MARINE TECHNOLOGY REPORTER

July/August 2010
www.seadiscovery.com

MTR100

Subsea Tech Takes Center Stage in Wake of GOM Spill & Recovery

www.videoray.com

VideoRay
THE GLOBAL LEADER IN OBSERVATION ROV TECHNOLOGY

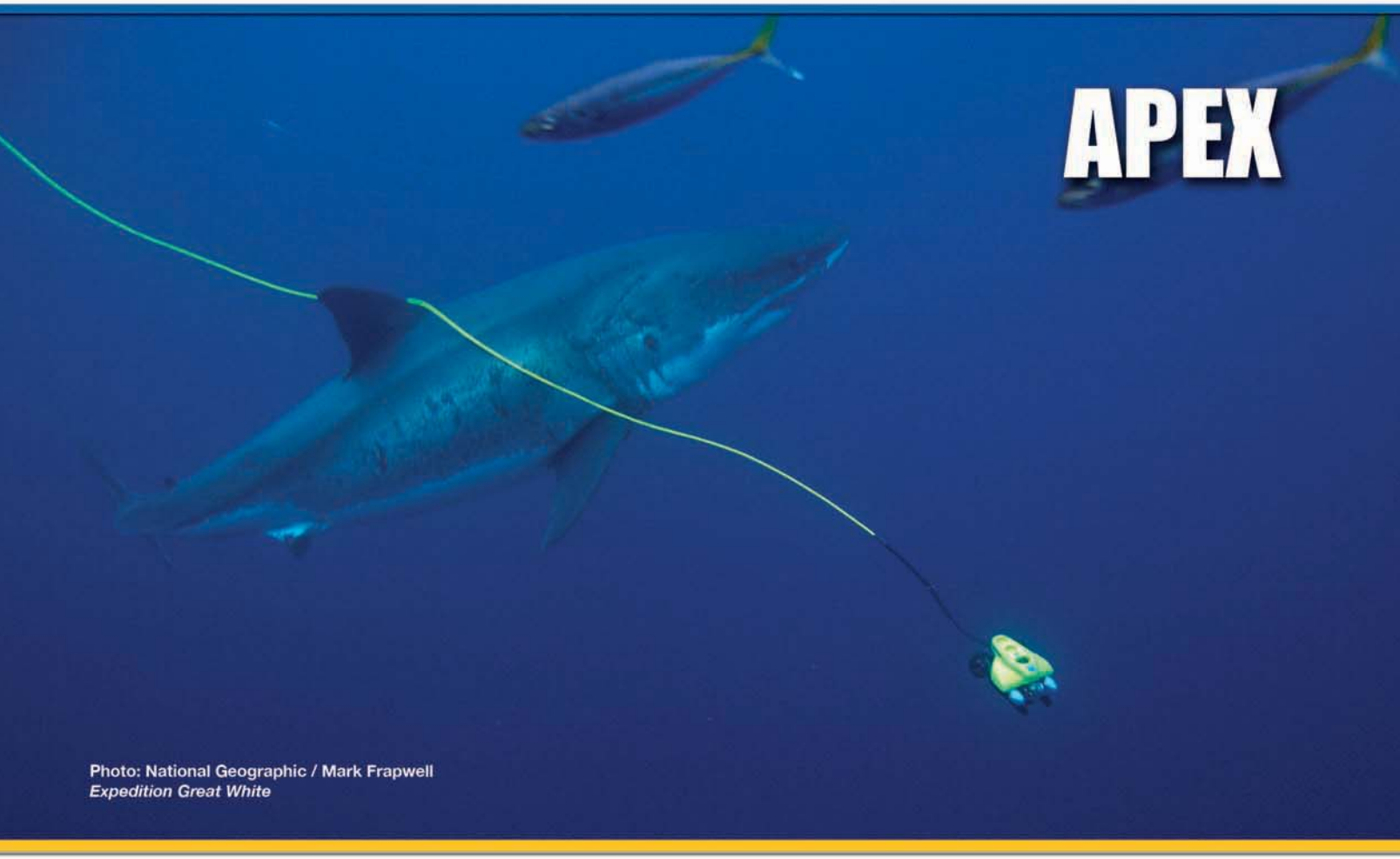


Photo: National Geographic / Mark Frapwell
Expedition Great White

VideoRay Remotely Operated Vehicles...
The **simple, rugged, portable, and reliable solution** for underwater observation challenges like those performed for Fischer Productions and the National Geographic television series *Expedition Great White*. The VideoRay Pro 4 ROV swam with the oceans apex predator and captured stunning close up high definition video. Learn more about VideoRay products, experience past missions, and view videos at **www.videoray.com**.

www.videoray.com
580 Wall Street Phoenixville, PA 19460 USA
phone: +1 (610) 458-3000 fax: +1 (610) 458-3010 e-mail: info@videoray.com

Piezoceramics - Transducers - Systems

CTG

CHANNEL TECHNOLOGIES GROUP

Stronger

ci

CHANNEL INDUSTRIES

Faster

ITC

INTERNATIONAL TRANSDUCER CENTER

Better

SONATECH

SONATECH

One Company. Three Divisions. World Class Quality.

www.channeltechgroup.com

879 Ward Drive . Santa Barbara . CA . 93111 . USA . Tel. 805.683.1431

July/August 2010

contents

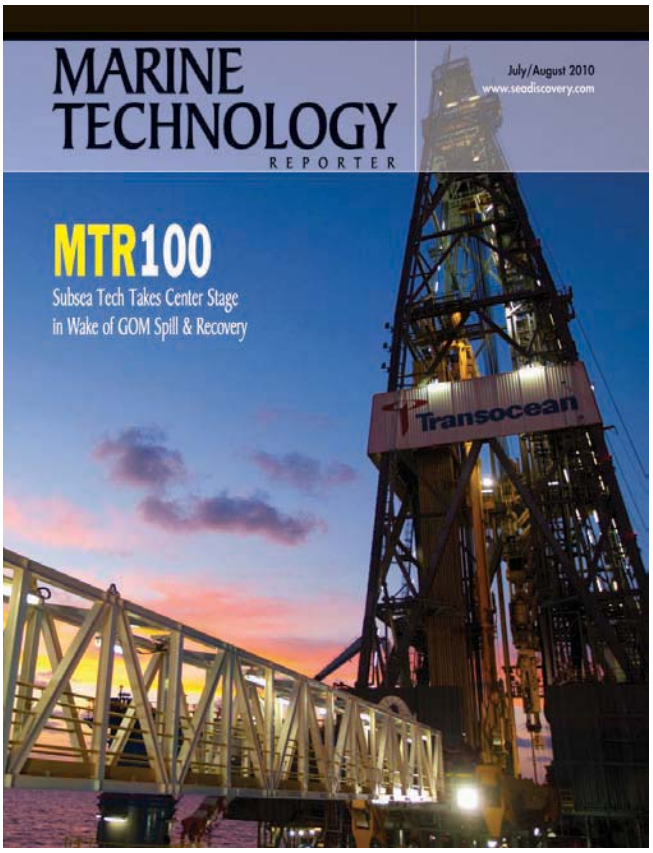
Marine Technology Reporter • Volume 53 • Number 6

MTR100

NO MATTER HOW DEEP, DARK AND COLD IT GETS, IT'S JUST ANOTHER DAY AT THE BEACH.

ISR Group has the unmanned service and support expertise to fit your requirements. To learn more about our technical services, systems training, or logistics and depot capabilities, go to ISRGroup.com or call 731-926-4188.

ISR GROUP



On the Cover
Transocean Discoverer Inspiration during a sunset on the MC 252 location in the Gulf of Mexico. (© BP p.l.c.)

MTREnews

MTR **publishes a weekly newsletter via e-mail. Subscribe for FREE at www.seadiscovery.com**
For banner advertisement info, contact Rob Howard at howard@marinelink.com

SUBSCRIBE

Subscribe to the print or electronic edition of *MTR* by visiting www.seadiscovery.com, or e-mail Kathleen Hickey at mtrcirc@marinelink.com

ADVERTISE

MTR **offers a number of print and electronic advertising packages. To see our editorial calendar and advertising rates, visit www.seadiscovery.com/mt/mtMagazine.aspx?mnl2=l2advertising**

POST/SEARCH JOBS

MTR JOBS **listings are updated weekly and help match employers with qualified employees.**

Post a position or keep abreast of new employment opportunities at www.seadiscovery.com/mt/mtJob.aspx

SUBMIT EDITORIAL

MTR **invites you to submit company news and events for publication on-line and in print. Visit www.seadiscovery.com/mt/mtStories.aspx?PostStory=new**

SUBMIT VIDEO

MTR **invites you to submit interesting Subsea videos for broadcast. Contact trauthwein@marinelink.com for details.**

EVENTS CALENDAR

MTR **maintains a list of upcoming industry events. Search an event or post information on your event at www.seadiscovery.com/mt/MTCalendar2.aspx**

MEET THE CastAway® CTD

Modern technology – yet simple to use, the CastAway is designed for CTD profiling down to 100 m, providing you the data you need in minutes!

- Conductivity, temperature, depth, salinity, sound speed
- Built in GPS
- Built in LCD display for easy data review
- Bluetooth communication (no cables needed!)

Oceanographers and hydrographers now have the ability to quickly collect CTD and sound speed data from any dock, bridge or boat.

With three taps of a stylus pen, simply drop the CastAway in the water, pull it up, and have position, time, conductivity, temperature, and depth in record time. Simply review the data on the built-in display or upload to your PC via Bluetooth. No tools, computers or cables required. Ever.

Download the Whitepaper at:

ysi.com/castaway | castaway@ysi.com

YSI®

(© BP p.l.c.)

www.seadiscovery.com

NEW YORK
118 E. 25th St., New York, NY 10010
Tel: (212) 477-6700; Fax: (212) 254-6271

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

PUBLISHER
John C. O'Malley
jomalley@marinelink.com

Associate Publisher & Editor
Gregory R. Trauthwein
trauthwein@marinelink.com

Contributing Editors
Capt. Edward Lundquist, USN (Ret.) • Steve Withrow

Production Manager
Irina Tabakina
tabakina@marinelink.com

Production Assistant
Amanda O'Malley
aomalley@marinelink.com

Sales Administration & Office Manager
Rhoda Morgan
morgan@marinelink.com

Sales & Event Coordinator
Michelle Howard
mhoward@marinelink.com

Manager, Accounting Services
Esther Rothenberger
rothenberger@marinelink.com

Manager, Public Relations
Mark O'Malley
momalley@marinelink.com

Manager, Information Technology Services
Vladimir Bibik
bibik@marinelink.com

CIRCULATION
Kathleen Hickey
mtrcirc@marinelink.com

ADVERTISING

Vice President, Sales and Marketing
Rob Howard
howard@marinelink.com
Tel: (561) 732-4368 • Fax: (561) 732-6984

Advertising Sales Manager
Lucia M. Annunziata
annunziata@marinelink.com
Tel: (212) 477-6700 • Fax: (212) 254-6271

Japan
Katsuhiro Ishii • amskatsu@dream.com
Tel: +81 3 5691 3335 • Fax: + 81 3 5691 3336

Last month I had the honor to attend a dinner at the residence of **U.S. Navy Chief of Naval Operations Admiral Gary Roughead** to engage in a discussion regarding Unmanned Underwater Systems, their application and future with the U.S. Navy. While the discussion among the 15 gathered industry leaders and senior Flag Officers was not fodder for publication, per se, it set my mind towards future applications of subsea technology in the military, commercial and scientific spaces.

As any reader of this magazine should know, the U.S. military — and in fact militaries worldwide — are a prime source of funding and creative driver of subsea technology. Based on the dinner and discussion, I am quite certain the level of interest in underwater technologies from a military perspective will advance even more rapidly in the months and years to come. More on that in future editions.

On the commercial side, the explosion and loss of Deepwater Horizon and subsequent oil spill in the Gulf of Mexico will have an equally significant impact on our industry, as new rules and regulations enter force on just where, when, and more importantly 'how' oil companies go about the business of discovering and recovering natural resources in increasingly deep, hostile waters.

The Deepwater Horizon event will be debated for years and remembered for generations, as the name itself – much like the Exxon Valdez and the global advent of double hull tankers – will become forever linked to new regulations and procedures in the production of oil and gas in the offshore environment, and the new and improved technologies that will certainly emerge to enable future accidents to be dealt with more expediently.

With that we offer the ***5th Annual MTR100***, our annual review and report on 100 leading companies in the subsea space. If the past four editions of the MTR100 is any indication, very shortly I expect to be inundated with comment and debate — which I sincerely welcome — on which companies are included (or not included).

Gregory R. Trauthwein • trauthwein@marinelink.com • tel: 212-477-6700

MARINE TECHNOLOGY REPORTER
www.seadiscovery.com
Vol. 53 No. 6
ISSN 1559-7415
USPS# 023-276

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

Marine Technology Reporter is published monthly except for February, August, and December by New Wave Media, 118 E. 25th St., New York, NY 10010-2915. Periodicals Postage at New York, NY and additional mailing offices.

POSTMASTER: Send address changes to MARINE TECHNOLOGY REPORTER, 118 E. 25th St., New York, NY 10010-2915.

Postmaster send notification (Form 3579) regarding undeliverable magazines to Marine Technology Reporter, 118 East 25th Street, New York, NY 10010.

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

Member
BPA WORLDWIDE BUSINESS

Subscription:
To subscribe please visit
www.seadiscovery.com/subscribe

MTR 100

Chevron • ConocoPhillips • ExxonMobil • Shell

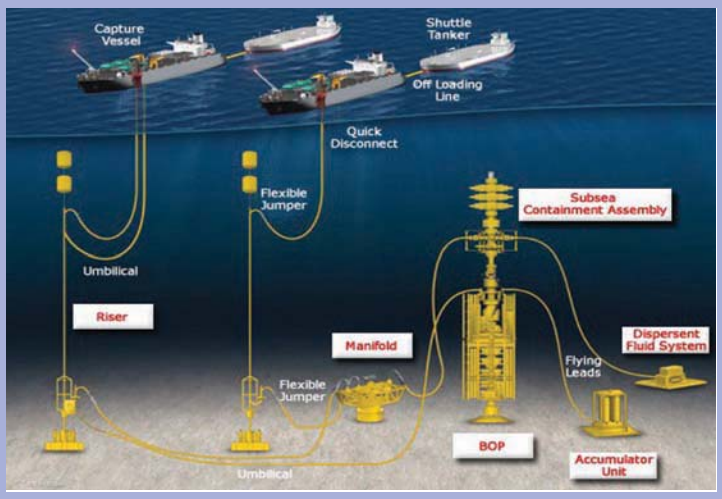
The Marine Well Containment Company

Welcome to the *5th Annual MTR 100*, and a unique presentation of the first five companies honored: oil majors Chevron, ConocoPhillips, ExxonMobil and Shell, as well as the newly formed Marine Well Containment Company.

Simply put, the recent explosion and oil spill in the Gulf of Mexico will impact the offshore oil & gas and subsea industries for a generation to come, as in the wake of the tragedy and clean-up, there are certain to be a complex new set of rules and regulations governing the offshore market around the United States, and new procedure for the plan of action when a spill inevitably happens again. Last month the four oil majors announced a progressive plan to build and deploy a rapid response system that will be available to capture and contain oil in the event of a potential future underwater well blowout in the deepwater Gulf of Mexico. Putting their money where their proverbial mouth is, the companies report that they have already committed $1 billion to fund the initial costs of the system, forming the non-profit Marine Well Containment Company, to operate and maintain this system.

This development will have far-reaching implications for the subsea technology industry as a whole, as the oil companies are actively seeking partners to provide the technology and service that will ultimately make this system run ... if ever needed.

Such developments in the wake of the Gulf of Mexico oil spill appear to be coming to fruition, as companies scramble to ensure that their operations are ahead of any legislative curve likely to evolve from the recent blowout in the GOM. The new system will be designed to be flexible, adaptable and able to begin mobilization within 24 hours and can be used on a wide range of well designs and equipment, oil and natural gas flow rates and weather conditions. The new system will be engineered to be used in deepwater depths up to 10,000 feet and have initial capacity to contain 100,000 barrels per day with potential for expansion. Additional operational and maintenance costs for the subsea and modular processing equipment, contracts with existing operating vessels in the Gulf of Mexico and any potential new vessels that may be constructed will increase this cost commitment.



This system offers key advantages to the current response equipment in that it will be pre-engineered, constructed, tested and ready for rapid deployment in the deepwater Gulf of Mexico. It is being developed by a team of marine, subsea and construction engineers from the four companies. The system will include specially designed subsea containment equipment connected by manifolds, jumpers and risers to capture vessels that will store and offload the oil. Dedicated crews will ensure regular maintenance, inspection and readiness of the facilities and subsea equipment. Work on this new containment system is being accelerated to enhance deepwater safety and environmental protection in the Gulf of Mexico, which accounts for 30 percent of U.S. O&G production.

The sponsor companies will proceed immediately with the engineering, procurement and construction of equipment and vessels for the system. ExxonMobil will lead this effort on behalf of the four sponsor companies.

AirMar

Milford, NH
Tel: 603-673-9570
Email: sales@airmar.com
www.airmar.com
CEO: Steve Boucher
President: Tom Krantz
VP: Matt Boucher
Sales Director: Jen Matsis
Engineering Director: Fred Buerick
Employees: 175
Annual Sales: $25m

Boucher

Airmar is a manufacturer and OEM supplier of a range of broadband, custom, transducers ranging from 10kHz to 455mHz. Airmar also manufactures Ultrasonic WeatherStation Instruments, GPS & Heading Sensors for monitoring information on buoys and vessels. Airmar's broadband transducers feature a low Q and very good sensitivity, enabling users to perform accurate surveys with higher resolution. These transducers can also be "chirped" with a longer pulse over a wide-frequency band. Users with adjustable frequency echosounders will be able to regulate the operating frequency and tailor the beamwidth to specific survey conditions. Best of all, the transducers are competitively priced. Applications include: Acoustic Doppler—For either vessel-mounted Doppler Speed Logs or ADCP applications; Acoustic Backscatter—For targets large or small. Using a single transducer, or several transducers set at staggered frequencies, you can slide the operating frequency up and down a continuous -3dB band with little variation in acoustic intensity; Hydrographic Survey—When used at discrete frequencies, the low-ringing and narrow-beam characteristics of these transducers help produce the most accurate single-beam surveys at any water depth. In addition, these transducers can be used with electronics that produce a chirp pulse. In 1982, AIRMAR was founded by owner and CEO, Steve Boucher. Twenty-seven years later the company has grown to a large-scale marine and industrial transducer supplier. Airmar is a leading manufacturer and OEM supplier of a wide range of Low Q, high power, broadband, custom, transducers ranging from 10kHz to 455mHz. These transducers are used widely for ocean & harbor survey & mapping by popular echosounder manufacturers like Odom, Knudsen, Simrad, Marport and others. Airmar offers transducers for broadband frequency operation, acoustic doppler, multi & split beam, sub-bottom profiling, and side-scan. Airmar also manufactures Ultrasonic WeatherStation Instruments, GPS & Heading Sensors and NMEA 0183 & 2000 Smart transducers for all commercial marine markets.

AMEC

St. John's, NL, Canada
Tel: (709) 722-7023
www.amec.com

AMEC Earth & Environmental is one of the world's leading environmental and engineering consulting organizations. Its full service capabilities cover a wide range of disciplines, including environmental engineering, meteorology, oceanography and science, geotechnical engineering, water resources, materials testing and engineering, engineering and surveying, and program management.

3PS Inc.

Cedar Park, Texas
Tel: 512-610-5200
Email: www.3psinc.com

3PS, Inc. specialize in the design and manufacture of sensors and systems, which must withstand high shock, vibration, and physical abuse inherent with shipboard and underwater operations. Operations and Engineering personnel prefer the 3PS products due to the 3PS sensor reliability and display view ability as well as the excellent support provided by 3PS and it's six multiple U.S. bases with direct 3PS employees. 3PS is the only provider of Winch & Crane Monitoring Systems that has been providing combined wireless and hard wired systems for more than 10 years in the offshore environments including:

- Deep Tow Line Tension, Payout, and Speed
- Seabed deployment winch depth, speed, and tension systems
- Hydrographic Launch Payout / Speed Systems
- Side Scan Sonar, Sub-bottom Profiler Line Monitoring Systems
- ROV deployment and TMS Tension & Payout Systems
- Seismic Fairleader, Gun Deployment, and Streamer Line Tension Sensors & Displays
- Seafloor Angular Position Sensors

Applied Acoustic Engineering Ltd.

Great Yarmouth Norfolk, UK
Tel: +44 1493 440355
Email: general@appliedacoustics.com
www.appliedacoustics.com
CEO: Adam Darling
Marketing Director: Sue Meeken
Sales Manager: Gavin Willoughby
Engineering Director: Neil MacDonald
Testing Capabilities: 6000m pressure test tank
Employees: 40

Applied Acoustics won the Queen's Award for Enterprise in 2010, which confirms its strong industry performance in the marine sector. Its range of

products includes USBL subsea tracking systems, positioning beacons and seismic seabed profiling equipment used by survey companies, oceanography and research institutes operating worldwide. Constantly innovating, new products released over the last year include a sophisticated rack-mount tracking system, the Easytrak Nexus, as well as a portable entry-level system for small workboats, the Easytrak Alpha. Seismic power supply units now extend to 12,000 Joules for increased sea-bed penetration in deeper waters.

Boston Harbor Cruises

Boston, Mass.
Email: rnolan@bostonharborcruises.com
www.bostonharborcruises.com/commercial/
Principal: Rick Nolan, Principal
Tel: 617-720-9220

Boston Harbor Cruises' Offshore Logistics Division offers support services for the provision of vessels and professional marine crews on shore side and offshore construction projects throughout New England.

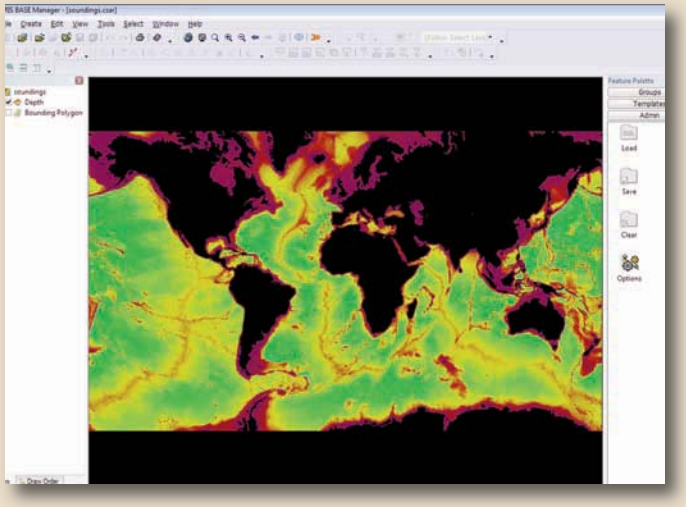
Boston Harbor Cruise's Scarlett Isabella.

Companies engage our USCG-certified and insured vessels for bridge/tunnel work, island construction, pier construction, subsea pipelines, marine surveys, private buoy maintenance, and many other special assignments including offshore wind and sustainable energy projects. BHC's vessels are also ideal for commercial dive operations including the transportation and launch of the latest ROV technology. Ample deck space easily accommodates most topside diving systems including air compressors and decompression chambers. Our services also include the movement of personnel and materials, via crew and supply boats to and from LNG tankers servicing the Northeast Gateway Terminal.

CARIS

Fredericton NB Canada
Tel: +1 (506) 458-8533
Email: info@caris.com
www.caris.com
Marketing Coordinator: Alex Palmer
Employees: 170

Dr. Masry



Right: Screen shot from Bathy DataBASE 3.0 released June 2010

Established in 1979, CARIS is a leading developer of geospatial software designed for the hydrographic and marine industries. Developed in cooperation with hydrographic clients and universities worldwide, the CARIS software is built on decades of hydrographic experience. Bathymetric innovations, feature data management, and data extraction support the company's diverse product range. More than 170 skilled engineering, IT and business professionals are employed by CARIS. In addition to its Fredericton office, CARIS also operates subsidiary offices in Australia, the Netherlands, the United Kingdom and the United States. CARIS has more than 30 worldwide distributors. The CARIS Ping-to-Chart product line is designed to deliver an integrated software solution for the entire workflow of hydrographic information from the echo-sounder ping to the production and distribution of the chart. CARIS products have been selected by hydrographic offices, military agencies, survey contractors, ports and harbors, municipalities, land administrators and academia. These products are used for processing and visualizing large bathymetric datasets, S-57 ENC and AML production, calculating offshore territorial claims under the United Nations Law of the Sea guidelines, and ports and waterways management. Through liaisons with the International Hydrographic Organization (IHO) and with the hydrographic community, CARIS has been closely involved in the development of the S-57, S-100, and other IHO standards.

