SUBSEA UK NEWS

THE NEWSLETTER FROM SUBSEA UK WWW.SUBSEAUK.COM FEBRUARY 2011

Global Connections

IN THIS ISSUE

Special Feature on Pipeline Pigging

Spotlight on New Technologies

International Projects

...and more

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Subsea UK to Reveal the "2010 Business Activity Review" Results at Subsea 2011

Subsea UK is poised to announce the results of the 2010 Subsea Business Activity Review at their flagship event, Subsea 2011.

The review, commissioned by Subsea UK, follows in the footsteps of previous reviews in '03, '05 and '07 in order to estimate the size of the subsea sector in the UK, as well as to measure its performance in terms of manufacturing, services, employment and exports.

The 2010 review comes at a particularly crucial time as the UK recovers from a financial crisis and economic downturn.

Chief Executive of Subsea UK, Alistair Birnie, comments: "The Business Activity Review gauges how well the UK has performed in a highly demanding business environment. We hope you will be just as pleasantly surprised by the results as we were."


Alistair Birnie, Chief Executive of Subsea UK

The 2010 Subsea Business Activity Review is released on the 9th February 2010. Results will be announced and discussed in depth by Mr Birnie in the opening presentation at Subsea 2011, and available through the Subsea UK website shortly thereafter.

Talent Pool: Online Subsea CV Database Now Live

Subsea UK is pleased to announce a new feature on the website, www.SubseaUK.com, that enables job-hunters to add their CV to our rapidly expanding pool of subsea talent - which all Subsea UK members can access.

The CV Database was created to serve our members and the industry alike. At Subsea UK, we receive emails from people looking to get into the subsea industry and enquiring about jobs on a daily basis. This new database gives job-hunters the opportunity to get their CV out to over 215 subsea companies at once, and gives our members access to a talent pool of potential employees as part of their regular membership benefits.
It is a free service designed to assist those looking to get started in subsea, or switch careers into subsea.

If you'd like to add your CV to the database, please visit our website. Subsea UK members can access the database by logging in and agreeing to our data protection / confidentiality statement.

Hot News

Visit our website for all the latest hot news on everything subsea:
www.subseauk.com

Forthcoming Events in 2011

23rd-25th February	**AOG 2011** Exhibition and Conference, Perth, Australia www.aogexpo.com.au/conference.asp
21st-25th March	**UK Energy in Brazil 2011** www.ukenergyinbrazil.com
19th April	**Spring Golf Outing** Inchmarlo
1st-3rd June	**Offshore Gas Asia and Subsea Asia Conference** Kuala Lumpur www.oilandgas-asia.com/conference.asp
29th June	**Subsea UK's Parliamentary Reception** London
7th September	**Offshore Europe – Subsea UK Networking Dinner** Aberdeen

Please visit www.subseauk.com for details of forthcoming events.

Looking Beyond the Launch of the Hyperbaric Lifeboat

Comment by David Smith, Managing Director of the National Hyperbaric Centre, UK

The requirement for hyperbaric lifeboats to move divers from a saturation system in the event of a sinking, or stricken DSV is now widely accepted following a number of incidents within recent years. Even areas in the world which previously did not have them are now considering installing them in response to the IMO, Class, client demand, diver awareness, plus the moral responsibility to employees and families.

However, this advance has not been thought through much beyond the 'launch' phase and this is the next area which the industry needs to concentrate on. A paper in last year's IMCA conference in Rio de Janeiro expressed concern that we could just be 'moving the bodies to a different location'. This is obviously of concern and we need to ensure that we have proven systems which overcome such fears.

Recent experience and activity of the National Hyperbaric Centre has identified a number of critical gaps in Hyperbaric Life Boat (HLB) management systems.

A paper presented by the NHC at the IMCA conference in Dubai in November 2010 brought to the forefront the industry's need to consider carefully plans for the following activities: HLB recovery, life support for the HLB, HLB attachment to a hyperbaric reception facility and medical support.

We have identified the problems of a lack of commonality in the handling of HLBs. Quite extraordinarily, the industry has missed an opportunity for common systems to be agreed upon with the introduction of the new generation of HLBs. There is no commercial advantage in having individually tailored systems.

We also need medical support which can work worldwide, and we believe that this is inextricably linked with the physical aspects and training and crew required to effect safe decompression of divers from a recovered HLB.

We identified a large number of mismatches, even at the NHC, in which interfaces between client and ourselves were very poor, systems were inadequate and the likelihood of a successful HLB mating would have been fraught with difficulty. We have only identified them because this is an area we have recently concentrated upon and we have such concerns that we think that the industry needs to review its systems, procedures and training, especially in remote locations.

The NHC proposes that there should be a Global network of Hyperbaric Reception Facilities with common, proven systems along with integrated Hyperbaric Medical Support Teams.

GE Opens New Oil & Gas Subsea Test Facility in Warsaw, Poland

GE has further expanded its Oil & Gas business portfolio capabilities with today's inauguration of a new $3M investment subsea equipment testing facility in Warsaw, Poland, opened in partnership with the Warsaw Institute of Aviation and Engineering Design Centre.

The new Warsaw Subsea Test Lab provides GE Oil & Gas with increased capacity for the testing and qualification of subsea equipment for its global Drilling & Production operations, increased support of sales activity in Poland and across Central Europe, as well as highly talented, experienced engineers.

"GE is a strategic partner to the Warsaw Institute of Aviation and this year we celebrated our 10th anniversary of successful cooperation. The new facility provides a unique opportunity for our engineers to develop expertise in complex disciplines including subsea oil and gas extraction," said the Managing Director of Warsaw Institute of Aviation, Witold Wisniowski.

Based on an engineering alliance agreement between GE Aviation and the Warsaw Institute of Aviation, the Warsaw Engineering Design Centre was established in 2000 and has grown from just 20 engineers to more than 1000 engineers collaborating in the development of world-class aviation, energy and oil & gas technologies. The last 10 years brought gradual rise of employment and development of engineers` capabilities while closely cooperating with the best Polish technical universities.

John Lammas, Vice-President – Engineering, GE Oil & Gas said: "The new test facility will help GE remain at the forefront of reliable innovation in the oil and gas industry. At GE Oil & Gas part of our strategy is to deeply embed an aviation mindset in terms of safety and reliability. Working together with GE Aviation and the Warsaw Institute of Aviation at these superb new subsea testing facilities, GE Oil & Gas will continue to build successfully on the Polish aviation industry's legacy of engineering excellence to help solve our customers' toughest technical challenges."

GE Oil & Gas will use the new Warsaw Test Lab for the qualification of existing drilling and production products, product line extensions and new product introductions for its Drilling and Production business. Subsea equipment that will be tested in the lab includes valves, seals, flanges, spool pieces and riser connectors. This new investment presents GE's commitment to partner with Poland and confirms the company's trust into the country's strong engineering capabilities and skills.

A Year of Innovation for C-Tecnics

During 2010 C-Tecnics, Aberdeen based manufacturer of subsea video and communication systems, unveiled a number of new and innovative products designed to meet the needs of the inshore diving, offshore diving and marine survey markets.

