration in the decommissioning sector should actually look like."

"Integrating the supply chain, sharing resources and drawing upon a knowledge base which extends beyond one company will mean major savings, quicker project execution and effective risk management. There is great potential for this joint approach both now and in the future."

Bibby Offshore secures first Norwegian contract award

Bibby Offshore's Norway division, Bibby Offshore AS, has successfully secured its first contract in the region with ConocoPhillips Skandinavia.

Managed from Bibby Offshore's Stavanger office, the workscope involves project management, installation engineering, procurement and subsea installation works related to maintenance activities on the Norpipe Oil pipeline.

The contract is due for completion in Q3 2016 and will utilize the construction support vessel Olympic Ares to support operator ConocoPhillips on integrity management of the Norpipe Oil pipeline between the Ekofisk area and the Teesside facility in United Kingdom.

Arne Lier, managing director of Bibby Offshore Norway, said: "We are delighted to have secured our first Norwegian contract with a leading E&P company such as ConocoPhillips."

This award not only demonstrates that Bibby Offshore has the necessary capabilities to provide the service and support required in the Norwegian sector, it also highlights that in a highly competitive market the company is a strong option at a time where value is paramount.

"Over the years, Bibby Offshore's international divisions have successfully secured regular and repeated work with a number of operators. Our goal in Norway is to grow and develop the business in a similar way by successfully delivering on projects safely and efficiently, and to develop our reputation as the go-to subsea service provider for the region," concluded Mr. Lier.

Forging improvements in oil spill response, dispersant application, and monitoring: innovation through strategic partnership

Seanic Ocean Systems Inc. (Seanic) and CSA Ocean Sciences Inc. (CSA) are responding to challenges faced by the oil industry to address increasing regulations and environmental stewardship concerns. This strategic partnership merges technology and environmental expertise with the goal of improving oil spill response equipment and services. Innovative solutions developed by Seanic and CSA will provide much-needed support to the oil industry, which is under increasing pressure to maximize efficiency while minimizing risk and environmental impact.

Both companies already support the oil spill response needs of the energy industry, providing a range of specialized equipment and services, from engineered solutions to oceanographic sensors and from testing and maintenance to developing dispersant monitoring plans. Forging this partnership integrates the skills and experience of each company, resulting in better service to both industry and the environment.

"Seanic's Remote Systems Technology combined with CSA's experience in Environmental Sciences will allow us to approach oil spill response, particularly the application and monitoring of dispersants, in a unique and innovative manner," stated Kevin Peterson, president of CSA Ocean Sciences Inc. "As environmental regulations evolve, water depths increase, and locations become more remote, cost-effective solutions based on solid science and technology become more important than ever."

Seanic brings expertise in ROV tooling, engineered solutions, and the maintenance and improvement of oil spill equipment. Their corporate headquarters in Katy, Texas offers state-of-the-art facilities for manufacturing, testing, storage, and maintenance of equipment, including stabilized yard space, a tool pool, storage warehouse, and a 500,000-gallon in-ground wet test tank. Overseas facilities in Scotland, Norway, Australia, and Singapore support international operations.

CSA brings 46 years of specialized experience in marine environmental consulting, serving the energy industry worldwide through offices in the United States, the Eastern Mediterranean, Qatar, Trinidad, Singapore, and Australia. CSA's expertise in coastal, marine, and deep ocean surveys, sampling, monitoring, assessment, and mitigation is built on the integration of science, operations, and an understanding of environmental data collection, management, and analysis within geospatial domains.

Radio holland executes major flng offshore telecommunication system contract for Keppel Shipyard

Radio Holland, member of RH Marine Group (formerly Imtech Marine), was awarded an FLNG project from Keppel Shipyard in Singapore. The contract encompasses an offshore telecommunication system package for the Golar Hilli LNG carrier, which is being converted into a Floating Liquefied Natural Gas (FLNG) unit. The contract was officially signed in Singapore following a tender procedure that started in November 2014.

René ten Brinke, CEO RH Marine Group, commented: "We are very pleased to be working on such a major contract and have been working closely with Keppel Shipyard since the bidding stage started in November 2014. Some months ago, Radio Holland Singapore also moved office to the district of Singapore where many of our maritime customers are based."

Supervision

The telecom system package includes the Public Address General Alarm (PAGA), the Private Automatic Branch Exchange (PABX), CCTV and the UHF systems. The entire package will be delivered to the yard by May 2016. All systems will be installed by the yard, Radio Holland Singapore providing the supervision of the installation and carrying out the cable plan and implementation.

For more information, visit www.radioholland.net

Aker Solutions' MMO unit to work with Kværner on Njord A upgrade

Aker Solutions' maintenance, modifications and operations (MMO) business in Norway will as a subcontractor of Kværner provide engineering services for upgrading the semi-submersible platform at the Statoil-operated Njord A oilfield. Photo: Øyvind Nesvåg / Statoil.

The company signed a subcontractor agreement with Kværner, which was awarded the framework agreement for the Njord Future project by Statoil. Aker Solutions' initial delivery will be front end engineering design (FEED) work. The contract with Kværner also includes engineering work in the engineering, procurement and construction (EPC) phase of the project should the operator decide to proceed with this, as well as an option for prefabrication work.

Photo credit: Øyvind Nesvåg/Statoil.

"We look forward to working with Kværner to find the most robust and cost-effective solutions for Statoil on this project, which draws on our experience in complex modifications," said Per Harald Kongelf, head of Aker Solutions' Norwegian operations.

The MMO unit in Bergen will execute the FEED work with support from Aker Solutions' engineering business in Oslo, working as an integrated team with Kværner. The work will start immediately and at its peak involve 120 employees of Aker Solutions.

Aker Solutions has previously delivered concept and feasibility studies on upgrading Njord to Statoil.

For more information, visit www.akersloutions.com.

DNV GL - Oil & Gas wins important verification on Norwegian giant field Johan Sverdrup

Johan Sverdrup is by far the largest ongoing project on the Norwegian Continental Shelf for the next few years.

Statoil has awarded contracts to DNV GL for verification of all four topsides, the three bridges, three of four jackets, topside installation by use of the Allseas single lift vessel 'Pioneering Spirit and extended site assessment for the jack-up.

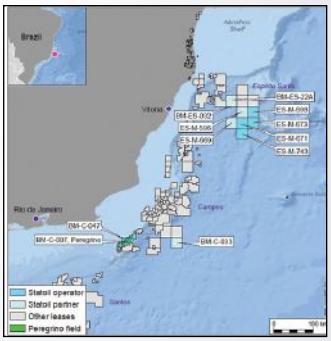
Johan Sverdrup - Photo credit: Statoil ASA.

Third party verification gives the operator and the authorities confidence that the project development has the required safety and quality level.

"The contract demonstrates that our investment in technology, service development and efficient operations is making us competitive also in this cost challenged market. We sincerely look forward to supporting Statoil and the Johan Sverdrup partners on this important project," says regional manager for DNV GL- Oil & Gas Norway, Kjell Eriksson.

The value of the contracts is approximately 60 MNOK.

Positive production test of gavea appraisal well in Brazil



Statoil together with operator Repsol Sinopec and partner Petrobras has completed the Gavea A1 well in the ultra-deep pre-salt block BM-C-33 in the Campos basin in Brazil.

The well encountered a hydrocarbon column of 175 m in a good-quality reservoir of silicified carbonates of the Macabu formation.

The well reached a total depth (TD) of 6,230 m and was successfully tested producing around 16 million standard cubic ft (scf) of gas and 4,000 barrels per day of oil (32/64" choke).

This is the fourth appraisal well in the license, which comprises the Seat, Gavea and Pão de Açucar (PdA) discoveries. In 2013-2015, the consortium drilled and tested the Seat-2, PdA-A1 and PdA-A2 appraisal wells.

With Gavea A1 the consortium has finalized the appraisal activities in BM-C-33 and will now evaluate the sub-surface data and assess lean and cost-effective development concepts.

Repsol Sinopec Brasil (35%) is operator of BM-C-33 with Statoil (35%) and Petrobras (30%) as partners.

As announced in December 2015, Statoil will take over operatorship of the license. This is expected to happen in the third quarter of 2016, subject to the approval from Brazilian authorities (ANP).

For more informayion, visit www.statoil.com.

Deepocean Ghana Ltd. awarded 3-year lCV contract

DeepOcean Ghana Ltd. announced that it has been awarded a 3-year contract with options for two additional years to provide a Light Construction Vessel (LCV) to Tullow Ghana Limited.

In this regard, DeepOcean Ghana has mobilized the DP2 ROV/construction vessel Dina Star with two DeepOcean Ghana-owned 220HP Constructor ROV systems, and commenced offshore activities mid March 2016. The scope of work includes inspection, maintenance and repair (IMR), surveys and subsea construction on the Tullow Ghana operated deepwater Jubilee and TEN Fields offshore Ghana.

DeepOcean Ghana Limited, an indigenous Ghanaian company in which Deep Ocean B.V. (DeepOcean) holds a 49% shareholding, commenced its working relationship with Tullow Ghana in February 2015 when it mobilized the Rem Forza to undertake multipurpose construction activities on Jubilee. The Rem Forza has now been replaced by the Dina Star, allowing the Rem Forza to continue working with Tullow Ghana to provide accommodation and construction support on the TEN project from March 2016.

A representative of DeepOcean Ghana's senior management stated: "We are very pleased that with this new contract; we have the opportunity to increase the scope of work we are undertaking offshore Ghana for Tullow. Our commitment to local content, which is in line with Tullow's, has been the key element of our work. We continue to demonstrate this through our use of local crew and in-country services, including Ghanaian ROV pilots and engineering support. Available competence in DeepOcean will be used to train and develop these local resources."

For further information, please contact: Henk van den IJssel, commercial director international. DeepOcean Group Holding B.V. (+31) 20 2625110.

Proserv Seals Significant Contract with Statoil

Global-leading energy services company Proserv has been awarded a multi-million pound contract with Statoil for the provision of production control equipment in Norway.

Proserv will supply five wellhead hydraulic power units (HPUs) for Statoil's Gullfaks oil and gas field in the Norwegian sector of the North Sea which is undergoing an extensive topside upgrade program.

The design, manufacture and supply of the workscope will be carried out by Proserv's specialist engineering and project teams in Stavanger, Norway. Work has already begun on the manufacturing of these systems and all five are expected to be delivered to Statoil by 2017.

Henrik Johnson, Proserv's regional president for Scandinavia, said: "This is a significant win for the company that highlights the strength of our technical and engineering expertise as well as our market-leading status for the provision of surface production systems and services.

"We are also extremely pleased that Statoil have so clearly shown their trust in us to deliver robust technology and services on time and to the highest standards, and we look forward to working with them in the successful delivery of this project."

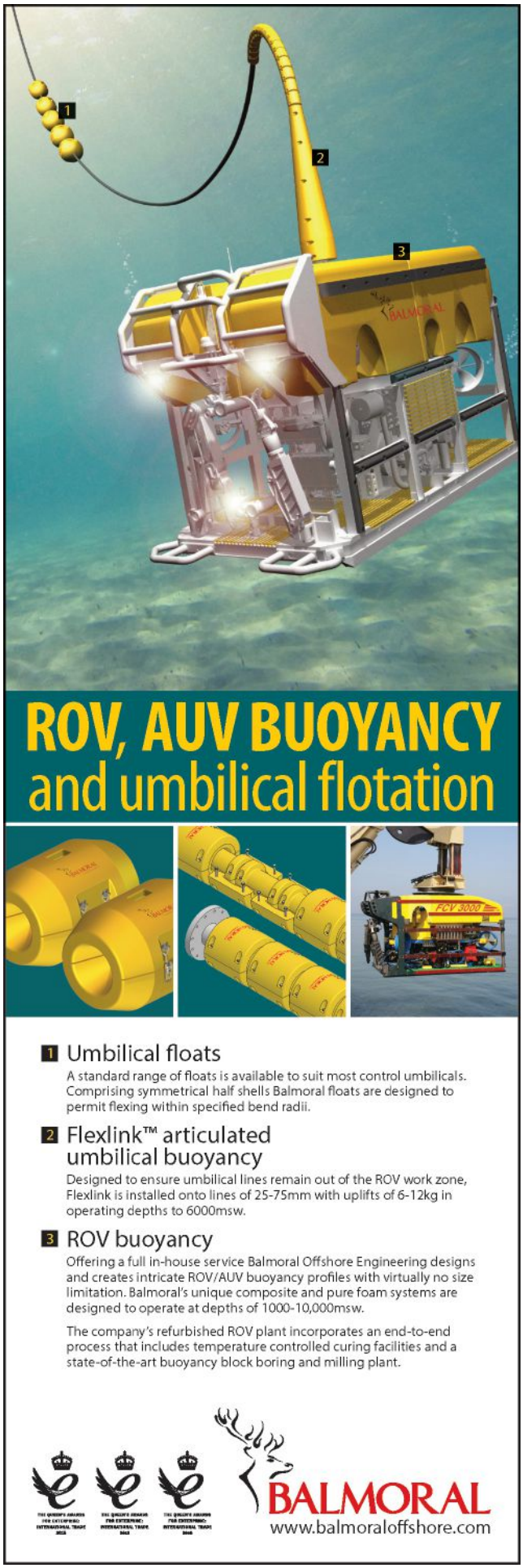
Statoil's Gullfaks A. Photo credit: Øyvind Hagen – Statoil.

The agreement comes just months after Proserv was awarded a contract to provide topside control equipment at one of the largest field discoveries on the Norwegian Continental Shelf. Proserv is supplying Aibel, on behalf of Statoil, with a HPU and three chemical injection panels for the prestigious Johan Sverdrup development's drilling platform.

Proserv is a global-leading market specialist in life-of-field services for the energy industry with its proven technologies and engineering expertise underpinning the company's success.

The company, which operates worldwide through 25 operating centers based in 11 countries, has a 40-year track record in delivering world class solutions particularly in the subsea, production and drilling market sectors.

For more information, visit www.proserv.com



Trelleborg demonstrates collaborative innovations in Action at OTC 2016

An industry slimming down is opening up the opportunity for implementation of innovative solutions to lower overall costs and optimize results of investments.

A recent roundtable held by Trelleborg saw industry experts agree that the positive effect of the low barrel price is the creation of more effective operations that embrace innovative solutions that can lower overall costs while maintaining safety and minimizing environmental impact. The roundtable explored issues raised from Trelleborg's 'Next Level Report' that gathered views from people involved in the offshore oil & gas industry.

On the roundtable for Trelleborg was John Drury, managing director of Trelleborg's offshore operation in the UK. He said, "We are in a time when there is an opportunity, an appetite for discussions on alternatives. Being down in the supply chain working upward, we have to seize that opportunity and make our voice heard. "

"There feels like there is a hunger for collaboration up through the value chain to the operators in the current climate. Although we all hope the oil price will go back up, there is a risk when it does that everything will slow back down again in terms of innovation. That would be the irony of the situation."

"During the years that the oil price was high, specifications have been developed by putting specification on top of specification. Now is a time to review them sensibly and change them. There is no suggestion that this will affect safety or create environmental risks. Rather, by focusing on engineering and material specifications, the aim is to optimize products that are delivered into the oilfield."

In light of these challenges, events like the Offshore Technology Conference (OTC) are central to sharing knowledge. At this year's show, Trelleborg's on-stand experts will demonstrate just some of the innovative key solutions that can help operators' bridge the gap between cost and performance.

Looking ahead to May, Trelleborg will also highlight some of the ways in which the market can lower project costs through collaboration and innovation, optimize productivity and retain competitiveness as barrel prices recover. Visit stand 5541 for demonstrations and further discussion.

Jonathan Fox, senior product development engineer for Trelleborg's offshore operation, says: "Pipelines unsupported over free spans, such as steel catenary risers and rigid steel flowlines, are prone to VIV fatigue, which can lead to serious issues such as pipe girth weld failure or premature pipe malfunction. To combat this, the Tri-Strake™ comprises interlocking moldings, with three-start helical strakes.

"By using our vast offshore and vortex induced vibration (VIV) knowledge, we were able to develop and design the Tri-Strake™ in response to the market demand for a high quality, cost-effective VIV suppression solution. The design enables the system to be stacked during shipping, ensuring more efficient and cost effective transportation as well as quick installation."

Downtime caused by failure or maintenance often yields a considerable cost that can be avoided. Henk-Willem Sanders, FPSO focus group leader at Trelleborg Sealing Solutions says: "Our innovative SealWelding™ technology allows seals to be

Industry News from Around the World - Almost as Fast as it Happens

Published every week, this electronic industry resource will keep you updated on current events, technology, and opportunities in the global oceans marketplace.
www.oceannews.com/newsletter-subscription

welded in-situ on an FPSO platform, eliminating the need for the platform to disconnect and return to shore. Facilities will no longer need to shut down operations for weeks at a time, causing significant loss of earnings from production. Solutions such as ours not only add value, but save a significant amount of time, and naturally, costs too."

While drilling offshore spans to new, far-off locations, conventional means for installing offshore oil rigs are cost-prohibitive. Julian Wee, managing director within Trelleborg's engineered products operation, says: "With topsides now often weighing more than 30,000 tons, floatover operations are a cost-effective alternative to conventional installation methods. However, installation windows are small and the mating process between the topside and the jacket legs must be controlled and executed precisely to avoid damage and downtime."

"During the topside lowering process, the barge may undergo significant heave and other motions due to wave and current actions. Our leg mating units (LMUs) and deck support units (DSUs) are designed to take shock impacts. This is one of the ways our solutions prevent damage during floatover. We also test our LMUs to the actual specified loads in order to confidently validate design requirements. With topsides ranging anywhere from 3,000 MT to 47,830 MT, LMUs cannot simply be scaled up to cater to the greater demands and loads. Specific analysis and calculations must be implemented to guarantee their performance at any size."

There is a growth in the Liquid Natural Gas (LNG) market to lower storage and transportation costs as it takes up 1/600th the volume of natural gas. However, it is more difficult to handle, stimulating the need for safe economic offloading methods.

Vincent Lagarrigue, marketing and proposal manager within Trelleborg's oil and marine hoses operation, says: "There was an absence of offloading solutions in the market, so we teamed up with Saipem to design a cryogenic floating hose. It can operate in sea states with wave heights of up to 3.5 m at connection and 4 m during transfer and disconnection – even with non-collinear wind or current directions. Our design enables transfer between the LNGC and FLNG terminal to be increased from a standard 5m to 150 to 250 m, significantly limiting the risk of collision."

Lagarrigue will be presenting a paper at the conference regarding tandem LNG offloading on 3 May at 9:30 am (Session 16 — Floating LNG Projects and Developments).

Trelleborg will exhibit its range of innovative offshore solutions at OTC Houston 2016 in Hall A at Stand 5541. Products are designed with quality, performance and efficiency front of mind and include high performance pipeline protection and insulation, buoyancy, floatover technology, seals and hoses.

You can download a copy of the Next Level Report using the following link: http://bit.ly/1StXtLo.

You can watch the Next Level Roundtable videos using the following link: http://bit.ly/1Kp4LrR.

iSURVEY Group strengthens North Sea presence with new contracts

iSURVEY Group, a leading provider of survey and positioning services to the global oil and gas and telecommunications sectors, has boosted its North Sea presence following a number of contract wins and the appointment of a new business development manager.

Following the recent announcement of a contract extension with Nexans Norway AS, iSURVEY has also been awarded a second contract extension with AGR to provide rig move and positioning services for the company and its clients, Faroe and Engie, during their exploration-drilling campaigns in 2016.

The semisubmersible rig Transocean Arctic will be used for the drilling campaigns on these two wells. iSURVEY has provided rig positioning services on board the Transocean Arctic since 2012, working with AGR during the same timeframe.

Øivind Røegh, group CEO at iSURVEY said: "With the current challenges faced in the offshore industry, iSURVEY continues to build strong, successful relationships with clients in order to further expand our operations. Securing these contracts with such highly regarded companies in the North Sea is testament to the high quality of service iSURVEY provides, and we are delighted that our solutions are being recognized across the industry."

To continue this North Sea growth is the appointment of business development manager, Stuart Murray. Over his career spanning more than 10 years, Mr. Murray has undertaken a variety of business development roles within the industry. Mr. Murray joins iSURVEY from Bibby Offshore where he held the position of subsea business manager, prior to this managing business development for Subsea7.

Andrew McMurtrie, managing director at iSURVEY said: "With an impressive track record in business development, Stuart brings a wealth of invaluable industry experience to iSURVEY. I have no doubt that he will be an asset to our team, supporting our growth plans which remain ambitious during the current industry environment."

Commenting on his appointment, Mr. Murray said: "I am delighted to join iSURVEY and become part of a company which has such a successful international track record. My previous business development experience will be a valuable asset to the team, allowing me to identify new opportunities for iSURVEY to continue expanding its business."

iSURVEY will be showcasing its service offering and expertise to the industry during Oceanology International, the world leading marine science and ocean technology exhibition and conference, from 15-17 March in ExCeL London, on stand B400.

Bibby Offshore wins north sea decommissioning contract

Bibby Offshore (BOUK), a leading subsea services provider to the oil and gas industry, has secured a multi-million pound contract with a North Sea Operator, to deliver decommissioning operations in the Northern North Sea East Shetland Basin.

The agreement, due to commence in Q2 of 2016 and be completed by the end of 2016, will utilize one of Bibby Offshore's construction support vessels with adequate deck space and crane capabilities to execute operations approximately 550 km northeast of Aberdeen.

Bibby Offshore has been appointed to carry out remedial rock placement over the existing 16-in oil export pipeline, recovery of 12-in pipeline bundles, subsea structure removal with pile severance and debris removal within the platform's 500 m zone and along bundle routes. Waste disposal services will also be provided by BOUK, recovering items that can be decontaminated, disposed or recycled, followed by an over-trawl of the cleared field.

Fraser Moonie, chief operating officer of Bibby Offshore, said: "We are looking forward to building on our existing relationship with this particular client and continuing our partnership to provide subsea services for its offshore assets.

"Decommissioning work is of a specialist nature and, with more oil and gas infrastructures reaching the end of their design life, multi-industry experience is key to ensure each project is complete in a safe and responsible manner. With 10 years of experience in decommissioning projects globally, often in highly challenging conditions, we have built up a strong track record and are ideally positioned to support companies operations.

DNV GL initiates 43 new collaboration projects for 2016 to help oil & gas industry safely reduce costs

In a period of cost constraint and increasingly complex oil & gas production, finding solutions that increase efficiency and production has never been more important. To address the industry's need for smart solutions that reduce complexity, DNV GL is funding 43 new joint industry projects in 2016 in addition to launching a new Step Change innovation programme to help customers leverage opportunities from digitalization.

Both initiatives are based on closed interaction and collaboration with industry partners. Key focus areas for DNV GL in 2016 will be to address challenges on standardization, operations (OPEX services), safety, environment, regulations and performance.

"DNV GL-led JIPs aim to provide insights into future trends and technologies. Many of the projects result in new industry standards and practices that support innovation and flexibility in design while managing costs and maintain safety levels," says Rolf Benjamin Johansen, technology manager, DNV GL – Oil & Gas.

The value of standardization is recognized by the industry with 61% of senior oil & gas professionals agreeing that operators will increasingly push to standardize their delivery globally. The most common strategy for maintaining innovation with lower budgets is to increase collaboration with other industry players (45%). and nearly one in three (30%) plans greater involvement in joint industry projects in the year ahead.

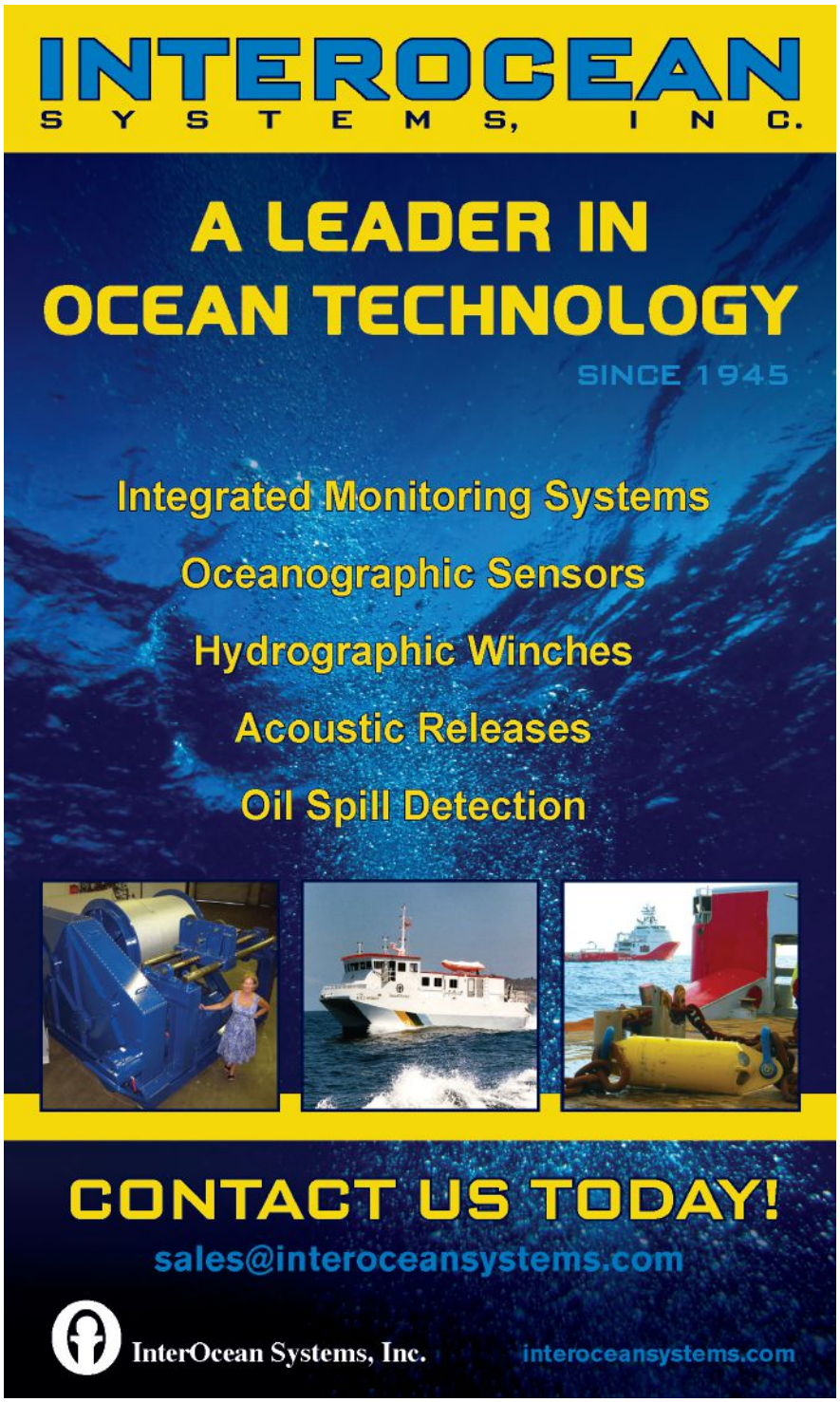
DNV GL's new Step Change innovation program is focused on digitalization. Only one in five oil and gas companies see themselves as highly digitalized today. However, close to half of senior oil & gas professionals (45%) already see solid or high potential for big data and analytics to transform the operating efficiency of the industry in 2016. DNV GL's program involves the end-users, (e.g., oil companies), drilling contractors and suppliers in the innovation process. The first pilot projects have already created significant value for these end-users from using new forms of data analytics in combination with domain knowledge and technical insight.

