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Marine Coordination

Global Offshore Wind 2016 Preview

Subsea Umbilicals
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INTRODUCTION

The weather and its effect on our industry

In a former lifetime my professional career was very much dependent on the weather conditions which prevailed at the time. It is therefore a very interesting subject to focus on within this edition – although my previous profession was very different to that of today I can understand completely why the weather massively impacts on the work which we do... particularly offshore!

Which brings me to weather onshore and the importance of weather forecasting. We have featured The Met Office on numerous occasions in previous editions however they taken the lead within this edition and head up our Onshore O & M feature, a fascinating insight I hope you will agree.

OTHER FEATURES INCLUDE...

- Hydraulics & Alternatives
- Onshore Operations & Maintenance
- Life Extension of Windfarms
- Global Offshore Wind 2016 Preview
- Marine Co-Ordination
- Marine Ordnance
- Survey Vessels
- Workboats

EDITORIAL CONTRIBUTIONS

Please feel free to contribute to the next edition. Your contributions are vital to our success so please do not hesitate to get in touch.

INTERACTIVE MAGAZINE IN PRINT AND ONLINE

Many of you are now quite aware of our magazine's interactive links. By using QR Codes in the printed version and direct links online we are able to assist our readership in finding out much more information on products and services available to the industry.

Please try these here to see what we mean

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FORTHCOMING FEATURES – GET INVOLVED

Please feel free to contact us if there is any subject area which you think may be of interest to our readership and we will do the rest – there is never any charge for genuine editorial.

NEXT EDITION OF THIS MAGAZINE (editorial deadline 20th June 2016)

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- 2 Working at Height
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- 8 High Voltage Cables
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- 13 Offshore Oil Changes
- 14 Focus on Whitby & Scarborough

MEET THE TEAM...AGAIN

We will be visiting Global Offshore Wind 2016, Manchester in June – please feel free to give us a call to arrange to meet face to face and discuss your views on how to help the industry continue to progress.

Even in this world of advanced communication technology we have found that it is much better to meet up in person either at a stand or over a coffee/drink.



D. McGilvray

Duncan McGilvray
Editor | **Wind Energy Network**

www.windenergynetwork.co.uk

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Weather!

It is often said that the UK and North Western European coastlines' climate is rather unpredictable and therefore severely affects planned work schedules. The fact is that this area does not have a climate... it has weather and this is quite a different animal.

Climates are quite predictable but have extremes because of large land masses and weather is generally very much the opposite.

The cover image reflects this and our designers have used their expertise to make the image a little more interesting.

I mentioned the word unpredictable. However The Met Office has made enormous strides in recent years to make the unpredictable predictable! Please read their substantial article that heads up our very interesting feature on Onshore O & M, which is particularly dependent on a regular basis to weather conditions.

OTHER FEATURES INCLUDE...

- **Survey Vessels** – often forgotten is the important work which is carried out long before offshore structures are installed
- **Marine Ordnance** – following on from marine surveys ordnance is regularly found and has to be dealt with safely
- **Life Extension of Windfarms** – as windfarm O & M costs become more and more important the extended life of a windfarm becomes even more vital

Duncan McGilvray
Editor | Wind Energy Network

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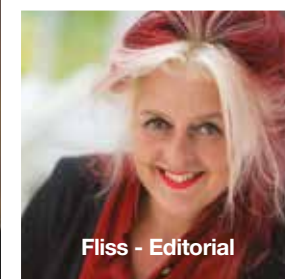
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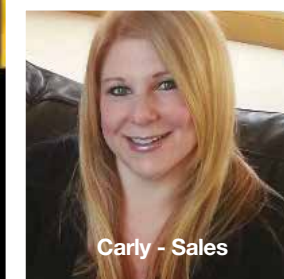
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Europe's Largest Contract for Offshore Wind Turbines

ScottishPower Renewables and Siemens have the final hurdle cleared for East Anglia ONE windfarm – the agreement is believed to be Europe's largest wind turbine contract for a single project.

The company has concluded a major deal with Siemens, which will see 102 wind turbines supplied for the East Anglia ONE offshore windfarm. The contract, including a 5-year service agreement, will be worth up to one-third of the overall £2.5 billion project investment.

CONTRACT FOR DIFFERENCE MILESTONES

The agreement comes on the same day that the Low Carbon Contracts Company confirmed that the Contract for Difference (CFD) milestones have been fulfilled, ensuring that East Anglia ONE will be the best value offshore windfarm to go in to construction anywhere in the world.

TURBINE PROJECT DETAIL

East Anglia ONE will utilise 102 turbines, each with a capacity of 7-megawatt (MW), which in total will power more than 500,000 homes every year. With the CFD milestones achieved and confirmed by the Low Carbon Contracts Company, the project will be delivered at a price of £119/MWh, a cost reduction of 20% compared to other offshore windfarms that have been built in the UK.

SIEMENS HULL FACTORY

The 75 metre long turbine blades are planned to be fabricated in Siemens' new factory in Hull, and £5 million is set to be invested in Great Yarmouth Harbour, which will act as the pre-assembly port for the installation of the turbines.

The turbine agreement is the largest individual contract placed as part of the £2.5 billion project, and will help to support many of the 3,000 jobs that the project aims to create during construction.

GLOBAL EFFORT

Ignacio Galán, Iberdrola and ScottishPower Chairman, said: "Offshore wind power is a vital component in global efforts to help to deliver the binding agreement achieved by more than 170 countries at the COP21 meeting in Paris and signed recently in New York. As a worldwide leader in renewable energy, we have always focused on clean technologies that are competitive enough to deliver real energy solutions. Offshore wind works."

"We have seen this in our highly efficient West of Duddon Sands project, and cost reductions are already benefiting the delivery of our Wiking project being constructed in Germany. East Anglia ONE will raise the bar further, as technology matures and expertise in the supply chain increases. We see huge potential globally for offshore wind, and we will continue to lead the industry in driving down costs."

SCALING THE FINAL HURDLE

Keith Anderson, CEO of ScottishPower Renewables, said: "We have concluded Europe's largest project-specific wind turbine agreement just a month after taking our final investment decision, and we have scaled the final hurdle by satisfying our CFD conditions with the Low Carbon Contracts Company. It is now full steam ahead for East Anglia ONE, with ground set to be broken early next year."

"East Anglia ONE is the first of up to four projects we would like to build in the southern North Sea, and we hope that our plans will stimulate jobs and investment for the UK and across the region for decades to come."

KEY OBLIGATION

Low Carbon Contracts Company CEO Neil McDermott, said: "The milestone requirement is a key obligation under the CFD and we look forward to working with East Anglia ONE to deliver this landmark project."

WORKING TOGETHER

Michael Hannibal, CEO Offshore of the Siemens Wind Power and Renewables Division, stated: "Siemens is delighted to work with ScottishPower Renewables on East Anglia ONE offshore wind power plant. This also represents the largest single order ever for our direct-drive, 7-megawatt wind turbine. The decision to go with our innovative wind turbines underscores the contribution made by these units to reducing the costs of offshore wind power."

CUTTING OFFSHORE WIND COSTS

ScottishPower Renewables is delivering a large cut in the cost of offshore wind power through East Anglia ONE, with a cost of electricity set at £119/MWh after a successful bid in the competitive UK Government auction. This cost reduction has been made possible by ScottishPower Renewables' use of advanced technology, such as these larger and more efficient turbines.

PROJECT WORKING HISTORY

ScottishPower Renewables and Siemens worked successfully on their first joint offshore project, the 389 MW West of Duddon Sands Offshore Windfarm in the Irish Sea. Construction work on ScottishPower Renewables' second offshore windfarm, the Wiking project in the German Baltic, is currently underway, using 5 MW ADWEN turbines.

ScottishPower Renewables

Siemens

ED'S NOTE

A spotlight on East of England is scheduled for Spring 2017 so we will be following this project and the supply chain much more closely. If you would like to get involved by contributing editorial please get in touch. Editorial which will help the industry is genuinely offered free of charge.

SERIES OF UK FIRSTS

Lowestoft based Sembmarine SLP Ltd (SLP) undertook a series of firsts at their Hamilton Road site this month.

The facility comprises of a topside and jacket structure, the latter of which uses suction bucket technology, a first for a substation in UK waters, with around 6m of the 9m bucket height being sunk into the sea bed on installation.

JACK UP OPERATION

In early March SLP took the project another step closer to completion by upending and jacking up the jacket. The jack up operation was the first of its kind in the UK and involved jacking up the 954 tonne (approx.) jacket to 14m high using a Mega Jack 800 jacking system provided and operated by global heavylift specialists ALE.

whilst also considering the construction constraints of the project. The roll-up event was a culmination of high level engineering and design works carried out by SLP and ALE and close collaborative working with STDL to get the jacket ready for the planned sail away."

TREMENDOUS TEAM EFFORT

John Davidson, STDL Project Manager, said: "I would like to acknowledge the tremendous efforts displayed by the team in reaching this important milestone



DUDGEON OFFSHORE WINDFARM

The Engineering specialists have been working with Siemens Transmission and Distribution Ltd (STDL) to build an offshore facility for the Dudgeon Offshore Wind Farm owned by Statoil, Statkraft and Masdar. The windfarm will be located 20 miles off the coast of Cromer in North Norfolk and when operational will have the capacity to power approximately 420,000 homes in the UK.

The suction buckets were positioned under each of the jacket legs using SPMT trailers to manoeuvre them into place. The Mega Jack 800 then lowered the jacket and held it in place whilst the suction buckets were welded to the jacket by SLP operatives.

COMPLEX OPERATION

Matthew Wooltorton, SLP Project Manager, said: "It has been a particularly complex operation to integrate the suction bucket technology into the Jacket

in the project. Whilst under enormous pressure they worked tirelessly around the clock without compromising on safety or quality.

"This was a good day for the project and the team should be proud of their achievement, well done."

Sembmarine SLP Ltd

CREATURE FROM THE DEEP NESSIE DISCOVERED!

Time after time the search has been made, and time after time, they've all come back empty handed. However this week, Kongsberg Maritime Ltd, the UK division of Kongsberg Maritime, has achieved the unimaginable and uncovered the elusive Nessie.

That is, the long lost model of Nessie which was used during filming of 1970's 'The Private Life of Sherlock Holmes'.

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

OPERATION GROUNDTRUTH

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

As Loch Ness has a reputation of being incredibly difficult to survey, the state-of-the-art MUNIN will undoubtedly reveal brand new information regarding the Loch.

UNCOVERING THE 46 YEAR OLD NESSIE MODEL WAS JUST THE BEGINNING...

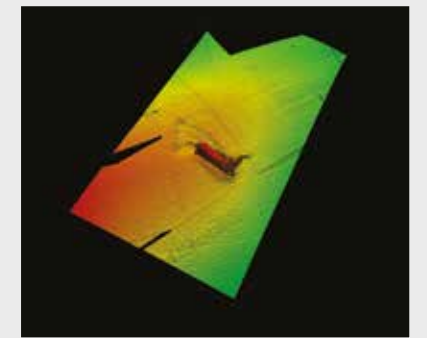
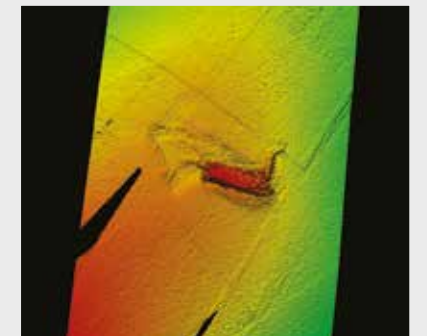
Craig Wallace, senior subsea applications engineer at Kongsberg Maritime Ltd is excited to be back at a favourite location:

"Kongsberg Maritime Ltd began surveying Loch Ness with some of the world's first multibeam sonar back in 1987. Over the years, the company has returned many times, bringing the latest technology to uncover the Loch's mysteries.

"We expect to uncover new information from the Loch during this survey, as MUNIN is the most advanced low logistics AUV on the market and is the first of the next generation AUVs from Kongsberg Maritime. Merging the cutting edge technology from the commercial sector whilst maintaining the robust reliability from the military market, the vehicle is providing insight to the Loch's depths as never before imagined. Finding Nessie was, of course, an unexpected bonus!"