All new products were designed in house by C-Tecnics' engineering team who have many years' experience in the development of electronic equipment for the underwater environment.

Released at the beginning of the year was the C-Vision Diver Video system, a highly portable two diver video recording and display unit with many novel features such as an in built diver communication system. Simultaneous recording of two divers plus up to 30 hours of HDD storage can be achieved and the system can be interfaced to external drives, networks and monitors just like a PC. The C-Vision is supplied with the C-Tecnics CT3008 High Resolution CCD Camera which provides excellent picture quality and operates superbly low light conditions. The C-Vision also controls the intensity of the diver's lights and C-Tecnics have introduced the CT4003 LED light to complete the package.

During the year, C-Tecnics received many enquiries for a High Definition variant of the C-Vision from customers involved in marine research and survey, C-Tecnics then responded with the release of the C-Vision HD. This single camera system enables recording and display of high definition video in a portable weatherproof case and features all the interface functionality of the original C-Vision. C-Tecnics developed the CT3009 Mantis HD Camera to compliment this system and also integrated zoom and focus control onto the surface control unit. A further enhancement was the inclusion of scaling laser with the package and these are also powered and controlled from the C-Vision HD surface control unit. The Tetra Laser modules were designed to be fitted to underwater vehicles to allow scaling of seabed features by the operator, by projecting pinpoints onto the seabed or structure at preset distances from each other.

Both the Mantis HD Camera and the Tetra Laser modules are available as standalone products.

Ace Winches Secures £1.6 Million Gem from Bluestone Offshore

ACE Winches has secured a £1.6 million contract from Bluestone Offshore for the design and manufacture of two comprehensive winch packages for use on the offshore support vessel, Greatship Maya. Each winch package comprises an 18.5 tonne Safe Working Load (SWL) hydraulic drum winch, 300kW containerised electric Hydraulic Power Unit (HPU), a central control cabin, interconnecting pipework package and associated wire rope package.

The Bluestone project is being wholly managed by ACE Winches at their state-of-the-art manufacturing facility at Towie Barclay Works and all equipment will be comprehensively FAT tested on ACE Winches' 750 tonne capacity hydraulic test bed facility, prior to delivery to Singapore in March 2011.

The complete winch system is scheduled to be deployed on the offshore support vessel, Greatship Maya, before it departs Singapore at the end of May 2011. The vessel, which is on charter to Bluestone Offshore and partner, GC Rieber Shipping Asia Pte Ltd, is being upgraded for use in the deep waters of the Atlantic Ocean, offshore Brazil. The two winch packages are designed for launching and recovering a seabed frame, fitted with geotechnical investigation equipment through the ship's moonpool for working in operational water depths of up 2,500 metres. Each winch is designed to carry 2,700 metres of steel wire rope and the complete package has built-in heave compensation line tensioning and computerised controls package.

CEO of ACE Winches, Alfie Cheyne described the contract as a valuable manufacturing order for the company. He said: "This contract award is a result of the commitment shown by ACE Winches in delivering exceptional service through our Hire Equipment division reacting quickly to deploy a 120 tonne winch package by air freight to Singapore. 2011 is, once again, forecasted to be an excellent trading year for ACE Winches. Bluestone signifies an important stepping stone for ACE Winches in gaining a firmer foothold in the Asia Pacific region."

The company's Hire Equipment division continues to trade exceptionally well internationally, despite recent global recessions. ACE Winches' Hire Division are currently completing a £5 million contract to install a topside and jacket for Petronas/MMHE in Turkmenistan. ACE Winches has deployed, from Aberdeen, a total of 20 large winch packages with a total gross tonnage of over 1000 tonnes, which was shipped out by sea freight from Aberdeen during August 2010, travelling through the Russian canal system, before docking in South Caspian, 30 days later.

ACE Winches Hire Division were recently awarded a £1.5 million contract with McDermott's in Saudi Arabia for oil and gas operator, Saudi Aramco, installing a 5-kilometre offshore communications cable. ACE Winches delivered a special traction winching system, pulling a floating, synthetic rope to deploy the cable from the offshore operations vessel to the beach.

The company continues to trade well, having broken its projected turnover for 2010 by £2 million, closing off the year at £18 million turnover from its Turriff base. During 2010, ACE Winches opened its new operational base at Dusavik in Stavanger, Norway. Again, excellent trading results have resulted in three full-time Norwegian staff employed and ACE is currently deploying assets valued at over £650,000 to support specialist wire rope spooling activities and vessel bollard pull tests.

ACE Hire Equipment and ACE Hire Personnel in Turkmenistan for the Petronas Carigali Project

Nylacast Launches New Houston Office

During 2010 Nylacast have been working hard to ensure their customers are receiving the value added service wherever they are in the world.

After great successes in 2010 and in order to service the North America and Latin markets, Nylacast have now investing in new offices in Houston, Texas in a continual growth and improvement effort to offer their first class solutions to its customers in the Oil and Gas sector. This forms part of the company strategy of being focused on their customers' needs, with Nylacast responding to recent customer and market demands to be in place to provide world leading polymer solutions as required.

The new Houston office allows Nylacast to continue providing solutions and creating value for their customers in this industry, being located in what is arguably the hub of the Offshore, Oil & Gas industry, it allows Nylacast to interact on a personal level with their customers and to be on hand to provide advice and solutions from their experienced engineers. Nylacast partners in industry including major blue chip companies such as BP, Shell and Total will now be seeing more and more of Nylacast in their effort to make a real difference to the industry.

The new facility and support service will be launched during Subsea 2011 this year, where Nylacast will be showcasing some of their latest offshore developments, and demonstrating how their knowledge of advanced polymers can add significant benefit to subsea based projects.

The new Nylacast Houston office will be lead by Flavio Olivarez who has served in various engineering and management roles in the Petrochemical, Aluminium, Construction, Oil, Gas and Offshore industries over the past 30 years.

Flavio is a registered Professional Engineer in the state of Texas and has held that distinction for more than 25 years.

Success Set to Continue for Subsea Specialists

2010 was an extremely successful year for subsea specialist flexlife, with a number of significant new appointments and a major capital investment deal secured in the latter part of the year.

flexlife recently announced the appointment of two international energy industry leaders to its board as non-executive directors. David Cassie of Subsea7 and Sandy Clark of Amec both have outstanding industry pedigrees with vast experience and knowledge of the market that will help flexlife expand in future.

In a further move to position the company for ambitious growth in 2011, a new Director of Sales and Marketing, Charles Cruickshank, and Finance Director, John Duncan, have also been appointed.