"Step change is exactly what it says—a paradigm shift in how we drive innovation to quickly test out data smart solutions and new business models with strong customer involvement at an early stage. In the current price environment, innovation is even more critical. It can both help the industry to reduce complexity short term by standardizing parts and processes and enable new technological developments long-term that will drive efficiencies. At DNV GL, we are continuing to invest 5% of our revenue in R&D because it enables us to provide long-term foresight for our customers," says Kjell Eriksson, regional manager Norway, DNV GL - Oil & Gas.

Currently in the initial phase, DNV GL welcomes industry players to join the JIP projects or contact us if they are interested to be involved in our Step Change program.

For further information about joint industry projects contact Evelin.Garnaas@dnvgl.com and for digitalization contact Nada.Ahmed@dnvgl.com.

Download a complimentary copy of A New Reality: The outlook for the oil and gas industry in 2016 from:http://dnvgl.com/anewreality



Camper comforst for freezing Falcon team

Working in minus ten degrees centigrade high up in the French Alps, the Jifmar team found that the most comfortable and convenient way to inspect the Tignes Dam was to load their Saab Seaeye Falcon ROV system and themselves into a recreational camper.

Jean-Baptiste Loiselet, ROV operations manager at Jifmar, the offshore service and dam inspection company, explains why the camper makes an ideal mobile base station.

"The Falcon is small enough to easily mobilize and we can contain the whole system and ourselves on board the camper for working in remote locations without facilities, and at the end of the day just stow-up and head to a nearby hotel for the night."

The mission, just completed by the Jifmar team, was to assess the integrity of the dam wall and structures such as water inlets, and measure the amount of sedimentation at the bottom of the wall.

To achieve the tasks they integrated a wide range of equipment onto the Falcon system. This included an ARIS Explorer 3000 sonar for extra fine 2D imaging and crack detection, an acoustic positioner and an ethernet HD camera with integrated lasers for scale reference.

Jean-Baptiste Loiselet says the Falcon is small but its intelligent systems architecture and five powerful thrusters can handle a wide range of large and sophisticated equipment.

"Its fiber optic capability gives us unlimited connection possibilities. We built a small interface pod with a 24V power supply and two Ethernet bulkheads, one for the ARIS or Blueview, and one for the camera and other equipment–and we still had spare power and spare RS232 bi-directional channels and ethernet connections."

Jifmar, with support from Saab Seaeye, also designed and created added buoyancy in the shape of an enhanced faring to provide extra payload ready for fitting a skid beneath the Falcon to carry the ARIS Explorer with its tilt and roll assembly–along with any other systems needed.

Freezing temperatures could have been a problem, as every time the ROV was pulled from the water ice froze over it, but Jean-Baptiste Loiselet knew the thrusters would keep working as they have magnetic couplings rather than moving seals.

"In thousands of hours of dive time," he says, "Seaeye thruster technology has proved to be the most reliable in the ROV world." He went on to praise the versatility of the Falcon for its easy deployment, both offshore and in the dam and hydro industry for inspection and survey operations, including long tunnel work.

"Along with all its capabilities, it's still small enough to launch from a hand operated winch and be sent into difficult-to-access locations, down small pipes and along 1,100 m of tunnel."

Newly upgraded ROV Jason: Bigger and better

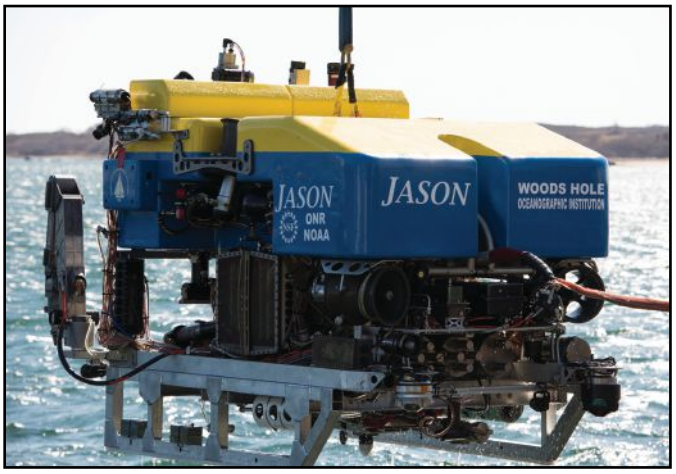


Photo by Tom Kleindinst, Woods Hole Oceanographic Institution.

A major, $2.4 million upgrade funded by the National Science Foundation (NSF) has made the ROV Jason more capable than ever. This 12-month-long project, conducted by engineers at WHOI, which designed and built the vehicle, has increased the vehicle payload and range of activities and streamlined the vehicle operation.

This is Jason's first upgrade of this magnitude since its second-generation launch in 2002; the original Jason was launched in 1988. The ROV is operated by WHOI for the nation's ocean scientists as part of the National Deep Submergence Facility (NDSF).

"This upgrade enabled us to increase the system's lift capability from 400 lbs to 2-tons of scientific samples and instruments from the seafloor and to eliminate its companion vehicle, Medea, for these operations," said Matt Heintz, a WHOI senior engineer and Jason program manager.

Until this latest upgrade, Jason has been operated as a two-body system in concert with Medea, a smaller ROV that buffered Jason from the movement of the surface ship while providing lighting for its seafloor activities. Now, Jason can be de-coupled from Medea and operated as a single-body system, streamlining its launch and recovery and making the vehicle more versatile.

Medea will still be used for scientific missions requiring depths greater than 4,500 m and on vessels equipped with cable strong enough to eliminate the need to install the new larger winch and cable system.

A key reason behind the upgrade was to enable Jason to perform maintenance to seafloor infrastructure related to the NSF-funded Ocean Observatories Initiative and Ocean Networks Canada's cabled observatories efficiently and with reduced need for deck space.

The upgrade has other added benefits as well. The heavy lift capability will be used at seafloor sites where several-hundred-meters-long sensor strings are routinely deployed into and recovered from seafloor bore holes. It also will deploy and recover trawl resistant instrument packages.

Since its original launch in 1988, ROV Jason has spent countless hours exploring the Earth's oceans, taking samples and imaging the seafloor. Perhaps nothing was quite as dramatic as

the 2009 observation of the West Mata volcano erupting at 1,100 m depth in the Pacific. Through its fiber optic tether, Jason was able to transmit HD video of the explosive erupting volcano and its molten lava in real-time to stunned scientists and crew onboard the ship.

With significant enhancements to its design and capabilities complete, Jason will expand its range of operations to meet the changing needs of the ocean science community, which increasingly involves seafloor-based ocean observing infrastructure. Jason begins its first post-upgrade science mission in June 2016 aboard the SIKULIAQ, a ship owned by NSF and operated by the Univ. of Alaska, and has a full science schedule into 2017.

For more information, visit www.whoi.edu.

Seafloor Systems delivers autonomous multibeam survey system to Skanska

Seafloor Systems is pleased to announce that they have been awarded a contract to deliver an EchoBoat-ASV

system to Skanska Construction in Trondheim, Norway.

The EchoBoat-ASV features dual-DC motors for ease of control and redundancy, non-corrosive materials, an integral transducer well, and multi-sensor payload capability. In addition, the package includes AutoNav™, the Seafloor Auto Pilot package enabling the user to pre-plan a survey, upload to the onboard memory and autonomously carry out the survey.

The system also provides the ability to manually override the auto pilot as well as a return to base function. Equipped with a NORBIT iWBMSc (Integrated Wideband Multibeam Sonar, Compact) with internal Novatel SPAN INS and integrated AML real-time SV sensor, the EchoBoat-ASV is an extremely capable and high-resolution survey package.

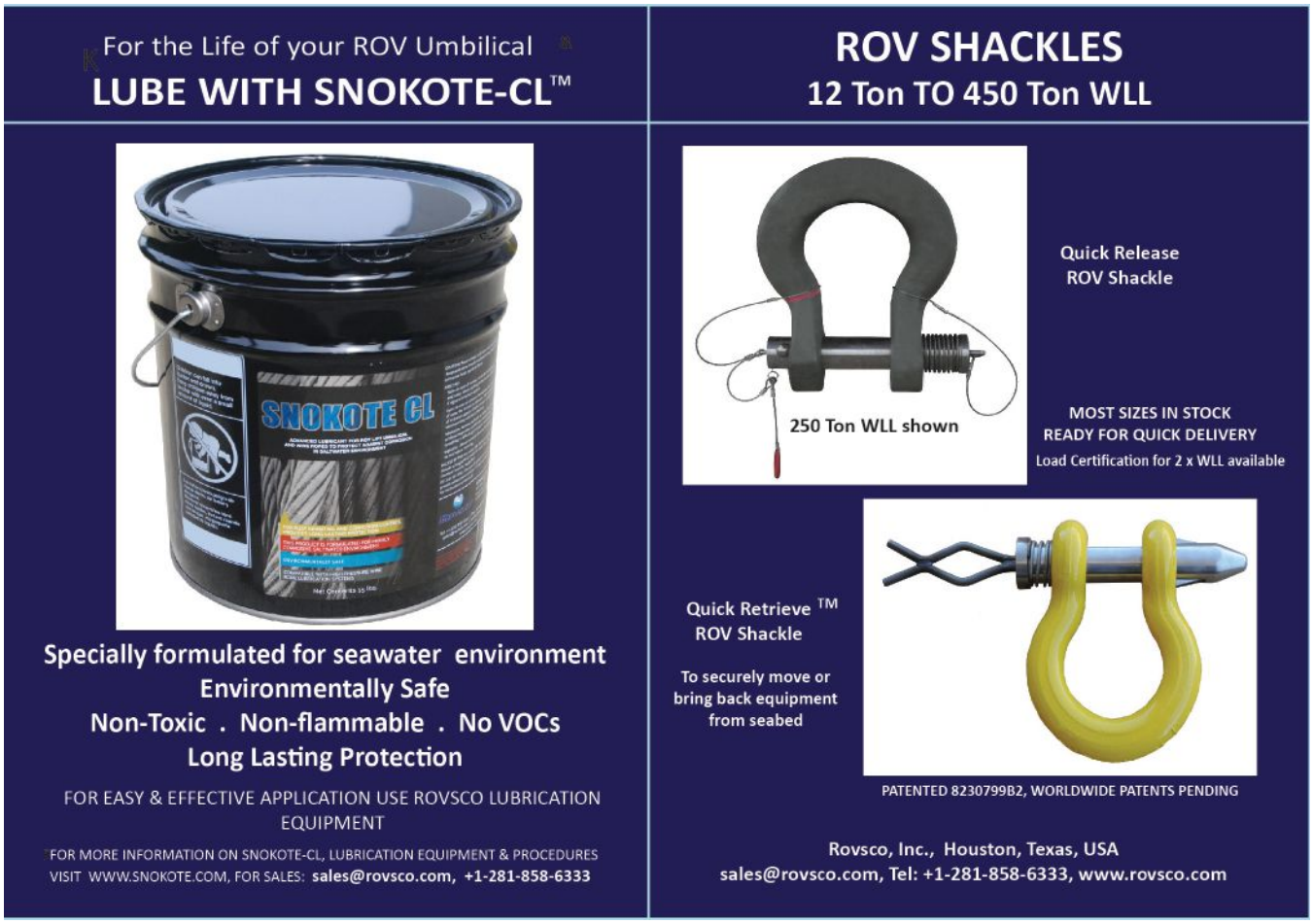
For more information, visit www.seafloorsystems.com.

SeeByte and OceanServer are now offering the Iver3 EOD-XO Neptune Edition

SeeByte, the global leader in creating smart software technology for unmanned systems, and OceanServer, a leading manufacturer of AUVs, are pleased to announce a new commercial partnership.

The companies recently successfully delivered three Iver3 systems with SeeByte's software to the United Kingdom's (UK) Ministry of Defence (MOD) Defence Equipment and Support (DE&S).

Following that success, SeeByte and OceanServer are now offering the Iver3

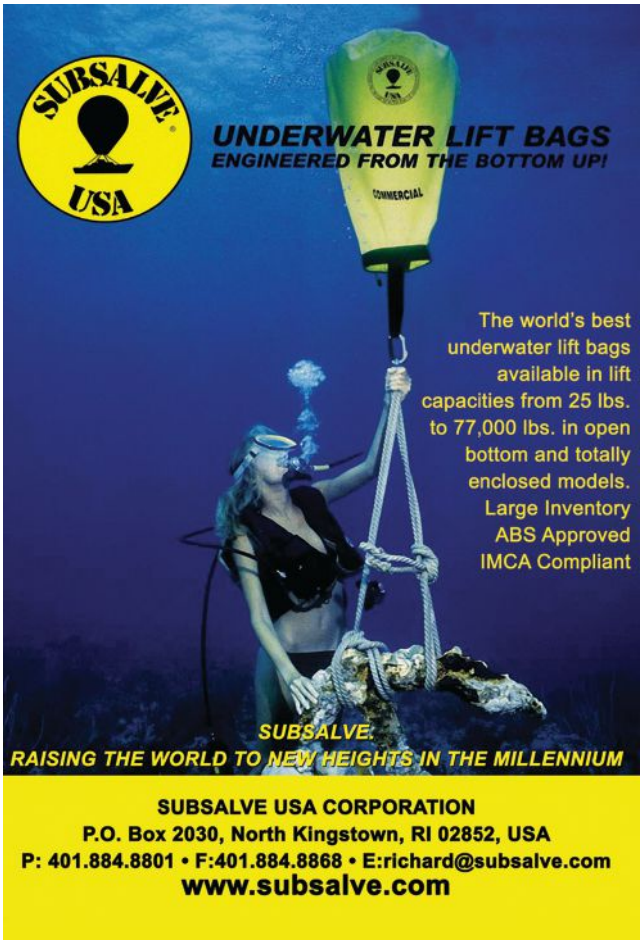


EOD-XO Neptune Edition. This package offers OceanServer's Iver3 AUV equipped with SeeByte Neptune, an open architecture enabling autonomous multi-vehicle collaboration. Designed to enhance Mine Counter-Measure (MCM) missions, the system offers launch and recovery software management, water column flight management, static and dynamic exclusion zones, survey and re-acquire tasks, and real-time progress and status monitoring. The Iver3 MCM systems come equipped with a Klein UUV 3500 side-scan sonar, RDI Explorer DVL w/ADCP, WHOI micro modem, Iridium communications and operator console.

Bob Anderson, president of OceanServer, said "The Iver3 EOD-XO Neptune Edition offers our customers the opportunity to operate multiple systems from a single control station. The systems are assigned tasks and they collaborate to fulfil the mission."

Ioseba Tena, sales manager of SeeByte, said "Our customers in the MCM domain are looking at ways in which to more effectively operate fleets of AUVs. The Iver3 EOD-XO Neptune Edition is designed for that purpose and it delivers!"

For more information, visit www.seebyte.com.



The Underwater Centre to deliver enhanced diver training courses

Subsea training facility, The Underwater Centre, is helping to increase its students' employability in the downturn by adding new modules to its commercial air diving courses, offering an enhanced package that cannot be found anywhere else in the world.

The 'Premium' and 'Construction' diver training packages will also include:

- Commercial enriched air nitrox course;
- MJI 21 hydraulically tensioned subsea bolted connections course; and,
- IMCA diver medic training (DMT) or IMCA assistant life support technician (ALST) training.

The modules have been added after consultation with industry and will provide students with important additions to their CVs in the current challenging climate.

The MJI 21 hydraulically tensioned subsea bolted connections course provides students with the knowledge and practical experience of working with and using bolt tensioning equipment. Delivered by an expert from Stork, who also supplied the equipment, the course includes isolations, dismantling, inspection and assembly, and tightening techniques in this specialist area.

The commercial enriched air nitrox course–the only one of its kind delivered by an independent training provider–gives a recognized industry qualification and ensures training in specific techniques around using nitrox as a diver.

The IMCA DMT is a highly sought after ticket and the Centre's course incorporates hands-on skills training with their decompression chamber and saturation and air diving systems.

The IMCA ALST certificate is seen as a good springboard to getting offshore - the majority of ALSTs work in this sector. This course will provide students with practical experience and exposure to a real saturation system, with mixed gas divers in training.

All of the training courses have been added at no extra cost to the student.

With accommodation and additional classrooms based at the landward end of the pier, The Underwater Centre is set up to provide its students with the skills and experience to succeed in their new careers and continue providing the subsea industry with the workforce that it needs.

For more information, visit www.theunderwatercentre.com.

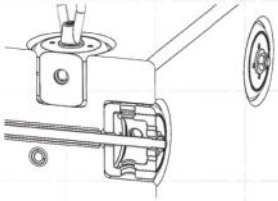
U-Boat Worx unveils new deepest diving tourist submarine

U-Boat Worx unveils new private submarines especially designed for cruise ships and tourism, including the deepest-diving ever built.

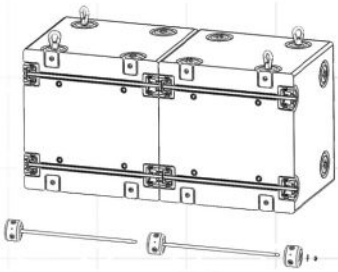
U-Boat Worx has launched three new luxury submarine models: the Cruise Sub 5, Cruise Sub 7 and Cruise Sub 9. The Cruise Sub 5 and 7 are capable of diving to 1,140 m, making them the deepest-diving tourist submersibles ever. Depending

FlexSEA

Modular Flotation Like Never Before

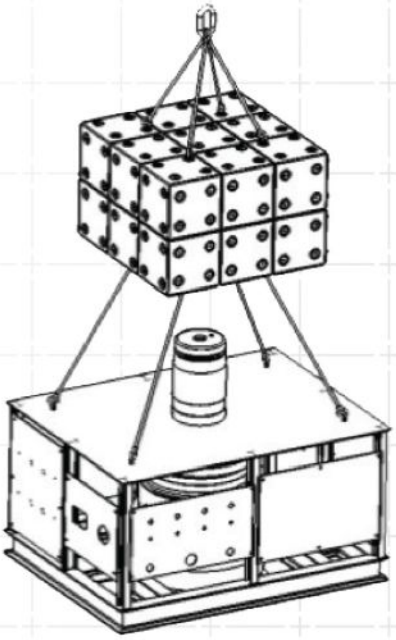


Detachable connection and positioning allow for a variety of geometries.



The connection hardware facilitate attachments to maintain structural integrity of the array.

Introducing the FlexSEA™ Modular Flotation System available for rent exclusively from Okeanus Science & Technology. We offer FlexSEA™ flotation modules in a variety of sizes to supply different amounts of buoyancy for a variety of payload sizes and weights. Our unique modules may also be configured to form arrays suitable for a wide variety of subsea modules, tools, instrumentation packages, vehicles and submersibles including ROV mounted intervention packages.



OKEANUS
SCIENCE & TECHNOLOGY

CREATING VALUE AT ANY DEPTH

2261 Denley Road • Houma, Louisiana • 70363 | 985-346-4666
www.okeanus.com

Caldwell

Marine International, LLC

Caldwell Marine International is a New Jersey based heavy marine construction firm specializing in the installation of submarine power and fiber cables.

Caldwell Marine International, LLC is seeking recent engineering graduates for the following positions:

MARINE DIVISION STAFF ENGINEERS

The Marine Division Staff Engineers will be responsible for supporting the Caldwell Marine Director of Engineering and the Project Management team with the following tasks:

- Equipment Design and Fabrication
- Deck Layouts and Load Calculations
- Cost Estimating Support
- Project Management Support
- Project Scheduling Support
- Marine Charting and Route Design

The applicant should be proficient in the following disciplines:

- AutoCAD for engineering and 3D applications
- Mechanical Engineering Theory, Design, and Loading Calculations

Work is divided between the field and the office. Successful candidate must be a team player, able to work with people in a wide variety of circumstances.

MARINE SURVEY AND POSITIONING ENGINEER (FULL TIME)

Caldwell Marine International, a leader in the submarine cable installation industry, is currently seeking a Marine Survey and Positioning Engineer.

Primary duties will include:

- The set up and operation of DGPS positioning systems for offshore operations
- The setup and operation of Marine echo-sounding equipment
- The setup and operation of HyPack and WinFrog survey suites used in cable lay applications as well as cable lay monitoring software
- The setup, operation, and troubleshooting of subsea pressure housings, underwater lighting and cameras, pressure sensors, and USBL systems used on subsea cable plows and ROV equipment

Additional duties include data post-processing, reporting and as-built drawing preparation, and hydrographic survey operations. Special consideration will be given for submarine cable laying and cable route engineering experience. Candidates shall have a minimum of a Bachelors Degree in Ocean Engineering or Marine Survey (or associated technical field) along with 2+ years of marine experience.

Work is divided between the field and the office. Successful candidate must be a team player, able to work with people in a wide variety of circumstances.

For a confidential evaluation, please E-Mail resume along with salary requirements to:
Marc.Dodeman@caldwellmarine.com

CALDWELL MARINE INTERNATIONAL, LLC
1433 Highway 34, South
Farmingdale, New Jersey 07727

on the model, it can carry 5, 7 or 9 persons per dive.

After the first success stories of submersibles operated from luxury Cruise Ships like the Taipan from Star Cruises and the Crystal Esprit, The Netherlands-based submersible manufacturer is seeing increased demand from the industry.

"Our operations on cruise ships inspired the development of the Cruise Sub series," says Bert Houtman, founder and chairman at U-Boat Worx. "Whether the operator focuses on exclusive deep sea exploration in remote destinations or on doing numerous subsea excursions on coral reefs, the Cruise Subs are optimized for maximizing the guest experience."

Traditional tourist submersibles have small windows, and passenger seating much like a bus. The new Cruise Sub series is based on the U-Boat Worx submersibles that are used on exclusive private super yachts and by research institutes. All guests will enjoy the same panoramic experience thanks to two large acrylic spheres that place everyone on the front row.

The interior can revolve inside the sphere, ensuring passengers always have the best view while diving–regardless of the direction the submersible is traveling.

The submersibles are designed to international standards and can be operated non-stop for up to 12 hours. The submersibles are battery-powered and therefore have no impact on the marine environment in which they operate, so diving in a U-Boat Worx submarine is an ecologically sound activity.

For more information, visit www.uboatworx.com.

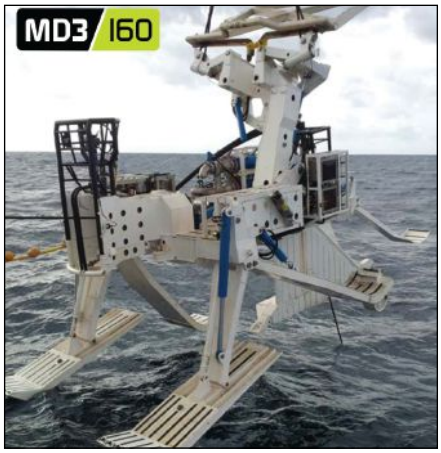
Plough available for sale or lease

SMD have acquired a Heavy Duty Multi-Depth Plough HD-200 that is now available for sale or lease. This is on of the first offerings of SMD's new services division, which is focused on making it easier for customers to purchase, own, maintain, upgrade and repurpose SMD assets.

The HD-200 is a 1,500 m rated plough with 300 kW jetting, surface control system and umbilical winch, cable and spares.

The equipment was delivered in 2013 and put immediately into service, completing a long ploughing campaign on the Polar Prince, at the Gwynt y Môr wind farm for RWE Innogy. The equipment was then demobilized in early 2015 and is currently at SMD Works in Wallsend, UK.

The asset has understandable wear to the ground-engaging parts. The control system, umbilical winch and cable are in excellent condition. The plough is available in its original configuration, needing only minor refurbishment for as-new condition.



Options are available to re-purpose the plough for suitability to the submarine telecommunication cable market, and also for protection of medium to large size power cables. Support from SMD's experienced six-man operating crew is also available.

The equipment will be supplied after a full workshop test program and with SMD's original equipment manufacturers warranty. A full spares package is included.

The equipment is available for outright purchase, or for lease with an option for outright purchase, and is available ex-works Newcastle upon Tyne, UK.

Repurpose options have a delivery time 12 to 26 weeks depending on final specifications. Lead time on the refurbishment only option is 6 weeks.

For more information, visit www.smd.co.uk.

Exeter researchers launch robotic marine surveyor in Argyll waters

Researchers from the University of Exeter have used the 'ideal' Argyll coastline to test a new sea-going robot that can map the seabed using its own intelligence.

Professor Peter Challenor from the College of Engineering, Mathematics and Physical Sciences and his team came to the Oban-based Scottish Association for Marine Science (SAMS) to test a computer algorithm that allows the autonomous surface vehicle to collect data at sea without any human intervention.

The robot, a C-Enduro model produced by ASV Global, is the size of a small car, powered by solar and wind energy and capable of traveling at sea for up to 3 months over a range of 4,000 mi. It has a self-righting hull and was built to operate in all marine environments.

The team spent a week at SAMS' Dunstaffnage base and in Ardmucknish Bay, near Benderloch and praised the testing ground available through SAMS' Scottish Marine Robotics Facility (Scot-MRF).

Trials officer John Holmes, a former Royal Navy hydrographer with more than 30 years' experience, said: "We had a very successful trial and the location has been an important part of that. In researching locations for this exercise, I noticed that there is guaranteed shelter in easy-to-access coastal spots and inshore lochs, offering a variety of depths."

"We have not lost any trial time because of weather; the sheltered areas mean any tidal or weather effects are minimal."

The C-Enduro has the potential to dramatically reduce the cost of data collection by removing the need for traditional survey vessels, and researchers believe it may produce more accurate data.

"This has been designed for gathering data at less cost and will be useful to the offshore industry and in scientific research," said Professor Challenor. "We are hoping that once our algorithm has been tested we will be able to

license this technology and convince people to start using it in earnest."

SAMS knowledge exchange fellow Fraser Macdonald, who hosted the team from Exeter, said, "I am glad that the team had a successful trial, as the C-Enduro is an exciting addition to the UK's national capability in marine research."

"We operate a range of marine robotics at Scot-MRF but the facility also offers the ideal testing ground for other platforms, given the variety of marine environments."

The project is a collaboration between Exeter University, the Met Office and Marine SouthEast, a not-for-profit organization working in the marine sector. The C-Enduro is part of the UK's Marine Autonomous and Robotic Systems (MARS) group, funded by the Natural Research Council.

For more information, visit www.theunderwatercentre.com.

Police and dive companies find many uses for side-scan sonars

A wide variety of users including public safety dive teams and commercial dive companies are finding side-scan sonar to be an essential piece of equipment in their search and survey operations. This sonar is the ideal tool for these projects because it produces detailed images of the underwater environment regardless of water clarity. Side-scan will locate sunken boats, submerged vehicles, and drowning victims as well as inspect bridge supports, seawalls and dams.