SIGNIFICANT BENEFITS

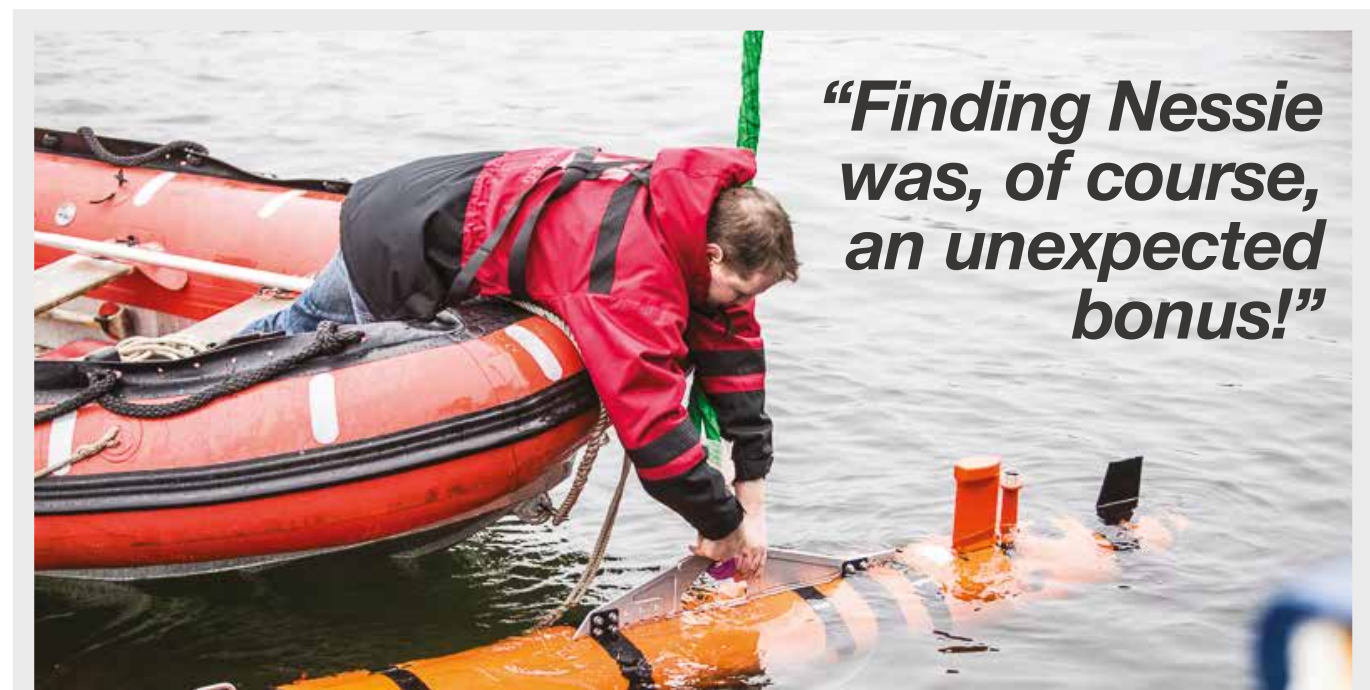
The MUNIN AUV, which was recently added to the company's Aberdeen-based rental pool, offers significant benefits in terms of low utilisation costs, high reliability, an excellent standard of data quality and easy deployment. In light of the product's recent launch, Kongsberg Maritime Ltd has unveiled an AUV Management Course, designed to ensure that those working with



its MUNIN (or HUGIN) AUV operations gain a greater understanding of its capabilities, mission preparation, vehicle launch and recovery, and data monitoring and verification.

Kongsberg Maritime Ltd

[Click to view video](#)



"Finding Nessie was, of course, an unexpected bonus!"

WORKWEAR THAT MAKES WORK EASIER

MASCOT's worldwide test wearers agree that the best workwear is that, that you don't notice you're wearing. The clothing must not be too heavy, pockets must sit properly and the clothing should fit perfectly.

Most industry workwear on the market is plain and simple, few details and fit, with the Mascot Light range the focus is on comfort and function.

GETTING THE JOB DONE COMFORTABLY... AND SAFELY

Temora trousers weigh 245g / m2 and have a proven fit for great mobility. Finley Softshell jacket has the same proven fit, pockets size and location, specific for work in industry. The range gets the job done easier because you are less focused on the workwear and more concentrated on the work. When you're a focused at work you also remain safe.

COST EFFECTIVE QUALITY

The pricing is low, but rest assured, there has been no compromise on quality. The range offers quality for professionals, just as in the company's other ranges. All products in the new range are made from hard-wearing twill material. The products offer extra reinforcement around the pockets and in other exposed places, so they can withstand daily wear and tear and last longer. In addition, the products are sewn with a reinforcing three-needle seam in all exposed places.

In the range you will find nine new two-tone products, including work trousers, work jackets and a boiler suit in two different colour combinations, royal blue/ navy or dark anthracite/black. The range is offered in a broad range of sizes, including trousers with three different leg lengths as standard to ensure a perfect fit.

CSR CERTIFIED WORKWEAR

Mascot Light is also workwear with a clear conscience. Our products are manufactured at Mascot's own factories in Vietnam, which have SA 8000 certification. SA 8000 is the most acknowledged international standard for corporate responsibility.

When a supplier has this certification, consumers can be confident that the products have been manufactured under good and safe employee conditions.

MASCOT

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(editorial deadline 20th June)



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PLEASE CONTRIBUTE YOUR STORIES TO THE MAGAZINE. YOUR EDITORIAL TO THE FEATURES ABOVE WOULD BE MOST WELCOME.

HUMBER SPECIAL IN THE NOVEMBER ISSUE



With pull out matrix supplement

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EDITORIAL REQUEST

If you would like to contribute an article please get involved and send us your 350 word story and images. Editorial is completely free of charge. To promote your company in the feature and matrix there are a number of options available. Follow the link above for more information.

Humber Update will consist the following subsections...

- | | |
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The Importance of... Weather Forecasting

Graham Ford, Head of Renewable Energy Services at the Met Office explains the crucial role that forecasting plays in safety, maintenance and operations for the onshore wind energy market...

WIND INDUSTRY FOCUS

Over the last few years, the Met Office has placed a particular focus on supporting the wind industry as the renewable energy market grows. We've developed weather and climate services to meet the requirements of onshore wind, throughout all stages of the project lifecycle.

EUROPEAN CHALLENGES

The wind industry in Europe has faced a number of challenges when it comes to developing energy profitably and at a cost which is competitive to other energy sectors. Downward trends in market support, less attractive incentive mechanisms and policy uncertainty for onshore projects post-2018 have played a key part in this, and this is coupled with the rising cost of land acquisition, development and operations.

However, there is significant construction activity planned over the next few years – at the end of last year there was 2GW of onshore wind under construction. There is a danger that this could mean increased pressure to complete projects before deadlines, such as working through the winter months, which could increase exposure to more challenging and hazardous working environments.

ADDED PRESSURES

Whilst the health and safety of site teams will always remain the paramount concern for operators, these added pressures mean the industry also has to focus closely on maximising the operational output and efficiency of onshore projects, to ensure the sector can continue to thrive.

WINDFARM MAINTENANCE

Maintenance is a key part of operations where planning and accurate forecasting can play a huge role in increasing efficiency and helping the sector in achieving this goal. When sites are under warranty, they often have no say in when maintenance takes place, which can be problematic – leading in some cases to downtime during optimum energy-generating conditions.

Furthermore, the maintenance can also be scheduled for periods where the weather turns out to be unsuitable – meaning important repair work cannot happen. This can in some cases mean that equipment brought on site for specific maintenance tasks, such as specialist cranes that are extremely expensive to hire, cannot be used. This is all very frustrating for operators and costly for the industry.

However, as the industry is maturing, it's beginning to reach a turning point where sites are coming out of their warranty period and operators can conduct, and therefore schedule, their own maintenance. This allows them to circumvent the two issues mentioned above and schedule maintenance for times when the energy yield would normally be low, and/or when the weather conditions are more likely to allow the maintenance to take place.

The benefits in efficiency associated with self-planning maintenance can be so significant to an operator that they may even buy themselves out of their warranty period.



OPERATIONAL PLANNING

To assist operators in planning their operations and maintenance, we've launched an enhanced version of VisualEyes – a product developed in-conjunction with the wind energy industry. The web-based monitoring and alert system helps manage conditions for onshore windfarms and informs management of the most efficient and optimum maintenance schedules.

Used by many of the major utilities companies and the largest windfarm in the UK (Whitelee Windfarm), it shows weather forecasts in a map view for up to five days ahead. The system is even used by the National Grid to help it establish how much energy will be produced in the short-term to make relevant planning decisions.

SITE SPECIFIC CHARTS

In addition to the five day forecasts, the system also provides customisable, probabilistic planning charts for up to 14 days ahead, these detailed site specific charts show a range of weather elements including surface wind speed, temperature, rainfall, snow and lightning strikes.

This comprehensive information means windfarm operators can potentially reduce maintenance costs significantly whilst, most importantly, offering health and safety benefits in terms of safeguarding staff and contractors, mitigating against the stranding of staff or equipment.

PRACTICAL APPROACH TO SAFETY

For example, on remote sites, personnel generally work in small groups – often pairs. Under these conditions, the most practical approach to safety is for workers to apply their own safety precautions as part of their working package – essentially putting the onus on site engineers to make the critical decisions about their own health and safety relating to the prevailing weather conditions.

Events they need to be aware of include: lightning, high wind, the risk of being snowed-in, fog or cloud leading to poor visibility, prolonged periods of rainfall and prolonged exposure to cold weather.

DEVICE RESPONSIVE

VisualEyes is device responsive, meaning personnel can access the system from mobile devices and stay informed during changing weather conditions. This, together with the push alerts, can be a vital warning system for those on site. As well as sending email alerts, we recognise that sites are often in remote locations in areas with little or no 3G (or data) availability, so alerts can also be sent in text format.

SUMMARY

The push to operate as efficiently as possible, maximising revenues, plus the need to beat deadlines for project completion, is leading to challenges, including increased exposure to extreme weather conditions. Whilst this is unlikely to change, we can help the industry be as informed as possible about hazardous weather to stay safe.

Graham Ford
Head of Renewable Energy services
Met Office

[Click to view more info](#)

VisualEyes is a trademark



VISUALEYES

The upgraded and enhanced VisualEyes product from the Met Office is an intuitive web-based weather alert system designed in conjunction with the renewables industry. Weather forecasts combined with site-specific probabilistic charts and alerting help operators manage their assets across the UK and Europe.

It covers weather types including...

- Observed Lightning
- Forecast Lightning
- Wind
- Wind Gust
- Wind at Height
- Gust at Height
- Rain Accumulation (6 hour and 12 hour)
- Snow Accumulation
- Temperature (low and high temp warnings)
- Visibility

Using site-specific data underpinned by world-leading science, it delivers benefits including...

- Minimising health and safety risks
- Reducing maintenance costs through workforce, site access and plant planning and scheduling
- Enhancing revenue to identify optimum times for power generation
- Allowing users to stay informed of site conditions through SMS, email alerts and mobile device access

CUSTOMER TESTIMONIAL

Scottish Power Renewables

"Using the Met Office's VisualEyes service gives us the control to monitor exact conditions and make real-time, on-the-ground decisions which have helped to increase our efficiency, and most importantly reduce safety risks to our staff and contractors."

Mark Gailey, SPR Control Centre Manager

Windfarm scale up

Van der Vlist was requested to arrange the transport of four wind turbines with a hub height of 100 metres, needed for increasing the capacity at the Battenort windfarm in the Netherlands.

COMPLETE TRANSPORT SOLUTION

The company offered a complete transport solution for all parts: everything from the 50 metre long blades that were transported by super wing carriers, the nacelle, hub and tower sections as well as ancillary parts that were moved on standard trailers.



BARGE TRANSPORT

92 concrete segments were also delivered using four barges. The barges were placed alongside the Van der Vlist quay where the segments were then transhipped with the aid of the mobile port crane being present.

LOCATION

The close proximity of the Van der Vlist Terminal at Moerdijk to that of the windfarm allowed for a combined road and river solution that was both cost effective and environmentally friendly.

WINDFARM INCREASED PRODUCTION

The expected annual production after scaling-up will be approximately 40 million kWh, four times higher than previously and sufficient for the electricity consumption of 11,000 households.

Van der Vlist

THE UK'S LARGEST ONSHORE TURBINE BLADES... DELIVERED!

Some would shy away from the challenge of transporting three 145m wind turbines featuring 58.7m blades; Collett & Sons say bring it on!

MUIRHALL WINDFARM

With approval granted for the phase three of Muirhall Windfarm in South Lanarkshire the company was called upon to facilitate the import and delivery of eighteen components from the Port of Grangemouth, components which when constructed would form three GE 2.75-120 145m wind turbines.

PREVIOUS CONTRACT

Having delivered two Servion turbines for phase two of the Muirhall extension in February 2014, the previous holders of the largest onshore turbine blade record, Collett were well practiced at traversing the route from port to pad side with the turbine component cargoes.

CHALLENGE AND THEN SOME!

However, due to the massive 58.7m length of the phase three blades, and the even larger 63.35m overall loaded length, their teams had to undertake meticulous planning ahead of the project. To ensure suitability of the route Collett Consulting pored over data providing Swept Path Analysis Reports and route access surveys before undertaking a test drive of the route with a vehicle adapted to accurately reflect the loaded vehicle dimensions.

The provision of all this data identified several requirements along the route to enable the convoy's safe passage, this included street furniture removal, relocation of signage and lamp posts, pruning of foliage, third party land requirements and certain sections where the placing of track way would be necessary.

The tower sections would move freely along the route but these special measures were essential for safe delivery of the blades. After liaising with several authorities, highways departments and constabularies the route was agreed and adapted to accommodate the convoy, now all that was needed were the turbines themselves.

SHIPPING

Cue the arrival of the ships. Handled by Collett's Marine Division, two vessels were expected at the Port of Grangemouth, the first arriving from Poland carrying the nine turbine blades, the second from Turkey carrying the nine tower sections.

As the vessels arrived the company was on hand portside ready to begin the discharging of the ships. One by one each of the components were safely lifted from the vessel to an agreed laydown plan portside at their Grangemouth Heavy Lift Storage Facility. Utilising the company's 110Te straddle carrier and various craneage equipment, each component was strategically positioned to allow for ease of loading in line with the delivery schedule. Here the loads would remain until the stage of construction at Muirhall could facilitate delivery allowing Collett to provide a 'Just in Time' service.

HUBS AND NACELLES – ANOTHER CONSIDERABLE CHALLENGE

The hubs and nacelles for each turbine were located in Germany. This provided yet another logistical challenge requiring expert co-ordination from Collett to ensure an orchestrated arrival of the components necessary for each complete turbine. The company once again rose to the challenge, with expert logistical planning and execution they ensured that deliveries of these integral components fell in line with the agreed schedule.

DELIVERY DETAIL

As the end of November approached the first delivery to site set off. In order to minimise disruption, and due to the size of the cargoes and the route they would be travelling, each convoy consisted of one tower section and one turbine blade.

Accompanied by Collett's pilot vehicles and under police escort the convoy made its way along the route, manoeuvring the components through the villages of South Lanarkshire with their expert drivers effortlessly taking the challenging route in their stride.

After crossing splitter islands, employing contraflow manoeuvres and utilising manual steering at key points throughout the route all components arrived safely on site ready for construction.