Desert Star Systems LLC

Marina, CA
Tel: (831)384-8000
Email: tgray@desertstar.com
www.desertstar.com
CEO: Marco Flagg
CFO & Sales/Marketing Manager: Thomas Gray
Vice President: Matthew Crenshaw
Production Manager: Jesse Harkness
Testing Capabilities: 17-ft. DR-520 Rigid Inflatable Boat for ocean testing, a pressure sensor for leakage testing, an industrial centrifuge for production, a water circulator for production/calibration, and a laser printer for production and engineering.
Number of Employees: 6
Annual Sales: $850 to $1m

Desert Star Systems was founded in 1992 by Marco Flagg and was reorganized as a LLC corporation in 2000. The company is focused on the rapid design and manufacture of advanced sensor systems for field applications in the defense, science and commercial exploration segments. Most of Desert Star's product line has been developed through the NOAA SBIR program or through similar programs. The company recently developed the first solar powered, geomagnetic SeaTag animal tag. It is currently being used on loggerhead turtles in Casey Key, Fla., with future tests and deployments planned throughout the world from Alaska to Antarctica. Desert Star Systems is a mixture of manufacturing and engineering. Desert Star manufacturers acoustic positioning systems, acoustic releases, acoustic modems, underwater autonomous cameras, Special Forces reconnaissance systems, SeaTag animal tags, and diver homing systems. Generally most of these systems are "off the shelf" with the exception of one-off engineered systems. For example, Desert Star has made several systems specifically designed for custom applications such as for Northrop Grumman, Lockheed Martin, and others. In 2007 Desert Star began working on its SeaTag product line and shipped their first tag in early 2010. SeaTag-GEO is the first solar powered, geo-

SeaTag

Ship Hull System.

magnetic tag. Desert Star is working on completing the SeaTag product line which will consist of a tag that transmits its locations via RF, a modular pop-up satellite tag, an autonomous camera tag that transmits its images via satellite, and other inexpensive, specialized tags. Beyond SeaTag, Desert Star is also developing a highly advanced acoustic positioning system that has a position update rate of many times per second with accuracy in the centimeter range. The company is developing a high load acoustic release based on its patented burn-wire design.

DTC International

Houston, TX
Tel: (832) 590-8800
Email: jd.castle@ dtc-houston.com
www.dtc-houston.com
President: Dana Bebee
VP Technology Development: Bill Parks
Product & Project Manager: Margaret Buckley
Director of Business Development: J.D. Castle
Testing Capabilities: Two years ago, DTC relocated from an office orientation, to a 25,000 ft manufacturing facility. This relocation has provided DTC with the space and resources to meet the markets demands. DTC has several industry partners to provide any and all testing that is required

DTC is a privately employee owned organization. For the first 10 years, the company focused on providing engineering services to the industry. Over the past three years, DTC shifted its strategy to leverage its several patents. DTC is now focused as a solutions organization, providing revolutionary product technology with project management and engineering capabilities. Recently DTC launched the first SID in the Gulf of Mexico, which incorporated its retrievable control system. DTC's mission continues to be, providing the Subsea industry with new deepwater subsea technology, as well as, subsea engineering, technical consulting services and equipment directly to oil and gas

Hydroid

Pocasset, MA
Tel: (508) 563-6565
Email: sales@hydroid.com • www.hydroid.com
President: Christopher von Alt
VP Operations: Duane Fotheringham

Hydroid, Inc. was founded in 2001 following the execution of a technology transfer license with WHOI to allow REMUS (Remote Environmental Measuring UnitS) technology to reach a wider market and to provide for continuous product development. REMUS vehicles are currently in operation around the globe, serving customers within the military, scientific, and commercial market segments. Hydroid opened a European branch office in 2007 and was acquired by Kongsberg Maritime in June 2008. The organization's growing representative network provides local sales and support at a global level; and customer service staff members provide on-site training, system commissioning, and continuous product service and support. Hydroid maintains a full service production and test facility on Cape Cod, in Pocasset, MA, with a staff of 71. From the coastline to the deepest corners of the ocean, Hydroid, Inc. offers three customizable AUVs: the compact REMUS 100, the modular REMUS 600, and the deep-water REMUS 6000.

operators, and drilling contractors. Recently DTC has been awarded two contracts by RPSEA (a government / industry consortium) for the development of advanced riser-less intervention systems. In addition, besides leading product development in the HPHT segment, DTC is offers revolutionary products for BOP controls systems. In short, DTC's MODSYS is a fully retrievable, modular control system, which eliminates the requirement to pull the riser, LMRP, or the entire stack, just to repair BOP controls. MODSYS is only one of the revolutionary technologies offered by DTC.

EdgeTech

West Wareham, Mass.
Tel: 508-291-0057
Email: info@edgetech.com
www.edgetech.com

EdgeTech is an innovator in the design and manufacture of high end sonar imaging systems for underwater survey, detection and identification applications. The company traces its history back to 1965 when it started out as a division of EG&G. In 1995, EdgeTech was taken private and selected its name in part to honor the late Dr. Edgerton, an MIT professor and marine instrumentation pioneer. EdgeTech's foundation is built on a core set of technologies which includes: Full Spectrum CHIRP Processing, Multi-Pulse Technology, Dynamically Focused Arrays, Bathymetry, Telemetry, Modular Design, and Compact & Low Power Electronics. The company designs and develops a variety of standard and engineered-to-order marine products and systems including side scan sonar, sub-bottom profilers, bathymetric, combined and modular systems. These systems are available in a range of configurations for towed, deep towed, AUV, ROV, ROTV and custom platforms. With its worldwide network, EdgeTech serves and services customers including the U.S. Navy, foreign navies, survey firms and the oil & gas industry. The company employs more than 50 people between two locations: Wareham, Mass., and Boca Raton, Fla.

EdgeTech is also an affiliate company of ORE Offshore, a leading manufacturer of high accuracy acoustic positioning, communication and control systems. The two companies share the same office in Wareham with a multitude of in-house testing facilities including a test pool, acoustic test tank, pressure test chamber and a company research vessel for sea trials. These facilities allow the companies to fully test and calibrate every system to ensure the highest quality product is delivered. EdgeTech's most recent innovations include the introduction of its new 4600 (**pictured right**). Combined High Speed Swath Bathymetry & Side Scan Sonar System, as well as their new Littoral Mine Countermeasure Sonar (LMCS) System. The 4600 is a combined, fully integrated high speed swath bathymetry & side scan sonar system that produces real-time high resolution 3D maps of the seafloor while providing co-registered simultaneous side scan & bathymetric data. The key benefit of the 4600 is the use of EdgeTech's proprietary Multi-Pulse

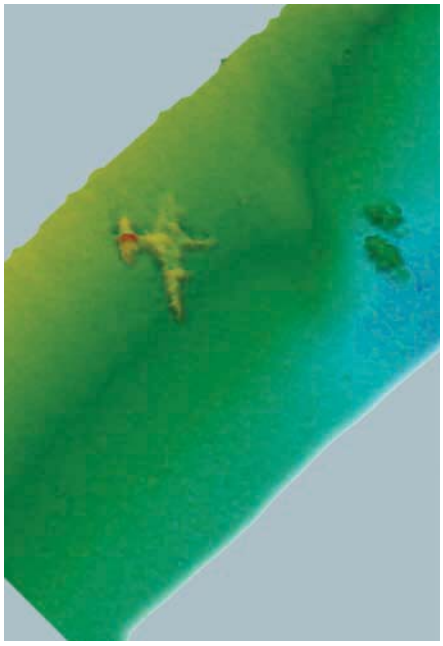
ECA

Toulon France 83078 • Tel: +33 494 08 90 00
Email: eca@ecagroup.com • www.eca.fr

ECA designs and delivers robotic and intelligent solutions. Established in 1936 as a R&D and patent deposit company, the company designed the first Unmanned Underwater Mine Disposal Vehicle with integrated Real Time and Artificial Intelligence on board in 1960. Since then, ECA has designed and produced more than 800 robots. Current products can be used for detection, inspection, destruction of mines, control & command systems, and anti-terrorist missions.

technology which places multiple, coded pulses into the water at the same time compared to just one pulse for conventional sonar systems. This means an area can be covered at twice the speed while still maintaining 100% bottom coverage, or one can get double the bathymetric data density along track. The 4600 provides a swath of up to 12 times water depth for bathymetric data, and a range of up to 250 meters/side for the side scan sonar, which operates at a 230 kHz frequency providing a great combination of range and high resolution CHIRP data.

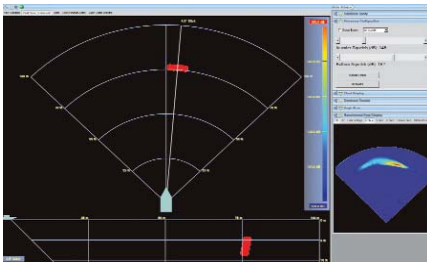
The LMCS is a highly advanced mine and underwater IED hunting system designed for small boat and unmanned surface vehicle operations. The LMCS combines EdgeTech's proprietary Dynamically Focused and Multi-Pulse side scan sonar technologies providing exceptional swath coverage and ultra high resolutions. The system's active towfish, designed by Vehicle Control Technologies (VCT), delivers unparalleled steadiness and ease of operations, even from small craft. The result is an affordable, state-of-the-art, commercial off the shelf (COTS) mine warfare sonar system. The LMCS System is outfitted with a 600/1600 kHz dual frequency sonar. The 600 kHz frequency utilizes both the Multi-Pulse technology and Dynamically Focused transducers for high resolution mine detection at ranges up to 125 meters per side at speeds of up to 14 knots. The 1600 kHz frequency utilizes Dynamically Focused transducers for detailed classification and identification of mine and IED-like targets with resolutions down to .8 cm. This rapidly-deployable system provides real-time sonar images allowing operators the ability locate, classify, mark and record mine-like objects and underwater terrain features.



and underwater terrain features.

FarSounder, Inc.

Warwick RI
Tel: 401-784-6700
Email: info@farsounder.com



www.farsounder.com
President/CEO: Cheryl M. Zimmerman
VP Sales & Marketing: Captain Ian Bowles
Test Capabilities: 1,250 sq. ft. tank testing facility

FarSounder is a marine electronics manufacturer specializing in sonar systems. With unique patented technology, the company is challenging the boundaries and furthering the advancement of the practical uses that sonar can have. The Company is well known for its advanced long range 3D Forward Looking Sonars that are revolutionizing marine navigation and now the same unique technology is being applied to underwater security, for fixed and floating assets. Navigation data is provided in a 3D display presentation with an intuitive user interface and significant fields of view. Flexible mounting methods allow for integration on both surface and sub-surface vessels and along waterside perimeters. The company is also working on a high speed sonar project for ONR for a system that would provide sensing and obstacle detection out to significant ranges, capable of very high speed operation and suitable for installation on high speed 11-meter RHIBs.

Fiomarine

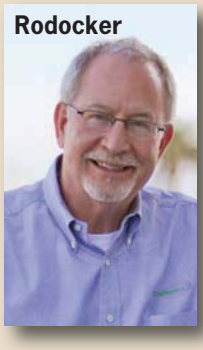
Tasmania 7010 Australia
Tel: +61 3 6272 6167
Email: rachael.foggitt@fiomarine.com
www.fiomarine.com
CEO: John Fiotakis
Engineering Director: Mike Shegog

Fiomarine secures and retrieves underwater equipment and data. After supplying to the Defence market for more than years, 2009 saw Fiomarine successfully enter the Marine Research and Oil & Gas industries. It has enlisted the help of a number of international agents to promote its Fiobuoy, which now has users in China, Canada, South Africa, Singapore, Scotland and the U.S. Fiomarine's signature product is the Fiobuoy, an all-in-one system that incorporates an acoustic release, marker, floatation, retrieval line and line storage. Fiobuoys will secure and retrieve underwater equipment used in subsea construction, engineering, hydrographic, oceanographic or geophysical research.

Australian Hydrographic Service - adcp tripod & fiobuoy.

Seabotix

2877 Historic Decatur Road, Suite 100, San Diego CA
Tel: (619) 450-4000
Email: Info@SeaBotix.com • www.SeaBotix.com
President: Donald Rodocker • Marketing Director: Jesse Rodocker
Sales Manager: Sean Newsome • Engineering Director: Sheldon Rubin
Square Footage: 18,000 sq. ft.
Testing Capabilities:
Facility on water, various pressure pots, dark room, test tank
Employees: 55 • Annual Sales (US$): 8.3m



Rodocker

SeaBotix Inc. manufactures and supplies MiniROVs. The company's products are continually improved and new technologies developed as evident in the newly released vLBV. The SeaBotix LBV has been the benchmark small ROV system with the vLBV set to define the Vectored ROV market. Stable in water design and mass as well as a multitude of optional items. Used globally by more than 750 operators the SeaBotix line of MIniROVs have proven their worth. Including deep water recoveries, military ops, maritime security, search and rescue, scientific research and many more.

TriOS Mess- und Datentechnik GmbH

Werftweg 15, Oldenburg, Germany D-26135
Tel: +49 441 48598 0
E-mail: info@trios.de • www.trios.de
CEO / President: Dipl. Phys. Rüdiger Heuermann
Engineering Director: Dipl. Phys. Karin Munderloh
Testing Capabilities:
Pressure chamber, climate chambers, optical laboratory (NIST standards), wet chemical laboratory, calibration labs.
Number of Employees: 18

TriOS has moved via limnology applications towards drinking water, waste water and process control. As 'light and water' is not anymore the correct slogan for most of the media where TriOS sensors are used, the motto was modified to 'light and liquids.' Despite the movements of the core business, TriOS will never loose it's passion for optics and marine applications. Using light as a direct measuring principle is an environmentally friendly principle. TriOS develops and manufactures optical sensors for scientific and industrial applications. TriOS was the first company offering hyperspectral sensors for environmental applications. The most popular ones are still the RAMSES radiometers.

Fisheries and Marine Institute of Memorial University of Newfoundland

St. John's, NL, Canada
Tel: 1-800-563-5799
Email: info@mi.mun.ca
www.mi.mun.ca

The Fisheries and Marine Institute (MI) of Memorial University of Newfoundland is Canada's most comprehensive institute dedicated to education, applied research and industrial support for the oceans industries. MI offers a range of graduate and undergraduate degrees,

Markey Machinery Co.

Seattle, Washington
Tel: 800-637-3420
email: info@markeymachinery.com • www.markeymachinery.com
President: Blaine W. Dempke • VP/Service: Robert LeCoque
Chief Engineer: Peter Hammerschlag • Sales Manager: Scott Kreis
Facilities: Engineering and Administrative Offices; Machinery, Welding and Fabrication Shops; Machine Assembly and Test areas
Number of Employees: 50

Markey Machinery is America's oldest privately-held winch manufacturer and a leader in the design and manufacture of deck machinery for commercial and scientific applications. Products include deep-sea oceanographic research winches, single, double drum and traction winch systems, commercial towing and ship-assist/escort winches, winch instrumentation systems, sheaves, capstans, and windlasses. The business was founded in 1907 by Charles Markey. Markey takes the support and repair side of business very seriously, servicing its own equipment and machinery for as long as it lasts, the stern-wheeler tug Portland a working example, as the company to this day services and makes parts for the tug's steam steering system the company built in 1947.

In 2010 Markey reopened its expanded, modernized and renovated factory in Seattle. For the first time, since 1943, it's entire staff of engineers, tradesmen, and administrators are co-located. The grounds include 20,000 sq. ft. in new building construction, 10,000 sq. ft. of upgraded or renovated manufacturing space in the existing buildings, and numerous key infrastructure improvements. Markey innovations include "on-the-fly" level wind controls, double-drum traction winch systems, automatic variable-speed transmissions, and below-deck drive systems. Its most significant winch innovation is Markey's Asymmetric Render-Recover (ARR) hawser winch technology. This concept provides safe line control by operating within an upper and lower tension range selected by the tug Captain. Markey's Render-Recover winches maintain constant line tension and automatically compensate for tug maneuvers as well as surge, heave, and pitch motions that would be nearly impossible for a man to achieve using standard lever controls. Automatic, real-time tension control keeps slack out of the working line at all times and prevents snap-loads from occurring, thus reducing the risk of line breakage or damage to the line's tie-off points. In addition to designing and manufacturing prototype machinery for a variety of customers, Markey is engaged in transferring its Asymmetric Render-Recover controls technology to other marine applications. A 760 HP Class III Hawser Winch using these controls proved capable of escorting and assisting LNG tankers in the dynamic open ocean environment. Newer applications for this technology include: offshore oil and gas dive support vessels requiring efficient execution of precision four-point moorings and research vessels requiring the decoupling of instruments, samplers, and other packages from wave-induced ship's motion for improved operating safety in high sea states.

advanced diplomas, diplomas and certificates, together with industry-oriented short courses through three schools: the School of Fisheries, the School of Maritime Studies, and the School of Ocean Technology. MI has a number of centers and units, including the Offshore Safety and Survival Center, the Center of Marine Simulation, the Center for Aquaculture and Seafood Development, MI International, School of Ocean Technology Applied Research Unit, Fisheries Conservation Group and the Centre for Sustainable and Aquatic Resources. These areas lead the institute in applied research and technology transfer and provide training to industry.

Germanisher Lloyd

Hamburg, Germany
Tel: +494036149-0
Email: headoffice@gl-group.com • www.gl-group.com
CEO: Dr. Hermann J. Klein, Pekka Paasivaara, Dr. Joachim Segatz
Employees: 6,400

Germanischer Lloyd (GL) is a ship classification society and an international inspection, certification and technical consultancy company. The company, whose main office is in Hamburg, Germany, employs more than 6,400 engineers, surveyors, experts and administrative staff in 77 countries. GL's global network consists of more than 200 stations and site offices. For 35 years, GL has performed consultancy and classification work on more than 340 surface and subsurface ships from 25 of the world's navies. GL was the first classification society to certify naval submarines and front-line warships, and has been granted Secrecy Authorization status by the German government and by NATO. GL published its Rules for Classification and Construction of Naval Submarines published in 2005. Currently, GL is the only class to have rules for naval submarines, remotely operated underwater vehicles and air-independent propulsion.

Granite State Manufacturing

Manchester, NH
Tel. (603) 668-1900
www.goGSMgo.com

Granite State Manufacturing (GSM) is a privately-held U.S. small business corporation dating back to 1938. With our HQ in Manchester, NH and 2nd facility in Baltimore, MD, we collaborate with our clients as an extension of their business to take complex electro-mechanical product ideas/challenges and implement optimized manufacturing solutions for cost, quality, and delivery thru advanced Program

Management, Operational Excellence, and Innovation.

Both facilities are ISO 9001:2000 certified, and support naval/marine product such as antenna masts, torpedo trainers, tow cable/winch systems, shock resistant electronic enclosures, etc.

It also produces robotic, medical device, and semi-conductor systems. Its strength begins and lies heavily with an advanced Program Management infrastructure including manufacturing engineering & supply-chain management.

The innovative manufacturing centers of excellence include: precision machining, welding, fabrication, finishing, paint, assembly, soldering, and testing.

HTI Hydroacoustic Technology, Inc.

Seattle WA
Tel: (206) 633-3383
Email: support@HTIsonar.com
www.HTIsonar.com
President: John Ehrenberg
Vice President: Bruce Ransom
Marketing Director: Caroline Mercado
General Manager: Pat Nealson
Employees: 40

Track the behavior of fish and other aquatic life in high-resolution 3D with HTI's acoustic tag systems.

IXSEA

Woburn, MA
Tel: 781-937-8800
Email: info@ixsea.com
www.ixsea.com

Formed in 2000, IXSEA designs, manufactures and markets inertial navigation and acoustic positioning systems for underwater vehicles, along with a complete range of seabed mapping solutions for the geoscientific, hydrographic, offshore and defense markets. IXSEA has a staff of 200+ divided between three manufacturing sites in France and five sales subsidiaries around the world. Registering average annual growth of 20%, in 2009 IXSEA generated sales of $45.1m. Sustained growth in IXSEA's sales revenue has been made possible by the introduction of innovative products into dynamic and competitive markets every year since its creation. IXSEA invests 15% of its annual sales revenue in Research & Development and 30% of its workforce are engineers. IXSEA's systems are used for seabed exploration and exploitation. Customers include major international players in the oceanographic (IFREMER, WHOI), hydrographic (Spanish Hydrographic Institute), offshore oil (Total, Technip, De Beers) and defense (British Royal Navy, US Coastguards, etc.) markets. IXSEA designs, manufactures and markets navigation and positioning systems based on its state of the art Fibre Optic Gyroscope technology, along with a complete range of seabed mapping solutions and acoustic release products.

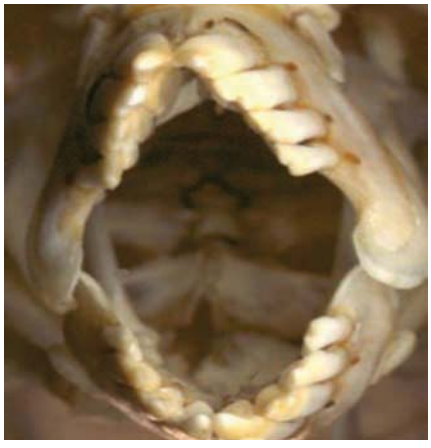
- Navigation and Positioning: Navigation units for surface vessels and underwater vehicles: ROVINS is a combined survey grade gyrocompass and full featured Inertial Navigation System (INS) for depths to 3,000 m. Designed specifically for offshore survey and construction activities, ROVINS builds upon the company's proven OCTANS gyrocompass and PHINS INS architecture (including upgrade capability from OCTANS to PHINS) and offers interfaces to standard surface and subsea positioning and aiding sensors.
- RAMSES is an intelligent acoustic synthetic baseline positioning system. Combined with an IXSEA Inertial Navigation System (tight coupled with PHINS for instance) to deliver its full potential, the RAMSES/INS solution provides the highest grade position accuracy and redundancy.
- GAPS, Global Acoustic Positioning System, fuses inertial and acoustic technologies that will determine the position of any underwater beacon to 0.2% of range.
- Seabed Mapping Solutions: IXSEA's unique range of systems and sensors includes: DELPH, a powerful suite of real-time data acquisition and fully integrated processing and interpretation tools; SHADOWS, the fourth generation side scan sonar, providing 'more pixels per hour'; ECHOES, the only complete range of fully tunable seismic sub-bottom profilers.
- Acoustic Releases: A complete range from shallow to full ocean depth releases are offered with capabilities ranging from 10's to 1000's of pounds of force.

Acoustic tag systems provide detailed information for survival studies, passage monitoring, and behavioral data - all accessed remotely from anywhere in the world. HTI also designs, manufactures powerful hydroacoustic (SONAR) systems for establishing fish distribution and density in any underwater environment. Learn more at HTIsonar.com. HTI provides advanced acoustic tag tracking systems and hydroacoustic echo sounders for fisheries research.

Linden Photonics

Westford, Mass.
Tel: (978) 392-7985
Email: info@lindenphotonics.com
www.LindenPhotonics.com
Testing Capabilities: Optical characterization, tensile testing, winding, pressure testing, abrasion testing, crush testing, temperature testing
Employees: 5
Annual Sales (US$): >1m

Founded in 2002, Linden Photonics Inc. has developed a range of miniature, high-strength fiber-optic cables, cable coatings and specialized optoelectronic packaging. Linden has worked with the U.S. Navy and local manufacturing and plastics experts to develop a manufacturing process for high strength, small diameter cables with single or multiple optical fibers. Linden's product development began by



The cable unfriendly jaws of the triggerfish.

exploiting Liquid Crystal Polymers (LCPs) which, according to the company, can exhibit a specific tensile strength ten times that of steel cable. Its 30 mil LCP jacketed SMF28 cable has a reported breaking strength of 55 lbs. In addition to high strength, STFOC is also designed to provide mechanical and thermal stability and survive exposure to organic solvents, acids, and fuel oils.

Magic Instinct Software

Nantes France
Tel: +33 (0)2 40 18 09 71
Email: peio@justmagic.com
http://wwwjustmagic.com
CEO: Peio Elissalde

Magic Instinct Software develops marine software, including electronic

chart systems, geo-referenced underwater movies, and web-mapping. MIS has developed the Marine GeoGarage, the first nautical charts web portal built on Cloud computing technology.