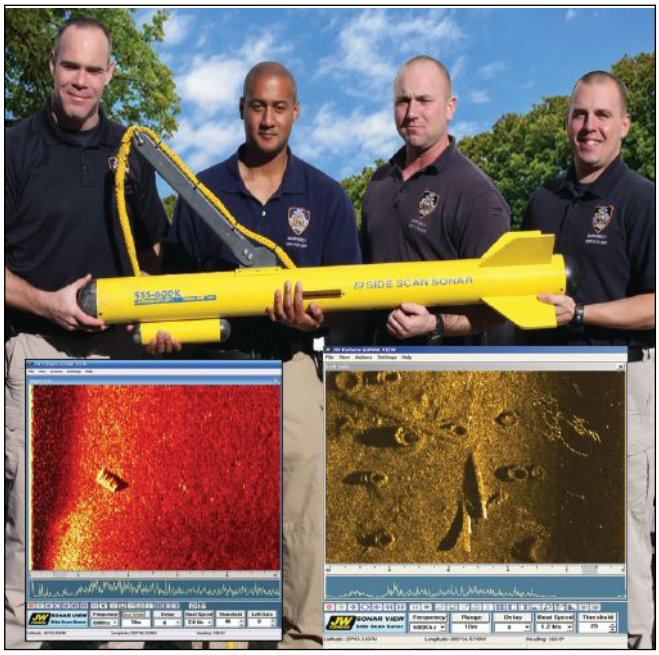
One agency utilizing this sonar is the New York Department of Environmental Protection (DEP) Police. Their primary duty is to protect and preserve New York

VIDEO IN PRINT™
If a picture is worth a thousand words...video is priceless!
Include your company's video in your next ad.

• Demonstrate product
• Illustrate services
• Deliver a "live" instruction manual
• Offer facility tours
• Create a commercial

VIP - an Ocean News exclusive!
For VIP details, contact your advertising representative:
TSC MEDIA & EVENTS Marketing & Information Resources
North America: Lisa Chilik Ph: +1 574.261.4215 Lchilik@tscpublishing.com
International: Mimi Shipman Mo:+44 (0) 777 601 7564 mshipman@tscpublishing.com

City's water supply system. Members of this department are New York State police officers and they investigate more than 4,000 complaints each year, including illegal transportation, storage, and disposal of hazardous waste. To assist in these investigations, the DEP Police acquired a JW Fishers SSS-600K side-scan sonar. The sonar allows them to survey reservoirs to ensure no foreign objects are contaminating the city's water supply. Towing the side scan over an area produces a detailed map of the underwater terrain so officers know exactly what's on the bottom. Even in zero visibility, the image quality can be almost photographic. The department recently upgraded their sonar system with the latest revisions and sent two officers to Fishers facility in Massachusetts for a free day of factory training.



Another law enforcement agency using the side-scan is the Dubai Police in the United Arab Emirates. This desert kingdom between Saudi Arabia and Oman is small by geographic standards, but holds the world's 7th largest oil reserves and is one of the wealthiest countries in the middle east. Situated on the Persian Gulf is UAE's most populous city, ultramodern Dubai, which is a hub for international business and travel. The 15,000 strong police force is responsible for the safety and security of 2 million people and is considered to be one of the most progressive in the Arabic countries. It continually strives to use the most up-to-date law enforcement techniques and technology. The police coordinate all emergency responses as well as search and rescue operations on land and sea. For water SAR operations, the department acquired a JW Fishers side-scan sonar with splash-proof computer and Sonar Map Coverage software. The splash-proof computer with ultra-bright display allows the sonar to be operated from small, open boats. The mapping software shows the operator the track of the boat as it moves over the search area as well as the width of the area being scanned to ensure no piece is missed.

Fishers also offers an adjustable transducer option for the sonar that allows vertical structures to be scanned by rotating the angle of the transducers. This means a team can survey the face of a dam, seawall, pier, bridge support, or ship's hull to look for damage or any "unnatural" device like an explosive that may have been attached to a submerged structure.

For more information, visit www.jwfishers.com.

New Singapore office expands Marlink's global presence

Marlink has moved to a new office in Singapore in order to meet the growing demand for delivery and support of its portfolio of multi-band, business critical communication solutions for maritime customers operating in Southeast Asia.

The original Marlink Singapore office was opened in 1998. The new Marlink Singapore office adds new facilities and potential while continuing to be a vital resource for local and international vessels through delivery of sales, installation and support services. The new office managed by Eric Jan Bakker, head of sales Asia in Marlink, includes a fully equipped support center operating 7 days a week, in addition to live test, demonstration and training facilities, covering all of Marlink's core connectivity services and solutions.

The Marlink Singapore team consists of trained experts on the company's integrated Ku, Ka, C and L-band satcom solutions supplied to commercial and recreational satcom service providers and end-users. With local knowledge and product/spare parts stocks, the team is on hand to support all Marlink equipped vessels transiting via Singapore.

The Singapore office move is the first such change to be established under the new Marlink name, which was launched February 25, 2016, as the next chapter for the organization previously operating as Airbus Defence and Space, and prior to that Astrium Services, Vizada, Telenor and France Telecom.

For more information, visit www.marlink.com.

Transocean orders Fleetwide Harris CapRock® One

Harris CapRock Communications will install its Harris CapRock One system on Transocean's entire fleet as part of a multi-year contract renewal for complete managed communications services. The contract provides satellite communications services and includes the industry's most intelligent communications service on all current vessels as well as pending new builds.

The managed end-to-end communications solution includes teleport and satellite services, backhaul, dedicated bandwidth for crew internet, traffic optimization and cyber security services. The upgrade to Harris CapRock One will provide improved system performance while reducing downtime and maintenance costs. The new solution will more than double available bandwidth for the Transocean fleet, while providing a single worldwide bandwidth price. The pricing model simplifies forecasting and planning for the fleet situated in locations such as the Gulf of Mexico, the North Sea, Brazil, Asia Pacific, Africa's West Coast and United Arab Emirates.

For more information, visit www.harriscaprock.com.

Singtel, Inmarsat partner to strengthen maritime cyber security capabilities

Singapore Telecommunications Limited (Singtel) and Inmarsat have entered into a strategic partnership to enhance maritime cyber security using Trustwave's Unified Threat Management (UTM) solution.

Trustwave, the cyber security arm of Singtel, will provide the software-based UTM service to be integrated with Inmarsat hardware onboard ships to protect data and reduce cyber risk for maritime companies. The UTM service offers a suite of cyber security defenses, such as advance firewall, anti-virus, intrusion prevention and web-filtering, which is backed by global round-the-clock support. It will be delivered through Fleet Xpress, the first globally available, high-speed broadband solution for maritime and offshore operators, available from a single communications provider.

Andrew Lim, managing director, business group, group enterprise at Singtel said, "Our partnership with Inmarsat is important as it marks the first phase in rolling out Singtel cyber security services for Inmarsat, starting with maritime. Shipping still moves about 90% of the world's trade, hence the maritime industry is a significant backbone of the global supply chain. As maritime systems become more digital, it is imperative for the industry to protect data onboard ships against all forms of cyber attacks. Our partnership with Inmarsat will provide maritime companies with a cyber security solution to meet rapidly evolving cyber threats, globally."

For more information, visit www.singtel.com.

SES launches Maritime+ service in Europe

SES S.A. unveiled its first maritime Ka-band services under the SES Maritime+ service offering. This new service for the maritime and inland shipping mobility sector will use ASTRA 2E's and ASTRA 2G's Ka-band beams to drive efficiency and operational savings.

The new Ka-band service, to be launched in Q2 2016, combines SES Ka-band spot-beams, EPAK's DSi9 maritime antenna and Gilat Satellite Networks' broadband technology. The offering is based on SES Techcom Services' Astra Connect solution and will provide coverage over Europe, including the North Sea, the Irish Sea and inland waterways. It will target customers such as offshore wind farms, inland shipping companies, and supply ships for oil platforms.

"Our new offering for the mobility market is a highly cost-effective maritime Ka-band service, which is designed to deliver communications on the move and allows a wider range of customers to profit from maritime connectivity," said Norbert Willems, commercial vice president at SES Techcom Services. "Providing connectivity at sea has become increasingly crucial. This new service not only meets this need, but also does so economically, thanks to the attractive price per megabit of our Ka-band offering."

For more information, visit www.ses.com.

Harris Caprock, Phasor partner on antenna development

Phasor, Inc. announced a partnership with satellite and remote communications services provider Harris CapRock Communications to develop an electronically steerable antenna (ESA) terminal. Phasor's ESAs are based on patented innovations in dynamic beam-forming technologies and system architecture. The companies will co-develop a maritime terminal based on Phasor's ESA technology that will support high throughput (HTS) Ku-band satellite communications to be included as part of Harris CapRock's managed services offering. This terminal will be ideal for high mobility and higher bandwidth applications, such as those found in the cruise market. Harris CapRock holds special distribution rights for the terminal in the cruise market.

The cruise-sector communications market is experiencing rapid growth, and the ships of today have very unique connectivity requirements. They combine multiple services such as passenger broadband access, retail, banking and hospitality and this places big demands on their communications infrastructure. The ability to offer a very high standard of connectivity to passengers on board is a differentiating factor. Therefore, reliable and expandable broadband connectivity on board a vessel is imperative.

Phasor's very low profile antenna provides high-bandwidth service in a more reliable, robust and failure-tolerant way. The antenna is solid-state, with no moving parts, so satellite signals are tracked electronically. Its sleek look is ideal for cruise lines, eliminating the need for visually unappealing radomes spread around the vessel. The terminal can match the performance of a 2.4 m antenna dish, making it the ideal solution to meet the demanding communications requirements of cruise lines, while the antenna's modular architecture allows the system to be scaled to any environment.

For more information, visit www.phasorsolutions.com.

Simon Møkster becomes first fleet to use Tampnet connectivity

Simon Møkster Shipping has become the first to integrate Marlink-provided Tampnet North Sea LTE (Long-Term Evolution) services across its entire fleet of vessels. Tampnet's state-of-the-art, low latency, high-bandwidth North Sea LTE services are enabled by an extensive 2,500-km subsea fiber network. Tampnet's LTE network works seamlessly as part of Simon Møkster's hybrid communication service from Marlink, which also integrates high bandwidth VSAT (Very Small Aperture Terminal), L-band and terrestrial 3G/4G to create the most complete and cost-effective multi-band communication system of any fleet in the world.

Simon Møkster is widely recognized for its innovative on board communication technology strategy, which ensures high bandwidth broadband availability for its clients, wherever they are operating. The integration of the Tampnet North Sea LTE service will support Simon Møkster's clients in the North Sea, enabling them to utilize the new connectivity for real-time applications that are optimized with lower latency links (i.e., video-conferencing or instant messaging). In addition to low-latency, Tampnet's technology's is well-proven to function in adverse weather conditions.

Though Tampnet services have been available in the North Sea since late 2013, the current user-base consists primarily of FPSOs, drilling rigs and vessels with specific requirements. Simon Møkster is the first vessel company to leverage the innovative offshore mobile service on a fleet-wide basis, which is made possible as a result of the partnership established between Tampnet and Marlink in May 2015. With access to Tampnet North Sea LTE, Marlink can fully realize its multi-band service approach, offering an extra layer of flexibility and cost-effectiveness for users of its innovative solutions, including SMARTConnect in the North Sea.

Marlink's multi-band/hybrid services seamlessly combine multiple communication carriers to provide the best available link based on pre-defined parameters set and managed by the customer. With a service delivery independent of specific carriers, cost can be reduced and greater flexibility and control provided for the customer. Tampnet North Sea LTE connectivity augments the existing services provided by Marlink. The multi-band approach provides least-cost/best performance routing to ensure highly reliable and high bandwidth communication across Simon Møkster's 25 strong fleet of offshore support vessels.

For more information, visit www.marlink.com.

Launch of Fleet Xpress marks start of 'smart' ship operations era

Inmarsat launched Fleet Xpress–the first globally available, high-speed broadband solution for maritime and offshore operators available from a single communications provider. Fleet Xpress enables ship owners and operators to enhance their business intelligence, improve operational efficiency and vessel performance, and provide a host of high-value, crew welfare benefits.

Fleet Xpress will also empower third party application providers to enhance their existing services to maritime customers and to develop a host of innovative new applications that will further drive operational efficiencies, ranging from real-time monitoring, remote diagnostics and telemedicine to security and crew service management tools, among others.

Based on Inmarsat's new Global Xpress (GX) satellite constellation, Fleet Xpress combines the high data speeds of Ka-band with the ultra-reliable FleetBroadband L-band service for unlimited backup. As a fully integrated service, it switches automatically between Ka-band and L-band, ensuring an 'always on' guaranteed connection with a committed information rate, backed-up by service level agreements to ensure customers always receive the service for which they are paying.

To take advantage of the new service, vessels will require a 1 m or 60 cm Global Xpress antenna and terminal and a FleetBroadband terminal (either FleetBroadband 500 or FleetBroadband 250) that are pre-commissioned on the network to provide quick and easy plug and play deployment.

For more information, visit www.inmarsat.com.

Cyber security roundtable identifies key issues of concern to maritime industry

KVH Industries, Inc. hosted maritime industry leaders for a frank discussion about cyber security prior to the start of the CMA Shipping 2016 conference in Stamford, Connecticut. During the roundtable, a range of concerns about the current level of vulnerability emerged. Among the key issues identified were complacency by ship operators, lack of training for crew, non-existent contingency plans for dealing with a cyber attack, and the need for a set of best practices for minimizing risks.

"We need to bring the same best practices that we expect on shore and in our corporate networks to ships," said Rick Driscoll, KVH vice president of satellite products and services. "Ship operators need to make sure there's a process that is consistent throughout their organization, especially as ships are increasing their data usage. For example, a vessel's digital systems must be configured to ensure personal devices brought onboard by the crew use a network separate from ship operations and that individual passwords are utilized when logging onto the ship's computer systems rather than relying on one password common to the ship. Those practices would be standard procedure anywhere else."

For more information, visit www.kvh.com.

Carisbrooke selects Marlink VSAT

Marlink has been selected as Carisbrooke Shipping's preferred partner to provide the satcom solution for its fleet of modern dry cargo and multipurpose vessels. Carisbrooke plans to improve vessel and fleet operations with greater access to data-centric applications made possible by higher and more available bandwidth on the Marlink Ku-band VSAT (Very Small Aperture Terminal) service. The delivery, which is expected to be complete by the end of the year, includes the sophisticated XChange BYOD (Bring Your Own Device) solution. The system will enable Carisbrooke Shipping crews to communicate with friends and family using their own smartphones, tablets and laptops.

Carisbrooke Shipping owns and operates its fleet from offices in Cowes (UK), Zwijndrecht (Holland) and Bremen (Germany). All key aspects of ship management are covered by the group, including chartering/operations, technical and safety management, crewing and financial administration. The company has developed a large fleet of fuel-efficient vessels in recent years. The new monitoring and remote support capabilities enabled by Marlink VSAT will further support the efficient and smart operation of this well-established fleet.

Marlink VSAT enables Carisbrooke vessels to benefit from throughput up to 1028 Kbps (downlink) and global coverage with unlimited MSS (L-band) back-up in addition to Local Numbers and Virtual Private Networks (VPN).

The VPN service is considered to be extremely valuable by Carisbrooke, allowing remote control of IT equipment and systems on board and inevitably leading to simplified IT management and increased reliability.

All Marlink installed vessels will use the Xchange communications management platform, which handles automatic switching between satellites, including seamless transition to the L-band back up system in addition to enabling remote access and streamlining administration.

Carisbrooke Shipping also joins the growing number of crew-focused shipping organizations that understand the benefits of providing flexibility for crew communications at sea. XChange BYOD is a ready-to-use Wi-Fi solution and comes with apps that provide voice and data access for crew using their own smartphones, tablets or laptops. The unique system ensures straightforward account administration while simplifying payment using pre-paid cards, making cost management and control easier and more transparent for vessel management and individual crew members.

For more information, visit www.marlink.com.

BlueTide introduces cybersecurity solution

BlueTide Communications strengthens remote site network defense with its industry-leading Security-as-a-Service (SECaaS) solution. Perfectly suited for remote maritime and offshore sites including yachts, merchant ships, offshore supply vessels, liftboats, rigs and platforms, the enterprise-grade network protection combines anti-malware, intrusion prevention, application control and content filtering.

The all-in-one cybersecurity solution features deep packet inspection, anti-malware and application control to protect against network vulnerabilities, malicious attacks and potentially compromised BYODs traversing the network. With the ever-increasing risk of malware—a number that nearly doubled to 8.19 billion samples in 2015 according to the 2016 Dell Security Annual Threat Report—advanced threat protection is necessary to secure vessel systems and applications including navigation systems, dynamic positioning systems, manifest documents, other operational systems and third-party applications.

"Our customers realize the need for increased network security; but without the resources to monitor, detect and prevent threats, it became evident a managed solution is optimal," says BlueTide managing director Emil Regard. "When a vessel's sensitive systems are made increasingly vulnerable by improperly maintained BYODs and the rising number of cyber threats, it's imperative to apply robust security measures without compromising network performance."

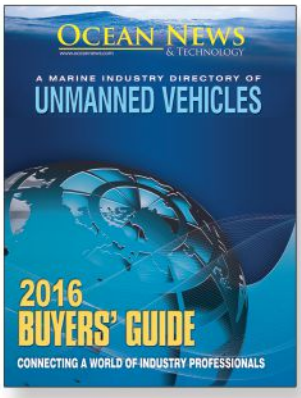
The BlueTide global network operating center provides 24/7 real-time event monitoring, analytics and reporting on application traffic, bandwidth utilization, threats and suspicious activity. As a managed service, customers rely on BlueTide to identify trends on their remote networks and offer recommendations to improve network security. Additionally this cybersecurity solution becomes a powerful troubleshooting tool to minimize downtime related to malicious applications, and with new vulnerabilities emerging and morphing each day, the firewall is continuously updated without interruption or a reboot.

For more information, visit www.bluetidecomm.com.

DON'T MISS THE NEXT OPPORTUNITY....

2016 Unmanned Vehicles Buyers' Guide

Mid-Year Update



You no longer have to travel from site-to-site to find the information you're looking for! This one-of-a-kind directory includes detailed, comparative product information for ROVs, AUVs, USVs, Gliders, Towables and Landers as well as corresponding manufacturer contact listings

FREE LISTINGS

The Buyers' Guide is available 24/7 on the Ocean News & Technology website.
www.oceannews.com/buyersguide
Check it out today!

For advertising information, contact:

North America
Lisa Chilik
574-261-4215
lchilik@tscpublishing.com

International
Mimi Shipman
+44(0)777 601 7564
mshipman@tscpublishing.com

NKT Cables awarded offshore contract

NKT Cables has been awarded a contract by DONG Energy to deliver 170 km of 220 kV high-voltage AC submarine export cable system for the Hornsea Project One offshore wind farm. Hornsea Project One will be the world's first gigawatt-scale offshore wind farm with a capacity of 1.2 GW providing electricity to well over one million homes in the UK.

Hornsea Project One will be NKT Cables' third large offshore project in cooperation with DONG Energy. The wind farm will be placed 120 km off the Yorkshire coast in the UK, and the cable system supplied by NKT Cables will connect the central circuit of the wind farm with the mainland grid, and also to the other circuits via two offshore interlinks. The wind farm electrical system will be fully operational in 2019.

For NKT Cables the order will have a contract value of approximately EUR 139 million. The cables will be manufactured in Cologne, Germany in 2017 and will be delivered for installation in early 2018.

Since 2010, NKT Cables has delivered high-voltage submarine power cables for 13 offshore wind farm projects in Europe.

For more information, visit www.nktcables.com.

ABB wins order to connect Belgian offshore windfarm

ABB has won an order worth around $80 million from Rentel NV in Belgium to deliver an advanced cable system that will connect the offshore substation at the Rentel windfarm located off the Belgian coastline to the mainland close to Zeebrugge. The order was booked in the first quarter of 2016.

ABB will design, manufacture and install the approximately 40 km long extruded three-core 220-kV alternating current (AC) submarine cable system that will have a transmission capacity of around 300 MW. The energy transmitted to shore from this windfarm will contribute to a greener power supply in Belgium, capable of providing enough electricity to meet the needs of around 280,000 households. The cable system installation will be executed by ABB's new state-of-the-art vessel, which will enhance efficiency and precision of the cable laying operations. The project is scheduled to be commissioned in 2018.

The Rentel windfarm connection in the Belgian North Sea will play a significant role in meeting Belgium's environmental objectives for 2020, specifically to increase the share of renewable energy to 13% of total energy production. It will also support the European Union's environmental targets for 2020.

For more information, visit www.abb.com.

TE SubCom to perform third upgrade to SJC

TE SubCom, a TE Connectivity Ltd. company, announced that it has signed a contract to perform its third network upgrade to the South-East Asia Japan Cable (SJC) System. Utilizing TE SubCom's latest 100 Gb/s coherent transmission technology (C100U+), this third upgrade increases the capacity by 6.3 Tb/s.

The SJC System links Brunei, mainland China, Hong Kong, Japan, Singapore and the Philippines. The upgrade of the 8,986 km system increases capacity to meet the continued rising demand for businesses and communications in the Asia-Pacific region and will be completed by the end of June 2016.

The SJC consortium is composed of Brunei International Gateway Sendirian Berhad (BIG), China Mobile International Ltd. (CMI), China Telecommunications Corporation (China Telecom), China Telecom Global Limited (CTG), Donghwa Telecom Co. Ltd (DHT) (a subsidiary of Chunghwa Telecom, Co., Ltd.), Globe Telecom, Inc., Google, KDDI Corporation, Singapore Telecommunications Limited (Singtel), PT Telekomunikasi Indonesia International (Telin a subsidiary of PT Telekomunikasi Indonesia, Tbk), and TOT Public Co., Ltd. (TOT).

For more information, visit www.subcom.com.

Cable for first U.S. offshore wind farm

Nearly five million pounds of submarine power cable arrived in Rhode Island in early April after a voyage halfway around the world. The cable will soon help deliver power generated by the first offshore wind farm in the United States to the mainland grid.

The 20-mi-long, 34.5 kV cable is the part of the Deepwater Wind Block Island Wind Farm project being undertaken by Rhode Island's power grid operator, National Grid Rhode Island. The cable, called "sea2shore," will link Block Island with the mainland at Narragansett and from there will be connected to the grid. The Block Island Wind Farm is the first offshore wind farm to be deployed in U.S. waters.

The sea2shore cable was manufactured by LS Cable and was shipped from South Korea by the cargo ship BBC Ruby to the Port of Quonset in North Kingstown, Rhode Island. The cable was transferred from the ship to a specially outfitted barge–a process that took over a week–that will conduct the installation work. The installation of the sea2shore cable, along with the inter-array cabling connecting Deepwater Wind's five turbines and an export cable to Block Island, is scheduled to begin in May. The erection of the turbines will take place in the summer and the wind farm is scheduled to be in-service and generating power in the fourth quarter of 2016.

For more information, visit www.nationalgridus.com.

Intertek to support FAB project

Intertek has been appointed by FAB Link Ltd. to provide marine environmental and planning support for the France-Alderney-Britain (FAB) Project, a proposed electrical interconnector situated underwater between France and Great Britain via the island of Alderney.

FAB Link Ltd is engaged with Réseau de Transport d'Electricité (RTE) in the joint development of a 1,400 MW High Voltage Direct Current (HVDC) electricity interconnector project that will connect the French and British electricity grids. The project will consist of two pairs of electrical cables, a converter station at each end, and connections into the high voltage grids at each end. The interconnector will travel nearly 220 km between the electrical substations at Menuel, on the Cotentin peninsula in France, and near Exeter, Devon, England and is scheduled to commence construction in 2018.

As marine specialists with extensive interconnector project experience in the UK and internationally, Intertek will be responsible for coordinating pre-application consultation, consent applications and consent compliance activities for FAB Link's offshore infrastructure between UK landfall and southern extent of Alderney waters. This will include delivery of a marine license application to the Marine Management Organisation (MMO) in England and a Food and Environment Protection Act (FEPA) license application to the States of Guernsey for protection of the seabed required during the cable installation process.

This project is being jointly developed by RTE and FAB Link Limited. FAB Link Ltd is a joint venture company of Transmission Investment LLP and Alderney Renewable Energy Ltd. RTE is the French transmission system operator of the electricity grid.

The project will allow a maximum transmission of 1,400 MW to help meet the need for increased capacity of energy trade between the two countries and thus contribute to the energy transition in Europe. The project is also designed to provide a route to market for marine renewable energy planned to be constructed in the seas around Alderney.

For more information, visit www.intertek.com.

EIB backing Caithness-Moray cable

The European Investment Bank has agreed to provide GBP 500 million to support a major reinforcement of the electricity transmission network in northern Scotland to improve connections between wind, wave and tidal renewable energy schemes and the national power network. The new power link will help secure the supply of electricity in the Highlands and beyond for generations to come. Once operational, the new transmission link will supply equivalent electricity to meet the needs of around 2 million Scottish residents.

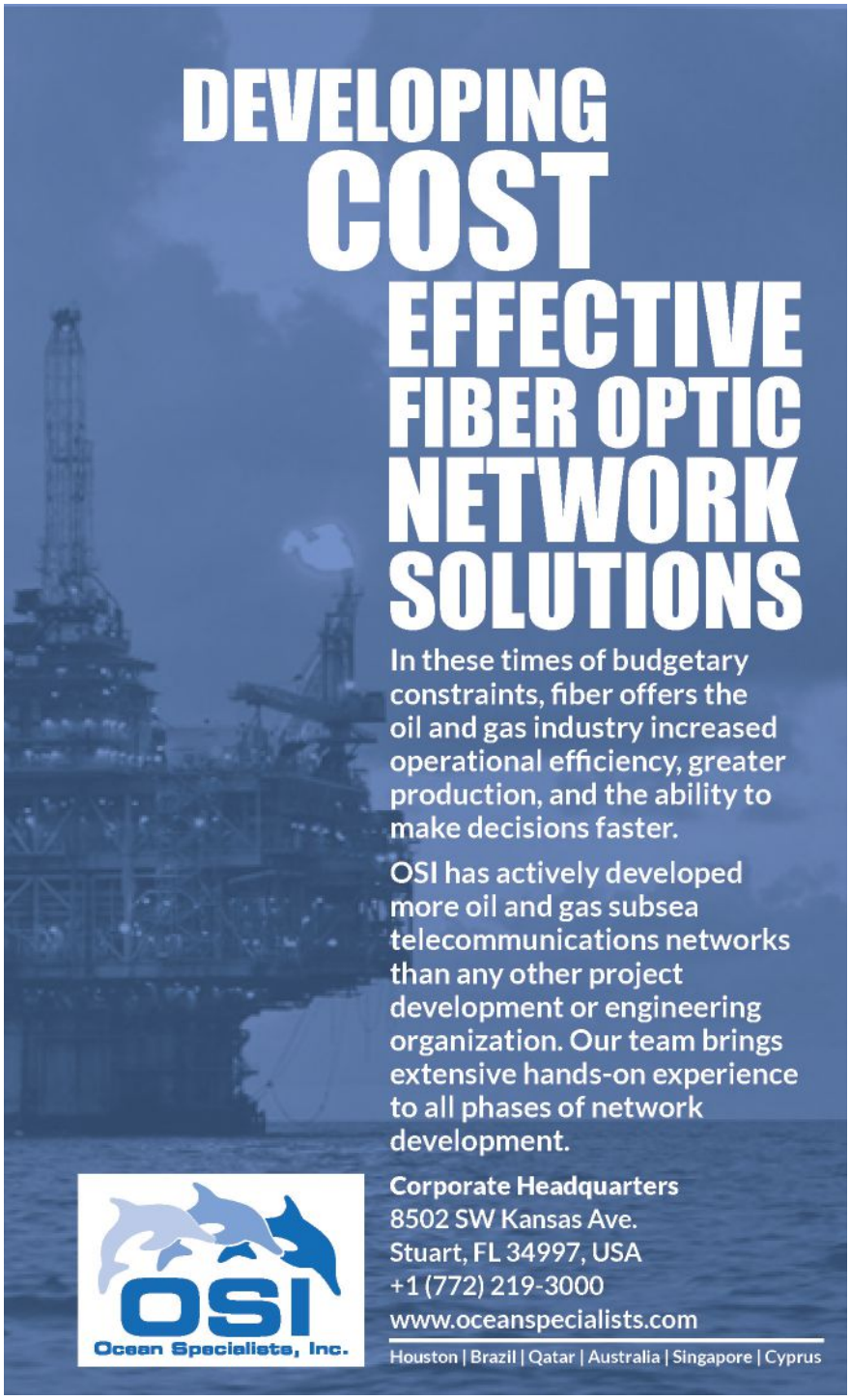
The new investment represents the largest investment in the electricity network in northern Scotland for 60 years and includes a new 1,200 MW subsea cable between Spittal in Caithness and Blackhillock in Moray. The laying of the subsea cable and associated onshore infrastructure works are expected to support 600 jobs during the construction phase and boost SSE plc's in-house apprentice, trainee engineer and graduate programs.