DELIVERY SCHEDULE

Working on a 6 day a week delivery schedule, and adopting the blade and tower delivery combination, each component safely made the journey from Grangemouth to site, arriving in synchronisation with the construction schedule.

Working closely with the experienced Muirhall wind energy team on both this and the previous phase two extension allowed the company to provide expert logistics throughout.

ISING TO THE CHALLENGE

From coordinating the arrival of components from three separate locations across Europe to the extensive planning and execution of manoeuvring a 63.35m loaded combination, Collett rose to the challenge and are proud to say that they've delivered the largest onshore turbine blade in the UK.

Muirhall Windfarm phase 3 extension, also known as Muirhall South is expected to be operational in early 2016 and will offset circa 10,848 tonnes of CO2 per annum whilst supplying up to 5,773 homes with electricity over the 25 year lifetime.

Collett & Sons

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Company Development and Progress

Stephen Bolton has been appointed Operations Director for Bibby Marine Services, owners of the recently commissioned Service Operations Vessel (SOV) for offshore windfarm operators, Bibby WaveMaster 1.

INDUSTRY EXPERIENCE

Stephen brings a wealth of industry experience to this strategically important role, having worked in the electricity industry for over 20 years. He has worked at windfarms (including North Hoyle, Barrow, Lynn and Inner Dowsing, Thanet, Rhyl Flats and Gwynt y Môr) and in senior roles at electricity companies such as RWE and Centrica.

KEY ROLE

Stephen Blaikie, Chief Executive Officer of Bibby Marine Services, commented, "This appointment is a key role in the development of our company. Stephen Bolton is a seasoned professional who will help us to bring our new vessel to market and will work with windfarm operators, ensuring we deliver high quality access and accommodation solutions. He will be involved in the build and the ongoing management of the vessel as well as the strategic development of our business."



Stephen Bolton, Operations Director

"He is also highly experienced in the offshore wind sector, having been involved in the construction of the UK's first offshore windfarm, North Hoyle. His pioneering approach led to a shift-change in Strategic Asset Management, delivering fit for purpose strategies that delivered whole windfarm asset management, as opposed to just wind turbine management."

Bibby WaveMaster 1



COMPREHENSIVE KNOWLEDGE AND UNDERSTANDING

Stephen Blaikie continued, "Drawing on his direct operations experience at several windfarms, his comprehensive grasp of the needs of operators will enable him to deliver the highest levels of customer service."

REALISATION

Insights gained throughout his career made him an early proponent of the concept of the Walk to Work SOV. Stephen Bolton explained, "From early on, I realised the step change in safety and operational efficiencies that could be gained from a properly designed Walk to Work SOV."

"Just as design is critical to the vessel's success in terms of accommodation and access, I also believe that the ability of the vessel owner to deliver a range of services is vital. The combination of Bibby Line

Group's heritage and the many services it can offer, coupled with the design and build capabilities of Damen, results in a vessel that will be a real game-changer in offshore wind. I am delighted that I am taking a role that is helping to shape the future of offshore wind access."

Stephen is a Chartered Mechanical Engineer (Leeds) with a Master of Business Administration (Henley). He has also published many thought leadership articles on offshore wind asset management.

Bibby Marine Services Limited

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INNOVATION IN SURVEY VESSELS

N-Sea is known for its innovative work as an independent offshore subsea contractor, specialising in inspection, maintenance and repair services for the renewable and energy industries. The company operates a fleet of specialised multipurpose vessels which are equipped with state-of-the-art systems and equipment as well as supporting a wide range of subsea operations.

PROJECT CASE STUDY

A recent project utilised four vessels including the Noordhoek Pathfinder, a survey and offshore support vessel, to complete an unexploded ordnance (UXO) survey, ID and disposal campaign for the TenneT project, BorWin3.

The Noordhoek Pathfinder is equipped for ROV, diving and survey projects with integrated air diving systems, vessel-mounted USBL, multibeam, sub-bottom profiler, ROV, ROTV and accommodation for 40 people. The vessel's speed and endurance enable a highly efficient range of operations, globally.

BORWIN3 PROJECT

For the BorWin3 project, transmission system operator TenneT built a grid connection system to connect wind parks in the North Sea with the high-voltage grid onshore. N-Sea's work scope involved surveying the seabed to identify and remove undiscovered explosive devices along the cable route of BorWin3.

The cable corridor started in very shallow water mudflats for a 12 nautical mile zone, north of Borkum in Germany. This was an extremely challenging environment known not only for its shallow waters, but also high currents and continuously moving sandbanks.

The survey campaign undertaken by N-Sea comprised a geophysical survey (multibeam, Side Scan Sonar (SSS), Sub Bottom Profiler (SBP) and Magnetometry) of 137 targets within the main cable corridor and adjacent anchor corridors, totalling almost 2000km.

RESULTS

The investigation element of the project resulted in three positively-identified explosives; two sea mines and one grenade. The sea mines were destroyed on site, with N-Sea coordinating the operation under supervision of an explosive ordnance disposal service.

Requiring a more accurate identification, the grenade disposal was carried out on board a separate vessel, through use of a mobile x-ray machine.

SAFE PROJECT COMPLETION

Despite the challenges documented above, the project was completed safely and effectively with no incidents, and reflected N-Sea's ability to always provide safe, sound and swift solutions.

N-Sea



SIGNIFICANT BREAKTHROUGH

CTruk Group has made a significant breakthrough into the survey vessel market with the delivery of a first-of-class boat to the Port of London Authority (PLA).

The 17m Maplin builds on the company's pedigree as a leading supplier of composite catamaran workboats to the offshore windfarm support market and the company has incorporated many of the lessons learned from building these vessels (WFSVs) into its survey boat design.

VESSEL SPECIFICATION

Maplin, which was built at CTruk's Colchester facility, will serve the PLA in Thames river and estuarial waters where its flexibility will prove invaluable, providing the advantages of a catamaran hull form that offers considerable working deck space and a composite structure that will significantly reduce maintenance costs. The boat has deck space of over 30 square metres and displaces 28 tonnes.

PLA Port Hydrographer John Pinder explained:

"We have a wide ranging fleet which enables us to work on the river or out into the North Sea and nowadays we are doing more and more environmental and geophysical case management work. With things like acoustic current profiling, parametric sonar or magnetometers, we need to deploy more equipment."

"Although we have been getting excellent results with the multi-beam sonar for a number of years, the increased working deck space of the catamaran allows us this greater flexibility. Maplin has a high freeboard and good working areas inside and out. Indeed, the quality of the fit out has been to a very high standard."

STABILITY

The vessel is based on the CTruk MPC19 catamaran which has been proven to have good stability and seakeeping characteristics. The stability will enhance survey capability, allowing more effective use of the multi-beam deployable sonar unit built into the hull, while another special



"We intend operating Maplin in the river but also out in the estuary and I envisage we will experiment with using the boat to work longer days, which will enable us to exploit a wider weather window."

feature is a low profile wheelhouse and retractable mast, specially designed for the boat to gain access under the low bridges of the Thames.

CTruk Group

Independent UTROV Operator

Utility ROV Services have just cleared their 2000th boulder on the Rampion Windfarm after operating all through winter.

Systems two and three available in August 2016.

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AUTONOMOUS SURFACE VEHICLES

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

SPECIFICATIONS

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

CONTROL SYSTEM

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

Thomas Chance, ASV's Chairman stated, "The C-Worker 5 is an exciting new ASV that will dramatically help our clients' bottom line. The new vehicle also complements ASV's C-Worker 6 and C-Worker 7 product line which can accommodate larger payloads."

WORLD LEADER

ASV is a world leader in autonomous marine technology. The company designs, builds and operates ASVs on a global basis. Products are available for lease and purchase alongside comprehensive support and training packages.

In just five years, ASV has produced more than 75 vehicles and developed more than 30 different payload packages. The company has also converted numerous existing vessels to operate autonomously.

ASV



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QUALITY, SERVICED ACCOMMODATION PROVIDER WITH A DIFFERENCE!

We met up with Nikki Blowers, Commercial Director at Eazy Rooms a company specifically set up to help the industry grow in the Humber area.

Eazy Rooms is a company which provides quality, serviced accommodation for companies and their staff allowing them to easily relocate and expand into areas where there is rapid and significant business growth. Packages are tailor-made to suit their clients' requirements – you name the service and they can provide it.

COMPANY PROFILE

Nikki started off by describing her beliefs in business and the most important one being the building of professional relationships which ensures long term worthwhile business and something successful managers in every industry can corroborate.

Her background has been broadly within local government in a role that is not unlike the work which she does now - that of helping people and businesses grow and prosper – latterly working in the regeneration department of Hull City Council. Nikki has also been involved in various roles within large businesses and spent some time on the South Coast as well as UK cities and has brought her professional experiences back to Hull to enhance the work which she now does for the company.

To back that statement Nikki went on to say that when she meets people in business she likes to find out their background, and their needs, before moving on to what her company can provide.

SERVICES

The most enlightening and in my view astonishing information which Nikki provided was the breadth of services available to a client which ranges from accommodation, to meal provision (of any standard, and at anytime, day or night), covering all corporate needs.

Although a new company specifically set up to fill a gap in the corporate market they can already boast clients which include Siemens, Yorkshire Water and BOC – the company offers assistance to all client staff ranging from Apprentices to Managing Directors.

NOT JUST A RELOCATION COMPANY

Nikki explained that the company can provide 'a home away from home' for temporary accommodation needs. This can vary from short to long term and caters for the market who work in the city throughout the week and return back to their homes at weekends for example. Or overseas clients who work on a rota basis and swap over every few weeks.

WORKING TOGETHER

One of the companies Nikki is working with is HETA who provides invaluable training for the industry. Basically HETA's out of town trainees, which also include overseas visitors, are accommodated by Eazy Rooms – just another service which can be provided with one simple phone call.

BESPOKE PACKAGES

The company provides bespoke packages which may start as an enquiry regarding relocation to the area and would include accommodation searches for the standard required and also source desired location, schools and facilities – nothing is too much trouble to ensure a client's needs are met.

As the company grows, so does their satisfied clients' list and it is reassuring to future



Nikki Blowers

potential clients that the company can provide evidence of successful relocations throughout a specific area – not only proving suitable serviced accommodation but a whole host of additional services including travel, cleaning, restaurant/theatre booking and anything else a client may think of.

SUMMARY

In a rapidly growing industry the need for services which Eazy Rooms provide is we believe essential and we leave you with something Nikki left us with 'We are a corporate accommodations solutions company and our emphasis is on the word solutions – we make things happen and we specialise in services for large groups.'

This company profile is our introduction to Eazy Rooms – other articles and case studies will follow in future editions.

Eazy Rooms

Click to view more info



Duncan McGilvray
Editor
Wind Energy Network





THE VITAL IMPORTANCE OF MARINE COORDINATION

The rate of change in offshore windfarm construction is rapid. Sites are being built further from shore and there is an industry-wide emphasis on driving down costs without compromising on health and safety.

With these changes, Marine Coordination has never been so important as a means to control costs and ensure efficiency.



ESSENTIAL APPLICATION OF TECHNOLOGY

Reporting is key for our clients. They need immediate access to vessel and turbine data to track assets and key metrics. SMC have used their long experience in offshore Marine Coordination to develop the ATLAS Marine Coordination System.

The system has been designed by our Marine Coordinators themselves, using their experience in conjunction with customer feedback to shape the system to fit the exact requirements of the job. This ongoing process of organic development through continual feedback means the system offers the ultimate simple, efficient and safe system to manage vessels and personnel.

A good Marine Coordination system, such as our ATLAS system, provides important support to the role. It is essential to provide clients with real-time data, tracking of all personnel and vessel movements. Movements are recorded in the ATLAS system for future reference if required.

Marine Coordinators need to anticipate potential problems and take remedial action when necessary. They also need to keep a cool head in emergency situations.

FAR-REACHING BENEFITS OF MARINE COORDINATION

Dean Coates, Marine Coordination Manager at Specialist Marine Consultants explains what Marine Coordination brings to a project...

Good Marine Coordination provides 24-7 logistical planning, operation and management of the personnel on the project. For example, at SMC we utilise a taxi system for crew transfer vessels. This minimises fuel costs and reduces transfer times, thereby increasing productivity on the WTG.

All of our Marine Coordination personnel have been Masters on offshore windfarm support vessels and have previous seagoing experience in different operational sectors. This brings a wealth of experience to a role which requires a complex mix of skills.

AUDITS

We are able to provide IMCA 149 audits on all construction and hotel vessels, IMCA 189 audits on CTV's that arrive to site and then follow these audits up with monthly 204 compliance audits. This keeps the CTV crews on their game resulting in less expensive down time due to poor maintenance.

SUMMARY

In a nutshell, Marine Coordinators keep operations running efficiently. We save the client time and money. We deal with emergencies and ad-hoc jobs that crop up, allowing the client to focus on their operational goals.

We give them peace of mind that all of this is achieved while maintaining the very highest health and safety standards.

SMC's Marine Coordinators use their specialist expertise and marine knowledge to...

- Supervise marine operations
- Coordinate all in-sea movements, including daily planning of all transfers
- Conduct site inductions and safety briefings
- 24/7 marine and aeronautical communication watches during all site activities
- Deal with emergency situations
- Regular vessel inspections by trained auditors

SUCCESSFUL PROJECTS INCLUDE...

- London Array – Siemens
- West of Duddon Sands – Siemens
- Gwynt y Môr - Siemens
- Hercules 3 – Siemens Service
- Osprey – Siemens Service
- London Array – London Array Ltd
- Baltic 2 – Siemens
- Butendiek – Siemens
- Kentish Flats Extension - Vattenfall
- Borkum Riffgrund – Siemens
- Gode Wind 1&2 – Siemens
- Veja Mate – Veja Mate
- Gemini – Siemens

ATLAS SYSTEM FEATURES INCLUDE...