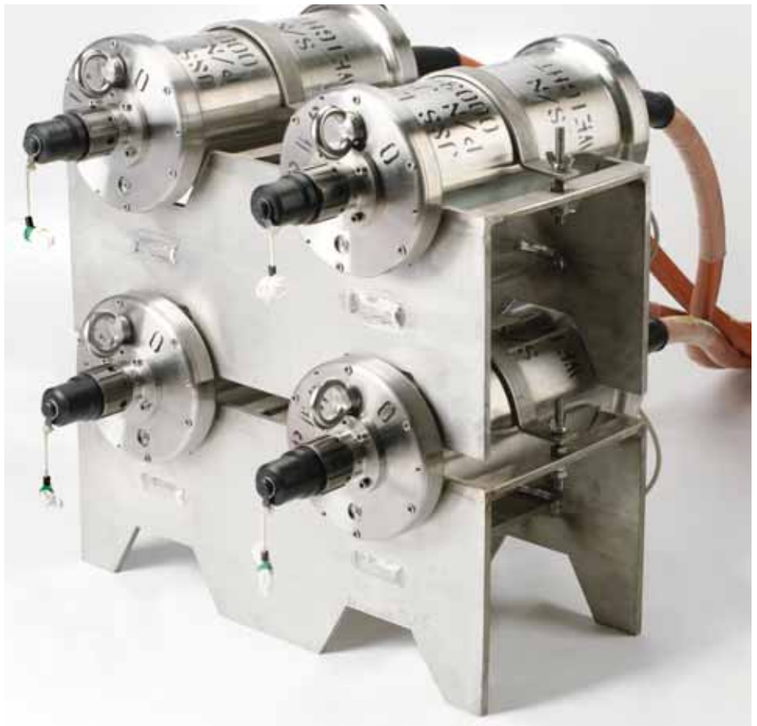
The company has also opened a new operation in Brazil and appointed Leonardo Dias as Executive Manager - Brazil, to lead the team targeting the lucrative deepwater market in South America.

A further boost to the company came in the form a £5.5million growth equity investment by Maven Capital Partners and Simmons Parallel Energy (SPE). The two firms have invested in flexlife to help complete the commercialisation of new products and underpin future Research & Development work.

flexlife CEO Stuart Mitchell said: "This investment will have a major impact on flexlife and help us achieve our growth aspirations. We have a strong reputation for our scanning technology for flexible pipes and risers that has helped our clients by giving 100% accurate results. We are now looking forward to building on that reputation with our new products that will help safeguard asset integrity."

It is anticipated that flexlife's ultrasonic scanning technology will be in high demand in the coming year. This combined with the recent commercialisation of a further spin-out product, incorporating the scanning technology into a pod that can be installed on risers at manufacture or retrofitted without process interruption, signals another profitable 12 months ahead.

The new system will enable all risers to be monitored permanently for outer sheath breaches and corrosion throughout their life. The technology will offer operators a view of all of their riser assets globally and give them an ongoing status of the outer sheath and armour wire condition, acting as a fail-safe early warning system providing major cost and safety benefits.



A Novel Solution to an Ongoing Problem

J+S has recently delivered eight subsea transformer units as part of a larger equipment design and manufacture project. The project was to replace subsea electrical and hydraulic distribution equipment for a North Sea asset of a major oil company. Delivery of the larger engineering project represents a significant milestone in J+S continued growth in the subsea engineering and support markets.

The J+S subsea transformer product was used within this wider project to solve a problem that is regularly met in such work. It provides a replacement for the inductive couplers that are still in use on subsea control systems in the North Sea and elsewhere. J+S select the transformers to match the electrical characteristics of the signal or power couplers being replaced. The transformers are packaged in an oil-filled pressure compensated housing fitted with industry-standard subsea mateable connectors.

This product offers the subsea controls customer a complete seamless replacement for existing subsea infrastructure. There is no need for time consuming and costly offshore work to recover and rework pre-installed equipment. The customer is left with a new, reliable, future-proof subsea installation.

The subsea transformer is one example of J+S' novel solutions in the support of subsea assets. Another example is the approach that J+S took in the design of the distribution assembly. The whole assembly is modular in construction and individual sub-assemblies can be removed and recovered without the need to recover the whole structure. This modular approach also makes it easier and more cost-effective to reconfigure the unit for other projects where different numbers of electrical and hydraulic circuits are required.

The engineering technology used in the subsea industry has progressed greatly since much of the equipment was originally installed. Modern materials, technologies, and methods can provide a more cost-effective and more reliable solution when replacing older subsea equipment.

Project Pathfinder: Eyes on the Industry

To enable industry, in particular the supply chain, to pinpoint and target emerging developments, a new initiative, 'Project Pathfinder' has been developed to provide a real-time look at the oil and gas projects, both for new field developments and decommissioning of redundant facilities in the UKCS over the next few years.

Project Pathfinder information includes the location, type of development, and the timings of the opportunities as well as the all important contact details within the companies. It has been developed to provide increased visibility to the contracting community and to build on the information available from existing forums such as the PILOT Share Fair and the PILOT Forward Workplan.

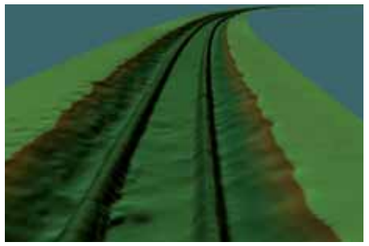
Penspen Completes Shell Sweep Details Design for Carrack East

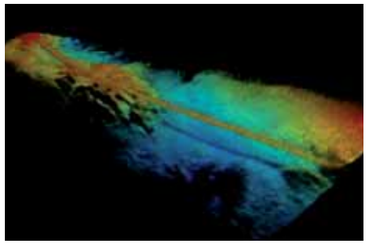
The Offshore Business Stream of the Penspen Group, Andrew Palmer & Associates, has successfully completed the Subsea Detailed Design for the Shell UK Limited SWEEP Carrack East Project. Shell UK Limited and NAM commissioned Penspen to provide detailed design for the SWEEP Project, which aims to develop the remaining small gas opportunities within their Southern North Sea (SNS) portfolio, following its successful completion of the Front End Engineering Design.

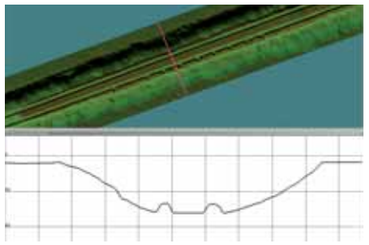
The initial design phase identified and developed a standardised, low cost solution which could be applied across Shell and NAM's remaining assets in the UK and Netherlands to ensure their economic viability.

Low cost subsea system solutions are an essential element of Shell's SWEEP development strategy and the Carrack East concept involves tying back new fields to their extensive host infrastructure in the Southern North Sea region.

It is envisaged that each successful SWEEP well will be tied back to a host in a summer installation campaign.







NCS Survey: Saipem Nord Stream Pipeline Project Completed Ahead of Schedule

NCS Survey, of Aberdeen, successfully completed a major survey contract recently for Saipem S.p.A. for pipelay support during the inshore phase of the Nord Stream Pipeline Project, two gas pipelines linking Russia with the European Union via the Baltic Sea.

Two small vessels were mobilised with NCS Survey's real-time 3D SVS (subsea visualisation system) for Touchdown Monitoring (TDM), operating from the 4m contour at the beach pull-out to the intermediate lay down locations.

Working on a 12-hour rotation the two vessels transmitted continuous live video images and data of the touchdown point to the C10 barge engineer, giving the accurate touchdown position of each pipelines in real-time as they were laid into the pre-excavated trench. In addition, when the capability of the system was realised by the client, additional pre-lay and post-lay surveys were performed, with field charts being completed within 24 hours with the same number of survey personnel onboard – just two!