The GBP 500 million long-term European Investment Bank loan will support nearly GBP 1.2 billion of overall investment in the electricity transmission network in northern Scotland by Scottish Hydro Electric Transmission plc, a wholly-owned subsidiary of SSE plc. The first part of the loan totaling GBP 300 million was signed and the remainder is expected to be signed next year as the project progresses.

For more information, visit www.eib.org.

Construction commences on SACS by NEC

Angola Cables S.A. and NEC Corporation announced that the contract to build the South Atlantic Cable System (SACS), the first subsea fiber optic cable system ever to connect Africa and South America in the southern hemisphere, has come into force. SACS is scheduled to be ready for service by the middle of 2018. The project cost is expected to



reach $160 million and will be partially co-funded by the Japan Bank for International Cooperation (JBIC) and Sumitomo Mitsui Banking Corporation (SMBC) with the support of Nippon Export and Investment Insurance (NEXI) through the Banco de Desenvolvimento de Angola (BDA).

SACS will connect Luanda, Angola and Fortaleza, Brazil, directly linking the African continent to Latin America for the first time, spanning more than 6,200 km across the South Atlantic, enabling high speed and large capacity international data transmissions. From Fortaleza, SACS can be connected to another cable system that stretches to Miami, Florida, enabling Angola and Africa to connect directly with the U.S.

SACS will feature the latest optical technologies to provide the most advanced subsea telecommunications system, coupled with a control plane based on innovative Software-Defined Networking (SDN) technology to serve bandwidth-intensive applications. SACS will have an initial design capacity of 40 Tbps.

For more information, visit www.nec.com.

Hawaiki contract comes into force

Hawaiki Submarine Cable LP and TE SubCom, a TE Connectivity Ltd. company, announced that the contract for the Hawaiki submarine cable system has come into force and the construction phase has commenced.

The Hawaiki submarine cable system is a new trans-Pacific cable that will link Australia and New Zealand to mainland United States, as well as Hawaii, with options to expand to several South Pacific islands. Permitting and initial route planning began in June 2015 and the system will be completed by mid-2018. The 14,000 km cable system will deliver more than 30 Tbps of capacity via TE SubCom's C100U+ Submarine Line Terminating Equipment (SLTE) and will allow for optional connectivity to islands along the route utilizing TE SubCom's industry leading optical add/drop multiplexing (OADM) nodes.

Sir Eion Edgar and Remi Galasso, the co-developers of the project, have entered into a long-term partnership and joined forces with entrepreneur Malcolm Dick to fund and operate the multi-million dollar cable system. Hawaiki will be a privately owned and carrier-neutral cable for the Pacific region.

Thanks to its cutting edge architecture, Hawaiki will be the fastest link between Sydney and the U.S. West coast and provide Australia, the largest capacity market in the South Pacific region, with a powerful solution. It will also provide New Zealand with direct connectivity to Australia and the U.S. and an alternative route between Hawaii and Oregon. This route also allows for a diverse and secure route from existing systems.

For more information, visit www.hawaikicable.co.nz.

TWA contracts Huawei Marine for 100G upgrade

Huawei Marine Networks Co., Ltd. announced that Transworld Associates (TWA), a Pakistani Tier 1 Internet and international connectivity provider, has contracted with them to upgrade its submarine cable system, TW1.

Commissioned in 2006, the 1,300 km TW1 submarine cable system connects Pakistan, United Arab Emirates

and Oman. The 100G upgrade will combine submarine and terrestrial systems into a unified network by utilizing Huawei's advanced WDM/OTN product OSN 8800/9800. This will greatly enhance the operational and management capabilities of the TW1 system, while substantially lower operating expenses. Huawei's OSN 8800/9800 platform and 100G transmission technology will increase the original system design capacity by six times.

For more information, visit www.huaweimarine.com.

Philippe Piron appointed president of ASN

Nokia has appointed Philippe Piron to lead its Alcatel-Lucent Submarine Networks (ASN) business, a global leader in designing and building optical communications across the world's oceans.

Piron will report directly to Marc Rouanne, chief innovation and operating officer, and replaces Philippe Dumont, who has decided to pursue endeavors outside of the company.

ASN, now part of Nokia and a provider of turnkey submarine network solutions, has the largest installed base of undersea cable systems in the industry. Oceans cover more than 70% of the earth's surface, and there is growing demand for telecommunications solutions that can offer content-rich services across vast distances.

Piron joins Nokia from GEA Batignolles Technologies Thermiques, restoring profitable growth and developing new markets. He started his career in 1994 at Total Chimie after studying both engineering and business. In 1996, he moved to Matra from Lagardère Group for several years and then to strategy consulting with A.T. Kearney and Roland Berger, where he specialized in the aerospace and telecom sectors. He then joined Roxel, where he restructured major defense projects, bringing the company back to profitability.

For more information, visit www.nokia.com.

Huawei Marine announces the launch of new ADIMS

Huawei Marine announced the launch of their new Automatic Digital Injection Moulding System (ADIMS).

Huawei Marine's broad commitment to innovation builds further on the successes of the second-generation titanium repeater technology, as ADIMS brings creative thinking and new technology into the wet plant and cable integration domain. ADIMS' customized design comprises a modular, compact, fully integrated and portable moulding system designed to be fully flexible across Huawei Marine's product portfolio and beyond.

The adoption of a pioneering modular heat/cool bolster with interchangeable mould cavity inserts and independently adjustable extruder positioning allows the ADIMS system to be fully configurable for any cable or wet plant moulding activity.

The adaptability and flexibility of the tool is further enhanced by the availability of multiple channels of heat control, allowing the heat/cool profile of the tool to be accurately defined to ensure repeatability of any moulding application.

Using the ADIMS ingenious independent twin extruder technology it is also possible to conduct re-instatement mouldings using different injectate material simultaneously at either end of the moulding cavity should the need arise. This unique design has been possibly with Huawei Marine's partnership with twin screw extruding specialists, Xtrutech Ltd of the United Kingdom.

"The launch of new ADIMS moulding technology is testament to our dedication and focus on bringing industry-leading innovation to the submarine cable market," said Mike Constable, chief executive, Huawei Marine. "Our desire for continuous improvement in quality, through advances in technology, products and services is unrivalled as is our steadfast commitment to pass on cost and time efficiencies to our rapidly expanding customer base."

For more information, visit www.huaweimarine.com.

Singtel, SubPartners and Telstra team up on APX-West

Singtel, SubPartners, and Telstra jointly announced that they have entered into a Memorandum of Understanding (MOU) to build a new international submarine cable connecting Perth and Singapore, APX-West .

The new APX-West submarine cable is expected to begin construction by the end of July 2016 and is scheduled to be completed in 2018. Once completed, the new submarine cable will span more than 4,500 km, carrying traffic between Australia and Singapore.

The new cable will incorporate two fiber pairs providing two-way data transmission and each pair will have a minimum design capacity of 10 Tbps. The cable will terminate in facilities operated by the consortium members in Singapore and Australia significantly reducing costs and permitting times.

For more information, visit www.singtel.com.

ASN, Cinia demonstrate record capacity on C-Lion1

Cinia Group and Alcatel-Lucent Submarine Networks (ASN), now part of Nokia, have successfully completed tests on the C-Lion1 submarine cable system, demonstrating a record-breaking capacity of 18 Tbps of data per fiber pair.

Showing an ultimate capacity of 144 Tbit/s (18 Tbps x 8 fiber pairs) demonstrates that C-Lion1 can effectively handle increased connectivity and data center requirements driven by cloud computing, big data and digitalization. Connecting Germany and Finland, C-Lion1 connects data centers in Northern and Central Europe and offers a low-latency route between Europe and Asia.

Cinia's C-Lion1 submarine cable system has implemented the latest generation of ASN high-performance wet plant based on extended repeater bandwidth and new generation of coherent submarine fiber (CSF-2). ASN's brand new 300G 8QAM technology from its 1620 SOFTNODE enables smart spectrum engineering. Additionally, the use of gridless, coherent detection and advanced error correction coding are used in combination with non-linear compensation to counteract the signal distortions and noise that impact high speed, long-distance transmission performance.

For more information, visit www.alcatel-lucent.com.

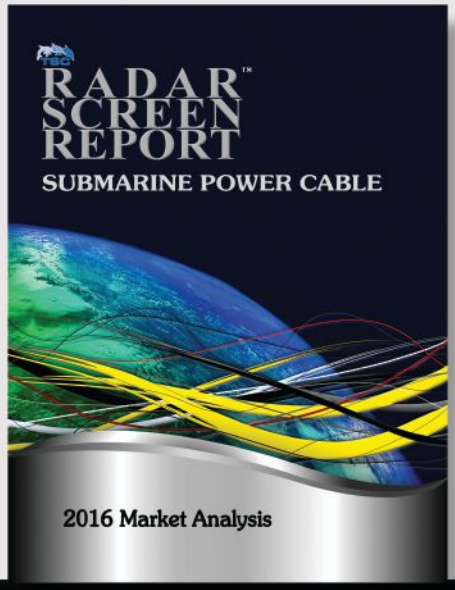
Submarine Cable World™

Daily Newsfeed • Industry Analysis • Consulting Services

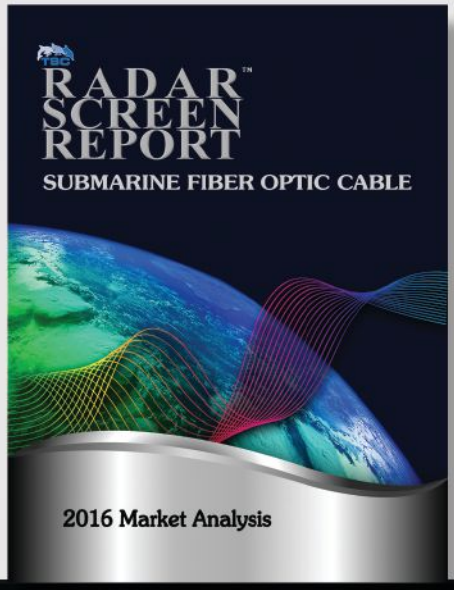
The highly specialized 2016 Radar Screen Report is available this year in three volumes

- Review of 2015 Contracts
- Forecast Demand 2016-2021
- Major Factors Impacting the Market
- List of 2015 Projects Under Contract
- List of Future Planned Projects

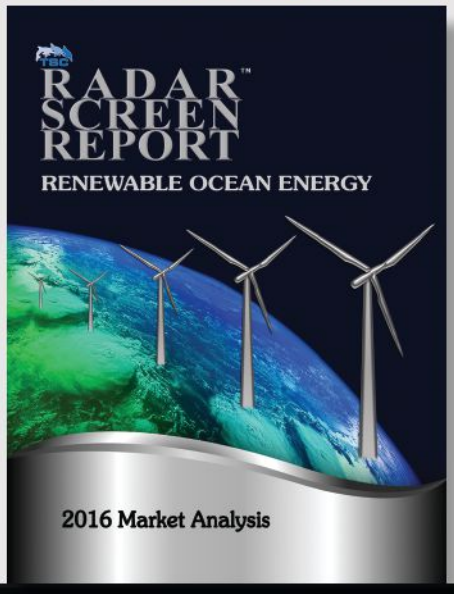
SUBMARINE POWER CABLE



SUBMARINE FIBER OPTIC CABLE



RENEWABLE OCEAN ENERGY



Order Today!

The 2016 Radar Screen Report™ is available in January and includes a mid-year update.
Place your order at www.subcableworld.com

Subscribe to the Submarine Cable World Daily NewsFeed™

Delivered electronically every weekday, the Submarine Cable NewsFeed™ includes the latest developments in:

- Submarine Fiber Optic Communications
- Power Cables
- Renewable Ocean Energy
- Marine Cable Installation & Maintenance Services
- Regulation of Cables
- International Telecom Carrier Activities
- International Internet Markets

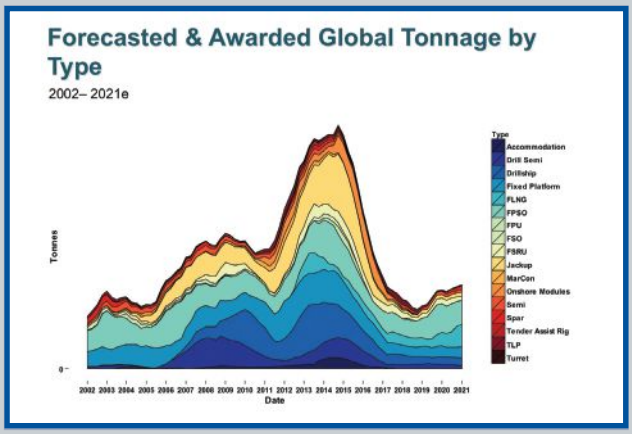
Subscribe at www.subcableworld.com

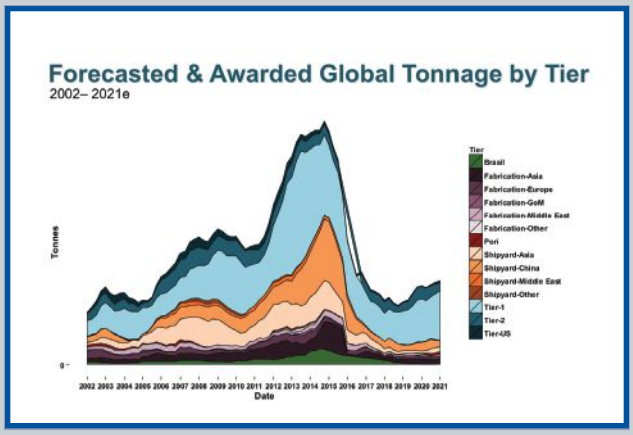
TSC

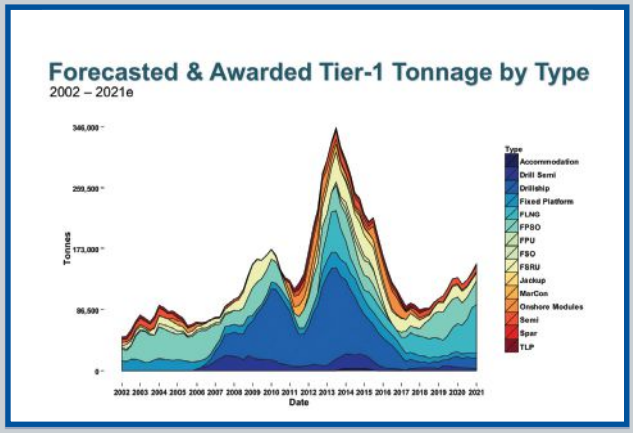
Published and distributed by TSC • www.subcableworld.com • 772-617-6787

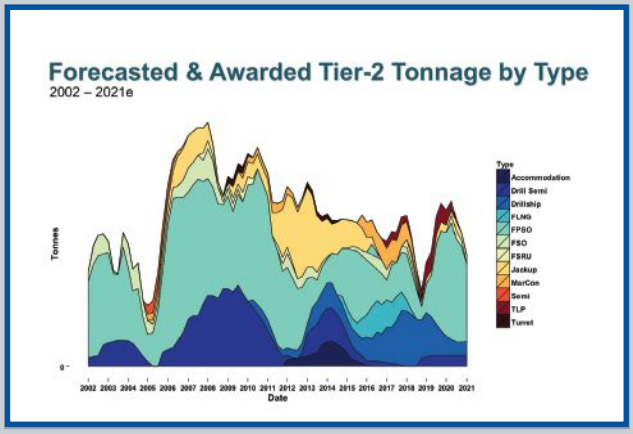
OFFSHORE STATS & DATA

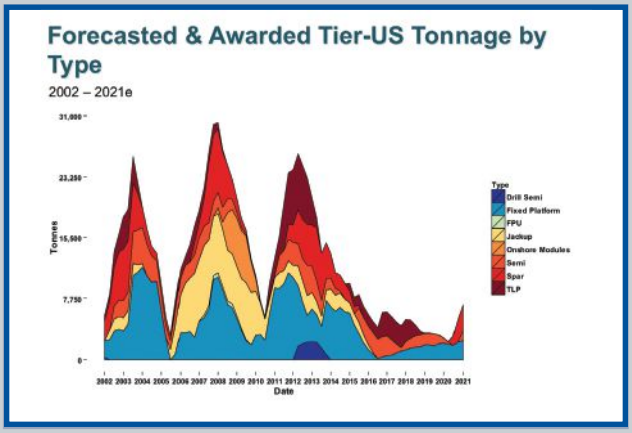
Quest Offshore Activity Report

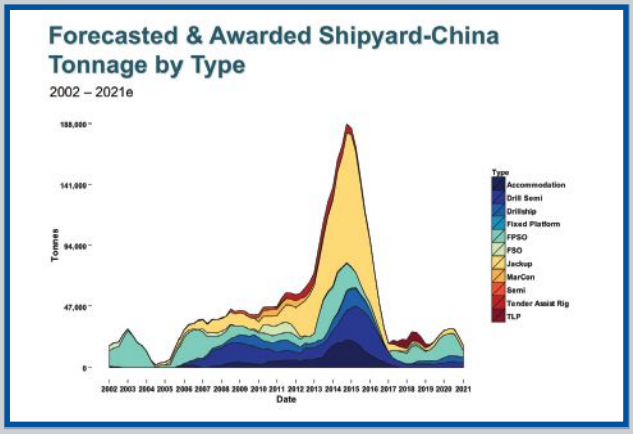












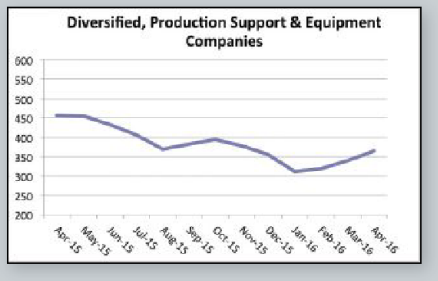
FOR MORE DETAILED INFORMATION
(281) 491-5900 - USA • 44 (0) 1737 371704 - London • e mail: corp@questoffshore.com
www.QuestOffshore.com • www.SubseaZone.com • www.FloatingProductionZone.com

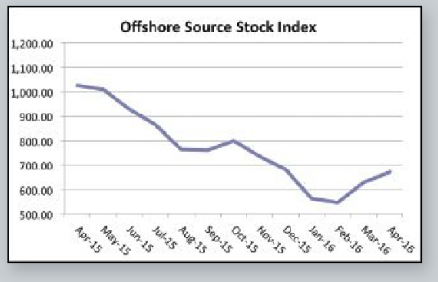
Monthly Stock Figures & Composite Index

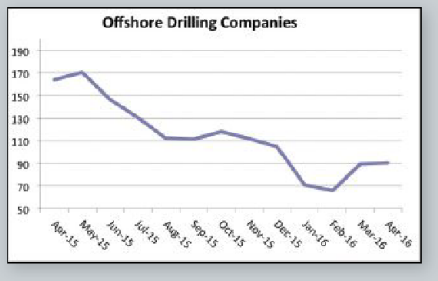
Industry Company Name	Symbol	Close(*Mid*) *April*	Close(*Mid*) *March*	Change	Change %	High 52 week	Low
Diversified, Production Support and Equipment Companies							
Baker Hughes, Inc.	BHI	43.32	43.34	-0.02	0.0%	70.45	37.58
Cameron Intl. Corp.	CAM	66.01	65.57	0.44	0.7%	71.22	40.50
Drill-Quip, Inc.	DRQ	58.86	50.81	8.05	15.8%	81.78	48.88
Halliburton Company	HAL	38.35	34.64	3.71	10.7%	50.20	27.64
Tenaris SA	TS	26.07	23.44	2.63	11.2%	32.77	18.53
Newpark Resources, Inc.	NR	4.64	4.06	0.58	14.3%	10.85	3.35
Schlumberger Ltd.	SLB	76.67	71.94	4.73	6.6%	95.13	59.60
Superior Energy Services, Inc.	SPN	14.24	12.02	2.22	18.5%	26.95	8.25
Weatherford International, Inc.	WFT	7.73	6.78	0.95	14.0%	14.91	4.95
Deep Down, Inc.	DPDW	0.81	0.72	0.09	12.5%	0.90	0.37
FMC Technologies	FTI	27.66	26.27	1.39	5.3%	44.43	22.30
Total Diversified, Production, Support and Equipment.....		**364.36**	**339.59**	**24.77**	**7.3%**	**499.59**	**271.95**
Geophysical / Reservoir Management							
Dawson Geophysical Company	DWSN	4.83	4.07	0.76	18.7%	6.11	2.90
Mitcham Industries, Inc.	MIND	3.27	2.99	0.28	9.4%	5.46	2.24
Compagnie Gnrale de Gophysique-Veritas	CGV	0.90	0.83	0.07	8.4%	7.98	0.59
Total Geophysical / Reservoir Management..…….....		**9.00**	**7.89**	**1.11**	14.1%	**19.55**	**5.73**
Offshore Drilling Companies							
Atwood Oceanics, Inc.	ATW	9.08	9.07	0.01	0.1%	35.66	4.82
Diamond Offshore Drilling, Inc.	DO	22.36	21.54	0.82	3.8%	35.95	14.18
ENSCO International, Inc.	ESV	10.61	10.61	0.00	0.0%	28.40	7.25
Nabors Industries, Inc.	NBR	9.78	8.63	1.15	13.3%	16.99	4.93
Noble Drilling Corp.	NE	10.40	10.72	-0.32	-3.0%	18.18	6.66
Parker Drilling Company	PKD	2.74	1.95	0.79	40.5%	4.44	0.98
Rowan Companies, Inc.	RDC	15.58	16.17	-0.59	-3.6%	24.13	10.67
Transocean Offshore, Inc.	RIG	9.77	10.79	-1.02	-9.5%	21.90	7.67
Total Offshore Drilling..…….....		**90.32**	**89.48**	**0.84**	**0.9%**	**185.65**	**57.16**
Offshore Contractors, Services, and Support Companies							
Helix Energy Solutions Group, Inc.	HLX	6.48	4.58	1.90	41.5%	17.73	2.60
Gulf Island Fabrication	GIFI	7.6	8.15	-0.55	-6.7%	16.00	7.40
McDermott International, Inc.	MDR	4.22	3.79	0.43	11.3%	6.00	2.20
Oceaneering International	OII	32.79	30.86	1.93	6.3%	59.58	25.33
Subsea 7 SA	SUBCY.PK	8.48	7.07	1.41	19.9%	12.15	4.86
Technip ADS	TKPPY.PK	14.06	13.61	0.45	3.3%	18.15	9.69
Tetra Technologies, Inc.	TTI	7.10	6.25	0.85	13.6%	9.44	4.62
Total Offshore Contractors, Service, and Support..…….....		**80.73**	**74.31**	**6.42**	**8.6%**	**139.05**	**56.70**
Offshore Transportation and Boat Companies							
Seacor Holdings, Inc.	CKH	54.91	50.02	4.89	9.8%	76.97	41.24
Gulfmark Offshore, Inc.	GLF	5.33	6.22	-0.89	-14.3%	16.43	2.50
Bristow Group	BRS	19.94	17.25	2.69	15.6%	64.64	11.02
PHI, Inc.	PHII	19.25	18.01	1.24	6.9%	35.74	15.01
Tidewater, Inc.	TDW	7.48	7.00	0.48	6.9%	31.80	4.24
Trico Marine Services, Inc.	TRMAQ.PK	10.92	10.32	0.60	5.8%	13.86	9.06
Hornbeck Offshore	HOS	9.80	9.25	0.55	5.9%	25.01	5.58
Total Offshore Transportation and Boat ……..…….....		**127.63**	**118.07**	**9.56**	**8.1%**	**264.45**	**88.65**

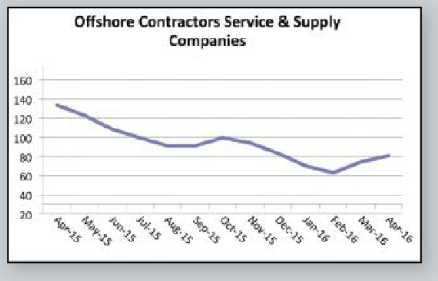
Monthly Stock Figures & Composite Index

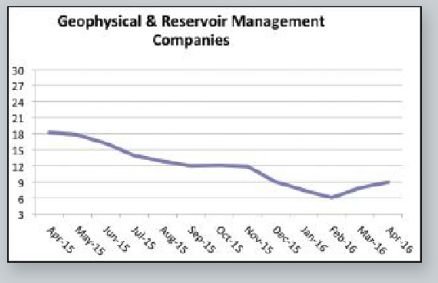
Industry	Close(*Mid*) *April*	Close(*Mid*) *March*	Change %	Change	High 52 week	Low
Total Diversified, Production, Support and Equipment	364.36	339.59	24.77	7.3%	499.59	271.95
Total Geophysical / Reservoir Management	9.00	7.89	1.11	14.1%	19.55	5.73
Total Offshore Drilling	90.32	89.48	0.84	0.9%	185.65	57.16
Total Offshore Contractors, Service and Support	80.73	74.31	6.42	8.6%	139.05	56.70
Total Offshore Transportation and Boat	127.63	118.07	9.56	8.1%	264.45	88.65
Total Offshore Source Index	672.04	629.34	42.70	6.8%	1,108.29	480.19

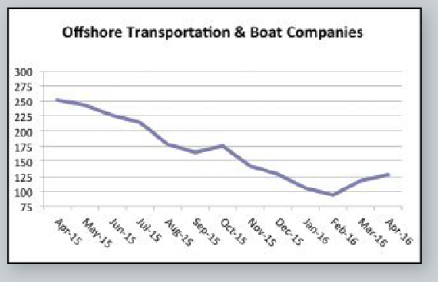










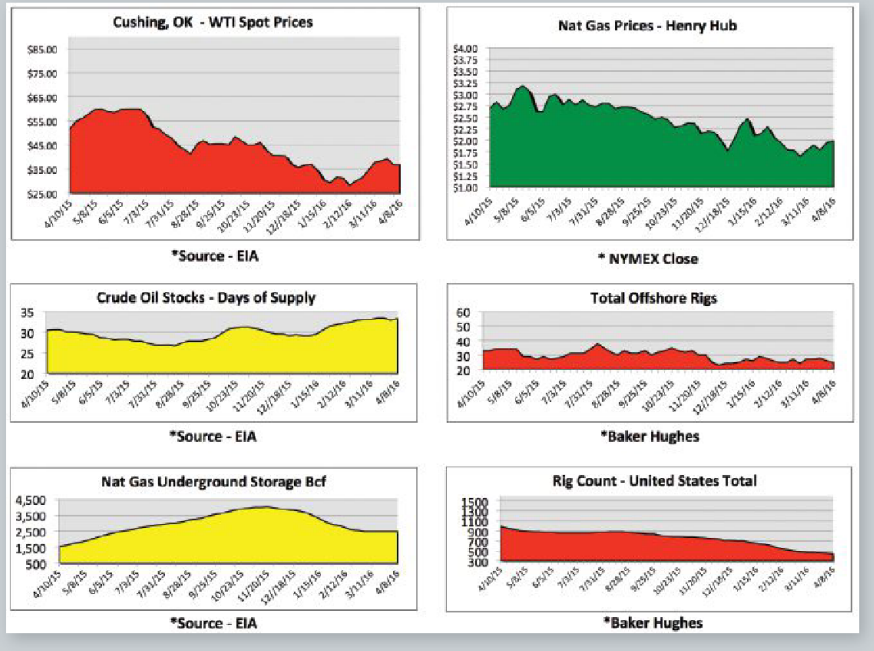


DISCLAIMER

The information on this page is provided for information and comparison purposes only and should not be used to make financial and business decisions and is accurate to the best of our knowledge for the period indicated.