- Remote Access
- Live Tracking of Personnel
- Operational Statistics
- 100% Traceability
- Defect Tracking
- Permit Tracking
- Certification Management
- HSE Reporting

CASE STUDY:

SMC AND SIEMENS WIND POWER – A SOLID PARTNERSHIP

Specialist Marine Consultants Ltd (SMC) is a global leader in providing Marine Coordination to the Offshore Renewable Energy industry. They have been providing Marine Coordinators to Siemens Wind Power since 2012 when they commenced work on London Array.

A DIFFERENT APPROACH

On London Array, SMC managed crew transfer vessels with a different approach to that typically seen. They utilised the vessels using a taxi system to increase the speed of transfers to turbines, thereby increasing Technicians' productive time on site. The taxi system also worked more effectively when weather conditions deteriorated and work had to be stopped and turbines evacuated.

Because vessels don't have dedicated teams, the company were able to organise pickups quickly and safely in the event of increasing seas, lightning etc. Marine Coordination is a pivotal role that requires multiple skills.

In addition to planning daily crew transfers, SMC's Marine Coordinators conducted site inductions and safety briefings, coordinated all in-sea movements, carried out vessel inspections and carried our marine and aeronautical communication watches.

SUBSEQUENT PROJECTS

Following a successful partnership on London Array, SMC embarked on subsequent projects with Siemens at Gwynt y Môr, West of Duddon Sands and numerous European wind power projects. The company continue to work with Siemens on projects outside of UK waters at Gemini and Gode Wind.

The relationship with Siemens was crucial in the shaping of SMC's ATLAS Marine Coordination system during daily use on Siemens projects. After extensive customer-driven development, the company now offer the system as part of their Marine Coordination service to all clients.

Ian Coates, MD at SMC says of the partnership "We have a long history of working with Siemens, providing Marine Coordination using our ATLAS Marine Coordination System.

"Each contract builds on a successful and on-going partnership. We understand their requirements and how best to utilise the use of CTV's in the most safe and efficient way."

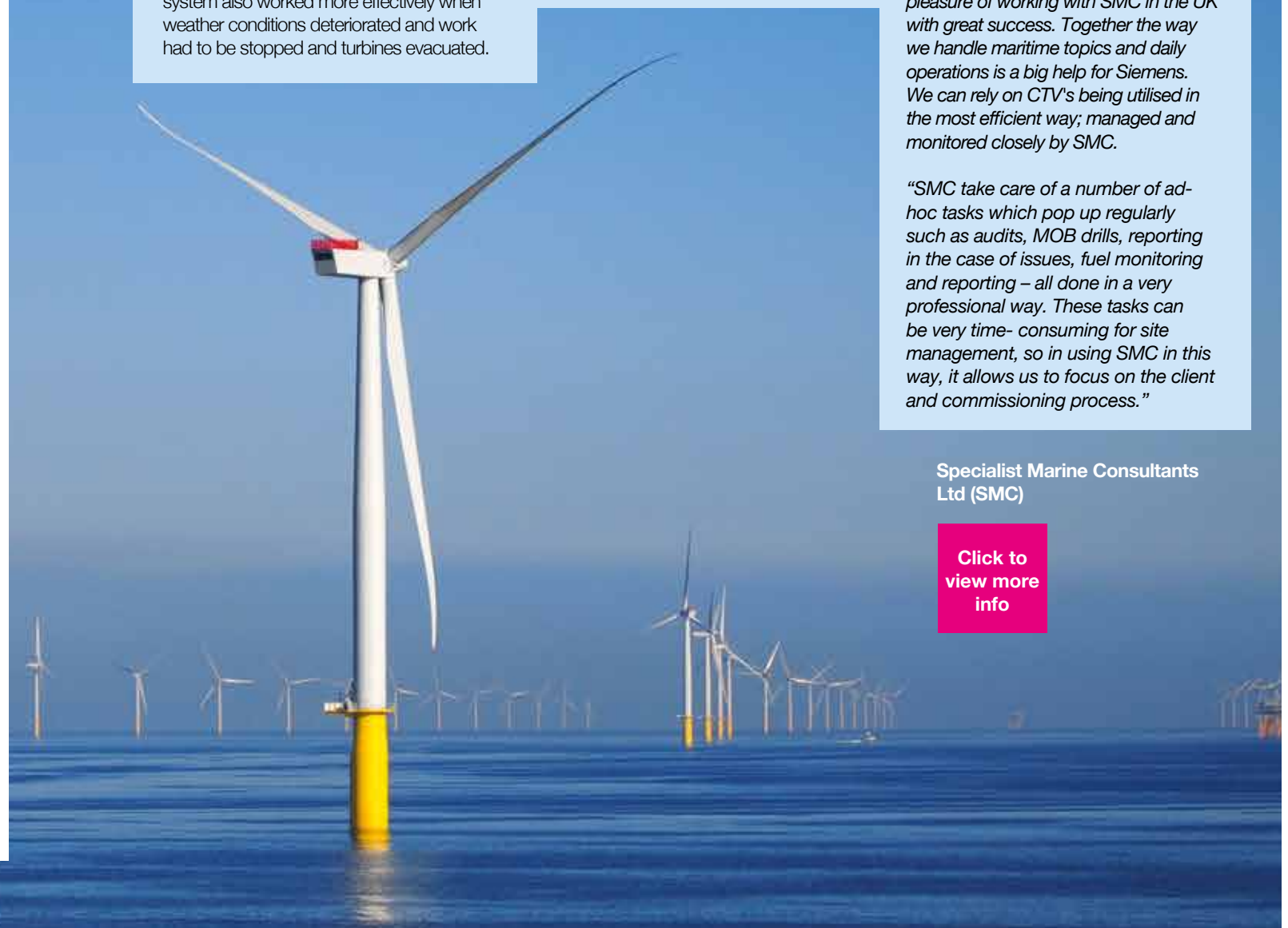
WORKING TOGETHER

Bent Berg Petersen, Site Manager at Butendiek, commented "I had the pleasure of working with SMC in the UK with great success. Together the way we handle maritime topics and daily operations is a big help for Siemens. We can rely on CTV's being utilised in the most efficient way; managed and monitored closely by SMC.

"SMC take care of a number of ad-hoc tasks which pop up regularly such as audits, MOB drills, reporting in the case of issues, fuel monitoring and reporting – all done in a very professional way. These tasks can be very time-consuming for site management, so in using SMC in this way, it allows us to focus on the client and commissioning process."

Specialist Marine Consultants
Ltd (SMC)

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MAN OVERBOARD TECHNOLOGY THE STORY SO FAR

Traditional devices in personal man overboard technology have used the aeronautical emergency frequency 121.5 MHz. However, with the advent of newer technologies, such as VHF DSC and AIS, there are demands to accommodate these in the latest devices with their potential to significantly increase the probability of survival.

Marine Rescue Technologies (MRT) has been at the forefront of the development of personal man overboard technology for almost 40 years and provides an assessment of the story so far...

REGULATORY STANDARDS

Worldwide authorities also recognised the potential advances of these devices and began to develop standards to regulate the minimum technical and functional capability. The first of these standards was issued by the US in June 2012.

European and other national bodies are also developing standards to regulate new devices; these are expected in 2015.

ADVANTAGES

There are significant advantages to be gained using these systems including much greater accuracy, the ability to locate and track a casualty in real time, and the capability to alert all ships in the area.

All of which improves the probability of a successful rescue operation. VHF DSC and AIS are mandatory systems on all ships over 300 tonnes, and routinely used on the majority of commercial vessels.

In 2011 a programme was started to embed this new technology into man overboard devices. The principal was to develop products that would be fully integrated within a life jacket, that would automatically operate on inflation of the jacket, not affect routine work practice, require no intervention from the wearer, significantly improve the probability of survival, and meet existing and future standards.

THE CHALLENGES

There were many challenges in designing these devices to operate using multiple systems, meeting stringent technical requirements within the new standards, whilst retaining a form factor that would integrate into a life jacket.

Where a risk has been identified, that requires the use of a life jacket, that risk can be reduced much further.

In any man overboard situation there are 4 major aspects that increase the chance of survival.

- **Flotation** – you must be to stay afloat so a life jacket should be used
- **Insulation** – especially in colder waters, the correct clothing/suit should be worn
- **Location** – time is critical and a man overboard will drift very quickly. An MSLD should be worn so you can be traced quickly and accurately
- **Extraction** – crew should practice the retrieval of a man overboard so they are prepared should the worst happen

ACHIEVING OPTIMUM PERFORMANCE

Through the development and testing programme it was apparent that the position of the device on the life jacket was critical in achieving optimum performance; this varies according to the lifejacket in use. As with all safety appliances annual recertification is necessary.

By developing a fully integrated system using modern technology, time to rescue is significantly reduced which increases the probability of survival even in the coldest waters. This technology is currently available in the wider marketplace.

Marine Rescue Technologies



INTERNATIONAL GUIDELINES IN MARINE COORDINATION

Marine coordination in offshore wind involves the planning and oversight of marine operations to be undertaken within an offshore windfarm, in addition to cooperation with national authorities in providing effecting incident response.

United Kingdom – safety measures are expected to be implemented for UK windfarms appropriate to the level of risk determined from the Environmental Impact Assessment (EIA) in consultation with the Maritime & Coastguard Agency (MCA).

Denmark – there are no mandatory requirements for continuous, remote marine coordination and traffic monitoring in Danish windfarms.

Germany – Bundesministerium für Verkehr und digitale Infrastruktur (BMVI) has established requirements for monitoring of offshore windfarms, based on the results of the mandatory environmental risk assessment (i.e. EIA).

Netherlands – arrangements for the monitoring of windfarms are listed as mitigation measures to be taken into account when determining the safety zones, but they are not explicitly required.

STATUTORY SAFETY ZONES

United Nations Convention on the Law of the Sea (UNCLOS) allows a coastal state to establish a safety zone of up to 500 m around an offshore installation or structure within its Exclusive Economic Zone (EEZ).

It is common practice in the North Sea to establish such a safety zone around a windfarm in construction, or around major maintenance activity to act as a control on third party traffic. An example definition of major maintenance is an activity involving a large vessel (self-elevating unit, floating barge, heavy lift vessel, DP/anchorage cable lay barge, etc).

United Kingdom – during construction, major maintenance, possible extension and decommissioning a temporary safety zone of 500m around each structure will normally apply.

Denmark – Danish windfarms follow the practice of establishing 500m safety zones around windfarm installations and activities during construction, but do not typically extend these into operation.

Germany – in Germany, the windfarms are always closed to outside activity. BSH applies a 500m safety zone around the entire windfarm during the construction and operations phase.

Netherlands – current windfarms in the Netherlands apply a 500m safety zone around the site and this practice is expected to continue.

IN-FIELD OPERATIONS

A wealth of industry standards have been developed for different marine operations in the offshore industry such as diving, cable-laying, lifting or other construction, installation and maintenance activities required by offshore.

NATIONAL ENVIRONMENTAL REGULATION

Special environmental concerns related to offshore wind turbines are covered by relevant environmental regulations for each country.

United Kingdom – the UK has the most extensive requirements for noise mitigation. Soft-start is required. Marine mammal observers are also required, although their extent and method of employment is site specific.



Denmark – in Denmark, the environmental impact assessment is used to determine the environmental permit requirements.

Germany – developers in German waters are obliged to employ some form of noise mitigation during piling. Soft-start is required.

Netherlands – noise mitigation requirements in the Netherlands include soft-start during piling, as well as seasonal restrictions on fish larvae, as the noise is thought to disturb feeding and reproduction cycles. Piling is not permitted between 1st January and 1st July for any site.

Martin Collingwood
Head of construction
Andrew Jackson Solicitors

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EXCLUSIVE MARINE AND HELICOPTER COORDINATION CENTRE

SeaPlanner has been announced as the system provider by DONG Energy (DE) for their Marine and Helicopter Coordination Centre (MHCC) which will be one centralised hub for their UK offshore windfarm construction and a number of regional Operations MHCCs.

LATEST ENHANCEMENTS

The MHCC project utilises SeaPlanner's latest enhancements that set out to centralise, standardise, automate and make equipment easily deployable and support far offshore projects in order to save cost and ensure safety from day one for the people working offshore.

DETAILED TENDER PROCESS

DONG Energy selected SeaPlanner after a detailed tender process having thoroughly assessed the market for a solution that encompassed all the exacting requirements of the project portfolio.

The company will provide DONG Energy with personnel management, vessel and helicopter tracking and the communication dispatcher and site wide communications hardware (TETRA, VHF marine, VHF airband) needed to safely operate an offshore construction site from a central location.

UNMANNED COMMUNICATIONS CONTAINERS

SeaPlanner will be deploying several unmanned communications containers. The containers will house all equipment required, including antennae, to carry out all communications on far offshore windfarms including vessel tracking, VHF marine and airband, Tetra, helicopter tracking and crewfinder.



The containers contain several self-contained safety systems including fire suppression, gas detection, climate control and more - these systems can all be monitored from the SeaPlanner software. The container will be suitable for applications on guard vessels and offshore platforms.

MARINE AND HELICOPTER COORDINATION CENTRE

The MHCC will include SeaPlanner hardware and software combined to fulfil the following main purposes...

- Offshore management system enabling centralised and regional support of the individual offshore sites simultaneously from standardised workstations
- Enable marine, helicopter and personnel coordination across all sites
- Enable voice communication between personnel offshore, vessels, helicopters and a central coordination centre across sites
- Manage people, vessels/helicopters and personnel transfer to and from sites based on transport requests and access rights
- Provide communication and sensor platforms/containers on multiple sites for central situational awareness and radio communication
- Support a satellite and Tetra communication based Crew Transport Terminal on vessels and helipads for automatic people location tracking and text messaging

PORTFOLIO EXTENSION

This contract extends SeaPlanner's portfolio with DONG Energy, which has now provided support to over 80% of their UK offshore windfarms.