Mad Rock Marine Solutions Inc.

St. John's NL, Canada
Tel: (709) 757-2049
Email: info@madrock.ca
www.madrock.ca
President/CEO/CTO: Dean Pelley
VP of Finance: Steve Lawlor
Sales Manager: Lacee Abbott
Engineering Director: Jason Dawe
Facility: Institute for Ocean Technology - National Research Council
Testing Capabilities: Offshore engineering basin, towing tank, ice tank, cold rooms, cultivation tunnel, towing tank, marine dynamic test facility, planar motion mechanism, yacht dynamometer. Training facilities worldwide through strategic partnerships.
Employees: 17
Annual Sales: $3.7m

Mad Rock Marine Solutions Inc. is a privately-held Canadian company that was incorporated in July 2002 to prevent fatal lifeboat accidents due to premature release of first generation hook systems. Using expertise and R&D partnerships, the Mad Rock

MSI (Materials Systems Inc.)

Littleton, MA
Tel: (978) 486-0404
Email: info@msitransducers.com • www.msitransducers.com
President: Dr. Leslie Bowen • VP: Gerald Schmidt
Facility: MSI's facility houses R&D, Manufacturing, and Sales and Marketing. Manufacturing includes equipment for making and injection molding piezoelectric ceramic, piezocomposite fabrication, transducer assembly and encapsulation, and in-water tank testing. Square Footage: 20,000 sq. ft.
Testing Capabilities: In water acoustic testing, pressure, temperature, impedance
Employees: 35

MSI (Materials Systems Inc.) designs and manufactures custom sonar transducers and arrays for harbor defense, side-scan, obstacle avoidance, sub-bottom profiling, swath bathymetry, mine hunting, swimmer detection, and acoustic communications. MSI personnel participated in the earliest work on piezocomposites in the late 1970's, when the performance benefits were first demonstrated under ONR and DARPA funding. Since then, MSI has developed injection molding techniques for mass-producing these transducers. MSI's development of injection molding for manufacturing piezocomposite opened the way for application of this acoustic transducer material in sonar and ultrasound. During the past 18 years, MSI has provided high performance piezocomposite transducers for the U.S. Navy and a variety of other defense and commercial clients. MSI is now in full scale production for a variety of commercial and industrial customers. MSI is ISO 9001 certified. MSI's piezocomposite arrays are designed to deliver broad bandwidth, allowing multiple beams to operate in distinct frequency bands. This should allow greater resolution and enhance broad spectrum (chirp) operating techniques. MSI's piezocomposite arrays can also be curved and shaded to achieve a specific beampattern or to achieve a hydrodynamic profile when mounting the arrays to the curved hull of a vessel or AUV. Resonant transmit designs are in production at frequencies ranging 20 kHz to 1MHz. MSI's piezocomposite arrays have been shown to meet full explosive shock requirements for Navy operations in both the US and UK, and can be configured for full ocean depth performance. MSI's piezocomposite array technology is providing major performance and cost benefits to many of the latest commercial and defense imaging systems, including Teledyne Benthos' C3D multibeam sidescan sonar and the US Navy's Archerfish vehicle for the Airborne Mine Neutralization System (AMNS).

team has developed new performance criteria and testing protocols, navigated complicated regulatory regimes, and educated ship owners and marine operators about preventative measures for lifeboat accidents, the RocLoc. Mad Rock's two time innovation award winning product, the RocLoc lifeboat launching system, has both inherent locking stability and external failure warning characteristics. The RocLoc, with its stainless steel fail-closed system, meets all design codes set out by Safety of Life At Sea (SOLAS) and the International Maritime Organization (IMO) and meets all proposed draft language concerning fail-safe criteria. RocLoc has been approved by Det Norske Verites (DNV), Lloyd's Register (LR) and MED (Lloyd's).

Marine and Mineral Project (Pty)

Kenilworth Western Cape, South Africa
Tel: +27 83 2288 593
Email: hans.smit@marineandmineral.com
www.marineandmineral.com
CEO: Hans Smit
Employees: 10
Annual Sales (US$): 5m

IHC Marine and Mineral Projects, part of the IHC Merwede BV, is a marine consulting and project management firm providing consulting, project management, engineering, procurement, production management, project integration management, commissioning, training and life cycle support for the Offshore and Underwater Mining Industry. Services also extend to Oil & Gas services, General Marine, Coastal Mining and Marine Infrastructure. The team has a proven track record of delivering projects safely, on time, to the correct quality and within budget. More recently, IHC Marine and Mineral has developed deep sea mining systems as the world mining industry's focus moves to the sea to find and mine mineral resources which are diminishing on land. The company offers the full range of project management and construction tools, from concept design and system definition to commissioning and handover. Systems are provided with approval from Classification Societies Lloyd's, ABS, and DNV.

Marine Institute of Ireland (Foras na Mara)

Republic of Ireland
Email: Tel: +353 91 387 200
www.marine.ie

The Marine Institute is Ireland's national agency for marine research, technology, development and innovation, with the general functions to undertake, to co-ordinate, to promote and to assist in marine research and development and to provide such services related to marine research and development that in the opinion of the Institute will promote economic development and create employment and protect the marine environment.

The Institute has a strong international reputation as a world-class performer in marine R&D. The Institute has ~200 staff, 2 Research Vessels and a suite of specialist infrastructure undertaking a suite of scientific functions delivering key services to government, industry and other stakeholders in the marine area.

LinkQuest Inc.

San Diego, CA
Tel: (858) 623-9900
Email: sales@link-quest.com
www.link-quest.com

LinkQuest manufactures precision acoustic instruments for offshore oil exploration, construction, drilling, survey, environmental study and other oceanographic applications. The company's Broadband Acoustic Spread Spectrum (BASS) Technology is widely used for acoustic communication and positioning. LinkQuest's high speed

underwater acoustic modems transport more than 95% of the world's acoustic communication data. These systems have set a series of technical performance records in field deployments all over the world. LinkQuest's line of TrackLink Acoustic Tracking Systems provide highly robust, accurate and cost-effective Ultra Short Baseline (USBL) solutions.The FlowQuest Acoustic Current Profilers, FlowScout Acoustic Flow Meters and NavQuest Doppler Velocity Logs (DVL) were designed to provide solutions for current profiling, wave measurement, flow measurement or precision underwater navigation applications. These products offer significantly longer range with high accuracy. LinkQuest also manufactures PinPoint LBL acoustic positioning systems and Precision Marine Geodetic Systems used for tsunami and earthquake monitoring and prediction.

Marine Sonic Technology, Ltd.

White Marsh, VA
Email: JHerbert@marinesonic.com
www.MarineSonic.com

Marine Sonic Technology, Ltd. builds and sells high resolution Side Scan Sonar Systems. Founded in 1990, Marine Sonic is located in Gloucester, Virginia. Towed side scan systems as well as embedded systems for use with AUVs are available. Two systems are offered; the Centurion system, an analog setup, and the new, HDS (high definition sonar) system. HDS is digital and will work from any modern, laptop running a windows operating system.

Measurement Technology NW

Seattle, WA
Tel: 206-634-1308
Email: lci@mtnw-usa.com
www.mtnw-usa.com
Managing Director: Tom Rezanka
VP Sales & Marketing: Matt Mostad
 # Employees: 30

Measurement Technology NW has continued to grow in 2009-2010 despite the global economic downturn. In the last 12 months, the Line Control Instruments division of

Imagenex Technology

Port Coquitlam, BC, Canada
Tel: 604-944-8248 • Email: Imagenex@shaw.ca • www.imagenex.com
President: Willy Wilhelmsen • Vice President: Jeff Patterson • Managing Director: Gordon Kristensen • Sales Manager: Steve Curnew
Testing Capabilities: 4' x 4' x 8' test tank, 26' aluminum survey boat, floating test lab
Employees: 25

Imagenex was founded in 1988 by pioneers in the development of high-resolution imaging and profiling sonar. Within two years the company had produced its first sonar– an imaging head for the commercial underwater industry that was the unheard-of size of a coffee mug and rated for 300m depth. Company milestones include introducing the first digital color imaging sonar that could be operated from a computer without a dedicated processor in 1995; introducing a sidescan sonar in 2000 with a revolutionary price/performance ratio; and developing a high quality, compact and cost-effective multibeam sonar with obstacle avoidance or profiling configurations and optional depth ratings to 6,000m. It is the company's development of the lightweight, cost-effective Delta T multibeam sonar unit that is successfully bringing the benefits of real-time, high-resolution, 3D visualization within reach of operators that previously had to settle for mechanical scanning single-beam devices. The combination of reduced cost, high quality imaging and functionality of the Delta T and other Imagenex products has been increasing its popularity in the scientific market, and for commercial, recreational and search and rescue (SAR) applications around the globe. Imagenex's patented Delta-T multibeam system is in use around the world on many different types of vessels, including AUVs operating to 6000m water depth. Used extensively on pipeline inspections and seabed mapping projects, these systems have a major impact on the prevention of marine disasters. New additions include the model 965 Multibeam Imaging sonar is the result of applying recent advances in computing power, which makes it possible to transfer and process the data at resolutions equal to that of computer monitors, with frame rates up to 10 per second. The new Model 878 "RGB" Sidescan Sonar is the next generation in high resolution sidescan sonar. The unit runs three simultaneous sonars on each side at different sound wavelengths, providing enhanced image clarity and now, for the first time, the ability to discriminate targets based on their acoustic "color."

iRobot Corporation, Maritime Systems

Durham, NC
Tel: 919-405-3993
www.irobot.com
CEO: Colin Angle
President: Joe Dyer
Marketing Dir: Rob Smith
General Mgr: Tim Trainer
No. Employees: 500 + (for all of iRobot)
Annual Sales: $300m (for all of iRobot – several divisions including consumer goods)

Angle

iRobot was founded in 1990 when Massachusetts Institute of Technology roboticists Colin Angle and Helen Greiner teamed up with their professor Dr. Rodney Brooks with the vision of making practical robots a reality. iRobot's combat-proven government and industrial robots perform multiple missions – on the land and in the sea. More than 3,000 iRobot PackBot tactical mobile robots have been delivered to military and civil defense forces worldwide, performing thousands of dangerous search, reconnaissance and bomb-disposal missions while keeping troops out of harm's way. iRobot's line of government and industrial robots also includes the iRobot Negotiator, an affordable surveillance robot for public safety professionals, and the iRobot Warrior, a large and rugged robot designed to carry 150-pound payloads. As a key partner in the U.S. Army's Brigade Combat Team Modernization program, iRobot is developing the next-generation Small Unmanned Ground Vehicle (SUGV). The iRobot 1KA Seaglider and 15A Ranger, iRobot's Unmanned Underwater Vehicles (UUVs), perform a variety of missions for maritime researchers and military planners. To support and encourage the development of robot technology, iRobot offers comprehensive resources for third-party developers, providing information and products that facilitate the creation and easy integration of new payloads, behaviors and capabilities on iRobot platforms. iRobot collaborates with external developers from government agencies, academic institutions and small and large businesses to create and bring to market innovations that help warfighters and public safety professionals tackle dangerous missions with less risk. With two decades of leadership in the robot industry, iRobot remains committed to providing platforms for invention and discovery, developing key partnerships to foster technological exploration and building robots that improve the quality of life and safety standards worldwide.

Technology Profile

iRobot's UUVs perform multiple missions for maritime researchers and military planners, including physical, chemical, biological oceanography, oceanographic surveys and marine environmental monitoring. iRobot's maritime systems includes the iRobot 1KA Seaglider, a long-range, high-endurance UUV for oceanographic measurements, and the iRobot 15A Ranger, a development platform for riverine and littoral operations. The 1KA Seaglider uses state-of-the-art oceanographic instrumentation to precisely measure and report a multitude of data, including temperature and conductivity as a function of depth, dissolved oxygen concentrations, ocean current variation, backscatter and multiple trophic level biomass. These measurements enable the development of sound velocity profiles that are critical for characterizing acoustic propagation models and monitoring oceans in great detail. Seaglider's modular architecture accommodates a variety of configurable sensors for exact mission need. Advanced design and engineering enables long duration data gathering missions of up to 10 months at sea that cover thousands of nautical miles. Requiring little power to effect buoyancy for thrust, coupled with a stable, low-drag, hydrodynamic shape the 1KA Seaglider effortlessly dives and gliders while activating sensors at pilot designated intervals to collect data. Designed to operate at depths up to 1,000m, the hull compresses as it sinks, matching the compressibility of seawater. Originally designed and developed thru a partnership between APL and the University of Washington School of Oceanography and now manufactured by iRobot Corporation, more than 120 Seagliders have been delivered worldwide to a growing list of Universities and Research Groups, performing an array of missions, gathering data at a fraction of the cost and enabling real-time, long-duration missions – reducing the need and cost of being at sea.

Seaglider

MTNW has completed:

- offshore rig/barge mooring projects in Scotland, Nigeria, Singapore and Dubai…with new projects scheduled for 2010;
- new winch and hoist instrumentation projects with Dynacon, Ingersoll-Rand and DynaWinch;
- a new venture into winch monitoring for aerostat applications with Allied Power;
- new fishing trawler warp/line monitoring systems.

Measurement Technology NW provides complete instrumentation solutions for new and retrofit winch/hoist installations for offshore, Oil & Gas, commercial marine and oceanographic applications. MTNW is a trusted source for industry-leading, daylight-readable displays, payout and tension sensors, running line tensiometers, PC software for remote winch monitoring, as well as a provider of calibration services and full system instrumentation packages. From single Line Control Instrument (LCI) display installations to complex networks of a dozen displays or more, MTNW equipment is designed to be fast, accurate, extremely reliable, and easy to use. Its LCI display products are used to control and monitor speed, payout, and tension (wire rope, EM cable, synthetic lines, and chain) in winch/hoist systems used for ROV deployment, oceanographic research, rig/vessel mooring and towing, barge positioning - anywhere accurate and reliable line control is required. LCI has also recently manufactured a new line of rugged tensiometers for winch mooring retrofit and line rider applications. These tensiometers are available in models ranging from 20KIPS to 1MKIPS. MTNW 's LCI division now provides an entire solution set from sensors and tensiometers, to displays, to remote PC software interfaces for data logging and analysis.

- Displays: The LCI-90i, MTNW's flagship display, released in early 2010. It includes a wide range of data inputs including (Ethernet, USB, and Serial Data), a high line tension sampling rates (over 20Hz to meet UNOLs new standards), a locally programmable interface for more flexibility, and a onboard CF disk for local data logging. The thin-film electroluminescent (EL) viewing screens used in our daylight-readable LCI displays provide higher contrast and brightness than comparable LCD technology and feature an amazing 160° viewing angle in both vertical and horizontal directions for crisp data viewing under any conditions. Our LCI solid-state design, rugged 316 stainless steel front panel, and sealed pushbutton controls all come together to yield a compact display with exceptionally fast response times. Crisp image quality is maintained even at high/low temperature extremes (-40C to +70C), and our EL panels retain more than 75% of their original luminance after more than 100,000 hours of operation. The LCI displays offer superior shock, vibration, and electromagnetic resistance.

Tensiometers: MTNW's running line tensiometers have a compact, cost-effective, rugged design that is

J.F. White Contracting

Framingham, MA
Tel: 508-879-4700
Email: jclark@jfwhite.com
www.jfwhite.com

J. F. White Contacting Company is a heavy civil and marine contractor with a demonstrated record for construction performance in the New England area commencing in 1924. The Diving Division performs inshore and offshore inspection, construction, and repair. J. F. White supplements traditional diving capabilities with ROV, ADS (Atmospheric Diving System), and manned submersible operations. The company has established an exemplary safety record, were awarded "AGC 1st Place Safety Excellence for 2010", and the Diving Division has a zero injury record. Diving Division experience comes with a reputation for creating innovative work plans, developing specialized underwater equipment, and executing projects in a disciplined and uncompromising manner.

SMD Ltd

Turbinia Works, Davy Bank
Wallsend, Newcastle Upon Tyne, UK
NE28 6UZ
www.smd.co.uk
CEO: Andrew Hodgson
Sales Director: Mike Jones
Operations Director: Peter Imlah
Technical Director: Paul Atkinson
Finance Director: Richard Lowery
Commercial Director: Richard Howarth
Sales Manager ROVs: Mark Collins
Sales Manager Trenchers/Specials: Graeme Walker

SMD consists of several business streams:

- SMD Work Class ROV Systems
- SMD Trenchers and Specials
- SMD Renewables,
- SMD Robotics
- SMD Mining Systems

Test Facilities

- Extensive site with main workshop housing 2 x 50te overhead cranes,
- Space for 4 x parallel WROV system manufacture and large vehicle/device manufacture
- Height clearance for indoor A-Frame and testing. Winch test bed.
- Indoor 3m deep test tank, Outdoor 4m deep large diameter test tank.
- Dedicated training centre with ROV simulator
- Riverside position with large quayside

Founded as Soil Machine Dynamics in 1971 by Dr Alan Reece, SMD was the first company to successfully develop machines for subsea cable and pipeline burial using remote control technology. Thirty-nine years later, SMD is still a leader in this field servicing the telecoms, oil and gas, renewable and military markets. In 2003 SMD purchased Hydrovision and added Work Class ROVs to its portfolio. It is now the largest manufacturer of Work Class ROVs in the world offering a wide range of systems covering a broad market. In 2007 SMD started development of the worlds' first subsea bulk mining system. Fully remote controlled, these large machines will enter service 2012 and harvest rich metal deposits in water up to 2.5km deep. In 2009 SMD started manufacture of a prototype full scale 1MW subsea tidal power generator. First trials of the device are scheduled mid 2010. In 2010 SMD Robotics was added to the company to concentrate on remote tooling applications and nuclear decommissioning. SMD is a privately owned limited company. SMD's product range is extensive and includes the following:

Work Class ROV Systems

- Quantum XP 150hp–250hp Constr. Class WROV
- Quasar General Purpose 125hp WROV
- Atom Compact 60hp – 100hp WROV
- Five models of Tether Management System (TMS) including Tophat, Garage and thruster equipped variants

Deck Equipment

- A-frames and Gantry launchers with safe working loads ranging from 5te - 200te. Telescopic, soft umbilical, dipping and cursor launch variants
- Winches. 5te – 200te, constant tension and lift, soft and SWA umbilical variants.
- Passive heave compensation systems
- Linear Cable Engines
- Safe Fleet Drum Engines/Universal Handling Winches

Subsea Trenchers

- A range of cable and pipeline trenching ROVs up to 2800hp and including the new Q-Trencher range
- A range of Multi-Depth Cable Ploughs for telecoms and power cables and flexibles
- A range of pipeline ploughs up to 400te bollard pull
- Jetting sleds & pipe-riders for diverless pipe trenching
- Tracked vehicles for trenching cables and pipelines, with designs incorporating cable reels for simultaneous lay

Mining Systems

- SMD are developing the world's first commercial deep-water seafloor mining systems

Renewable Energy

- SMD have a free-stream tidal generating technology known as TidEl
- Manufactured a 1MW tidal turbine for Atlantis Resources Corporation

Curvetech Components

- Range of HPUs, Intelligent valve packs (Servo, proportional and solenoid), Compensators, Thrusters and Control systems

Special Projects

- SMD excel in listening to customer requirements for subsea remote control applications and then applying our full range of in-house engineering disciplines and Curvetech components to deliver innovative solutions with full after sales support. Examples include a 600kW Fall Pipe ROV.

easy to set-up with a removable, instrumented center sheave. All tensiometers are built of tool steel with a marine grade coating and can operate in a temperature range of -20°C to +70°C. MTNW's new tensiometers are installed with NPCC, Frontier, TransOcean, and Ombak Marine Group.

Multi-Electronique (MTE) Inc.

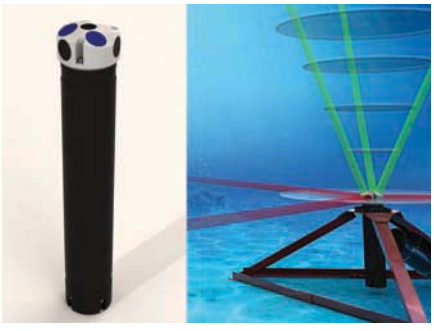
Quebec, Canada
Tel: (418) 724-5835
Email: info@multi-electronique.com
www.multi-electronique.com
CEO: Jacques Saint-Pierre
Facility: Located in the Quebec maritime center on the shore of the St-Lawrence River
Square Footage: 3,200 sq. ft.
Employees: 12

Multi-Electronique (MTE) Inc. is an active firm in the electronic field. The firm activities include the design and manufacture of electronic equipment. Over the years, its work has given the firm the opportunity to develop an expertise in the oceanographic equipment field. The AURAL is the archetypal underwater sound recorder used by the scientist community all over the world. It is designed to record underwater sounds, pressure and water temperature over a period up to a year with total autonomy. Two pieces of software included with the device are intended to configure it and retrieve embedded information in the recordings after deployment. The AURAL is available in three lengths for short, medium and long deployment (respectively 16, 64 and 128 batteries).

NortekUSA

222 Severn Ave., Annapolis MD 21403
Tel: (410) 295-3733
Email: inquiry@nortekusa.com
www.nortekusa.com
General Manager: Eric Siegel

NortekUSA, a subsidiary company of Nortek AS, was formed in 1998 to provide sales and technical support for the Nortek acoustic Doppler current meters, profilers and velocimeters used to measure currents and waves in the ocean, lake, river and laboratory. The NortekUSA office is located in Annapolis, Maryland and provides customer support and technical services for clients in the western hemisphere, particularly the US and Canada. The subsidiary also assists its parent company in product development. NortekUSA provides technician staff in the Annapolis office and technical sales representatives on the East Coast, West Coast, and Gulf communities.



Ocean Server Technology

151 Martine St., Fall River MA 02723
Tel: (508) 678-0550
Email: info@cean-server.com
www.ocean-server.com
President: Bob Anderson

OceanServer Technology, Inc. is a privately held company, established in 2003 to build man-portable Autonomous Underwater Vehicles (AUVs), three axis digital compasses and high performance Lithium Ion battery solutions. The affordable Iver2 AUV is a commercial vehicle used by customers around the globe for sensor development, water quality surveys, sub-surface security and general research. Vehicles are commonly equipped with Side Scan Sonar (SSS), Doppler Velocity Logs (DVLs), Acoustic Doppler Current Profiler (ADCP), Conductivity, Temperature and Depth (CTD) sensors, Multibeam Imaging sonar and camera systems.

Oceanic Consulting Corporation

St. John's, NL, Canada
Tel: (709) 722-9060
www.oceaniccorp.com
oceanic@oceaniccorp.com

Headquartered in St. John's, Newfoundland & Labrador, Canada, Oceanic Consulting Corporation provides contract research services in hydrodynamics and arctic engineering to the international marine industry. The firm is internationally recognized for its expertise in the areas of Arctic and ice engineering, vortex

induced vibration research, and for its work for clients competing for the America's Cup, including two-time champion, Team Alinghi. Oceanic also has carried out research for a wide range of projects including: tankers, liquefied natural gas carriers, semi-submersible drilling units, production spars, floating production storage and offloading vessels, articulated tugs and barges and a number of super yachts.

ORE Offshore

4 Little Brook Rd., West Wareham Ma 02576
Tel: (508) 291-0960
Email: sales@ore.com • www.ore.com
VP: Greg MacEachern
Square Footage: 15,000
Testing Capabilities:
Acoustic calibration tank, test pool, pressure test chamber, research vessel for sea trials.
Employees: 15

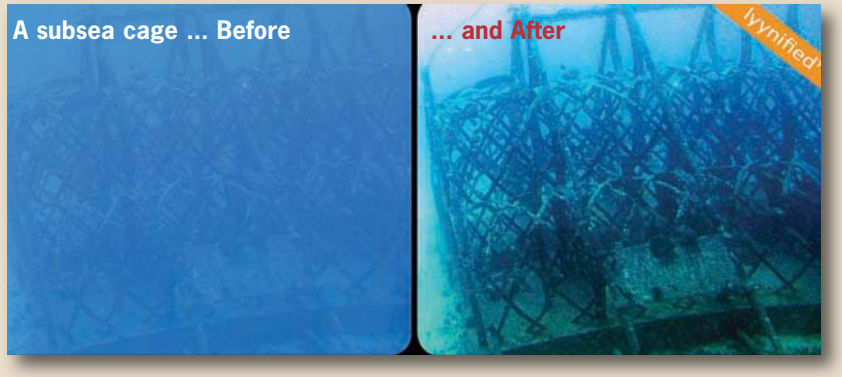
ORE Offshore was founded in 1961 and originally focused on subsurface flotation and acoustically released anchors for oceanographic moorings. Over the years, ORE has expanded and now manufactures high accuracy acoustic positioning, communication and control systems. ORE has two main product lines: Underwater Navigation & Positioning and Acoustic Communication & Control. The Navigation & Positioning systems are used to track underwater vehicles and the Communication & Control products are used to locate, communicate and activate or control devices underwater. ORE Offshore , an affiliate of EdgeTech sells these products and systems to commercial, institutional and military customers.