Oil & Gas Industry Trends

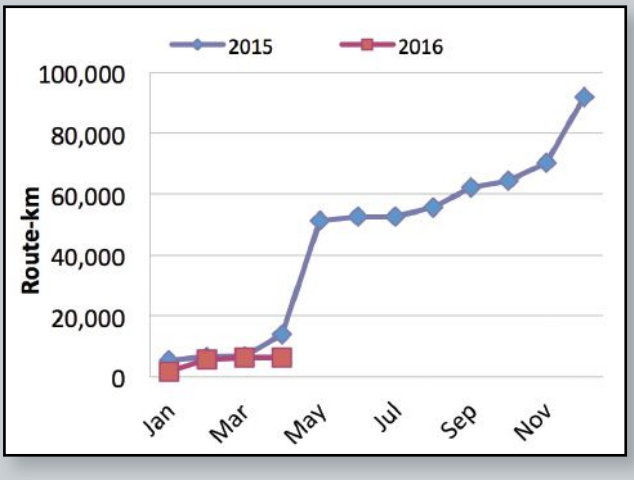
Monitoring the Pulse of the U.S. Offshore Oil & Gas Industry



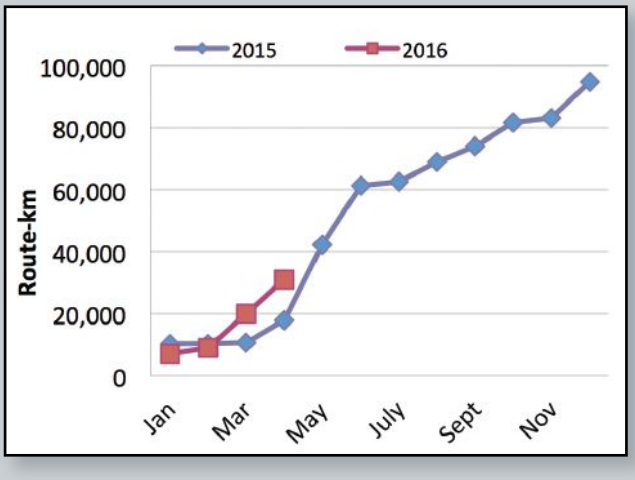
Positive trend, at least 3 weeks
Changing trend, less than 3 weeks
Negative trend, at least 3 weeks

Subsea Telecom & Power Cable Data

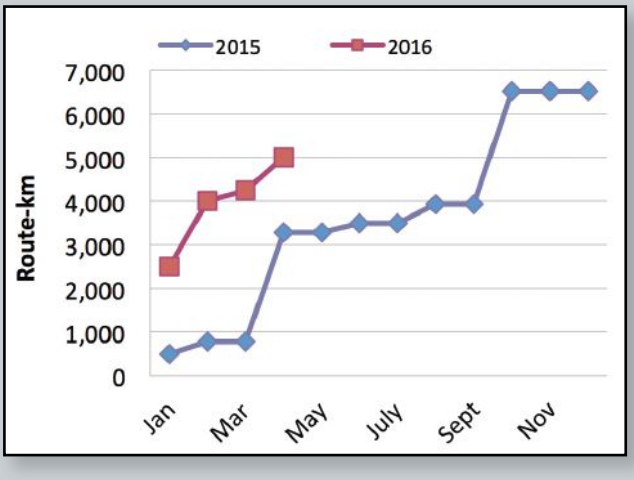
FO Cable Awards by Month



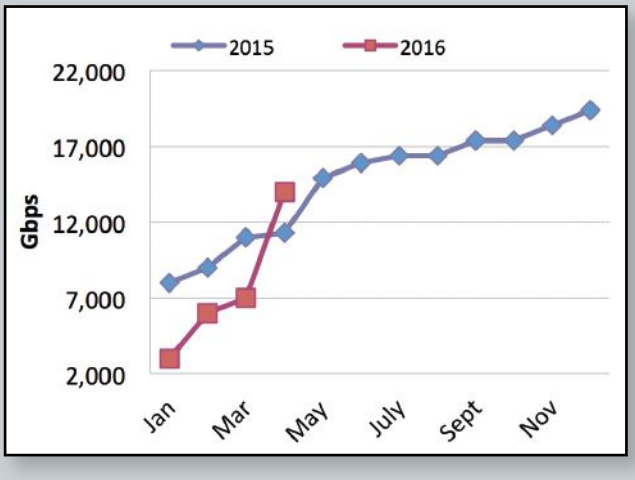
FO Cable Announcements



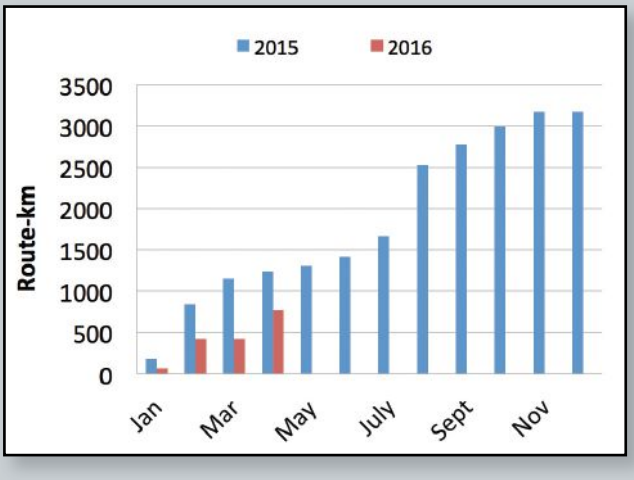
Submarine FO Cables Entering Service in Route-km



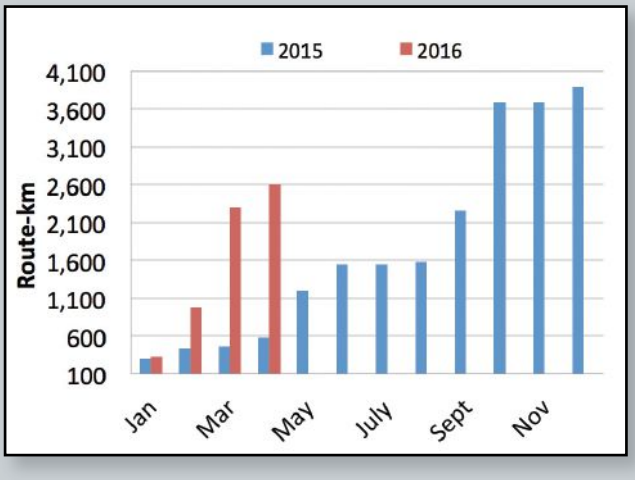
Upgrades of Existing Cable Systems in Gbps



Submarine Power Cable Awards in Route-km



Submarine Power Cable Announcements in Route-km



Gulf of Mexico Data

Current Deepwater Activity

Operator	Area	Block	OCS Lease	Rig Name	Prospect Name	Water Depth (ft)
SHELL OFFSHORE INC.	WR	508	G17001	T.O. DEEPWATER THALASSA	STONES	9,591
SHELL OFFSHORE INC.	AC	815	G19409	NOBLE DON TAYLOR	Silvertip	9,340
STONE ENERGY CORPORATION	AC	943	G31205	ENSCO 8503	Hammerhead	8,035
SHELL OFFSHORE INC.	AC	857	G24593	H&P 205	Great White	7,822
ANADARKO PETROLEUM CORPORATION	MC	876	G21190	ROWAN RESOLUTE	Callisto	7,788
MARUBENI OIL & GAS USA INC	MC	348	G19939	ENSCO 8505	APPOMATTOX	7,202
EXXON MOBIL CORPORATION	WR	584	G20351	MAERSK VIKING	Julia	7,138
ANADARKO PETROLEUM CORPORATION	KC	875	G21447	NOBLE BOB DOUGLAS	LUCIUS	6,820
BP EXPLORATION & PRODUCTION INC	GC	743	G15607	SEADRILL WEST AURIGA	ATLANTIS(GC)	6,820
UNION OIL COMPANY OF CALIFORNIA	WR	634	G21245	T.O. DISCOVERER CLEAR LEADER	Saint Malo	6,804
SHELL OFFSHORE INC.	MC	475	G35335	NOBLE GLOBETROTTER		6,590
BP EXPLORATION & PRODUCTION INC	MC	822	G14658	T.O. DEVELOPMENT DRILLER III	Thunder Horse South	6,263
LLOG EXPLORATION OFFSHORE LLC	MC	560	G34896	SEADRILL SEVAN LOUISIANA		6,237
BP EXPLORATION & PRODUCTION INC	MC	778	G14658	THUNDER HORSE PDQ	Thunder Horse NORT	6,036
ANADARKO PETROLEUM CORPORATION	WR	51	G31938	DIAMOND OCEAN BLACKHAWK	Shenandoah	5,847
BP EXPLORATION & PRODUCTION INC	MC	776	G09866	SEADRILL WEST VELA	Thunder Horse North	5,742
BP EXPLORATION & PRODUCTION INC	MC	778	G09867	HELIX Q5000	Thunder Horse NORT	5,631
ENI US OPERATING CO INC	MC	773	G16647	* COIL TUBING UNIT (N.O. DIST)	Devil's tower	5,610
ENI US OPERATING CO INC	MC	773	G16647	NABORS POOL	140 Devil's tower	5,610
COBALT INTERNATIONAL ENERGY LP	KC	129	G30924	ROWAN RELIANCE		5,519
FREEPORT MCMORAN OIL & GAS LLC	MC	127	G19925	NOBLE TOM MADDEN	KOQV	5,471
CONOCOPHILLIPS COMPANY	AC	475	G35137	MAERSK VALIANT		5,142
BP EXPLORATION & PRODUCTION INC	GC	825	G28100	ENSCO DS-3	Mad Dog Phase 2	4,979
CHEVRON USA INC	KC	96	G33531	PACIFIC SANTA ANA	Ludlow	4,838
CHEVRON USA INC	GC	806	G31751	PACIFIC SHARAV		4,720
BP EXPLORATION & PRODUCTION INC	GC	782	G15610	MAD DOG SPAR RIG	Mad Dog Phase 2	4,428
HESS CORPORATION	MC	725	G22898	STENA FORTH	Tubular Bells	4,334
BHP BILLITON PETROLEUM (GOM) INC	GC	654	G20084	T.O. DEEPWATER INVICTUS	Shenzi development p	4,300
CHEVRON USA INC	GC	640	G20082	T.O. DISCOVERER INSPIRATION	Tahiti 2	4,292
CHEVRON USA INC	GC	640	G20082	T.O. DEEPWATER ASGARD	Tahiti 2	4,251
ANADARKO PETROLEUM CORPORATION	GC	561	G16753	DIAMOND OCEAN BLACKHORNET	K2 (Eni)	4,144
ANADARKO PETROLEUM CORPORATION	GC	561	G16753	* WIRELINE UNIT (HOUMA DIST)	K2 (Eni)	4,144
LLOG EXPLORATION OFFSHORE LLC	MC	895	G33764	SEADRILL WEST NEPTUNE		3,682
HESS CORPORATION	GC	512	G26315	DIAMOND OCEAN BLACKLION	Stampede	3,577
SHELL OFFSHORE INC.	MC	807	G07963	OLYMPUS N88	MARS	3,039
SHELL OFFSHORE INC.	MC	806	G07962	ATWOOD CONDOR	Deimos	3,003
SHELL OFFSHORE INC.	MC	807	G07963	H&P 201	MARS	2,945
NOBLE ENERGY INC	GC	39	G34536	ATWOOD ADVANTAGE	GC039	1,921
CHEVRON USA INC	VK	786	G10944	NABORS 87	Petronius Compliant	1,754
HESS CORPORATION	GB	215	G09216	NOBLE PAUL ROMANO	Conger	1,453
HESS CORPORATION	GB	215	G09216	* COIL TUBING UNIT (LAF DIST)	Conger	1,450
FIELDWOOD ENERGY OFFSHORE LLC	GC	65	G05900	* COIL TUBING UNIT (HOUMA DIST	Bullwinkle	1,353
STONE ENERGY CORPORATION	VK	989	G09771	H&P 100	Pompano i	1,290
WALTER OIL & GAS CORPORATION	EW	834	G27982	H&P 203	Hummingbird	1,183
ENVEN ENERGY VENTURES LLC	MC	194	G02638	NABORS S.D. XIV	Cognac	1,024
ENVEN ENERGY VENTURES LLC	MC	194	G02643	* LIFT BOAT (NEW ORLEANS DIST)	Cognac	1,024
FIELDWOOD SD OFFSHORE LLC	EB	165	G06280	* WIRELINE UNIT (L.J.DIST)	East breaks 164	863
FIELDWOOD SD OFFSHORE LLC	EB	165	G07397	* NONE RIG PA OPERATION (LJ)	East breaks 164	863
EXXON MOBIL CORPORATION	SM	6636	00188	* WIRELINE (GENERIC)		842
WHISTLER ENERGY II LLC	GC	18	G05809	NABORS MODS 201	Boxer	760
FIELDWOOD SD OFFSHORE LLC	EB	110	G02650	* NONE RIG PA OPERATION (LJ)	Tequila	660

Deepwater prospects with drilling and workover activity: 50

Current Deepwater Activity as of Tuesday, April 26, 2016

Activity by Water Depth

Water Depth (m)	Active Leases	Approved Applications	Active
0 to 200	1,199	36,303	2,223
201 to 400	82	1,134	21
401 to 800	172	903	10
801 to 1,000	245	576	9
1,000 & above	2,525	2,139	30

Rig Activity Report 22 April 2016

Location	Week of 04/22	+/-	Week Ago	+/-	Year Ago
Land	401	-8	409	-494	895
Inland Waters	4	1	3	1	3
Offshore	26	-2	28	-8	34
U.S. Total	431	-9	440	-501	932
Gulf of Mexico	25	-2	27	-8	33
Canada	40	0	40	-39	79
N. America	471	-9	480	-540	1011

Activity by Water Depth Information current as of Tuesday, April 25, 2016.
Maximum number of rigs operating in the deepwater Gulf of Mexico. The rig unit includes platform rigs operating on deepwater production facilities in addition to the MODU's. The numbers do not distinguish between rigs drilling and those in service for completion and workover operations.

Information provided courtesy of the U.S. Bureau of Ocean Energy Management and Baker Hughes

iXBlue launches its brand-new inertial navigation system ROVINS NANO and revolutionizes ROV navigation

iXBlue, a global leader in navigation, positioning and imaging solutions, is launching ROVINS NANO, a state-of-the-art inertial navigation system designed for ROV navigation. Announced at the Oceanology International trade show, the product was eagerly awaited by the offshore industry.

Based on iXBlue's ultimate performance fiber optic gyroscope technology, ROVINS NANO has been designed for ROV pilots performing maintenance and construction operations. It offers the unbeatable stability and accuracy of the inertial position, outputting true north, roll, pitch and rotation rates. Paul Wysocki, iXBlue ROVINS NANO product manager, comments: "ROVINS NANO is able to directly transmit the ROV's position with extreme accuracy thanks to its integrated INS algorithm capable of collecting acoustic data. This is now possible regardless of the depth at which it is located; it is therefore not just an evolution, but rather a revolution for the Middle Water Station Keeping."

Where the Doppler Velocity Log (DVL) has limitations, especially when operating in middle water, ROVINS NANO is now there to guarantee optimal navigation safety. Paul Wysocki points out: "In the future, it will no longer be necessary to use a DVL; even in "sparse array" LBL fields, with the presence of only one or two beacons, the combination between ROVINS NANO and our RAMSES acoustic system enables to reach extremely accurate positioning data." iXBlue thus provides more flexibility to its customers–by avoiding the use of DVL, operators undeniably reduce their operational and associated calibration costs.

Besides its high level of performance, ROVINS NANO adapts itself to its user. The configuration, installation and product's use have been considerably facilitated, while incorporating a system as complex as the INS. The ultimate goal? The pilot forgets the very existence of the product when maneuvering. Moreover, thanks to its compactness, lightness and open architecture with all third-party sensors, ROVINS NANO is extremely easy to integrate. All of this, at a very affordable price–the product offers better return on investment and lower total cost of ownership.

For more information, visit www.ixblue.com.

Kongsberg launches new color PATZ cameras

Kongsberg Maritime has launched two new Color Pan and Tilt Zoom (PATZ) cameras. The OE14-222 (PAL) and OE14-223 (NTSC) underwater CCD color cameras provide completely enclosed pan, tilt and zoom functionality. Kongsberg's new cameras support a wide range of applications, including observational and situational awareness tasks, close proximity inspection, process monitoring, marine science applications and manned submersible deployment.

A development of the well-proven Kongsberg Maritime OE14-122/3 PATZ camera platform, the OE14-222/3 cameras have been upgraded using the latest technology, giving the operator a host of real world advantages, such as removing the 45 second calibration delay during initialization, greatly improved resistance to shock and vibration, greater range of head movement on both axes, integrated LED lighting as standard, greater head stability including slow speed pan and tilt control and a more user friendly experience through the use of a new Graphic User Interface (GUI). The cameras can be used in restricted spaces without fear of fouling or in a multi-role environment when a camera is required to address multiple tasks. Close up inspection capability is obtained by using a 10x zoom for powerful long-range viewing.

OE14-222/3 cameras have a compact and robust head assembly that neatly integrates a 10x optical zoom lens and ¼ in. CCD sensor, giving excellent light sensitivity and image definition. When used with the GUI provided, the operator has the ability to control the camera's many functions including pan, tilt, focus, zoom and iris aperture settings, control of the integrated LED lighting and activating the on-screen display, which allows the overlay of time, date and positional data onto the video image. The GUI also enables network functions such as the ability to control a series of cameras in a multi drop arrangement and ID assignation.

OE14-222/3 cameras are compatible with the unique Kongsberg Maritime IR remote control, which allows long line drive to be set, LED lighting to be switched on or off and camera control options selected without risking damage to the integrity of housing seals. A humidity sensor with a visual alarm to warn of excessive moisture levels is installed. A 2,000 msw model is available for the smaller payload ROV.

Importantly for existing customers, the OE14-222/3 cameras share the same form factor and mounting arrangement, enabling them to be used as drop in replacements for the outgoing OE14-122/3 cameras.

For more information, visit www.km.kongsberg.com.

OceanServer orders 10 more Teledyne RD Instruments DVLs for Iver AUV

Teledyne RD Instruments (TRDI) has received an order for 10 custom-designed Explorer Doppler Velocity Logs (DVLs) to provide precision navigation and current profiling capability on board OceanServer Technology's Iver3-580 AUVs. These vehicles are designed for customers and applications, which include the U.S. Navy Fleet Survey Team for littoral data collection to support the Warfighter's needs, the Canadian Government for Advanced Mine-Counter-Measures Research, several universities for various research programs, and commercial survey providers doing coastal engineering projects. This brings the total number of DVLs ordered by OceanServer for integration onto IVER AUVsystems to 66.

The Explorer DVL provides a flexible solution for high-quality navigation aboard small underwater platforms such as IVER AUVs, gliders, disposable vehicles, inspection class ROVs and diver platforms. The DVLs supplied to OceanServer are custom designed to meet the vehicle's unique size, weight and power requirements as well as provide onboard navigation and ocean current profiling functions.

For more information, visit www.rdinstruments.com.

FSI announces a new compact ultra-low frequency sub-bottom profiling system

Falmouth Scientific, Inc. (FSI) continues to grow their sub-bottom product line with the addition of the new HMS-AT650 compact ULF sub-bottom profiling system. It is ideal for applications that require high resolution CHIRP sub-bottom images along with deeper penetration in difficult sediments such as hard-packed sand.

The new Compact ULF System generates CHIRP signals in the 200 Hz to 2 kHz frequency range and is suitable for operation in a variety of array configurations to support many different shallow water sub-bottom profiling applications. It fills the application space between FSI's Bubble Gun™ Family of Portable Seismic Systems and the rest

of FSI's CHIRPceiver™ compatible transducer offerings.

Components of the ULF System include a standard single or dual frequency CHIRPceiver™, a dedicated ULF Matching Driver, the HMS-AT650 transducer, and a specialized hydrophone streamer. The transducer can be either mounted on a rigid support or towed behind a small vessel using an optional vehicle.

Falmouth Scientific offers other sensor-based products such the PLUS Family of current, wave, and tide meters and other acoustics-based underwater instrumentation. Service areas include custom design, development, integration, and production of marine systems and acoustic transducers.

For more information, visit www.falmouth.com.

Hybrid-power ROV system

Deep Trekker Inc., the world's only manufacturer of completely portable ROVs announced the launch of a new hybrid-power ROV. The system provides optional unlimited deployment capabilities. Users now have the option of operation and charging the internal batteries while the system is plugged in. The ROV can also be switched to its on-board batteries for up to 8 hrs of deployment at any time.

With Deep Trekker's internal batteries, ROV pilots around the world have benefited from being able to launch the entire system in the most remote areas from one carrying case with no generator or additional top-side gear. The internal batteries provide 6 to 8 hrs of operation with a 1.5 hr re-charge time, more than enough power for the majority of tasks in underwater work.

Challenging circumstances in environmental monitoring, salvage, and recovery projects often require a Deep Trekker ROV to be in operation for more than 8 continuous hours at a time. For these specific tasks, Deep Trekker now offers a hybrid-power ROV, providing a continuous charge to the ROV's on-board batteries.

This new system will still use a lightweight 5 mm tether similar to that on Deep Trekker's battery-operated ROV designed to send power to the batteries. A simple charging cord, resembling a laptop charger, connects to the tether reel. Thus Deep Trekker ROVs can operate indefinitely while plugged in.

Traditional ROVs are designed to be deployed using top-side power. Although this allows for unlimited mission times, the industry sought out a compact solution for immediate deployment. This gap in the market has been filled by Deep Trekker ROVs–with self-contained batteries, a handheld control system, and one carrying case.

For more information, visit www.deeptrekker.com.

3D at Depth improves survey data value with new features to software suite

3D at Depth, a global technology provider of advanced subsea LiDAR systems and solutions, announced that it has expanded its 3D Software Suite with new upgrades and features designed to enhance the overall value of collected survey data and to help reduce survey application expenditures.

3D at Depth's new software release spans the portfolio of 3D products focused on data collection, quality control and processing of offshore LiDAR data. In addition to the new upgrades, 3D at Depth also announced that the new 7.0 version of 3D Cloud will provide the only multi-return processing capability in the market for subsea LiDAR datasets. This unique capability allows 3D's SL sensor to produce at least 25% more data at longer ranges with multiple laser pulse returns delivered into one point cloud. Through these upgrades, customers can reduce the overall costs associated with offshore surveys in the areas of data acquisition, processing and visualization times while ensuring higher quality and repeatable millimetric data sets. Customers also can better leverage third party modeling tools and quickly view their data topside to reduce processing time and enhance quality.

Along with the software enhancements, 3D at Depth has taken the lead and introduced the ASTM standard E57 format to subsea 3D data collection. The E57 standard is an internationally recognized format launched under the ASTM International umbrella in conjunction with the National Institute of Standards and Technology (NIST). The standard was developed to address the interoperability issues for 3D imaging systems.

As 3D imaging technology continues to gain market acceptance in subsea survey programs, standards play a critical role in future industry growth by providing a basis for data interoperability. E57 has been widely used in terrestrial 3D

imaging to help ensure better quality control and enhance data processing outputs. Most, if not all, point cloud processing and modeling applications support the E57 format which allows 3D at Depth clients to take advantage of the newest technologies and best practices. The new release of 3D at Depth's 3D Cloud Software will now offer a full range of E57 support as a data output type so customers will have more flexibility from their data processing applications. In addition, 3D at Depth's E57 implementation has been proven with leading point cloud process software, including Leica's Cyclone.

For more information, visit www.3datdepth.com.

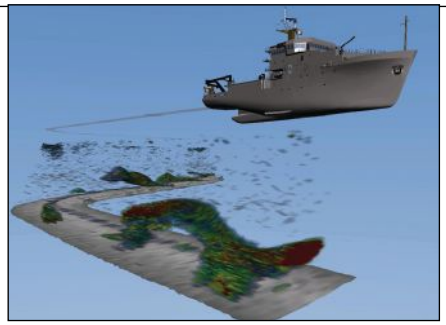
Live 3D data streaming

Kongsberg Maritime has unveiled an advanced new technology platform at the ICES Working Group on Fisheries Acoustics, Science and Technology (WGFAST) that enables live streaming of 3D data generated by scientific multibeam systems. The unique, new Simrad TD50 data visualization software is currently operational with the Simrad ME70 scientific multibeam echo sounder, with plans to enable 3D data streaming from a wider range of Simrad acoustic systems in the future.

The Simrad TD50 software reads the incredibly clean raw data from the ME70 in real time and delivers accurate live visualization of the oceanspace beneath the vessel to the scientific lab on board and to the bridge. Previously the data had to be post-processed before the 3D potential of the system was realized, but with a live feed now available, researchers and vessel crews benefit from a new highly effective decision support tool that can enhance vessel efficiency and the effectiveness of scientific surveys in general.

