MARINE TECHNOLOGY REPORTER

July/August 2011 www.seadiscovery.com

5-minutes with
Bill Vass
CEO, Liquid Robotics

Sixth Annual

MTR100

Market Report
Work Class ROVs

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ABOVE: A film crew from the SyFy Television Series *Destination Truth* prepares a VideoRay Pro 4 HD ROV system for underwater filming. The ROV was used to search in Canada's Okanagan Lake for a fabled water dwelling serpent called the Ogopogo. The lake serpent remained elusive, however, the crew obtained beautiful underwater HD footage of the lake environment while safely operating from their small vessel.

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Pictured on the Cover

is an ice diving experiment in Northern Ohio. Working in and around icy environments are some of the harshest conditions on the planet, and will be a topic for the subsea industry for a generation to come with the "opening" of the Arctic.

(Photo Credit: Hunter C. Brown, Department of Naval Architecture & Marine Engineering, University of Michigan)

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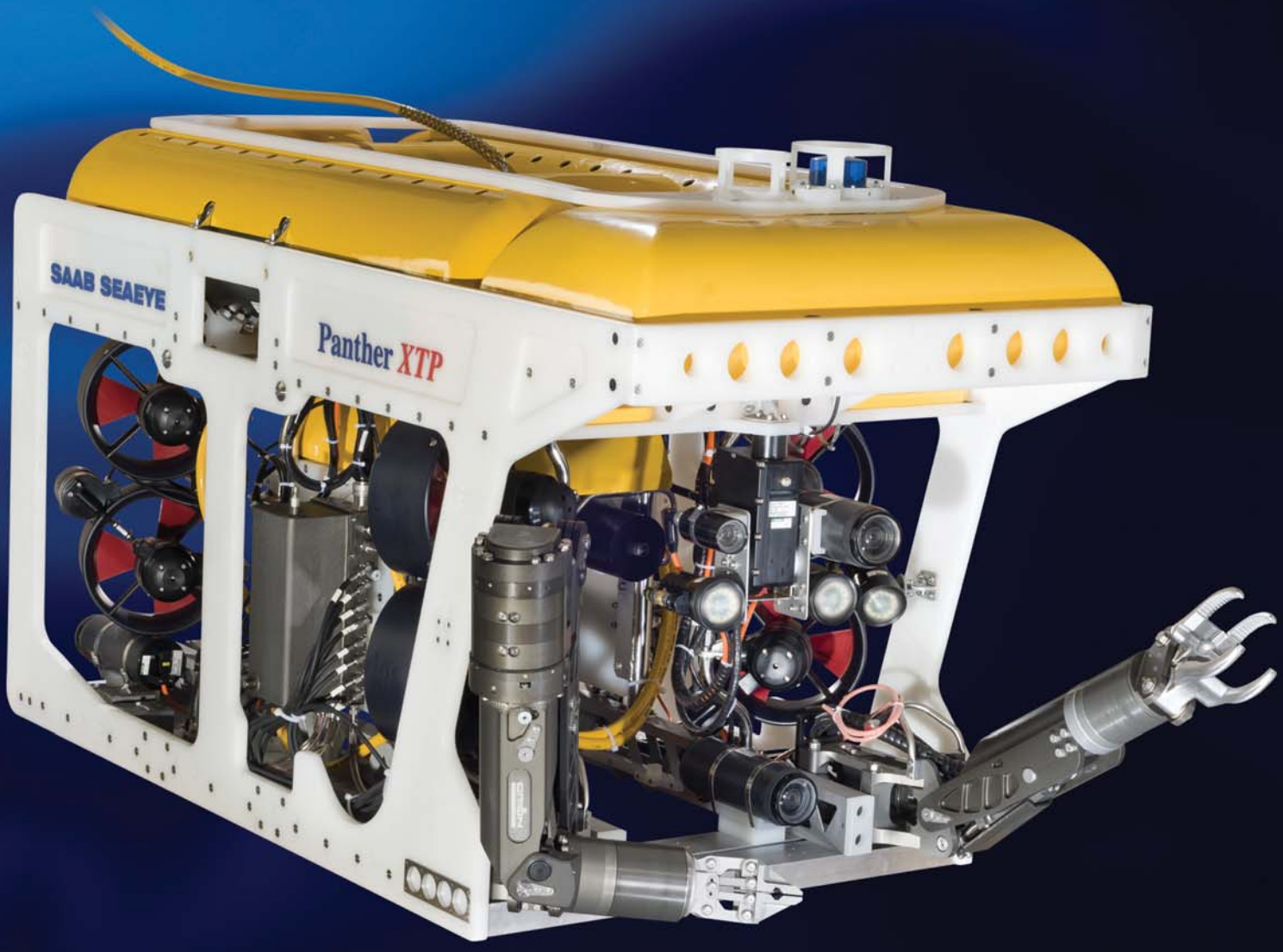

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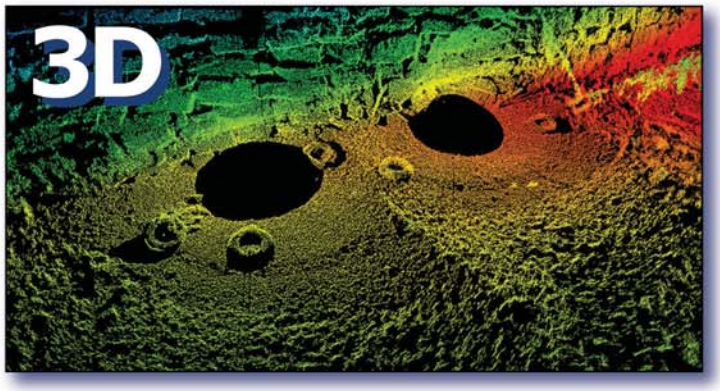

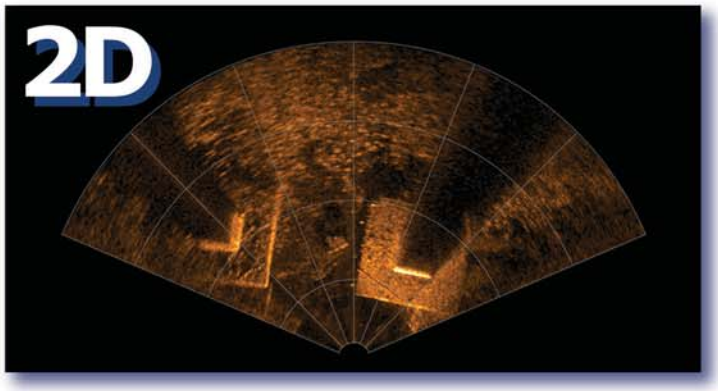

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One of my most dreaded and favorite editions each year is the annual presentation of the MTR100. It is my most dreaded because invariably many deserving companies are not featured, as the popularity of this special edition has again garnered a record number of applications for inclusion.

It is my favorite because it gives to our editorial team the opportunity to fully engage with the companies serving this market — large and small, near and far — to catch up and keep up with the titans of the industry and to uncover some hidden gems that may fly under the radar at the moment.

In addition, it provides an opportune time to reflect on the market direction, near and long-term. I'm fairly certain that many of you feel — personally and professionally — the effects of the global economic instability, which is and will present a number of near- and long-term challenges and opportunities. Companies serving the subsea market should be in good position, though, as the technologies and services that you provide are essential tools in the new economy, tools to help those working in, around and under the world's waters to do so more safely, efficiently and cost-effectively.

Our interview with **Bill Vass**, the new CEO of Liquid Robotics, echoes these sentiments. Vass comes to Liquid Robotics with a Silicon Valley pedigree, having served previously as the President and COO of Sun Microsystems Federal. His vision for Liquid Robotics is to make it more than a company that sells vehicles. Rather, he envisions using his company's unique platform, deployed as grids in the world's waterways, to form the basis for an information company. Read his insights starting on page 8.

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Empowering your Vision

Bill Vass *CEO, Liquid Robotics*

When former Sun Microsystem Federal executive Bill Vass was named CEO of Liquid Robotics, the natural question was: "What's a Silicon Valley guy know about the subsea industry?" A lot, as it turns out. • by Greg Trauthwein, Editor

Earlier this summer Liquid Robotics announced an exciting chapter in its relatively short history, securing $22m in financing and the selection of Bill Vass, former President and COO, Sun Microsystems Federal, as its CEO. Vass took time from his busy schedule to share with MTR his vision of his company's – and perhaps moreover the industry's – future in terms of the collection and dissemination of information from the seas.

Can you tell us how a "Silicon Valley" exec fits into the subsea space?

Vass: My degrees when I started school were in Marine Biology and Geology, but my first job was writing software for the designs of submarines and hulls of ships. I worked for a small ocean engineering company writing software, and then I worked in merchant marine training.

So you do have some experience with the industry?

Vass: Yes, I thought I'd be in marine technology or Oil & Gas or something related. But computers were always a hobby for me, so that just became my career – writing software, running software, running big data systems. I have a strong background in cyber security and private works computing and cloud data systems. Very large-scale systems. I'm very familiar with the government space,

especially in intelligence and other systems.

How does your computer and marine experience meld for Liquid Robotics?

Vass: My long-term goal (for the company) is to be more of a data services provider rather than just a company that builds vehicles. We aim to put a very large number of vehicles out there and operate them continuously. The vision is to run (the vehicles) for two, three years, with no interaction other than telling it where to go and pulling the data from it. So the goal is establishing grids of these vehicles out that are (continuously) pulling data, reprocessing it, and communicating that back in large cloud services that reprocess data and deliver data to services.

Could you share a brief overview of your management philosophy?

Vass: For large organizations, I believe in centralized control and centralized execution. For smaller organizations, you have to be more hands-on. I have ten rules of management – I won't go through all of them, but I have a very straight-forward management style. I'm very communicative. Very big on prioritization, with coming up with a lot of innovations and prioritizing them.

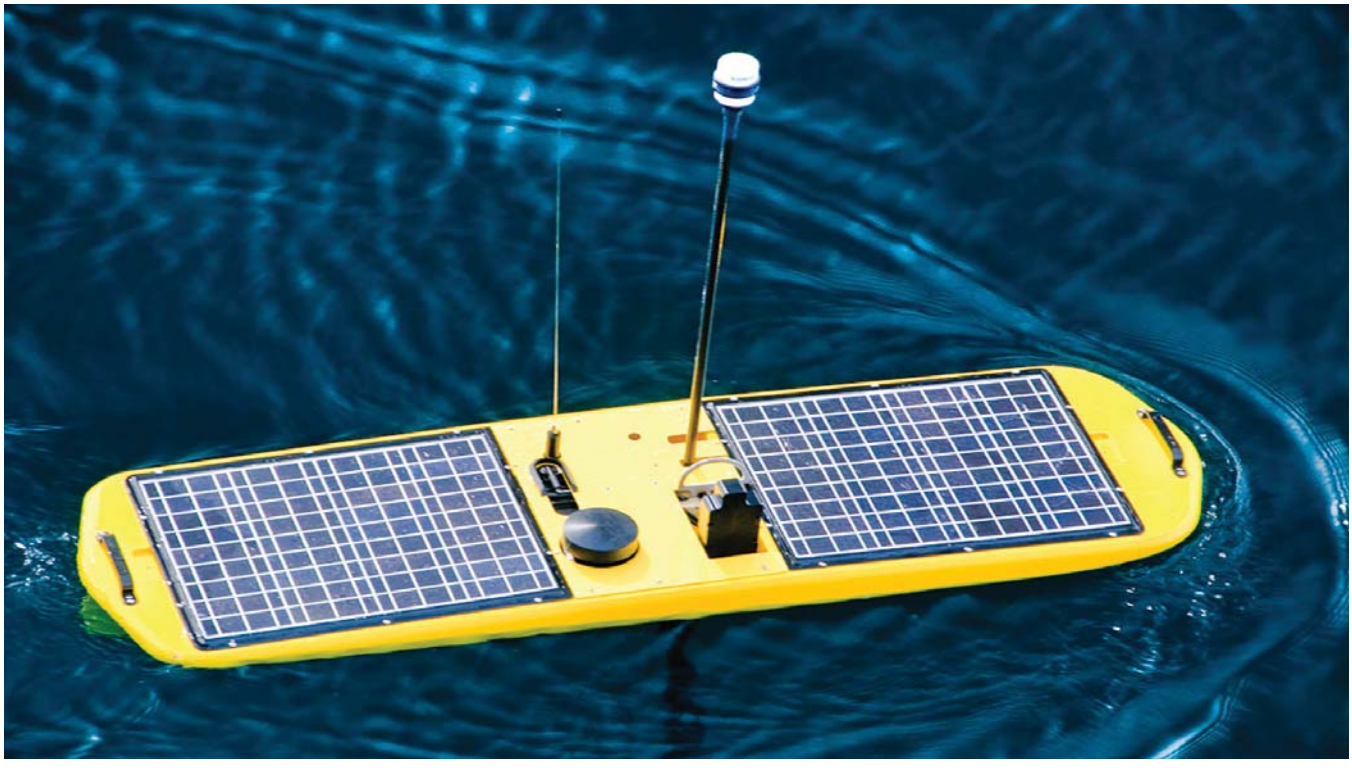
I have a pretty good understanding of what goes on in the marine services field and what has to happen at sea; what is survivable at sea. The reason I joined Liquid Robotics is because I saw a video of it operating, and I thought it was like the invention of the wheel. I love engineering solutions that are elegant and simple. If you look at Apple, for example, in the IT world, one of the reasons people like Apple so much is that they take very complex things and make them look simple.

The beauty of the Wave Glider is its simplicity and engineering elegance. One of the first things I did when I joined the company is I worked for our manufacturing organization for a day and assembled (the vehicles), so I know how they are put together.

What are the strengths of the platform?

Vass: This current platform is the most practical, most reliable, for the most possible number of uses we could build. It's small enough to be standard air-shipped anywhere, the

The sales cycle for selling a vehicle – if they have to learn how to use it, try it out, etc. – can be 6-18 months. The sales cycle for selling them data can be a day.



standard battery is the largest standard lithium ion pack you can ship on an aircraft. The foils are designed for maximum reliability and redundancy, allowing for multiple years at sea. And it's designed to handle very large waves; we've been through almost 30 ft. waves, so we know we can be quite survivable.

The ocean is a bit more challenging for computers than on land.

Vass: The ocean tears everything up; especially when you combine salt water, electronics with metal together in the ocean, it's a terrible combination. And then making vehicles that can be self-aware and avoid obstacles on their own, avoid other ships on their own, while they're on these long missions, can be quite a challenge as well. We've got a fleet of robots that we run continuously at sea. And if the robots operate outside your parameters they literally text you on your phone and tell you to take a look at them.

So where are your vehicles operating today?

Vass: I live on the ocean in California, and when I get up in the morning and look out the window, I think about all the robots we have out there, doing their thing, thousands of miles out at sea, in the Gulf of Mexico, and Hawaii, and a lot of other places we can't talk about. It's

"The thing I really like is that **Roger (Hine) is an artist ...** it's just an artfully designed system."

Bill Vass, CEO, Liquid Robotics

really amazing; it changes the game and changes what you ever thought you could do before. If you have a deep ocean ship you have to send out, you could spend $70,000 a day to have it sent out at sea.

How does the Liquid Robotics solution help to minimize this expense?

Vass: We launch a mile offshore, or we can launch from shore, too, if the water's deep enough. It's a game-changer economically, but it takes a while for people to get the idea that we're going to launch them from California and they're going to operate in the middle of the Pacific, several thousand miles offshore.

How does this system fill multiple needs, from commercial to military to scientific?

Vass: Basically, anything you could do with a ship, a buoy or a satellite, you can do with this system. It makes sense economically, and from an ecological perspective, as well as from a human safety perspective. You can imagine the Wave Glider, when you're talking about (the need for power at sea for UUVs) being the power platform for sea vehicles. It can operate on a surface as a dock, giving you the ability to fill up at a battery station at sea. In addition, the vehicles can transmit data while they are still doing their mission. So you can imagine fleets of these continuously monitoring pipelines, conducting surveys of undersea cable, doing archeological surveys, looking for seismic events … there is just a huge number of applications.

So ultimately, what do you envision your company's role in this?

Vass: The goal is to set up all these

Obviously, I've never had to think about putting a server in the ocean.

I've never had to consider my server being attacked by a shark!

applications for these continuous, autonomous robots, and to be selling these streams of data. Some (customers) might want to control where the robot goes for specific information.

Others would just want to connect into a general data services grid. And others would want value-added data. We have this concept, sort of like an iPhone, where the robot would have this general communications check-in where they can upload their own software using the existing sensors.

Based on your Silicon Valley experience, how is Liquid Robotics similar, and how is it different?

Vass: It has cloud data services; it has large-scale computing; it has networking; and it has communication, software, hardware, sensors and multiple programming languages, and a lot of important missions. How's it different? Obviously, I've never had to think about putting a server in the ocean.

I've never had to consider my server being attacked by a shark! Really what these are is a bunch of little grid servers in the ocean.

So who is your customer?

Vass: Data consumers. Our business model is sort of three-pronged. On one prong, we want the majority of our data to just go directly to the people who need it.

They don't care if it's a robot, a ship, a buoy, or a satellite: they just want accurate data and they want it now. Then of course, there are the people who say, "I want the data at this point, next to my rig, next to my harbor. I want this data." So that's a different customer, but it still has a data services sell.

Then there's the traditional marine sales, for example when you're selling it to MBARI for them to run it themselves. So there's a hybrid there. In many cases, we'll go ahead and pilot them for a service fee. Then there's the customers we can't talk about, some of our government customers. They obviously want to own and operate it, and they tear it apart and change it and do sorts of things to it. So in that case, it's more of a customizing partnership with whoever needs that service.

The nice thing about being a data services provider is this: if you're selling a vehicle, and something goes wrong with it, you've got to work with a customer to get the parts, to help them service it.

If you're just providing them data, you throw a vehicle in the water and let it do the work while you deal with the repair issue. It's a very different sales model. The sales cycle for selling a vehicle to somebody – if they have to learn how to use it, try it out, all those other things – can be 6-18 months. The sales cycle for selling them data can be a day.

In your short time with the firm, could you point to what you see as the company's current strengths and weaknesses?

Vass: Our current strength is the technology prowess, both in hardware and software. The thing that I really like about the architecture is that Roger (Hine) is an artist, it's just an artfully designed system.

And I think our small size is both a strength and a weakness. Our small size allows us to be very flexible. On the same token, though, our weaknesses are the lack of scale. We have challenges, for example, on the sales side.

We've got a huge demand, a huge interest, for multiple facets. How do we scale to meet those demands? I think prioritization is a challenge because, over the course of this conversation, I'm sure we've talked about over 30 different things we can do.

With the announcement that you joined the firm, there was an announcement regarding some financing. Could you share with me how you see that money being invested?

Vass: The majority of the money in the near term will be split between two things. One will obviously be our R&D capability: continuing to grow the platform and deal with some of these new designs we've got onboard. The second thing will be increasing our customer service/sales footprint.

How will Liquid Robotics look different in the coming two years?

Vass: I'm hoping that we will have a series of large data services contracts and that we'll continue to grow our internal fleet for delivering those contracts while, at the same time, continuing the grow our scientific governments' and other customers' businesses themselves. I'd like to see us have 12 different derivatives of the vehicle at some point in time that do a whole range of things, where you can order them off the shelf and customize them from there.

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Work Class ROVs

Last month MTR caught up with a pair of Workclass ROV leaders — Kevin Taylor, Forum Energy Technologies & Pierre Emmanuel Gaillard, ECA Montpellier & Mark Collins, ROV Business Stream Manager, SMD — to discuss technical trends that will drive this dynamic business in the near term.

Please provide a brief overview of your company.

Kevin Taylor, Forum Energy Technologies

Forum Energy Technologies was formed in August of 2010 to create a significant, broad based supplier of products and services to the energy industry. Forum employs 2200 employees in countries around the world. We are located in most of the areas that are strategic to energy exploration and production. This includes North America, Europe, the Middle East, and Southeast Asia. More than 60% of our sales are outside the United States and 40% are directly related to offshore activity. To ensure better alignment with customer interests, we now operate the business in two distinct segments, "Drilling, Downhole, & Subsea" and "Production & Infrastructure." The subsea segment of the business includes two strong global brands — Perry Slingsby Systems and Sub-Atlantic, both of which provide Forum with a wide range of electric and hydraulic ROVs and associated tooling and equipment.

Pierre Emmanuel Gaillard, Director of Montpellier Department, ECA Group

The ECA group is specialized in design, manufacture and commercialization of robotic systems, simulators and control command systems since its creation in 1936. End of 2010, the group consisted of 12 affiliates, eight of them outside France, and realized a turnover of 116.7m (34% export) with the following repartition: Defense (53%) & Civil (47%). The ECA group counts 600 employees as of today. Its activities in France are gathered under the company name ECA Robotics International Activities: The group's solutions and products are commercialized all over the world (34% of the turnover) via our network of agents and distributors and local establishments to provide technical assistance to our customers. The Montpellier department designs and builds equipment for remotely controlled interventions in hostile environment, it commercializes its products under the trademark ECA HYTECTM.

How did you come to be involved in the business of Work Class ROVs?

Gaillard, ECA Group Since 1981, we, at ECA Montpellier, have designed and built Underwater Remote Controlled Vehicles; we started with inspection ROV's, with as early as in 1985, the 6000m depth rated Robin which inspected the Titanic wreck from the Ifremer manned submarine Nautile. Our current 300m H300 inspection ROV is being sold worldwide. The move from inspection to work class ROV has been just natural, and has been prompted by a tender in 2003 from the French Navy, which we won with our 1000m work class ROV, operated since 2005. And we recently won another tender from the French Navy for a 2000m depth rated ROV; our H2000 will be delivered in Spring '12.

Taylor, Forum Perry Slingsby Systems work class ROVs evolved from the efforts of two early pioneers in the aviation and engineering industries: John Perry and Fred Slingsby. Each began successful forward-looking businesses that eventually combined to form Perry Slingsby Systems. Operating in 1956 as "Perry Submarine Builders," Perry was designing and building one-atmosphere submarines for military and oil and gas clients. Called "Cubmarines," one of the subs was used in the 1966 search for the lost H-bomb off the coast of Spain. Later, John Perry working with Edwin Link (designer of the Link trainer for WWII pilots) built the world's first diver lock-out submarine.

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A major technological challenge is to get rid of these two constraints by having battery operated ROV's stocked and recharged within a garage laying on the sea bottom, powered directly from the well heads, and only linked to the surface by a fiber optic cable for their control.

Pierre Emmanuel Gaillard, Director of Montpellier Department, ECA Group

In the UK, Slingsby Sailplanes business had evolved and was doing cutting edge fiberglass research with applications to submarine building. As we were specialists in composites, this allowed us to get into early manned subsea systems which moved ever deeper. Remotely operated vehicles were the next step to going deeper and eliminating pilot risk on subsea operations. To our knowledge we were the first company to use fiber optics to control a typical ROV. One- to five-man subs built by Slingsby were under license from Perry. As the demand for commercial diving in the oil and gas sectors increased and saturation diving became more commonplace, the focus shifted to designing and building diving systems. As the requirements for operations moved beyond diver depths, the combined company adapted to those requirements and evolved into ROV systems. In the early days, a 20 horsepower "Recon" was state of the art. But today it is completely different. Our newest system is a 1,200 HP flowline trenching system.