During the installation of the second pipeline, which was laid parallel to the first, the barge display was constantly updated giving the actual position of each of the pipelines in the trench and thus the separation, DCC (distance cross course) and KP (kilometre point). This allowed the C10 to continue laying operations with confidence and accuracy, which contributed to the scope of work finishing well ahead of schedule.

The SVS enabled the C10 barge engineer to know exactly where the pipelines were laid in real-time and thereby minimised the risk of the pipelines coming out of the trench, and allowed the separation to be managed when laying round bends and near any seabed obstruction like wrecks.

Proserv Offshore Completes Major Subsea Cutting Contract

Proserv Offshore recently completed a major subsea cutting contract for the decommissioning of the Iwaki platform off the north-east coast of Japan. Situated in 154m (505ft) of water, the eight-legged, 20,735-metric ton (22,856-ton) platform was the largest in the region scheduled for decommissioning.

Proserv Offshore supplied all the cutting equipment and services required, which included Jetcut Water Abrasive Cutting Systems, Diamond Wire Cutting Systems and Friction Disc Cutters. Whilst some of the tooling already existed, Proserv Offshore had to develop the 24" to 42" Saddle Pipe Cutter, Launch Runner Cutting Tool and 62" to 80" Diamond Wire Cuting Tool. Each of these tools had to meet demanding design parameters set by the client which included fully integrated fly-to-site capabilities with SapuraAcergy's Work Class ROVs. All the new tooling was designed and developed within 14 weeks using Proserv Offshore's in-house engineering and manufacturing capability.

Part of the extensive trial process completed during the testing of the cutting tools was to perform a diamond wire cut using Proserv Offshore's 62" to 80" tool on a full scale mock of the platform leg complete with launch runner under the compressive loads of 560 metric tonnes. This simulated the loading that the leg would be under during the actual offshore cuts.

Once the trials were complete, the equipment was prepared at each regional base and mobilised to the S3000 heavy lifting vessel so the cutting operations could commence. Throughout this process Proserv Offshore supervised the entire cutting operation which was deployed using ROVs.

A total of 34 structural cuts were performed which were completed successfully for the client on time and within budget.

SeeByte's 2010 Internship Scheme is a Huge Success

SeeByte, the global leader in creating smart software technology for unmanned systems, have said goodbye to their interns of 2010.

In-keeping with the company's commitment to continuous improvement and its efforts to nurture and encourage university students, SeeByte welcomed three students to undertake six month internships within the company. Kyle McNally, David Dunsmore, who are both undergraduate students at Heriot-Watt University, and Ayodele Lawal, a postgraduate student of Glasgow Caledonian University, were welcomed within the SeeByte Engineering team where they were given hands-on experience in working for one of Scotland's fastest-growing software development companies.

Having been provided with an overview of SeeByte's technology, each intern was then assigned to one of the company's latest projects best suited to their skills, working with some of our finest engineers. Ayodele, who was involved in re-designing the interface unit for SeeTrack CoPilot, commented that "I have been able to sharpen my skills in a number of areas. The atmosphere was very conducive and supportive, especially from my supervisor and other staff. The environment at SeeByte is definitely the best motivation anyone could have and was indeed very inspiring to me."

The Interns at SeeByte

Dr Scott Reed, SeeByte's Head of Engineering, stated: "Each of the interns worked to the very best of their abilities, showed commitment and produced high quality work which has certainly been beneficial to SeeByte during this busy period. I would recommend Kyle, David and Ayodele for any future position and wish them the best of luck with their imminent careers."

SeeByte will continue its internship program in 2011 and would like to encourage students with the relevant qualifications to apply. Details can be found by visiting the careers page on the SeeByte website.

OnlinE Electronics Ltd's Solutions for Pipelines

Pigging a Pipeline

Pigging a pipeline is a critical and essential part of the pipeline pre-commissioning and maintenance programme, which helps to ensure the integrity and optimum efficiency of the pipeline. Pigging aids continuous operation by removing any debris or liquids which may accumulate and constrict the flow and provides up to date information and data on any growing problems by analysing the general condition of the line. For the pigging operation to be efficient it is always necessary to monitor the pigs to know when a pig has left the launching trap, when it arrives at the receiver and to know where the pig is at any given time.

OnlinE Electronics Ltd (OnlinE) contributes to the process of pipeline pigging with its provision of pig signallers, locators and tracking systems, which ensure that valuable time and money is saved should there be a problem during the pigging process, for example; if a pig has become stalled.

OnlinE's products range from acoustic, electromagnetic, magnetic and ultrasound technologies and can be used in subsea, topside and land operations to signal, locate or track pipeline pigs.

Pig Signalling Systems

Pig signalling is a means of indicating when a pig has reached a certain point in the pipeline and can be used to confirm when a pig has left and arrived at its destination, determining when the valves can be activated during the launch and receive process. Non-intrusive signallers are now becoming the standard, particularly for subsea installations, and are an increasingly cost effective method of signalling. The clear benefits of non-intrusive technology are that it eliminates the need to stop production to install or maintain the equipment and the equipment can be clamped to the pipework, which removes the possibility of any corrosion problems which can occur as a result of welding.

OnlinE's ATEX certified magnetic signallers can be used where there is inadequate space in pipeline pigs to house transmitters or pingers. For those operators who are budget conscious, non-intrusive signalling is the most beneficial option as there is

OnlinE's ATEX Certified Magnetic Pig Signaller - MAGSIG™ 4000D

never a need to interrupt production for maintenance. Additional benefits of OnlinE's non-intrusive magnetic signallers include the means to provide a local signal of an event, downloadable event history and GS output.

The 4000D MAGSIG™ and 4000SD can be strapped to the pipeline and can log the time and date of up to 50 pig passages, information which can be viewed quickly and conveniently on the display.

OnlinE's Subsea Magnetic Pig Signaller - 4000SD

OnlinE developed its non-intrusive technology further with the introduction of their ATEX certified (Inject Detect) 'id 5000™' – a dual-sensing ultrasound pipeline pig signalling system suitable for use in hazardous conditions. Ultrasound is a very effective method for pig signalling in topside applications. The 'id 5000™' can accurately monitor the passage of a pig without the need for inserts or magnets resulting in no intrusion or welding. The 'id 5000™' can operate in different modes depending on the conditions in which the pig is passing through, for example; through fluid or gas filled pipelines or travelling at low or high speeds by adjusting the mode to suit the conditions, this ensures maximum reliability of operation.

Pig Tracking and Locating Systems

Pig tracking and locating is carried out to detect the position of a pig and usually involves following the course of a pig either continuously or by locating it at a series of fixed points. The primary advantage of pig tracking is that it reduces the search area to the distance between two suitable pig tracking locations, eliminating much of the pipeline route and saving valuable time. In addition to locating stalled pigs, tracking also gives useful information with respect to slippage or bypass and enables accurate prediction of the time of arrival at the receiver.

Commonly used devices for locating and tracking pigs include electromagnetic transmitters that operate well in gas-filled, buried pipelines and in pipe-in-pipe installations, and acoustic pingers and transponders used in subsea pipelines.