Accurate 3D visualization gives users a better understanding of the marine ecosystem by enabling precise measurement of schools of fish rather than estimating size and shapes based on models. Additionally, 3D view of bottom topography and the relating bottom habitats further enhances the understanding of the marine ecosystems. When accurate 3D visualization is delivered in real-time, the benefits are significant. The Simrad TD50 system is especially relevant to projects using adaptive sampling, as the live 3D stream of the survey area enables researchers to see specific attributes as the vessel passes over them, allowing action for further inspection to be taken immediately.

The live 3D stream from the Simrad ME70 data can be delivered to multiple locations on board, which allows for



better interaction between scientists and the vessel operators, typically important in demanding operations where the vessel interacts with objects in the water column. Research vessels engaged in active sampling of biology such as trawling can also improve their capabilities, with the Simrad TD50 system effectively providing a long range camera below the surface.

The ME70 is a calibrated system with extremely low noise data, making it possible to map very small targets, such as plankton layers, at the same time as strong targets, such as fish school or bottom. The ME70 has been adopted by several key research organisations worldwide, including France's Ifremer on board 'L'Europe' and 'Thalassa,' and Norway's Institute of Marine Research (IMR) on board the new 'Kronprins Haakon' research vessel. The latter is equipped with an extensive suite of Kongsberg systems for research vessels, including the full range of scientific equipment for marine ecosystem assessment.

To view a video, visit www.youtube.com/watch?v=4PK2b89i5rI.

CARIS Bathy DataBASE 4.2

CARIS is pleased to announce the release of CARIS Bathy DataBASE™ 4.2. As part of the CARIS Ping-to-Chart™ solution, Bathy DataBASE is a powerful system for the management and analysis of bathymetric surfaces and point clouds.

Highlighting the release is the first appearance of the enhanced 3D Subset Editor for area-based editing. This update provides a more powerful and user friendly environment for interacting with large volumes of point data from multibeam, laser scanner and LiDAR sensors.

Subset Editor is now equipped to allow for the simultaneous editing of multiple point clouds. New visualization opportunities have been added, such as custom coloring based on non-elevation data sources and a more flexible use of reference data for context. The interactive experience in the Subset Editor has been improved with a move to shared interface settings, controls, and properties.

Other major enhancements include new tools for working with raster surfaces, which are referenced to vertical and inclined planes through the Engineering Analysis Module (EAM)™. The ability to drape higher resolution imagery (e.g., backscatter) over elevation models in both 2D and 3D has been introduced. There has been a substantial coordinate reference system modification that incorporates the implementation of EPSG Geodetic Parameter dataset. Support for Oracle 12c has been enabled as well as an overall emphasis on server-specific performance, including faster server combine processes.

For more information, visit www.caris.com.

Crystal IS expands Optan product line with higher light output deep UV LEDs

Crystal IS augmented the Optan SMD (surface mount device) product line for instrumentation with the addition of higher light output and wavelength specific bins (SKUs). This newest offering resulted from increased demand for UVC LEDs in fluorescence spectroscopy, imaging and biofouling control.

Like other Optan products, the high-performance UVC LED uses lattice matched native Aluminum Nitride substrates, Crystal IS's competitive differentiator, proven to overcome limitations of other UVC LEDs in the instrumentation markets.

For more information, visit www.cisuvc.com.

ROV/diver operated electrical switch

The new ROV/diver controlled electrical switch can operate in up to 6,000 m of water and has an ROV compliant handle. The switch can rotate continuously in both directions and turns on and off at 90° intervals. The switching function will automatically rotate the switch to ON or OFF when the control is less than 90° between functions. The rugged casing is made from stainless steel, a commonly used material in the subsea environment.

The switch is rated for 240 Volts AC (400VDC), 6 Amp continuous, 3 Amps switching, and a 100 Watts total load

For more information, visit www.prevco.com.

IT International acquires all electric MacArtney winch

MacArtney has supplied a MERMAC S30C winch, cable and termination to IT International of Halifax, Nova Scotia, for their core sampling business group.

MERMAC S winches are available with several purpose-built features and options that make them ideal for use with side-scan sonars, corers, CTD systems, towed vehicles and other instrument and equipment types.

Based on demands made on the SWL and cable capacity of the winch, MacArtney decided to use a customized version of the MERMAC S30 all electric winch. This winch gives the operator feedback to the line tension on the main umbilical, quiet operation and extreme ease of use. Due to the flexible design of the MERMAC S30C, the system can also handle IT International's future use of tow sledges, subbottom profiling and side-scan sonar systems.

The winch has been supplied with a Focal Model 180 slip ring, 1500 m Ø = 17.3 mm armoured Coax cable fitted with a MacArtney TrustLink stainless steel stress termination to connect to the corer. The winch system will be used with IT International's NEPTUNE 3000 CPT corer system.

MacArtney MERMAC S winches combine reliability with controllability and are supplied with variable speed, tension read-out and control via an integrated load cell. A PLC on the winch controls the electrically driven level wind and transmits encoder and load cell data to a display showing winch speed, paid out cable length and alarms. The PLC can also interface to other control systems. Optional PC software offers fully automated profiling capabilities.

Additional features of the MERMAC S winches represent adaptability to suit various cable diameters and availability with interchangeable drums. Spare drums can be spooled with different cable sizes and swapped as needed for swift change of winch application.

For more information, visit www.macartney.com.

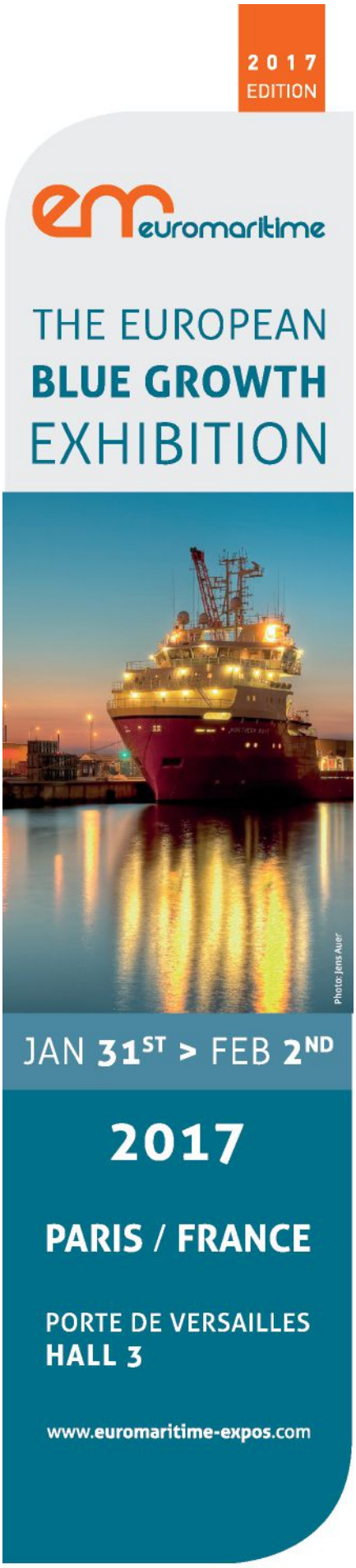
Moskito oil recovery tool is now a practical reality

The recent completion of the development of the Moskito means that oil can now be recovered from sunken wrecks quickly and economically. Developed in Norway by design and magnetic technology specialists Miko Marine, the new tool is currently being prepared for salvage projects at critical locations around the world. The first of these is imminent and follows a detailed assessment of its suitability and practical benefits.

Moskito was developed specifically to address the potential pollution problems faced by many governments with World War II ships sunk in their territorial waters. Seventy years of corrosion eating at their plates creates a growing risk that any hydrocarbons in their tanks and bunkers will escape. Given the choice of sealing the wreck at great expense or recovering the pollutant in a controlled manner, Moskito is now being actively considered by some unnamed governments as a solution to the problem.

The Moskito is deployed by divers or ROV to any ocean depth. Once in position outside the wreck's tank the Moskito's three powerful magnetic feet are planted against the steel hull and a technician on the surface then activates a 75-mm (3-in.) diameter electrically powered tank cutter drill. With its operation controlled through a dual video link, the Moskito's drill pierces the steel tank walls, which may be up to 1-in. (25mm) thick. The cut disc then falls away inside and is immediately followed into the tank by a patented spring latch coupling that automatically connects and locks a hose to the tank without allowing any of its contents to escape. When the extraction hose is securely in position a subsea pump can be activated to recover the oil at the rate of up to 12 cu. m/hr. If the contents prove too viscous to pump efficiently, another Moskito can remedy the problem by creating an entry for steam injection.

For more information, visit www.mikomarine.com.



Seatronics chooses Tritech Gemini 720is

Tritech International Ltd,, A Moog Inc. company, is pleased to announce that Seatronics, an Acteon company, is the first rental company to choose its next generation Gemini 720is multibeam imaging sonar.

Seatronics will offer the Gemini 720is for rental as prompted by customer demand to provide high-quality, new and innovative rental products to the subsea market. Additionally, the multibeam imaging sonar will be used on Predator, a portable inspection class ROV.

The new Gemini 720is combines the benefits of high-definition imaging with long-range target detection, making it ideal for AUV and ROV platforms, including installation on pan and tilt units. With a new body shape and enhanced electronics, the Gemini 720is continues to offer real-time visualisation and a fast update rate of 30 Hz across a 120° field-of-view. Familiar features such as an integrated velocity of sound sensor and near-range focus remain, and the sonar is now integrated with Ethernet communications as standard (VDSL and dual communication units are also available).

To support the new model, Tritech's standalone Gemini software package now enables operation of all Tritech multibeam Gemini imagers (from the 720i series to the NBI) and the Gemini profiler (620pd), from one dedicated software platform.

For more information, visit www.seatronics-group.com.

New Teledyne PDS 4.1–visual project management and setup

Teledyne PDS 4.1 software now features visual project management and Setup. It includes an improved user interface that provides a visual presentation of the survey tracks on the World globe. When zoomed in, it will appear as a flat plane to be viewed in detail showing the GPS tracks data and the extent of the projects. Project information is available on the world globe or in the projects list. Any data type that can be visualized, for instance grid models, charts, and guidance types, can be selected and viewed with one click of the mouse. The selected data type will be used automatically in the applicable views throughout the Teledyne PDS applications. Teledyne PDS 4.1 furthermore provides 2D and 3D visualization, and the Control Center has been optimized to be even more intuitive for maritime operations.

For more information, please visit www.teledyne-pds.com.

YSI releases new technologically advanced Amazon Bubbler

YSI, a brand of Xylem Inc., announced the release of the Amazon Bubbler.

Low power e-ink display, capacitive touch buttons and advanced design are just a few features of the new YSI Amazon Bubbler water level sensor.

Designed with simplicity in mind, the WaterLOG® (a YSI product line) Amazon Bubbler is ideal for long-term, water level and flow monitoring sites. It can be used as a stand-alone system with internal data storage or as a sensor connected to any manufacturers' data logger.

Its rugged build and technologically advanced system makes the Amazon Bubbler an attractive solution for real-time monitoring and data collection. And with its low cost of ownership, your initial investment will provide a great return for years to come. All YSI products are durable, rugged, reliable, and have a 2-year warranty. With the Amazon Bubbler, expect to get quality data for quality decision making.

For more information, visit www.xyleminc.com.

ASV builds four C-Worker 5 vehicles

ASV has completed the construction of four C-Worker 5 vehicles. These state-of-the-art Autonomous Surface Vehicles (ASVs) will be added to ASV's global lease pool in the second quarter of 2016. While the C-Worker 5 can accommodate a variety of client payloads and applications, it was specifically designed as a hydrographic survey force multiplier.

The C-Worker 5 is 5 m in length and can operate at 7 kts for 5 days before refuelling. This speed/range combination maximizes acquisition effectiveness while minimizing launch and recovery operations. As a force multiplier, it can operate concurrently alongside traditional survey vessels, dramatically increasing survey efficiency.

The C-Worker 5 uses a direct drive marine diesel propulsion system operated via ASV's proven ASView™ control system. The C-Worker 5 integrates quickly and easily with a wide variety of payloads, including hull-mounted and towed sensors. The ASView™ control system enables line plans from a variety of data acquisition systems to be uploaded for efficient data collection.

For more information, go to www.asvglobal.com.

New series of high performance MRUs from Norwegian Subsea

Norwegian Subsea's Motion Reference Units (MRUs) are high performance, compact and affordable MRUs. NORSUB MRUs use state-of-the-art MEMS technology and groundbreaking, new sensor fusion algorithms to provide real-time attitude at high frequencies. NORSUB MRUs are made specifically for demanding marine applications where reliability and high dynamic accuracy are important. They come in waterproof, marine housings with gigabit Ethernet and a wide range of industry standard protocols. NORSUB MRUs perform very well in dynamic and irregular sea states, which is often a challenge for other MRUs.

For more information, visit www.norwegian-subsea.no.

Applied Acoustics' Nexus 2 launched

Applied Acoustic Engineering (AAE) chose this year's Oceanology Conference & Exhibition in London (UK) to launch several new products, including a greatly enhanced USBL system. Nexus 2 is the second generation 2-way digital system designed and produced by the award-winning UK-based company that takes the performance and

features of the popular Nexus USBL system to a new level. Developed with an emphasis on far greater accuracy while positioning over an extended operational range, the Nexus 2 provides a reliable and secure acoustic link with an extremely low susceptibility to interference.

Fundamental to the Nexus 2 system is AAE's Sigma 2 digital acoustic coding, a proprietary set of bi-directional spread spectrum acoustic protocols devised by the company's in-house R & D team. These protocols working with a complementary transducer design mean that positional accuracies of up to 0.15% slant range have been achieved.

Alongside the USBL development, AAE also showcased a new series of acoustic beacons to complement the Nexus 2. Based on the same Sigma 2 protocols, the 1100 Series Beacon has evolved to provide more accurate positioning, very long battery life and now has the addition of data telemetry options when used with the Nexus 2.

For standard positioning and tracking tasks, Nexus 2 is also compatible with AAE's 1000 Series beacons, 1200A and 1300A Micro beacons, and some of the older AAE 'tone' products (900 Series).

For more information, visit www.appliedacoustics.com.

Klein completes delivery of three System 4900 dual-frequency side-scan sonar units

Klein Marine Systems, Inc., a wholly owned subsidiary of Mitcham Industries, Inc. announced the shipment of three System 4900 dual-frequency side-scan sonar units for the Boston Police, Quincy Police and the Cambridge Fire Department for search and recovery (SAR) missions. The Quincy Police originally purchased a Klein System 3900 in 2009 and have been utilizing the portable, dual-frequency side-scan sonar for search and recovery missions. Both the System 3900 and the System 4900 operate using the Klein custom-developed SonarPro® software that combines ease of use with advanced sonar features.

The Klein System 4900 is a versatile side scan sonar that can be used for many different survey and recovery applications. The high fidelity, high-definition imaging abilities and the portability of the System 4900 make it an ideal tool for SAR missions while its rugged construction, selectable frequencies and 300-m operational depth rating provide superb capabilities for the coastal survey and security communities.

The System 4900 is designed for producing detailed underwater images using advanced sonar technologies. It is commonly used for search and recovery and shallow water mapping and is in use by police, fire, sheriff, Coast Guard, and Naval units throughout the world. The System 4900 employs ultra wide-band technology, and image quality is further improved by the transducer design that is optimized to provide very narrow horizontal beam widths and thereby exceptional along-track resolution.

For more information, visit www.KleinMarineSystems.com.

Aquatic Engineering & Construction Ltd, an Acteon company, has expanded its team based in Houston. **Bob Terrell** joined Aquatic last month as regional manager, while **Andrew Blaquiere** has moved permanently from the Acteon group to Aquatic as proposals and project engineer. Both will focus on growing Aquatic's business in the Americas. Bob Terrell joins Aquatic with more than 30 years' experience in the onshore and offshore oil and gas industry, with a substantial focus on subsea operations, having held roles in business development, sales and operational management. Andrew Blaquiere has eight years of experience in the offshore oil and gas industry, and holds a degree in mechanical engineering from the University of Missouri.

Terrell

Blaquiere

WFS Technology Ltd. has appointed **David Baumley** as sales manager for the Scandinavia region. He will be based in Bergen, Norway. David will extend the market reach of WFS' Seatooth enabled products in the Norwegian, Swedish and Danish markets. Prior to this appointment, he was the business development manager GE Oil & Gas Subsea integrity systems, where he was responsible for guiding the direction of new products and delivering new technologies.

Baumley

Bibby Offshore Holdings Ltd. is pleased to announce the appointment of **Archie Kennedy** to the Board of Bibby Offshore as a non-executive director. Archie previously served on the Company's Board between 2011 and 2012. He is a chartered engineer with over 35 years' experience in the oil and gas industry. He has previously held roles as managing director of Nexen Petroleum UK Ltd. and managing director of ConocoPhillips UK Ltd.

Kennedy

DeepOcean Group Holding BV announces that **Harald Norvik** has been elected by the DeepOcean Board of Directors to serve as its chairman. Mr. Norvik joined the DeepOcean Board of Directors in July 2011. He is an independent consultant and advisor with more than 30 years of public and private sector experience, a large portion of which was in senior management positions overseeing operations in offshore oil and gas markets, including subsea construction and deepwater operations.

Seafloor Systems announced that **Josh Grava**, sales manager, North America, RESON Teledyne Marine, is joining John Tamplin, president, Seafloor Systems, Inc. in a newly created position, vice president sales. Josh will manage U.S. and international sales and rentals for all multibeam hydrographic sonar systems.

Bibby Marine Services has announced that **Stephen Bolton** has been appointed operations director. Stephen brings a wealth of industry experience to this strategically important role, having worked in the electricity industry for over 20 years. He has worked at both wind farms (including North Hoyle, Barrow, Lynn and Inner Dowsing, Thanet, Rhyl Flats and Gwynt y Mor), and in senior roles at electricity companies such as RWE and Centrica.

Seatronics, an Acteon company, and part of its survey, monitoring and data business segment, has announced the appointment of **Kevin Strachan** as head of finance. The new role will require Strachan to lead the finance function in each of Seatronics' global bases and divisions. Strachan holds a masters degree in accounting from Aberdeen University, and a chartered accountant designation from the Institute of Chartered Accountants of Scotland. With more than 20 years of experience, he has held a number of managerial roles, including chief financial officer at Chantry Networks in Toronto, Canada, and group financial controller for the Ferguson Group in the UK.

Strachan

Wärtsilä announces that **John Hatley**, vice president, Wärtsilä Marine Solutions in America, has been elected to the Board of Directors of the Society for Gas as a Marine Fuel (SGMF). Wärtsilä has long been at the forefront of developing technologies to make possible the use of gas as a marine fuel, and this appointment reflects this long standing commitment.

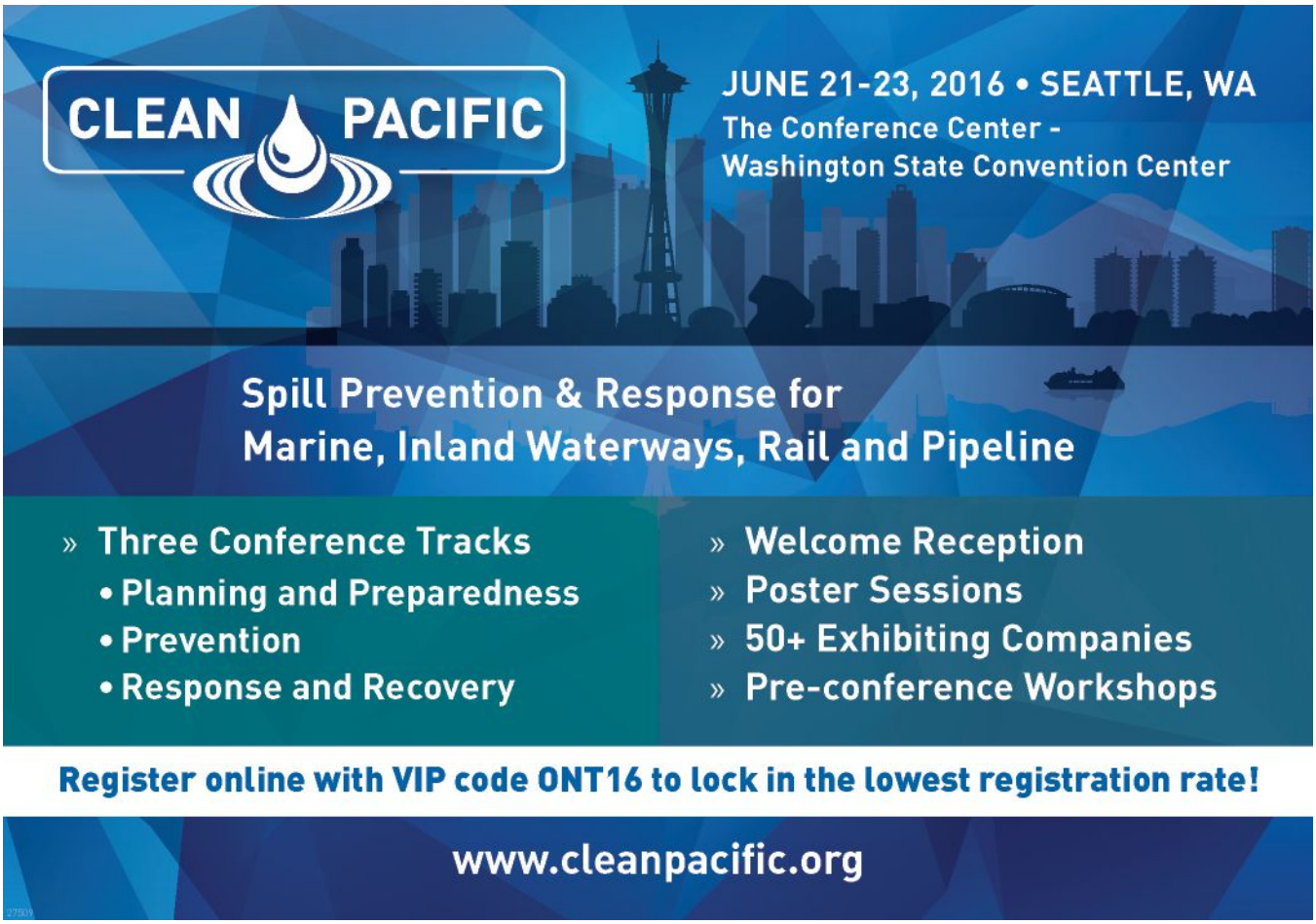
Buckthorn Partners and the **Arab Petroleum Investments Corporation** (APICORP) have acquired **Ashtead Technology**, a leading independent provider of subsea equipment and services to the offshore oil and gas industry. The undisclosed funding package from Buckthorn and APICORP will allow Ashtead to further expand its service offering through both organic and acquisition led growth. The investment will also enable Ashtead to expand its geographical reach, with the Middle East being a particular area of interest and focus for the company.

Kongsberg GlobalSim, the wholly owned land-segment crane simulation subsidiary of Kongsberg Maritime is to become an independent business following a management buyout announced on 21 March 2016. The buyout will enable GlobalSim to focus on its core port crane, construction crane, military crane, and other heavy equipment simulator development while Kongsberg continues to develop its position as a leading maritime and offshore simulation provider.

Marlink has moved to a new office in Singapore in order to meet the growing demand for delivery and support of its portfolio of multi-band, business critical communication solutions for maritime customers operating in Southeast Asia. The new Marlink Singapore office adds new facilities and potential while continuing to be a vital resource for local and international vessels through delivery of sales, installation and support services.

Aberdeen-based subsea cable and connector specialist **Hydro Group**, has expanded its premises by investing £2million in a new 13,700 sq. ft bespoke facility, set to open in spring 2016. The company currently occupies a 45,500 sq. ft facility at the Aberdeen Energy Park, purchasing the additional 0.63 acres of development land from Buccleuch Property and Moorfield Group (Buccmoor LP) to enable it to expand operations and develop a brand new workshop with mezzanine deck.

Soil Machine Dynamics (SMD) and **Underwater Mining Solutions** (UMS) are teaming up to offer customers the full scope of mining equipment required for underwater mining projects, both offshore and inland, and in all territories. Their combined expertise, and the strength of each of their parent companies, enable SMD and UMS to provide customers with proven, de-risked solutions to deep-sea, near-shore and inland underwater exploration, mining and processing.



May 16-19, 2016
Canadian Hydrographic Conference
Halifax, Nova Scotia
www.chc2016.ca

May 25-26, 2016
Deepwater Decommissioning Workshop
Houston, TX
decommissioninggom.offsnetevents.com

June 1-3, 2016
UDT
Oslo, Norway
www.udt-global.com

June 7-9, 2016
Capitol Hill Ocean Week
Washington, D.C.
nmsfocean.org/capitol-hill-ocean-week

June 12-15, 2016
PORTS 2016
New Orleans, LA
www.portsconference.org

June 14-16, 2016
SeaWork International
Southampton, UK
www.seawork.com

June 21-23, 2016
Clean Pacific
Seattle, WA
www.cleanpacific.org

June 21-23, 2016
MAST
Amsterdam, The Netherlands
www.mastconfex.com

July 18-20, 2016
Oceanography & Marine Biology
Brisbane, Australia
www.oceanographyconference.com

July 30 - Agust 3, 2016
IMCC
St. Johns, Newfoundland
conbio.org/mini-sites/imcc-2016

August 9-11, 2016
Deepwater Intervention Forum
Galveston, TX
www.deepwaterintervention.com

August 29 - September 1, 2016
Offshore Northern Seas
Stavanger, Norway
www.ons.no

September 19-23, 2016
Oceans '16 MTS/IEEE
Monterey, CA
www.oceans16mtsieeemonterey.org

October 10-12, 2016
DP Conference
Houston, TX
www.dynamic-positioning.com

October 11-13, 2016
Oil Comm
Houston, TX
www.oilcomm.com

October 17-18, 2016
Submarine Networks World
Singapore
www.terrapinn.com

October 19-20, 2016
Offshore Well Intervention GoM
Houston, TX
www.interventiongom.offsnetevents.com

October 25-26, 2016
AWEA Offshore Windpower
Warwick, RI
www.awea.org

OCEAN NEWS & TECHNOLOGY
www.oceannews.com

Ocean News & Technology
7897 SW Jack James Dr, Suite A; Stuart, FL 34997

Fax this form to 772-221-7715, or subscribe online at www.oceannews.com/subscribe

☐ Renew ☐ New
☐ Change of Address ☐ Cancel
☐ Change Subscription Name

1 YES! I wish to receive my FREE subscription
☐ Print ☐ Digital ☐ Both

Complete steps 1-3 to validate subscription

Name _____
Company _____
Title _____
Address _____
City _____ State _____
Zip _____ Country _____
Email _____
Phone _____
Fax _____
Signature _____
Date _____

Unsigned or incomplete forms will be disqualified.