Mark Collins, ROV
Business Stream Manager, SMD

After completing an honors degree in Electronic and Electrical engineering in 1997 I joined a small company as a graduate engineer which operated eyeball ROV systems. The systems were mainly used for training purposes but also rented externally for contracts on the spot market. I was employed to project manage these ROV spreads, teach ROV electronic courses and accompany eyeball systems offshore. I also got involved in light electrical design of saturation dive systems. Later I transferred internally to a part of the business which designed and manufactured sonar systems for civilian and military applications. Initially involved in the design of sonar subsystems, I progressed through project management to the Production Managers role overseeing projects and onsite manufacture of electronics, ceramics and machined components. In 2002 I left the company and joined Work Class ROV manufacturer Hydrovision as the Sales Manager. This company was subsequently purchased in 2003 by the plough and Trenching ROV manufacturer SMD. SMD wanted to enter the Work Class ROV market and although I was still employed as the Sales Manager, I retained my technical roots and helped define SMD's new Work Class ROV product range going forward. In 2011 SMD split the company into several business streams including Work Class ROVs, Trenchers, Subsea Mining, Offshore Renewables and Nuclear. I moved into the role of ROV Business Stream Manager, heading up SMD's Work Class ROV business. SMD is now one of the worlds largest manufacturers of Work Class ROVs.

What, in your opinion, makes your company/vehicles stand-out in a crowded field of UUV solutions?

Collins, SMD Currently SMD has the largest range of Work Class components available. This includes 3 different models of WROV, six different models of TMS, 2 different control cabin configurations and a host of launch and recovery (LARS) solutions to help cater for a wide range of applications. SMD's ability to manufacture Work Class LARS and winches is unique. Our standard range of deck equipment is large and varied and if a customer has a special

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requirement, SMD can design a solution to suit. SMD understand that good post delivery support is key to ensuring customers get the best from their equipment. We have in place strategic spare part holding in the UK, USA, Singapore and Brazil. Expert support engineers are also based in these locations. As a result there is always an SMD support engineer available to answer the phone 24 hours a day. SMD's dedicated offshore support division employs experienced offshore pilot/ technicians and supervisors to assist customers mobilising systems and those undertaking live operations. Offshore personnel are stationed around the globe and can be on location anywhere within 36 hours.

Gaillard, ECA Group Our organization permits the design and production of custom made systems, and the ability to being extremely reactive to customer's request.

Taylor, Forum I don't believe that I would describe it as a crowded field. In fact, most of the market is shared by a limited number of work class ROV builders. There are quite a few smaller companies that produce one or two systems a year, but these are generally for a domestic market. Our clients require that their suppliers have a global reach. That is why we have service and support centers in the US, UK, and Asia. Our next center will be in Brazil. Listening to the client's requirements, and having the engineering capability to deliver systems that meet those requirements, is a very important part of our history – and our future. An ongoing and significant investment in research, development, and testing is of course an integral part of our business model. But as a technology company we must always keep focused on the real end-game, developing products that improve our client's productivity and safety. To do that, we have to be good listeners. We are in the process right now of gathering information from our clients in order to plan out our 2012 R&D program and also to further the process of the next generation ROV systems. This involves sending out questionnaires followed by meetings with our clients – usually walking around the current systems — and discussing which improvements would truly add value to their operations. It is not an easy process and the investment in man-hours is not insignificant – but we have to get it right. We have to have a process that is client focused. That is fundamental. For example, more and more subsea operations now require increased auxiliary hydraulic power. As a result of this growing requirement, we have increased the size of our onboard auxiliary power from 60 up to 200 hp. Our unique power management system allows for the installation of up to 400 hp of hydraulic consumers on a single 200 hp hydraulic power system. This system allows full horsepower draw from either hydraulic circuit – or from a combination of both. This new system was a direct result of input from our clients around the world.

What technologies have had the biggest impact on the efficient and effective operation of ROVs in the past decade?

Taylor, Forum For the past 30 years there has been a steady progression of new technologies designed into work class ROV systems. All of these innovations are interrelated. For example, for many years vehicles were limited in depth capability because of umbilical design. The advent of fiber optics and higher voltage power systems allowed the umbilical manufacturers to reduce the copper component of ROV umbilicals thereby reducing the weight and size of the umbilical which allowed more power in deeper waters. Today's ROVs nearly fly themselves. Using our ICE control system, our ROVs can automatically maintain station, perform self-diagnostics, detect faults and self correct (in some cases), and manage multiple sensor and data packages. The list is huge. But we can't forget reliability. The "technology" of reliability will always be a priority.

Gaillard, ECA

- Ability to transfer high level of energy to the ROV from surface, while keeping umbilical cable thin, thanks to use of very high voltage current;
- Incorporation of Fiber Optics cores within the umbilical, permitting the transmission of much higher amount/rate of data; and
- Significant improvement in the performance of the vision systems (TV and still cameras) and acoustic systems (sonars, positioning).

What technologies do you think will help to drive the increased use and capabilities of ROVs in the coming five years?

Gaillard, ECA Montpellier Use of inertial reference systems in acoustic positioning, will permit the automatic survey of targets. Besides, real time images processing will permit automatic fixed points telemanipulation operations.

Taylor, Forum It will be the same as the last five years—control systems.

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Everything from high accuracy automatic positioning, increasingly enhanced system monitoring and diagnostics, computer controlled tasks and functions—again, a long list. The new project simulation systems such as VMAX will also have a significant impact on deepwater effectiveness. Being able to simulate and practice tasks not only increases the ROV operator's efficiency, simulation also provides a wealth of information engineers can use in subsea systems design. A closer relationship between the ROV manufacturers and subsea equipment companies will certainly add value.

Fully Integrated Mission Systems: while many surface vessels use USBL's (Ultra Short Baseline) data to provide approximate position of the subsea vehicle, and some subsea sensors have improved this performance in recent years, they have been expensive or not integrated with other systems. Vehicle systems have had auto positioning for years. Now, however, they can realistically have a Kalman filter based navigation system (which uses the most accurate data from multiple systems) integrating USBL with INS, DVL, depth and AHRS sensors, etc. at a more realistic price than previously possible. These systems provide extremely accurate position referencing of subsea vehicles, infrastructure, or any other subsea equipment. When this capability is combined with 3D visualization systems (currently used for mission planning and evaluation, mission training post mission lessons learned, etc) these systems will provide pilots and observers greater situational awareness throughout missions as well as provide navigation systems to ease the burden of manually flying missions. All this will dramatically improve not only the vehicle operations efficiency but the efficiency of entire field operations. These developments reduce risk and vessel durations costs, just to detail just a few of the extensive significant benefits in addition to obviously increasing use and capabilities.

What do you see as the biggest technological challenge to overcome or master to make ROV use more ubiquitous globally?

Taylor, Forum A very big challenge is eliminating the umbilical and tether to produce an "autonomous" work class ROV. The benefits are obvious. But to do this reliably we will have to wait for the technology to be developed. Battery technology and through-water telemetry and communications, to name just two areas, have a long way to go before we will have the tools we need to produce autonomous ROVs. Many people don't believe it will happen. However, I believe it will. But it will be quite some time.

Wireless Subsea Communications: Currently AUVs are extensively used for survey work and other simple tasks where decision making is minimal and understood. ROVs typically carry out tasks which rely on the pilot

to carry out complex intervention tasks where there are many possibilities that cannot be rationalized and therefore could not be carried out autonomously. Surveys are typically carried out where the risks of doing the wrong thing are limited, whereas the risks associated with typical ROV operations is usually significantly higher if the wrong decision is made. Any damage can have significant consequences, therefore the need for remote control remains. However if the commercial benefits of AUVs can be harnessed alongside the ability to control the equipment remotely, this would dramatically increase what can be carried out offshore, enabling many potential installations to become commercially viable and increase the use and further the capabilities of ROVs.

Gaillard, ECA Montpellier Current handicap for work class ROV's is the need for having to deploy, from a ship positioned above an oil field operational site (e.g. sub-bottom well heads), a few thousand meter long umbilical cable providing, via the TMC cage, the power to the ROV, its control, and the transmission of all its data back to surface. A major technological challenge is to get rid of these two constraints by having battery operated ROV's stocked and recharged within a garage laying on the sea bottom, powered directly from the well heads, and only linked to the surface by a fibre optic cable for their control.

Where do you see the biggest opportunities for growth in the Work Class ROV field?

Taylor, Forum Let's start geographically, an easier question. The deepwater sectors requiring the most new equipment are Brazil and W. Africa. Asia will grow, but the total requirement will be less. The US and UK should remain fairly balanced and steady. Relative to a business niche, work class ROV systems are in many respects their own niche. To create a niche within a niche could be a somewhat limiting business model. For example, at Forum we design, build, and support ROVs from a ten horsepower electric Mojave ROV to a 1200 horsepower flowline trenching system and everything in between. And we are diversified into the telecoms, renewables, and defense sectors. But if I had to describe a specific niche or business model that we target, it would be the value-added offering of multiple deepwater products and services from a single company—leveraged into a single package.

Forum/Perry Triton XLX 35, rated 4000 meters, working in the Troll field in Norway.

(Source: Forum Energy Technologies)

MTR 100

For the sixth consecutive year, Marine Technology Reporter offers insights on one hundred companies — from established corporate leaders to new start-ups — that produce and consume the technology that drives the global subsea market.

VideoRay

580 Wall Street, Phoenixville, PA 19460
Tel: 610) 458-3000
Email: info@videoray.com
Website: www.videoray.com
President: Scott Bentley
Sales & Marketing Director: Chris Gibson
Sales Manager: Erick Estrada, Sim Whitehill
Engineering Director: Marcus Kolb
Facility: Machine shop, warehouse, production floor, and corporate office
Testing Capabilities: ROV Test Tank
Employees: 33

VideoRay was founded in 1999 on the premise of making ROVs (Remotely Operated Vehicles) more accessible to those who want to explore, inspect, and capture underwater worlds on video. Twelve years later, the company has sold more than 1,950 ROVs worldwide. VideoRay ROVs are suitable for underwater operations including surveys, offshore inspections, search & recovery, homeland & port security, science & research, fish farming, and broadcast television production. Plug and play technology was designed to allow customers to attach sensors and accessories in the field. VideoRay is available on the General Services Administration (GSA) schedule.

The VideoRay line of Remotely Operated Observation and Inspection Systems combines electronics, optics, and hydrodynamics to produce high-quality video in a small, light, easily-deployed unit. 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. Ongoing R&D, extensive spare parts supplies, and trained technicians ensure that VideoRay customers stay productive.

Applied Acoustic Engineering Ltd

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Great Yarmouth, Norfolk, UK, NR31 0NB
Tel: + 44 (0) 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 chamber
Number of Employees: 40

The company designs and manufactures subsea positioning transponders, USBL tracking systems and sub-bottom profiling equipment. This year has seen the launch of several new products to increase surveyors' and scientists' operational efficiency. These include **a compact, portable tracking system for on-deck deployment**, a new acoustic release beacon targeted at the growing marine survey market and a high power, high resolution seismic boomer with triple plates. This S-Boom System delivers a source level high enough to significantly increase sub-bottom penetration without loss of data quality.

AC-CESS Co UK Ltd

Tyrebagger Works, Clinterty,
Kinellar, Aberdeen, AB21 0TT, UK
Tel: +44 (0)1224 790100
Fax: +44 (0)1224 790111
www.ac-cess.com
Managing Director: Brian Abel
Business Development Manager: Callum Magee
Workshop Manager: Stuart Sangster
Accounts Manager: Karen Stevenson
Testing Capabilities: Multiple test tanks, pressure pot

AC-CESS manufactures remotely operated vehicles (ROV) and underwater inspection systems and products for the remote visual inspection (RVI) of open and confined spaces. It delivers underwater inspection solutions to the global subsea, oil and gas, military, marine and research industries. Based in Aberdeen, Scotland,

AC-CESS is a subsidiary of All Oceans Engineering Ltd.

Technology Profile: The C-ROVC 100 Underwater Inspection System features a full five degrees of freedom and a depth of 100 meters.

It was designed to be deployed in under three minutes offshore, onshore, or down pipes, making it a quick tool for underwater inspection. It was also designed to be controlled with one hand, leaving the other free to tether.

C-ROVC 100 has a fly through size of 190 mm and a drop through size of 210 mm. Marginally larger at 200 mm, AC-ROV 3000 Fly Out System is intended for operations in busy, congested, or high-risk operating environments.

The vehicle is garaged on the host ROV and is deployed and recovered by an electric Tether Management System (TMS). It features a 500w single phase auto ranging power interface, an RS232 control interface, and ROV and TMS cameras.

Bourbon Extends Offshore

BOURBON
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75002 Paris, France
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CEO: Christian Lefèvre
Executive VP, COO: Gaël Bodénè
Executive VP, CFO: Laurent Renard
Vice-president Business Management : Rodolphe Bouchet
Vice-president Marketing & Business Development: Gregoire Durand
Senior Vice-president Business Management: Patrick Belenfant
Senior Vice-president Marketing & Business Development: Michel Gondolo
Revenue 2010: $215m
Fleet:
• 17 multipurpose vessels, ROV & crane support vessels rated up to 3000m water depth reach,
• Well test and Well stimulation vessels
• 13 Remote Operated Vehicle rated up to 4000m depth.
Employees: 900

Bourbon CEO Christian Lefèvre has the company embarked on a dominating path.

BOURBON offers surface and subsea maritime services for offshore oil & gas fields and wind farms, based on an extensive range of latest-generation vessels. The Group provides a local service through its 26 operating subsidiaries.

BOURBON has two operating activities: Bourbon Marine Services, supplying oil & gas clients with a marine support services for exploration, development and production in deepwater and continental offshore; and Bourbon Subsea Services, specializing in field maintenance, well inspection and intervention, tie in, repair in deepwater offshore to depths of up to 4,000 meters, and providing oil & gas clients and entrepreneurs with subsea services.

BOURBON weathered the recent economic crisis while maintaining its strategy of growth and newbuilding. Production in series has paved the way for more efficient and economic vessels: according to the company, its Bourbon Liberty Series allows for greater cargo capacity and 30% reduction in fuel consumption.

As part of its "BOURBON 2015 Leadership Strategy," the Group is investing $2 billion in high-performance vessels for deepwater and shallow water offshore. This ambitious investment plan will enable BOURBON to grow its young-profile fleet to 600 vessels by 2015 while increasing the number of high-skilled professionals to 12,000.

Technology Profile: BOURBON IMR vessels are currently supporting the daily production of 1.8 million barrels of oil. Since 2004, Bourbon Subsea Services has deployed 107 X.mas trees from the four main subsea hardware in West Africa deepwater, for supermajors (Total, Shell, Chevron and BP) and other oil companies such as HESS and CNR. It completed more than 200 operations involving well Jumper tie-ins and connection, subsea control module changes, choke valve installations, and electrical and hydraulic connections. Bourbon Subsea Services recently performed a wireline well abandonment in 1350m water depth in West Africa. BOURBON also currently works in Brazil and Mexico, and has placed one of its largest vessels in the Far East for installation and post-First Oil maintenance. Bourbon Subsea Services also offers field support vessels for commissioning, cleanup, and power cable installation for offshore wind farms. Its fleet will reach 29 vessels by 2013, adding another series of Bourbon Evolution 800 vessels (DP 3, rescue, and FiFi class with special products) built to reach 3000m water depth field area.

Measurement Technology NW

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Seattle, WA 98199
Tel: (206) 634-1308
Fax: (206) 634-1309
Email: lci@mtnw-usa.com
www.mtnw-usa.com
Number of Employees: 33
Sales: Private Company, but sales have increased by 130% year/year for 2010.
Line Control Instruments Division:
Managing Director: Tom Rezanka
VP Sales & Marketing: Matt Mostad

Measurement Technology NW provides instrumentation, monitoring and control technologies for new and retrofit winch installations. Its primary customers are in the offshore, Oil & Gas, commercial marine and oceanographic industries. The company's LCI display products are used to control and monitor speed, payout, and tension (wire rope, EM cable, synthetic lines, and chain) in winch/LARS systems used for ROV deployment, oceanographic research, rig/vessel mooring and towing, and barge positioning. MTNW has also recently manufactured a new line of tensiometers for winch mooring retrofit and line rider applications. These tensiometers are available in models ranging from 2 to 1,000 KIPS. MTNW provides WinchDAC, a PC-based software package, for monitoring and data-logging winch systems. WinchDAC can accommodate from 1 to a vessel-wide view of the winches. **The LCI-90i, MTNW's flagship display, was 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 an onboard CF disk for local data logging. MTNW's running line tensiometers have a compact design with a removable, instrumented center sheave.

Multi-Electronique (MTE) Inc.

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Canada
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Fax: (418) 722-4837
Email: info@multi-electronique.com
www.multi-electronique.com
CEO : Jacques St-Pierre
Employee : 10

Multi-Electronique (MTE) Inc. is a Canadian company with 30 years' experience in the design and manufacture of oceanographic equipment. The office, located on the shore of the St-Lawrence River, in the Quebec maritime center, provides customer support for customers in

Canada, United States, France, Argentina and Norway. The AURAL-M2 is an autonomous underwater sound recording device for passive acoustic. Powered by standard "D" battery, it is used for the listening of methane bubbles, marine mammal's life, underwater noise pollution, even the Grand North ice cracking. It is designed to record underwater sounds, pressure and water temperature over a period to one year with total autonomy. It is available in three sizes (for short, medium and long deployment). The Instrumental Oceanographic Buoy is available in optical, meteorological and oceanographic parameters. The information it collects is sent to a land station via UHF modem/satellite or a combination of UHF and internet.

Other notable Multi-Electronique products include the Winch Counter, Underwater Camera, Bionet, Sample Counter, MC Data Logger and Vertical Net.

The Oceanscience Group

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E-Mail: sales@oceanscience.com
Website: www.oceanscience.com
President: Ron George
Vice President: Tricia Takacs
Operations Manager: Mike Wilson
Sales Manager: Adrian McDonald
Marketing and Sales Coordinator: Shannon Searing
Facility: Corporate Administration, Engineering, Research and Development, and Manufacturing
Square Footage: 6800 sq. ft.
Testing Capabilities (ie. test tanks, boats, pressure chambers): Oceanscience is located on the west coast of the U.S. on the Pacific Ocean where all ocean testing is completed. Additional tests are completed at the Oceanscience facilities or at Scripps Institute.
Number of Employees: 20
Annual Sales (USD): $3m

Since 1998, Oceanscience has developed and manufactured oceanographic, hydrographic and hydrologic field equipment and instrumentation.

The UnderwayCTD, conceived at Scripps Institution of Oceanography and developed at Oceanscience, was designed to provide quick, research-quality data. The fully portable system was designed to be set up and manned by one person. Oceanscience has also launched UnderwaySV, which it had developed in partnership with Valeport Ltd. The UnderwaySV, intended for use by hydrographic surveyors, offers profiles to 600m depth while underway at 10 knots and free falling at up to 5m/s. Oceanscience also offers surface buoy mounts and seafloor platform frames for acoustic Doppler current profilers (ADCP). Custom applications and design projects from large spar buoys to small sensor packages have been created at Oceanscience with the help of the ocean engineering team.

Chelsea Technologies

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Email: ekeegan@chelsea.co.uk
www.chelsea.co.uk
Managing Director: Dr. Brian Phillips
Sales & Marketing Director: Richard Burt
Technical Director: Dr. John Attridge
Testing Capabilities (i.e. test tanks, boats, pressure chambers): Chelsea Technologies has just completed a major upgrade of its optics and calibration facilities. The facility is ISO9001 accredited and provides calibrations for conductivity, temperature, pressure, acoustic instrumentation plus optical parameters including fluorescence absorbance, turbidity and PAR.
Number of Employees: 28
Annual Sales (US$): $3.77m)

Established in 1965 as a spin out from Imperial College, London, Chelsea Technologies Group (CTG) has developed a reputation as a designer and manufacturer of innovative sensors and systems for the military and civil oceanographic, environmental, acoustics, medical diagnostic and process control markets. CTG was recently asked to provide sensors to monitor and track the oil released into the Gulf of Mexico following the Macondo incident. Chelsea's long established **UV AQUAtracka fluorimeter** with the new FASTocean Fast Repetition Rate Fluorimeter are now being used to monitor the effects of the oil on the primary productivity of the Gulf. **Technology Profile:** CTG recently launched the FASTocean system designed to improve the accuracy of primary productivity measurements within diverse natural phytoplankton communities. Applications for this system now include primary productivity measurements, coastal monitoring, iron fertilization experiments, algal bloom detection and the protection of water supplies against accidental or deliberate contamination. Following on from the successful launch of the Lux range of miniature high performance fluorimeters last year, over 150 units are now in the field with users reporting excellent datasets. Chelsea also has an established range of acoustics transducers including hydrophones, projectors, towed arrays and military sonar test & evaluation systems. Chelsea has a history of working with UK and overseas navies and has recently supplied the Sonar 2115 oceanographic system for a fleet wide installation onboard the Royal Navy's new Astute class submarines.

OceanTools Ltd.

Claymore Drive, Aberdeen, Scotland AB23 8GD
Tel: +44 1224 709606
Email: info@oceantools.eu
Website: www.oceantools.eu
Managing Director: Kevin Parker
Testing Capabilites: 4m x 1m x 2m test tank
: EMC test engineer and equipment to EN60945
: Pressure testing and load testing (done externally)
: PAT test engineer and equipment
Number of Employees: 9
Annual Sales: $3.5 million

Since 1997, OceanTools has designed and produced underwater equipment for the subsea industry. The company specializes in offshore oil and gas exploration, oceanographic science and defense. Before establishing OceanTools, managing director Kevin Parker underwent training in both aircraft and electronics engineering, and he developed an interest in subsea tools while building manned submersibles and remotely operated vehicles. Since then, OceanTools has engineered the first subsea fiber-optic gyro compass, which remains one of its strongest products. **Recently, the company moved its global HQ and hopes to double its number of employees in the next twelve months.**

Technology Profile: OceanTools products include gyrocompasses, video overlays, underwater display units, leak detection systems, bespoke winches and hydraulic power units. New products include an updated version of the company's fiber-optic gyro compass, which is one-third the size of its predecessor. OceanTools also recently introduced the OceanSENSE leak detector, which has proven effective in offshore project testing.

MSI (Materials Systems Inc.)

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Littleton, MA 01460
Tel: (978) 486-0404
E-Mail: info@msitransducers.com
Website: www.msitransducers.com
President: Dr. Leslie Bowen
Vice President, Products: Gerald Schmidt
Vice President, Engineering: Dr. Brian Pazol
Director of Business Development: Rick Foster
Square Footage: 20,000
Testing Capabilities (ie. test tanks, boats, pressure chambers): Test tanks and associated equipment for in-water acoustic testing, pressure chambers, environmental test chamber

Materials Systems Inc. (MSI) designs and manufactures custom sonar transducers and arrays for a wide range of applications, including mine detection, mine classification,

Forum Building a Behemoth

Forum Energy Technologies
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Chairman of the Board and Chief Executive Officer
Charles E. Jones
President of the Drilling and Subsea Division
Wendell R. Brooks
President of the Production and Infrastructure Division
James L. McCulloch
Senior Vice President and General Counsel
James W. Harris
Chief Financial Officer

Human Resources
Michael Danford, Vice President Human Resources
Becky Taylor-Shaw, Director Human Resources, Drilling and Subsea Division
Melissa Joseph, Director of Human Resources, Production and Infrastructure Division
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Corporate Marketing
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Forum Energy Technologies has quickly established itself as a driving force in the subsea technology market.

Forum Energy Technologies Inc., headquartered in Houston, TX, provides manufactured technologies and applied products to the energy industry. Forum's over 2,300 employees provide the products and technologies essential to solving the increasingly complex challenges of the oil and gas industry. The company is located in areas strategic to energy exploration and production, including North America, Europe, the Middle East and Southeast Asia. More than 60% of sales are outside the United States and 40% are directly related to offshore activity.

Forum specializes in subsea vehicles and associated products and services. Its suite of solutions includes ROVs, tethering systems, simulation software, data acquisition software and geosciences product management. Its vehicle brands include two well-known names in the industry: Perry and Sub-Atlantic. Most of these products are available for rental.