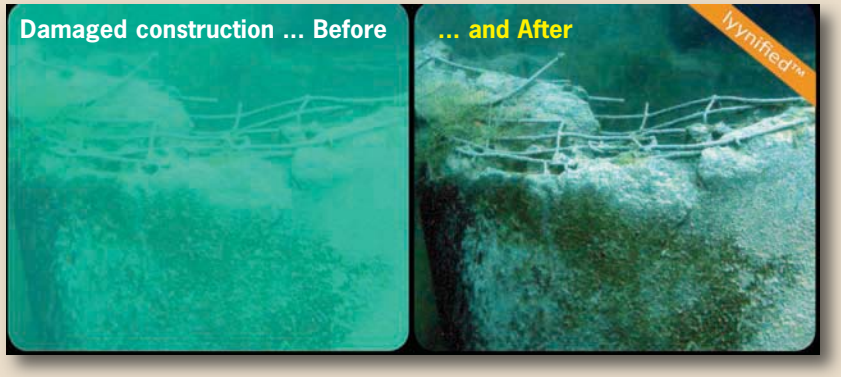
ORE provides systems that are designed to allow secure command and control capability and systems that accurately track underwater vehicles of all types. ORE's acoustic release products and long life transponders are designed around very low current circuits intended to extend battery life. ORE's tracking systems are designed around operations in noisy environments while maintaining accuracy and long operational ranges. The company offers a wide range of standard acoustic products but also prides itself on developing and delivering engineered to order systems for customers with unique requirements. Additionally ORE designs and manufactures its own transducer and hydrophone assemblies in order to achieve the level of capability, positioning accuracy, and reliability that their customers expect. With an acoustic calibration tank and pressure test capabilities ORE Offshore can thoroughly test and calibrate all of the equipment that the company offers.

LYYN AB

Lund, Sweden
Tel: +46462865790
Email: info@lyyn.com
www.lyyn.com
President/CEO: Bengt Sahlberg
Marketing Director: Fredrik Beckman
Employees: 4
Annual Sales (US$): 1m

LYYN's goal is to improve visibility through real-time image enhancement based on years of research in the human vision system and imaging technologies. LYYN offers products and solutions based on the V.E.T. – Visibility Enhancement Technology – platform. V.E.T. aims to improve visibility (particularly the possibility to see colors, movement and contours) in subsea, fog, snow, dust, sand, lowlight, etc as well as in e.g. medicinal applications. V.E.T. works on images and video from normal color cameras, but can also be used in processing saved material.





Channel Technologies Group

One Company - Three Divisions - World Class Quality

Ruelas

CTG operates an engineering and manufacturing center in Santa Barbara, Calif. The 103,500 sq. ft. facility contains design, development, manufacturing, and test capabilities for a wide range of technical disciplines. It is staffed by professional, technical, and manufacturing personnel with a broad range of experience in piezoelectric physics, transducer design and development, underwater acoustics and oceanography. Custom engineering, software development, unique manufacturing methodologies, and the highest standards in quality control have ensured their success for over 50 years.

- 3 Buildings / 103,500 sq ft.
  - o 4 fully automated acoustic test facilities
  - o 'Class 1000' – Clean Room
  - o DoD Cleared Facility
- Field test areas
  - o Pier testing
  - o Offshore
- (4) Acoustic Testing Tanks
  - o Totaling 73,000 gal
- Hydrostatic Test Vessel
  - o Pressure to 10,000psi

Channel Technologies Group (CTG) designs, develops, and manufactures high-quality piezoelectric ceramics, underwater and ultrasonic transducers, and underwater acoustic equipment, including sonar systems, navigation systems, range systems, and custom acoustic solutions. CTG is the new, streamlined combination of three sister companies; Channel Industries, International Transducer Corporation (ITC), and Sonatech. Fair prices, for top quality products have ensured their success for over 50 years. Channel's large plant capacity - in tooling, automated machinery, and experienced people - provides the capability to match the specific needs of their customers.

CTG's core strength is their ability to provide tailored solutions that satisfy the specifications and special requirements of their customers.

Channel Industries Division

Channel Industries is a custom manufacturer of piezoelectric elements in lead-zirconate and barium titanate compositions. Channel ceramics are recognized among the highest quality in the world. Servicing the best known companies in America and abroad, Channel's engineering and manufacturing capability provides the technology necessary to produce small or large orders quickly and with uniform electrical properties.

International Transducer Center Division

Since its establishment in 1966, ITC has gained a reputation for being a leader in the field of ultrasonic and acoustic transducer development. ITC is a leading manufacturer of acoustic transducers for: ship and submarine sonar, oceanographic survey, seismic exploration, marine life research, medical devices and industrial proximity sensing.

Sonatech Division

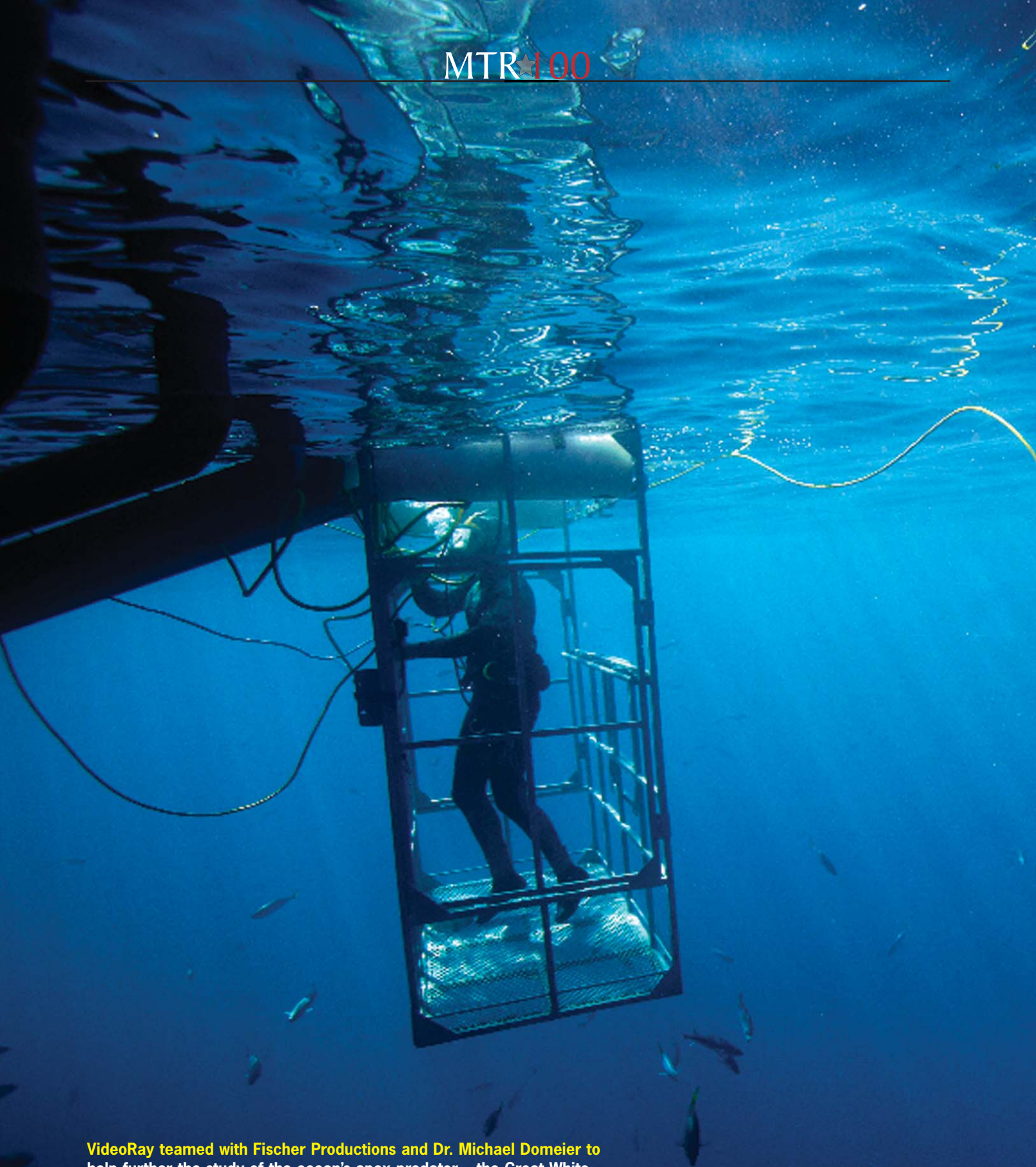
Since beginning operation in 1973, the Sonatech Division of CTG has been a leader in the design and development of underwater navigation and sonar equipment for the United States Navy and various other research and military customers. The Sonatech Division is ISO 9001:2008 certified.

Channel Technologies Group (CTG)
Channel Technologies Group
879 Ward Dr., Santa Barbara, CA 93111
Phone: 805.967.0171
www.channeltechgroup.com
President: Kevin Ruelas
VP/Operations: Arthur Campbell

Channel Industries, Division of CTG
839 Ward Dr., Santa Barbara, CA 93111
Phone: 805.967.0171
www.channelindustries.com
President: Kevin Ruelas
Vice President: Elias Medina
Senior Sales Manager: Edward Bickel
Sales & Marketing Manager: Joshua Sharon

International Transducer Center, Division of CTG
869 Ward Dr., Santa Barbara CA 93111
Tel: 805-683-2575
www.itc-transducers.com
President: Kevin Ruelas
Engineering Manager: Ender Kuntsal
Director of Business Dev: Brian Dolan

Sonatech, Division of CTG
879 Ward Dr., Santa Barbara, CA 93111
Phone: 805.683.1431
www.sonatech.com
President: Kevin Ruelas
VP Sonar and Transducer: Mark Shaw
VP Nav and Range Systems: Richard Franklin



VideoRay teamed with Fischer Productions and Dr. Michael Domeier to help further the study of the ocean's apex predator – the Great White Shark (Carcharodon carcharias) using the VideoRay Pro 4 ROV system. (PHOTO CREDIT: National Geographic)

VideoRay LLC
580 Wall Street, Phoenixville, Pa. 19460
Tel: +1 (610) 458-3000
Email: info@ideoray.com
www.videoray.com
President: Scott Bentley
Marketing Director: Chris Gibson
Product Manager: Tom Glebas
Sales Manager: Erick Estrada, Sim Whitehill
Engineering Director: Marcus Kolb
Testing Capabilities: 3,000 Gallon ROV Test Tank
Employees: 30

VideoRay was founded in 1999 on the premise of making ROVs (Remotely Operated Vehicles) more accessible to more people who want to explore, inspect, and capture underwater worlds on video. Now, with more than 1,650 ROVs sold world-wide, VideoRay has become the leader in Observation-ROV sales & technology. VideoRay ROVs are a 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. Plug and play technology allows customers to quickly attach sensors and accessories in the field. VideoRay is available on the General Services Administration (GSA) schedule.

Technology Profile The VideoRay line of Remotely Operated Observation and Inspection Systems combines state-of-the-art materials, electronics, optics, and hydrodynamics to produce the highest quality video in the smallest, lightest, and most easily deployed unit available. This feat of engineering was accomplished by some of the world's top underwater engineers and scientists. VideoRay's design has been perfected over years of extensive field experience. VideoRays have been deployed all over the world - from the warm, clear, calm waters of the Caribbean to hostile environments in the Arctic. VideoRays have been used in water too polluted for humans and in many places too confined or dangerous for divers to enter. Tough materials – acrylic domes, anodized aluminum, stainless steel, and Kevlar – used in the VideoRay ensure that it will withstand repeated and extended use. The careful assembly, quality controls, and pressure testing in assembly plants ensure that each unit will continue to provide service for years. Ongoing R&D, extensive spare parts supplies, and trained technicians ensure that VideoRay customers stay productive.

Outland Technology Inc.

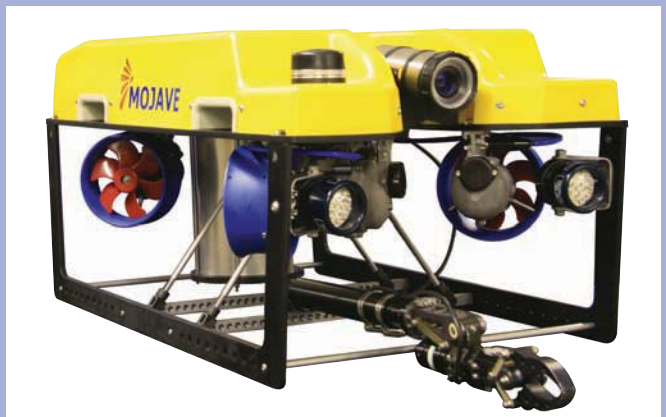
38190 Commercial Ct., Slidell LA 70458
Tel: (985) 847-1104
Email: sales@outlandtech.com • www.outlandtech.com
President: Charles Duassin
Square Footage: 6,000 sq. ft. office, 3,000 sq. ft warehouse
Testing Capabilities:
Pressure testing to 2,000 PSI, 10 ft diameter, 4 ft deep test pool
Employees: 6
Annual Sales (US$): 3.5m

Outland Technology Inc. was established in Gretna, La. in 1984. From its inception, the company's goal has been to design and manufacture a range of video and audio products using high volume components adapted for specific applications. In October 1996, Technology Profile: Outland's product line evolves constantly as the company tries to adapt new technology to subsea applications. Many never make it past testing but some do. The new single LED light the UWL-401 uses many of the same parts as Outland cameras, so spare parts are common to both. With each new generation, the Outland 1000 ROV is outfitted with longer cables, more cameras, new sonars, and more power.

Triton Group

Triton Group is an international group of businesses offering a range of subsea controls technology products and services, bringing some of the leading names in subsea technology together into an integrated product offering. Since its creation in 2007, following an MBO of Perry Slingsby Systems (PSS), a leading provider of remote intervention systems, Triton Group has created an unrivalled breadth and depth of subsea expertise. By pursuing a buy-and-build strategy Triton has succeeded in combining a group of complementary businesses and making the company one of the key players in the subsea sector.

The Group's extensive offering includes design, development, manufacture, sale and rental of remotely operated technologies and their systems' components: related services such as offshore personnel recruitment, equipment rentals and engineering solutions. The innovative technology offering also extends to geosciences project management and data analysis, seabed geotechnical coring, software products in physics based simulation and 3D visualization, digital video editing and data management applications.



With increasing demands for state-of-the art technology and services in the subsea sectors, Triton Group, is committed to a research and development program which produces innovations which are reliable, robust and cost efficient. During the past year, the company has made significant headway in this area of the business. PSS added the Triton XLR, 'baby brother' to the Triton XLX, to the very successful Triton series which began with the XL and XLS. A medium workclass ROV, the vehicle system is designed for light construction work and incorporates the latest controls technology, ICE, graphic user interface and ergonomic control consoles.

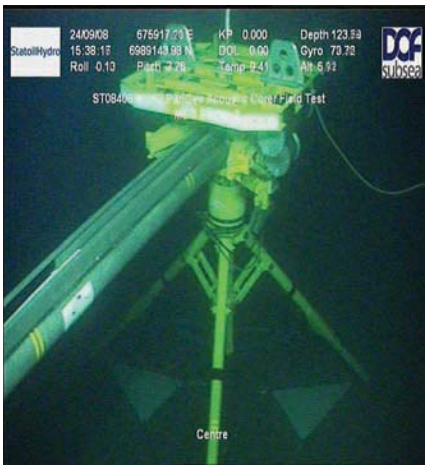
Fellow group company, Sub-Atlantic, recently developed one of the most adaptable product offerings on the market: the Mojave is the most powerful observation ROV for its size. The compact ergonomic design and light weight construction allows for speedy deployment using a variety of power supply options. The system also features the subCAN control and diagnostics system. Ideally suited for a wide range of subsea missions, the Mojave can operate in depths of 300m using the very latest in miniature PC technology.

Seafloor Geoservices Inc introduced the latest evolution in the Rovdrill series. Rovdrill 3, a remotely operated seafloor drilling system is powered and controlled through ROV intervention. Rovdrill 1 & 2 were successfully deployed during exploration campaigns offshore Papua New Guinea. To optimize a much wider application market, the design concept has been developed and enhanced

PanGeo Subsea Inc.

St. John's, NL, Canada
Tel: (709) 739-8032
www.pangeosubsea.com
info@pangeosubsea.com

PanGeo Subsea is a technology development and service delivery company specializing in 3D and 4D subsea acoustic imaging. The company delivers solutions that mitigate risk and create value for oil and gas, offshore renewable energy and other industries including mining and military applications. It is a commercial provider of specialized acoustic solutions that mitigate risk and create value for international clients in oil and gas, renewable energy and other high-value markets. Pangeo delivers this through the use of acoustic tools designed to deliver unparalleled volumetric delineation of sub-seabed hazards and sediment variations. Its goal is to produce answer products which enhance customer's operations from the seafloor to the reservoir with data delivery that is unambiguous.



Garage Tether Management System

further. Capable of drilling in depths of 3000m, the third generation remotely operated seafloor drilling system, has full geotechnical sampling and in-situ data acquisition capabilities, including the capacity to drill 75mm core holes in excess of 100 meters and comes with detachable multi-legged jack up to allow the rig to land on rocky and sloping terrains.

Other significant developments include the Garage Tether Management System (GTMS). Designed and built by PSS, the garage, one of the most powerful on the market, latches and holds the XLX during deployment and recovery. With a depth rating of 4000m, the GTMS has optimized tether path which is lighter, hence increasing efficiency and reducing cost.

Triton Group comprises 3 principal divisions, namely Products, Rental & Services and Technical Services.

Products Division

(Incorporates Perry Slingsby Systems and Sub-Atlantic)

- Remotely Operated ROVS (inspection, survey, deepwater) & System Components
- Intervention Tooling and remote control solutions
- Software based controls technologies: ICE, subCAN

Vice President: Rory Satterfield, Tel: +713 4681410, rory.satterfield@tritongroup.net
Regional Director (Asia): Bruce Lokay, Tel: +65 6576 4300, bruce.lokay@tritongroup.net
Perry Slingsby Systems
General Manager (UK): Kevin Taylor, Tel: +44 1751 431 751, kevin.taylor@perrymail .com
Sub-Atlantic
General Manager (UK): John Ferguson, Tel: +44 1224 798660, john.ferguson@sub-atlantic.co.uk

Rentals and Services

(Incorporates DPS Offshore and UKPS Offshore)

- Equipment rental includes: ROVs, tooling, survey and positioning systems, sensors
- Specialist personnel and training services and equipment support

Vice President: Mick Jones, Tel: +44 1224 748340, mhjones@tritongroup.net
DPS Offshore
General Manager (Aberdeen): Ross McLeod, Tel: +44 1224 226850, ross.mcleod@dps-offshore.com
Tooling Rental Manager: Phil Hogben, Tel: +44 1224 226850, phil.hogben@dps-offshore.com
UKPS Offshore
General Manager: Andy Brodie, Tel: +44 1502 533300, andy.brodie@ukpsoffshore.com

Technical Services Division

(incorporates Geoscience, Earth & Marine Services (GEMS), Seafloor Geoservices Inc (SGI), Visualsoft and VMAX)

- Geosciences Consultancy
- Geotechnical Coring Products
- Software Products and Services (simulation & digital editing and data processing)

GEMS
President: Mike Kaluza, Tel: +44 1224 748346, mike.kaluza@gemsinc.com
Seafloor Geoservices
General Manager: Allan Spencer, Tel: +1 713 461 2600, allan.spencer@sfgeoservices.com
VMAX
General Manager: Bob Manavi, Tel: +1 713 329 8290, bob.manavi@vmaxsimulator.com
Visualsoft
Business Development Director: Paul Evans, Tel: +44 1224 766000, paul@visualsoft.ltd.uk

PMI Industries, Inc.

5300 St. Clair Avenue
Cleveland, Ohio 44103
216-881-4914
email: sales @pmiind.com
www.pmiind.com
President: Robert A Eucker
Chief Operating Office: Allan Metzler Sr.
Marketing Manager: Bill Green
Operations Manager: Allan Metzler Jr.
Engineering Manager: Jay Marino
Square Footage: 32,000
Number of Employees: 25

Since 1969 PMI solutions have been provided worldwide to customers working in industries involving cable installation, defense, oil & gas exploration, search & salvage, and seismic surveys. PMI Industries, Inc. is an engineering service company specializing in highly reliable cable systems and hardware for undersea operations. PMI has a long term reputation for engineering and manufacturing military cable systems used on surface ships and submarines. Currently, PMI builds the tow cable assembly for the Multi-Function Towed Array (MFTA) and the SURTASS TB-29 A Twinline program. As innovators of the helical gripping concept for use on underwater cables, PMI manufactures a complete line of high-strength mechanical cable terminations that can be field installed without special tools. These cable terminations have been field proven on a multitude of armored and jacketed cables as well as wire rope. PMI pioneered a field installable electrical splice kit with sealing techniques that prevent seawater intrusion between your cable and connector to full ocean depth. The splice uses ambient pressure to prevent internal water migration. PMI is also a leader in cable bend protection. Our Bending Strain Relief designs are a matrix of steel helical stiffener rods and polyurethane; this approach provides high stiffness in a low profile shape. Supporting a growing need by seismic companies to tow multiple seismic arrays PMI developed the DYNA-HANGER Suspension System. The DHSS is a mid-span high-strength lead-in attachment point that incorporates multiple layers of helically preformed rods to provide lead-in gripping and bend protection. Every product and system PMI offers has been tested in our dynamic testing facility which can simulate at-sea cable-handling and environmental conditions. PMI performs design verification testing, factory acceptance testing, failure analysis studies and other qualifying testing to commercial and government standards.

Resolute Marine Energy, Inc.

3 Post Office Square – 3rd floor, Boston, Mass.
Tel: (617) 600-3050
E-mail: wstaby@resolute-marine-energy.com
Website: www.resolute-marine-energy.com
CEO: Bill Staby
President/COO: Olivier Ceberio
Engineering Director: Cliff Goudey
25 Lindsey Street, Rockland, ME 04841
Square Footage: 2,500
Testing Capabilities:
LabView, dSpace, WAMIT, MatLab, Solidworks
Number of Employees: 7
Annual Sales: >$1 million

Staby

RME was founded in 2006 to develop wave energy converters that generate clean energy from ocean waves. Since its founding in 2006, RME has received research and development funding from NOAA, the U.S. Department of Energy and the Minerals Management Service to build and test several wave energy converter prototypes. RME's initial focus is on smaller-scale autonomous power solutions (1-10kW) utilized in open-ocean aquaculture, seawater desalination and ocean observation systems but its long-term focus is on wave energy conversion for utility-scale, grid-connected electricity generation. RME core competencies include computer simulations of wave/structure interactions and design of advanced sensing, control, and data acquisition/analysis systems. RME has academic and commercial partnerships with MIT, Duke University, Maine Marine Composites and Alden Labs. RME is currently developing two different wave energy converter prototypes. One device is designed for shallow-water (near-shore) deployment and the other is designed for deeper water deployments. Preliminary reduced-

MacArtney Underwater Technology Group

Gl. Guldagervej 48
6710 Esbjerg V, Denmark
Tel: +45 7613 2000
info@macartney.com • www.macartney.com
Managing Director/CEO: Niels Erik Hedeager
Sales and Marketing Director: Marco MacArtney
Technical Director: Steen Worsøe
Financial Director: Lars Andersen
Sales Manager: Connectors & Cables: Kurt Lund
Sales Manager: Ocean Science: Hans-Jørgen Hansen
Sales Manager: Launch & Recovery: Klaus Brix
Head of Project Management: Lars Jørgensen
Technical Manager: Flemming Christensen
QA/QC Manager: Søren Rasmussen

Hedeager

Testing capabilities: MacArtney has a network of testing facilities available at our wokshops in Europe and in the US. Our in-house facilities include large full ocean depth computer controlled pressure test vessels, an 8x3x3 metre test tank and a cable tension rig. Some of our sites offer portable testing facilities, performing a range of tests on site. All testing procedures are documented under our DnV certified ISO 9001 QA system. We also work closely with external companies and Institutes that specialise in such disciplines as hydrodynamics, corrosion and cable dynamics.