OnlinE's electromagnetic pipeline pig monitoring system can be used as a signaller or to establish a pig's exact location, both onshore and offshore, and consists of a transmitter, a receiver and an antenna. The electromagnetic system can also be operated subsea with the use of ROVs or a diver-operated combined antenna and receiver – the first of its kind to be produced – which provides the diver with full control over operation. Additionally, OnlinE offers ATEX certified electromagnetic systems to operate in hazardous areas, now a pre-requisite on most North Sea oil and gas platforms.

OnlinE's TAPS™ (Temperature and Pressure Subsea Data Logging System)

Acoustic systems have a greater detection range than Electromagnetic systems in fluid filled, unburied offshore pipelines when operated from either a support vessel or platform.

The function of OnlinE's range of high-specification acoustic pingers is to allow contractors to accelerate the process of locating a stuck pig, reducing loss of operating time and costs. This is achieved when a pig pinger gives off a strong acoustic signal which can be received from the surface by a pinger receiver or a hydrophone. This is a cost effective solution to more complex navigation and tracking systems and means quick detection of an acoustic pinger.

Data Logging System

OnlinE's TAPS™ (Temperature and Pressure Subsea Data Logging System) is designed to monitor, record and report pressure and temperature data during the hydrotest of an underwater pipeline. The TAPS™ system secures data whilst freeing up a vessel. Before its introduction a support vessel had to remain on location attached to the pipeline to monitor pressure for a set time of up to 24 hours. TAPS™ achieves the same result at a fraction of the cost enabling the vessel to move off station to perform other tasks, this also allows operators to have pipelines producing sooner. A new generation of TAPS™ is near to introduction.

Subsea Pipeline Communication Challenges for the Future

More and more subsea pipelines are being laid and, as time progresses, exploration and production is taking place in deeper waters. Some offshore pigging providers are now planning for operations down to 5000m and operators are finding that traditional techniques will no longer meet the demand.

Developing tracking and signalling pigs to work at extreme depths creates new challenges. Pre-commissioning pigs pass along subsea pipelines and may be pre-installed in to launchers months and sometimes a year in advance of flooding, cleaning, gauging and testing operations.

Pressure rating, battery life, delayed-activation techniques and reliable and efficient data communication are examples that need to be met to ensure the integrity of pigging equipment matches the intended purpose.

48" GAUGE PIG with GRID™ installed

OnlinE continually strives to meet the ever increasing and changing parameters and is constantly upgrading its product offerings by incorporating the latest technological advances.

A case-in-point is the value of additions it has made to its subsea pig tracking and locating systems allowing enhanced data communication during operations that require ROV interface; for example, OnlinE's model's 2001RS Acoustic Pinger Receiver and 3002RS Electromagnetic Receiver are primarily intended for use in tracking or locating underwater Pingers and transmitters. The communication between the receiver and Pinger transmitter is via a digital link, usually through an umbilical cable connecting the surface ship to the ROV. The OnlinE Acoustic and Electromagnetic Receiver Systems allow communication with most ROVs using fibre-optic umbilical and standard RS232 protocol.

A further example of OnlinE's innovative technology to ensure pipeline integrity is the GRID™ SYSTEM (Gauging Run Integrity Data system), which can detect internal defects in pipelines. The system uses coded acoustic pulses to report data on the status of a gauging disc, assembled on a pipeline gauging pig, transmitted through the pipeline wall to a vessel or topside receiving unit. As part of flooding, cleaning, gauging and testing operations the function of GRID™ is to confirm the condition of a gauging plate with the time of an event, if the plate has been damaged. Knowledge of a conformant gauging run facilitates an immediate hydrotest and avoids the need to recover pigs to manually inspect the plate, saving significant vessel time and associated costs.

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Bill Smith (left) and Andrew Seaton (right)

Tritech Strengthens Customer Support

Tritech International, the innovative underwater technology company, has grown its elite customer support team with two new appointments.

Andrew Seaton has been promoted to Customer Support Manager, effective from summer 2010. Andrew has been with Tritech since 2001 and previously held the roles of Customer Support Engineer and Product Line Manager.

With a BSc. (Hons) in Electric and Electronic Engineering, Andrew is currently working towards a Masters in Project Management. In his role as Customer Support Manager, he is responsible for Tritech's team of Customer Support Engineers who continue to service the requirements of Tritech's global customers. Andrew is well equipped to lead the Customer Support Team with the wealth of knowledge and experience he holds in Tritech's industry-standard subsea products.

Bill Smith joins Tritech with over 20 years' experience in the offshore industry. Bringing invaluable expertise to the team, Bill is skilled in the build and repair of subsea sensors; transferable skills he has been able to develop from his past profession as a broadcasting engineer.

Andrew Seaton comments: "Tritech is successfully delivering global results, over five continents and this is possible due to the highly experienced, world-class Customer Support Team we have here at Tritech. Bill's appointment adds greater expertise to the team, to complement our existing skills as we assist our customers in getting the most out of their Tritech products."

Nautronix Strengthen their Top Team with the Appointment of a New Director of Engineering

Gavin Duncan as the new Director of Engineering

Nautronix are pleased to announce the appointment of Gavin Duncan as the new Director of Engineering.

Gavin joins the company with over 20 years' experience in the oil and gas industry, mainly in subsea production and intervention with senior technical roles at Aker Solutions and Expro. His role will focus on overseeing all engineering projects including internally funded R&D and customer funded projects as well as developing the company's engineering capability.

Director of Engineering, Gavin Duncan said: "I am very pleased to be joining Nautronix at this early stage of growth and look forward to my new role, working with a first class team, and the exciting challenges it will bring."

Gavin will take over this role from Lindsay MacDonald who will now become Director of Technology. This will allow Lindsay to focus on developing technology, provide technical support for sales, and also develop relationships with industrial and academic bodies.

CEO Mark Patterson said: "I feel that these changes are a great step forward for the company, with Gavin's wealth of experience in the subsea industry he will be a great asset to the top team. Furthermore, Lindsay has many years of experience in the company and his depth of knowledge of the entire product range will allow key product development decisions to be made quickly, and will also be able to react to customer needs. Lindsay will also manage the product line to make sure we use "best practice" and keep our products competitive."

This move will allow Nautronix to develop not only their existing technology but also develop their latest product lines such as NASNet®, NASeBOP and NASMUX.

CSL Strengthens Project Delivery Capability with Appointment of Projects Manager

CSL, the Aberdeen-headquartered project management and engineering company is pleased to announce that Charlie Hughes is joining the company in the new role of Projects Manager.

Charlie has a strong background in Pre-Commissioning and Project Management from his recent career in Acergy that will reinforce the management of subsea project delivery in CSL.

This is a key appointment in the development of CSL's services and in delivering those services to its clients in the North West European Continental Shelf (NWECS) and future projects in North and West Africa.

CSL's Neil Knowles (left) and Charlie Hughes (right)

Charlie will also assist in expanding CSL's office in Stavanger to support both projects and field development studies. He will coordinate between Stavanger and Aberdeen to maximise the efficiency of service delivery to the overall benefit of the client's in the NWECS.