Forum's other divisions are responsible for drilling products, completion products and surface production and process equipment as well as a full line of high quality valve solutions.

Technology Profile

The new $2 million testing and R&D facility in Kirkbymoorside, UK is crucial for new product development and for testing new designs. A large portion of the structure is dedicated to vehicle integration and testing along with customer support services and training. Also housed in the building is a large test pool as well as a hyperbaric pressure test facility.

Hyperbaric test facilities include a large chamber with an internal diameter of 2.3 meters (7.55 feet) by 8.1 meters (26.6 feet) long capable of testing, for example, a rescue submarine hull. The working pressure is 241 bar (3500 psi). Smaller chambers in the facility range from 0.11 meters @ 690 bar (10,000 psi) to 0.45 meters @ 138 bar (2,000 psi).

Forum also has full test tank facilities and hydrostatic pressure testing in Aberdeen, Scotland (test tank @ 3.1 meters deep by approximately 5.5 meters square). The drilling segment of the Drilling and Subsea Division has eight testing locations worldwide.

swimmer detection, port and harbor security, torpedo homing, side-scan, forward looking sonar, obstacle avoidance, bottom mapping, and acoustic communications (ACOMMS). Transmitter designs are available at frequencies ranging from 15 kHz to 1MHz. Receive arrays cover this same range and more, operating as low as 10 Hz in long-range surveillance arrays.

The company's piezocomposite technology is designed to provide broad bandwidth with high receive sensitivity, high source levels, and conformability for curved arrays. MSI's process is vertically integrated from piezoceramic powder formulation to the in-water final test. The ability to fabricate piezocomposite in large sheets allows manufacture of multi-element arrays and complex mechanically shaded apertures.

MSI is currently developing technology to enable the use of even broader band and higher output single crystal materials in its transducer designs. MSI has received several SBIRs (Small Business Innovative Research) grants from the U.S. Navy for work in this area.

MSI has a staff of scientists, acoustic designers, mechanical engineers, and technicians. During the design process, MSI engineers work closely with the customer to ensure that the resulting transducer provides the desired electromechanical and acoustic performance. MSI is ISO 9001 certified.

CaviDyne, LLC

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Tel: (352) 275-5319
Email: aforneris@cavidyne.com
www.cavidyne.com
CEO: Antone Forneris
President: Dr. Ilia Kondratiev
Number of Employees: >30 Manufacture Representatives – world wide
Annual Sales: >$1,250,000

CaviDyne's CaviBlaster is an underwater cleaning system that uses cavitation to remove marine growth. CaviBlasters are available in several sizes, from small commercial models to large industrial ones. Additional tools for the CaviBlaster include a CaviGrinder designed to cut steel or concrete or polish propellers, depending on what type of pad or blade is used. The CaviGrinder allows divers to use one system to clean and perform magnetic particle testing. A CaviDome, designed to allow divers to clean a larger area, will be available in the fall.

Atlas Services Group Energy UK

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Newquay, Cornwall, TR9 6TL
Tel: +44 (0) 1726 862200
Email: ameeks@atlasservicesgroup.com
www.atlasservicesgroup.com
Directors: Marcel Burghouwt / Rene Neelissen / Dirk-Jan van Leeuwen
Number of Employees: 120 employees in the group, 14 based in the UK
Annual Sales: 120 Million EURO for group

Atlas has served the oil and gas, hydrographic survey, maritime, seismic, and related industries for 25 years. The company is made up of contractors and client representatives, project managers and surveyors, party chiefs, reporting surveyors, positioning and acoustic surveyors, survey technicians, underwater and acoustic engineers, data processors, multibeam processors and operators, cartographers, and geophysicists. Atlas also features Marine Seismic, Land Seismic, and Geophysical Exploration Consultancy divisions, and training courses are held every six months to ensure consultants and contractors maintain and develop their skill set. The company is ISO 9000-certified and FPAL and Achilles and IMCA-registered.

AXYS Technologies Inc.

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Email: info@axys.com
www.axystechnologies.com
President/CEO: Harry Weiler
Marketing Director/Sales Manager: Don Bryan
Engineering Director: Reo Phillips
Square Footage: 21,000 sq ft
Testing Capabilities: Wave Simulator, Data Acquisition Board Test Center (IDAQ), 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 over 35 years experience in the design, manufacture and installation of remote environmental monitoring systems worldwide. Founded in 1974, the company first received marine consulting contracts with Environmental Canada for wave studies. This was followed by the design of several marine technology devices in the 1980's that led to an opportunity to design, manufacture, install and service Canada's Marine Weather Buoy Network. In the early 1990's, AXYS began producing marine technologies in collaboration with the National Research Council (NRC). Two of the main outcomes were the TRIAXYS directional wave buoy and the next generation WatchMan500 controller processor.

CONTROS Systems & Solutions

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Director Sales & Marketing: Stefan Kramer
Technical Sales & Support: Melanie Herrmann
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 full and part time
Annual Sales: $ 1.8 million


Daniel Esser, CEO & President

CONTROS Systems & Solutions GmbH, founded in 2006, develops and sells underwater sensors for the determination, localization and measurement of insitu CO2, CH4, oil and Polycyclic Aromatic Hydrocarbons (PAH) down to 6000 m water depth. The CONTROS software is designed for easy data selection, visualization and processing. CONTROS currently employs engineers, geoscientists, chemists and physicists, complemented by an experienced management team with more than 30 years of industry proficiency. CONTROS will soon introduce an upgraded version of the optical-based underwater CO^2 sensor "HydroC" following extensive proving trials and scientific validation. All HydroC sensors are designed to determine gas concentrations in a membrane equilibrated headspace using non-dispersive IR-spectrometry. The HydroC also features an internal zeroing procedure and is available with an internal data logger, as a flow-through model and as an arctic version. The small size and fast response time of the sensors lead to their deployment on platforms such as buoys, ROVs and AUVs.

CONTROS has also developed a Mobile Leak Detection System (MLDS), developed to detect oil and gas leaks at subsea structures such as pipelines, templates, and manifolds a very early stage. The HydroCTM MLDS has been successfully used in hydrocarbon surveys and pipeline inspections to water depths up to 2000 meters. It integrates a variety of oceanographic sensors for full coverage of anomalies such as CH4, PAH, CO2, CTD, Fluorometer, Diss. Oxygene, pH and Redox.

Harry Weiler

Over the last twenty years, AXYS has continued to grow its marine product portfolio and increase market share with major buoy networks in Italy, Colombia, Spain, Portugal, the United States, and Brazil. In recent years, AXYS has diversified with new hydrological products for freshwater monitoring, and teamed up with a third party to offer the world's first offshore wind resource assessment buoy.

Technology profile: AXYS designs, builds, deploys, and services a variety of marine products including moored buoys for weather, wave, and sea state forecasting, as well as buoys for specialized applications such as renewable energy resource assessment, tsunami, red tide, and oil spill detection. The new AXYS WindSentinel is the world's first wind resource assessment buoy, designed to gather data at turbine hub-height and across the blade span. Other AXYS products include the WatchMan500 controller, designed to provide desktop to sensor monitoring and control, including dynamic onboard control and data storage capabilities. The company also provides full data hosting and management services.

Kongsberg's Global Reach

Kongsberg Maritime
Strandpromenaden 50,
Horten, Norway
Tel: +47 33 03 41 00
Fax: +47 33 04 47 53
Email: subsea@kongsberg.com
Website: www.kongsberg.com / www.km.kongsberg.com
President: Geir Håøy (Kongsberg Maritime)
Facility: Kongsberg Maritime – Horten and Kongsberg, Norway, Aberdeen, Scotland; Kongsberg Seatex – Trondheim, Norway
Kongsberg Mesotech – Vancouver
Testing Capabilities:
- Simrad Echo test boat and large pool in Horten Norway
- Test tank in Port Coquitlam and a test barge in Port Moody.

Number of employees: 2,730 (in 25 countries)
Annual Sales 2010: $1.1B

Kongsberg Maritime provides solutions for shipping, offshore, oil & gas, subsea, navy, coastal marine and fisheries, maritime training, port and harbor surveillance industries. 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. Headquartered in Kongsberg, Norway, the company maintains a presence in 25 countries. Kongsberg Maritime's subsea department develops and markets underwater positioning and navigation, including HPR and HiPAP systems and inertial navigation, through Hydroacoustic Aided Inertial Naviagation, the HAIN systems.

Kongsberg designs transponders for use in any water depth and any of the LBL, SBL, SSBL or combined principles. The company also specializes in underwater cameras, horizontal and vertical acoustic telemetry, acoustic BOP emergency controls, hydrographic single- and multi-beam precision echo sounders, hydrographic data processing software, integrated instrumentation systems, and active sonars. Kongsberg products are designed for Littoral Warfare and brown water operations.

Subsea product development and manufacturing takes place in Aberdeen, Horten and Vancouver.

Technology Profile

Kongsberg Maritime's multibeam echo sounder systems for seabed mapping include models for all water depths. In addition to the Horten facility, Kongsberg Mesotech's Vancouver facility is responsible for the design and manufacture of underwater acoustic products, including imaging and profiling mechanically scanned sonars, multi-beam imaging sonars, and altimeters.

Kongsberg Maritime offers mapping systems, providing survey solutions including multibeam echo sounders connected to positioning equipment, heading and motion sensing instruments, and sound velocity sensors in order to position the soundings correctly. The entire package, including software, is designed, manufactured, and often installed by Kongsberg Maritime.

The company also develops underwater cameras and AUV development, counting several navies and several survey companies as customers of its HUGIN AUV. The AUV has been used for a variety of civilian and military applications, including:

- High-resolution high-speed seabed mapping and imaging
- Ocean exploration and \ monitoring
- Marine geological survey
- Inspection of underwater engineering structures and pipelines
- Mine countermeasures - MCM
- Rapid environmental assessment - REA / Battlespace access
- Anti-submarine warfare - ASW

Kongsberg Underwater Technology, Inc.

19210 33rd Avenue West, Suite A,
Lynnwood, WA 98036-4749
Tel: (425) 712-1107; Fax: (425) 712-1197
Email: chris.hancock@kongsberg.com
Website: www.km.kongsberg.com
President/CEO: Tom Healy
Testing capabilities: Facilities for service, repair and test of marine electronics, including a 1,000 cu. ft. tank for testing sonar transducer equipment.
Number of employees: 28
*Kongsberg Underwater Technologies, Inc. is a wholly owned subsidiary of Kongsberg Maritime.

Kongsberg Underwater Technology, supplies underwater acoustic systems, autonomous underwater vehicles and subsea instrumentation to the ocean research, commercial fishing, naval defense and offshore energy industries. The company was established in 1990 as the United States center for sales, engineering and customer support for Kongsberg Maritime's subsea product line. Kongsberg Underwater Technologies, Inc. maintains a staff of mechanical, electrical, software and field support engineers. Work performed includes custom software development, custom mechanical design, custom manufacturing, integrated system delivery, project/program management and complete logistic support. Particular emphasis is placed on custom software design for underwater acoustic systems and AUV systems plus design, integration and testing of acoustic geophysical survey systems for naval, research and commercial survey vessels.

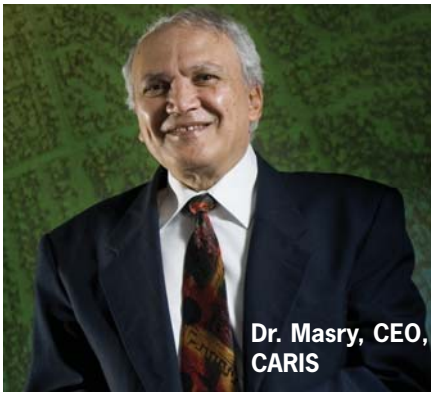
Technology Profile

- Multibeam echo sounders capable of operating in depths from 1 meter to full ocean depth
- Autonomous underwater vehicles
- Synthetic aperture sonar
- Sub-bottom profilers
- Scientific echo sounders
- Fisheries sonar systems
- Side scan sonar
- Acoustic positioning systems
- Underwater transponders
- Scanning sonar
- Acoustic communications systems
- Underwater and harsh environment camera and lighting systems

CARIS

Fredericton NB Canada
Tel: (506) 458-8533
Email: info@caris.com
www.caris.com
CEO: Dr. Masry
Sales Manager: Andrew Hoggarth
Marketing Supervisor: Alex Palmer
Employees: 170

CARIS develops geospatial software for the hydrographic and marine industries. Developed in cooperation with hydrographic clients and universities worldwide, CARIS software is designed to cater specifically for the marine GIS community, and is built on decades of hydrographic experience. CARIS is a privately held company with more than 170 engineering, IT and business professionals employed in its HQ in Fredericton, Canada as well as in CARIS offices in the Netherlands, Australia, the UK and the U.S. Technology Profile: The CARIS Ping-to-Chart software solution is designed to deliver hydrographic information from the echosounder ping to the production and distribution of the chart. The product is designed to manage bathymetric data sets containing billions of soundings, to support the development of multiple chart types from a single source, and to be able to distribute and interrogate high-density bathymetry over the internet. CARIS offers training sessions, consulting and technical support services, as well as an courses to ensure clients take advantage of the software's capabilities. Users can also gain access to technical experts on-line, multilingual telephone support and email.


Dr. Masry, CEO, CARIS

BioSonics, Inc.

4027 Leary Way NW, Seattle, WA 98107
Tel: (206) 782-2211
Email: info@biosonicsinc.com
www.biosonicsinc.com
President/CEO: Tim Acker
Vice President: Bev Acker
Marketing Director: Eric Munday
Engineering Director: Asa Packer
Facility: Office and manufacturing
Square Footage: 8,000
Testing Capabilities: Multiple test tanks, US Navy reference hydrophones, diagnostic and calibration bench, 30' research vessel.
Number of Employees: 15
Annual Sales (USD) $3-5M

BioSonics has manufactured scientific bio-acoustic instruments and software for over 33 years. BioSonics scientific echosounder systems are used in fresh water and marine environments. Clients include federal, state, and provincial agencies, research institutions, and private sector entities worldwide.

Technology Profile: BioSonics mobile echosounder technology has evolved through several generations

CEO Tim Acker

to the current DT-X digital series. The DT-X, a lightweight, portable and ruggedized unit, utilizes narrow beam acoustic technology with transducer frequencies from 38 kHz to 1 MHz. BioSonics split-beam technology provides information about aquatic organisms including abundance, sizing distribution, and 3D target tracking. Post-processing software is available for SAV assessment and substrate classification and mapping. Recently, BioSonics released the DT-X SUB, a submersible echosounder for subsea deployments on offshore observatories or UUVs. The DT-X SUB requires no surface cable and offers programmable duty cycling and self contained data logging and smart power management systems.

Caley Ocean Systems

Mavor Avenue, East Kilbride
Glasgow, Scotland G74 4PU
Tel: +44 (0)1355 246626
Email: info@caley.co.uk
Website: www.caley.co.uk
CEO: David R. Cooper
Marketing Director: Gregor McPherson
General Manager: David R. Cooper
Facility: Design offices, factory, and load-out quay
Square footage: 25,000 sq ft

Established in 1968, Caley Ocean Systems Ltd. is a specialist in bespoke, offshore handling systems for the offshore, oceanographic marine science and naval emergency vessels.

Global Diving & Salvage

3840 W. Marginal Way SW
Seattle, WA 98106
Tel: (206) 623-0621
Fax: (206) 932-9036
E-mail: fimmel@gdiving.com; info@gdiving.com
www.gdiving.com
CEO: Tim Beaver
President: Devon Grennan
Vice President: Trinity Ng-Yeung
Marketing Director: Frank Immel
Engineering Director: Mike Langen
Facility: Corporate Office: Seattle, Regional Offices: Richmond, CA; Rio Vista, CA; Anchorage, AK; Houston,TX
Number of Employees: 400

Global Diving & Salvage, Inc. was founded in 1979 as a full-service marine contractor in Seattle, WA. At the time of its founding, it was envisioned that the scope of operations would extend only to ship husbandry, underwater construction, salvage, and marine oil spill cleanup. Global has grown from the original owner/operator company to a major marine-service provider in the civil engineering, and energy, markets. Global's corporate office remains in Seattle, WA, but four regional offices in Anchorage, AK, Rio Vista, CA, Richmond, CA, and Houston, TX support both domestic and international operations. In-house operations can provide project management, technical, and engineering support in additional to the day-to-day operations for a myriad of projects.

Global has experience in all forms of diving, ranging from surface air/mixed gas to saturation diving operations. In addition to standard diving equipment, the company owns and operates four saturation diving systems as well as a variety remotely operated vehicles. Global also performs 24 hr on-call preventative booming operations and can maintain a standby labor pool of 230 vessel operators and deckhands in support of MSRC, Marine Spill Response Corporation, during spill events.

Technology Profile: Global recently purchased a SAAB Cougar XT ROV as well as Mesotch 1000 and BlueView sonars. All of the company's dive stations and systems are regularly inspected and tested according to industry requirements. Additional technology is incorporated into projects as required by the customer and/or to ensure that the project is safe and constructible. 3D modeling is used for complex or detailed projects were tolerance is critical to ensure that components will fit.

Significant industry developments include davit technology, diving bell winches, heavy weather A-frames and high-capacity carousels for cables and pipelines.

Technology profile: Davits for rapid launch of emergency lifeboats and inflatable boats. Pipe and cable carousel and reels up to 7,000 tons. ROV and dive bell handling: A-frame and precision winch control. Design and FEED studies, and control systems development. Recent projects: FPSO Hose Deployment system, and ultra-compact winch system for downhole tool deployment.

Castrol

Castrol Technology Centre
Whitchurch Hill, Pangbourne, Reading, RG8 7QR
Tel: +44 (0)118 984 3311
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US address:
501 Westlake Park
Houston, Texas 77079
Tel: +1 800 339 7157
Email: CastrolOffshoreAmericas.orders@bp.com
www.castrol.com
Global Sales Director: Graham Rose
Regional Sales Director
(Americas, Middle East and Asia): Carmen Pino
Regional Sales Director
(Europe, Africa and Caspian): James Finn
Marketing Director: Shailendra Gupte
Technical Director: Andy Pierce
Regional offices also in Singapore, Shanghai, Dubai, Rio de Janiero, and Aberdeen
Testing Capabilities: analytical laboratories, extensive testing equipment and conference and training facilities on site at the Pangbourne Technology Centre

Castrol Offshore provides a complete lubrication service to the oil & gas exploration and production industry. From mobile drilling rigs to the world's most demanding deepwater production platforms and subsea production control systems, Castrol Offshore delivers high-quality lubricants coupled with an expert technical support network and supply capability.

Technology Profile

The Castrol Biobar hydraulic fluids and thruster-specific lubricant

Channel Technologies Group (CTG)

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, 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.

SEAFAC/STAFAC HFA and HGMS Radiated Noise Measurement Arrays designed and built by CTG divisions Sonatech, ITC and Channel Industries.

ITC 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

ITC, 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

Castrol BioStat have both been tested and registered according to the OSPAR (the Oslo and Paris Conventions for the protection of the marine environment of the North-East Atlantic) requirements on the Norwegian NEMS database. The range is completed by Castrol Anvol CF22, formulated for surface BOP control systems, Castrol BioTac greases for jacking legs and deck machinery and Castrol BioTrans lubricants for gear boxes. All of these products are easy to retrofit.

Castrol's Brayco Micronic synthetic hydrocarbon based and Castrol Transaqua water based subsea control fluids are fully compliant with the most recent OSPAR environmental legislation and are installed on over 1,500 subsea oil & gas wells worldwide.

Chesapeake Technology, Inc.

888 Villa Street, Suite 200
Mountain View, CA 94041
Tel: (650) 967-2045
Contact: Eileen Gann, president
e-mail: info@ chesapeaketech.com
www.chesapeaketech.com
Testing Capabilities:
Chesapeake Technology performs most of its product testing in-house, with owned equipment (analog and analog sub-bottom sonar testing) for real-time acquisition scenarios, and borrowed equipment for other types of sidescan, sub-bottom, and magnetometer acquisition. The in-house analog testing only requires a function-generator, oscilloscope, and in-house interface box product.
Number of Employees: 6

Chesapeake Technology, Inc. (CTI) was founded in 1995 in the heart of the Silicon Valley by John Gann, who continues to serve as CTO. CTI offers custom software and hardware solutions, as well as thought-leading consulting services to the hydrographic survey, marine geophysical and geological survey industries.

Technology Profile

Chesapeake Technology, Inc.'s flagship product, SonarWiz 5, provides sonar data acquisition and processing software for side-scan and sub-bottom sonar systems being used by hundreds of clients worldwide including NAVO, NOAA, USGS, and many of the world's navies and universities.

DCL Mooring & Rigging

4400 North Galvez St.
New Orleans, LA 70117
Tel: (504) 944-3366
Fax: (504) 947-8557
E-Mail: Sales@ DCL-USA.com
www.dcl-usa.com
CEO: Peter L. Kazunas
President: Peter L. Kazunas
Vice President: Hans Jonassen
Marketing Director: Todd Allemand
Sales Manager: Chris Janssen
General Manager: Rick Hall
Engineering Director: Richard D. Haun, PE
Facility: 3 – New Orleans, Lafayette and Houma, LA
Acres: 16
Square Footage: 120,000
Testing Capabilities: 5 proof-test beds from 400,000-3,000,000 lbs capacity; 3 portable basket proof testing units from 60,000-120,000 lbs capacity
Number of Employees: 51
Annual Sales (USD) $25M

The merger of Dreyfus Supply, Cortney Co. and Lowery Bros. in 2004 allowed DCL Mooring and Rigging to combine both anchoring and lifting products and services under one roof. DCL,the only authorized SlingMax fabricator for Louisiana, offers on-location and portable off-site NDT and load testing of slings and CCUs. In addition

Peter Kazunas, CEO

to its inspection, testing and certification services, the company provides comprehensive web-based Inventory Management Systems and has partnered with InfoChip to incorporate RFID capabilities into the system.

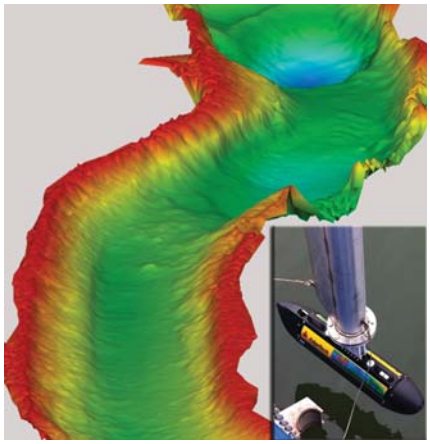
Recently designed, tested and released products include the Synthetic Rope Connector (SRC) for high performance MODU mooring ropes, the Synthetic Rope Thimble (SRT) for heavy lift and subsea installations and the Multi-Purpose Connector (MPC) initially designed for U.S. Navy SPM hawser ropes. R&D efforts are currently underway for a Subsea Quick-Connect component, a Double-Lock ROV shackle and a Portable Offshore Tester to cer-

and a Portable Offshore Tester to certify mooring and subsea installation wire rope terminations offshore. 2010 saw the introduction of a portable sling testing bed and a portable CCU testing unit, which are currently assisting recertification requirements.

EdgeTech

4 Little Brook Road
West Wareham, MA 02576
Tel: (508) 291-0057
Email: info@edgetech.com
www.edgetech.com

EdgeTech designs and manufactures high-end sonar imaging systems for underwater survey, detection and identification applications. Founded in 1965 as a division of EG&G, the company became private in 1995 and selected its name in part to honor the late Dr. Edgerton, an MIT professor and marine instrumentation pioneer.



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. EdgeTech's most recent innovations include the newly-enhanced version of their 4600 Combined High Speed Swath Bathymetry & Side Scan Sonar System, as well as their new Littoral Mine Countermeasure Sonar (LMCS) System. The 4600 is designed to produce real-time high resolution 3D maps of the seafloor and co-registered simultaneous side scan & bathymetric data.