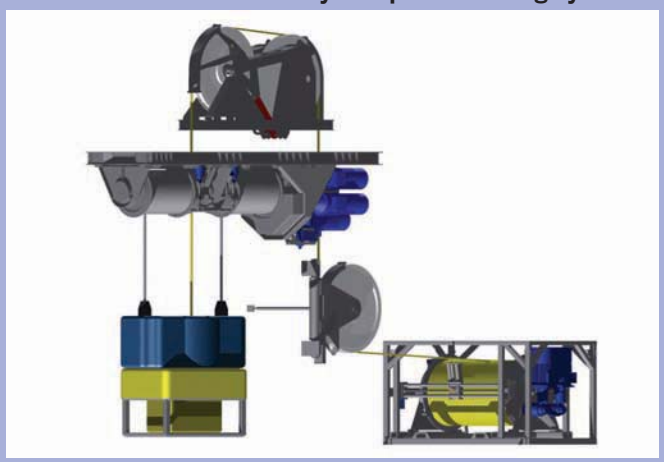
Employees: 185

The MacArtney Underwater Technology Group is a global supplier of underwater technology specializing in design, manufacture, sales and service of a wide range of systems to offshore operators, surveyors, the renewable energy sector, ocean sciences, security forces and navies across the world. MacArtney's systems and components are backed by an international network of subsidiaries, providing local access to global service. MacArtney has been supplying products and engineering solutions for over 30 years and is a privately owned corporation with group headquarters in Esbjerg on the west coast of Denmark. From our head office in Denmark, we have been providing logistical, technical, financial and marketing support to all of the companies within the group since 1978. The MacArtney Group supplies and services a wide range of integrated systems and products, many of which have been designed, developed and manufactured by MacArtney. We are also trusted representatives of many leading manufacturers of underwater products and systems. MacArtney is expert at combining own products with customer or supplier products into integrated systems. MacArtney supply includes cable and connector systems, advanced fibre optic telemetry systems, complete launch and recovery systems – including active heave compensation winches and electrical work class winches. Our range of oceanographic equipment includes the MacArtney FOCUS-2 and TRIAXUS vehicles, which are highly regarded as fast and precise towed vehicles. System integration with qualified, experienced engineers is an important part of MacArtney's portfolio. Combined with a wide range of products and systems, MacArtney can offer turnkey solutions designed specifically for requirements and installed ready for use wherever needed. MacArtney has over 30 years of experience in underwater technology solutions and has specialist knowledge that is essential for providing reliable advice and tested technologies and products. Experts with specialist knowledge provide advice and support in all areas of underwater technology, and systems and products are backed by 24 service worldwide.

MacArtney FOCUS survey system.

MacArtney launch and recovery systems.

MacArtney complete handling systems.



scales tests have been conducted for both devices and additional wave tank tests will be conducted in the latter half of 2010. In January 2009, pursuant to an R&D grant from NOAA, Resolute and its partners conducted ocean testing of a wave energy converter prototype which produces compressed air for offshore aquaculture cages. The compressed air is stored and used in various operations including feeding, cleaning, cage positioning and harvesting.

Purvis Systems

Middletown, RI
Tel: 401-849-4750
www.purvis.com
reachus@purvis.com

PURVIS Systems Incorporated is a small business founded in 1973 that provides professional engineering and technical services and products to the Department of Defense and the Public Safety business sector. PURVIS has operating divisions in Middletown, RI; New York City and Virginia Beach, VA and field offices in Panama City, FL and San Diego, CA. PURVIS has major contracts with the Naval Undersea Warfare Center, Newport, RI and the Surface Warfare Development Group, Virginia Beach, VA. Primary technical services include program and financial management, system engineering; software engineering; in-service engineering, facilities operations and maintenance services; system prototyping and test and evaluation. PURVIS also has a long history providing products and services to public safety agencies such as the Fire Department of the City of New York (FDNY), where PURVIS provides computer-aided dispatch, voice alarm, emergency notification, incident management and first responder systems.

Polyline Industries

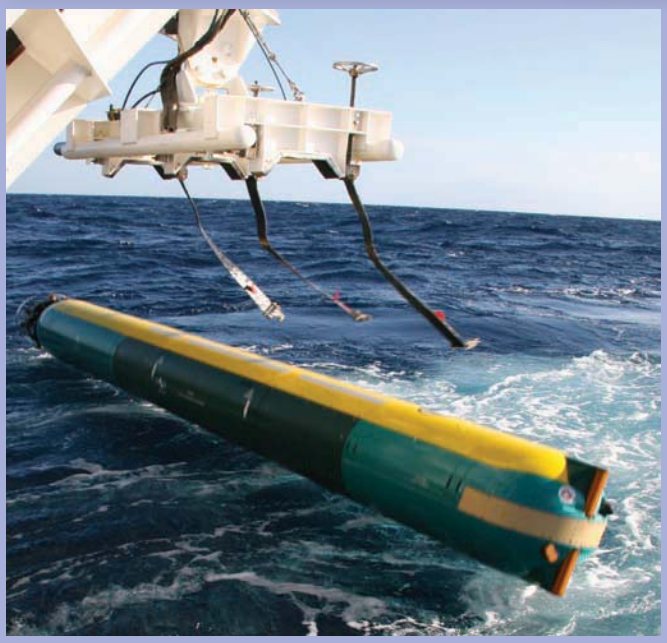
Lot 49 Cutler Road Jandakot WA 6164
PO Box 3406 Success WA 6964
Ph: +61 08 9414 1535
Email: dwilkie@polyline.com.au
Website: www.polyline.com.au

Polyline Industries is a privately owned plastics fabrication company founded in 1999 by David Wilkie and David Law. The company is based in Jandakot, Western Australia. Polyline first targeted the underground mining industry by developing and introducing a number of unique products, including Polyduct Ventilation, Plastic Detonator Boxes, Poly Pump Floats and Shields, and an underground poly pipe welding system to name a few. Its mining product range has become standard issue in most underground mines. Expanding into the marine industry, Polyline introduced a number of plastic commercial boats into the arena, and is currently leading the world in

Hydrex US

Clearwater, FL
Tel: (727) 443-3900
Email: info@hydrex.us• www.hydrex.us
Director of Public Affairs: Renata St. Lawrence
Operations Manager: William Abbott

The Hydrex headquarters are seated in the Belgian port of Antwerp where the company was founded over 35 years ago. Hydrex also has offices in Tampa (U.S.A), Algeciras (Spain), Mumbai and Visakhapatnam (India) and Port Gentil (Gabon). All offices are ready to mobilize immediately. As part of the Hydrex group they can take advantage of the main office's experience in the shipping and offshore industry. Hydrex LLC is located in the Tampa Bay area and is capable of efficiently servicing vessels and offshore units calling on ports in Canada, North, Central and South America as well as the Caribbean. Saving significant amounts of time, trouble and expense through on-site underwater work, the offered services range from a detailed inspection of a vessel's external condition and any required maintenance or cleaning work all the way through to highly technical major repairs. Repairs to thrusters, propellers, rudders, stern tube seals, damaged or corroded hulls and all other underwater services are done by professional teams trained and qualified to carry out complex technical tasks underwater while the vessel is in-situ.



Boeing

Anaheim, CA
Tel: (714) 762-5838 • www.boeing.com
Boeing Chairman, President and CEO: Jim McNerney
Director, Maritime ISR Systems: Tom Jones
Facilities: Maritime ISR Systems occupies two buildings that include engineering and support offices, high capacity computer networks, and test, integration and manufacturing areas including high-bay test areas with 10- and 40-ton cranes.
Square Footage: 200,000 sq. ft. of engineering, test, integration and production space, of which 40,000 sq. ft. is dedicated to undersea programs.
Testing Capabilities: In addition to the above, Maritime ISR Systems' footprint includes certified battery recharging facilities, a 10,000 psi test chamber, and a 120'L x 90'W x 33'D test pool which is enclosed to handle various levels of security.
Employees: 140

Formerly part of Rockwell International, Maritime ISR Systems has produced more than 36 undersea systems during its 40-year history. The company specializes in submarine systems integration, autonomous software, complex low power systems design, launch and recovery design, mission/sortie planning, open systems command and control, real-time/faster-than-real-time simulation, undersea systems networking, and acoustic processing.

A sampling of early programs in the 1960s and 1970s includes the Dolphin UUV, Powered Underwater Research Vehicle (PURV) and Beaver. A few of their other milestone programs were MK40, Unmanned Free Swimming Submersible (UFSS), and the initial Remote Mine Operational Prototype (RMOP). In parallel with the vehicle design, Boeing has invested in development of high-level, fault-tolerant autonomous software. Current field-tested systems include the Navy's AN/BLQ-11 (mine survey UUV) and the Echo Ranger LDUUV (recently transitioned from commercial surveying to a DoD development testbed). Maritime ISR Systems' acoustic processing heritage is also impressive with more than 30 years of providing hardware, software and interface design for airborne, shore-based and shipboard acoustic processing. Current programs include the analyzer subunit (ASU) of the USQ-78B for the P-3 Orion and the acoustic processing suite for the P-8A Poseidon. Combined, these two programs provide sonobuoy acoustic processing for all US Navy fixed-wing ASW aircraft.

The AN/BLQ-11 autonomous Unmanned Undersea Vehicle (UUV), formerly called the Long-term Mine Reconnaissance System, was designed for covert mine countermeasure capability. It remains the US Navy's only submarine-qualified 21-in. heavyweight vehicle. The autonomous UUV carries multiple sonar and navigation systems and control software for the mine reconnaissance mission. The BLQ-11 system is a temporary alteration (TEMPALT) and the vehicles and shipboard deployed equipment are all handled and loaded like a torpedo. In January 2006, several UUV "firsts" were accomplished, including full impulse torpedo tube launch, repetitive helo recovery, following an SSN through 180-degree turns, and successful docking to an SSN while underway. During two sequential attempts in October 2007 tests, each AN/BLQ-11 UUV was successfully launched from a U.S. Navy attack submarine, then returned to the vessel where the system's robotic arm retrieved the vehicle back into the submarine. AN/BLQ-11's sister vehicle is Echo Ranger, an autonomous large displacement unmanned undersea vehicle (LDUUV). This COTS-designed system with a maximum operating depth of 3000 meters has logged more than 2000 miles in tests and surveys (up to 28 hours) and could be configured for 30-day missions.

design, functionality and standards, for polyethylene vessels. Polyline has achieved the highest survey standards in Australia for a plastic vessel as well as the largest polyethylene conventional hull vessel, and only offshore polyethylene Oil Platform mounted vessel in the world.

RJE International, Inc.

15375 Barrance Pkwy, B-107, Irvine CA 92618
Tel: (949) 727-9399
Email: sales@rjeint.com
www.rjeint.com
President: Robert Jechart
VP: Bruce O'Bannon
Marketing Director: Steve Herring
Engineering Director: Stephen Cole
Square Footage: 2,000 sq. ft.
Testing Capabilities:
Acoustic test tank and offshore test/training boat
Employees: 10
Annual Sales (US$): 4m

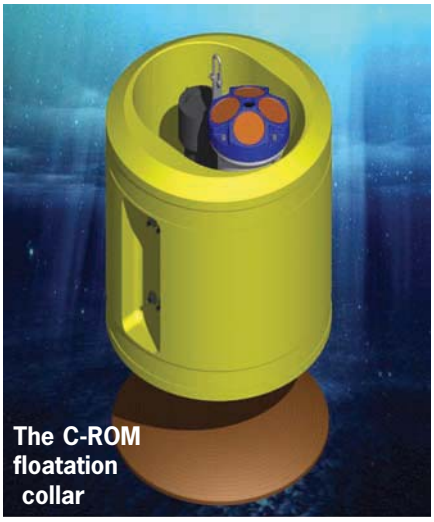
RJE International, Inc. supplies high technology solutions to military, commercial and scientific communities. By manufacturing or working with other companies, RJE offers design, development, evaluation and marketing of products for military divers, offshore and marine scientific communities,search and rescue teams, and commercial and military aviation. RJE also has an extensive background in developing, manufacturing, and supplying underwater acoustic marking/relocation systems and diver navigation platforms. RJE products are designed to allow operators to mark and locate any object or location underwater. Recently, the company has been developing underwater autonomous navigation platforms for diver and subsea vehicles. Other applications for equipment include mine recovery sonars, diver navigation boards, emergency relocation systems, and pinger receiver systems. In addition, RJE International has developed an acoustic-based swimming pool safety system called SonarGuard, which provides an acoustic net for swimming pools.

Rite Solutions

Middletown, RI
Tel: 401-847-3399
www.ritesolutions.com

Rite-Solutions is a Service Disabled Veteran Owned Small Business providing Advanced Systems and Software Engineering Services; Visualization capabilities; Real-Time Decision Support; Enterprise and Transaction Based Systems; and Knowledge Management tools. Rite-Solutions' was founded on our capability to develop, manage and support all types of Software systems in both the Government and commercial markets. We support our customers' needs with mission critical software, as well as providing engineering in the form of advance command decision system development; and performance tools sets. Our continuous leveraging of both Government and Commercial Technology throughout our Engineering disciplines provides our customers with robust, scalable, right sized solutions that truly fit their needs without the cost of complete custom development or one-size-fits-all applications.

ROMOR Ocean Solutions



The C-ROM floatation collar

10-51 Raddall Ave., Dartmouth, NS Canada B3B 1T6
Tel: 902-466-7000
Email: sales@romor.ca • www.romoroceansolutions.com
President/CEO/GM: Darrin Verge
Vice President: Murray Scotney
Marketing Director/Sales Manager: Matthew Davis
Engineering Manager: Blaine Carr
Square Footage: 4,800 sq. ft.
Testing Capabilities: Instrumentation repair and test facility, warehouse and mobilization space, ROV/Instrument Test Tank
Employees: 8
Annual Sales (US$): 2.5m

With more than 25 years of experience, ROMOR Ocean Solutions provides technical services and integrated instrumentation solutions for the geophysical, oceanographic and oil & gas industries. ROMOR has combined the technical knowledge, expertise and specific instrumentation to customize a complete solution for our clientele and their specific projects. Representing some of the world's leading manufacturers in the industry and also manufacturing our own solutions, ROMOR can create custom engineered and integrated

Bluefin Robotics

Cambridge MA
Tel: (617) 715-7000
Email: info@bluefinrobotics.com
www.bluefinrobotics.com
President/CEO: David P. Kelly
Marketing Director/Sales Manager: Michael C. Donovan

Facility: Bluefin occupies two facilities in the greater Boston area. The main facility is a 37,000 sq. ft. headquarters on Putnam Avenue in Cambridge, MA which houses three floors of engineering, manufacturing, and corporate administrative functions. Marine operation is based in East Boston, which provides Bluefin with year-round ocean access for testing and sea trials. In fall 2010, the company will be moving to a new facility in Quincy, MA. The waterfront location will boast 65,000 square feet of space and feature new test fixtures, flexible manufacturing bays and a collocated marine operations department.

Testing Capabilities: Four test tanks, machine shop, 58 ft boat, RHIB, 35 ton crane

Bluefin-9 being launched from a RHIB in Boston Harbor.

Bluefin Robotics develops and manufactures Autonomous Underwater Vehicles (AUVs), derivative systems, and related technology. Since 1997, the company has provided AUVs for military, commercial (oil and gas survey and sea floor mapping) and scientific markets worldwide.

Bluefin became a wholly-owned subsidiary of Battelle Memorial Institute in 2005.

Bluefin's wide range of vehicles includes the Spray glider; the non-tethered Hovering Autonomous Underwater Vehicle (HAUV) designed for ship hull inspection; and the BF Series of AUVs, available in a number of standard and customized configurations.

In addition, Bluefin's product family includes propulsion, navigation, and battery systems. All BF Series AUVs are designed for rapid swapping of pressure-tolerant batteries for safe, fast turnaround at sea.

Bluefin has licenses with Massachusetts Institute of Technology, Scripps Institute of Oceanography, and Monterey Bay Aquarium Research Institute.

The Bluefin-12 SMCM Inc. 2 vehicle.

instrumentation solutions. ROMOR also offers custom training procedures on aspects such as instrumentation operation and maintenance, to consultation on proper techniques for instrumentation deployment and mobilization.

ROMOR can fulfill application requirements through:

- Project Mobilization & Management
- Mooring Design & Oceanographic Deployment Services
- Hydrographic & Geophysical Survey Support Services
- In-house Maintenance and Field Personnel
- Custom Instrumentation & Integration Engineering
- Ocean Instrumentation & Technology Consultation
- Sales and Leasing
- Training & Demonstration
- New Product Development & Manufacturing

ROMOR Ocean Solutions is an international systems integrator and is committed to working together with the scientists, engineers, government officials, academic institutions and private firms around the world to drive advances in ocean technologies.

The ROMOR C-ROM (Compact Recoverable Ocean Mooring) is an oceanographic subsurface mooring solution that offers a reliable and compact design to mooring and recovering oceanographic instrumentation. The C-ROM consists of a subsurface flotation collar that provides approximately 80 lbs positive buoyancy for use in a seawater environment for depths up to 500m without degradation of the materials or the flotation value for a minimum of five years.

The C-ROM floatation collar encloses a customer specified acoustic release assembly as well as the client specified instrument that can be accommodated within the dimensions of the design. The arrangement is a two-piece flotation collar that fastens directly to a strongback assembly

Remote Ocean Systems (ROS)

5618 Copley Drive, San Diego, CA 92111
Tel: (858) 565-8500
Email: sales@rosys.com • www.rosys.com
CEO/President: Robert Acks
Square Footage: 28,000 sq. ft.
Testing Capabilities: 20k PSI Pressure Chamber, Temperature Chambers, Computer Simulation, Rapid Prototyping
Employees: 50 • Annual Sales: $10M

Remote Ocean Systems (ROS) is a leader in the development, design, and manufacture of advanced technology inspection and lighting systems for the most severe offshore, oceanographic, industrial, and military applications. ROS customers demand products that are infinitely reliable. The ROS product line includes underwater video cameras, lights, pan and tilts, and control systems. ROS' ISO-certified Quality Management System is committed to ensuring customer satisfaction and continuous improvement. ROS' design and manufacturing facility is located in San Diego, California. ROS has led the industry in the supply of underwater LED lights that are true "halogen-replacements". In early 2010 ROS unveiled its newest, the Q-LED III, an ultra-efficient LED Floodlight that represents the next generation of underwater illumination. At full power, the Q-LED III's dimmable light output can exceed that of a 500 watt Halogen, yet it draws significantly less power and offers long life and minimal maintenance. The Q-LED III is certified submersible to 4000m, operates on 120 or 220/240VAC, and is compatible with both 50Hz or 60Hz power and NTSC or PAL Video cameras. Always on the forefront of technology, the innovative ROS Inspector HD Underwater Camera is another of ROS' flagship offerings. This underwater camera offers High Definition Video in 1080i and real-time high resolution snapshots. Video output formats include HD-SDI, Fiber optic, Ethernet, or Component. A super-wide angle view, 10:1 optical zoom, and auto focus system allow for flawless inspection and monitoring with minimal operator attention. The Inspector HD camera is certified submersible to 4000mand employs innovative controls that allow a pilot to operate the camera's many features remotely, and upload still images while the camera is submerged and in operation. The field-proven ROS Inspector HD Camera delivers imagery of the highest quality to the client, with the lowest HD integration costs.

AXYS Technologies

Sidney, BC Canada
Tel: (250) 655-5850
Email: info@axys.com
www.axystechnologies.com
President/CEO: Harry Weiler
Marketing Director/Sales Manager: Don Bryan
Engineering Director: Reo Phillips
Square Footage: 12,000 sq. ft.
Testing Capabilities: Wave Simulator, Data Acquisition Board Test Center (DAQ), Hardware Electronics Test Equipment, Custom Software for Data Quality Assurance
Number of Employees: 40

AXYS Technologies Inc. (AXYS) is an ISO 9001-2008 registered Canadian company with more than 30 years experience in the design, manufacture and installation of environmental monitoring systems worldwide, for both marine and terrestrial applications. Its technical field services train and support customers in the operation and maintenance of all products. AXYS' products can be used in freshwater, marine, and land-based monitoring stations that measure aquatic, oceanic and atmospheric parameters. AXYS has built and commissioned more than 250 meteorological and oceanographic stations of various types around the world, in over 30 countries. Clients include international military agencies, environmental agencies, coastal engineering firms, oil & gas companies, mining companies, wave energy research companies, port authorities, meteorological agencies, and oceanographic research institutes.

AXYS's Marine products include moored buoys for weather, wave, and sea state forecasting, as well as buoys for specialized applications such as offshore wind resource assessment, red tide, and oil spill detection. AXYS has a full service oceanographic department for biological, meteorological and physical oceanography consulting and a comprehensive range of oceanographic lease equipment. The latest data collection platform developed by AXYS is the WatchMan500 Data Acquisition System. The WatchMan500 was designed as the new generation of payload for the AXYS marine buoy and terrestrial weather information systems to provide desktop to sensor monitoring and control, including dynamic onboard control and data storage capabilities. It can interface with custom or commercial off the shelf sensors, equipment, software, and telemetry allowing for easy initial installation and equipment upgrades. It has two-way communication capabilities and is the ideal solution for long-term data acquisition from remote locations.

to which the acoustic release is attached. Each halve of the collar is a polyethylene shell filled with a syntactic foam. As an option, the C-ROM Roto Drum can be included with the C-ROM to enable recovery of the mooring anchor once the mooring has been released and surfaced. Additional options, such as an acoustic modem for remote data collection and RF/LED flashers, can also be included into this design.

Other products and solutions include underwater acoustic navigation and positioning, hydrophone arrays, subsea and surface modems, mooring assemblies, flotation, Acoustic Release/Transponders, Hydrographic/Geophysical equipment and maritime security applications.

The Sea Con Group

1700 Gillespie Way, El Cajon, Calif.
Tel: (619) 562-7071
E-mail: seacon@seacon-usa.com • www.seacon-usa.com
President: Mr. Patrick G. Simar
Vice President: Mr. Denton Seilhan
Testing Capabilities:
Pressure cycling to 20,000 psi, accelerated life, full optical, gas leak, cold water, sand and silt, full mechanical, environmental, vibration and tensile strength.

The SEA CON Group is a leader in the manufacture of underwater electrical connectors and fiber optics providing solutions for many applications within the Oil & Gas, Defense, Oceanographic and Environmental markets. Founded in 1964, SEA CON Brantner & Associates, Inc., was the first manufacturing division within the SEA CON Group. The facility located in El Cajon, San Diego, USA houses design, engineering, manufacturing, quality control and testing. Many of SEA CON's

Mini Con Series

products have been developed through this division including the highly successful MINI-CON and Metal Shell Series. This history of proven development has resulted in this division being the focal point for the supply of electrical cable and system solutions within the Group.

SEACON (europe) Ltd formed in 1987 was the first international addi-

Sea-Bird Electronics, Inc.

13431 NE 20th Street, Bellevue, WA
Tel: 425-643-9866
E-mail: seabird @seabird.com • www.seabird.com
President: Dr. Norge Larson, Oceanographer
Vice President: John Backes
Sales Manager: Calvin Lwin
R & D Manager: Dave Murphy
Facilities: Engineering and Administrative offices, laboratories, manufacturing, CNC machine shop.
Square Footage: approx. 34,000
Testing Capabilities: Conductivity, temperature, and dissolved oxygen calibration baths (20), 10,000 psia hydrostatic pressure test vessels (3), deadweight testers, metrology laboratory - water triple-point cells, gallium melting point cells, 8400B Autosals, IAPSO Standard Seawater
Number of Employees: 110

Sea-Bird Electronics, Inc. manufactures oceanographic CTDs and integrated water sampling systems. The CTDs are designed to measure conductivity, temperature, and pressure (depth), dissolved oxygen, and other variables, enabling oceanographers to determine salinity, density, and other properties contributing to ocean circulation, the function of marine ecosystems, and global climate dynamics. Sea-Bird has been serving universities, oceanographic institutes, government agencies, engineering firms, and navies throughout the world for more than 30 years. Sea-Bird employs 110 people, including five oceanographers, and has more than 40 products in current production.