CSL's Managing Director, Neil Knowles, commented, "I am delighted to have Charlie as part of the team. 2011 promises to be a year of expansion for CSL and I'm confident he's the right man to help the company grow its services and its markets."

Fugro GRL Models NDT Tools for Subsea Deployment

As part of a European FP7 Project to develop new underwater non-destructive testing tools, Fugro GRL provided its DeepWorks software to simulate the deployment by ROV of a long range ultrasonic manipulator in the jacket structure of an offshore platform. The work was part of 'SubCTest', a €2m project, sponsored by the EC to develop ROV deployable inspection systems.

TWI in Cambridge has developed a prototype Long Range Ultrasonic Tool (LRUT) designed to be deployed by ROV and clamp around vertical or horizontal jacket tubulars. Fugro GRL created a simulation of the deployment of the tool by ROV and a simulation of the tool's operation in attaching itself to the tubular. Carrying out a simulation of the tool's operation was useful in reducing risk and cost prior to the underwater trial, in providing an early learning opportunity for engineers, and to allow design changes to be made based on the simulation rather than waiting to discover problems in the trials phase. The simulation has provided important proof of concept for the application of the tool.

Using DeepWorks, FGRL was able to model the articulated mechanism of the ultrasonic manipulator as well as its electro-hydraulic supply system from the ROV. The tool could be tilted up and down, rotated and clamped around vertical and horizontal tubulars. The LRUT model was quickly generated using CAD models supplied by TWI. DeepWorks' simple drag and drop user interface allowed the model to be rapidly configured and early simulations were possible within a day. Refactoring and modifications were easily carried out by engineers without the need to use simulation specialists.

"We now have an operational prototype which we have demonstrated with an ROV in limited sea trials. Because of the expense of full offshore trials the FGRL simulation is very useful in showing how the unit moves around a platform, locks on to a leg, collects data and unlocks," said Graham Edwards, Consultant, NDT group at TWI. "We now plan to use the simulation to demonstrate the potential of our prototype tool to prospective investors, and it's not just long range ultrasonics there are other NDT methods we can apply."

The JOK Harness Mk2

Life Support Engineering (LSE) have recently successfully trialled and tested the JOK Mk2 diver recovery harness. The harness has been modified following feedback from commercial divers worldwide, with the neck area being widened and the general fit made to suit a slightly larger diver.

This CE marked and tested harness has been very popular in both onshore and offshore diving environments, but adjustments have been made in response to requests for a buckle type waist fastening and less D rings.

Features still include the distinct and readily identifiable lifting points, tool attachments, umbilical attachment either side, bungee retainer loops to avoid the previous modifications to the harness by diver which void any lifting certifications.

The JOK Mk2 harness is now available from LSE Stockists around the world.

Well Ops Pioneers Coiled Tubing System

Aberdeen-based Well Ops UK, a business unit of international energy service company Helix Energy Services Group, is anticipating strong interest in its new coiled tubing (CT) system.

Launched last year and operating from the company's state-of-the-art well intervention vessel the Well Enhancer, Well Ops has developed the first CT system to be deployed from a mono-hull vessel. This CT capability is a recent development for Well Ops and is technology which many companies have been aiming to produce for some time. The system offers an alternative and more effective method of carrying out intervention procedures.

Steve Nairn, regional vice president of UK, Europe and Africa, said: "CT intervention allows us to expand the number of intervention activities we can deliver, such as milling, pumping and gaining access to highly deviated wells. To enable CT we have to run a rigid riser from the subsea equipment to the surface to contain the tubing, which means additional equipment on deck and a need to compensate for vessel motion."

Well Enhancer is a 132 metre long vessel that offers ROV, diving and well intervention services. Compared to its sister vessel the Seawell, the Well Enhancer provides a larger bore intervention system which allows access to a greater number of subsea wells. It features a 150 ton multipurpose tower capable of deploying wireline, slickline and coiled tubing tools - the addition of the CT system has expanded the vessel's already impressive workscope capabilities. The vessel also features kill pumps, an intervention lubricator control system and an active heave compensated main winch.

Mr Nairn added: "We have proven the system on a test well, including our ability to run and recover the riser, carry out an emergency disconnection and reconnection, and to run tools into the well. The system has also completed its first live well project for Hess, which involved the recovery of downhole equipment and placement of cement plugs to decommission a well. CT enables a very accurate placement of the cement plugs and is not reliant on the condition of the existing downhole tubing."

GSE Rentals Becomes First to Hire Out Sonardyne Ranger 2 Technology

GSE Rentals of Aberdeen, UK has made a major investment in Sonardyne's advanced 6G® technology by adding a Ranger 2 USBL (Ultra-Short BaseLine) acoustic positioning system to its equipment inventory. This is the first purchase of a Ranger 2 system by a rental company and it is anticipated by GSE that the system will be in high demand for survey operations in the North Sea and elsewhere.

Ranger 2 is designed for deep water, long range tracking of underwater targets such as ROVs and also position referencing for dynamically positioned (DP) vessels. The new system builds on the simplicity and performance of Sonardyne's popular Ranger 1 system but adds support for the company's latest sixth generation (6G®) acoustic instruments and Wideband 2 signal architecture. These technologies offer precise acoustic ranging, fast data telemetry and hardware that is easier to set up and operate even in the most challenging subsea operating environments.

The equipment purchased by GSE Rentals includes a complete Ranger 2 topside, high performance omni-directional HPT transceiver and four directional Wideband Mini Transponders (WMT). This equipment package can be easily and quickly installed on vessels-of-opportunity to position multiple subsea targets over a wide area and range of water depths with the highest levels of accuracy.

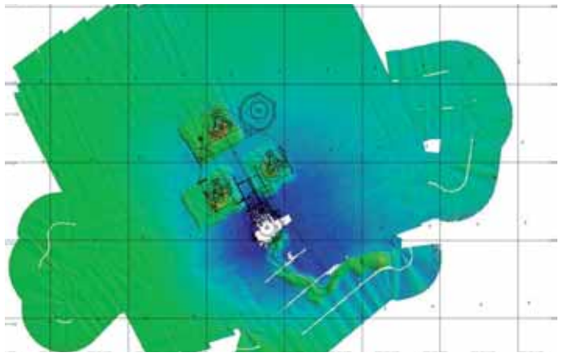
Commenting on the decision to purchase Ranger 2, Alan Cameron, engineering manager of GSE Rentals said; "The acquisition of Ranger 2 complements our existing range of hydrographic, geophysical and oceanographic rental equipment and ensures that our clients now have access to the very latest subsea acoustic positioning technology. Ranger 2 and its advanced features will improve the efficiency of survey operations, reduce vessel delays and generate savings for those using it."

NCS Survey Low Flying AUVs

NCS Survey recently performed some restricted access data acquisition with one of their Gavia Offshore Surveyor AUVs (Autonomous Underwater Vehicles) for Shell Upstream International Europe.

The primary reason for the survey was to observe any possible scouring around the spud cans of the jack-up drilling rig located alongside a platform. The AUV flew several lines between the legs of the jack-up drilling rig, as well as a couple of lines between the stern legs and the fixed platform. As can be seen from the accompanying images, the MBES and SSS image are both very high resolution. The SSS is a 900kHz Marine Sonics system and the MBES is a 500kHz Geoswathe interferometric system. The data was acquired in a single dive in water depths of less than 10m.