Nick Murphy, SeaPlanner Head of Operations commented: *"SeaPlanner has undergone significant development over the last 12 months. As the industry has evolved, we've seen the demand for more extensive and complex solutions from our clients and we have invested heavily in our products and services to ensure that we meet those needs."*

COORDINATION CENTRE



"The introduction of SeaPlanner's portfolio management functionality is a significant benefit, particularly on a project of this scale. Giving the DONG Energy project team the ability to manage multiple sites from a centralised system not only saves a considerable amount of administration time and costs, but it also provides an enhanced level of control and brings standardisation across projects."

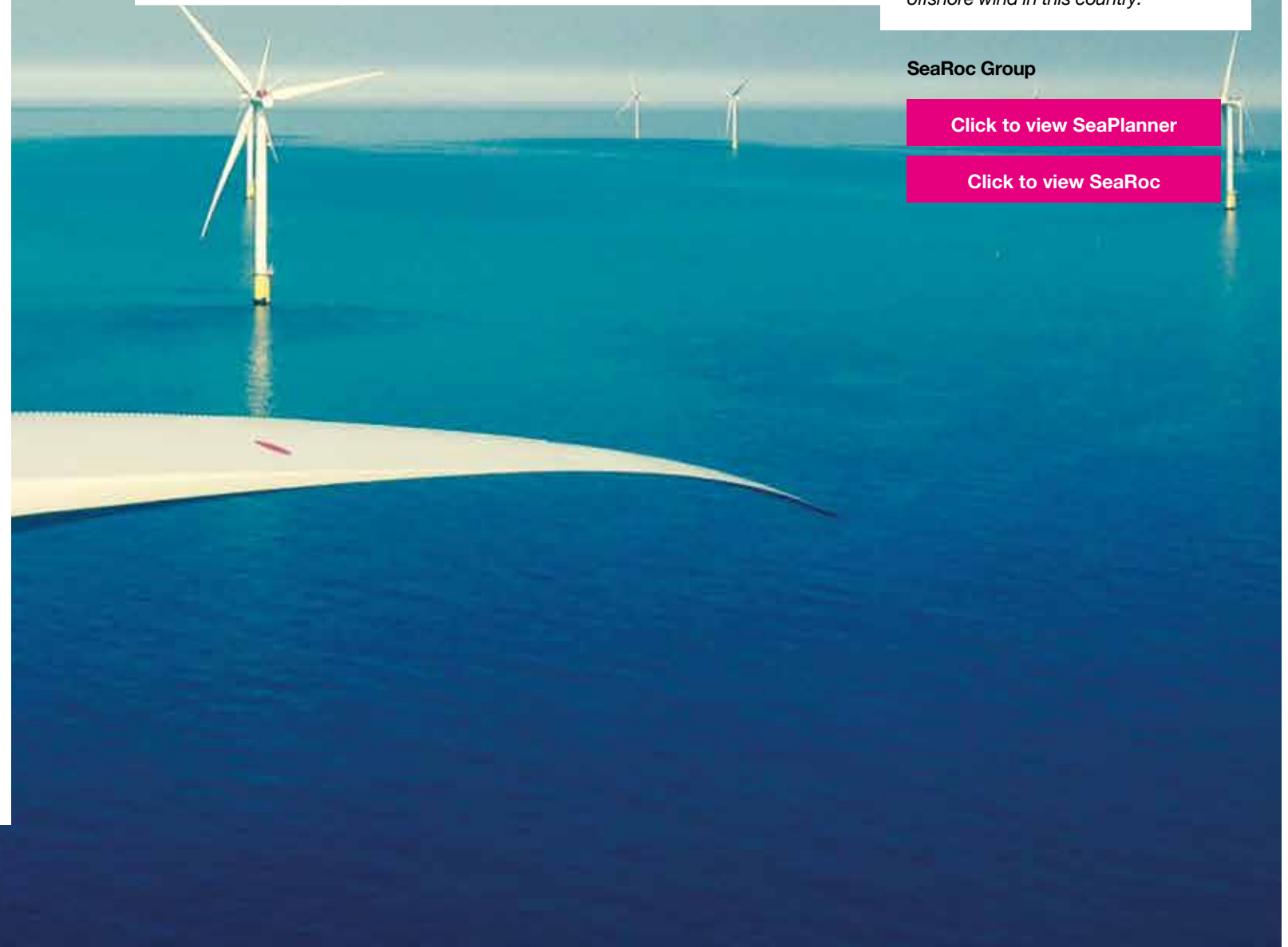
MARINE AND OFFSHORE COORDINATION CAPABILITY

Louise Damgaard, Senior Project Manager at DONG Energy, said: *"We're very pleased to work with SeaPlanner to implement these important enhancements to our new Marine and Offshore Coordination capability. They've undertaken work for our projects in the past and this contract proves that having a reliable UK supplier is an invaluable asset to offshore wind in this country."*

SeaRoc Group

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CONTRACT SECURED FOR MERSEYSIDE FIRM

DONG Energy has signed a contract with a UK-based firm for the undertaking of a subsea inspection campaign.

Merseyside-based firm Hughes Sub Sea Engineering (Hughes SSE) will conduct a subsea inspection, examining various components of offshore wind turbine foundations and cabling at DONG Energy offshore windfarms located in Denmark and Germany.

CONTRACT DETAIL

The campaign will comprise a general visual inspection, examining the transition pieces, monopile and boat landing components, located at the foot of offshore wind turbines, as well as inspection of the cable route connecting each turbine to the onshore substation. Work on the campaign commenced in April and is expected to last until September 2016.

BUSINESS GROWTH

A spokesperson from Hughes SSE said: *"We're very pleased to sign this contract with the world's leading offshore wind company. Our engineering expertise in the offshore industry has been honed in the past decade. As UK offshore wind has grown, we have thrived as a company, able to undertake a whole manner of tasks for the industry. This is now an exciting opportunity for us to take these skills to projects across the continent and expand our business."*

RELATED WINDFARMS

The offshore windfarms Hughes SSE will be servicing are Gode Wind 1 and 2 and Borkum Riffgrund located off the north west coast of Germany in the North Sea; and the Anholt offshore windfarm off the north east coast of Denmark.

As part of essential operations and maintenance of offshore windfarms, each project is required to have structural inspections of its foundations undertaken in order to identify any potential maintenance work. Subsea inspection campaigns are routine work and occur every year.

Hughes SSE

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CASE STUDY AMRUMBANK WINDFARM

The 288MW Amrumbank West offshore windfarm was announced as fully operational at the end of 2015, with developers E.ON confirming that construction was complete. SeaPlanner was the chosen system provider for the construction phase, which included provision and installation of the marine coordination hardware for the MCC based at Hamburg, Germany.



ENSURING SAFETY AND EFFICIENCY

The SeaPlanner system ensured the safe and efficient coordination of the windfarm which is located off the coast of Germany – 35km north of Helgoland and 37km west of Amrum, by providing software for reliable vessel tracking, personnel tracking and online inductions. Combined with the hardware provision of VHF over IP, CCTV over IP, AIS tracking installed on the offshore infrastructure.

The configuration of the setup allowed the marine coordinators located in Hamburg, to monitor, communicate and control operations of the windfarm site whilst effectively coordinating project personnel from the project ports including Esbjerg, Cuxhaven, Romo and Helgoland.

REAL-TIME PERSONNEL TRACKING

This included the coordination of inductions for all personnel working on the site which, by utilising SeaPlanner's Induction Manager module, could be managed online from any location and therefore ensured site induction and required training was completed before arrival to the windfarm. The benefit of this to the marine coordinators was overall control and visibility of all activities with effective management locally from Hamburg.

A core function of the SeaPlanner system is the real-time personnel tracking system which has both a manual and automated function using RFID swipe cards. All real-time data feeds, movements and actions are stored in the system for quick replay and audit for the lifetime of the project. The system generates a range of custom and standard report outputs to help facilitate daily and ad-hoc reporting.

COMPLETE SETUP AND INSTALLATION

SeaPlanner provided complete setup and installation of marine management and vessel tracking at the central marine coordination centre, as well as the provision and setup of 20 personnel tracking units on various vessels which included iridium satellite communications for data transfer back to the MCC.

Throughout construction of the project, SeaPlanner managed and recorded 3,000+ inductions, and the safe transfer of over 76,000 personnel.

SeaRoc Group

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DELIVERING EUROPE'S FIRST SIMULATION TRAINING FOR OFFSHORE WIND

Under the EU Renewable Energy Directive (RED), the UK must source 15% of its energy for heat, transport and power from renewable sources by 2020.

As a result of this target, global investment in renewables is increasing, with some of the world's biggest energy firms laying down roots in Europe.

To realise the opportunities in this sector and achieve the UK's renewables targets, high quality, bespoke training is needed in order to meet the requirements of businesses in the renewables supply chain. This ranges from new recruits entering the sector, to professional development for the existing workforce.

Not only do these roles cover the obvious ones such as wind turbine manufacture and vessel operation and maintenance, but also the onshore and offshore support jobs, providing portside services and logistics. That's why the Grimsby Institute and the Humber LEP have joined forces to create Modal Training, a centre of excellence for the energy, ports and logistics industries.

Although Modal Training will be based in Immingham, at the heart of the Humber region, it will serve a much wider area – with state-of-the-art facilities and a wide variety of courses delivered by experts – all under one roof. This centralises training for businesses who often have more than one requirement, or who are part of a supply chain with multimodal disciplines needing more consistency and connectivity between them.

Simulated training is safe, effective and cost efficient. The Kongsberg simulators will enable Modal to offer training that effectively replicates the working environment. With accurate real-time physics and hydrodynamic modelling, ships and equipment behave exactly as they would during operations, making Kongsberg simulator training as close as you can get to being out at sea.

This simulation will cater for a wide range of maritime roles, including bridge crews, navigators, maritime engineers and Vessel Traffic Service (VTS) operators. Each part of the simulator system can be operated independently, or be interconnected to provide full vessel operation exercises for an entire crew.

KNOWLEDGE, UNDERSTANDING AND PROFICIENCY THROUGH E-LEARNING

International conventions for seafarer training set out three facets of learning – Knowledge, Understanding and Proficiency (KUP). Modal's method of seafarer training blends e-learning with the more practical elements in simulator and experiential learning on board vessels in a real environment.

Online learning allows individuals to educate themselves at their own pace, removing the need to attend physical classes. This reduces training costs and facilitates training which can be tailored to specific needs.



STATE-OF-THE-ART SIMULATION

Modal Training has invested in a simulation suite from Kongsberg Marine, the global leader in marine training technology, which will provide Europe's first dedicated simulator training for offshore wind.

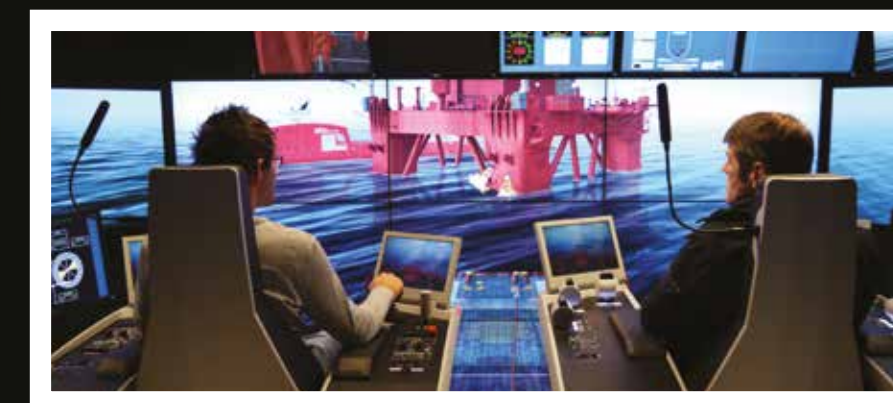
BASIC SEA SAFETY

Safety is paramount when it comes to those employed on a vessel – whether you are out at sea, or loading a ship dockside. Modal Training will be delivering a comprehensive range of Standards of Training, Certification and Watch-keeping for Seafarers (STCW) entry level courses. This provides those with the basic training required to work at sea, in accordance with section A-VI/1 of the STCW.

In addition to the basic proficiency are courses on: maritime security; fire-fighting and fire prevention; first aid and medical care; crowd management; crisis management; personal safety; survival; rescue boats.

LEADING THE WAY

Management is crucial when at sea. To maximise seafaring safety, Modal will be offering the Human Element Leadership and Management Level Theory (HELM) qualification. The aim of the course is to give all officers the education and training in the human element leadership and management at operational level.



For example, Modal will offer a blended approach to Dynamic Positioning (DP) training – a fundamental concept in operating offshore vessels safely. The training model will provide space for distance learning aligned with both collective simulator and experiential development.

Modal Training

[Click to view more info](#)

Evolution in Torque Control **TAKE TWO**

In 2010 Norbar research revealed that traditional electric torque tools were giving vastly different results depending on the joint type. The torque delivered to a hard joint could be more than double the torque that the same tool, with the same settings, would deliver to a soft joint with great potential to leave bolts under or over tightened and potentially therefore dangerous.

INNOVATIVE LAUNCH

As a result, Norbar launched EvoTorque, and now EvoTorque2, which uses the very latest in joint sensing technology, a patent pending motor design and market leading control software to emit exactly the right amount of torque required to tighten a specific joint. The required torque can be easily programmed with the touch of a few buttons and the EvoTorque indicates, using a clear display screen, when the correct output has been achieved.

This revolutionary tool underwent rigorous evaluation including drop tests, water and dust resistance ingress, and power cable stress tests. Coupled with a third party verified sound power of 72.3 dB (A) and vibration level of 0.304 m/s² the EvoTorque is leading the way in accuracy, efficiency and safety – now that's what we're torquing about!