2 Describe your job function (circle 1):
1. MANAGEMENT/EXECUTIVE
2. EDUCATOR
3. ENGINEER/SCIENTIST
4. TECH'N/OPERATOR
5. BUYER/SALES
6. OTHER (Specify) _____

3 Describe your organization (circle 1):
A. Marine Industry (Shipyard, Naval Architecture; Shipping & Transportation; Construction; Salvage; Dive Services; Subsea Inspection; Marine Electrical/Electronics; Navigation and Positioning; Ports and Harbors)
B. Offshore Oil and Gas/Mining
C. Ocean Renewables
D. Education
E. Government, Military
F. Government, Civilian
G. Marine Science/Environmental/Fisheries (Science; Environmental; Fishing and Aquaculture; Survey; Observation; Exploration)
H. Maritime Communications and Computing (Communications Products and Services; Computer Services/Software; Subsea Telecom; Cables and Connectors)
I. Instrumentation/Equipment/Components (Equipment Manufacturer/Rentals; Ocean/Science Instrumentation; Marine Hardware; Deck Equipment)
J. Other (please specify) _____

☐ I would also like to receive Ocean News Weekly E-Newsletter FREE (email must be included)

I would also like to receive ECO/Environment Coastal & Offshore magazine FREE
☐ Print
☐ Digital
☐ Both

☐ I would also like to receive Offshore Source E-Newsletter FREE (email must be included)

OCEAN NEWS & TECHNOLOGY

www.oceannews.com 35 YEARS

JANUARY
Editorial: Underwater Navigation; Manned Submersibles
Distribution: Underwater Intervention; GOM Oil Spill & Ecosystem
Product & Services Focus: Multibeam & Side Scan Sonars; Research & Development Services

FEBRUARY
Editorial: Oceanology & Meteorology; Decom & Abandonment
Distribution: Decommissioning and Abandonment Summit; Oceanology International
Product & Services Focus: Buoys & Monitoring Instrumentation; Environmental Monitoring/Testing Services

MARCH
Editorial: Subsea Fiber Optic Networks; Maritime Security
Distribution: Canadian Underwater Conf & Expo; SubOptic
Product & Services Focus: Connectors; Cables & Umbilicals; Diver Detection Systems

APRIL
Editorial: Offshore Technology; Ocean Mapping & Survey
Distribution: OTC; AUVSI-Xponential; Deepwater Decommissioning Workshop Canadian Hydrographic Conference
Product & Services Focus: Subsea Tools & Manipulators; Batteries; Training/Safety

MAY
Editorial: UW Imaging & Processing; Marine Salvage/UW Archeology
Special Focus Section: *Executive Profiles*
Distribution: UDT (Norway) Seawork International
Product & Services Focus: Magnetometers; Water Dredges & Airlifts; Diving Services

JUNE
Editorial: Autonomous Unmanned Vehicles; Defense & Naval Systems;
Special Focus Section: *New Product Profiles*
Distribution: Clean Pacific; MAST
Product & Services Focus: Tracking & Positioning Systems; Seismic Monitoring; Equipment Leasing/Rental Services

JULY
Editorial: Ocean Engineering; Marine Construction
Special Focus Section: *Company History Profiles - Then and Now*
Distribution: OMICS
Product & Services Focus: Navigation, Mapping & Signal Processing; Data Processing Services

AUGUST
Editorial: Workclass ROVs; Deepwater Pipeline/Repair/Maintenance
Distribution:
Product & Services Focus: Cameras, Lights & Imaging Sonars; Oil Spill Clean-Up Services

SEPTEMBER
Editorial: Ocean Observing Systems; Subsea Telecom; Offshore Wind Installation & Maintenance
Distribution: AWEA Offshore Windpower; Oceans '16 MTS/IEEE Monterey; Teledyne Marine Technology Workshop:
Product & Services Focus: Water Sampling Equipment; Cable Installation Services

OCTOBER
Editorial: Offshore Communications; Subsea Inspection, Monitoring, Repair and Maintenance
Distribution: OilComm; Offshore Energy; Clean Gulf; Euronaval; Offshore Well Intervention GoM
Product & Services Focus: Acoustic Modems, Releases & Transponders; Marine Communications; Survey & Exploration Services

NOVEMBER
Editorial: Offshore Support, Supply & Emergency Vessels; Deep Sea Mining
Distribution: International Workboat
Product & Services Focus: Ship Protection Systems; Cranes, Winches & Control Systems; Vessel Charter/Leasing Services

DECEMBER
Editorial: Light Workclass ROVs; Commercial Diving; Year in Review; UI Pre-show issue
Distribution: Offshore & Deep Sea Mining
Product & Services Focus: Diving Equipment & Services; Buoyancy Materials; Construction & Repair Services

Serving the Ocean and Offshore industry, Ocean News & Technology has a long, rich history as the primary information resource executives around the world rely on.

For more than 30 years ON&T has provided news, forecasts, and authoritative feature articles designed to keep industry leaders informed and focused on the future of the industry.

Industry's Choice creates Advertiser's Advantage

ONT's unique comprehensive format and cutting-edge distribution methods demonstrate the publication's standing as the #1 choice for industry news, making it the best ROI choice for advertisers!

Print – Still the preferred format in the industry, ON&T print copies are distributed worldwide.

Digital – No matter where they are in the world, subscribers also have the benefit of the digital edition, complete with linked websites in ads, articles and releases.

APP – ON&T's free APP is utilized thousands of times each month, creating an instant path from ads to websites 24/7.

VIDEO-IN-PRINT – Embed video in your ad! Viewed by digital and APP readers, your VIP can be informational, inspirational, and/or entertaining.

Ocean Industry Directory – Each issue features a directory providing your product, services and contact information to buyers around the world. Listings are available in print and digital editions and can be updated throughout the year.

Archives – Available through digital and APP, readers can research historical data, articles, and references with the aid of Keyword Search.

TSC

ADVERTISING

North America
Lisa Chilik
574-261-4215
Lchilik@tscpublishing.com

International
Mimi Shipman
+44 (0) 777 601 7564
mshipman@tscpublishing.com

Editorial
Ladd Borne
772-285-8308
lborne@tscpublishing.com

OCEAN NEWS & TECHNOLOGY

www.oceannews.com 35 YEARS

OCEAN INDUSTRY *MONTHLY* DIRECTORY

CURENT LISTINGS IN EVERY ISSUE

Ocean Industry Directory is featured in every issue of Ocean News, and the industry knows this is the one source they can count on to provide them with up to date listing information for the products and companies they're looking for.

Don't miss the opportunity to provide your next prospect with the information he needs to contact *you*. Place your listing in the Ocean News & Technology Ocean Industry Directory today! Listing can be changed at any time. Add your QR code to direct print readers to your website.

ANNOUNCING PRODUCT & SERVICE DIRECTORY:

Produced annually with a mid-year update in digital format, this new comprehensive directory distinguishes between manufacturers, sellers, and rental agents.

SPECIAL OFFER

Companies listed in our Monthly Ocean Industry Directory will receive a free logo in the company listing section of the Product & Service Directory. Contact your representative for details.

Directory Sales:

North America:
Lisa Chilik: +1 574-261-4215
Lchilik@tscpublishing.com

International:
Mimi Shipman: +44 (0) 777 601 7564
mshipman@tscpublishing.com

ACOUSTIC SYSTEMS

Applied Acoustic Engineering Ltd
Marine House, Gapton Hall Road, Great Yarmouth. NR31 0NB, UK
Tel: + 44 (0) 1493 440355
Fax: +44 (0) 1493 440720
E-mail: gavinwilloughby@appliedacoustics.com
Website: www.appliedacoustics.com
Contact: Gavin Willoughby

Manufacturer of fully integrated USBL acoustic tracking systems, both portable and vessel based, high quality multi-system compatible beacons for acoustic positioning and release, and seismic sub-bottom profiling systems for coastal, offshore or geohazard surveys. All products are supported by a network of overseas representatives providing a first class service on a global scale.

iXBlue
Tel: +33 (0) 1 30 08 88 88
Fax: +33 (0) 1 30 08 88 00
Website: www.ixblue.com

- **GAPS USBL** acoustic positioning system
- **RAMSES** long baseline MF and LF positioning systems
- **POSIDONIA** very long range USBL system
- **ComMet** subsea metrology system
- **OCEANO** acoustic release range

iXBlue is a leading global provider of innovative solutions and services for navigation, positioning, and imaging.

Ocean Sonics Ltd.
11 Lornevale Road
Great Village, NS, B0M 1L0
Tel: +1 902 655 3000
E-mail: info@oceansonics.com
Website: www.oceansonics.com

*Ocean Sonics designs and manufactures the **icListen Smart Hydrophone**, a compact self-contained easy to deploy digital instrument. As the world leader in gathering ocean sound, Ocean Sonics combines very high signal performance with innovative ease of use to give customers the best digital hydrophone technology available. This enables users to collect, record, measure, process and interpret calibrated sound data from the ocean.*

icListen HF *10 Hz to 200 kHz*
icListen LF *1 Hz to 1600 Hz*
icListen AF *1 Hz to 12 kHz*
icTalk Calibrated Smart Projector: *10 kHz to 200 kHz*
LUCY PC software *for instrument control and data presentation*
Radio Buoy, Battery Packs and Cable solutions

RTsys
25 rue Michel Marion
56850 Caudan, France
Tel: +33 297 898 580
E-mail: info@rtsys.eu
Website: www.rtsys.eu

- *Acoustic Monitoring: EASDA14, Embedded Multichannel Passive Acoustic Recorders*
- *WiFi remote Buoy: BASDA14, Multi-sensor & Rechargeable Acoustic Buoy accessible in Real-time*
- *Sediment Characterization: INSEA, Acoustic Velocimeter for Sediment Characterization*

We provide advanced embedded acoustic products in the environmental research, surveying and monitoring areas. With Synchronized Multichannel Acquisition and accepting a broad range of Acoustic Transducers and Hydrophones from 3Hz to more than 1MHz, our solutions allow the user a new range of applications.

ADCP/DVL

Rowe Technologies, Inc.
12655 Danielson Ct.
Suite 306
Poway, CA 92064
Tel: 858 842 3020
E-mail: sales@rowetechinc.com
Website: www.rowetechinc.com
Contact: Ray Mahr

Rowe Technologies Inc. [RoweTech] specializes in the design and manufacture of underwater acoustic Doppler products and imaging systems for the oceanographic, hydrographic and hydrologic markets. Founded in 2009, Rowe Technologies is a technology-based private company with the main office located in Poway CA, USA. Rowe's ADCP/DVL electronics suite is superior to others due to a powerful compact single-unit configuration which allows simultaneous current profiling and bottom tracking.

Nortek AS
Vangkroken 2
1351 Rud, Norway
Tel: +47 67 17 45 00
E-mail: inquiry@nortek.no
Website: www.nortek.no

Nortek excels in the development and manufacture of acoustic Doppler instrumentation. Doppler Velocity Logs (DVL) are used for subsea navigation. Acoustic Doppler Current Profilers (ADCP) are used to understand physical processes in the ocean, rivers, lakes and laboratories. We pride ourselves on being innovative in product development and production processes. Nortek provides solutions to engineers and scientists by offering real-time data collection and support from our responsive technical team.

BUOYS

MetOcean
21 Thornhill Drive
Dartmouth, Nova Scotia
B3B 1R9 Canada
Tel: +1 902 468 2505
Fax: +1 902 468 4442
E-mail: emily@metocean.com
Website: www.metocean.com
Contact: Emily MacPherson

MetOcean designs and manufactures drifting buoys, environmental platforms, and the world renowned NOVATECH locator beacon product line. MetOcean's drifting buoy family consists of environmental and weather monitoring, oil spill response, and search and rescue drifters: NOVA profiling float, Iridium SVP (iSVP), iSPHERE, Argosphere, SLDMB, and iSLDMB.

BUOYANCY PRODUCTS

DeepWater Buoyancy, Inc.
394 Hill Street
Biddeford, ME 04005
Tel: +1 207 502 1400
Fax: +1 207 221 5718
E-mail: sales@deepwb.com
Website: www.DeepWaterBuoyancy.com
Contact: Dan Cote, Sales Manager

DeepWater Buoyancy creates subsea buoyancy products for leading companies in the oceanographic, seismic, survey, military and offshore oil & gas markets. Thousands of customers have relied on our products for over thirty years, from the ocean surface to depths exceeding six thousand meters.

Subsalve USA
P.O. Box 2030
North Kingstown, RI 02852
Phone: 401-884-8801
Fax: 401-884-8868
E-mail: richard@subsalve.com
Website: www.subsalve.com
Contact: Richard Fryburg

Since 1977 Subsalve USA has been America's #1 manufacturer of standard and custom flotation devices and we are the innovators in buoyancy and engineered inflatables. Our products include: Professional, Commercial, Standard, Shallow Water, Enclosed Flotation Bags, Cable & Pipeline Floats, Water Load Test Bags, Rapid Recovery & Mark V/ORCA EOD Systems.

Nautilus Marine Service GmbH
Alter Postweg 24
Buxtehude
21614
Germany
+49 (0) 41618 66250
info@nautilus-gmbh.com
www.vitrovex.com
Contact name: Steffen Pausch

Nautilus Marine Service provides the finest VITROVEX® glass housings that are capable of operating in the most extreme regions of the Earth. VITROVEX® glass enclosures offer the dual advantage of buoyancy and pressure proof housings - a perfect combination for small and autonomous underwater instrumentation packages.
Simple, reliable and affordable.

KEEP YOUR ONT DIRECTORY LISTINGS ON TARGET

- Can be updated at any time throughout the year
- Keeps your market aware of your current contact and product information

Call Today! +1-772-221-6796

CABLES

Falmat Cable
1873 Diamond Street
San Marcos, CA 92078
Toll Free: 800 848 4257
Tel: +1 760 471 5400
Fax: +1 760 471 4970
E-mail: sales@falmat.com
Website: www.falmat.com
Contact: Shawn Amirehsani

*Falmat Custom Cable Technologies is a global leader in providing innovative and high performance designs for use in harsh and demanding environments. Our proven and hardworking **"XTREME"** cables are known worldwide for superior reliability and durability in commercial and military projects.*

High quality engineered cables for ROV, side scan sonar, video, communication, towed array, geophysical, instrumentation, deep-water Ethernet and many other specialized applications. We offer installing braided haired fairing, single and multilayered steel armored cables in short lengths. Falmat is a Certified ISO9001/AS9100 organization. Visit our web site: www.falmat.com.

South Bay Cable Corp
54125 Maranatha Drive
P.O. Box 67
Idyllwild, CA 92549
Phone: (951) 659-2183
Fax: (951) 659-3958
E-mail: Sales@southbaycable.com
Website: www.southbaycable.com
Contact: Gary Brown, Sales Manager

Since 1957, South Bay Cable Corp has designed and manufactured specialized electrical, electro-mechanical and electro-optical-mechanical cables for use in demanding marine environments. Cables are designed to meet customer requirements and include tether and umbilical cables for ROVs, tow cables, video inspection, faired cables and a host of other customer specific applications.

CONNECTORS

AK Industries
3115 East Las Hermanas Street
Rancho Dominguez, CA 90221
Tel: +1 310 762 1600
Fax: +1 310 762 1616
E-mail: sales@ak-ind.com
Website: www.ak-ind.com
Contact: Allan Kidd

AK Industries is an agile high tech manufacturer of rugged low cost underwater electrical connectors. The HydroVolt line of connectors is the most rugged and reliable low cost connector available. AK Industries is also ideally suited to provide unique solutions engineered to customer requirements.

BIRNS, Inc.
1720 Fiske Place
Oxnard CA 93033-1863 USA
Int'l: +1 805 487 5393
Fax: +1 805 487 0427
USA: +1 888 BIRNS 88 (+1 888 247
E-mail: service@birns.com
Website: www.birns.com
Contact: Eric Birns

BIRNS, Inc. has been serving the subsea industry since 1954, and is an ISO 9001:2008 certified global leader in the design and manufacturing of high performance connectors, custom cable assemblies and lighting systems. With a NAVSEA PRO-020 certified molding facility, the company leads the industry with sophisticated connector lines, including exceptional electrical, electromechanical, coaxial, electro-coax, optical, electro-optical and electro-opto-mechanical hybrid options. BIRNS provides the industry's highest volume of cost-effective hydrostatic and helium pressure testing, and has a wide range of ABS Product Design Assessment (PDA) certified fiber optic and electrical penetrators. BIRNS also delivers brilliant LED and tungsten-halogen marine, chamber, security and commercial diving lights trusted in the world's most extreme environments.

KEEP YOUR ONT DIRECTORY LISTINGS ON TARGET

- Can be updated at any time throughout the year
- Keeps your market aware of your current contact and product information

Call Today! +1-772-221-6796

BIRNS Aquamate LLC
122 Waltham St.
Pawtucket, RI 02860 USA
Tel: +1 401 723 4242
Fax: +1 401 753 6342
E-mail: sales@birnsaquamate.com
Website: www.birnsaquamate.com
Contact: Eli Bar-Hai

Birns Aquamate design and manufacture underwater electrical connectors, cable assemblies, and cable terminations. The company produces a wide range of standard industry connectors such as the 5500 Series, SC, MC, LP, FAWL/FAWM, Rubber Molded, etc. BIRNS Aquamate is the only underwater connector producer that guarantees compatibility with other manufacturers. Birns also specializes in fast turn-around for custom design of special connector solutions. Stocking dealers in the UK, South Africa and Holland as well as dealers in Canada, Germany, Belgium, Norway, China, and Brazil.

SEACON
1700 Gillespie Way
El Cajon, CA 92020 USA
Tel: +1 619 562 7071
Fax: +1 619 562 9706
E-mail: seacon@seaconworldwide.com
Website: www.seaconworldwide.com

The SEACON Group are world leaders in underwater connector technology and provide an extensive and diverse range of electrical, optical and hybrid connector assemblies, submersible switches and cable system solutions for many applications within the Oceanographic, Defense, Oil and Gas and Environmental markets. With locations in California and Texas, USA, Mexico, Brazil, the United Kingdom and Norway and a worldwide network of agencies and representatives, SEACON is able to supply very quick solutions to any requirements across the globe.

Teledyne Impulse
9855 Carroll Canyon Road
San Diego, CA 92131 USA
Tel: 1-800-327-0971 or
+1-858-842-3100
Fax:+1-858-565-1649
E-mail: impulse@teledyne.com
Website: www.teledyneimpulse.com

Teledyne Impulse designs and manufactures highly reliable electrical and optical interconnection systems for a range of harsh environments. From underwater sensor connectors, to ROV connectors, to the largest vehicle systems, Impulse products are proven performers in demanding applications, which include oceanographic exploration, defense, oil and gas production, and wastewater management.

Teledyne ODI - A Teledyne Technologies Company
1026 North Williamson Blvd.
Daytona Beach, FL 32114
Tel: +1 386 236 0780
Fax: +1 386 236 0906
Toll Free: (888) 506 2326
E-mail: ODI_marketing@teledyne.com
Website: www.odi.com

A leader in subsea electrical & fiber optic interconnect systems. Wet-mateable connectors include signal & high-power electrical, optical, and hybrid products. All based on patented PBOF technology. These rugged components are designed for use at any ocean depth, in the harshest environments. ODI also provides top quality custom engineered solutions for any subsea networking challenge.

DESIGN AND ENGINEERING

Hydro Leduc NA, Inc.
19416 Park Row, Ste. 170
Houston, TX 77084
Tel: 281-679-9654
E-mail bogden@hydroleduc.com
Website: www.hydroleduc.com

Hydro Leduc is a specialist in the design and manufacture of hydraulic piston pumps, hydraulic motors, hydro pneumatic accumulators, and customized hydraulic components satisfying customer needs with reliable products from a reliable source. As the leader in micro hydraulics, it is feasible to obtain several tons of force from a minimal power source within a restricted space envelope. The techniques of micro hydraulics allow simple solutions to problems that are often beyond the limits of traditional mechanical options. Hydro Leduc's expertise is at your service in varied applications such as oil service tools, oceanographic instrumentation, aeronautics, and any extreme working condition of temperature, pressure, medium, and environment.

EQUIPMENT RENTAL

Alpha Seismic Compressors, LLC
Fleet Operations: Houston, TX
Corporate and Sales Offices: Portland, OR
Tel: 503-244-0701 (office) 503-805-3798 (mobile)
Email: fred@AlphaSeismicCompressors.com
Website: www.AlphaSeismicCompressors.com
Contact: Fred Pfaffle, Managing Director

Alpha Seismic Compressors. Offshore rentals. Very high pressure air source solutions. Alpha Zulu custom services. Houston fleet. Proven reliability in harsh and demanding harshest conditions: Arctic. Alaska. Brazil. Finland. Great Lakes. Gulf of Mexico. Mexico. Nigeria. Singapore. Trinidad. Worldwide. Strategic alliance agreement with Generon/Houston Compression & Services. ISO and DNV capabilities. Diesel or electric. Containerized or framed. Nitrogen generation. Membrane technology.

Okeanus Science & Technology, LLC
2261 Denley Road
Houma, LA 70363
Tel: 985-346-4666
Fax: 985-346-8444
E-mail: Bleblanc@okeanus.com
Website: www.okeanus.com
Contact: Benton LeBlanc

Okeanus is the premier rental provider for oceanographic and marine scientific research equipment utilized in nearshore and offshore projects around the world. Focused on providing industry-leading customer service, Okeanus offers advanced, high-quality technology coupled with knowledgeable and experienced staff that can deliver dedicated support regardless of a project's location.

FIBER OPTIC PRODUCT/SERVICES

Focal Technologies Corporation, Moog Inc.
77 Frazee Avenue
Dartmouth, Nova Scotia
Canada B3B 1Z4
Tel: +1 902 468 2263
Fax: +1 902 468 2249
E-mail: focal@moog.com
Website: www.moog.com/marine
Contact: Shawn Taylor

Focal, A Moog Inc. Company, specializes in providing electrical slip rings, fiber optic rotary joints, hydraulic utility swivels and fiber optic multiplexer solutions for the worldwide marine industry including ROV, seismic, FPSO turret and oceanographic applications. Product features include hybrid packages that combine fiber, electrical and fluid rotary joints for harsh environments.

Ocean Specialists Inc.
8502 SW Kansas Ave
Stuart, FL 34997
Tel: +1 772 219 3033
Fax: +1 772 219 3010
Email: jbyous@oceanspecialists.com
Website: www.oceanspecialists.com
Contact: Jim Byous

Ocean Specialists, Inc (OSI) is a submarine fiber optic network development company with global project capabilities. OSI works with clients during all project phases of subsea network development, from planning and design to procurement and implementation. Our customers, primarily representing Oil and Gas, Telecommunications and Ocean Observing, recognize the value of fiber optic networks to their field and services solutions, and look to OSI to deliver the skills and experience that developing these networks require.

GEOPHYSICAL SERVICES

Alpha Seismic Compressors, LLC
Fleet Operations: Houston, TX
Corporate and Sales Offices: Portland, OR
Tel: 503-244-0701 (office) 503-805-3798 (mobile)
Email: fred@AlphaSeismicCompressors.com
Website: www.AlphaSeismicCompressors.com
Contact: Fred Pfaffle, Managing Director

Alpha Seismic Compressors. Offshore rentals. Very high pressure air source solutions. Alpha Zulu custom services. Houston fleet. Proven reliability in harsh and demanding harshest conditions: Arctic. Alaska. Brazil. Finland. Great Lakes. Gulf of Mexico. Mexico. Nigeria. Singapore. Trinidad. Worldwide. Strategic alliance agreement with Generon/Houston Compression & Services. ISO and DNV capabilities. Diesel or electric. Containerized or framed. Nitrogen generation. Membrane technology.

GYRO COMPASSES

iXBlue
Tel: +33 (0) 1 30 08 88 88
Fax: +33 (0) 1 30 08 88 00
Website: www.ixblue.com

- **QUADRANS** compact surface gyrocompass
- **OCTANS** surface gyrocompass and motion sensor
- **OCTANS NANO** compact subsea gyrocompass and motion sensor
- **OCTANS** 3000 subsea gyrocompass and motion sensor

iXBlue is a leading global provider of innovative solutions and services for navigation, positioning, and imaging.

HYDROPHONES

High Tech, Inc
21120 Johnson Road
Long Beach, MS 39560, United States
Tel: 228 868 6632
Email: high_techinc@bellsouth.net
Website: www.hightechincusa.com
Contact: Glenn Pollock

Experts in rugged marine sensor systems utilized in geophysical surveys, anti-submarine warfare, marine mammal monitoring and downhole applications. Products include data acquisition systems, hydrophones, array cables, pressure vessels and peripherals related to marine systems.

INSURANCE

John W. Fisk Company
4833 Conti Street, Suite 200
New Orleans, LA 70119
Toll Free: +1 888 486 5411
E-mail: insure@jwfisk.com
Website: www.jwfisk.com

Fisk Marine Insurance provides all types of insurance to any limit required for commercial diving, marine contractors, offshore oilfield and platforms, plug and abandonment (P&A) contractors, land based energy, ocean marine cargo and oceanographic research worldwide. Our coverages include Workers Compensation (USL&H & Jones Act, General Liability, Professional Liability, Hull P&I, Equipment, Bonds and International Packages for clients working outside of the USA. Contact us for more information: 1-888-486-5411 or insure@jwfisk.com. Visit our website: www.jwfisk.com

LIQUID STORAGE

Aero Tec Laboratories, Inc. (ATL)
45 Spear Road Industrial Park,
Ramsey, NJ 07446 USA
Tel: +1 201 825 1400
Fax: +1 201 825 1962
E-mail: atl@atlinc.com
Website: www.atlinc.com
Contact: David Dack

ATL specializes in the design/manufacture of custom bladder-type fluid containment systems, including tanks, inflatables, pillows and bellows for surface and subsea. ATL's flexible fluid containers boast unparalleled chemical tolerance, abrasion resistance, and remarkable durability - used with methanol, diesel fuel, gases, ethyleneglycol, hydraulic fluids and chemical cleaning cocktails. Expedited deliveries are also available.

MAGNETOMETERS

Bartington Instruments Ltd
Unit 5, Thorney Leys Business Park
Witney, Oxon OX28 4GE
United Kingdom
Tel: +44 (0)1993 706565
E-mail: sales@bartington.com
Website: www.bartington.com

Bartington Instruments' products include high precision, low noise fluxgate magnetometers, gradiometers and data acquisition units for marine applications. With a reputation for performance, reliability and durability, our instruments are used for detection of magnetic anomalies such as underwater UXO, pipe and cable location, magnetic signature analysis, and oil and mineral exploration.

Geometrics, Inc.
2190 Fortune Drive
San Jose, CA 95131
Tel: +1 408 954 0522
Fax: +1 408 954 0902
E-mail: sales@geometrics.com
Website: www.geometrics.com
Contact: Bart Hoekstra

Geometrics, a member of OYO Corporation, manufactures, sells, and services portable geophysical instruments for land, marine, and air investigations of the subsurface. Geometrics' product line includes proton precession and cesium magnetometers, high-resolution seismographs, and electrical conductivity imaging and resistivity systems. Geometrics' instruments are used around the world for natural resource exploration, geotechnical and environmental assessments, ordnance detection, locating archeological and treasure sites, teaching and research.