Previously, to perform such a survey required the



drilling rig to suspend drilling operations, lift up the hoses deployed over the side and sail a small vessel under the drilling rig, which obviously had safety implications. By using the AUV, NCS Survey were able to deploy and recover the vehicle from the standby vessel whilst located outside of the 500m zone, thus allowing safer operations and removing the need to suspend drilling.

The standby vessel, which was used as the support vessel, was already required on location so no extra vessel costs were incurred by the client.

The survey is expected to be repeated on a regular basis to monitor any scour developing around the spud cans. The vehicle can be mobilised in just a few hours and the data acquired within the endurance of a single battery pack which lasts four hours. The option to utilise two battery packs is also available for longer scopes.

The systems have been used on a number of different types of projects including pipeline inspection, harbour surveys and decommissioning.

NCS Survey currently has one 500m-rated vehicle based in Europe with another 1,000m-rated vehicle currently based in US Gulf of Mexico.

Control Line Routing - Engineering Expertise from L&N

Engineering Service Company L&N (Scotland) is utilising its engineering expertise to provide clients with a new routing service for Subsea control lines.

The company's new Control Line Routing System (CLRS) will significantly cut the time involved in manufacturing and assembling control lines used in manifolds and subsea Christmas trees, used in the oil and gas industry.

Clients would traditionally commission third party isometric drawings of control lines, which would then be passed to an engineering company like L&N for execution and assembly.

However, L&N has developed a new system which allows them to bypass this phase and to produce the drawings at source. With 15 years' experience in assembling flow and control lines, L&N's CLRS can save clients vital time with a faster delivery of manifolds and subsea trees.

By using CLRS, the manufacture of control lines can be initiated and completed without the manifold or Christmas tree being in situ.

L&N's Business Development Director, Mike McArtney, said: "Typically we could not start this type of project until we took delivery of isometric drawings, which are often supplied by companies with very limited or no welding or fabrication experience.

"Our practical experience gained over many years means we know the optimum position of the pipe bends and supports in a control line allowing us to factor this in at the drawings stage. Our CLRS cuts out the middle man and allows us to get straight on with the job without the need for the actual equipment to be with us.

"The big advantage for customers is that the tree or manifold can be progressing through the build stage and in tandem we will have all the pipe work completed and ready to be fitted."

L&N has already provided a Technician and Equipment package to Cameron, which successfully utilised the CLRS to complete a manifold control line contract in Egypt for the TAURT II Project.

A significant factor in the development of the CLRS service has been the contribution made by L&N mechanical engineers who have progressed through the companies apprentice & graduate programme.

Mr McArtney, added: "We invest a lot of time and resources in training and education and the fruits of this investment are now making a major contribution towards the future growth of our company. I am delighted at the way in which we are embracing new technology and introducing fresh ways of doing things which offer better value to our clients."

MEC-FIT: A Novel Flexible Riser Inspection Tool from Innospection Ltd with Remote Deployment Solution from Fugro Subsea Services Ltd

With the market demand for general riser and flexible riser pipe inspections operated from offshore rigs, Innospection has developed and launched MEC-FIT - a novel inspection tool using a patented NDT electromagnetic eddy current technology with deployment by a Remote Operated Vehicle from Fugro

MEC-FIT offers fast external scanning with the ability to penetrate into the various armoured layers of the flexible riser pipes. The patented inspection technique, a modification from standard eddy current technology, combines direct current magnetic field lines with eddy current field lines which allow the deeper penetration into the ferrite steel material.

The defined magnetisation level and eddy current frequency allow the selection of layers of the pipe to be inspected, or alternatively allow the optimisation of the inspection for a specific layer, from which a defect signal is received.

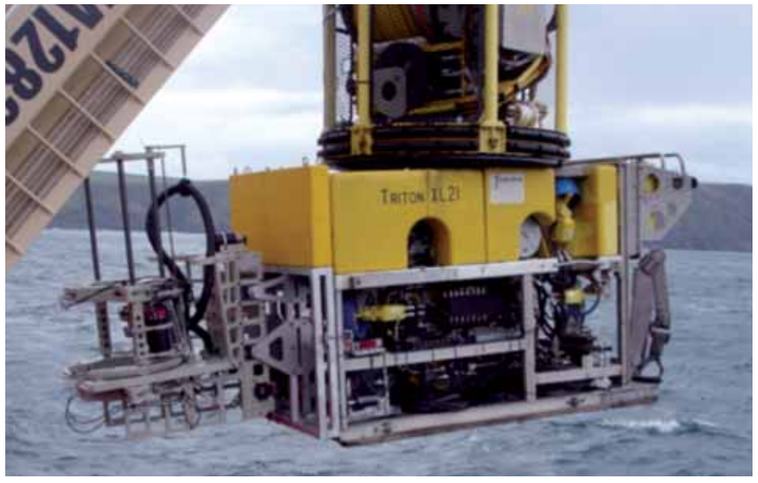
The key capability of MEC-FIT is to detect localised material defects such as cracks and corrosion beneath the pipe coating at the single wires or wire areas. Further potential is the detection and analysis of material property change (fatigue) and general wall loss.

Because the inspection method is electromagnetic, defects or material non-homogenous in the metallic layers are indicated. The inspection data for condition assessment is an additional support for the riser integrity evaluation.

Recent technical trials on a 10 inch flexible riser performed in deep waters have demonstrated the penetration of up to three metal layers from the outside of the pipe.

Other benefits of MEC-FIT include the provision of instantaneous inspection results of the flexible risers. The principle of the technique means that no couplant or annulus flooding is required for the inspection to be carried out.

MEC-FIT consists of a clamp-on cage which allows the scanning device to be attached to the outer surface of the pipe around its full circumference. The cage is deployed onto the pipe via a ROV and moves along the pipe for inspection. The inspection head contains the permanent magnet unit which can be controlled in its field strength by hydraulic valves. The sensors are connected to the electronic subsea system, and from there via the main ROV umbilical for the transfer of the signal data back to the inspection computer and control units at the ROV control unit, to receive the information in real-time.



Ashtead Technology to Launch New Calibration Laboratory

Leading subsea equipment rental company Ashtead Technology is making a substantial investment in a new Calibration Laboratory. Currently under development, the new Cal Lab will offer the ability to calibrate depth, temperature, conductivity and sound velocity equipment to manufacturer's standards. Ashtead engineers are undergoing comprehensive specialist calibration training at leading manufacturers Valeport, Ocean Scientific and Tritech. The lab is being developed in close collaboration with these manufacturers to ensure the same high level of calibration standards will be obtained.

The Lab will be headed by Gordon Smith, an Engineer at Ashtead Technology with 10 years' experience in the industry. Ian Harvey, Regional Manager commented: "This new facility will allow Ashtead Technology to calibrate our rental fleet internally, reducing the time taken during external calibrations, and thus increasing rental availability. In addition the facility will be available for calibrations of customer owned equipment, to the manufacturer's high standard."

The development of the new Lab follows the success of the Ashtead Technology Singapore Calibration Lab, launched in November 2009.