TORQUEING WIND TURBINES

When it comes to large wind turbines; both on and offshore, the greatest cost consideration is usually the turbine itself and the installation process. While maintenance programmes are a necessity, in some circumstances the tools and processes involved could be doing more damage than good.

Juan Carlos Casas, Sales Engineer at Norbar explains...

Torque, in this context, is essentially the measurement of rotational force applied to a threaded fastener. Where the torque is either under or over the manufacturer's specification, it can cause considerable damage to the turbine structure. One of the key technical implications of over or under torque is the potential for vibrations in the turbine, which presents a real risk

of catastrophic failure. The relaxation of joints as a result of bolts becoming loose, premature wear on a number of components, damage to the steel or concrete structure or even fire are all possible consequences.

IN REALITY

To put this into context, in many windfarm locations maintenance operatives are required to use a variety of tools to get the job done. For example, in the turbine tower; an operative would require one tool to run down the bolts and then a hydraulic wrench to achieve final torque. The reality of using these two tools could present a number of complications, particularly with regard to ease of operation and manoeuvrability. Health and safety is therefore a key concern.

Furthermore, when triggering electric multipliers on bolts that have already been tightened, a dangerous overtorque can be achieved due to the slow response time of controllers, high motor start currents and high motor inertias. In some cases, this overtorque can be in the region of 100 per cent. When triggered multiple times, in this type of condition, there is an extreme danger that the application may fail due to the overstress of the joint.

SOLUTION

The solution therefore is the Norbar EvoTorque2 which is capable of incredible control in tough conditions - producing results within ± 5 per cent of set torque, when re-applied to a bolt that is already tightened. However, in scenarios where bolts have not previously been tightened EvoTorque will deliver torque values with an accuracy of $\pm 3\%$. When performing a re-tightening test, the EvoTorque also demonstrated a clear advantage which, when triggered 18 consecutive times on an already tightened bolt, it achieved total accumulated overtorque of around 15-20 per cent of the set torque; depending on the hardness of the joint. This number of consecutive applications using traditional electric tools would almost certainly result in failure of either the tool or bolt.

CONTINUED...



BENEFITS

The benefits of the EvoTorque2 are therefore considerable, offering far more reliable torque results than conventional tools and, more importantly, no need for final torquing with a hydraulic wrench.

Furthermore, in independent tests and calibrations conducted across a number of Spanish windfarm sites; EvoTorque achieved the OK/PAA/APPROVAL standard; making it the first and only electric multiplier permitted to perform final torque on a number of windfarm sites.



The range is available in both 110V and 230V versions and crucially is weather sealed to IP44 and equipped with a maintenance free motor. The EvoTorque range covers requirements from 200 N·m to 6,000 N·m.

ADDITIONAL OPERATING CONCERN

Another major concern regarding the use of electric tools on windfarm sites is the quality of the power supply. Power is usually provided by small generators together with long cable runs. The implication of which is, that most electric tools will either not run or their torque output becomes erratic. The EvoTorque is largely immune from the effects of voltage fluctuation due to the technology used in the motor controller.

SPECIFICATION

EvoTorque2 adds Bluetooth connectivity, a 3,000 reading memory and Torque, Torque & Angle, and Torque Audit modes to its capabilities. Torque data can be sent via the tool or a PC, either wirelessly via Bluetooth Smart, or wired using the USB cable supplied. The reading memory will store 3,000 readings, each date and time stamped. These features provide comprehensive joint traceability for operators and their clients.

Norbar Torque Tools Ltd

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HANDLING EQUIPMENT SET TO WORK ON RAMPION CONSTRUCTION

Houlder has successfully delivered the first of two offshore Pile Upending Tools for the Rampion Offshore Wind Farm development, off the Sussex coast. The specialist marine supplier is leasing the innovative handling equipment to the Rampion project being developed by E.ON, the UK Green Investment Bank and Canadian energy company Enbridge Ltd.

REDUCING CRANE TIMES AND INSTALLATION COSTS

Through wireless auto-engagement, the tools help reduce crane times and installation costs while keeping personnel away from hazardous deck locations. They are also the optimal solution where the lifting point overhangs the deck or is otherwise out of reach.

The remote controlled hook-up and release system engages directly with the foundation pile flanges. It is a self-contained system with rechargeable hydraulic and electric supplies. Recharging is carried out at a deck-mounted docking station, avoiding the need for additional umbilical connections or power lines during lifting operations.

TOOL DETAIL

Andy Lovell, the Project Director explains "The tools are compatible with 855t, 5m diameter piles. These are not small pieces of equipment and handling them offshore, let alone upending them from 0 to 90 degrees, is one of the riskiest operations during windfarm construction. Our tool needed to be incredibly robust, but also lightweight enough to ensure easy integration with existing craneage. Some very ingenious design work has gone into the steel structure and hydraulics. It also goes without saying the control system needed to be simple to use but also provide complete fail safety."

WORKING TOGETHER

"By working with E.ON and the Rampion project so closely," adds James A. Russell, Houlder Marine Equipment Director, "Houlder is playing a key role in developing UK offshore wind infrastructure – providing a fantastic opportunity to innovate. We can do this because our engineers have practical hands on experience of offshore construction. Our work is not theoretical and this feeds into our equipment designs including the Rampion upending tools."

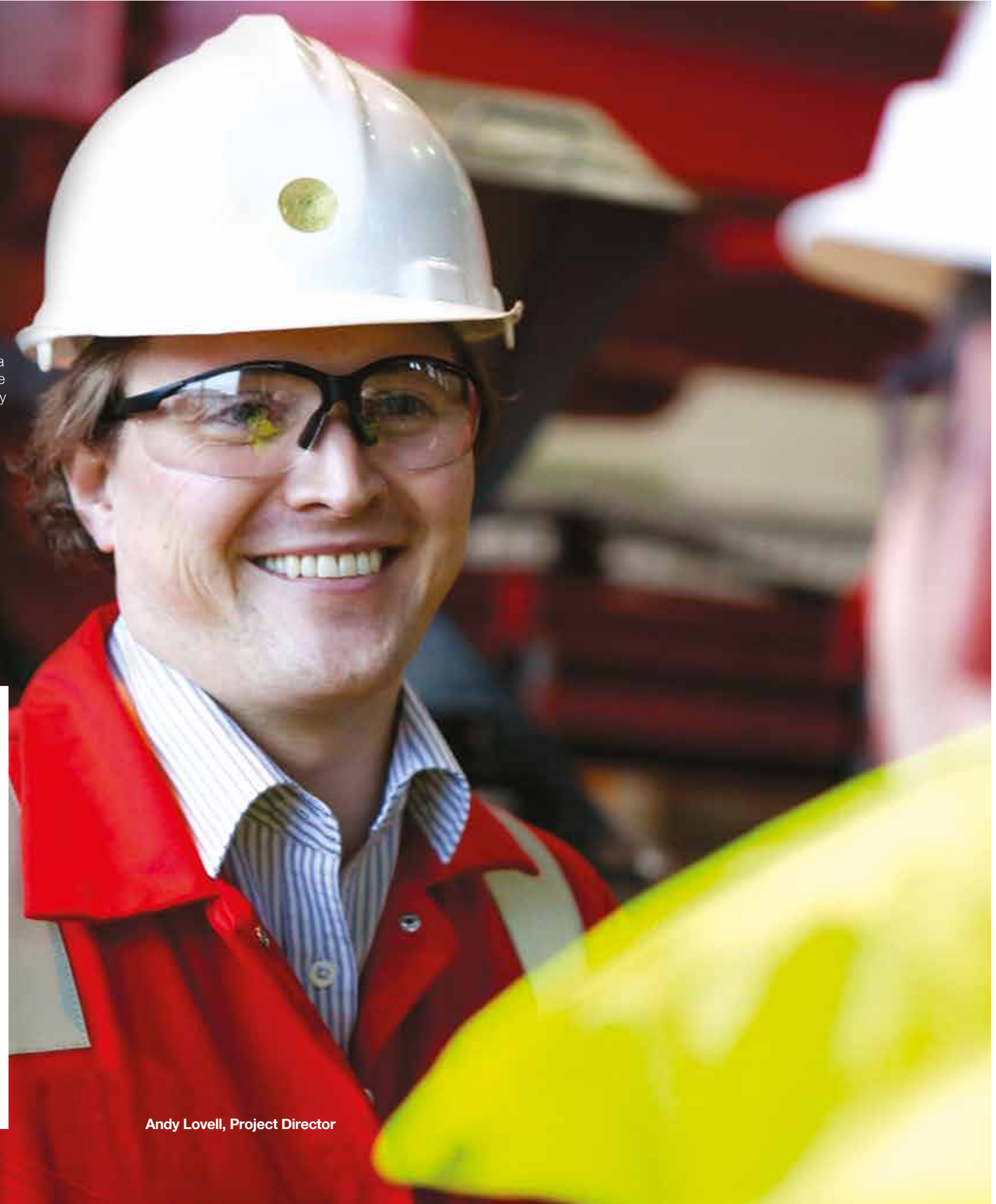
"We supply on a completely turnkey basis on both our purchase and rental contracts. Customers experience a seamless design, fabrication and installation service. When requested we also offer training, maintenance and emergency call-out services."

INSTALLATION

The first of the tools was installed on the MPI Discovery in January 2016. The second will be delivered to the Pacific Orca installation vessel later in the year alongside other Houlder handling equipment currently in development.

The Rampion Offshore Wind development is due to be completed in 2018.

Houlder



Andy Lovell, Project Director

Using data to extend main bearing life through predictive maintenance

Recognising the issue that main bearings, unlike the gearbox, do not have great attention paid to the lubrication, with no filter for removal of metallic particulates, no dryers or desiccant breathers labour and no lubricant change at five year intervals (typical), Romax InSight developed a process for extending bearing life.

Now flushing around 50 bearings annually, Romax continues to optimise the predictive maintenance methodology. Thorough flushing of the bearing to remove all the grease and repacking with fresh grease resets the lubrication conditions. Data gathered from flushed bearings has consistently shown significant reduction in metallic debris, water content, temperature and vibration; extending bearing life significantly.

UNDERSTANDING THE FAILURE TO CATCH IT EARLIER

Spherical roller bearings are selected primarily due to cost and their ability to handle a large amount of radial load and misalignment. However, they have been found to have limited life in many turbine designs. The failure mode is complex, but a key factor is that the thrust load is supported principally by the downwind bearing, the downwind rollers often skew during rotation as well as sliding.

This raises surface stresses and leads to surface initiated micropitting. The debris generated causes bearing and cage wear, debris denting and early life failure as the bearing spalls out.

EXISTING PRACTICES

There are a number of commonly used industry practices for managing main bearing health, which include alarms that are triggered when certain factors arise. Once an alarm is sounded, by vibration or temperature, the bearing is inspected to confirm the damage highlighted in the data. Historically the options for life extension at this stage have

is required. A periodic grease sampling and analysis programme provides insight into the lubrication quality. For vibration data, Romax has developed special algorithms that provide 12-18 months on the initial spalling on rollers and raceways – this is a critical point where the damage accumulation in the bearing accelerates. Figure 1 provides a case study with one year's warning on bearing failure, when the first debris dents were appearing on the inner race.

The same Cloud-based software shows that temperature warnings are very late stage, even using an advanced algorithm that corrects for environmental fluctuations and tracks deviations from the fleet mean. The software allows users to pull all forms of



Figure 1. Romax InSight Fleet Monitor™ hardware-independent Cloud-based predictive maintenance software tracking main bearing damage with over a year's lead time on the failure using advanced algorithms applied to the raw vibration data feed. Temperature provides only late stage warning.

been limited to a time when a crane can be arranged. If the bearing is in poor condition, it is common to pump in additional grease to buy some time (purging).

Combined with de-rating, the bearing can be limped along without tripping the turbine on temperature as often, whilst repairs are arranged. When the bearing is overheating, typically with cracking on the raceway shoulder at bottom dead centre, it is prudent to shut down. Both examples, inefficient purging and waiting time for repairs on inactive turbines, can cost production revenue significantly.

EARLY DETECTION TRIGGERS PREVENTATIVE MAINTENANCE

Preventative maintenance by grease flushing extends the bearing life. To get the maximum benefit, the early detection of poor lubrication conditions or early stage wear and spalling

useful data into decision making: SCADA, vibration, particle counters, lubricant analysis, inspection and maintenance data. Point B is a good time to use this data to schedule grease flushing.

COMBINING TECHNOLOGIES FOR BEST PRACTICE

Combining technology for early detection and bearing life extension allows for best practice management of main bearing health and reduces the cost of failure. A predictive maintenance programme incorporates assessing principally the vibration and grease data to develop a priority list of bearings that require flushing. Then batches of bearings can be flushed during convenient service periods to extend life.

To perform the flushing, Romax developed a special flushing machine that is installed and allows spraying and slow rotation of the bearing to remove all the grease. For severely damaged bearings, larger pieces of raceway can be removed manually beforehand to prevent ingress further into the bearing, typically these can be found at the rear of the bearing near bottom dead centre.

The process allows for >95% removal of the old, contaminated grease. An endoscopic inspection at this stage confirms the removal and allows complete access to all positions on both the upwind and downwind side to fully quantify the damage to the bearing.