Hemisphere GPS

4110 9ST SE, Calgary, AB Canada, T2G 3C4
Tel: (403) 259-3311
www.hemispheregps.com
Precision@hemispheregps.com
Steven Koles, President and CEO
Phil Gabriel, VP and GM - Precision Products
John Bohlke, Director of Corporate Communications
Michael Whitehead, VP Technology
Testing Capabilities:
All Hemisphere GPS Marine Products are tested to meet or exceed the following standards:
Operating temperatures: -30 to +70 degrees Celsius
Humidity: 95% non-condesign
Shock and vibration: IEC60945
EMC: FCC, CISPR22, CE
IMO Wheelmark Certification
Employees: 230
Annual Sales (USD): Approximately $70 million

Imagenex Technology Corp.

209 – 1875 Broadway Street
Port Coquitlam, BC, Canada V3C 4Z1
Tel: (604) 944-8248
Fax: (604) 944-8249
E-Mail: imagenex@shaw.ca
Website: www.imagenex.com
President: Willy Wilhelmsen
Vice President: Jeff Patterson
Managing Director: Gordon Kristensen
Sales Manager: Steve Curnew
Square Footage: 10,000
Testing Capabilities: 4' x 4' x 8' test tank, 26' aluminum survey boat, floating test lab
Number of Employees: 25

Imagenex manufactures mechanical scanning, sidescan, and multibeam sonars, as well as echo sounders and altimeters. The company has gradually grown to about 25 employees, including electronics assemblers and technicians, electrical and mechanical engineers, and marketing and administration staff. Imagenex ensures quality control by centralizing almost all of its product development and production functions at Imagenex headquarters in Port Coquitlam. One important exception is testing – after on-site bench and tank tests, all products are field tested at Imagenex's floating test facility in nearby Vancouver Harbor. Some equipment is also tested and demonstrated on the company's 26-foot survey boat.

Technology Profile: Imagenex has developed a sonar designed for use in pipes of varying sizes. The 831A (or 831L) Digital Pipe Profiling Sonar was designed to facilitate internal pipe inspections. The addition of an optional tilt motor assembly to the new Model 965 Multibeam Imaging sonar was recently demonstrated at the Ocean Tech Expo held in Newport, Rhode Island. As a recommended option, this drive, which allows for real time vertical angular adjustment of the sonar, enables the operator to adjust the vertical scan angle from +10° to -90° in 5° increments. This permits the operator to tilt the sonar down towards the target as it approaches. Another new development from Imagenex demonstrated at Ocean Tech Expo 2011 is the most recent addition to the 881A & 881L product line, the 881A/L Narrow Beam Imaging sonar, which has an extra narrow horizontal beam angle of 0.75° to achieve very high sonar resolution.

Hemisphere GPS designs and manufactures GPS (GNSS) products for positioning, guidance, and machine control applications.

Hemisphere GPS was founded in 1990 and is headquartered in Calgary, Canada, with major product development, sales, and marketing facilities in Arizona, Kansas, and Australia. Hemisphere GPS is listed on the Toronto Stock Exchange (TSX) trading under the symbol "HEM" and is one of the TSX Cleantech designated companies. Hemisphere GPS produces a variety of precision products used in marine applications, including GPS receivers and GPS compasses. Hemisphere GPS precision R-Series receivers provide cm-level positioning in the most demanding marine applications. Hemisphere GPS patented Crescent Vector based marine products give users precise heading and positioning for accurate navigation. Hemisphere GPS' all-in-one GPS compasses are designed to replace magnetic compasses, which are affected by metal objects and electromagnetic fields.

Sound Metrics Corporation

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Lake Forest, WA 98155
Tel: (206) 364-1441
Fax: (206) 374-2929
E-Mail: info@soundmetrics.com
Website: www.soundmetrics.com
President: Joe Burch
Vice President: Bill Hanot
Marketing Director: Jeanne Dorsey
General Manager: Richard Morris

In the mid-1990's, the U.S. Navy asked engineers at the University of Washington Applied Physics Lab to develop a tool to identify underwater explosives and swimming intruders in muddy or dark water. The imaging sonar the researchers created delivered near-video-quality data. Requests for other applications soon followed, and in 2002, the research team founded Sound Metrics Corp.

The sonar offered commercially was the DIDSON, an acronym for Dual-frequency, IDentification SONar. This technology uses over 128 channels of focused sound waves transmitted through an adjustable lens set. The DIDSON uses two frequencies to provide greater utility – a lower frequency extends the functional range for searching/locating, while a switchable higher frequency provides greater resolution for identification/inspection purposes. SMC offers models with depth ratings to 3,000m plus a Diver Held model (autonomous or tethered) that allows unmatched freedom for inspection and security surveillance via a heads-up display mounted to the diver's mask.

Continuing to focus on research & development, SMC has developed a new generation of DIDSON sonar, the ARIS (Adaptive Resolution Imaging Sonar). The ARIS is designed to provide a smaller form factor, lower power requirements and powerful software processing capabilities.

Marport Makes its Mark

Karl Kenny, Marpor't hard-charging CEO & President, has the St. John's company in rapid but rational expansion mode.

Marport Deep Sea Technologies Inc. focuses on developing and marketing Software Defined Sonar technology and products. Its target markets are Commercial Fisheries, Underwater Defense, Offshore Energy and Ocean Science. Marport recently entered into a partnership 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 ISR missions. GDC has also awarded Marport a multi-year R&D contract for new naval sonar products. Marport's partners include General Dynamics Canada, Canon France, Simon Fraser University, MIT, National Research Council of Canada's Institute for Ocean Technology, Questar Tangent, Rolls-Royce, NOAA and SINTEF.

Marport has also recently spun off its underwater robotics division, Marine Robotics Inc. (MRI). MRI manufactures and develops Unmanned Maritime Vehicle (UMV) systems, technology and products designed for military, commercial, and scientific research applications.

Technology Profile: Marport created AquaPix, an interferometric Synthetic Aperture Sonar targeted to mine countermeasures, hydrography, seabed survey. The sonar is frequency agile from 200 – 400 kHz and offers range independent resolution of 2.5cm by 2.5cm with co-registered 3D bathymetry. Effective swath widths are up to 12 times water depth in shallow water, to a maximum width of 600m - more than double currently available high resolution bathymetric sonars. This increased quality greatly facilitates detection of small objects, i.e. mines and underwater IEDs, and changes in seabed texture such as that caused by oil spills. AquaPix is the latest product based on Marport's Software Defined Sonar (SDS), an underwater acoustics technology platform designed to enable advanced underwater sensing, communications and imaging. The majority of Marport products — ranging from single channel acoustic sensors to military sonars — are supported from a common electronics platform.

The software-centric architecture enables digital signal processing to be executed in multiple FPGA cores allowing dynamic reconfiguration and massively parallel processing performance.

Marport

50 Harbour Drive, St. John's, NL, A1C 6J4.
Tel: (709) 757-5757
Website: www.marport.com
CEO & President: Karl Kenny
Executive Vice-President, Sales: Oskar Axelsson
Vice-President, Software Engineering: Anthony Paul

Testing Capabilities

Marport C-Tech, located in Cornwall Ontario, is equipped to handle a great deal of testing. Testing facilities include hydrostatic pressure testing, vibration, temperature and onsite acoustic test tanks. Comprehensive acoustic testing is conducted at a company owned Underwater Acoustic Test Facility located in an off-site area remote from environmental noise and providing acoustically quiet and stable water. The site measures 140 metres long, 100 metres wide and 13.5 metres deep.

On site there is a fully instrumented floating, moored barge. This facility allows us to measure, record and calibrate sensitivity characteristics of projector and hydrophone arrays at frequencies from 50 Hz to 200 kHz. Under computer control, measurements are plotted, data is computed and results are drawn in diagram form.

The barge can accommodate transducer array sizes ranging up to 5000 kg in weight. Although the water freezes during winter, the test site remains fully operational by keeping the barge pool and other instrumented areas free of ice.

Acoustic Tests

- Beam Patterns (horizontal and vertical)
- Polar and rectilinear directivity patterns
- Source level test (transmit)
- Receive Sensitivity
- Hydrophone calibration
- Deep submergence acoustic testing, .05-10 kHz at 0-500 psig

Underwater Acoustic Test Tank, UWTT

The UWTT is a cylindrical redwood tank 6.4m in diameter and 3.6m deep and is used for near-field acoustic transducer measurements ranging from 3 kHz - 200 kHz. Typical acoustic tests performed using the UWTT are:

- X-Y Admittance Plots
- X-Y Impedance Plots
- Resonance
- Source Level

Hydrostatic Pressure Testing

A pressure vessel provides automated programmable pressure cycle sequencing to a maximum pressure of 1210 psig. The vessel chamber measures 24 inches in diameter and 84 inches high.

In addition to these facilities, Marport has signed Memorandum of Understanding agreements with several organizations that allow full access to their facilities. These organizations and their testing facilities include:

Number of Employees: approximately 105
Annual Sales (US$): $18 Million (expected)

South Bay Cable Corp

54125 Maranatha Drive
Idyllwild, CA 92549
Tel: (951) 659-2183
Fax: (951) 659-3958
E-mail: sales@southbaycable.com
Website: www.southbaycable.com
President/CEO: Gordon Brown
Sales Manager: Gary Brown
Engineering Manager: Oscar Lehuede
Production Manager: Ken Cripe
Facility: Two facilities (Idyllwild, CA and Temecula, CA) 100,000 total sq/ft
Testing Capabilities: electrical, optical and mechanical testing equipment. Outside facilities are also used and include hydrostatic pressure, and a host of mechanical tests.
Number of employees: 80

Founded in 1957, South Bay Cable Corp designs and produces purpose-built, hard-working cables for use in harsh and demanding environments. Corporate headquarters are located in Idyllwild, CA with additional manufacturing facilities in Temecula, CA. The two facilities total approximately 100,000 square feet. To date, South Bay has designed and produced over sixty-thousand different cable constructions, with each cable design customized for the intended application. Cable uses include ROV Tether and Umbilicals, tow cables, geophysical exploration, bottom laid interconnect cables, mine sweep cables, airborne aerostat and a host of other special purpose applications.

Technology Profile: From the initial design phase to the drawing of the copper rod to the final jacketing operations, South Bay Cable performs nearly all operations in house. Electrical conductors can be designed to be highly flexible, optical fibers can be incorporated into several different configurations and mechanical strength members include both synthetic and metallic materials. Cables can be designed with working loads as low as 50 pounds to ultimate breaking strengths in excess of 100,000 pounds. All load-bearing cables are designed to be torque-balanced or torque-resistant.

Hydracon Company

P.O. Box 27584, Anaheim, CA 92809
Tel: (714) 281-2460
Website: www.hydracon.com
President & CEO: Alex Pullos
Marketing Director: Faye Pullos
General Manager: Andy Pullos
Engineering Director: V.A. Pullos
Square Footage: Approx. 1,500
Number of employees: 6-10

Hydracon Subsea has manufactured high-performance deepwater subsea products for over 25 years. Many of the company's near 100 product models are intended for operation ocean depths to 20,000 ft. or to 10,000 psi ambient. Hydracon's high-performance subsea products include submersible electrical switches, subsea solenoid valves, ocean submersible solenoid actuators, and other subsea technology products. Applications include Subsea Electro-Hydraulic Controls, Downhole Tools, Deepwater Pipeline, BOP Controls, autonomous underwater vehicles AUV's and ROVs, Diving,

Alex Pullos, CEO

Deep Sea Mining, Dredging, Marine Geophysical, Subsea Oil & Gas, Naval Defense and others.

Hydracon Subsea pressure switch model 2406-100 is submersible to 20,000 feet ocean depth. The pressure switch is used on deepwater subsea hydraulic control systems. The switch is magnetically actuated, uses only two wires, no electric power consumption, and is supplied with underwater conductors.

HTI Hydroacoustic Technology

715 NE Northlake Way, Seattle, WA 98105
Tel: (206) 633-3383
Email: support@HTIsonar.com
http://www.HTIsonar.com
President: Dr. John Ehrenberg
Vice President: Bruce Ransom
Marketing Director: Caroline Mercado
Sales Manager: Colleen Sullivan
General Manager: Patrick Nealson
Engineering Director: Anthony Johnson
Square Footage: 7,500 square feet
Testing capabilities: on-site R&D lab and off-site, floating calibration laboratory/barge equipped with advanced electronics for calibrating split-beam, dual-beam, single-beam transducers, and echo sounders from 38 kHz to 1 MHz.
Employees: 34

HTI offers underwater acoustics monitoring for fisheries and oceanographic resources. Dr. John Ehrenberg, HTI's president, is one of the founding members of hydroacoustics for fisheries research. In 1970, one of his first tasks at the University of Washington Applied Physics Lab was to help develop the first all-digital echo integrator for fisheries assessment. It was based on a Digital Equipment PDP 8 computer

iXSea

55 Avenue Auguste Renoir
78160 Marly le Roi, France
Tel: +33 (0)1 30 08 98 88
Fax: +33 (0)1 30 08 88 01
www.ixsea.com

iXSea designs and manufactures 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 industries. Customers include major international players in the oceanographic, hydrographic, offshore oil and defense markets.

iXSea has a staff of 250+ divided between three manufacturing sites in France and five sales subsidiaries around the world. Registering an average annual growth of 20%, in 2010 iXSea generated sales more than $59m.

iXSea is part of the iXBlue group, which provides a range of equipment in the areas of navigation and surveillance, underwater positioning and communication, seabed imaging and surveying. In 2010, iXBlue employed 500 people with a turnover of $136.5m.

iXSea's ROVINS system is a survey-grade gyrocompass Inertial Navigation System (INS) intended for use in depths up to 3,000 m. Designed for offshore survey and construction activities, ROVINS offers interfaces to standard surface and subsea positioning and aiding sensors.

RAMSES is an acoustic baseline positioning system that can be combined with an INS system for increased accuracy and redundancy.

The Global Acoustic Positioning System (GAPS) fuses inertial and acoustic technologies to determine the position of an underwater beacon to .2% of range.

Other iXSea systems include DELPH, a powerful suite of real-time data acquisition and fully integrated processing and interpretation tools; SHADOWS, the 4th generation mapping sonar, providing 'more pixels per hour'; ECHOES, the only complete range of fully tunable seismic sub-bottom profilers.

(the size of a small file cabinet) with processing power like that of the current microprocessor used in the HTI sub-gram tags. Driven by research needs and advances in micro-electronics and software technology, he later worked on the first dual-beam and split-beam direct in situ target strength measurements systems, as well as the first real-time 3D fish tracking systems using acoustic tags. He found a key ingredient to all these advances has been close collaboration with engineers and field biologists who use the equipment to obtain accurate, timely results to manage fisheries resources.

Hydrex LLC

604 Druid Rd E, Clearwater, FL 33756
Tel: (727) 443-3900
E-mail: info@ hydrex.us
www.hydrex.us
CEO: Boud Van Rompay
Marketing Director: Martin Pauwels
Sales Manager: George Aristizabal
Production Manager: Geoffrey Lamrini
Number of employees: 90
Annual Sales: $18m

Hydrex, an underwater repair and replacement specialist, brings dry-dock-like conditions to ships and offshore units. The company has an in-house research and testing department and continues to invest in new research initiatives. Since its founding in 1974, Hydrex has sent diving teams to perform work in virtually every part of the world. The Hydrex headquarters are seated in the Belgian port of Antwerp. Hydrex has further offices in Tampa (U.S.A), Algeciras (Spain), Mumbai and Visakhapatnam (India) and Port Gentil (Gabon). All Hydrex offices have fast response centers where an extensive range of logistics, tools and diving support equipment is available at all times for the Hydrex underwater teams. Services range from an inspection of an external condition and any required maintenance work all the way through to highly technical major repairs or replacements of a ship's external underwater equipment and machinery.

Surface Supplied, Inc.

PO Box 2229
El Granada, CA 94018-2229
Tel: (650) 679-0234
Email: info@surfacesupplied.com
Website: www.surfacesupplied.com
CEO: Jason van der Schyff
Testing capabilities: hydrostatic pressure testing, oxygen cleaning, audio signal measurement, light output/lux measurement, electronic test bench
Number of employees: 5-15
Annual Sales: $1-5 million

Surface Supplied was established in early 2011. The founding team has experience in both the supply and manufacture of commercial and military diving equipment. Based in Northern California, close to the heart of Silicon Valley, Surface Supplied incorporates the latest electronic developments into its products. Surface Supplied uses a combination of electronic hardware, embedded software, mechanical components and a streamlined route to manufacture in order to provide technology to the commercial diving sector. Product innovation is led from all four elements and may include material selection, COTS components, custom hardware development and multi-platform software. By adopting a holistic view of each product, the correct hardware can be chosen to minimize component count, leverage mechanical packaging and place the focus on embedded software. Surface Supplied has products available for hyperbaric communication, diver's breathing gas analysis, class leading high intensity LED lighting and the hyperbaric monitoring of saturation diving systems. Included in the product suite is the thinnest CO2 analyzer commercially available.

Hard Problems, Soft Solutions

SeeByte, Ltd.
Orchard Brae House
30 Queensferry Road
Edinburgh, Scotland, EH4 2HS
Tel: +44 (0) 131 447 4200
Fax: +44 (0) 0131 447 4911
Website: www.seebyte.com
Email: info@seebyte.com
CEO: Bob Black
VP US Operations: Jon Wood
Sales Manager: Ioseba Tena
Head of Engineering: Scott Reed
Number of Employees: 40

SeeByte CEO Bob Black has helped SeeByte deliver on the promise of its technology with a number of world "firsts" since it emerged from the halls of academia, Heriot-Watt University.

SeeByte creates software for autonomous underwater vehicles (AUV) and remotely operated vehicles (ROV), enabling them to identify manmade underwater objects in frontline war zones or carry out inspection and maintenance duties for the offshore oil and gas industry.

SeeByte was founded in 2001 in Edinburgh, Scotland, with the aim of bringing to market the technologies designed at the Ocean Systems Laboratory of Heriot-Watt University.

SeeByte has since established a global network to service its expanding customer market by adding an operations base in San Diego and appointing sales representatives in Houston, Japan and New Zealand. SeeByte is credited with conducting the first autonomous inspection of riser pipes using ROVs without direct pilot control.

The company also manufactured the first AUV with sonar and video and the first commercially-available automatic manmade underwater object-identifying software using side-scan.

Technology Profile

The flagship product currently offered by SeeByte is SeeTrack: an automatic decision-making software designed to control a vehicle's actions by gathering and integrating data using an open-architecture platform. Other SeeByte products are as follows:

- **SeeTrack Military** Showcased in a multitude of military situations, SeeTrack Military is currently known as the de facto technology for the worlds' navies. This product is predominantly used for the identification of manmade underwater objects, search and recovery missions, and enhancing the capabilities of remote underwater vehicles, marine mammals and divers.
- **SeeTrack CoPilot** Offering features like auto-hover, straightforward point-and-click mouse interface capabilities, and technology designed to anticipate changing sea conditions, CoPilot can highlight and track targets of interest from the sonar screen in subsea operations, carrying out the same inspection several times to compare the data.
- **SeeTrack AutoTracker** This software enables AUVs to detect and track a pipeline using existing payload sensors. AutoTracker was designed to provide improved inspection data and time-reductions.
- **SeeTrack Professional** A situational awareness and performance analysis tool for port and coastal security, local police forces and bespoke seabed inspections.
- **SeeTrack Recovery** Manages assets' data and provides a real-time picture of how the components work together

Along with creating new solutions-based technology, SeeByte continually works to boost"plug-and-play" capabilities with new software modules on current offerings. SeeByte's SeeTrack Military technology remains a popular tool with worldwide militaries and security personnel due to its expandable platform.

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underwater tech and ocean science news

MARINE TECHNOLOGY REPORTER

July 6 - Nov. 10, 2011

Subsea Photo Contest

Your photo could be on the front cover of MTR

Share your experiences in the underwater world - your entry will be seen by thousands of your colleagues. All contest winners will be published in a special section of the Nov/Dec issue, with one winner featured on the cover. Go to:

http://photos.seadiscovery.com

to submit your best underwater images. Complete rules and terms can be found on the website, or go to:

http://photos.seadiscovery.com/rules-and-terms.asp

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KONGSBERG

SEACON®

Imenco

Haugesund (Head Office):
Stoltenberg gt. 1, 5527 Haugesund, Norway
P.Box 2143, 5004 Haugesund
Tel: +47 52864100
E-mail: Imenco@imenco.no

Houston Office:
Imenco International
16111 Park Entry Dr., Ste 100
Houston, TX 77041
Tel: (713) 480-7777
Email: al.cohen@imenco.com

Imenco is a major EPC-contractor to the maritime industry. The company designs, develops, and manufactures a wide range of Diving Systems, Helicopter Fuel Systems, Industrial CCT Systems, Ex cameras, Lifting & Handling products, Subsea cameras and tools including subsea Lights and Lasers.

Imenco is among the leading suppliers of special tools for Subsea and ROV operations and has also developed the 3-finger claw for various manipulators, the latch for launch and recovery of ROVs, and other umbilical-operated equipment. Its engineering team is specialized in the area of mechanics, hydraulics and electronics engineering. Imenco is approved by Achilles and DNV, and its Integrated Management System is certified according to NS-EN ISO 9001 : 2008. In 2010, Imenco won the Deloitte Technology Fast 50. This year, the company delivered the advanced Diving System Havila-7 together with Drager.

Phoenix International Holdings

9301 Largo Drive West, Largo, MD 20774
Tel: (301) 341-7800
E-Mail: tjanaitis@ phnx-international.com
Website: www.phnx-international.com
President: Michael K. Kutzleb
Vice President: John D. Smith
Marketing Director: Timothy W. Janaitis
Engineering Director: Andrew M. Resnick
Square Footage: 110,000
Testing Capabilities:
1) 21,000 gallon, 20 ft. long x 10 ft. wide x 14 ft. deep fresh water test tank.
2) 2 ft x 8 ft x 6 ft Polyethylene indoor test tank.
3) 10,000 psi pressure testing chamber.
Number of Employees: 220


Mike Kutzleb, President

Phoenix is a marine services company that performs unmanned (robotic) and manned underwater operations and engineering projects. Begun in 1996 as a waterborne ship repair company, Phoenix has now developed additional core business segments in deep ocean search and recovery; offshore oil and gas support; submarine rescue maintenance and operations; underwater structure inspection, maintenance and repair; unmanned vehicle development; and engineering support/development of underwater systems and tools. Phoenix holds multi-year U.S. Navy contracts to provide waterborne ship repair, search and recovery in water depths to 6,000 meters, and submarine rescue. The company maintains inventories of Navy and Phoenix owned equipment at multiple locations for these purposes. Comprehensive operations and engineering services are provided through offices located in Largo, MD; Norfolk, VA; Bayou Vista, LA; Houston, TX; San Diego, CA; and Aiea, HI.

Technology Profile: Phoenix expertise includes the design, development and operation of electro-hydraulic and battery powered ROVs with an emphasis on the use of pressure tolerant electronics; side scan sonar data collection and interpretation; development and use of underwater welding procedures (wet and dry chamber); non-destructive testing; and conventional and one-atmosphere manned diving. Engineering services include concept development, design, analysis, testing, and rapid prototyping of diver operated and robotic underwater tools and work systems. Phoenix has built over 20 ROVs for commercial and government customers.