Sea-Bird's instruments are engineered to produce accurate data from research vessels, fixed moorings, moored profilers, autonomous drifting profilers (Argo floats), AUVs, autonomous gliders, and large-scale networked sensor arrays in ocean observatories. These instruments are designed to eliminate or minimize dynamic errors and preserve initial accuracy throughout a deployment. Accuracy begins with stable sensors and circuits, and calibration in Sea-Bird's automated bath systems for temperature, conductivity, and dissolved oxygen. The calibration facilities are backed by an in-house metrology laboratory where primary standards in temperature (water triple point and gallium melting point) and conductivity (IAPSO Standard Seawater) are maintained. Calibration bath data, reference sensor stability, and standards data are monitored daily and reviewed for consistency by the chief scientist.

Saab Seaeye

20 Brunel Way
Segensworth East
Fareham, Hampshire, PO15 5SD, UK
Tel: +44(0)1489 898 000
rovs@seaeye.com • www.seaeye.com
Managing Director: Dave Grant
Sales Director: Matt Bates
Engineering Director: Jon Robertson

Testing Facilities: An in-company pressure test tank facility is installed at the company's 24,000 sq ft factory, with an available test tank resource for hydrodynamic testing and trimming, together with product development trialling.

Grant

Saab Seaeye claims it is the world's largest manufacturer of electric ROV systems. Accredited to DNV ISO 9001, Saab Seaeye is a leading supplier of electric ROVs to the oil and gas industry, and a major ROV resource for defense forces, marine science and hydro-engineering.

Its parent company, Saab Underwater Systems is a leader in sensor systems, precision engagement systems, and remotely operated and autonomous underwater vehicles. Saab Seaeye employs 100 people and has a turnover of $36 million. The company is represented and supported in 28 countries around the world. Founded in 1986, Seaeye has pioneered many innovations in the ROV industry. These include:

- **Brushless DC thrusters**
- **Polypropylene chassis**
- **Carbon fibre electronics pod**
- **Distributed intelligence**
- **Modular control system**
- **Dual fault-tolerant self-diagnostic redundancy**
- **High frequency power distribution**
- **Simplified man/machine interface**
- **Thruster controlled TMS for electric systems**

More than 500 ROV systems have been sold by the company. They are fitted with a range of standard and custom designed tooling that includes cameras, manipulators, survey sensors, cutters, tracking systems, sonar, torque tools and water jetting. The company also designs and manufactures a range of ROV handling devices including Tether Management Systems.

The breadth of capability in the range offers an ROV system suitable for subsea tasks across the oil and gas spectrum, and in other sectors.

Technologically, the Saab Seaeye range comes in size, power and tasking options that extend from the easily man-handled Falcon ROV, to the muscular and pioneering work-class Jaguar, rated to 6000m.

Breakthrough concepts have created new control and power distribution systems currently migrating from the flagship Jaguar throughout appropriate ROVs in the range. The new systems include complete dual-redundancy that allows a failed component to be isolated and the ROV kept working. Also an intelligent three-mode distributed plug and go control system that manages each on-board device – thrusters, lights, tools etc – with the first mode controlling the device; the second diagnostics; and the third software updates. An innovative high frequency 800Hz power system has cut the size of the ROV's on-board transformer by 80% and cut the vehicle's power to weight ratio.

Top of range Jaguar is the an advanced electric ROV.

Voltage is also boosted to 3000V to feed onboard systems, so that the diameter of the umbilical and tether cables are minimized. This reduces winch drum size and tether drag through the water. Another new development that solves the problem of multiple ROV deployment under a single vessel and the risk of entanglement, is to fit powerful thrusters to each ROV's Tether Management System so it can hold position automatically whilst its ROV carries out its task and remains orientated ready for recovery of the ROV onto the cage.

RANGE outline

- **Falcon** Portable ROV for rapid deployment. Rated 300 and 1000m, with a one to one power to weight ratio.
- **Tiger** Observation ROV. Rated 1000m
- **Lynx** Rated 1500m
- **Cougar XT** Powerful and compact observation package with underslung skid able to handle work tasks at lower cost with heavy duty tooling. Four vectors thrusters and two vertical thrusters. Rated 2000mCougar XTi - New concept ROV with self-diagnostics and modular control system. Rated 3000m
- **Panther XT** Rated 1500m
- **Jaguar** The largest in the range. An electric work class ROV with full redundancy and rated to 3000m with option to 6000m.

tion to the Group. The division located in Great Yarmouth, Norfolk, UK has become a strong base for design, engineering, manufacturing, quality control and testing and has developed highly successful product ranges including the 55 and SEA-MATE series and OPTI-CON range of standard, dry-mate, fiber optic, hybrid connectors. SEA CON Global Production created in 1989 provides quality, low cost solutions for the manufacture of underwater electrical connectors. As a result of continuous success, SEA CON Global Production has become the main rubber molded and composite connector manufacturer within the SEA CON Group. With two manufacturing facilities located in Mexico, this division has the capability to produce high volume, low cost quality connectors. In addition, the specialized engineering and product development departments can design and produce special application connectors to meet individual requirements. SEACON Advanced Products, LLC. was formed by the Group in 1999, to focus directly on the Lockheed Martin designed HYDRASTAR and CM2000 high integrity underwater mateable connectors.

Today, SEACON Advanced Products, LLC. continue to develop state-of-the-art products including underwater mateable fiber optic connectors such as the HYDRALIGHT and G3 together with a vast range of optical and hybrid dry-mate connectors. SEACON Advanced Products, LLC. also continue to design and manufacture the CM2000 underwater mateable electrical connector along with electrical and optical jumper assemblies, single and multiple channel optical fiber and hybrid penetrators, field installable umbilical terminations and underwater switches.

Precision Subsea AS, founded in 2008, is a Norwegian company located just 30km from Kongsberg. Utilizing the vast experience and knowledge of Precision's personnel and combining both new technology with the proven technology of the SEA CON Group, Precision Subsea provides full engineering, design, testing, production and service support. Precision Subsea's engineering team has over 30 years of experience in subsea control system design, development and qualification.

CONTROS Systems & Solutions GmbH

Kiel, Germany
Tel: +49 431 260 959 00
Email: s.kramer@contros.eu • www.contros.eu
CEO: Daniel Esser
Director Marketing & Sales: Stefan Kramer
R&D Director: Peer Fietzek
Facility: Office, Lab and Workshop at Harbor Site
Square Footage: 500 sq. m.
Testing Capabilities: 3 Tanks, boat FS Bluewind, pressure tank, calibration lab, Test lab, Harbor site for testing
Employees: 21 • Annual Sales: $1.6m


Kramer


Esser

CONTROS Systems & Solutions GmbH was found in 2003 in Kiel, northern Germany. The company is developing and marketing advanced subsea sensor systems for CO2, Methane and Hydrocarbons. Also CONTROS has launched what it claims is the world's only MEG pre-commissioning system to the O&G industry. CONTROS systems are used in many applications such as underwater hydrocarbon and gas measurements, greenhouse gas monitoring, air/sea exchange, ocean acidification, carbon capture and storage and also methane hydrate studies. Moreover CONTROS is involved in Subsea Oil & Gas Early Leak Detection, pipeline inspection as well as subsea Oil & Gas installation monitoring systems. CONTROS systems have been successfully attached to a wide range of platforms like AUVs, ROVs, Floats, Landers, CTDs, Gliders and Buoys. CONTROS also offers quality management, training courses and sessions, engineering services, ROV Pilots, Leak Detection Experts and international project management.

CONTROS HydroC systems are optical, headspace-based underwater sensors for the measurement of the partial pressure of carbon dioxide, hydrocarbons and methane. Dissolved gas diffuses from the liquid through a patented thin film composite membrane into a detector chamber. The concentrations are measured by non-dispersive infrared spectrometry within a gas circuit. The sensors measure in real time and store data to an internal data logger at different operating depths with a maximum of 6000 m. The standard measuring range is 200 to 1000 ppm (µmol/mol) for CO2 and 50 nmol to 50µmol/l for CH4 in the gas phase (other ranges are available). Every HydroC is calibrated individually and in situ within a special insulated water tank.

Birns standard Hybrid Electro Optical Connector.

Birns, Inc.

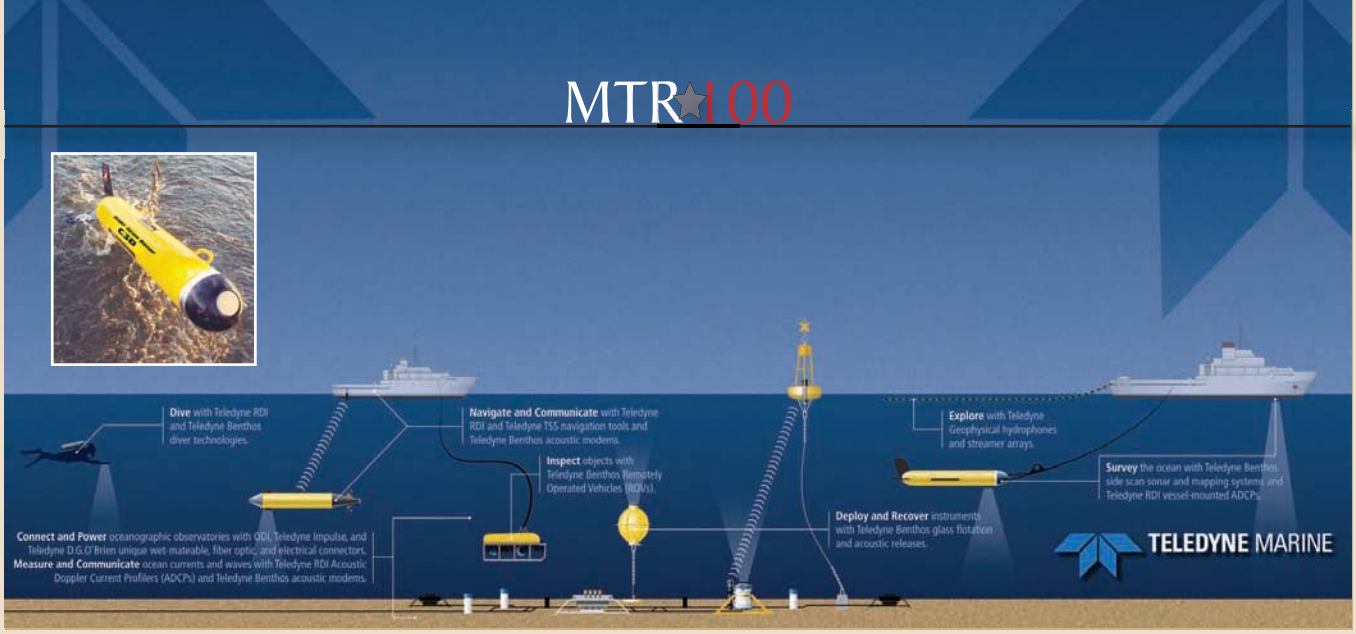
Tel: 805-487-5393
Email: abrown@ birns.com
www.birns.com
CEO/President: Eric Birns
Director of Comms: Amy Brown
QA Manager: Seth Everett
General Manager: Keith Gear
Square Footage: 11,400
Testing Capabilities: In 2010 BIRNS implemented an enhanced new 9 tank high performance hydrostatic pressure testing system, with a range of vessels rated to 20,000, 10,000, 5,000 and 1,000 psi, which provides an enhanced, streamlined, efficient means to test a wide range of products for both rigorous safety and demanding performance requirements. Customers are now offered a turnkey program with costs to include ABS approval for orders moving forward.
Number of Employees: 25

Eric Birns

BIRNS is an ISO: 9001 2008-certified leader in the design and manufacture of high performance lights, connectors, penetrators and custom cable assemblies for deep ocean, marine, military and nuclear power applications. With more than a half century of industry experience, BIRNS has a legacy of contributions in emerging technologies for some of the harshest environments on earth. Renowned since its inception in 1954 for developing solutions for exceptionally rigorous applications, its products have widespread oceanic deep submergence and diving decompression acceptance—in fact, 2010 marks the 50th anniversary of BIRNS' ongoing partnership with the US Navy. Its products are trusted in 83% of the US nuclear power facilities and many others worldwide. In the 1970s, BIRNS produced lights to meet the extreme depth applications of the offshore oil and deep-sea exploration industry—some tested to an equivalent depth of 42,000 FSW (13 km). In 1978, the BlackBIRN self-contained underwater Magnetic Particle Inspection (MPI) system allowed single divers to detect oil leaks or welds defects in underwater steel structures. The BIRNS Snooper, a 3km-rated 3200K light, is durable and dependable, with many from the 1960s are still in use today. BIRNS introduced an advanced oil-filled connector adaptor for the US Navy that solved the risk of cut tubing with underwater oil-filled cables for deep submergence ROVs—a unique double-ferrule electro-hydraulic connector adaptor system. BIRNS is the only company offering this level of sophistication in oil-filled cable connector technology. BIRNS' products undergo rigors like open-faced saltwater hydrostatic pressure testing, and the company's sophisticated, high performance connector systems achieve the lowest optical losses (>.2 dB at depths of 6 Km) in the industry.

Recently, BIRNS developed its BIRNS Millennium connector range with both multi- and single- mode optical fibers, and high voltage (3.6Kv) and low voltage (600v) conductors – delivering huge bandwidth and power for extreme depth applications — allowing transmission of real time data for subsea observatories, towed data acquisition devices and ROV projects. The typical loss recorded for a cable assembly of the series is <1dB, yet it can carry high and low voltages — thus delivering power, control signals and high bandwidth telemetry both to and from a device for military and industrial applications. In 2010 BIRNS spearheaded further initiatives in its industry-leading trend of miniaturization and hybridization in a series of affordable, short lead time offerings that are the most advanced cutting edge connectors on the market. It introduced a new line of standardized electro-optical hybrid connectors as a supplement to its wide range of custom connector lines, including the standard hybrid BIRNS Millennium 3T series (also capable of handling high voltage (3.6Kv) conductors), in which users can specify up to 31 electrical wires and up to 10 optical fibers, and the standard hybrid BIRNS Millennium 3O, with a single optical fiber and up to 10 electrical wires, allowing unparalleled versatile high performance connectivity.

BIRNS just expanded its lines of commercial diving and subsea lighting products to include new, innovative LED options in the BIRNS "L" series—chamber lights and helmet and ROV work lights—all with 40,000 hour lamp lives and brilliant LED illumination.



Teledyne Marine

E-mail: tminfo@teledyne.com
www.teledynemarine.com

Teledyne Marine is a group of undersea technology companies that have been assembled by Teledyne Technologies Incorporated. In keeping with Teledyne's philosophy, the member companies within the Marine Group remain committed to their technical heritage. These companies now combine their talents and technology under the Teledyne Marine umbrella to provide their customers with a new level of collaborative technology, innovation, and worldwide support. Each Teledyne Marine company is a leader in its respective field, with a shared commitment to providing premium products backed by unparalleled service and support. The Teledyne Marine companies are deeply entrenched in the oceanographic, offshore and defense industries, providing a wide array of highly reliable products and solutions in some of the world's most extreme offshore environments.

Teledyne Marine's company capabilities include:

- **Teledyne Benthos** provides a wide array of oceanographic instrumentation and sensor solutions for use in marine environments. Products include acoustic modems, acoustic releases, seafloor mapping systems, Remotely Operated Vehicles, and glass flotation products.
- **Teledyne Cormon** provides engineered monitoring packages and applications expertise, mainly to the Oil and Gas Industry.
- **Teledyne D.G.O'Brien** incorporates the unmatched reliability of glass-to-metal seals into optical and electrical solutions.
- **Teledyne Geophysical Instruments** designs and manufactures marine seismic exploration products.
- **Teledyne Impulse** designs and manufactures electrical and optical interconnection systems.
- **Teledyne ODI** engineers and manufactures subsea electrical, fiber optic, hybrid and interconnect systems.
- **Teledyne Odom Hydrographic** is a leading manufacturer of single and multibeam echo sounders for hydrographic applications.
- **Teledyne RD Instruments** (See Below)
- **Teledyne TSS** (See Next Page)
- **Teledyne Webb Research** manufactures autonomous gliders and profiling floats for oceanographic applications.

Teledyne RD Instruments

14020 Stowe Drive,Poway, CA 02644
Tel: +1-858-842-2600
Email: rdisales@teledyne.com • www.rdinstruments.com
General Manager: William Kikendall
Vice President Sales/Marketing: Harry Maxfield
Marketing Manager: Margo Newcombe
Number of employees: 210

Teledyne RD Instruments (RDI) developed the industry's first Acoustic Doppler Current Profiler (ADCP), a revolutionary device capable of measuring the speed and direction of underwater currents at up to 128 individual points throughout the water column. Through the years, the company has expanded its core technology to create a wide array of current profiling, wave measurement, CTD, and navigation products for environments ranging from shallow water estuaries to full ocean depth applications. With over 15,000 Doppler products delivered worldwide, Teledyne RDI is a clear leader in its field. Through market growth and product diversification, Teledyne RDI is now comprised of three distinct business units:

Marine Measurements: Highly precise and dependable acoustic Doppler current profiling and wave measurement products for coastal and deep water oceanographic environments. New products for this business unit include the Doppler Volume Sampler for moored current profiling

applications, and a full line of CTD (Conductivity, Temperature, and Depth) products.

Navigation: Doppler Velocity Logs (DVLs) for precision navigation on board AUVs, ROVs, and surface vessels around the world. Industry professionals have selected Teledyne RDI's DVL for over 99% of the AUVs deployed to date. This business unit also offers Diver Navigation and Mapping Systems.

Water Resources: ADCPs for discharge and flow-measurement applications in rivers and streams. This product line includes the industry standard Workhorse Rio Grande for moving boat applications, the StreamPro for towed applications, the ChannelMaster and new V-ADCP for stationary applications, and our new next-gen RiverRay ADCP. Teledyne RDI's ADCPs offers many technical advantages, including: patented broadband processing; patented 2D phased array transducer design; and a unique 4-beam configuration. Teledyne RDI has also applied its leading edge technology to a line of Doppler Velocity Logs (DVLs) and diver navigation products.

Teledyne TSS Ltd.

1 Blackmoor Lane, Croxley Green Business Park,
Watford, Hertfordshire WD18 8GA
Tel: +44 1923 216020
Email: tsssales@teledyne.com
URL: www.teledyne-tss.com
V.P./General Manager: Brian Huntsman
Sales Manager: Martyn Grange
Engineering Manager: Harpal Khamba
Business Support Manager: Carolyn Jones
No. of employees: 85
Annual Sales (US$): 27m
Testing Capabilities:
- **Environmental chambers**
- **Vibration testing**
- **Dynamic motion test tables**
- **Clean air room**

One hundred years since the original S G Brown company was founded and now part of the Teledyne Group, Teledyne TSS combines a centenary of navigation know-how with thirty years of motion measurement expertise. TSS Technology is at work across the globe in some of the harshest environments imaginable, situations where performance and safety rely upon the highest integrity data results. From positioning technology and motion sensors in use in hydrographic survey, navigation, defence and offshore industries, to applications where pipe and cable survey systems are employed in the constant checking and surveying of subsea pipe and cables - TSS technology is in operation on and in the oceans of the world.

With products widely recognised as the industry standard in their sectors, TSS has an uncompromising commitment to leading the way in the development and delivery of leading edge motion sensing and subsea detection solutions to the ever-changing marine market. The company also provides expertise in defence steering and navigation and is able to provide retrofit solutions to meet the needs of Navies worldwide. Following a major investment in new premises (including the construction of an advanced clean room and environmental testing area), designated product manufacturing zones will improve efficiency and quality control while also leaving ample space for additional production lines.

Technology Profile:

The Teledyne TSS range of motion sensors is designed to enable highly productive surveys aboard all types of vessel in varying sea conditions. Teledyne TSS motion sensors are proven to negate the errors usually associated with motion and to enable surveys that meet or exceed IHO standards. The company also produces a world-leading range of underwater pipe and cable location and survey equipment, used in the oil and gas, and telecommunications industries. These systems can be fitted to work class ROVs and, when interfaced with suitable navigation packages, provide the precise location and depth of burial for pipes and cables. Teledyne TSS also provides navigation solutions for the commercial marine market including gyrocompasses and repeaters as well as ship steering systems. The latest product range of inertial navigation systems combine the navigation expertise of S G Brown with the motion measurement knowledge of TSS, in the SGB2000 and ORION ring laser systems. Adapted specifically for the Defence market, MK31 Inertial Reference System is in service with Navies and Coast Guards worldwide.

SeeByte

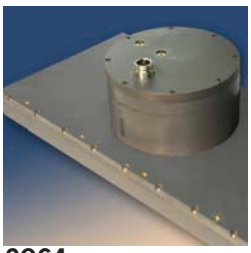
30 Queensferry Rd., Edinburgh Scotland UK EH4 2HS
Tel: +44 (0) 131 447 4200
Email: sales@seebyte.com • www.seebyte.com
CEO: Bob Black
Sales Manager: Ioseba Tena
Head of Engineering: Dr. Scott Reed

SeeByte creates some of the world's most advanced software for managing unmanned and remote assets including solutions for the military, security, offshore, subsea and renewable energy sectors; helping users transform raw data into actionable information for asset management and vehicle operation, often in real time. SeeByte's flagship product is SeeTrack, an open-architecture platform which gathers and integrates data from multiple sensors. The information attained is assessed and used to generate automatic decision-making processes that control the vehicle's actions. SeeTrack CoPilot is designed to highlight and track targets of interest from the sonar screen in subsea operations, carrying out the same inspection several times and comparing the data.

Sensor Technology Ltd.

Collingwood, Ontario, Canada L9Y 3Z4
Tel: +1-705-444-1440
Email: techsupport@sensortech.ca • www.sensortech.ca
CEO: Dr. Eswar Prasad
Ops Mgr.: Niru Somayajula
R&D Mgr.: Sailu Nemana
Testing Capabilities: In-house test tank; Portable, floating testing facility for open water, low frequency testing; Two pressure vessels, rated to 3000 psi and 6000 psi respectively; Automated, 500V, hipot tester; Complete electronics testing; Sensor Technology Ltd. SS50 Strain Measurement System and SS01 Piezo d33 Meter for piezoelectric ceramic characterization
Employees: 45
Annual Sales: $5 Million

Sensor Technology Ltd. (SensorTech) is a vertically integrated company, manufacturing piezoelectric ceramics as well as piezo-based hydrophones, acoustic transducers and actuators, and all related electronics. The company can take customers through the entire design process, from concept, to prototyping, to production.


SQ64


Somayajula

SensorTech, based near Toronto, Canada, was founded in 1983. It has shown steady growth over nearly three decades. The company invested more than $1 million in piezoelectric ceramic production and grinding capabilities in the last two years and purchased two CNC grinding machines in early 2010 to increase its capacity and to add to its technical capabilities.

Sensor Technology Ltd. has a long history of research and development, having conducted experiments on the space shuttle, the Mir space station, in both the Arctic and the Antarctic and in ocean depths exceeding 20,000 feet.

These research activities lend to the company's expertise and design capabilities. SensorTech recently introduced its SQ64 hydrophone, a 24" x 12" array with multiple channels and more than 1,000 elements.

C & C Technologies, Inc.

730 East Kaliste Saloom Road, Lafayette, LA 70508
10615 Shadow Wood Drive Suite 100, Houston, TX 77043
Tel: (337) 210-0000 or Tel: (713) 468-1536
Email: info@cctechnol.com • www.cctech.us
President/CEO: Thomas Chance
Employees: 500+


AUV Recovery

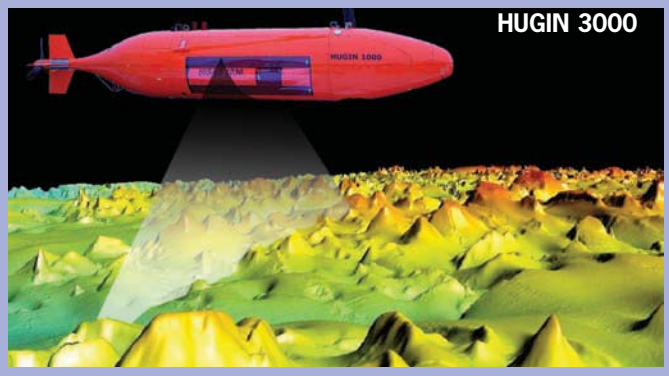
C & C provides a range of survey and mapping services for the land and offshore oil & gas industry, the telecommunications industry and several government entities. The company consists of six divisions: Land and Transition Zone Survey Division, Marine Construction Survey Division, NOAA Survey Divisions, Geotechnical Division, Geophysical Division, and Worldwide DGPS Services Division. Several in-house departments including a Database, System Development Information Technology, HSE, and QA, as well as a mechanical fabrication department support all C & C's operational divisions. C & C Technologies pioneered the world's first commercially-operated AUV for oil and gas exploration. The company has made advancements in the survey industry with C-Nav, Globally-corrected GPS and C-Surveyor AUVs.