The benefit of the Lab is that it will allow cost savings to be passed onto the customer, by significantly reducing the amount of money spent on external calibrations. It will also ensure higher availability of equipment, by reducing the period of time taken to calibrate equipment through the removal of shipping time to/from the manufacturer.

First Subsea Introduces First Structural Integrity NDT Test for Deepwater Fibre Rope Connectors

First Subsea is using innovative non-destructive testing (NDT) technology to inspect the quality of forgings used in the new range of LankoFirst fibre rope connectors for deepwater moorings. Process Compensated Resonance Testing (PCRT) undertaken by Vibrant NDT Ltd is the only NDT technology to correlate to the structural integrity of the inspected component.

The LankoFirst fibre rope mooring connector is designed to revolutionise the ease with which deepwater fibre mooring lines for rope-rope, rope-wire and rope-chain connections are deployed offshore. Developed specifically for deepwater fibre connections, the connectors are smaller, lighter, stronger and more efficient than current plate links and thimbles for the same MBL.

Ease of make-up offshore is enabled by splicing the LankoFirst's sub-connector to the rope end during rope manufacture. It is this donut-shaped subconnector that is being tested using PCRT.

During PCRT the subconnector is excited with minute, through thickness vibrations generated by dry coupled piezoceramic transducers, from a continuous swept sine frequency input. The resonant spectra of the excited components is then logged permanently in a digital library and compared to spectras from known good and defective sub-connectors.

Unlike other NDT technologies that look for "indications" associated with defects that might affect the structural integrity of a component, PCRT measures the variations in resonance signatures that are the result of variations in structural integrity. In this way the PCRT software "learns" the acceptable manufacturing variations as well as the unacceptable variations caused by material problems, process problems, and in-process damage.

In addition the PCRT technique can be used to compare a component's resonance signature before use, during (as part of an inspection routine) and after use, and thus monitor the connector's structural intergrity for the onset of fatigue before cracking has begun.

Bright Future for Caledonian Geotech

The future of the Dundee-based geoscience consultancy, Caledonian Geotech, was assured earlier this year when Specialist Subsea Services (S^3), the ROV and survey service provider in Aberdeen, secured full ownership of the company.

Originally founded in 1980 by Richard Robinson, Caledonian Geotech encompasses the practical application of geology, land and marine geophysics, hydrography, engineering and oceanography to onshore and nearshore development and maintenance projects. With clients drawn from the civil and petroleum engineering industries, and with an extensive track record spanning 30 years, Caledonian Geotech's professional, multi-disciplinary team offers a comprehensive package of geo-scientific services embracing:

Coastal stability assessments, land based geophysical & geotechnical investigations, marine hydrographic and geophysical surveys, inspection of subsea assets including pipelines, cables and small platforms such as wind farm mono-piles, offshore geotechnical investigations, environmental surveys, oceanographic surveys and project consultancy

Caledonian Geotech has a readily accessible, UK-wide coastal data repository spanning 30 years of data gathering, both onshore and nearshore, around the UK and Ireland.

The firm's fleet of shallow draughted vessels includes a 20m ex-pilot cutter converted for survey and inshore ROV operations, and a collection of smaller vessels for shallow water work in confined seaways. The company also has access to a larger 30m catamaran for 24-hour offshore hydrographic, geophysical and geotechnical survey and ROV operations through an existing close relationship with the Marine Institute of Gdansk.

S^3's Managing Director, Graeme Kidd, commented; "With the ever expanding near shore engineering and construction market, in particular the renewable energy sector, Caledonian Geotech is well positioned to provide extensive support services to operators and contractors alike. I am delighted to welcome the team to the S^3 family where they will compliment our existing offshore subsea services, which now cover the entire water column from 0m to 3,000m."

Caledonian Geotech's founder, Richard Robinson commented: "I am very pleased that the name and reputation of Caledonian Geotech will be carried forward by the team at S^3 and that both myself and Mary McMurtrie, the Company Manager, will continue to support the development of the company going forward."

Deepwater Installs Nine RetroBuoy Systems to Protect Four Aging North Sea Structures

In 2010, Deepwater EU (a subsidiary of Deepwater Corrosion Services) successfully designed, deployed and commissioned nine impressed current cathodic protection (ICCP) systems to four fixed platforms located in the Forties Field, North Sea, UK. The 35-year-old platforms are 110 miles (180 km) east-northeast of Aberdeen in around 120 meters of seawater. The owners required a life extension solution for the cathodic protection (CP) system to add at least 20 additional years of service for the aging structures. The engineering and design for the systems were carried out from their UK offices; systems were all manufactured in the UK.

The installation followed extensive engineering in order to design the most appropriate system for the aging structures including topside equipment suitable for installation in hazardous areas on the platforms. Deepwater's focus was to provide a retrofit CP system that could meet the current required for the 20-year life extension, while minimising installation costs for the client. The ICCP systems consisted of nine RetroBuoy anode skids, which were deployed concurrently with all associated cabling, in order to reduce the installed cost as much as possible. In any CP retrofit, deployment of the subsea anodes is always the major expenditure, however actual deployment of each anode skid in this case was completed in 12 hours.

Topside equipment was installed by the client's nominated contractor and pre commissioned by Deepwater in the summer of 2010, prior to anode and subsea cable deployment in the Autumn of 2010. Deepwater engineers were on-site to oversee topside termination of the subsea cable and confirm that all equipment had been installed in accordance to the design and specifications.

Once both phases of deployment were completed Deepwater commissioned each ICCP system. Structure to seawater potentials were recorded prior to and after the system was energised. The transformer rectifier outputs were adjusted as required to maintain an average potential of - 1,000 mV w.r.t. Ag/AgCl across each structure.

Developments in Cavitation Cleaning

2010 saw a number of successful deployments around the UK of the CaviBlaster cavitation cleaning machines supplied by Charles Cleghorn Ltd, for both diver and ROV operations. The inherent safety and ease of use of the system when diver-operated has been proved in a variety of cleaning tasks. Examples included a Thames Estuary wind farm installation and dockyard piers. Anodes needing inspection after 6 years' immersion and pier structures needing examination for insurance purposes, were typical of tasks where marine growth could be removed quickly, economically and safely.

The cavitating water plume from the CaviBlaster nozzle does not damage the material being cleaned, and does not damage or remove the surface of anti fouling paints, or modern foul release coatings. This gives a significant benefit where cleaning is in the vicinity of vulnerable installations, such as wind farm power cables, where high pressure blasters could cause a safety hazard. The CaviBlaster system has been successfully tested against a modern foul release coating for ships, and testing is scheduled against oil installation riser coatings, where cavitation cleaning offers significant advantages over current techniques in both speed of operation and elimination of the risk of damage

CaviBlasters have also been deployed using ROVs, and were found to give major time savings over conventional cleaning processes, a significant benefit given the high cost of ROV operations. The cavitation cleaning process is highly energy efficient, and so requires less power input than a conventional high pressure blaster for a given cleaning performance. CaviBlaster machines have recently been introduced for installation on ROVs, eliminating the need to run hoses from a machine at the surface while minimising demands on the ROV power budget.

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