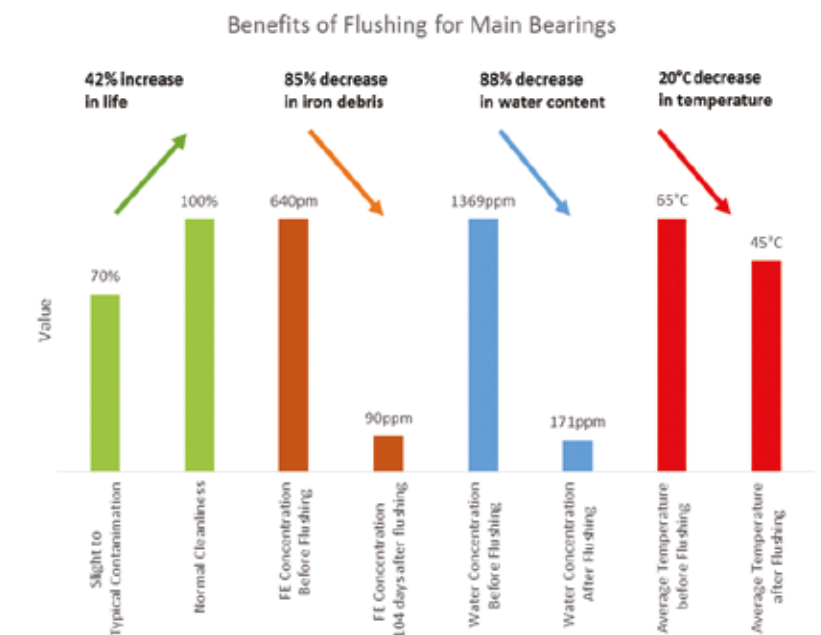


Figure 2. Results from various studies on flushing main bearings conducted from 2014-2016. Bearing life is based on life calculation methodology per ISO 281 2007 Annex A.



Samples showing grease condition before and after flushing. Fresh grease improve lubrication conditions and extending bearing life

RESULTS FROM FLUSHING

Introducing a new maintenance practice to the wind industry requires significant trial and evaluation by owners. During 2014-2016, Romax conducted trials with over 10 owner/operators, including gathering and examining data to investigate the effect on lubrication conditions, temperature and vibration. Figure 2 provides some typical examples from bearings that had started down the road to failure, but were in earlier stages. If the grease is laden with iron and water, replacing it resets it to fresh grease. After 104 days running the iron concentration was still low.

The temperature data is for a bearing that was degraded enough to be overheating, here the flushing extended life more than one year, allowing repairs to be delayed and downtime minimised.

With this process proving successful, Romax is looking forward to using flushing to allow in-field trials of different greases and sees this as the next area where life extension (e.g. use the best performing grease) could be achieved.

Romax

[Click to view more info](#)

INNOVATING IN WINDFARM ASSET MANAGEMENT

With the goal of reaching a strike price of £100/MWh by 2020, offshore wind companies are seeking to reduce both capital expenditure (CAPEX) and operating expenditure (OPEX), while increasing annual energy production.

Turbine OEMs and suppliers are focusing on investment in innovation, to make next generation windfarms larger and more efficient and reduce CAPEX long-term. However there are still many challenges facing operators as they strive to reduce OPEX and maximise operational efficiency and production, including:

- Reducing unscheduled maintenance
- Optimising component repair vs replacement decisions
- Optimising the distribution of power references based upon conditions and damage
- Asset life extension

MOVING FORWARD

Fundamental to improvement here, is for operators to develop a quantitative metric of damage accumulated by asset components, and to put processes in place to capitalise on the information captured. This is difficult, as operators are not typically in possession of the detailed design information used to perform an accurate appraisal of integrity.

This problem is not unique to wind energy. Frazer-Nash has extensive experience in developing mathematical models that combine fundamental physics with operational data to help clients manage their assets. In gas turbines, these models are used to optimise operating strategies to minimise creep fatigue and, through doing so, increase production hours. Similarly, they have collaborated with nuclear operators to justify asset life extension. Although the underlying physics changes, the approach is consistent.

MEETING TARGETS

For the wind industry to meet its targets, some innovative steps could focus around the internalisation of modelling approaches from more mature sectors, and the development of supporting decision-making processes. One existing example of this internalisation is in the monitoring of drivetrains.

LEARNING FROM OTHER INDUSTRIES

In order to develop processes, again the sector could look elsewhere for inspiration. It is standard practice in some sectors (e.g. oil and gas, defence, aerospace) to employ a probabilistic approach to operation, balancing uncertainty on the estimate of remaining useful life with the impact of a failure.

By adopting this type of approach, information from an early life model can still have an impact. As confidence grows in model accuracy, as they are refined with operational data, the value their use adds increases proportionally.

The UK remains a leader in offshore wind with over 5 GW of installed capacity and experience shows it has the potential to optimise the short, medium and long term financial return from these assets.

Frazer-Nash

A 'VISION' FOR THE WIND INDUSTRY

Glasgow based components and consumables specialist, Renewable Parts Ltd, believe in supplying more than just parts. By providing a total supply solution, the company can help to ensure the highest levels of turbine availability at low, and in some cases, completely predictable cost.

Renewable Parts' commitment to removing cost from the customer's operation, has led to a number of innovative approaches that are changing the traditional relationship between customer and supplier.

INNOVATIVE NEW SERVICE

Renewable Parts is launching an innovative, new service for consumables called 'Vision'. Delivering a customised service using only OEM approved products, 'Vision' promises customers a fixed priced, turnkey solution that meets all of their consumables needs.

Spanning a broad range of wind turbines, principally from the Vestas, Siemens and Nordex stables, the service enables customers operating mixed fleets, to employ a standardised, user friendly approach for all their equipment.

The ongoing development of customer friendly service solutions, which provide outstanding value for money, is central to the company's growth strategy. The arrival of Vision is the next step of that strategy. The culmination of a six month consultation with customers to identify supply chain improvements that will enhance their business, the new service promises to reduce costs, increase predictability and simplify the customer to supplier interface.

CONFIDENT FINANCIAL PLANNING

Contracted over a minimum 12-month period, Vision enables customers to plan financially with confidence, insulating them from cost overruns, while also significantly reducing workload associated with consumables management.

RECURRING THEMES

In explaining this development, James Barry, Chief Executive of Renewable Parts sums it up well: *"During our regular meetings with customers, the same recurring themes of needing greater simplicity, cost certainty and flexibility, emerged making us think there was a strong market demand for a new service offering. The generation of repeat purchase orders for hundreds of line items, often very low priced goods, really made no sense at all."*

"It became increasingly obvious that significant management time was being diverted from running businesses and reducing cost in the areas of highest expenditure. We believe that 'Vision' squarely addresses this challenge, allowing our customers to operate with the confidence that all their consumable needs will be met for a fixed monthly fee, adjustable as fleet changes occur."

"One annual purchase order that allows Renewable Parts to get on with the job of delivering on-time, to cost, made natural sense. Customer feedback so far has been overwhelmingly positive and we already have, in the space of weeks, customer commitments across many different turbine types."

IMPROVING AVAILABILITY AND REDUCING COST

The advent of 'Vision' continues the theme of improving customers' turbine availability and reducing their cost. Renewable Parts' highly successful logistics and parts management solution, which extends more deeply into the customer's operation, is already delivering significant operational and financial benefit.

Applied to RWE's Little Cheyne Nordex N90 operation, this integrated solution which preceded Vision, has delivered flawless results, with zero parts related interruptions, in almost 12 months since go-live. As critically, this approach has released the customer from supply chain management, enabling them to increase focus on managing and improving their core business.

In a world with investors demanding ever higher availability at even lower costs, operators need flexible supply solutions which are more than just parts. It is clear that Renewable Parts innovative approach is paying dividends for its customers.

'Vision', for those businesses that need to see ahead...

Renewable Parts Ltd

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MAXIMISING RETURN ON INVESTMENT

Wind Prospect and Nabla Wind Power have joined forces to support windfarm owners, operators and developers in the UK and beyond in gaining the maximum return on their investment.

COLLABORATION

In response to the changing renewable energy market in the UK and the move towards significantly reduced and zero subsidies for onshore wind projects, leading independent consultancy, Wind Prospect, has developed a package of measures to extend the typical 20 year life expectancy for a wind project.

Wind Prospect will work in collaboration with Nabla Wind Power, an independent wind engineering service provider who specialise in predicting site specific component life, and a windfarm certification body to accredit the service.

UNSURPASSED PRACTICAL EXPERIENCE

Robert Speht, Wind Prospect's Advisory Services GM, said: "With more than 20 years expertise in all aspects of wind, offshore wind and solar farm design, permitting, construction, operation and commercialisation, Wind Prospect's multi-disciplinary teams have unsurpassed practical experience and are renowned for providing the detailed technical advice that helps clients to deliver projects.

"We have harnessed these skills to introduce a series of measures to advise and support those in the market currently reviewing their assets and looking for ways in which to maximise their investment. Wind projects have traditionally been based on a standard 20 year lifespan, but we think that existing and future projects now need to be engineered for a 40 year lifespan.

INTERESTING QUESTION

"This raises an interesting question about what owners and operators need to do to extend the lifespan of their project? We can answer this question and help our clients take the next step, from a high level review of each project to the practical steps of implementing the engineering solutions.

"Furthermore, by extending the project design lifecycle, we could see the Levelised Cost of Electricity being brought down significantly. In the UK, where the government has withdrawn subsidies, this is incredibly valuable."

COMBINATION OF SKILLS

Ruben Ruiz de Gordejuela, CTO of Nabla Wind Power, said: "The combination of our skills will bring to owners and operators the best information to support decision making by identifying the optimal 'financial life' extension potential for our clients assets, how to achieve it and the plan for making it possible, leading to the protection and maximisation of the asset value of your windfarm."

Wind Prospect

Nabla Wind Power





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WORLD'S FASTEST GROWING RENEWABLE ENERGY SOURCE

With the increased interest in reducing greenhouse gas emissions, wind energy is now the world's fastest growing renewable energy source.

Wind turbines are traditionally erected on land but the past ten years has seen substantial growth in the popularity of offshore windfarms; delivering higher wind speeds across the ocean and therefore producing an increased contribution of electricity.

The UK has been the world leader in offshore wind since October 2008, boasting 1,465 wind turbines. A good percentage of these turbines (175) are located in the London Array – the largest offshore windfarm in the world – with intentions to reduce annual CO2 emissions by approximately 900,000 tons, equal to the emissions of 3,000,000 passenger cars.

POWER GENERATION USING WIND TURBINES

Wind turbines harvest wind energy by converting the kinetic energy in the wind to electrical energy. An alternator in the turbine converts the rotational energy into electrical energy which is passed via a subsea cable to an offshore platform along with cables from other turbines. Here the power passes through a transformer to raise the voltage for transmission via a larger subsea cable to the land where it enters the shore station.

At the shore station the power is conditioned and fed into the national grid network for distributor across the country.

The whole shore station site needs power to run the computers, pumps, lights, SCADA systems, air handling, security systems etc. For this, some of the power is transformed down from 33,000 volts to 400V to power the substation via auxiliary transformers.

AUTOMATIC VOLTAGE REGULATOR

However, clean regulated power is required for the equipment and so an automatic voltage regulator is used to stabilise the voltage and to provide reliable operation of the substations control equipment and ancillary appliances. This is the application for which Sollatek has been commissioned to supply a number of AVRs to sites including; Greater Gabbard, Thanet, London Array, Gwynt y Môr, Dudgeon and Galloper offshore windfarms in the UK.

Typically the substation has two auxiliary 33,000 volts to 400 volts step down transformers connected to two three phase Sollatek AVRs. The AVRs regulate the 400 volt three phase supply to the site's Low Voltage Alternating Current (LVAC) distribution board from which point all the site equipment is powered.

NEED FOR VOLTAGE REGULATORS

Variations in voltage can damage mains connected appliances due to the fluctuations from dangerously highly to frighteningly low inputs. Damage can be caused to equipment resulting in depleted life span, degraded performance, digital errors and failure of hard drives.

Voltage regulators are used to keep voltages within the prescribed range that can be tolerated by the electrical equipment, controlling that power and thus minimising variations in voltage in order to protect equipment using the electricity.

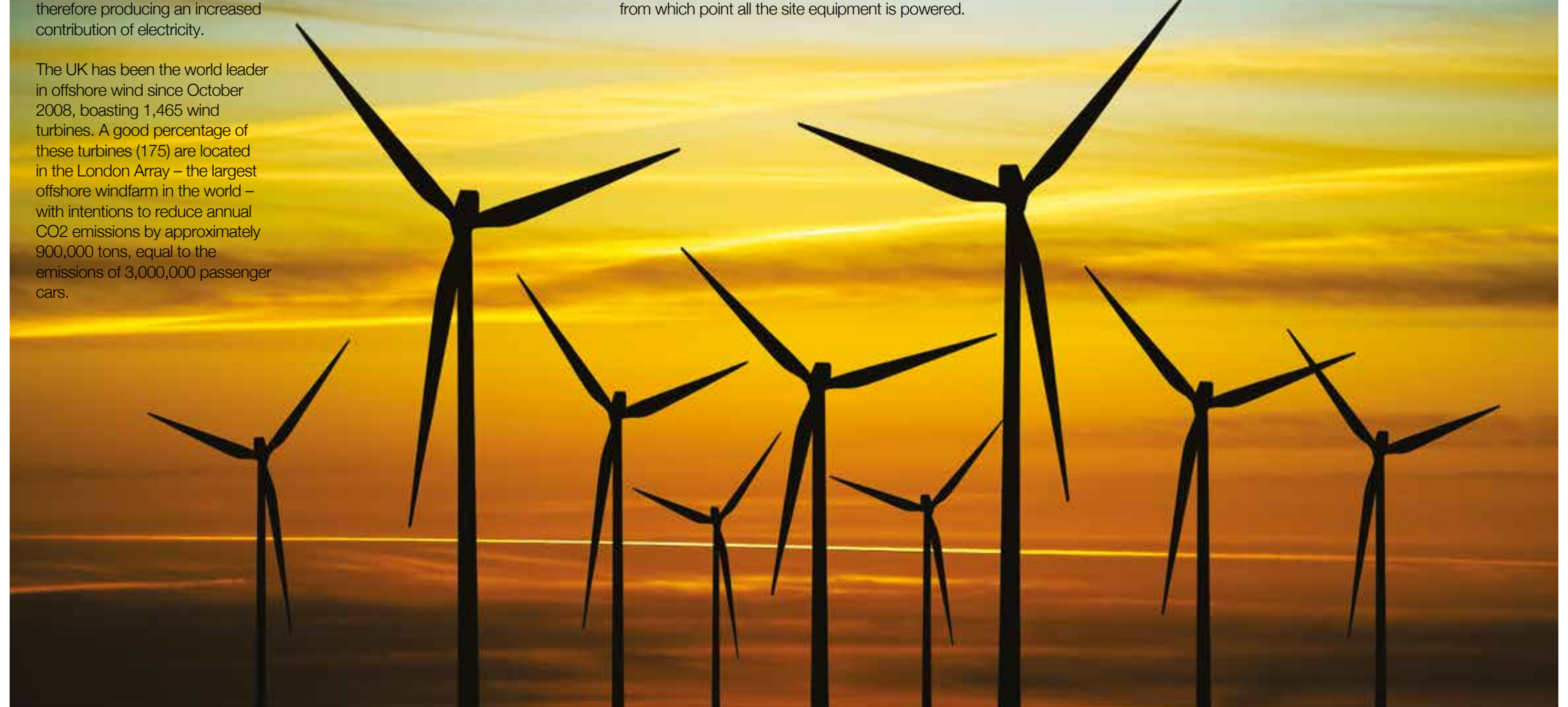
BEST SOLUTION

The company's Voltright range is the best solution to stabilise and regulate mains supply where the voltage is erratic or unreliable and can protect all domestic, commercial and industrial appliances.