Intermoor

900 Thread Needle, Suite 300, Houston, TX 77079
Tel: (832) 399-5000 • Email: info@intermoor.com
Website: www.intermoor.com
President: Tom Fulton
Vice President: David Cobb
Marketing Director: Kelly Moore
Sales Manager: Kathy Legnon
Engineering Director: Don Hardin
Facility: Morgan City, LA
Number of Employees: 255

InterMoor is a mooring, foundations and subsea services company, providing solutions for rig moves, mooring services and offshore operations including engineering and design, survey and positioning, fabrication and subsea installation. Subsea services from InterMoor include in-line heave compensation for the deployment and recovery of a wide range of subsea hardware; decommissioning; and subsea severance and cutting services. Its services cover three main areas of operation: rig moves; vessel-acquired surveys; and field development and construction support. In-house-designed navigation and positioning hardware solutions complement these services and provide better efficiency for clients.

InterMoor specializes in the inspection, automated testing and certification of mooring chain and the repair or upgrade of heavy-duty mooring systems. The company operates a fleet of ChainCo chain inspection units. These inspection and repair units enable studs to be pressed and replaced. With locations in the U.S., West Africa, Brazil, U.K., Southeast Asia, Norway and Mexico, InterMoor has performed over 2,500 rig moves worldwide and has completed preset mooring campaigns in 10 countries.

Tom Fulton, President

The company has also executed eight different permanent preset mooring projects. InterMoor is the current record holder of conventional drilling rig mooring installation and has achieved many industry firsts.

ROVs for Most Any Need

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

Testing Facilities
A 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 trialing.
Number of Employees: 125
Annual Sales (US$): $40 million

Saab Seaeye's entrant in the Workclass ROV segment.

Saab Seaeye, founded in 1986, manufactures electric ROV systems and has supplied approximately 60% of the world's electric ROV systems operating in the offshore energy market. Accredited to DNV ISO 9001, Saab Seaeye supplies the oil and gas industry, defense forces, marine science and hydro-engineering. The company is represented and supported in 28 countries around the world. Saab Seaeye's parent company, Saab Underwater Systems, specializes in sensor systems, precision engagement systems, and remotely operated and autonomous underwater vehicles. In June 2011, Saab transferred the underwater defense division, Saab Underwater Systems, to Saab Seaeye's UK operations. This also introduces to the oil and gas operations, autonomous unmanned vehicle (AUV) technology adapted from the defense sector. More than 500 ROV systems have been sold by the company. These are fitted with a range of standard and custom-designed tools that include: 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.

Technology Profile: Saab Seaeye produces a wide range of ROVs, listed below. In addition, the company has made advancements in ROV design, e.g. fitting their ROVs' tether management systems with thrusters to prevent entanglement. Saab has also developed Intelligent Control of Nodes (iCON): a system developed to allow ROVs report on their status to a central control system.

Saab's Product Range:

- **Falcon** - portable ROV for rapid deployment. Rated 300 and 1000m.
- **Tiger** - standard observation ROV. Rated 1000m
- **Lynx** - larger than the Tiger, with one additional vertical thrusters. Rated 1500m
- **Cougar XT** - compact observation package with under-slung skid with dual five function manipulators. Four vectored horizontal thrusters and two vertical thrusters. Rated 2000m
- **Cougar XTi** - new ROV with self-diagnostics and modular control system. Rated 3000m
- **Panther XT** - large ROV for work and survey tasks. Rated 1500m
- **Panther XT Plus** - large ROV designed to carry one 4/5 function grabber and one seven function position feedback manipulator arm that challenges hydraulic work ROV systems. Ideal for high current shallow water work tasks. Rated 1000m
- **Jaguar** - the largest in the range: an electric work-class ROV with full redundancy. Rated to 3000m.
- **Sabertooth** – a deep water hybrid AUV/ROV, ideal for autonomous inspection and maintenance of subsea installations, as well as offshore survey work.

InterMoor also opened the first permanent polyester mooring production facility outside of Brazil in 2003 and developed the first in-line passive subsea heave compensation system in 2004.

InterMoor's experience in foundations includes the completion of 35 suction pile projects to date including design and installation of piles for the GoM, West Africa, Southeast Asia and Brazil. In the subsea sector, it has executed tree, jumper, manifold, template and conductor installations in up to 6,300 ft of water using heave compensation systems. InterMoor has also performed platform recoveries and has made over 500 subsea cuts of conductors and piles.

InterMoor maintains a 24-acre state of the art fabrication facility in Morgan City, Louisiana for the fabrication of mooring components, installation equipment and other oilfield hardware. Amenities include more than 30,000-sq-ft of fabrication space; mooring storage capabilities; and a state-of-the-art 20,000-sq-ft blasting and painting facility.

OceanWorks International Corporation

#120-6741 Cariboo Rd., Burnaby, V3N 4A3, BC, Canada
Tel: (604) 415-0088
Email: info@oceanworks.com
Website: www.oceanworks.com
CEO/President: Rod Stanley
COO: Glen Viau
Vice President: Jim English
Commercial Manager: Derek White
Engineering Director: David Lo
Testing capabilities: hydrostatic test tanks (pressure chambers), manned and unmanned; thermal stress testing; oxygen cleanliness testing; high voltage power testing; custom testing, jigs and fixtures.
Number of Employees: 96

OceanWorks International Inc. is a privately held subsea technology company that specializes in manned and unmanned subsea work systems, fabrication services and equipment for international marine industries, including the Oil & Gas, International Military, Scientific, Telecom, Marine Salvage and Construction, and Renewable Energy markets. The company offers subsea system engineering, design, analysis, fabrication, testing and project management services. OceanWorks personnel have been at the cutting edge of deep subsea intervention and diving technology, operations and support for over 30 years.

Technology Profile

OceanWorks' product lines include atmospheric diving systems, submarine rescue systems, ROV Intervention Tooling, custom subsea equipment, launch and recovery systems, and ocean floor cabled networks. Services include custom subsea fabrication, build to print services and FAT/SAT services for subsea equipment.

ORE Offshore

4 Little Brook Road, West Wareham, MA 02576
Tel: (508) 291-0960
Email: sales@ore.com • Web: www.ore.com

ORE Offshore is based in West Wareham, Mass., and shares facilities with EdgeTech, an affiliate company. ORE Offshore was founded in 1961 with an original focus on subsurface flotation and acoustically released anchors for oceanographic moorings. The company has expanded, and currently manufactures high accuracy acoustic positioning, communication and control systems. ORE has two main product lines: Underwater Navigation & Positioning (USBL) and Acoustic Communication & Control. With an acoustic calibration tank and pressure test capabilities, ORE Offshore can test and calibrate all of its own equipment. The company also owns the RV Ocean Researcher.

Outland Technology Inc.

38190 Commercial Ct., Slidell, Louisiana 70458
Tel: (985) 847-1104
President/V.P.: Charles Daussin (chuck@outlandtech.com)
Sect./Treas.: George (Buddy) Mayfield
Testing Capabilities:
1) Pressure test facilities, 10" ID x 36" long test tank. 1000 meter rated.
2) Wet tank, 10' dia. x 4 ' deep.
Number of Employees: 7
Annual Sales (USD): $2.6 million

Outland Technology Inc. was established in Gretna, La., in 1984. From inception, the company's goal has been to design and manufacture video and audio products using high volume components. In October 1996, Outland moved into its 6,000 sq. ft. building in Slidell, La. The building has since doubled in size as the company has expanded. Electrical and mechanical assembly, product testing, repairs, and product shipments all take place at the company's Gulf of Mexico headquarters. Outland's design engineering staff has a combined 60 years of electronics and undersea experience, and it primarily serves the marine, military and industrial markets. For several years, Outland also offers 600 line resolution cameras, video overlay boards, and ROV control boards, and is in the process of developing HD cameras.

LYYN AB

Ideon Sciense Park, Lund, Sweden 22370
Tel: +46462865790
E-Mail: info@lyyn.com
Website: www.lyyn.com
President/CEO: Bengt Sahlberg
Marketing Director: Fredrik Beckman
Engineering Director: Anders Holm
Number of Employees: 5
Annual Sales (USD) $1 million

LYYN is a Swedish image technology company founded in 2003. Its products and services, based on its Visibility Enhancement Technology (VET) platform, can be applied to both still and video images from most

Remote Ocean Systems (ROS)

5618 Copley Drive
San Diego, CA 92111 USA
Tel: (858) 565-8500
Fax: (858) 565-8808
Email: sales@rosys.com
Website: www.rosys.com
CEO/President: Robert Acks
Square Footage: 28,000 ft²
Testing Capabilities: 20k PSI Pressure Chamber, Temperature Chambers, Computer Simulation
Number of Employees: 45
Annual Sales (US$): $12M

Remote Ocean Systems (ROS), founded in 1975, develops, designs and manufactures inspection and lighting systems for the most severe offshore, oceanographic, industrial and military applications. Its product line includes underwater video cameras, lights, pan and tilts and control systems.
ROS' Quality Management System complies with ISO 9001 with a commitment to ensure customer satisfaction and continuous improvement. ROS' headquarters, design and manufacturing facility is located in San Diego, CA.

Technology Profile

The MANTIS-HD Camera is the latest ROS innovation in High Definition Color Zoom Cameras, offering an 86° field of view underwater. The MANTIS-HD delivers 1080i and 720P resolution with a 10:1 zoom capability and is certified to 4000 meters. The system includes two MV-LED High Intensity Spotlights with PT-25 Heavy-duty Pan and Tilt with 45 lb./ft. of output torque capability. ROS has also developed a line of compact, high intensity LED lights. The ROS Q-LED product line was designed to operate on AC power, enabling "plug and play" upgrades.

color cameras. VET products were designed to improve visibility in fog, haze, snow, rain, dust, and darkness, and are suitable for underwater and medical applications. The company maintains a presence in over 50 countries and has delivered more than 100 systems to date.

PCCI, Inc.
300 North Lee Street, Suite 201
Alexandria, VA 22314-2640
Tel: (703) 684-2060
Website: www.pccii.com
President: Bob Urban
Vice President: Frank Marcinkowski
Marketing Director: Tom Hudon
Engineering Director: Tony Kupersmith
Facility: Offices, meeting rooms, library space, CAD equipment, networked computers, repro and graphics equipment
Square Footage: 6,600 sq ft
Number of Employees: 52
Annual Sales: $21,500,000

PCCI, Inc. is a marine and environmental engineering firm established in 1977. The company has experience in marine emergency operations involving oil and hazardous substance issues, salvage and safety engineering, Incident Command System (ICS) management, ocean facilities engineering, and naval architecture. The company also manages the installation of moorings, underwater instrument arrays, submarine cables, hyperbaric facilities, and waterfront structures.

PCCI analyzes, designs, and installs both temporary and permanent moorings for ocean platforms, from simple buoys to large floating bases. The company uses the OPTIMOOR and ORCAFLEX programs to analyze platform motions and mooring leg loads.

PCCI engineers conduct finite element model analyses of Underwater Ship Husbandry (UWSH) cofferdams, analyzing weight handling systems, providing operational procedures development services, and developing logistics support requirements for UWSH operations and activities.

The company's salvage engineers and naval architects use the HEC Salvage Engineering (HECSALV) program, often coupled with ORCAFLEX, to analyze and design open ocean salvage lift systems, taking into consideration the dynamic response of the object being lifted. HECSALV is also used for damaged vessel analysis to obtain estimates of projected oil outflow, tidal and weather effects, and damaged hull girder strength and deflections.

Keeping Connected with BIRNS

BIRNS
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Oxnard, CA 93033
Tel: 805-487-5393
Fax: 805-487-0427
Email: abrown@birns.com
www.birns.com
CEO: Eric Birns
Director of Corporate Communications: Amy Brown
QA Manager: Steve Hollinger
Engineering Mgr.: Jeff Kirby
Production Mgr. : Keith Gear
Facility: Manufacturing/Design
Square Footage: 11,400

Testing Capabilities
BIRNS has a state-of-the-art, high performance hydrostatic pressure testing system, with a range of vessels rated to 20,000, 10,000, 5,000 and 1,000 psi. The system also has a robust, high volume helium testing capability, exceeding stringent ABS/DNV requirements for man-rated penetrator testing.
BIRNS serves as an independent testing resource for the industry, and provides electrical testing (to 10kV) and hydrostatic pressure testing (to 20,000psi) per MIL-STD-1344, triple optical loss testing and custom tests like mechanical pull testing (to 16,000 lbs.) in straight or side loading and numerous test per UL requirements. BIRNS also performs tests for a wide range of underwater lighting products, including qualification to rated depth, continuity, leak, burn and pressure testing.
Number of Employees: 25

BIRNS, Inc. is an ISO 9001:2008-certified designer and manufacturer of high performance lights, connectors, penetrators and custom cable assemblies for the planet's most demanding environments—from deep ocean, commercial diving and marine applications to military programs and nuclear power facilities.

The company has been innovating underwater technology since 1954, delivering a wide range of unparalleled, technologically advanced products proven to perform in rigorous applications.

Its products began **lighting the way to new depths of subsea exploration during the original Sealab projects**, and today continue to be relied on worldwide.

Technology Profile: In 2011, BIRNS received ABS Product Design Assessment Certification for its lines of penetrators. Thus, ABS pre-approved all design, drawing and test procedures for BIRNS electrical penetrators and cable assemblies for underwater vehicles, systems and hyperbaric facilities for use on a variety of ABS-class vessels. BIRNS offers a range of high performance connectors lines, including the BIRNS Millennium series. These high-density metal shell connectors come standard with a high open faced pressure rating to 6km and have options from high and low voltage combinations, electro-coax and electro-mechanical configurations, to single fiber and complex electro optical hybrid configurations with the lowest losses in the industry (<1dB), in accordance with ANSI/TIA/EIA-455 for fiber optic return loss test procedures. The Millennium series has features such as high contact density for maximized payload efficacy, replaceable inserts that permit the use of 22, 20, 16, 14, 12 and 10 AWG contacts all in the same connector. BIRNS also provides state-of-the-art in house testing, electrical, optical and mechanical termination and assembly molding and overmolding.

This year the company launched the BIRNS Aurora, a 14,000 lumen Light Emitting Plasma (LEP) deep submergence vehicle light, and enhanced options to its popular "L" series of LED lights, including the new BIRNS Aquila and the new BIRNS Doubly-Safe Chamber Light, both with brilliant 50,000 hour lamp lives.

CEO Eric Birns' company has a long and distinguished history, dating to the 1950s, serving the subsea industry's needs.

Pharos Offshore Group Ltd.

Netherton Harthill, Shotts, ML7 5TT Scotland
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Website: www.pharosoffshoregroup.com
President/CEO: Phil Walker
Engineering Director: Don Lasser
Facility: Operations, Production
Number of Employees: 85+

Pharos Offshore Group is a specialty marine contractor. Since 2003, the company's personnel arm, DF Hydraulic Consultants Ltd., has provided unmanned services in extreme underwater environments.

Pharos Offshore Group's employees and contractors have been directly involved with over 750,000km of telecoms cable installation and burial. The company has also performed over 6,000km of 3-meter burial, in addition to Post-Lay Inspection and Burial (BLIB), Pre-Lay Grapnel Run (PLGR) route clearance, mobilization and vessel modification.

Pharos Offshore Group has developed a multi-functional Inter-Turbine Array Trencher system. The ITAT is an 800 HP (600kW) cable trenching Remotely Operated Vehicle (ROV) system. This tracked ROV, with up to 3-meter burial capacity, is specifically designed for the offshore wind farm trenching market. Another system, the MENTOR 800, provides the ITAT's powerful jetting capability to depths up to 3000m for deeper cable and O&G pipeline work.

Rockland Scientific Inc.

520 Dupplin Road, Victoria, B.C. V8Z 1C1
Tel: (250) 370-1688
www.rocklandscientific.com
info@rocklandscientific.com
President: Dr. Rolf Lueck
Vice President: Dr. Fabian Wolk
VP Engineering: Mr. Peter Stern

Testing Capabilities: Calibration facility for

- turbulence velocity shear probes
- pressure calibration to 0.1% accuracy
- temperature calibration to 0.005 degC
- conductivity calibration to 0.005 mS/cm
- pressure testing facility for small sensors to 600 bar

Rockland Scientific was founded in Victoria in 2005. Co-founders Dr. Rolf Lueck (President) and Fabian Wolk (VP), both oceanographers, collaborated at UVic in the mid-90s and have translated their academic careers into a business that supplies researchers and ocean industry with tools for the study of ocean turbulence. Today, RSI is a manufacturer of instrumentation for the measurement marine turbulence. RSI operates worldwide and has delivered measurement systems and high-accuracy sensors to universities, research institutes and navies in 14 countries. Recently, RSI has formed a partnership with JFE Advantech, a major oceanographic instrumentation manufacture in Japan. The agreement involves technology transfer, manufacturing licensing, distribution, and joint development of new sensor technology.

Technology Profile

Rockland Scientific offers turbulence measurement systems and sensors for operation in the upper ocean and down to 6000 m. **The product lineup falls into three major categories: vertical profiling instruments; modular sensor packages for deployments on AUV, gliders and other autonomous platforms; and customized measurement solutions for science, engineering, and security applications.**

The vertical profilers come in a variety of sizes that can be deployed in a range of environments, from lakes and coastal zones to deep ocean areas. The flag-ship profiler is the VMP-6000 profiler, a completely autonomous profiling robot designed to probe turbulence levels in the deep ocean down to depths of 6000 m. The modular MicroRider system is used on AUV platforms such as Hydroid's Remus 100, 600 and 6000 AUVs. The most versatile application of the MicroRider is the integration with the Teledyne Webb Slocum glider, which makes it possible to conduct turbulence measurements autonomously for many weeks.

Customized solutions include various towed configuration of turbulence sensors, as well as moored systems for long-term studies in a fixed location. Current R&D initiatives focus on the integration of RSI's turbulence sensor technology into autonomous profiling floats (ARGO floats) for long-term monitoring and surveillance of oceanic turbulence and mixing.

Planet Ocean Ltd

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Bracebridge, Camberley, Surrey GU15 3DP UK
Tel: +44 (0) 845 108 1457
Website: www.planet-ocean.co.uk
Commercial Manager: Graham Sloane • Employees: 5

Planet Ocean provides marine scientific instruments for research, survey and operations support. The company specializes in data and directional wave buoys; sensors for nitrate, phosphate, radiance, irradiance, fluorometery, plankton and ice keel; flow cytometers; miniature data loggers; acoustic data modems; mooring and asset tracking beacons; mooring recovery systems; and smart hydrophones.

Hydroid, Inc

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URL: www.hydroid.com

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Phone: +44 (0) 2380-682-388

President/CEO: Christopher von Alt
Hydrographic Sales Manager: Rick Morton
Sales Engineer: Ernest Petzrick
Director, Hydroid Europe: Graham Lester

Facilities:
Testing Capabilities: Test Tank/Boat
Number of Employees: 70

Hydroid manufactures Autonomous Underwater Vehicles (AUV). In 1995, the REMUS (Remote Environmental Monitoring Units) AUV was invented, and Hydroid was subsequently founded in 2001. Hydroid's REMUS vehicles are used in military, academic and commercial ventures around the world. Hydroid holds the exclusive license from the Woods Hole Oceanographic Institution for the manufacture and further development of all REMUS Autonomous Underwater Vehicle technology. In June 2008, Hydroid was acquired by Kongsberg Gruppen ASA, and is now part of a larger company that offers a full complement of AUVs, for operations in any water depth that includes the REMUS and HUGIN family of customizable autonomous underwater vehicles.

Hydroid continues to invest private funds in the development of AUV technology and has significantly increased the capabilities of these systems over the past nine years. These underwater systems have been used to aid in hydrographic surveys, harbor security operations, debris field mapping, mine countermeasures, scientific sampling and mapping, and deep sea exploration. The company now boasts over 200 AUV system sales to a variety of domestic and international customers in nearly 30 nations.

Technology Profile

From the coastline to the deepest corners of the ocean, Hydroid, Inc. offers three autonomous underwater vehicles: the lightweight REMUS 100; the REMUS 600; and the REMUS 6000 for deep-water. STANDARD SENSORS: Acoustic Doppler Current Profiling (ADCP); Doppler Velocity Log (DVL); Long Baseline Navigation (LBL); Dead Reckoning Accuracies; Sidescan Sonar; Conductivity and Temperature; Depth; Bathymetry; Heading, Roll & Pitch; Sound Speed; Mission Progress; System Status; Multi-Vehicle Capability.

• **ENVIRONMENTAL SENSORS**: ECO sensors; Dissolved Oxygen; pH; ORP

• **COMMUNICATIONS**: Acoustic Communications (Low and High Frequency Options available); Iridium; WiFi; Gateway Buoy

• **IMAGING**: Dynamically focused Sidescan Sonar; Interferrometric Multi-Beam; Multi-Beam Echosounder (MBES); Dual Frequency Sidescan Sonar; Synthetic Aperture Sonar (SAS); Video Camera; Electronics Still Camera (ESC) and with 200 watt-sec Strobe Lighting; Sub-Bottom Profiler (SBP)

• **NAVIGATION**: Global Positioning System (GPS); Digital Ultra Short Baseline (DUSBL); Inertial Navigation System (INS)

• **SOFTWARE**: 32-Bit Vehicle Interface Program (VIP); Trackpoint Capability; RECON software (remote control capability)

• **SHIPBOARD DEVICES**: Shipboard Communications Console; Shipboard Communications Mast; Power Box with Battery Charger; Antenna Box (GPS, Iridium, WiFi and optional Freewave); Acoustic Communications Bottle; Ranger Deck Box; Towfish; Acoustic Transponders

RESON A/S

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

Training 2011: An increase in demand for training and boat demonstration of multibeam echosounders as well as software related to multibeam data acquisition and processing inspired RESON to host two conferences during autumn 2011. One user conference in Jersey City, USA, the RESON user conference 2011 and in Valencia, Spain, RESON Academy '11

Both conferences will contain basic and advanced training within sonar techniques, there will be on-boat demos and industry partners will present papers on the newest technologies.

MacArtney Underwater Technology Group

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Steen Worsøe, Technical Director
Morten Helsinghoff, Financial Director
Lars Andersen, Financial Manager
Marco MacArtney, Sales & Marketing Director
Kurt Lund, Sales Manager - Connectors & Cables
Hans-Jørgen Hansen, Sales Manager - Ocean Science
Klaus Brix, Sales Manager - Launch & Recovery

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MacArtney has a network of testing facilities available at workshops in Europe and in the US. In-house facilities include large, full-ocean depth, computer-controlled pressure test vessels; an 8x3x3 meter test tank; and a cable tension rig. Some sites offer portable testing facilities, performing a range of tests on site. All testing procedures are documented under a DnV certified ISO 9001 QA system.
Number of Employees: about 200

Company Profile

The MacArtney Underwater Technology Group supplies underwater technology and specializes in the design, manufacture, sales and service of systems for 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 its head office in Denmark, the company has provided logistical, technical, financial and marketing support to all companies within the group since 1978.

Technology Profile

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. MacArtney supply includes cable and connector systems, fiber optic telemetry systems, and complete launch and recovery systems, including active heave compensation winches and electrical work class winches. Its range of oceanographic equipment includes the MacArtney FOCUS-2 and TRIAXUS vehicles.

Teledyne RDI debuts V ADCP

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E-mail: rdisales@teledyne.com
Website: www.rdinstruments.com
General Manager: William Kikendall
Vice President Sales/Marketing: Harry Maxfield
Marketing Manager: Margo Newcombe
Sales Directors: Darryl Symonds, Marine Measurements; Omer Poroy, Navigation; Jim Rogers, Water Resources
Engineering Director: Ed Tyburski

Facilities:
Teledyne RD Instruments, Poway, CA
Teledyne RDI Europe, La Gaude, France
Teledyne RD Technologies, Shanghai, China

Square Footage (Poway, CA): 80,000 sq ft.
Testing capabilities: Test tank, company boat
Number of employees: 210

Teledyne RD Instruments unveiled its next-generation Acoustic Doppler Current Profiling — the new Sentinel V ADCP — product line in the UK.

Teledyne RD Instruments, Inc., located in San Diego, CA, specializes in the design and manufacture of underwater acoustic Doppler products for a wide array of current profiling and precision navigation applications.