Kongsberg Maritime/Kongsberg Mesotech

Vancouver, Canada
Tel: 604-464-8144
Email: km.sales.vancouver@kongsberg.com
www.kongsberg.com • www.kongsberg-mesotech.com
CEO: Nader Riahi (Kongsberg Mesotech)
President: Torfinn Kildal (Kongsberg Maritime)
Sales Manager: Gavin Cullimore (Kongsberg Mesotech)
Engineering Director: Max Muntner (Kongsberg Mesotech)
Facility: Kongsberg Mesotech – Vancouver: Kongsberg Maritime – Horten and Kongsberg, Norway, Aberdeen, Scotland: Kongsberg Seatex – Trondheim, Norway
Square Footage: 20,000 (Kongsberg Mesotech – Vancouver)
Testing Capabilities: (ie test banks, boats, pressure chambers): Simrad Echo test boat and large pool in Horten Norway; Test tank in Port Coquitlam and a test barge in Port Moody.
Employees: Kongsberg Maritime – 2510 in 25 countries

Kildal

Kongsberg Maritime provides solutions for shipping, offshore, oil & gas, subsea, navy, coastal marine and fisheries, maritime training, port and harbor surveillance and more. The company delivers systems for positioning, surveying, navigation and automation, and is a market leader in dynamic positioning systems, automation and surveillance systems, process automation, satellite navigation and hydroacoustics. With integration of various systems a key driver, Kongsberg Maritime prides itself on its ability to deliver the Full Picture to all of its markets. Headquartered in Kongsberg, Norway, the company is present in 25 countries to ensure its ability to provide reliable service at local level but as a global technology leader. With manufacturing facilities in Aberdeen, Scotland; Horten, Norway; Kongsberg, Norway; Trondheim, Norway and Vancouver, Canada, the company exceeds market requirements for a wide range of products and services, and is well known for its commitment to R&D. Kongsberg Maritime's subsea department develops and markets single and multibeam echo sounders, Sonar, Underwater Cameras and the HUGIN AUV. Its solutions are used by the world's best survey vessels, operated by the top survey companies. Subsea product development and manufacturing takes place in Aberdeen, Horten and Vancouver. The company gives particular focus to this business segment in North America with its Kongsberg Mesotech Ltd facility in Vancouver and the Kongsberg Maritime Inc., office in Houston, Texas, which is positioned to service survey and energy companies operating in and around the Gulf of Mexico. Kongsberg Maritime is committed to developing new and innovative products that use the latest technology and techniques to the operational and economic benefit of its many customers. The company's multibeam echo sounder systems for seabed mapping include models for all water depths, and virtually any application and the subsea department offers



hydroacoustic systems for all eventualities. In addition to the Horten facility, Kongsberg Mesotech's Vancouver facility is responsible for the design and manufacture of underwater acoustic products.

Kongsberg Mesotech Ltd.

Port Coquitlam BC, Canada
Tel: (604) 464-8144
Email: km.sales.vancouver@kongsberg.com • www.kongsberg-mesotech.com
President: Nader Riahi
Sales Manager: Daryl Morse – Offshore; Sales Manager: Phil Andrew – Surveillance
Sales Manager: Bill Fickes – Fisheries; Engineering Director: Max Muntner
Square Footage: 20,000 sq. ft. • Employees: 52

Kongsberg Mesotech Ltd. is the Canadian subsidiary of the Kongsberg Maritime. The company's Vancouver office is responsible for the design, manufacture and sales of underwater acoustic products, while its Halifax office handles Canada-wide distribution, service and customer support. Kongsberg Mesotech's Port Coquitlam facility is responsible for the design and manufacture of more than 100 models of multibeam, scanning, echo sounder, and altimeter sonar combinations.

Kongsberg Maritime Ltd (Camera div.)

Aberdeen, Scotland
Tel: +44 1224 226500
Email: km.camsales.uk@kongsberg.com •
www.km.kongsberg.com/cameras
Sales Manager: Bill Stuart • General Manager: David Mackay
Testing Capabilities: Test Tank 5Mtr x 3Mtr x 3Mtr, Environmental Test Lab for EMC, Pressure, Thermal, Humidity, Vibration and Shock
Employees: 150

Mackay

Kongsberg Maritime Ltd is a member of the Kongsberg Group of international companies and is a world leader in the design and manufacture of harsh environment Marine CCTV systems and underwater video and imaging products to the Offshore Oilfield, Maritime, Scientific and Defense sectors. The company, originally known as Osprey Electronics Ltd, was founded in Wick, Scotland and can trace its history back to the birth of the UK North Sea oil industry in 1975.

Sidus Solutions, LLC.

P.O. Box 420698, San Diego, CA 92142
Email: info@sidus-solutions.com
www.sidus-solutions.com
President: Leonard Pool
Sales Manager: Brian Smallwood
Operations Manager: Kenneth Steeves
Engineering Manager: Jeff Gardiner
Marketing Director: Patrice Alexander
Testing Capabilities: Video Testing Lab, Soak Test Tank, R/V High-Test 21' Center Console outfitted for surveys and deepsea deployments
Employees: 14

SIDUS Solutions designs and manufactures cutting-edge subsea video cameras, lighting and robotic positioning devices for extreme environments. SIDUS also specializes in custom, end-to-end underwater systems including customized controllers and cabling. Their engineering staff provides system integration, design, installation and commissioning of all remote video surveillance systems. From ocean observation platforms on the sea floor, to anchor bolster surveillance systems for offshore rigs, to thru-hull sonar deployment systems - SIDUS has a field proven solution. SIDUS is a single-source, full-service provider, serving the oil & gas, nuclear, scientific research, military and petrochemical industries.

SIDUS offers over 80 models of cameras, lighting systems, pan & tilts, lasers and control recording systems. as well as custom solutions. SIDUS specializes in subsea closed circuit television (CCTV) cameras including the High Definition Color Cameras SS448/450, with integrated fiber optics for video and communication. SIDUS is also expanding its product line to incorporate internet protocol (IP), communication such as their recent SS429 IP Digital Color Video Camera. Additional new product offerings include the SS501 high power, deep sea green laser which offers multiple beam pattern options.

Smiths Detection

Middletown, RI 02842
Tel: 401-848-7678
www.smithsdetection.com

Smiths Detection offers advanced security solutions in civil and military markets worldwide, developing and manufacturing government-regulated technology products that identify explosives, chemical and biological agents, weapons and contraband. It is part of Smiths Group, a global leader in applying advanced technologies to markets in threat as well as contraband detection, energy, medical devices, communications and engineered components. Smiths Group employs around 22,000 people in more than 50 countries.

ISR Group

670 Industrial Rd., Savannah, TN
Tel: (731) 926-4188
Email: info@isrgroup.com • www.isrgroup.com

ISR Group is dedicated to providing unsurpassed service and support for the Unmanned Vehicle Systems (UVS) industry. ISR focused its energies in direct support of unmanned programs that are vital to National Defense, Intelligence, and Homeland Security Agencies, as well as Commercial Corporations.

ISR's primary business is to provide life cycle support services to Government Agencies and Prime Contractors for aerial, ground, and maritime Unmanned Systems, including associated sensors and payloads. ISR Group also participates with government and commercial customers on developing and implementing unmanned programs in the areas of RSTA, C4ISR, Search & Rescue, and Battlespace Management.

ISR Group's corporate headquarters are in Savannah, TN.

Sound Metrics Corp.

Lake Forest Park, WA
Tel: 206-364-1441
Email: info@soundmetrics.com
www.soundmetrics.com

Based in Lake Forest Park, Washington, Sound Metrics builds imaging sonars that capture the clearest, most detailed video images in their class. Originally built to help the US Navy identify mines in virtually opaque water, Sound Metrics sonars have become the undisputed tool of choice in the marine biology/fisheries industry – delivering images precise enough to identify species, and video feeds fast enough to observe dynamic animal behavior.

Now more industries worldwide requiring optimal clarity underwater rely on Sound Metrics, including military, oil & gas, underwater construction, law enforcement and more. From the most remote reaches of the flood plains of Venezuela to the depths of the North Sea, Sound Metrics sonars are the choice when failure isn't an option.

Molchan Marine Sciences

Pawcatuck CT 06379 • Tel: (860) 599-8366
Email: marianne@molchanmarine.com
www.molchanmarine.com
President: Marianne Molchan
Engineering Director: Richard Walker • Employees: 2

Molchan Marine Sciences (MMS) is a business enterprise bridging the gap between operators and maritime technology providers in Advanced Marine Navigation, Ship, Port, and Offshore Energy Security, Underwater Port Security and providing documentation for Naval Ship Systems. Molchan Marine Sciences professional services extend overseas in support of Diver Detection and Interdiction, the International Ship and Port Facility (ISPS) Code, Ship and Facility Security Assessments, Plans and Training.

MAR Incorporated – Ohmsett Facility

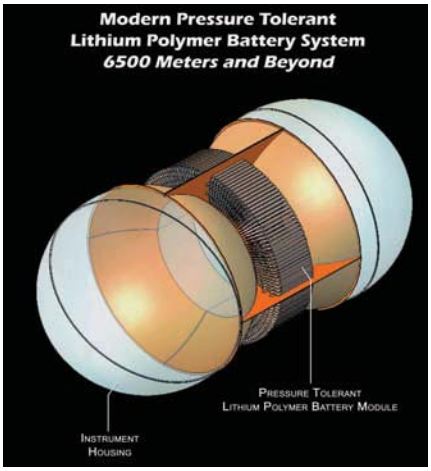
Ohmsett Program Manager: Bill Schmidt
Atlantic Highlands, NJ
Tel: 732-866-7183
Email: bschmidt@ohmsettnj.com • www.ohmsett.com

Ohmsett - The National Oil Spill Response Research & Renewable Energy Test Facility is located in Leonardo, New Jersey. It is the largest outdoor saltwater wave/tow tank in North America where full-scale oil spill response testing, research and training can be conducted with oil in a realistic simulated marine environment under controlled conditions. The facility consists of a large outdoor above-ground concrete test tank measuring 667 feet long by 65 feet wide by 8 feet deep filled with 2.6 million gallons of crystal clear salt water, conference rooms, maintenance/machine shop, chemistry laboratory, and offices. Ohmsett's mission is to increase oil spill response capabilities through independent and objective performance testing of equipment, providing realistic training to response personnel, and improving response technologies through research and development The U.S Department of Interior, Minerals Management Service (MMS) has operated the Ohmsett facility for 16 years as part of its mandated requirements to ensure that the best and safest technologies are used in offshore oil and gas operations. The Ohmsett facility is maintained and operated by MAR, Incorporated through a contract with Minerals Management Service. Ohmsett plays a critical role in developing effective response technologies and represents a necessary intermediate step between small scale bench testing and open water testing of equipment. Many of today's commercially available oil spill cleanup products and services have been tested at Ohmsett either as off-the-shelf commercially available equipment, or as equipment or technology still under development. The facility has the capability to test and evaluate all types of oil spill response technologies such as: chemical treating agents and dispersants, fire-resistant containment booms, remote sensing and detection instruments, sorbent materials, temporary storage devices, viscous oil pumping units and oil water separators. Recent research projects include development of the American Society of Testing and Materials (ASTM) skimmer test protocol, testing concepts for new products not yet in production, and the development of testing capabilities for dispersants. Ohmsett's wave generator system recently underwent an upgrade to expand its wave generating capability. The new system has the ability to generate random waves that more closely approximate waves in the ocean. In addition to generating sinusoidal and harbor chop waves, Ohmsett is now able to create more realistic waves such as those based on Pierson-Moskowitz, JONSWAP, and Frequency Modulated (FM) Slide, with scalable ocean water depth, wind speed, and model scale factor. In addition to developing and testing response technologies, Ohmsett provides first responders, from state and federal government agencies, private industry and foreign countries, with the most realistic training available enabling a rapid and efficient response to an actual spill event. Ohmsett course offering includes U.S. Coast Guard Class C Response Technician training, U.S. Coast Guard SMART Protocol training, Oil Spill Response and Strategies Training (in English and Spanish), and Dispersant Training for the Oil Spill Responder. Over the years substantial progress has been made in harnessing marine renewable energy resources, including off-shore winds, tidal currents and wave energy. MMS has made a commitment to supporting the development of alternative energy devices and has upgraded the Ohmsett facility to test marine renewable energy systems, in particular wave energy mechanical devices, in a controlled environment. The Ohmsett test tank is larger than most test tanks internationally and can handle many devices at meso-scale. The advantage is that arduous scaling considerations are minimized, and validation testing is more realistic. Ohmsett facility has the capability of 6.5 knot tow rates, as well as the ability to generate complex waves with periodic reproducibility.

Southwest Electronic Energy

12701 Royal Drive, Stafford, Texas
Chairman/CEO: Mr. Benckenstein
President: Dean Perkins • Marketing: Pamela Daniel
Manufacturing: Paula White • R&D: David White
Tel: 800.231.3612
Email: info@swe.com • www.swe.com
Employees: 60
Annual Sales: $23

Custom battery systems using Lithium, Lithium-Ion and Lithium-Polymer cells have been a strategic thrust at SWE for more than 15 years. SWE has invested extensively in developing technology, emerging methodologies, and creating intellectual property associated with development and commercialization of battery packs and battery systems that utilize Lithium, Lithium-Ion and Lithium-Polymer chemistry. SWE actively participates with the intellectual community in sharing technical advances via international battery technology conferences and technical journals. SWE has produced seven



patents directly related to control of Lithium batteries, Lithium-Ion batteries, solar panels and systems, and has an 8th patent pending. SWE has reduced to practice all of this intellectual property in delivered products used in above-ground application, one atmosphere underwater applications, and pressure-tolerant underwater application.

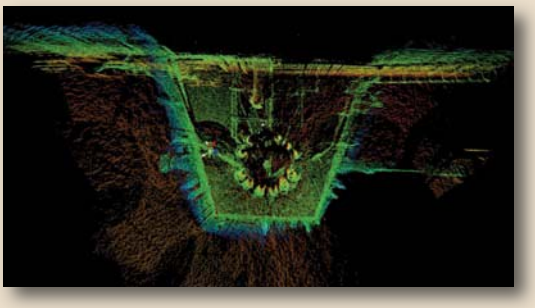
Tritech International Ltd

Tritech International Ltd
Westhill Business Park, Peregrine Road
Westhill, Aberdeen, AB32 6JL
Tel: +44 (0) 1224 744 111
Email: sales@tritech.co.uk
MD: Simon Beswick
Sales & Marketing: Maurice Fraser
Facilities: Two sites: operations and head office in Westhill, Aberdeenshire and production facility in Ulverston, Cumbria
Testing capabilities: Both Ulverston and Aberdeen sites have full test tank and pressure chamber facilities. Ulverston also has a boat to assist in trials and testing. All equipment is tested to the highest possible standards both electrically and mechanically.
Employees: 80

Established in 1991, Tritech International Limited began with the aim of producing the finest, most innovative range of subsea products for the offshore oil & gas industry, military and other world-wide subsea markets. Tritech's products are represented and supported in five continents through a broad distributor network. Tritech is based in Westhill, Aberdeenshire, Scotland, with its design and manufacturing base located in Ulverston, Cumbria, UK. Its

BlueView Technologies

2151 N. Northlake Way, Suite 214, Seattle, WA 98103
P (206) 545-7260 • www.blueview.com
CEO/CTA: R. Lee Thompson • COO: Jason Seawall
Vice President Corporate Affairs: Scott Bachelor • Vice President Sales & Marketing: Steve Chapman
Director of Marketing: Rick Elento • Engineering Manager: Brian Twehues
Testing Capabilities: Control tank testing; On-site open water testing; Full ocean-depth pressure testing
Number of employees – 14



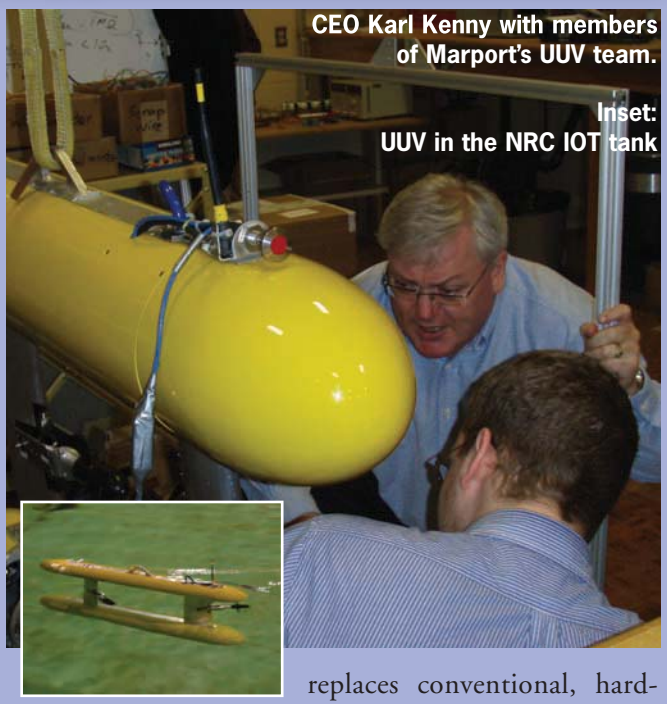
BlueView Technologies is a provider of state-of-the-art compact imaging sonar solutions for navy, offshore oil & gas, offshore and inshore engineering, department of transportation and port security applications worldwide. BlueView acoustic underwater vision solutions use a technology that provides high performance imaging sonar capabilities in compact, low power systems. Since delivering the first products in mid 2005, BlueView has been growing rapidly based on its unique underwater vision solutions and customer-focused approach. More than 400 BlueView commercial systems have been deployed on micro and work-class ROV platforms, small to medium sized UUVs, diver hand-held units, boat mount systems and fixed surveillance platforms. BlueView was selected by the Research Partnership to Secure Energy for America (RPSEA) as the development provider for the Ultra Deepwater Program (UDP). Additionally the Office of Naval Research (ONR) recently awarded a contract to BlueView to deliver customized 3D MicroBathymetry sonar systems to the US Navy. BlueView has developed a broad line of 2D and 3D commercial systems that operate from 225 kHz to 2.25 MHz to meet a broad range of underwater imaging needs. Within the last year BlueView has expanded its line of 2D imaging sonar with multiple field-of-view options, including a 130° system. Recently, BlueView partnered with Seebyte and Perry Slingsby Systems of the Triton Group to develop an advanced sonar-based station keeping system for the Triton XLX work-class ROV. In addition, BlueView has launched a new line of 3D mechanical scanning systems that are a leap forward in underwater 3D visualization and mapping.

MARPORT Canada

St. John's, NL, Canada
Tel: 709.757.5757
Email: gleyte@marport.com
www.marport.com
Chairman of the Board: Derrick Rowe
CEO & President: Karl Kenny
Executive Vice-President, Sales: Oskar Axelsson
Vice-President, Military & Offshore: Michael Harvey
Vice-President, Software Engineering: Anthony Paul
Vice-President, Research & Development: Neil Riggs
Annual sales: (expected) $18.4m
Employees: 115

Marport is a pioneering developer of Software Defined Sonar (SDS) and a leader in the design and manufacture of high performance subsea acoustic solutions. Applications include underwater sensing, processing, communications and visualization for commercial fisheries, offshore energy, ocean science and defense. In 2009 Marport acquired C-Tech Ltd., a leading supplier of advanced sonars for underwater defense, including anti-submarine warfare, mine countermeasures and harbor surveillance. This acquisition positioned Marport as Canada's largest underwater acoustics technology company. In 2009 Marport signed a Memorandum of Understanding with General Dynamics Canada, a pioneer in the development of military acoustics processing and display solutions, setting the stage for the joint development and marketing of next generation underwater acoustic products to support underwater military Intelligence, Surveillance and Reconnaissance (ISR) missions. This partnership positioned Marport to address increasing global market demand for underwater ISR systems as militaries around the world rebuild and retool their fleets. GDC has also awarded Marport a multi-year research and development contract for new naval sonar products that leverage Marport's SDS technology. Marport obtained funding from the Canadian Government to assist in the development of a new class of Autonomous Underwater Vehicle (AUV). Marport has been awarded a contract for delivery of two AUVs; an SQX-500 depth rated to 500m and an SQX-3000 depth rated up to 3,000m. Both units are to be purchased by an international geodetic survey company. The AUV will utilize a combination of Marport's revolutionary SDS technology, underwater modem and 3D acoustic image processing and display software.

Marport develops and manufactures software defined acoustic products for subsea applications and is a pioneering developer of Software Defined Sonar (SDS), an adaptive future-proof solution for highly flexible underwater detection, sensing and communications systems. SDS



CEO Karl Kenny with members of Marport's UUV team.

Inset: UUV in the NRC IOT tank

replaces conventional, hardware based sonar systems with one common platform composed of programmable components that are controlled by software. SDS performs significant amounts of signal processing in high-speed reprogrammable devices such as field programmable gate arrays and general purpose processors. With SDS technology, a single hardware platform handles many different sonar functions – the platform is easily reconfigured to change its specific function as needed. A user can change functionality or add optional features to a piece of equipment by changing the software, not the hardware. Functionality is altered by downloading new software directly to the sensor via Bluetooth download and can be done even while at sea. This technology provides Marport customers with flexible, reconfigurable platforms that provide greater accuracy and functionality with increased efficiency, greater affordability, lower power consumption, over-the-air bug fixes and upgrades and full versatility. Other SDS products currently under development include:

- Suite of Autonomous Vehicles for defence and exploration applications
- Swath Bathymetry Imaging Sonar
- Underwater high speed wireless acoustic modem
- Beam echosounder
- Single beam echosounder
- CHIRP ES echosounder
- Doppler current profiler
- AquaPix 3D acoustic imaging sonar

Mission Statement is: "To design and manufacture the highest quality advanced Subsea equipment in the world."

Tritech specializes in the design and production of high performance acoustic sensors, sonars, video cameras and mechanical tooling equipment for professional underwater markets including defense, energy, engineering, recreation, survey and underwater vehicles. Tritech is an industry leader in the provision of sensors and tools for ROV (Remotely Operated Vehicles) and AUV (Autonomous Underwater Vehicles) markets.

As its name suggests, Tritech embraces three different technologies:

- Acoustic and video imaging
- Motion reference and positioning
- Mechanical and hydraulic

Turner Designs

845 W Maude Avenue, Sunnyvale, CA 94085
Tel: 408-749-0994
Toll-Free 877-316-8049
Email: sales@turnerdesigns.com
www.turnerdesigns.com
CEO/President: James Crawford
VP/Marketing Director: Pam Mayerfeld
Sales Manager: Tom Brumett
Engineering Director: James Crawford

Turner Designs' mission is to provide innovative fluorescence-based solutions for basic research, water quality analysis, pollution control analysis and specialized OEM industrial applications. Having a unique focus on fluorescence instrumentation for over 35 years and customers throughout the world, Turner Designs is a leader in filter fluorometer design, manufacturing, and support. Turner Designs is known for providing rugged, reliable and stable submersible, field, handheld, laboratory, and online fluorometers and turbidimeters varying in functionality, size and price to fit any type of user need. With its applications lab it provides presales support to help customers identify instrument requirements as well as post sales support to assist with implementation.

In addition to the original fluorescence applications of in vivo and extracted Chlorophyll a and dye tracers, Turner Designs is continuously enhancing its line of optical configurations such that it now encompasses blue green algae pigments such as phycocyanin and phycoerythrin, active fluorescence, Colored Dissolved Organic matter (CDOM), ammonium, optical brighteners, crude and refined oil and several fluorescent dyes as well as infrared wavelengths used to detect turbidity. Solid Secondary Standards enabling quick instrument verification and calibration checks are available for most wavelengths and are known to hold their value over several years of use.

Rapp Hydema

Burøyveien 31/33
Tel: +47 75550100
Email: office@rapphydema.com • www.rappmarine.com
Testing Capabilities: Rapp Hydema performs full scale Factory Acceptance Tests (FAT) combined with Umbilical-/wire spooling under controlled tension. The test stand is equipped with an Electric driven Traction Winch to provide back tension during spooling as well as a Hydraulic Cylinder for the static testing and certification.
Employees: 80

For over a century, Rapp Hydema's core business has been to provide winch-handling systems to the offshore and marine industries. The company specializes in both hydraulic and electric-powered winches and has its own proprietary brand of Automated Active Heave Compensation (AHC) Control System, PTS Pentagon. Rapp Hydema offers a wide range of ROV winches, multi-handling A&R winches designed for heavy lift operations, oceanographic & research winches, and tow winches, as well as engineering and technical support. The company is located in Bodø, Norway.