MARINE ENVIRONMENTAL CONSULTING SERVICES

CSA Ocean Sciences Inc.
8502 SW Kansas Avenue
Stuart, FL 34997
Tel: +1 772 219 3000
Fax: +1 772 219 3010
E-mail: gstevens@conshelf.com
Website: www.csaocean.com
Contact: Gordon Stevens

CSA Ocean Sciences Inc. (CSA) is a marine environmental consulting firm specializing in multidisciplinary projects concerning potential environmental impacts of activities throughout the world. With extensive experience in environmental sciences and technical field operations, CSA is staffed and equipped to offer a complete range of services for projects in offshore, nearshore, estuarine, wetland, and freshwater environments.

MOTION SENSING EQUIPMENT

Kongsberg Seatex AS
Pirsenteret
N-7462 Trondheim, Norway
Tel: +47 73 54 55 00
Fax: +47 73 51 50 20
E-mail: km.seatex@kongsberg.com
Website: www.km.kongsberg.com/seatex
Contact: Finn Otto Sanne at finn.otto.sanne@kongsberg.com

Kongsberg Seatex is a leading international marine electronics manufacturer specializing in the development and production of precision positioning and motion sensing systems. Our commitment is to provide quality products and solutions for safe navigation and operations at sea in the commercial offshore, maritime, hydrographics and defence industries.

Watson Industries, Inc.
3035 Melby Street
Eau Claire, WI 54703
Tel: +1 715 839 0628
Fax: +1 715 839 8248
E-mail: info1@watson-gyro.com
Website: www.watson-gyro.com
Contact: Tom Henke

Specializing in precision positioning and motion sensing systems for use in undersea cable laying, buoy and current monitoring, magnetic field measurement, yacht and ferry stabilization, remotely operated vehicles, sonar, camera and antenna stabilization, heading reference and surface ship navigation. We can customize our products to meet your specifications.

NAVIGATION & POSITIONING SYSTEMS

EvoLogics GmbH
Ackerstrasse 76
13355 Berlin, Germany
Tel: +49 (0) 30 4679 862-0
Fax: +49 (0) 30 4679 862-01
E-mail: sales@evologics.de
Website: www.evologics.de

EvoLogics provides the world's most advanced spread-spectrum underwater communication systems (S2C) with multi-channel data management, networking capability, built-in tracking and positioning functions with USBL. Data loggers, acoustic wake-up module and releasers optionally included. Deployments in offshore platforms (FPSO, ABS), environmental monitoring, defense systems, ROV and AUV operations and more. Applications include simple positioning and sensor information to transmission of underwater photos.

iXBlue
Tel: +33 (0) 1 30 08 88 88
Fax: +33 (0) 1 30 08 88 00
Website: www.ixblue.com

- **PHINS** surface and AUV INS
- **PHINS 6000** deep water subsea INS
- **HYDRINS** hydrographic survey INS
- **MARINS M-Series** first rank and submersible ships INS
- **ROVINS** subsea INS

iXBlue is a leading global provider of innovative solutions and services for navigation, positioning, and imaging.

OCEANOGRAPHIC INSTRUMENTS/SERVICES

Falmouth Scientific, Inc.
1400 Route 28A, PO Box 315
Cataumet, MA 02534-0315 USA
Tel: +1 508 564 7640
E-mail: fsi@falmouth.com
Website: www.falmouth.com

Sensors – Systems – Service
Falmouth Scientific, Inc. designs and manufactures precision oceanographic instrumentation and systems. Product areas include:
• Ultra-Portable Seismic Systems • Current, Wave, and Tide meters • Structural Stress Monitoring Systems • Sidescan Sonar Imaging Systems • Acoustic Transducers, Systems, and Support • Acoustic Positioning and Relocation Beacons

nke Instrumentation
rue Gutenberg
56700 Hennebont, France
Tel: +33 2 97 36 41 31
Fax: +33 2 97 36 10 12
E-mail: info.instrumentation@nke.fr
Website: www.nke-instrumentation.com

• Fresh and marine waters multiparameter probes: CTD, dissolved oxygen, turbidity, chlorophyll, Phycocyanin, Phycoerythrin, CDOM, detection of hydrocarbons, pH, Redox
• Dedicated monitoring data loggers and equipment for: sediment transport, underwater systems behavior, marine corrosion, pCO2 sensor (stand alone or on drifting buoy), density, absolute salinity…
• Intelligent network: environmental parameters (meteorologic and oceanographic), Ecosystems Approach to Fisheries (EAF - Voluntary fishinf vessels), Webdata application
Contact: Valérie Le Pen - vlepen@nke.fr or Goulven Prud'homme - gprudhomme@nke.fr

• Provor and Arvor profiling subsurface floats (ARGO project): CTD, dissolved oxygen, BGC, deep; Argos and Iridium transmission.
• Drifting surface buoys with temperature and GPS receiver for Surface velocity project.
Contact: Nathalie Le Bris - nlebris@nke.fr

RBR
95 Hines Road, Ottawa
Ontario Canada K2K 2M5
Tel: +1 613 599 8900
Fax: +1 613 599 8929
E-mail: info@rbr-global.com
Website: www.rbr-global.com

Based in Ottawa, Canada and established in 1976. The company is an industry leader in the design, development and manufacture of high precision instruments for oceanographic, freshwater, groundwater and cryospheric research. Products include CTDs, small temperature or depth loggers, tide gauges, wave loggers and multi-parameter sondes.

ROMOR Ocean Solutions
41 Martha Avenue
Mount Uniacke, NS Canada
B0N 1Z0
Tel. +1 (902) 466-7000
Fax. +1 (902) 466-4880
E-mail: Sales@romor.ca
Website: www.romor.ca
Contact: Darrin Verge, President & CEO

ROMOR Ocean Solutions provides instrumentation solutions for the geophysical, oceanographic, defense, security, oil & gas, and renewable energy industries. By partnering with world renowned manufacturers, ROMOR is able to offer technical knowledge, value added services, logistics expertise, and the most reliable instrumentation on the market.

Sea and Land Technologies Pte Ltd
65 Tuas Avenue 1
Singapore 639508
Tel: +65 65180777
Fax:+65 65630366
E-mail: enquiry@sea-landtech.com
website: www.sea-landtech.com

A leading solutions provider in Asia Pacific countries for Oceanography, Meteorology, Hydrography, Hi Resolution Marine Seismic studies, Coastal Monitoring, Hydrology and Environmental Surveys. With over 20 years of experience partnering leading worldwide manufacturers, SALT provides advanced technology hardware and software solutions, combined with Calibration, Training, Repairs, Cable Moulding services & RENTAL Equipment to the users in the region. In addition to our 60,000 square foot HQ in Singapore, SALT has offices in Malaysia, Indonesia, Thailand, Philippines and Australia.

Sea-Bird Scientific
13431 NE 20th St.
Bellevue, WA 98005
Tel: +1 425 643 9866
Fax: +1 425 643 9954
E-mail: info@sea-birdscientific.com
Website: www.sea-birdscientific.com
Contact: Calvin Lwin, Sales

Sea-Bird Scientific, comprised of Sea-Bird Electronics, WET Labs, and Satlantic, provides integrated solutions to customers' measurement needs. Sea-Bird Scientific is the leader in accurate, stable ocean instruments for measuring conductivity (salinity), temperature, pressure, oxygen, pH, chlorophyll, CDOM, turbidity, beam attenuation, irradiance, radiance, PAR, nitrate, and phosphate. Our CTD profilers, water samplers, moored CT recorders, wave/tide recorders, DO sensors, and optical sensors are used by research institutes, ocean observing programs, government agencies, and navies globally.

Star-Oddi
Skeidaras 12, 210
Gardabaer, Iceland
Tel: +354 533 6060
Fax: +354 533 6069
E-mail: baldur@star-oddi.com
Website: www.star-oddi.com
Contact: Baldur Sigurgeirsson

A manufacturer of miniature data loggers with sensors as temperature, depth/pressure, salinity, tilt/acceleration, compass direction/magnetometer, light levels, acoustic receiving/transmitting. The loggers are used for various researches, including oceanography, fishing gear studies, equipment behavioral monitoring and fish tagging. Data is presented in the application software with a time-stamp for each measurement.

Turner Designs
845 W Maude Avenue
Sunnyvale, CA 94085
Phone: +1 408 749 0994 x146
Toll Free: +1 877 316 8049 x146
Fax: +1 408 749 0998
Contact: Tom Brumett, Sales Engineer
E-mail: sales@turnerdesigns.com
Website: www.turnerdesigns.com

Providing fluorescence-based solutions for research, water quality, and pollution control for over 40 years. Known for reliable and stable submersible, field, handheld, laboratory, and online fluorometers and turbidimeters. Customers rate us an average of 9.4, on a scale of 1-10, when asked how likely they would be to recommend us.

SMART TELEMETRY

OceanWise Ltd
Dovedale House, 16 Butts Road
Alton, Hants, GU341NB, UK
Tel : +44 (0)1420 768262
Fax : +44 (0)8713 140910
Email : info@oceanwise.eu
Website: www.oceanwise.eu
Contact : john.pepper@oceanwise.eu

Monitoring and measuring environmental data is not enough. You need to manage it so you get the right data in the right place at the right time. Our Environmental Data Sharing and Publishing solutions gets the most out of your investment in data monitoring.

- ***Easy and inexpensive viewing and sharing of real-time data***
- ***Secure and straightforward archiving and storage of all types of marine data***
- ***Data accuracy, integrity and reliability***

Enjoy the confidence of working with marine data experts!

SONAR SYSTEMS

iXBlue
Tel: +33 (0) 1 30 08 88 88
Fax: +33 (0) 1 30 08 88 00
Website: www.ixblue.com

- **JH 200, JH 250, JH 500** very low frequency transducers
- **SAMS-DT-6000** deep tow synthetic aperture sonar
- **SEAPIX 3D** multibeam sonar

iXBlue is a leading global provider of innovative solutions and services for navigation, positioning, and imaging.

Klein Marine Systems, Inc.
11 Klein Drive
Salem, NH 03079
Tel: +1 603 893 6131
Fax: +1 603 893 8807
E-mail: Klein.Mail@KleinMarineSystems.com
Web: www.KleinMarineSystems.com
Contact: Deborah Durgin, Supervisor, Marketing & Sales

Klein Marine Systems, Inc. is the world's leading sensor technology provider that manufactures and designs high-resolution side scan and multi-beam sonar equipment, and radar-based security and surveillance systems. Klein has developed a worldwide reputation of excellence in the industry by providing quality products and excellent customer service. Please feel free to check out our product offerings at www.KleinMarineSystems.com.

Marine Sonic Technology
120 Newsome Dr. Suite H, PO Box 1309
Yorktown VA 23692-1309
Toll Free: +1 800 447 4804
E-mail: Regan.Lipinski@na-atlas.com
Website: www.marinesonic.com

Marine Sonic Technology builds high quality, high resolution side scan sonar systems. Located in Yorktown, Virginia, Marine Sonic has been in business for more than 25 years. Our towed systems are rugged, easy to deploy and simple to operate. We also offer highly efficient AUV/ROV embedded systems, which occupy minimal space and low power consumption.

SOUND VELOCITY PROBES/CTDS

SAIV A/S
Nygardsviken 1, 5164
Laksevag, Norway
Tel: +47 56 11 30 66,
Fax: +47 56 11 30 69
E-mail: info@saivas.no
Website: www.saivas.no
Contact: Gunnar Sagstad

• STD/CTD, Sound Velocity probes/recorder with optional multi-parameter facilities; Turbidity, Fluorescence, Oxygen etc. The new CTD/STD model SD208 with wireless communication and high accuracy: 0.002 mS/cm, 0.002 °C

• Precision pressure /depth (0.01% accuracy) and temperature sensors/recorders. Applications: hydrographic profilings, installation on ROVs and towed systems, etc. Robust and compact designs are combined with accuracy and "plugand play" compatibility. Output format for sonar equipment, e.g. EM1002, EM3000, SSP, HiPAP and Reson 8125.

SUB-BOTTOM PROFILES

iXBlue
Tel: +33 (0) 1 30 08 88 88
Fax: +33 (0) 1 30 08 88 00
Website: www.ixblue.com

- **ECHOES 3500 T3 and T7** high penetration sub-bottom profilers
- **ECHOES 5000** full ocean depth sub-bottom profiler
- **ECHOES 10000** shallow water sub-bottom profiler

iXBlue is a leading global provider of innovative solutions and services for navigation, positioning, and imaging.

SUBSEA FABRICATION

New Industries
6032 Railroad Avenue
Morgan City, LA 70380
Tel: +1 985 385 6789
E-mail: bill.new@newindustries.com
Website: www.newindustries.com
Contact: Bill New

New Industries provides quality fabrication services to the offshore oil & gas and marine industries focusing on large diameter pressure vessels, suction piles, DNV buildings and deepwater subsea production equipment such as jumpers, PLETs, PLEMs and manifolds.

SUBSEA TOOLING

Subsea Americas
3447 Hwy 182
P.O. Box 185
Berwick, LA 70342
Tel: +1 985 714 1767 or 985 518-0055
E-mail: charles@subseaamerica.com
Website: www.subseaamericas.com
Contact: Charles Mayea

Subsea Americas (SSA) is a leading provider of rental ROV tooling equipment on a worldwide basis. SSA is a 24 hr. / 7 days a week service provider of a comprehensive range of standard subsea tooling equipment. From torque tools and flying lead orientation tools to 15k isolated hydraulic intensifiers and wire rope cable cutters - SSA can fully support the client's needs with quality service, and reliable equipment at a most competitive cost.

UNDERWATER VEHICLES/AUVS

Hydroid, Inc.
a subsidiary of Kongsberg Maritime
6 Benjamin Nye Circle
Pocasset, MA 02559-4900 USA
Tel: +1 508 563 6565
Fax: +1 508 563 3445
E-mail: glester@hydroid.com
Website: www.hydroid.com
Contact: Graham Lester

Hydroid, a subsidiary of Kongsberg Maritime, is the world leader in manufacturing advanced Autonomous Underwater Vehicles (AUVs). REMUS AUVs provide innovative and reliable systems for the marine research, defense, hydrographic and offshore/energy markets. Hydroid vehicles represent the most advanced, diversified and field-proven family of AUVs and support systems in the world.

OceanServer Technology, Inc.
151 Martine Street
Fall River, MA 02723 USA
Tel: +1 508 678 0550
Fax: +1 508 678 0552
E-mail: sales@ocean-server.com
Website: www.iver-auv.com
Contact: Jim Kirk

OceanServer Technology, Inc. is a leading provider of man-portable Autonomous Underwater Vehicles (AUVs) with over 250 AUVs deployed worldwide. The Iver AUV is an affordable, commercial vehicle used for general survey and sub-surface security work, and serves as a research platform for autonomy, behavioral and sensor development studies at universities and navy research facilities.

UNDERWATER VEHICLES/ROVS

Deep Ocean Engineering Inc.
2528 Qume Drive, Suite 11
San Jose, CA 95131 USA
Tel: +1 408 436 1102
Fax: +1 408 436 1108
E-mail: sales@deepocean.com
Website: www.deepocean.com
Contact: Bill Charbonneau

Deep Ocean Engineering, Inc. provides remotely operated and unmanned surface vehicle (ROV / USV) solutions which are used by a broad range of industry applications - security, military, nuclear and hydroelectric power plants, inshore dams and lakes, oil and gas, scientific research, fisheries, salvage, search / recovery, and pipeline inspections.

i-Tech
22330 Merchants Way
Katy, TX 77449
Tel: +1 281 693 9403
E-mail: Katarina.Tehlirian@Subsea7.com
Website: www.interventiontechnology.com
Contact: Katarina Tehlirian

i-Tech is a global division of Subsea 7 delivering world class remotely operated vehicle (ROV) and intervention tooling support services to the offshore energy industry, operating from four regional centers: Europe & Africa, Asia-Pacific the Americas and Brazil.

KEEP YOUR ONT DIRECTORY LISTINGS ON TARGET
- Can be updated at any time throughout the year
- Keeps your market aware of your current contact and product information

Call Today! +1-772-221-6796

Oceaneering International, Inc.
11911 FM 529
Houston, TX 77041
Tel: 713.329.4500
E-mail: info@oceaneering.com
Website: www.oceaneering.com
Contact: Bill Mallin

Oceaneering is the subsea connection specialist. We are connecting what's needed with what's next as the world's largest ROV operator and the leading ROV provider to the oil and gas industry with over 300 systems operating worldwide. We push the limits of ROV intervention and meet new, demanding tooling intervention.

QSTAR ROV Training & Subsea Services
C/ Sucre 26, 35008 - C/Medas 4-6, 08023
Canary Islands & Barcelona, Spain
Tel: + 34 616 604 778 / + 34 928 91 48 13
Fax: +34 928 91 48 13
E-mail: info@qstar.es
Websites: www.qstar.es & www.rovs.eu

QSTAR was established to offer services for industries that require effective solutions for Subsea projects through the use of our ROV fleet and high Qualified personnel. Our World leading ROV Training Division offers High Quality Training for ROV PILOT TECHNICIANS as a World-Wide ROV Training Establishment Member of the IMCA.

Outland Technology
38190 Commercial Ct.
Slidell, LA 70458 USA
Tel: 985-847-1104
Fax: 985-847-1106
E-mail: jeff@outlandtech.com
Website: www.outlandtech.com
Contact: Jeff Mayfield

Offering the most rugged equipment and unsurpassed customer service, Outland Technology has been the world's leading manufacturer of underwater video, lighting and ROV equipment for over 30 years. We recognize that no two jobs are the same and specialize in products that are customizable for your specific applications.

Teledyne SeaBotix
2877 Historic Decatur Road, Suite 100
San Diego, CA 92106 USA
Tel: +1 619 450 4000
Fax: +1 619 450 4001
E-mail: SeaBotixInfo@Teledyne.com
Website: www.SeaBotix.com
Contact: Alasdair Murrie

Teledyne SeaBotix is a world leading manufacturer of capable underwater MiniROVs that perform a multitude of tasks including maritime security, search and recovery, hull and pipeline inspection, hazardous environment intervention, aquaculture, sensor deployment and oceanographic research. The Little Benthic Vehicle systems have become the benchmark in compact ROVs around the world.

and ROV equipment for over 30 years. We recognize that no two jobs are the same and specialize in products that are customizable for your specific applications.

VideoRay
212 East High Street
Pottstown, PA 19464
Tel: +1 610 458 3000
Fax: +1 610 458 3010
E-mail: sales@videoray.com
Website: www.videoray.com
Contact: Brian Luzzi

With more than 3,500 ROV's in service around the world, VideoRay has clearly become the global leader in Observation ROV technology. VideoRay is an extremely versatile, portable, affordable, and reliable solution for underwater operations including surveys, offshore inspections, search & recovery, homeland & port security, science & research, fish farming, and other unique applications in underwater environments. VideoRay is available on the General Services Administration.

UNDERWATER VIDEO EQUIPMENT

ROVSCO, Inc.
5263 Barker Cypress Road, Suite 600
Houston, TX 77084
Tel: +1 281 858 6333
Fax: +1 281 858 6363
E-mail: sales@rovsco.com
Website: www.rovsco.com
Contact: Jessica McKenney

Rovsco provides support and solutions to the offshore subsea and marine industries; work-class ROV and Commercial Diving operations. We manufacture a number of tools/equipment and subsea video items. We have an excellent reputation worldwide based on our product knowledge, dependability, commitment to customer service and speed of response.

WINCHES, HANDLING & CONTROL SYSTEMS

Hawboldt Industries
220 Windsor Road
Chester, Nova Scotia
Canada B0J 1J0
Tel: 902 275 3591
Fax: 902 275 5014
E-mail: paul.phillips@hawboldt.ca
Website: www.hawboldt.ca
Contact: Paul Phillips

Hawboldt Industries has built robust commercial and scientific deck machinery for over a century, focusing on custom winch solutions and satisfying project requirements from engineering to commissioning. ROV winches, A-frames, and electro-hydraulic power packs are available to satisfy the offshore and subsea markets. Our scientific winches, preferred by universities and governments worldwide, are renowned for their durability and performance particularly in harsh environments.

Markey Machinery Company
7266 8th Ave. South
Seattle, WA 98108 USA
Tel: +1 800 637 3430
Fax: +1 206 623 9839
E-mail: info@markeymachinery.com
Website: www.markeymachinery.com

Preferred by the US fleet, Markey's advanced oceanographic winch systems provide ultimate dependability, reliability and precise performance when and where you want it. Operating within critical windows of opportunity you can count on our custom winches, capstans, windlasses and auxiliary machinery for the successful execution and completion of your research.

WINCHES - UNDERWATER

ALL OCEANS Engineering Ltd.
Tyrebagger Works, Clinterty, Kinellar
Aberdeen AB21 0TT, UK
Tel: +44 (0) 1224 791001
Fax: +44 (0) 1224 791002
E-mail: admin@alloceans.co.uk
Website: www.alloceans.co.uk
Contact: Brian Abel

MECHANICAL HANDLING UNDERWATER
Launch and Recovery Systems - 6,000m plus Underwater Winches - ROV and Diver operated Tether Management Systems - 6,000m plus Torque Tools - Electric and Hydraulic systems - ROV and Diver operated General Products - Compensators, latches, swivels, metrology sets, cable reels, pressure housings, junction boxes Workshop Services - Fabrication, assembly and testing Engineering - prototyping, product development, solutions engineering AC-ROV - The mini ROV that broke the mold.

KEEP YOUR ONT DIRECTORY LISTINGS ON TARGET

- Can be updated at any time throughout the year
- Keeps your market aware of your current contact and product information

Call Today! +1-772-221-6796

LOOK FOR YOUR NEXT OPPORTUNITY TO GET LISTED IN THE MID-YEAR UPDATE

It's Here!

From A-Frames to Winches; Cable Installation to Welding & Fabrication
Ocean News & Technology's Product & Service Directory lists more than 300 products and services, distinguishing manufacturers, sellers, rental agents and service providers.

Who Manufactures?
Who Sells?
Who Rents?
Who Provides the Service?

visit www.oceannews.com/product-service-directory

For advertising information, contact:

North America
Lisa Chilik
574-261-4215
lchilik@tscpublishing.com

International
Mimi Shipman
+44(0)777 601 7564
mshipman@tscpublishing.com

Corporate
Jessie Lewis
772-617-6787
jlewis@tscpublishing.com

ADVERTISER INDEX

Ametek SCP Inc. ....49 ....www.ametekscp.com
Balmoral Comtec Ltd ....37 ....www.balmoral-group.com
Caldwell Marine International, LLC ....46 ....www.caldwellmarine.com
Clean Pacific ....71 ....www.cleanpacific.org
CSA Ocean Sciences Inc. ....4 ....www.csaocean.com
ECA Robotics ....19 ....www.eca-robotics.com
ECO Magazine ....9 ....www.ecomagazine.com
Euromaritime ....67 ....www.euromaritime.fr/en
EvoLogics GmbH ....83 ....www.evologics.de
Global Ocean Design ....52 ....www.globaloceandesign.com
Hydroid ....5 ....www.hydroid.com
InterOcean Systems, Inc. ....41 ....www.interoceansystems.com
JW Fishers Manufacturing, Inc. ....34 ....www.jwfishers.com
LinkQuest, Inc. ....13 ....www.link-quest.com
MacArtney A/S ....3 ....http://macartney.com
Marine Sonic Technology ....7 ....www.marinesonic.com
Nautilus Marine Service GmbH ....40 ....nautilus-gmbh.com
New Industries ....39 ....www.newindustries.com
Oceaneering International ....32 ....www.oceaneering.com
Ocean News ....38, 48, 51, 53, 72, 73, 74, 81 ....www.oceannews.com
Ocean Sensor Systems ....23 ....www.oceansensorsystems.com
OceanServer Technology ....21 ....www.ocean-server.co
Ocean Specialists, Inc. ....55 ....www.oceanspecialists.com
Oceans '16 ....70 ....www.oceans16mtsieeemonterey.org
Okeanus Science & Technology ....45 ....www.okeanus.com
Quest Offshore Resources, Inc. ....56 ....www.questoffshore.com
Radar Screen Report ....58 ....www.subcableworld.com/radar-screen-report
RBR, Ltd ....84 ....www.rbr-global.com
ROVSCO, Inc. ....43 ....www.rovsco.com
SeaRobotics ....47 ....www.searobotics.com
SeaWork Intl ....69 ....www.seawork.com
Shark Marine Technologies, Inc. ....16 ....www.sharkmarine.com
SonarTech Co., LTD ....47 ....www.SonarBeam.co.kr/www.sonartech.com
Subcable World ....58 ....www.subcableworld.com
SubCtech GmbH ....49 ....www.subCtech.com
Subsalve USA ....44 ....www.subsalve.com
Tecnadyne ....27 ....www.tecnadyne.com
Teledyne Marine ....14 ....www.teledynemarine.com
VideoRay ....2 ....www.videoray.com

S2C TECHNOLOGY: COMMUNICATION AND TRACKING COMBINED

- time, space and cost-saving solutions
- low power consumption for autonomous operations
- advanced data delivery algorithms, addressing and networking, remotely configurable settings
- extendable platform with multiple configuration options: power-saving Wake Up module, acoustic releaser, additional sensors, custom solutions, OEM versions availableh

USBL POSITIONING SYSTEMS

simultaneous positioning and communication - no need to switch between positioning mode and modem mode

- flexible SiNAPS positioning software
- reliable data transmissions
- range: up to 8000 m
- accuracy: up to 0.04 degrees

LBL POSITIONING SYSTEMS

highly accurate, precise and stable performance, simultaneous positioning and data transmissions

- flexible SiNAPS positioning software
- reliable data transmissions
- range: up to 8000 m
- accuracy: better than 0.01m

UNDERWATER ACOUSTIC MODEMS

reliable data transmissions even in adverse conditions, customizable R-series modems, light and compact M-series "mini" modems, **new S2CM-HS high-speed modem**, special editions for developers, S2C communication and positioning emulator - remote access or standalone device

- range: up to 8000 m
- depth: up to 6000 m
- data rate: up to 62.5 kbps

Meet us at
UNDERSEA DEFENCE TECHNOLOGY 2016!
1 - 3 June 2016
Oslo, Norges Varemesse
Stand A40

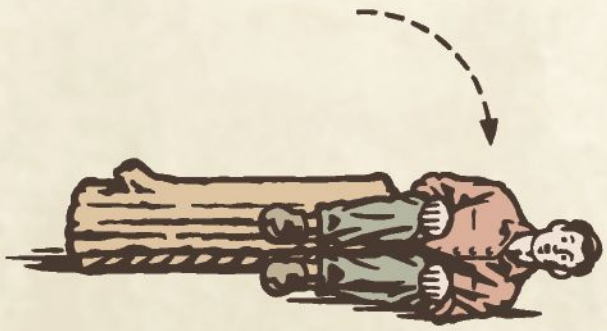
EvoLogics GmbH
Ackerstrasse 76,
13355 Berlin, Germany

tel.: +49 30 4679 862-0
fax: +49 30 4679 862-01

sales@evologics.de
evologics.de

Instructions for the deployment of our latest sensors.

Step 1



Step 2

Introducing our new |rt range of small, realtime sensors. No configuration required; simply attach a cable and the data starts streaming out.

Oceanographic quality measurements without deployment stress.

Single or dual channel units available.

Temperature ❋ Depth ❋ Tides ❋ Waves ❋ DO ❋ Tu ❋ PAR

RBR

rbr-global.com