Originally founded as RD Instruments, the company was formed in 1982 by Fran Rowe and Kent Deines as a result of their development of the industry's first Acoustic Doppler Current Profiler (ADCP), a revolutionary device capable of profiling currents at up to 128 individual points in the water column.

In August 2005, RD Instruments was purchased by Teledyne Technologies, and now operates as a wholly-owned indirect subsidiary of Teledyne Technologies, Inc. Upon acquisition, the company's name was changed to Teledyne RD Instruments.

Through the years, the company has continued to expand its core technology to create current profiling, wave measurement, CTD, and navigation products for environments ranging from shallow water estuaries to full ocean depth applications. Nearly 20,000 Doppler products have been delivered to date.

Technology Profile: Through market growth and product diversification, Teledyne RDI is now comprised of three distinct business units:

- *Marine Measurements:*

Acoustic Doppler Current Profiling (ADCP) and wave measurement products for coastal and deep water oceanographic environments. New technological advancements for this business unit include the next-generation V ADCP product line, Vector Software, and a fully renovated line of CTD (Conductivity, Temperature, and Depth) products.

- *Navigation:*

Doppler Velocity Logs (DVLs) for navigation on board AUVs, ROVs, and surface vessels around the world. New technological advancements for this business unit include export-friendly DVLs and the new long-range PAVS 150 DVL. This business unit also offers Diver Navigation and Mapping Systems that provide underwater navigation and mapping capabilities for commercial and naval diving operations.

- *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, and the ChannelMaster and Vertical-ADCPs for stationary applications. Advancements for this business unit include Section-by-Section Pro software and our new next-gen RiverRay ADCP.

PMI Industries, Inc.

5300 St. Clair Ave, Cleveland, OH 44103
Tel: (216) 881-4914
Email: sales@pmiind.com
Website: www.pmiind.com
President: Robert J. Schauer
Marketing/ Sales Director: William E. Green
Engineering Director: Jay C. Marino
Square Footage: 32,000
Number of Employees: 25

PMI Industries, Inc. designs, manufactures and tests solutions to underwater cable, wire rope & tension member application problems. PMI provides cable systems and hardware to the military, commercial and scientific communities.

PMI employs techniques such as the helical gripping concept for holding tensile members, isostatic sealing for water-tight integrity, and cable electrical core isolation from strain for long cable life. A myriad of terminations and protection products have been designed for use on Electro-Optical-Mechanical cables, rope and hose assemblies, while incorporating electrical and optical connectors into the final assembly.

Technology Profile:

EVERGRIP Termination, the benchmark product of PMI, is a full-strength, field installable termination. Designed to hold 100 percent of the cable's rated breaking strength, it protects against fatigue of the cable system under severe dynamic conditions. The cable or wire rope extends through the termination intact without cutting or modification of the cable; no cable preparation, special training, or tools are required to install it. Other, mid-span-terminations, like the Dyna-Hanger

EVERGRIP Termination

Suspension System, are designed to offer both bend protection and strain relief.

In addition to the standard line of products and custom engineering, PMI's test facility simulates at-sea environmental conditions. From raw cable, hardware or termination devices to a full-length cable assembly, the laboratory can perform tests such as; tension, hydrostatic pressure, bend-over-shave and many more to the customer requirement. PMI also performs design verification and acceptance testing.

PDM Neptec Limited

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Website: www.pdmneptec.com
Managing Director/CEO: Ian Doble
UK Sales Manager: Gary Kelly
European Sales Manager: Anders Hill
Applications & Engineering Manager: Dave Nicholson
Production Manager: Graeme McGhee
Quality Manager: Roy Mepham
Employees: 40
Testing Capabilities:
PDM's in-house testing facilities include tensile testing, pressure testing, and a 3.8-meter oven used for temperature cycling and annealing. All testing procedures carried out in-house are documented under the British Standards Institution ISO 9001:2008 quality management system. There is also a clean electrostatic area in a stand-alone secure unit, which is ideal for electronic assembly and molding. More extensive testing and qualification is available from PDM's ongoing relationships with universities and research establishments.

PDM NEPTEC
Engineering for the underwater environment

PDM Neptec Ltd was formed over 25 years ago as an exclusive distributor for off-the-shelf Teledyne Impulse underwater connectors and cable assemblies. Today, the company boasts five full-time design engineers with a combined total of 135 years of design and manufacturing experience in underwater engineering, atmospheric diving, ROVs, deep sea photographic camera systems, bespoke housings for video cameras and instrumentation, and oceanographic sampling equipment (not to mention knowledge of hydraulics, pneumatics and injection molding). PDM's products are used in harsh conditions in the military, oil and gas, marine, nuclear, renewable energy, ROVs, AUVs, oceanographic, geophysical, and scientific industries.

Technology Profile

PDM has built anti-cathodic delamination products for the Canadian Navy submarine fleet; tested cable assemblies for power and signal transmission for Euro Fighter ground test equipment; and designed and manufactured a harness assembly system for the MoD's Surface Ship Torpedo Defense System. PDM has also developed electrical and high voltage connectors, water blocked penetrators, encapsulated sensors and transducers, instrumentation housings, cable bend control devices, Quickcure Moulding Systems for off-site cable repairs, and remote encapsulated displays for re-breather diving equipment. The company produces the Omega range of hybrid electro-optic connectors and the Omicron fibre optic subsea connector.

Current projects include subsea riser encapsulation for the Oil and Gas industry; panel wiring and encapsulation for navigation buoy control boxes; electronic assembly of ROV thrusters; full cycle temperature, pressure and tensile testing of cable assemblies for Oil and Gas pipelines; and anti-corrosion connectors for MoD applications.

ROMOR Ocean Solutions

10-51 Raddall Ave., Dartmouth, NS Canada B3B1T6
Tel: (902) 466-7000
E-Mail: sales@romor.ca
Website: www.romoroceansolutions.com
President/CEO: Darrin Verge
Sales & Marketing: Matthew Davis
C-ROM & Mooring Design: Murray Scotney
Engineering Director: Blaine Carr
Facility: Complete office and warehouse/technical work shop
Square Footage: 4800
Testing Capabilities (ie. test tanks, boats, pressure chambers): shallow test tank, testing, maintenance and calibration facility, cable moulding & splicing.
Number of Employees: 8
Annual Sales (USD) $2.6 million

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 also offers custom training procedures on instrumentation operation and maintenance. ROMOR's services include project mobilization and management, mooring design and oceanographic deployment services, hydrographic and geophysical survey support services, custom instrumentation and integration engineering, ocean instrumentation and technology consultation, sales and leasing, training and demonstration, and new product development and manufacturing.

The ROMOR C-ROM is an oceanographic subsurface mooring solution. The C-ROM and C-ROM Plus units consist of a subsurface flotation collar designed to provide approximately 80-105 lbs positive buoyancy for use in a seawater environments for depths up to 750m. The flotation collar encloses an acoustic release as well as the instrument. As an option for both the C-ROM and C-ROM Plus packages, a Roto Drum can be fitted to the system to enable recovery of the mooring anchor once the mooring has been released and surfaced.

Rutter Inc.

63 Thorburn Road
St. John's, Newfoundland and Labrador, Canada A1B 3M2
Tel: (709) 576-6666
Email: sales@rutter.ca
URL: www.rutter.ca
President/CEO: Fraser Edison
President, Business Development and Innovation: Byron Dawe
Director of Business Development: Gary Lovell
Director of R&D Department: Alan Tremblay
Number of Employees: Approximately 100
Annual Sales (FY 2010): $40,276,719

Rutter Technologies was founded in 1998 and is a division of Rutter Inc. Rutter's products include high-resolution radar processing and recording technology, radar systems, marine certified interfaces, tactical data recorders (TDR), and digital audio and video recording modules.

In addition to offering its own product lines, Rutter also offers ISO 9001 certified electronics manufacturing solutions on an outsource basis to civilian and military customers.

To date, Rutter is one of only two companies in the world having met the NOFO (Norwegian Clean Seas Association for Operating Companies) compliance standard for oil spill radar detection requirements.

Rutter's Sigma S6 Oil Spill Response system is designed to detect small quantities of surface oil, estimate and outline the size of the slick, and predict the trajectory of the spill.

Scubacraft Ltd

Caer Mynach
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E-Mail: info@scubacraft.com
CEO: Robin Harris
Marketing Director: James Browne
Website: www.scubacraft.com

Incorporated in 2010, Scubacraft Ltd was formed to take advantage of the identified market demand for a new range of submersible watercraft that make the underwater world more accessible. Initially aimed at the private leisure market, the company is also penetrating commercial markets where there are substantial operational benefits. Scubacraft's patented buoyancy technology was designed to allow the watercraft to transform from a high performance surface craft into a streamlined submersible with none of the normally associated cost and complexity of transporting people underwater. The patented, scalable technology was developed to be highly efficient, lightweight and robust. Scubacraft is launching the Scubacraft SC3 initially and is planning to develop the Volt concept, a zero-emission, all-electric variant.

Founded by Marty Klein in a small factory in Salem, NH in 1968, Klein Associates became the first commercial manufacturer of side scan sonar.
L-3 Klein Associates has expanded its product offerings to include integrated bridge systems, navigation products and waterside security and surveillance systems. Its customers include navies, shipbuilders, secure installations, researchers, oil & gas explorers, and hydrographers.
L-3 Klein is still headquartered in Salem, but has a second remote field service site in Newport News, VA. The Salem location is a design and manufacturing facility of approximately 56,000 square feet located about 30 miles Northwest of Boston. A Department of Defense Secret facility clearance operating in compliance with the National Industrial Security Operating Manual (NISPOM) is in place at this facility. It contains two sonar test tanks – the largest of which contains approximately 16,000 cubic feet of water – a temperature- and humidity-controlled transducer laboratory, and digital design and manufacturing equipment.
L-3 Klein engineers specialize in the design and development of acoustic systems capable of operating in extreme marine environments. L-3 Klein engineers make use of a variety of engineering tools and systems to design, test, verify, and analyze acoustic systems. These tools include mechanical CAD packages such as Solidworks and AutoCad and finite element analysis (FEA) applications such as COSMOS and Flow Works to design and analyze mechanical structures and assemblies. Electrical design tools such as Orcad and PADS are used for schematic capture and module layout, while embedded hardware description language simulation and analysis is done using ModelSim. For data analysis and numerical simulation the engineers use tools such as MatLab, MathCad, and Mathematica. The engineering organization also makes regular use of two on-site acoustic test facilities, which allow for test, measurement, and verification of various acoustic design parameters. There are also two pressure test vessels on the premises that allow for testing mechanical structures and transducers to their full operational depth.

L-3 Klein Associates

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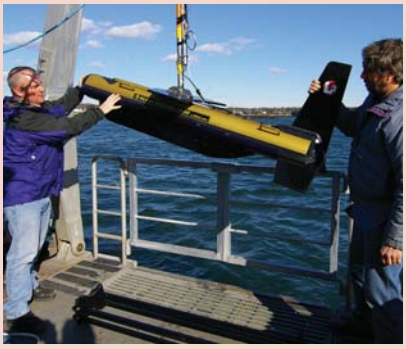
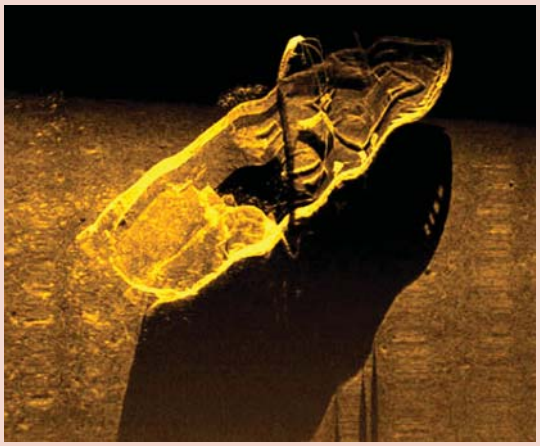
President: John Cotumaccio
V.P. Business Development: Michael J. Mitchell
V.P.Engineering: Marc Parent
Marketing & Sales: Deborah Durgin



Technology Profile: The UUV 3500 was developed as a side scan sonar with an advanced bathymetry payload for the growing Autonomous Underwater Vehicle (AUV), Remotely Operated Underwater Vehicle (ROV) and UUV markets. L-3's UUV 3500 product line leverages multi-channel processing electronics, offering both photo-quality side scan imagery and swath bathymetry. In addition, the new system utilizes L-3 Klein's proprietary wideband technology while operating at lower power. In 2010, L-3 Klien's product lineup also included the Klein 3000, the Klein 3900 SAR, the Multi-beam Klein 5000 V2 (available with interferometric bathymetry), and the Klein 5900 minehunting SSS. This year, the company introduced the HydroChart 5000 hydrography system, which combines high-resolution 455 kHz Multibeam side scan sonar with high-definition Interferometric bathymetry sonar. The HydroChart 5000 utilizes a phase difference measurement technique and Linear FM (Chirp) processing to produce data sets for the hydrographic industry. The system was designed to reduce survey times, and may be hull mounted or pole mounted.



Bluefin: AUV Redefined

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Email: info@bluefinrobotics.com
www.bluefinrobotics.com
President/CEO: David P. Kelly
Marketing Director/Sales Manager: Michael C. Donovan
Engineering Director: Louis Quartararo

Facility
Bluefin's headquarters is a 55,000 square-foot facility in Quincy, Massachusetts with direct ocean access. The newly-renovated building houses all engineering, manufacturing, marine operations, and administrative functions.

Testing Capabilities
Three saltwater test tanks, pressure chamber, machine shop, 58-foot workboat, RHIB for shallow-water and case-boat support, knuckle-boom crane rated for 1-ton at 10-meter.

Bluefin Robotics develops, builds, and operates Autonomous Underwater Vehicles (AUVs), subsea batteries, and related technologies for defense, commercial, and scientific applications. The company was founded in 1997 by engineers from the Massachusetts Institute of Technology (MIT) AUV Laboratory, and in 2005 became a wholly-owned subsidiary of Battelle. Today, the company offers a full range of modular, free-flooded AUV platforms. Using a core set of building blocks, Bluefin has designed over 50 different configurations. This includes over 70 different sensors on over 80 AUVs.

Bluefin "strives to be a full AUV lifecycle provider" by offering research and development, technology integration, full-scale manufacturing, platform training, and operations support.

The company is headquartered in Quincy, Massachusetts in a 55,000-square-foot facility housing three floors of engineering, manufacturing, marine operations, and corporate administrative functions. With ample space for its equipment and direct ocean access, Bluefin is able to design, build and test its systems in a single location.

Technology Profile: Bluefin Robotics continuously advances the state of AUV technology through internal R&D funding as well as through several development contracts. Bluefin is redesigning the HAUV in response to a $30 million contract modification to exercise option III of the Explosive Ordnance Disposal Hull Unmanned Underwater Vehicle Localization Systems (HULS) production systems. In addition, a new variant of the HAUV (HAUV-N) is being designed to include a manipulator arm. The HAUV-N will provide a robotic ship hull mine and Improvised Explosive Device (IED) identification and neutralization capability for use in Joint Service Explosive Ordnance Disposal.

With regard to the other Bluefin platforms, the company now owns a Bluefin-21 with a survey sensor suite and a Bluefin-9 with sonar. Both are available for demonstrations. The Bluefin-12 is now available with a synthetic aperture sonar (SAS) and a line release nose designed for easier recovery.

This spring, Bluefin and MIT successfully demonstrated the Bluefin-9 running MOOS, the open-source backseat driver tool used to develop autonomy behaviors.

Other AUV platforms are also on Bluefin's horizon. The company recently won a subcontract from Ultra Electronics Ocean Systems to provide the mobility subsystem for the acoustic device countermeasure (ADC) MK 5 and is working with The Columbia Group and Battelle to develop Proteus, a large diameter Dual-Mode Underwater Vehicle that can be manned or run fully autonomously. Lastly, Bluefin is engaged in several battery projects focusing on using its standard 1.5 kWh subsea batteries as well as new, custom designs.

SEA CON

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President: Patrick G. Simar
Vice President: Denton Seilhan

With almost 45 years in the subsea industry, the SEA CON Group is a manufacturer of electrical, optical and hybrid subsea systems and connector solutions for the Oil & Gas, Defense, Oceanographic, and Renewable Energy markets. The company has stated that it aims to capitalize on gaps in each of these markets. For example, CON commitment to supported the use of fiber optics within the Oil & Gas industry through the development of dry-mate optical products, including the Mini-Con and Opti-Con connector series, the Hydralight connector, and the multi channel fiber optic G3 connector series. SEA CON also has several molding departments with a wide variety of composites/elastomers and an in-house glass-to-metal sealing facility.

SEA CON has extensive in-house testing capabilities that include electrical, optical, dimensional, pressure, shock, vibration, axial pull equipment. To support its products in the field, SEA CON provides 24/7 field service support.

SEA CON's product line includes the All Wet connector series, designed to allow the user to connect multiple individual instruments and lights into a single interface connection point. Another major product, the Metal Shell Series, allowed SEA CON to meet API-16D standards.

Ohmsett – The National Oil Spill Response Research & Renewable Energy Test Facility

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Website: www.ohmsett.com
CEO: Mike Norcio, MAR Inc.
Program Manager: Bill Schmidt, Ohmsett
BEOMRE Project Officer: Matthew Quinney
Marketing Specialist: Jane-Ellen Delgado
Testing Capabilities:
Outdoor saltwater wave/tow test tank and training facility

OHMSETT provides performance testing of full-scale oil spill response equipment and marine renewable energy systems (wave energy conversion devices), and is dedicated to improving technologies through research and development. **Ohmsett is the largest outdoor saltwater wave/tow tank facility in North America** and is the only facility where full-scale oil spill response equipment testing, research, and training can be conducted in a marine environment with oil under controlled environmental conditions (waves and oil types). With recent emphasis on developing renewable energy sources, Ohmsett's mission has expanded to offer a research and testing venue for wave energy conversion devices. The facility consists of a large outdoor above-ground concrete test tank measuring 667 x 65 x 8 feet deep filled with 2.6 million gallons of crystal clear salt water, conference rooms, maintenance/machine shop, chemistry laboratory, and offices.

Technology Profile

The Ohmsett 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. Many of today's commercial 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. 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 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 offerings 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.

Seafloor Systems, Inc

Address: 3941 Park Dr. Suite 20-218
El Dorado Hills, CA 95762 USA
Tel: (530) 677-1019
Email: Adam@ seafloorsystems.com
Website: Seafloorsystems.com
President/CEO: John Tamplin
Marketing Director: Adam Graniss
Sales Manager: Tim Tamplin
Facility: Warehouse and Engineering Lab
Square Footage: 2000 Sq Ft
Testing Capabilities: 500 Gal Acoustic Test Tank
Number of Employees: 8
Annual Sales (US$): $2m

Seafloor Systems, Inc. was formed in Portland, OR in 1999 by veteran Naval Hydrographer John Tamplin to provide hydrographic survey equipment and consulting to survey companies in the Pacific Northwest. Since then, Seafloor Systems has expanded its business to provide hydrographic survey equipment rental, sales, and manufacturing to geophysical and hydrographic survey companies worldwide. Seafloor Systems' offers custom hydrographic survey services include integrating multibeam echosounder systems and position and orientation systems. Seafloor is also the developer of the Hydrolite-TM and Sonarmite MILSpec portable survey systems, featuring all-digital, Bluetooth echosounder system for shallow water surveying and mapping.

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
Testing Capabilities: Video Testing Lab, Soak Test Tank, R/V High-Test 21' Center Console outfitted for surveys and deepsea deployments
Number of Employees: 14

SIDUS Solutions designs and manufactures subsea video cameras, lighting and robotic positioning devices for extreme environments. SIDUS also specializes in underwater systems including customized controllers and cabling. The engineering staff provides system integration, design, installation and commissioning of all remote video surveillance systems. 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. SIDUS' new products include a compact High Definition Color Camera (SS446), Very Low Light (.0003 Lux) Wide Angle Compact Monochrome Camera (SS408), 6,000m rated Rotators and Pan &Tilts, high power 6,000m rated lasers with multiple beam patterns and the Dam Inspection System with Depth Gauge.

Silicon Sensing Ltd

Clittaford Rd, Southway, Plymouth, Devon UK PL6 6DE
Tel: +44 (0) 1752 723 330
Email: andrew.derbyshire@ siliconsensing.com, stephen.clarke@ siliconsensing.com
Web: www.siliconsensing.com
Commercial Business Manager: Andrew Derbyshire
Senior Sales Engineer: Stephen Clarke
Number of Employees: 350

The Silicon Sensing joint venture company was established in 1999 to provide MEMS inertial sensors to the inertial sensing industry. Silicon Sensing has provided silicon MEMS gyros and inertial systems to a wide range of commercial markets, including the offshore industry, for over a decade. It has a formidable reputation in the automotive industry, supplying over 3 million ESC yaw rate sensors per year with warranty returns less than 1 part/million. Silicon Sensing' CRS09 solid-state gyro is suited for a range of underwater and surface requirements. The vibrating ring structure of Silicon Sensing Micro Electro-Mechanical System (MEMS) gyros was designed to offer low-noise navigation and attitude measurement in extreme conditions. This product is appropriate for orientation of remotely operated underwater vehicles; dynamic positioning of anchored drilling activities; stabilization and location of surveying and pipeline inspection equipment; structural monitoring and stabilization of surface platforms; and incorporation into severe environment attitude heading and reference systems (AHARS).

Cygnus Instruments, Inc.

PO Box 6417, Annapolis, MD 21401
Tel: (410) 267-9771
Email: sales@ cygnusinstruments.com
www.cygnusinstruments.com
President: Rod Sanders
Number of Employees: 6
Annual Sales: $1-5 Million

In 1983, Cygnus Instruments designed the world's first multiple echo ultrasonic thickness gauge. The gauge was designed by a marine surveyor who specialized in large oil carriers. These gauges were built to overcome the rigors of gauging at sea, where surfaces can be heavily corroded or coated with layers of paint or protective coatings. The gauges are designed to measure rough, corroded steel with minimal surface preparation. Cygnus also offers a handheld thickness gauge and a series of ROV mountable gauges for subsea inspection. Topside gauges are also available in configurations from hands-free operation to durable and data logging. Cygnus recently introduced two ROV Mountable Thickness

SeaBotix Inc.

2877 Historic Decatur Road, Suite 100
San Diego, CA 92106
Tel: (619) 450-4000
Email: info@seabotix.com
Website: www.seabotix.com
Donald Rodocker
Jesse Rodocker
Sean Newsome
Sheldon Rubin
Square Footage: 18,000
Testing capabilities: shallow water test/trim tank, hot/cold temperature test tank, multiple pressure test tanks, seawater harbor with dock
Number of Employees: 50
Annual Sales: $8.5 million

SeaBotix was founded in 2001 by Donald Rodocker with the goal of manufacturing small ROV systems. In 2011, the company was purchased by Bolt Technologies. Its range of MiniROV systems were designed to offer enhanced capability and integration with such systems as the first rescue system SARbot, LBC hull crawler and the vLBV: the first small, vectored platform with depth ratings to 4,000m.

Testing Systems. One unit has been pressure tested to 2,000 msw and the other (handed machined in stainless steel) to 4,000 msw for use on medium to Work Class ROV's. The gauges are fitted with a safety Pressure Relief Valve and a Securing Eye for added security. Thickness measurements can be viewed at the surface using CygLink software to display on a computer screen. The units were designed to offer user-selectable output data in either RS-232 or RS-422 without the need for a converter for use with multiplexers. There is a removable cover plate for full serviceability and mateable "MC" style underwater connectors. Cygnus also offer a stainless steel probe holder designed for use on Work Class ROV's.