Woods Hole Group, Inc.

81 Technology Park Dr., E. Falmouth MA 02536
Tel: (508) 540-8080
Email: bhamilton@ woodsholegroup.com
www.woodsholegroup.com
VP, Business Development: Robert P. Hamilton
VP, Scientific Operations: Robert A. Catalano
Senior Scientist/Engineer: Bruce Magnell, Ph.D.


Magnell

Woods Hole Group is an international environmental consulting organization founded in 1986. With headquarters in Falmouth, MA and satellite offices in Dover, DE and Houston, TX, and a network of international representatives, Woods Hole Group (WHG) is positioned to serve the worldwide environmental community. WHG focuses on water and sediments from the deep ocean through the continental shelf, on beaches, within estuaries and wetlands, and into rivers and terrestrial environments. The company has scientific and engineering expertise in the areas of Physical Oceanography, Systems Engineering, Coastal/Civil Engineering, Geomorphology, and Environmental Impact Assessment. Specific leadership is provided by Senior Scientists and Engineers, including Drs. David Aubrey and Bruce Magnell, Professional Engineers Kirk Bosma and Paul Dreyer, and Professional Wetland Scientist Dr. Lee Weishar. WHG has experienced double-digit year-over-year growth since 2006.

RESON A/S

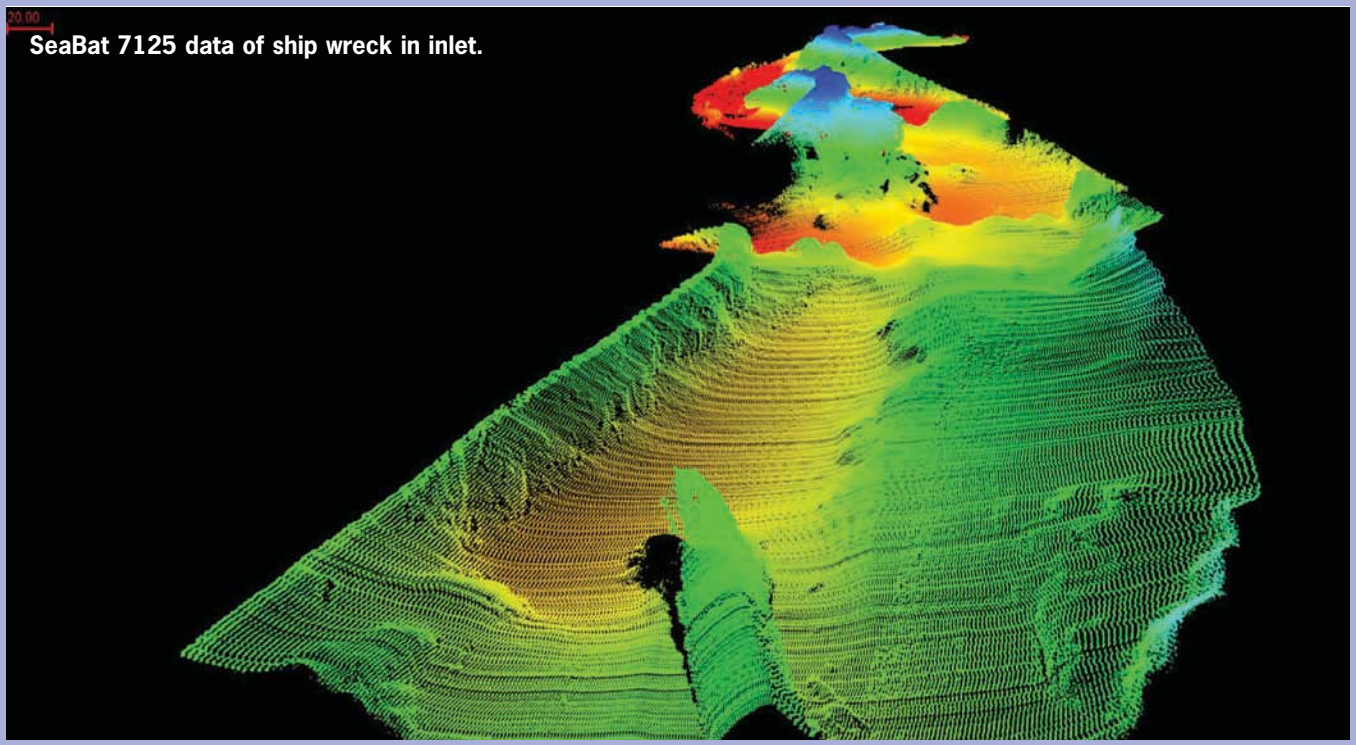
Fabriksvangen 13, Slangerup 3550 Denmark
Tel: +45 47380022
Email: reson@reson.dk
www.reson.com
CEO: Kim Lehmann
Executive VP Sales: Per S. Jensen
Marketing Manager: Marianne Heidam
Testing Capabilities: test tank, calibration facilities, service center,
Denmark facility houses test tanks and a pressure chamber. USA facility has a test tank and demo boat.
Employees: 180

RESON A/S manufactures underwater acoustic sensors, state-of-the-art echosounders, multibeam sonar systems, transducers, hydrophones, and software. RESON's SeaBat sonars and NaviSound echosounder systems have become an industrial standard in areas such as hydrography, dredging, offshore operations, marine research and defense & security. RESON was established in 1976 as a manufacturer of transducers; and after years of continued product and technology development, RESON is currently a leader in its field. The company has recently expanded into new markets and application areas: its fourth generation of sonar systems will provide unprecedented performance for naval and commercial systems in terms of accuracy, resolution, depth rating, and range.

RESON has launched a new version of the well-known SeaBat 7125 multibeam sonar system. The most notable change is a new transceiver that combines a sonar processor with an interface unit, thus removing the need to install the LCU bottle used in the deep-rated SeaBat 7125 systems. Cable length of 25m (standard) or 50m (optional) between the transceiver and the transducer arrays allow for simple installations on most small vessels. All performance and acoustic parameters are identical to those of the other members of the SeaBat 7125 family. Through a number of new and unique features, the SeaBat 7125-Surface reduces data collection and processing time while maximizing surveying productivity. These include:

- Single or dual-frequency operations (200kHz and/or 400kHz) to ensure high flexibility
- A new transceiver, which provides an integrated multiport serial card. PDS2000 comes pre-installed for data acquisition and display as well as data processing, all on the same hardware platform.
- Four video outputs to run multiple user and helm displays.
- A ping rate of 50Hz (range dependent) with 256 equi-angle or 512 equi-distant beams per swath ensures exceptionally high data density.
- Advanced signal processing and bottom detect routines deliver second-to-none data quality.
- Backward compatibility with LCU and other SeaBat 7K transceiver systems.

RESON has its corporate headquarters in Denmark, with subsidiaries in USA, U.K., the Netherlands, Germany and Singapore.



SeaBat 7125 data of ship wreck in inlet.

Xsens

Pantheon 6a, Enschede Netherlands 7521 PR
Tel: +31 88 97367 00
Email: info@xsens.com • www.xsens.com
CEO: Casper Peeters • Engineering Director: Per Slycke
Employees: 65

Xsens supplies products for the measurement of motion, orientation and position based miniature MEMS inertial sensor technology. The products are designed for control, stabilization and navigation of vehicles and new applications such as inertial full-body human motion capturing. One of these products, the MTi, is a miniature Attitude Heading Reference System (AHRS) designed for use in USBL systems, survey vessels, sonar systems and ROV's/UUV's, e.g. in the high-end platforms by Saab Underwater Systems and Seaeye.

Schilling Robotics Inc.

260 Cousteau Pl, Suite 200, Davis CA 95618
Tel: (530) 753-6718
Email: sales@schilling.com • www.schilling.com
President/CEO: Philip F. Otto

Schilling Robotics has been engineering, manufacturing, and delivering subsea equipment since 1985. The company currently offers five standard telerobotic manipulator systems: TITAN 4, ATLAS, RigMaster, CONAN and ORION. The product line displays a range of functions, sizes, lift capacities, ranges of motion, control systems, and dexterities.

Shark Marine Technologies Inc.

4-23 Nihan Dr., St. Catherines Ontario Canada L2N 1L2
Tel: (905) 687-6672
Email: sales@sharkmarine.com • www.sharkmarine.com
Facility: Located near the southern shore of Lake Ontario
Testing Capabilities: Facilities include a complete machine shop, electronics department and software engineering department.
Employees: 15

Shark Marine Technologies has made advancements in underwater imaging equipment, ROVs and other survey systems. Shark has provided consultation, software development, custom manufacture, hydrostatic testing, equipment rentals and location operations. Shark Marine Technologies Inc. has developed and manufactured products such as diver detection and deterrent systems, remotely operated inspection and

YSI Inc.

1725 Brannum Lane, Yellow Springs, Ohio 45387
Tel: 937-767-7241
E-mail: environmental@ysi.com • www.ysi.com
CEO: Rick Omlor • Vice President: Gayle Rominger • Sales Manager: Rick Fielder • Engineering Director: Ed King
Facility: Corporate HQ, Research and Development, and Manufacturing
Acres: 13 • Square Footage: 24,004 sq ft
Testing Capabilities: Pressure tester; electromagnetic chamber; wave tank; fresh and marine water access
Number of Employees: 360
Annual Sales: 90m


YSI CastAway CTD.

YSI designs and manufactures sensor instrumentation and real-time monitoring systems for professionals who protect natural resources and aquatic life. Founded in 1948, YSI—including its SonTek and Integrated Systems & Services divisions—offers a variety of environmental monitoring instrumentation that fit together into a comprehensive data collection system to measure baseline data and changes in quality in water bodies. YSI provides products, systems, solutions, and technical support to help managers monitor and protect water resources.

- **NEW Castaway-CTD**: Small, accurate instrument takes quick, georeferenced CTD profiles and displays them immediately on an integrated color screen. Developed to quickly obtain speed-of-sound corrections, but useful in all applications that need rapid conductivity, temperature, and depth data.
- **YSI 6-Series Sondes**: Multiparameter instruments for unattended, in situ monitoring of water quality. Measurements include chlorophyll, dissolved oxygen, salinity, pH, blue-green algae, temperature, PAR, and more. Wipers and copper anti-fouling components now protect the sondes for longer marine deployments.
- **SonTek/YSI ADV**: Acoustic Doppler velocimeters for unattended monitoring of directional waves, tides, currents, meteorological sensors, and power supplies. They are rugged enough to withstand significant wind and wave activity in near ocean applications, providing reliable long-term monitoring in harsh environments.
- **Vertical Profiling System**: An autonomous profiler tracks water quality variability throughout the water column. This system is used in drinking water reservoirs and aquaculture applications to track algal blooms, sediment plumes, and conditions which may lead to critically low dissolved oxygen levels.
- **EcoMapper AUV**: An autonomous underwater vehicle which maps large areas of water, generating high-resolution data of water quality, bathymetry (using side-scan sonar) and velocity logs.

Retlif Testing Laboratories

795 Marconi Avenue, Ronkonkoma, NY 11779 USA
Tel: 631-737-1500
Email: sales@retlif.com • www.retlif.com
CEO/President: Walter A. Poggi
Vice President: Exec VP William K. Hayes
Sales Manager: Owen W. Watford
Engineering Director: Richard Reitz

Testing Capabilities:
Product compliance testing for maritime, marine, military, homeland security, aerospace and commercial applications. EMI, Environmental, Lightning and Noise testing. USCG approved for 30+ product sectors.

Number of Employees: 75

Poggi

Established in 1978, Retlif maintains multiple testing, engineering and regulatory offices. Retlif is headquartered in Ronkonkoma, Long Island, NY, where it maintains a 27,000 sq. foot facility which houses its corporate offices and primary testing laboratories. In addition, Retlif also offers testing from its 10,000 sq. foot facility in Goffstown, NH, and its 19,000 sq. foot facility in Harleysville, PA. A Retlif Sales & Engineering office is located in Charlotte, NC and a Regulatory Compliance Office is maintained in Arlington, VA.

Retlif maintains one of the country's most extensive listing of accreditations, listings and approvals, all which attest to the corporate commitment to testing excellence. Retlif is fully accredited to ISO-STD-17025 by both the National Voluntary Laboratory Accreditation Program (NVLAP), administered by N.I.S.T. and accredited by the American Association for Laboratory Accreditation (A2LA). Beyond its accreditations, Retlif is also approved, recognized or listed with: U.S. Coast Guard, Federal Communications Commission (FCC), Industry Canada, Japanese VCCI, U.S. Defense Supply Center, U.K. Civil Aviation Authority, American Bureau of Shipping (ABS) and Lloyd's Registry. Further, Retlif is designated by the U.S. Dept. of Commerce as a certified approval body for engineering and consulting for compliance to the European Union's CE Marketing program.

EMI EMC Shielded room.

Retlif Testing Laboratories is a national conformity assessment testing organization providing testing and engineering solutions in the areas of Electromagnetic Compatibility (EMC), Environmental Simulation, Lightning and Acoustic Noise. In addition Retlif provides a conformity assessment system and regulatory compliance consulting services such as compliance of Homeland Security sector products with the Department of Homeland Security's SAFETY ACT regulations.

Retlif offers full classic shock testing capabilities as well as Burst & Chirp, SRS, Ballistic and Pyrotechnic shock. Vibration testing (up to 20,000 lbf), salt fog, inclination, temperature and humidity are a representative sampling of Retlif's environmental simulation testing that can be provided to the latest test standards, including MIL-STD-167, MIL-STD-810, IEC-68, MIL-S-901 and MIL-STD-202.

Electromagnetic Interference (EMI), Electromagnetic Pulse (EMP), power line fluctuations and magnetic effects testing can also be provided to such standards as MIL-STD-461, MIL-STD-704 and MIL-STD-1399.

RETLIF provides on-site testing such as:

- EMC Site Surveys
- EMC Final Compatibility Testing
- Vibration Site Surveys
- Acoustic Noise Site Surveys

Retlif's Engineering Services Division can also augment a customer's own internal engineering staff by generating compliance-oriented plans such as test plans and procedures and compliance management plans. Further, Retlif can manage the entire compliance program if desired.

Vibration table.

intercept vehicles, diver-held imaging sonar, and hull inspection devices.

International Submarine Engineering (ISE) Ltd.

1734 Broadway St., Port Coquitlam BC Canada
TEI: 604 942 5223
Email info@ise.bc.ca • www. ise.bc.ca

ISE formed in 1974 to design and build underwater vehicles for the subsea industry. During the last 35 years ISE has built remotely operated vehicles (ROVs), manned submersibles, semi-submersibles, robotic manipulators and AUVs. ISE also designs and builds unique solutions for subsea and robotic tasks, and has a customer base spanning the globe. ISE's experience is represented by the over 200 vehicles it has built and delivered to clients in 20 countries. These vehicles can be found in the offshore petroleum industry, scientific research, telephone cable maintenance, accident investigation, torpedo recovery and military uses.

Princetel

1595 Reed RD STE 300, Pennington, NJ
Tel: 609-895-9890
Email: info@princetel.com • www.princetel.com

Princetel, Inc. is a dynamic technology manufacturer that manufactures fiber optic inter-connect products with the main focus on fiber optic rotary joints (FORJs), electrical slip rings, and video/data MUX/DMUX fiber media converters for the geophysical, military, biomedical, wind energy, broadcasting, robotic, and communications markets. Founded in 2000, the company has transformed itself into a major force in fiber rotary technology innovations. Princetel offers fiberoptic rotary joints with 1-12 fibers as standard products.

Sonardyne Inc.

President: John Ramsden • VP and GM Americas: Simon Reeves • Marketing Director: Rob Balloch
Facilities: USA, UK, Singapore, Brazil **• Testing Capabilities:** Acoustic test tanks, client training facilities, sea trial vessels and facility, pressure chambers

Sonardyne is a group of companies manufacturing subsea instrumentation specializing in the use of sound for underwater navigation, positioning, data communication and control. The company has diversified into underwater maritime security solutions and innovative high resolution survey systems. Operating subsidiaries in Aberdeen, Houston, Singapore and Brazil employ more than 250 people comprising R&D, manufacturing, sales, equipment servicing, field engineering, training, and 24-hour customer support. Sonardyne's long-term partnership with its customers has enabled it to develop insight into the diverse nature of subsea operations. In 2010 this has culminated in the introduction of the Sonardyne Matrix; a comprehensive, flexible and highly integrated family of products for acoustic and inertial underwater positioning, wireless communications and sonar detection. The aim is to maximize operational efficiencies and minimize vessel and project costs. Reinforcing the Sonardyne Matrix, is more than 40 years of subsea engineering and product development culminating in the launch of Sonardyne's new 6G (Sixth Generation) technology and subsea instruments. The diverse requirements of 10 market sectors are addressed within the Sonardyne Matrix: Exploration, Ocean Science, Telecommunications, Drilling, Construction, Pipeline, Dynamic Positioning, Asset Management, Maritime Security and Decommissioning. The Sonardyne Matrix assumes no one system meets all requirements for every operation. Exploring the matrix allows users to identify the most appropriate Sonardyne technique for their operational scenario and determine the optimum balance between performance, equipment cost, deployment and vessel time. Many of the techniques available within the Sonardyne Matrix use Sonardyne's 6G technology platform, which is designed as simple and intuitive to operate. New acoustic instruments enable faster and more efficient solutions for applications such as spool piece metrology and structure placement, reducing vessel time. At the core of the new range of 6G transponders and transceivers is Sonardyne Wideband 2 which uses ultra-wide bandwidth signals offering faster and more robust transmission of data, more precise ranging and mitigation from multipath in shallow water and amongst steel structures in deepwater. Also new for 2010 the Lodestar aided inertial navigation platform is now tightly integrated with Sonardyne's acoustic positioning components; providing power and control of surface and subsea transceivers as well as instruments such as Doppler Velocity Logs. This integration enables relative inertial navigation, real-time USBL smoothing, sparse LBL and DP-INS operations. Sonardyne has expanded its portfolio with it's first sidescan sonar, Solstice, which has been developed over 3 years to provide new levels of performance for operators of AUVs. It provides ultra-low power consumption (12W) and class-leading range and imagery including co-registered bathymetry provides high area coverage rates and long endurance.

TE SubCom

(formerly Tyco Telecommunications)

412 Mt. Kemble Avenue, Suite 100 S
Morristown, New Jersey 07960
Tel: 866.892.6611
www.SubCom.com
Email: sales-hq@subcom.com
www.subcom.com
President: David Coughlan
Number of Employees: More than 1000
Annual Sales (US$): An average $1 billion

Coughlan

Tyco Electronics Subsea Communications (TE SubCom) is an industry pioneer in undersea communications technology and marine services and a leading global supplier for today's undersea communications requirements. Drawing on its heritage of technical innovation and industry recognized performance, the company delivers the most reliable, high quality solutions to organizations with undersea communications needs vital to their core mission. In more than five decades of operation, TE SubCom has designed, manufactured, and installed more than 100 undersea fiber optic systems around the world. TE SubCom's global presence, backed by industry leading research and development laboratories, manufacturing facilities, installation and maintenance ships, depots, and management team work together to implement integrated solutions and network upgrades, with unsurpassed reliability, that support the needs of telecommunications, internet providers, offshore and science customers worldwide. TE SubCom (formerly Tyco Telecommunications) received its new corporate name in early 2010, enabling it to more closely align with its parent company and reinforce its commitment to designing, manufacturing, installing and maintaining the premier subsea cable systems across the globe. Working under its new name, TE SubCom continues to deliver the same services and innovative technological developments the industry has come to expect throughout the company's robust history.

To meet the needs of the world's increasing demand for highly reliable bandwidth capacity and marine services, TE SubCom continues to develop and build on its world-class technology, with a commitment to forward-looking, customer-focused solutions, including delivering systems capable of carrying 40G transmission technology.

TE SubCom also remains committed to its research and development efforts for creating solutions to serve the oil and gas industry. With platforms continuing to move farther offshore and into deeper waters, the demand for reliable and robust communications networks is ever-growing. Using Optical Add/Drop Multiplexing (OADM) technology and its own developed suite of interconnect devices and submarine line terminal equipment, TE SubCom deploys self-healing ring topologies, connecting rigs to rigs and rigs to shore.

In addition to its focus on traditional and offshore cable installation, TE SubCom offers complete marine support for undersea networks of any size, including route survey and engineering; cable installation; terrestrial constructions; cable data management; deep and shallow water repair; cable recovery and retrieval. The company's fleet of Reliance-class vessel cable ships, with their state-of-the-art control systems, satellite communications systems and ROV tracking systems, along with TE SubCom's new shore-end and cable burial plows and remote-operated vehicles, provides the most efficient means for cable installation and ensure the rapid recovery and repair of damaged cable worldwide.

New shore-end plow.

Advertiser's Index

For Fast, Free Information from Advertisers visit www.maritimeequipment.com/mt

Page	Company	Website	Phone#
17	BIRNS, Inc.	www.birns.com	(800)-Birns-88
1	Channel Technologies Group	www.channeltechgroup.com	(805) 683-1431
21	GSE Rentals, Ltd.	www.gserentals.co.uk	44 (0) 1224 771247
9	HYDRIOD INC.	www.hydroid.com	(508) 563-6565
17	iRobot Corporation	www.irobot.com	(919) 405-3993
3	ISR Group Inc.	www.ISRGroup.com	(731) 926-4188
29	Kongsberg Mesotech LTD.	www.kongsberg-mesotech.com	(604) 464-8144
13	LinkQuest, Inc.	www.link-quest.com	(858) 623-9900
4	Mar inc/Ohmsett	www.ohmsett.com	(732) 866-7183
15	Marine Sonic Technology, Ltd.	www.marinesonic.com	Please visit us online
C3	OceanTechExpo	www.oceantechexpo.com	(561) 732-4368
29	Princetel, Inc.	www.princetel.com	(609) 895-9890
4	RJE International	www.rjeint.com	(949) 727-9399
19	SAIV A/S	www.saivas.no	Please visit us online
13	Seacon Europe LTD.	www.seaconeurope.com	011 44 1493652733
21	Shark Marine Technologies Inc.	www.sharkmarine.com	(905) 687-6672
5	Sontek YSI, Inc,	www.ysi.com/castaway	Please visit us online
11	Sound Metrics Corporation	www.soundmetrics.com	Please visit us online
9	Subconn	www.subconn.com	(781) 829-4440
C4	Teledyne Marine	www.teledynemarine.com	Please visit us online
C2	VideoRay LLC	www.videoray.com	(610) 458-3000
23	Woods Hole Oceanographic Institution	http://jobs.whoi.edu	Please visit us online

Working Underwater

Hydrex divers are world-renowned for their ability to make most any fix, anywhere, underwater.

(U.S. Navy photo by Mass Communication Specialist 1st Class Richard Doolin/Released)

OceanTech Expo

Explore the business of Ocean Technology

2010 FEATURED:

OTE At-Sea Demonstrations with:

Bluefin Robotics
Ocean Server Technology Inc.
SeaBotix
Stiletto Maritime Test Platform
Sound Metrics Corp.
Marine Sonic Technology Ltd.
VideoRay
WHOI Research Vessel Tioga
Marport Canada Inc.
Sea Sciences Inc.
L-3 Klein
OSV Scarlett

Industry Outlook Panels covering:

- Oceanographic and Hydrographic Survey
- Arctic Ocean Exploration
- Technologies for Offshore Oil and Gas
- Port & Harbor Security
- Ocean Renewable Energy
- Wreck Oil Removal Program (WORP)
- Federal Technology Overview
- Undersea Robotics

We invite you to be a part of OTE 2011, back on the water in beautiful Newport R.I.

May 24-26, 2011

Contact Rob Howard to be a part OTE 2011 - (561)732-4368 or howard@marinelink.com

oceantechexpo.com

Teledyne Marine has you...

covered!

navigate Teledyne **TSS**
measure Teledyne **RD Instruments**
monitor Teledyne **Cormon**
observe Teledyne **Webb Research**
explore Teledyne **Geophysical**
survey Teledyne **Odom Hydrographic**
communicate Teledyne **Benthos**
connect Teledyne **D.G.O'Brien**, Teledyne **Impulse**, Teledyne **ODI**



What can Teledyne Marine do for you?

More than you ever imagined! Now ten companies strong, Teledyne Marine has the products, technology, and talent you need to take you from the ocean's surface to the ocean's abyss—and everywhere in between.

Visit www.teledynemarine.com

TELEDYNE
MARINE
www.teledynemarine.com