SonTek/YSI

9940 Summers Ridge Road, San Diego, CA 92121
Tel: (858) 546-8327
E-Mail: inquiry@sontek.com
Website: www.sontek.com
President/CEO: Rick Omlor
Executive Vice President: Gayle Rominger
International Sales and Marketing Director: Chris Ward
Facility: San Diego Center of Excellence, Sorrento Valley
Number of Employees: 250

SonTek/YSI, founded in 1992, offers a wide variety of acoustic Doppler instrumentation. The company's instruments use sound waves to discern whether water is moving and, if so, where and how fast. Its customer base includes scientists, engineers, hydrologists, research associates, and water resource planners. SonTek products can be found in a university laboratory, in the deep ocean, along the coast, or in a river, lake, or stream. The company's staff of 250 includes experts in fluid dynamics, oceanography, hydrology, and all engineering disciplines.

SonTek's first product, the 10-MHz Acoustic Doppler Velocimeter (ADV), was developed in cooperation with the US Army Corps of Engineers' Waterways Experiment Station. Originally designed for laboratory use, the ADV is a single-point, high-resolution Doppler current meter used for detailed studies of 3D velocity fields. The ADV product line includes laboratory and field instruments with options for integrated sensors (temperature, pressure, compass/tilt) and autonomous operation.

The SonTek product line has expanded to include a wide range of current measurement instruments. The Acoustic Doppler Profiler (ADP) is a current profiler with profiling ranges of up to 200 m. Since its introduction in 1994, SonTek has refined current profiling and introduced the Pulse-Coherent ADP (PCADP) – one of the highest resolution acoustic Doppler current profilers available.

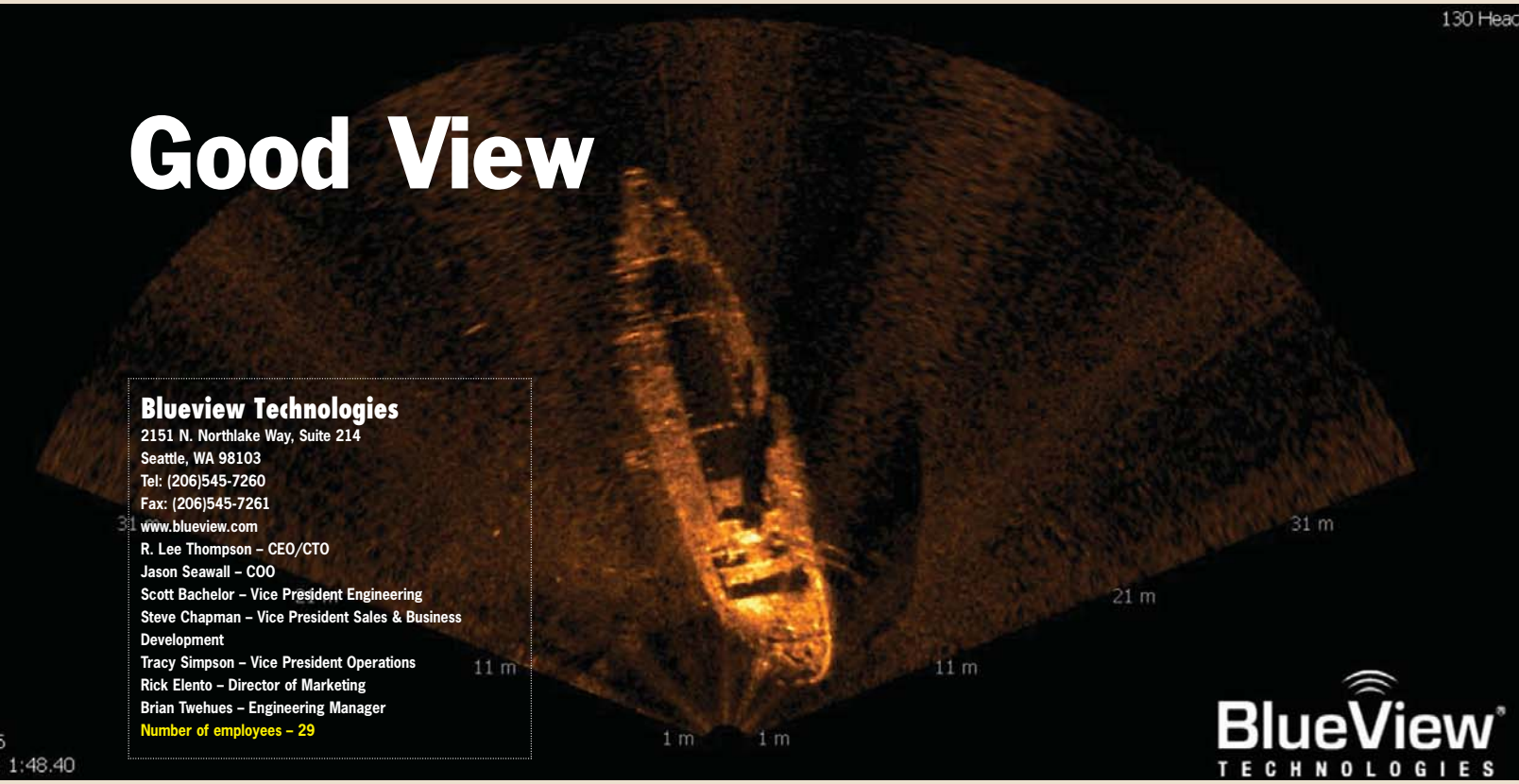
In 2009, SonTek launched the RiverSurveyor S5/M9.

Sparton Navigation & Exploration

5612 Johnson Lake Road, DeLeon Springs, FL 32130
Tel: (386) 985-4631
President/CEO: Cary Wood
Vice President: James Lackemacher
Engineering Director: David Bruderick
Number of Employees: 389
Annual Sales (US$): Approx. $200 million

Sparton has over 100 years of experience serving the electronics and electromechanical device industries. The company has five facilities throughout the U.S. and Vietnam. Sparton supports businesses of all types, but primarily deals with medical, defense and security, and navigation and exploration companies. Sparton has contributed to defense with its sonobuoy line of products, with over 6 million sold. The company is ISO registered, QSR compliant, and CAMCAS certified. Sparton produces a line of digital compasses for commercial and defense applications. The company also develops sensitive specialty hydrophones for general purpose underwater applications and marine seismic acquisition systems, such as oil and gas exploration and

Good View



Blueview Technologies
2151 N. Northlake Way, Suite 214
Seattle, WA 98103
Tel: (206)545-7260
Fax: (206)545-7261
www.blueview.com
R. Lee Thompson – CEO/CTO
Jason Seawall – COO
Scott Bachelor – Vice President Engineering
Steve Chapman – Vice President Sales & Business Development
Tracy Simpson – Vice President Operations
Rick Elento – Director of Marketing
Brian Twehues – Engineering Manager
Number of employees – 29

BlueView Technologies, Inc. is a provider of compact acoustic imaging and measurement solutions for navy, energy, civil engineering, transportation and port security applications worldwide. BlueView acoustic underwater vision solutions use a technology breakthrough 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 underwater vision solutions and customer-focused approach.

More than 500 BlueView commercial systems have been successfully deployed on micro and work-class ROV platforms, small to medium sized UUVs, diver hand-held units, boat mount systems and fixed surveillance platforms to fast become the new standard in multibeam imaging sonar. These systems have been delivered to offshore oil and gas groups around the world, over 25 major US port security groups, US and international navies, NOAA, global defense contractors, as well as universities for a wide range of underwater vision applications. In addition, many custom UUV systems have been deployed to provide integrated obstacle avoidance, automated homing, and 3D imaging capabilities on a variety of UUV platforms.

BlueView Technologies, Inc., is the leading provider of miniature multibeam imaging sonar. BlueView delivers acoustic underwater vision solutions using a technology breakthrough that provides high performance imaging sonar capabilities for the first time in compact, low power systems. 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, and at the direct request from multiple industry segments, BlueView has expanded its line of 2D imaging sonar with multiple field-of-view options, including a breakthrough 130° system.

In addition, BlueView has a line of 3D mechanical scanning systems that are a quantum leap forward in underwater 3D visualization and mapping. The BlueView 3D systems deliver accurate high-resolution imagery and data at levels akin to topographic 3D laser scanners establishing new standards in imaging and mapping underwater structures and areas. The first systems were delivered in early 2010 and are currently deployed in the oil and gas industry.

Since its founding, BlueView has worked closely with the US Navy to develop custom UUV systems for a variety of specific applications. Over a dozen custom UUV systems have been delivered to provide integrated obstacle avoidance, automated homing, and 3D imaging capabilities on a variety of UUV platforms.

sea floor mapping. Sparton designs are developed to operate well in harsh environments that include extreme temperature fluctuations, high shock, and humidity. **This fall, Sparton will be rolling out a new gyro-enhanced line of digital compass products.**

Think Sensor Research Inc.

555 St. Giles Road West, Vancouver , BC V7S1L7 Canada
Tel: (778) 895-2201
E-mail: info@thinksensor.com
Website: www.thinksensor.com
President: Pavel Haintz
Testing Capabilities: boat testing, sensor calibration

Think Sensor Research provides sensor products, assistance and support. The company's President and Founder, Pavel Haintz, is a seasoned engineering professional with more than 10 years' experience in the fields of robotics, control systems, sonar, target tracking, inertial sensors and signal processing algorithms. The TSR-100 Motion Reference Unit (MRU) is designed to measure pitch, roll, heading and heave in surface and underwater applications under static and dynamic conditions. Think Sensor Research's newest product, the TSR-500 Navigation System, is designed to interface an existing Doppler velocity log (DVL) to provide under water position for AUVs and ROVs. In addition, the TSR-300 Ice Tracker was developed to track ice flows in the Arctic with real-time satellite update of position, air temperature, ice temperature, barometric pressure and relative humidity.

Titanium Industries, Inc.

18 Green Pond Road, Rockaway, NJ 07866
Tel: (973) 983-1185
E-Mail: corp@titanium.com
Web: www.titanium.com
Chairman: James S. Paddock
President and CEO: Brett Paddock
VP and CFO: Joe Ferment
Vice President Sales & Marketing: Jeff Wise
Number of Employees: approximately 140

Titanium Industries, Inc. is a manufacturing distributor of titanium and nickel base alloy mill and specialty products. The company was established in 1972 as a titanium fabrica-

YSI Inc.

Danielle Dumont, Marketing Communications Manager
1725 Brannum Lane, Yellow Springs, Ohio 45387
Tel: (937) 767-7241
E-mail: environmental@ysi.com
Website: www.ysi.com
President/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: 380
Annual Sales (US$): $100 million

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. With locations around the world, YSI provides products, systems, solutions, and technical support to help managers monitor and protect water resources. The company's global headquarters, research and development lab, and largest manufacturing facility are in Yellow Springs, Ohio. Additional YSI sales and service facilities are in Massachusetts; California; Florida, Louisiana; Utah; Brazil; England; Spain; Japan; China; Arabian Peninsula; India; Hong Kong; and Australia.

Technology Profile

- **YSI SeaKeeper 1000** An underway sampling system for collecting and transmitting data from ships of opportunity. The system, when installed on ferries and sea-going freightliners, collects high-spatial resolution water quality and meteorology data for global reporting.
- **Floating Platforms** 6 newly redesigned floating platforms for continuous water monitoring and profiling. These environmental monitoring modules reduce integration work and are designed to make data collection and transmission more reliable. Works easily with YSI water quality sondes or third-party instruments.
- **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.
- **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.
- **EcoMapper AUV** An autonomous underwater vehicle which maps large areas of water, generating high-resolution data of water quality, bathymetry (using side-scan sonar), stratification, and velocity logs.

WFS Technologies

7, Houstoun Interchange Business Park
Livingston, Edinburgh, EH54 5BZ, United Kingdom
T: +44 (0) 845 862 1574
Email: info@wfs-tech.com
www.wfs-tech.com
CEO/Chairman: Brendan Hyland
Senior VP & General Manager, Subsea: Ian Crowther
Marketing Manager: Amanda Collins
No of employees: <25
Annual Sales: <$5m

WFS supplies through-water and through-ground wireless technology for communication, navigation and power transfer. Using radio, acoustic and inductive power transfer technologies, WFS's wireless connectivity devices support subsea and defense industries worldwide. **WFS launched the first commercial underwater RF modem in 2006; the first underwater broadband modem in 2007.** That year, the first dual-technology Radio Acoustic modem was also launched and the company was announced as the overall winner of the UK MoD's top innovation award. Since then, seatooth was also awarded a "Spotlight on new Technology" award by the Offshore Technology Conference. The company is headquartered in Livingston, Scotland with additional offices in Aberdeen, Washington DC and Houston, as well as an R&D Centre in Belfast, Northern Ireland. For underwater vehicles, seatooth was designed to extend capability of an existing vehicle with the integration of wireless technology. Coupled with complementary hybrid solutions, seatooth can remove traditional limitations and enhance safety and reliability of operations.

tor and distributor when TIMET (titanium mill) sold their Application Development Center. In the mid-1980's, the engineering firm Kamyr acquired Titanium Industries to support its titanium industrial projects. In 1994, the titanium mill Jim Paddock and Oremet purchased the distribution and wire manufacturing segments of the company and in 1997, Allegheny Technologies (ATI) purchased Oremet's share of the organization. James Paddock acquired the balance of the distribution business from ATI in 2001, and the company became privately owned.

TriOS Mess- und Datentechnik GmbH

Werftweg 15, Oldenburg, Germany D-26135
Tel: +49 441 48598 0
E-mail: info@trios.de • Website: www.trios.de
CEO / President: Dipl. Phys. Rüdiger Heuermann
Engineering Director: Dipl. Phys. Karin Munderloh
Square footage: 21,000 sq. ft.
Number of employees: 19

TriOS develops and manufactures optical sensors for scientific and industrial applications. TriOS was the first company offering hyperspectral sensors for environmental and marine applications. The most popular products remain the RAMSES radiometers, which are used by scientists around the globe. Remote places like Arctic or Antarctic, coral reefs, moored in coastal seas and lakes, onboard cruise liners, regatta yachts and ferries – these are locations where one can find RAMSES sensors in autonomous, continuous or mobile operation. TriOS offers hyperspectral UV-photometer for chemical free substance analysis, hyperspectral attenuation meter and PSICAM absorption meter. Besides hyperspectral technology, TriOS produces a range of fluorometers for CDOM, chl-A, blue algae or hydrocarbon detection with many accessories like solid secondary standards for all types of fluorometer.

VSD, LLC (VSD)

4460 Corporation Lane, Suite 200, Virgina Beach, VA
Tel: (757) 498-4766
E-mail: jbertsch@vsdonline.com
Website: www.vsdonline.com
Managing Director: Chuck Wythe
Director of Special Programs and Communications: Jessica Bertsch
Director of Engineering Services: Mark Muhlenbeck
Number of Employees: 96

Established in 2001 and headquartered in Virginia Beach, VSD currently has four national offices and six satellites, and is opening two international offices this year. VSD offers performance improvement, software engineering, corporate consulting and implementation, engineering services, and multimedia services. In the past several years, the company has acquired DTM Global (based in the United Kingdom), received Virginia's Fantastic 50 Award, formed a joint venture with Ezz Al Khair Establishment in the Kingdom of Saudi Arabia, and garnered multimillion dollar contracts for the Iraqi 35-Meter Patrol Boat and 60-Meter Offshore Support Vessel. VSD has been chosen to exhibit in multiple forums such as the 2011 ITEC and IDEX conferences, and has been the topic of conversation on CNN and ABC news and in popular magazines such as Inside Business and Virginia Business.

Technology Profile: VSD recently defined, designed, developed, and delivered a naval vessel training program in seven months after contract

award. VSD also oversaw the development and coordination of a Full Mission Bridge Trainer, a Small Arms Trainer, and a Firefighting Trainer for a 35-meter swift interceptor patrol boat designed for the Iraqi navy.

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
Managing Director: Simon Beswick
Sales & Marketing Director: Maurice Fraser
Technical Director: John Smith
Business Development Manager (Defense): Mike Broadbent
Business Development Manager (US): Angus Lugsdin
Customer Support Manager: Andrew Seaton
• Two sites: operations and head office in Westhill, Aberdeenshire and production facility in Ulverston, Cumbria
• Number of employees; 80 across the two sites

As its name suggests, Tritech embraces three different technologies: acoustic and video imaging, motion reference and position, and mechanical and hydraulic. The company 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. One of Tritech's best-known products is the SeaKing sonar, employed in many of the world's ROV fleets. All products in the SeaKing family were designed to run on a single ArcNet communications link, using the same processor and display.

Woods Hole Group, Inc.

81 Technology Park Drive, East Falmouth, MA 02536
Tel: (508) 540-8080
Email: bhamilton@woodsholegroup.com
Website: www.woodsholegroup.com
CEO: David G. Aubrey, Ph.D.
President: Dennis B. Aubrey
VP Business Development: Robert P. Hamilton Jr.
Vice President Scientific Operations: Robert A. Catalano
Senior Scientist/Engineer: Bruce A. Magnell, Ph.D.
Senior Scientist/Coastal Eng.: Lee L. Weishar, Ph.D., PWS
Senior Environmental Scientist: Jerome J. Cura, Ph.D., LSP

Woods Hole Group is an environmental consulting and applied

oceanography organization founded in 1986. Headquartered in Falmouth, MA, WHG has satellite offices in Dover, DE and Houston, TX, a new office in Brazil, and a network of international representatives. Woods Hole Group 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. Leadership is provided by Senior Scientists and Engineers, including Drs. David Aubrey, Bruce Magnell, and Jerome Cura, Professional Engineer Kirk Bosma, and Professional Wetland Scientist Dr. Lee Weishar. Woods Hole Group has experienced double-digit year-over-year growth since 2006.

Woods Hole Group is focused on three major technical areas: Coastal Sciences, Engineering & Planning; Environmental Assessment & Remediation; and Oceanography & Measurement Systems. As an engineering company for projects in the coastal zone (beach nourishment, coastal structures, wetlands restoration, and dredging), numerical models are applied to understand existing conditions and optimize engineering designs. Particular expertise is offered

TE SubCom

412 Mt. Kemble Avenue, Suite 100 S
Morristown, NJ 07960
Tel: (866) 892-6611
Fax: (978) 656-8131
Email: sales-hq@subcom.com
Website: www.subcom.com
President: David Coughlan
Number of Employees: 900
Annual Sales (US$): $700 Million

Coughlan

TE SubCom (SubCom), a TE Connectivity Ltd. company, is a pioneer in undersea communications technology and marine services. The company designs, manufactures and installs systems around the world, and **has deployed more than 490,000km of subsea communication cable**—or enough to circle the earth more than 12 times at the equator. SubCom's global presence – backed by research and development laboratories, manufacturing facilities, installation and maintenance ships, depots, and management team – work together to support the needs of telecommunications, internet providers, offshore and science customers.

In addition to designing, manufacturing and installing undersea cable systems, SubCom is focused on optimizing existing systems by migrating capacity from 10G to 40G to 100G data rates and beyond.

In early 2011, SubCom was contracted to provide the first 40G upgrade in a system more than 9,500km in length, using its next-generation G4 SLTE technology.

"RITE" Solutions for Subsea Security

Rite Solutions

Rhode Island Office:
88 Silva Lane, Suite 220 East
Middletown, RI 02842
Tel: (401) 847-3399
Fax: (401) 847-8833

Connecticut Office:
110 W. Broad Street
Pawcatuck, CT 06379
Tel: (860) 599-1938
Fax: (860) 599-1969

Email: jkeil@rite-solutions.com
Website: www.ritesolutions.com
CEO: Jim Lavoie
President: Joe Marino
COO: Karen Conti
Business Operations: Ken Haner
Engineering Director: Ozzie Watterson
Facility: engineering and development facility
Square Footage: 15,000
Testing Capabilities: Systems engineers for custom site system, HW and SW test. CMMI Level 2 certified.
Number of Employees: 165
Annual Sales: $30M

Founded in 2000, Rite-Solutions is engaged in government and commercial business bases, including the Naval Sea Systems Command, Office of Naval Research, Raytheon, the Oneida Indian Nation, Hasbro, and General Dynamics.

Products and services include software intensive products, engineering services, undersea warfare concept development and analysis, advanced situational awareness and visualization, real-time decision support, emergency response coupled with simulation and training, transaction-based systems, and computer/web-based training and knowledge management tools.

Starting with 12 employees in a small Middletown, RI office, the company now employs over 165 in Rhode Island, Connecticut, New Hampshire, and Florida. The offices are fully interconnected, allowing virtual project collaboration and data sharing.

Technology Profile

Rite-Solutions has developed a Command Decision Support System, aiming to improve mission planning and command level decision making for employment on US submarines. The company serves as technical manager for a scalable maritime command and control system developed for underwater perimeter defense known as Project UPSIDE, which can be operated in a standalone mode or integrated into a regional level maritime defense system. The Swimmer Threat Neutralization System is a fully scalable, non-lethal protection system to counter underwater threats, developed for both the US Coast Guard and the US Navy.

for tidal current circulation and water quality, wave generation and transformation, and sediment/contaminant transport and fate. Ocean observations, especially real-time data collection, are at the heart of Woods Hole Group's expertise. Woods Hole Group designs, builds, deploys, and operates meteorological and oceanographic buoy systems and platform-based systems. Complete moored instrument measurement programs are offered in deep and shallow water, along with vessel survey measurement programs. In ports and harbors, WHG works under contract to NOAA to provide measurements of water level, current speed, water quality, and the air gap between bridges and the water ensure safe navigation and improve maritime commerce. For the offshore oil and gas industry, WHG provides deep water metocean data systems on exploratory rigs and platforms to meet government measurement requirements and guide safe drilling operations, as well as scientific data analysis and interpretation. Proprietary software is used to turn raw data into information required by maritime decision-makers.

Xsens Technologies B.V.

Pantheon 6a, Enschede, Netherlands 7521 PR
Tel: +31 88 97367 00
Xsens North America, Inc.
2684 Lacy St, Suite 205, Los Angeles, CA 90031
Tel: (866) 973-6787
E-Mail: info@xsens.com
Website: www.xsens.com
CEO: Casper Peeters
Marketing Director: Erik Wilbrink
Engineering Director: Per Slycke
Number of Employees: 70

Xsens provides 3D and 6D tracking solutions and MEMS inertial technology, including gyroscopes and accelerometers. Xsens' market can be divided into 4 business segments: movement science, entertainment, training & simulation and industrial applications. In industrial applications, Xsens orientation sensors are widely used to stabilize other systems (such as USBL, ROV/UUV and satcom), data correction (e.g. camera systems and sonar) and navigation. Customers who have chosen Xsens products in their production series include Kongsberg Defense Systems, Saab Underwater Systems, Evologics, Sonardyne and Applied Acoustics.

It opened a full-service office in the US, headed by Xsens' CEO, to provide support and sales services to US/Canada based customers. Xsens' product line consists of various motion sensing solutions. For industrial applications, the MTi-AHRS (3D orientation, rate of turn, acceleration and magnetic field) and the MTi-G GPS enhanced AHRS (3D orientation, 3D position and velocity, rate of turn, acceleration, magnetic field and barometric pressure) are available. The MTi-AHRS is also available in a board only version that can be mounted in tiny places (48x33x15mm). Synchronization options and flexible interfacing (various serial connections and USB) make the MTi and MTi-G unobtrusive in any existing system.

Zupt

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Tel: (832) 295-7280
Email: sales@zupt.com
Website: www.zupt.com
CEO/President: Keith Vickery
VP of Engineering: Anno Sauer
Marketing Director: Jamie Shaw
Technical Engineer: Josh Lewis
Office Manager: Cadance Wager
Project Manager: Haseeb Rafeek
Number of Employees: 6
Annual Sales: $2.5m

Zupt is an offshore service contractor that delivers survey services. Based in Houston, TX, Zupt has completed survey operations in West Africa, the North Sea and the US Gulf of Mexico. The company claims that its services reduce the time required for subsea positioning tasks by 50%. This significantly reduces the vessel, rig, or installation barge spread time consumed for survey tasks.

Metrology Surveys – the measurement required from hub to hub, or connector to connector for the fabrication of a jumper or spool piece. This system has been operating offshore successfully for over two years.

Pipeline touchdown monitoring/as built survey – Installing a Zupt C-PINS inertial system on the ROV allows for the vessel based acoustic positioning system (USBL) to be used in much deeper water. This system can remove the need for Long Baseline transponder (LBL) arrays on the seabed that consume many days of vessel time for installation and calibration.

OCEAN NET Consultoría y Servicios Ambientales

Avenida La Pau, 53, 8
Riba-roja del turia, Valencia, Spain 46190
Tel: +34 654375065
E-Mail: oceano@ocean-net.info
Website: www.ocean-net.info
CEO: Fernando López Melián
Sales Manager: Pau Puig Costa
Square Footage: 150 m2
Number of Employees: 4
Annual Sales (USD): $250,000

Founded in 2005, Ocean Net Environmental and Systems Consulting is a young Spanish company specializing in land, sea, and environmental services. The company sells and rents oceanographic and environmental equipment including nets, sensors, and buoys. Ocean Net also conducts coastal studies and performs installations.

Black Laser Learning, Inc.

P.O. Box 339
Hockessin, DE 19707
Tel: (302) 352-1800
Email: vince@blacklaserlearning.com
www.blacklaserlearning.com

Black Laser Learning is a marine technology education company specializing in distilling complex technological subject matter into easy-to-understand training segments presented live, by DVD or computer-based interactive training formats. Vince Capone, a 30+year diver and 20-year ROV pilot, has over 25 years of commercial/military/Homeland Security side scan experience in most every environment with all types of sonars. With over 500 copies in circulation and in over 34 countries worldwide, Black Laser Learning's second edition *Not in the Manual Guide to Side Scan Sonar Image Interpretation* has become a standard in sonar training.

iRobot

8 Crosby Drive, Bedford, MA 01730
Tel: 781.430.3000
Email: info@irobot.com
http://irobot.com

iRobot designs and builds robots that make a difference. iRobot's government and industrial robots provide enhanced situational awareness and increased mission success on the land and in the water. iRobot's Unmanned Underwater Vehicles (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 include the iRobot 1KA Seaglider, a long-range, high-endurance UUV for oceanographic measurements, and the iRobot 15A Ranger, a development platform for reverine and littoral operations. The Seaglider precisely measures and reports a multitude of data, including temperature and conductivity, dissolved oxygen concentrations, ocean current variation, backscatter and multiple trophic level biomass. These measurements enable 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. iRobot remains committed to establishing robot and software platforms for invention and discovery, building key partnerships to develop mission-critical payloads and creating robots that improve the standards of safety and living worldwide.

Balmoral Offshore Engineering

Group HQ
Balmoral Park, Loirston
Aberdeen AB12 3GY, UK
Tel: +44 (0)1224 859000
Email: offshore@balmoral.co.uk
www.balmoral-group.com

Balmoral Offshore Engineering provides surface and subsurface buoyancy, insulation and elastomer products and services to the global energy, defence, subsea communications and oceanographic industries.

Early in 2011 the company announced plans for a new Brazilian manufacturing facility. As it already exports more than 95% of manufactured goods from its Aberdeen HQ, the company is completing the incorporation of its Brazilian division, Balmoral Offshore Brasil Ltda.

The new facility will manufacture the company's complete range of products from the largest deepwater riser buoyancy and insulation systems to the smaller, more intricate, elastomer mouldings such as bend stiffeners, restrictors and cable protection.

In May the company announced the opening of its new test facility — **The Balmoral Subsea Test Center** (**pictured below**) —located at company HQ in Aberdeen. It offers a range of procedures including hydrostatic, mechanical and laboratory testing and represents a multi-million pound investment for the company.

A custom-built pressure test vessel, 'PV6', thought to be the largest commercially available unit in Europe, forms the centrepiece of the new center. Installed vertically with an internal diameter of 1.83m (72") an internal length of 9m (29.5') and a maximum operating pressure of 410bar (6000psi), the vessel is fitted with penetration flanges to allow the connection of hydraulic and electrical lines. Other tests carried out at the all-new centre include uplift determination, water ingress, bulk modulus, compression and creep. All equipment is fitted with or linked to the latest software to provide highly detailed results.

Transcendev

35 Bridge Street, #222, Gaysville, VT 05746-0222
Tel: (802) 788-4154
E-Mail: info@transcendev.com
www.transcendev.com
Facility: Laboratory, Workshop, and Office
Testing Capabilities: Comprehensive electronics bench testing; other testing is outsourced.
Annual Sales (USD): $300,000

Transcendev is a small business startup that develops and markets sensors, sensor systems, and instrumentation for applications in the marine, hydrologic, atmospheric, geotechnical, security, transportation, and medical sectors. Transcendev began operations in 2010, capitalizing on the founder's 20-plus years of experience in a large science and engineering firm. The company out-

sources the production of subsystems and components to pre-qualified vendors in various specialties, from full-service CNC machining to embedded systems programming. Wet testing of marine systems is performed at third party facilities. In collaboration with the University of Rhode Island, Transcendev recently developed a seafloor borehole monitoring instrument called SCIMPI. As the acronym implies, SCIMPI is a low-cost, flexible option for studying subseafloor circulation dynamics associated with thermal venting, hydrate/clathrate production and dissolution, and seismic and geotechnical instabilities.

Denso

9747 Whithorn Drive
Houston, TX 77095
Tel: 1-888-821-2300
Email: info@densona.com
www.densona.com
General Manager: Lucian Williams
Inside Sales: Jesse Flores
West Regional Sales Manager: Steve Baker
Midwest Regional Sales Manager: Jim Utley
East Regional Sales Manager: Jeff Baker
Mexico Regional Sales Manager: Nefi Hernandez
Company Profile:

Denso manufactures anti-corrosion coatings, including Protal liquid epoxies, Denso petrolatum tapes, mastics, primers, bitumen tapes, butyl tapes, hot applied tapes, and a full line of marine pile protection systems. Originally established in London, England, in 1883, Denso developed the first Petrolatum Tape to protect buried steel pipelines against corrosion. Denso's SeaShield Marine Systems include fiberglass forms, epoxy grouts, underwater epoxies, injectable epoxies, and petrolatum tape wrap systems.

Denso's products were designed to protect timber, steel and concrete piles. The company's grouts and epoxy coatings may be used to protect and repair piles and bridges. Denso developed a 2-part polyester glass flake coating, called Rigspray, to protect steel structures in aggressive marine environments. Denso also recently released its new underwater epoxy mastic called SeaShield SplashZone UW Epoxy. This Solvent-free patching compound is used for repairing pits, cracks and voids in steel, concrete, wood and other surfaces. The SeaShield SplashZone UW Epoxy was designed to be mixed, applied and cured underwater.

C-Nav World DGNSS

730 East Kaliste Saloom Road
Lafayette, LA 70508
Tel: +1 337 210-0000
C-Nav Manager - Tim Patro
Business Development Manager: Dan Galligan
International Sales Manager: Ed Danson
Operations Manager: David Fitts
Product Development Manager: Mark Schmidt
Software Development Manager: C. James Callaway
Systems Development Manager:O. Russell Morton

C-Nav, a division of C & C Technologies, manufactures high level GNSS positioning products, including C-Nav Precise Point Positioning solutions and range of GNSS receivers, long range Ultra RTK, C-Monitor, C-NaviGator and P3QC packages with the acclaimed C-Scape online GNSS/DP suite. C-Nav is a dynamic DGNSS Precise Point Positioning system, providing worldwide accuracy of <0.1 meter horizontally and 0.2 meter vertically. C-Nav's solution is based on Real Time GYPSY technology developed by NASA's Jet Propulsion Laboratory to provide centimeter-level accuracy for navigation in space and for a range of complex spacecraft maneuvers. C-Nav has offices in the US, Mexico, Brazil, Peru, Angola, South Africa, The UAE, The UK, Russia, Norway, China, India, Indonesia, Japan, Singapore, and Vietnam.

Sensor Technology

20 Stewart Rd., Collingwood, ON, Canada, L9Y 3Z4
Tel: +1 705.444.1440 ext 26
www.sensortech.ca
ssomborac@sensortech.ca
Stefan Somborac
Business Development Manager, Sensor Technology Ltd.

Sensor Technology Ltd. produces piezoelectric ceramics and a piezo-based product line, including hydrophones, acoustic transducers, piezoelectric actuators and supporting electronics. Design, machining, final assembly and testing, both for prototypes and full production runs, all occur at one facility. This end-to-end approach provides fast turn-around times and ensures complete quality control through all stages of production. The company also has a strong commitment to R&D, 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. This research activity lends to the company's expertise and design capabilities. Sensor Technology Ltd. is registered to ISO 9001.

Sensor Technology specializes in custom hydrophones and transducers and new product development. With in-house design, machining, electronics and testing capabilities, the company works with its customers to create designs to meet exacting specifications, build prototypes and provide complete testing. Yet, with its dedicated assembly department, Sensor Technology has the capacity to bring new products into full production. The company is currently deploying an industrialization plan, adding equipment for increased capabilities and efficiencies. With its new Lilian and Haas mills, the machining department performs close tolerance turning and milling of metals, plastics and ceramics. Testing facilities

include an indoor water tank, pressure testing vessel and a new boat-based testing lab, for low frequency testing on Georgian Bay, the largest freshwater bay in the world.

Bennett & Associates, L.L.C.

5177 Richmond Ave, Suite 1188, Houston, TX 77056
Tel: (713) 961-7737
Email: aruderman@bbengr.com
www.bbengr.com
Chairman: William T. Bennett, Jr.
CEO & President: Jose Vazquez, Ph.D.
Marketing Director: Beau Bennett
Sales Manager: Greg Castleman, VP Operations & Business Development
Engineering Director: George Petrie
Facility: Headquarters: Houston with offices in New Orleans
Number of Employees: 40

Bennett & Associates, L.L.C., is a naval architecture, design and consulting firm that also provides hydrodynamic and other marine and offshore related services. The company, founded in 1997 by William T. Bennett, Jr., specializes in the design, modification and construction supervision of Marine Vessels, Offshore Mobile Drilling and Offshore Production Units. Consultancy services include engineering, software development, site inspection and project management.

The MinDOC deepwater production unit design is an exclusive product of Bennett & Associates. MinDOC ATP Titan is the first unit designed to the Post-Katrina requirements of the Central GoM and combines the features of a semisubmersible with spar deepwater designs. The B-Class Jack Up built by Keppel Offshore & Marine is an example of a cooperative design between a shipbuilder and the Bennett team. It features a cantilever designed to extend up to 100 feet and skid off the drill package.

FarSounder, Inc.

43 Jefferson Blvd., Warwick, RI 02888
Tel: (401) 784-6700
E-Mail: info@farsounder.com
www.farsounder.com
CEO: Cheryl M. Zimmerman
Vice President of Engineering: Matthew J. Zimmerman
Signal Processing Engineering Director: Dr. Alexander Yakubovskiy
Facility: 2 facilities, RI, USA
Number of Employees: 12-14

FarSounder designs, manufactures and markets 3D sonar systems for the commercial, recreational, defense and homeland security markets, internationally as well as domestically. FarSounder products can be used to study the ocean, for AUV navigation and missions, for fisheries research and by-catch reduction, dredging operations and for Forward Looking Multi Beam (FLMB) surveying.

Products range from long-range 3D

(Continued on page 80)

Oceans of Opportunity: International Cooperation & Partnerships across the Pacific

Important Dates

Final Submission of Papers: 15 July
Early Bird Rooms & Registration: 01 Aug
NELHA Tours sign-up: 15 Aug
Education Symposium sign-up: 26 Aug
Conference dates: 19-22 Sept 2011
www.oceans11mtsieeekona.org

Will you be there?

Keynote Speakers

Dr. Marcia McNutt, Director, U.S. Geological Survey
Mr. Mike Utsler, COO, Gulf Coast Restoration Organization (GCRO), BP
Dr. Eddie Bernard, Director, NOAA PMEL [Retired]

Technical Program - OCEANS '11 MTS/IEEE Kona will have a very strong technical program. A record 750+ abstracts were received with substantial international representation and a broad range of topics, including Ocean Vehicles, Ocean Observations, and Sonar Signal/Image Processing & Communication. In addition to the Kona Special Topics, there will be a track to accommodate the canceled UT'11 Tokyo Symposium.

Exhibits - Over 100 national and international exhibitors from government, academia, and industry have already committed. Please contact our Exhibits team at exhibit@oceans11mtsieeekona.org for further details and to reserve your space. A few limited booths remain in the HI, WA and the BC (Canada) groupings.

Tutorials - Nine offerings for full- and half-day sessions on a wide variety of technical topics ranging from imaging technologies, autonomous vehicles, ocean energy and modeling, as well as a business-oriented topic for companies seeking to improve on strategies for engagement with government customers in DoD and other federal agencies. Tutorial participants may earn formal credits through IACET.

Education Symposium - Sat Sept 17, 2011, Hilton Waikoloa Village - Free full- & half-day professional development offerings for elementary to high school educators focusing on Pacific Coral Reefs and Climate Change, Discovery of Sound in the Sea, and Exploration in the Mariana Trench Marine National Monument.

Exclusive Tours - A tour of the Natural Energy Laboratory of Hawai'i Authority (NELHA) will be offered. Don't miss this chance to visit and learn about the state's most unique and innovative ocean science and technology development park, where NELHA is growing sustainable industries for the 21st century.

Patron Opportunities - There are a number of remaining opportunities for exhibitors who want to enhance their market presence at OCEANS and companies/organizations that are looking for an alternative strategy to raise their visibility with this highly qualified target audience!

MTS www.oceans11mtsieeekona.org info@oceans11mtsieeekona.org IEEE OES

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7	Sparton Navigation & Exploration	www.sparton.com/ne	(386) 985-4631
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23	Subconn	www.subconn.com	(781) 829-4440
49	Subsea Photo Contest	http://photos.seadiscovery.com	Please visit us online
39	Surface Supplied	www.surfacesupplied.com	(650) 679-0234
17	Teledyne Marine C/O	www.teledynemarine.com	Please visit us online
13	Teledyne RDI	www.rdinstruments.com	(858) 842-2600
33	Teledyne TSS	www.teledyne-tss.com	44 (0) 1923 216020
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Forward Looking Sonars to underwater Diver Detection. The FS-3ER, FarSounder's flagship navigation sonar, was designed to offer 3D forward-looking navigation information out to 1/2 nautical mile (900 meters) ahead of the vessel.

FarSounder also manufactures the Ship Protection System (FS-SPS), a multi-sensor solution with 360º coverage using fixed in-hull sensors. The system is designed to provide underwater threat protection while at anchor or at the dock as well as forward looking, obstacle avoidance sonar capabilities while underway.

Spurs Marine Manufacturing Inc.

201 SW 33st, Fort Lauderdale, FL 33315
Tel: (954) 463-2707
E-Mail: spurs@spursmarine.com
www.spursmarine.com
Vice President: Pablo Sosa
Engineering Director: Pablo Sosa
Facility: Machining facility and offices
Number of Employees: 13
Annual Sales (USD): $3 million

Spurs Marine Manufacturing, Inc. was founded in 1981 and is located in Fort Lauderdale, Florida. Spurs' line and net cutter system was designed to address the age-old problem of line & net entanglement.

As line is caught by the propeller blade, it is then wound down towards the propeller hub.

The line is then picked up by the rotating cutter blades and carried around to the waiting stationary blade. The resistance sensed by the stationary cutter activates the cam wedge action that causes the stationary blade to be forced aft against the rotary blades. Lines and nets are then cut before entanglement occurs.

Spurs Cutter Systems are approved by the American Bureau of Shipping (ABS) and protected by USA and International Patents, and have been installed on over 500 ships worldwide.

Soil Machine Dynamics Limited

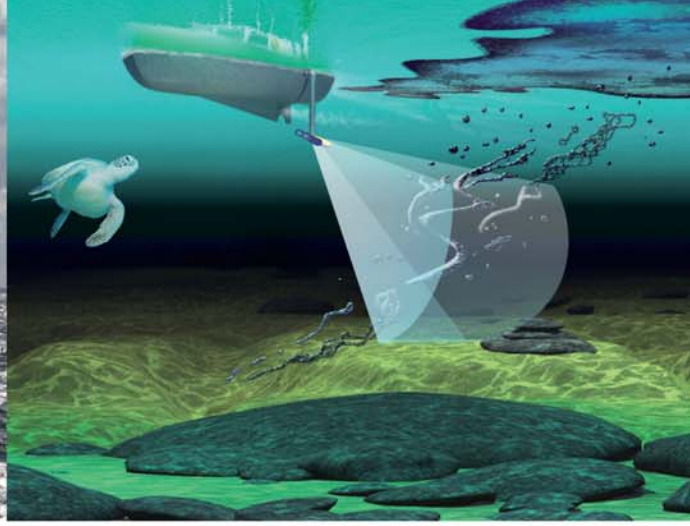
Turbinia Works, Davy Bank, Wallsend, North Tyneside NE28 6UZ UK
Tel: +44 191 234 2222
Email: info@smd.co.uk • Website: www.smd.co.uk
CEO: Andrew Hodgson
Technical Director: Paul Atkinson
Finance Director: Richard Lowery
Testing Capabilities: SMD has an indoor and an outdoor test tank at its facility in Turbinia Works, near Newcastle upon Tyne in the UK. Full assembly and final commissioning and test is conducted on all ROVs prior to shipment.

SMD manufactures remote intervention equipment for hazardous environments. The business has been involved in subsea engineering projects since the 1970s, when it pioneered the design and manufacture of seabed ploughs. Following the acquisition of Hydrovision in 2003, SMD has grown to be an independent designer and manufacturer of workclass and specialist subsea remotely operated vehicles (ROVs). Recently SMD delivered the world's largest free stream tidal turbine (to Atlantis Resources Corporation), and is designing and manufacturing the world's first deep seabed mining vehicles (for Nautilus Minerals, Inc.). The business can offer fully integrated solutions, as SMD also manufactures a range of deck and handling equipment, control systems, and the Curvetech range of components. SMD also offers a full range of assistance to its customers including a 24-hour hotline, operational and engineering support, spares, service and training support including a specially developed workclass-ROV simulator for pilot training.

SMD shipped its first workclass ROV in 2005, and by 2010 had the largest market share of the three major OEMs. The company underwent a management buy-out in 2008, funded by the private equity group Inflexion. In 2010, SMD focused its organization along five key business streams: ROVs, Trenching, Mining, Renewables, and Nuclear. The following year, SMD received Subsea UK's "Subsea Company of the Year" award and a Queens Award for Enterprise in the innovation category.

The company is headquartered near Newcastle in the UK, with additional facilities in Malton (UK), Houston, Singapore and Macaé in Brazil.





RESON Hydrophones and Sonar Systems

Marine Research - mammal monitoring
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Cable inspection - AUV and surface vessel mounted sonars
Online monitoring - of wave and current turbines
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RESON

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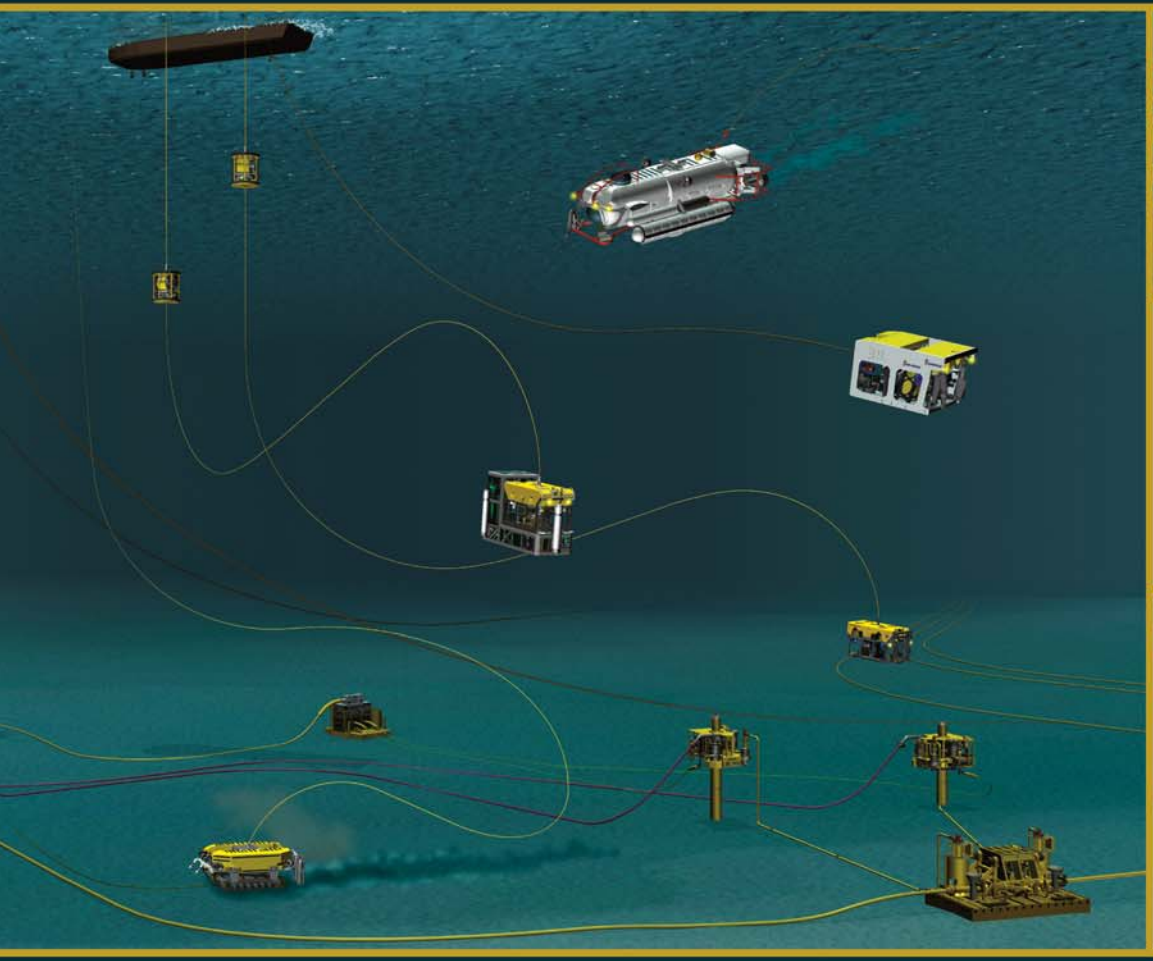

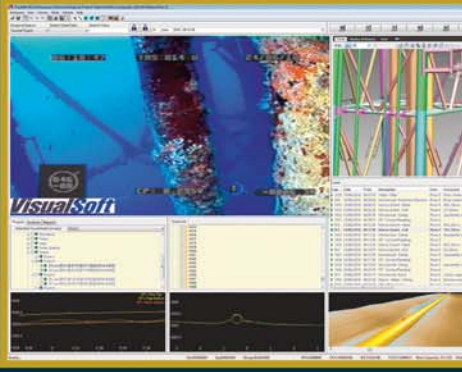

Turn to Forum's Subsea Group when you need state-of-the-art technology and experienced personnel for your next subsea project.

Forum's products include purpose built remotely operated vehicles (ROVs), ROV and custom intervention tooling, control systems and integrated system solutions. Our services include rental of ROVs, tools and positioning systems as well as personnel and training services, seabed coring, geoscience project management and subsea pipeline joint coating. Forum's pioneering Rovdrill® drilling system and VMAX™ simulation software are providing innovative ways to drill smarter and deeper. **To take your next subsea project to a new level visit: www.f-e-t.com**

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