The new Thyristor controlled Automatic Voltage Regulator is a solid state stabiliser which uses microprocessor technology. The AVR can rapidly detect voltage variations and correct the output. This ensures that no damage can be done.

The system, while costing less than other stabiliser technologies that use mechanical systems. Furthermore, the compact design of their AVRs offer a smaller footprint and the solid state technology gives a longer operational lifetime and little or no need for maintenance.

Sollatek




PALFINGER MARINE **STAND NO. 163**

PALFINGER MARINE is the expert for lifting and handling solutions designed especially for the wind industry and offers wind cranes for nacelles, platforms and substation/accommodation platforms as well as davit systems, boats, winches and offshore equipment. Innovative products that are certified by class societies ensure efficiency and maximum performance throughout the crane's lifetime.
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JDR is a world-class provider of subsea cable technology for some of the world's largest offshore wind projects. We are committed to enabling the next generation of wind power projects by partnering with our customers in order to help them deliver cost-effective renewable energy.
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Senvion is one of the world's leading manufacturers of onshore and offshore wind turbines. The international mechanical engineering company develops, produces and markets wind turbines for almost any location – with rated outputs of 2 MW to 6.15 MW and rotor diameters of 82 metres to 152 metres.
www.senvion.com


NAVANTIA **STAND NO. 207**

Navantia yards are key supplier to the offshore wind industry. Their current workload includes jacket and pile foundations both for WTG and substations, floating foundations (Spar type) and AC large substation topsides. Construction is accomplished in Spain, from two of the biggest yards in Europe, Fene and Puerto Real.
www.navantia.es

INNOVATION RULES AT GLOBAL OFFSHORE WIND 2016

Now in its 15th year, RenewableUK's Global Offshore Wind 2016 is still the major event dedicated to offshore wind in the UK. It takes place on the 21 & 22 June 2016, at the Manchester Central Convention Complex.



Highlights of this year's event include cost-saving innovations, export opportunities, international networking, supply-chain avenues and exclusive 1-2-1 meetings.



Garth Halliday


WORLD LEADER IN OFFSHORE WIND

RenewableUK's Director of Events Garth Halliday said: "As the UK's leading renewables trade association, we are proud that Britain is the world leader in offshore wind. This is a technology which started in UK waters in the early 2000s and we now have more installed capacity than any other country. The future pipeline is also the largest in the world."

Global Offshore Wind 2016 brings together many of the key players instrumental in the future growth of offshore wind energy around the world. Offshore wind is a relatively young industry, but its importance and future potential is clear.

Seaway Heavy Lifting

SEAWAY HEAVY LIFTING **STAND NO. 178**

Seaway Heavy Lifting is a leading offshore contractor in the global Renewables and Oil & Gas industry. We have vast experience in the offshore wind industry and have installed over 400 WTG foundations, > 10 substations by using our crane vessels Stanislav Yudin and Oleg Strashnov, which have a revolving lift capacity of 2,500mt and 5,000mt respectively.
www.seawayheavylifting.com


CWIND **STAND NO. 80**

CWind is an integrated service provider that supports the offshore wind industries by providing on-demand services as well as integrated packages during the construction and O & M phases such as OFTO asset management and O & M Summer campaigns. We work with windfarm developers, operators and their sub-contractors to deliver cost efficient and clean energy.
www.cwind247.com



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www.guidance.eu.com

Fred. Olsen Windcarrier

FRED. OLSEN WINDCARRIER STAND NO. 124

Fred. Olsen Windcarrier provides innovative and tailored services for the transport, installation, and maintenance of offshore windfarms. The company offers a holistic solution including vessel operation, crew and turbine technician supply, in-house engineering and complete project management. The company currently owns and operates class leading jack-up vessels and a fleet of crew/service vessels.

www.windcarrier.com



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Provides innovative products for personnel management, tracking, surveillance & communications, supported by specialist services including HSE, marine coordination & asset risk management. Its industry leading marine management & monitoring system, SeaPlanner, effectively integrates all this information to optimise safety & efficiency, & support project cost-reduction strategies throughout the project lifecycle.

www.searocgroup.com



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Experienced submarine cable installer for the renewable market. We utilise our advanced in-house fleet of offshore service vessels to install, repair and maintain submarine cables. We excel in harsh conditions, minimising weather delays whilst maximising roll-out efficiency.

www.siemoffshorecontractors.com



VBMS STAND NO. 145

VBMS specializes in SURF, subsea power cable and interconnector installation, providing engineering, procurement, installation (including burial) and termination & testing for total solutions consisting of subsea, platform and shore connections. VBMS complies with strict international industry standards, provides quality services balanced with cost effectiveness and an excellent international track record.

www.vbms.com



The UK currently has 5 gigawatts (GW) of installed capacity, which contributes over 5% of the country's total electricity supply. By 2020, RenewableUK expects this to grow to 10 GW of capacity, which will double the current amount of electricity generated. The job opportunities in the sector are also significant, during the planning, construction and operational phases. In recent years, job growth in offshore wind has been substantial and the industry now employs over 6,500 full time employees.

CONFERENCE FOCUS

This year's conference will focus on four distinct themes covering the whole lifecycle of an offshore windfarm...

1

Building Your Business – where delegates will have the opportunity to learn about new business opportunities and developments in international markets. Speakers will cover cost reduction, asset management and project economics.

2

Enabling Current and Future Projects – exploring just how offshore wind features in the UK electricity system.

3

The Lessons Learned – will feature presentations covering the latest insights gleaned during the construction and operations phase of projects to date.

4

Technical Focus – participation attendees will hear from those developing and delivering the latest innovations in offshore wind, as well as those dealing with the environmental and legislative challenges of constructing and operating within the marine sector.

EXTENSIVE EXHIBITION

The event features an extensive exhibition which showcases manufacturers, developers, service suppliers, consultancies, government agencies and more. Exhibitors already signed up include DONG Energy, A2SEA, Fred Olsen Windcarrier, MHI Vestas Offshore Wind, Servion and Siemens.

Feedback from this event consistently shows that the exhibitions generate a number of high quality leads.

SHARING A COMMON AIM

One of the virtues of this event is that delegates and exhibitors all share a common aim, to grow the sector and drive efficiencies and improvements. Every pound earned at these events is fed back into supporting and growing the wind and marine energy industry in the UK.

OPPORTUNITY

The event offers a tremendous view into the heart of the world's largest offshore wind market. This is an opportunity to make connections with key players in the market and to network with those who have successfully delivered projects both in the UK and around the globe.

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- World-class conference programme with 100+ key speakers
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Integrating ADS-B Receivers into an Industrial Environment

ADS-B (Automatic Dependant Surveillance-B), a new 'radar' surveillance technology, has become popular by public flight tracking network apps that can display air traffic on everybody's smartphone. Making flight positions, altitudes and many other data visible on a Geographical Information System (GIS) is an interesting application for industrial fleet operators, too. Knowing where helicopters and aircraft on support missions are positioned can be crucial for safe and economical operations.

ECONOMICAL SOLUTIONS

Similar to the vessel information system (AIS) flights equipped with an ADS-B capable transponder 'squitter' their position, altitude, speed and track, but also up to 55 other flight data to ground stations. But traditionally receiving ADS-B signals has been a domain of Air Traffic Control (ATC) and its receiving equipment and installation had to go through a strict certification process to comply with the various international and local regulations of aviation safety and security. In the past the resulting costs made the commissioning of ADS-B systems little appealing to non-ATC applications.

This has changed with the availability of ADS-B equipment that is solely used for surveillance and information purposes, but not to exercise 'control' of flights – it can be offered less expensive avoiding aviation certification costs. Manufactured from mostly COTS components Planevision Systems ADS-B receivers are still certified to the required industrial standards (CE, FCC, VDE).

INTEGRATION INTO INDUSTRIAL SYSTEMS

Planevision Systems has developed its PlaneTRack series of ADS-B receivers and accessories to perfectly fit into standard 19" racks. A network connection transmits flight data to the operator's central data room, where they can be overlaid to a GIS. Often in the past this integration has been a painful task as aviation and industrial data formats seldom fit together.

Now, with a wide variety of data formats available integration has become an easy task. For example the popular JSON format can be loaded in almost any GIS without additional interface programming and flights will appear on the control room overview map within a short time.

OPTIONAL INTERFACE

To monitor the proper operation of the equipment the PlaneTRack series also offers an optional SNMP interface to connect to a typical industrial environment and network management system. Another option that supports dual power supply systems with an uninterruptible switching technique rounds up Planevision Systems assistance for industrial integration of ADS-B receivers.



Planevision Systems



The right vessel for the job

With the development of offshore windfarms in Britain's coastal waters looking set to continue in the years ahead, developers and operators are rightly becoming ever more selective when choosing the vessels for their projects. As more offshore windfarms reach the construction stage, so vessel designers and ship builders are coming up with variations and options to meet what is becoming a diverse demand.

SIZE AND DISTANCE FROM SHORE

There are currently 23 operational windfarms off the coast of the UK, ranging from the small Beatrice in northern Scotland to the 160 turbines of Gwynt y Môr off the coast of North Wales. Distances from shore vary tremendously with Blyth offshore being just 1.6 kms from land whilst Greater Gabbard is 23 kms offshore. It's worth bearing in mind that the actual distances travelled from the operational port to site as opposed from landfall to site, increases these figures considerably.

The Dudgeon offshore windfarm, which is now under construction off the North Norfolk coast, is even further away at 32 kms, and with planned developments such as Dogger Bank being at even greater distances out to sea, the need for a diverse range of vessel types has been acknowledged. This is clearly demonstrated by the decision of the Dudgeon operations team to charter a Service Operational Vessel (SOV) to facilitate and support the maintenance of the Dudgeon offshore windfarm.

ON THE EAST COAST

The shallow waters and high wind speeds off the UK's eastern seaboard has resulted in a significant percentage of the existing and planned windfarms being located in the North Sea. However working in the North Sea presents serious challenges, as the water is often rough and the swells high. It therefore follows that the types of vessel used in both the construction and operational phases of a windfarm are of vital importance to the health and safety and efficiency of all those working on site.

PTV ANSWER

Tidal Transit is one of the most successful companies providing PTVs for the transfer of windfarm personnel from land to offshore windfarm sites. It has built a fleet of purposed-designed vessels each of which provides four crew members and twelve passengers with comfortable beds, bathrooms, galley, internet access and entertainment facilities, allowing windfarm engineers and support technicians to live and work offshore for up to several days at a time.

Each vessel has been in constant use since its arrival from its Spanish boat builder, and over the last 5 years they have been variously on charter at Greater Gabbard, Sheringham Shoal, Westernmost Rough and Gwynt y Môr.

Rugged GRP construction enables the company's vessels to operate in rough seas – a major advantage when working in the North Sea. Twin V12 MAN engines facilitate speeds of up to 27 knots when carrying twelve passengers, the crew, and their on-board cargo.

Massive cargo decks fore and aft can accommodate up to 10,000kg of tools, equipment and spares, and the Guerra crane on the fore deck has a lifting capacity of 1,025kg at 6.9m, which caters for long reach loading and unloading. Cranes can also be deployed for camera surveys and grab sampling.

WAVECRAFT JOINS THE FLEET

The WaveCraft is manufactured by Umoe Mandal in Norway, and is considered an industry 'game-changer' by those who have been exposed to this remarkable vessel. The first vessel was chartered by Dong Energy for use at its Borkum Riffgrund windfarm off the coast of Germany, and Tidal Transit has taken delivery of the second one, Umoe Firmus, for which the company will be the UK operator under a ship management contract with Umoe Unda.

The WaveCraft is a Surface Effect Ship (SES) which uses an air cushion between its catamaran hulls to lift 80% of the vessel out of the water. The small draught that this creates provides the vessel with easy access to ports, and enables it to travel at high speeds [40 knots] whilst maintaining a low fuel consumption that gives it a range of more than 700 nautical miles.

Importantly, managing the pressure of the air cushion according to wave height allows for smoother voyages and provides a greatly increased opportunity for access to turbines – up to wave heights of 2.5 metres.

The company will operate the Umoe Firmus alongside its existing fleet of PTVs and has finalised the first UK charter agreement for this exciting new vessel, having entered into an initial six-month agreement with Statkraft, with a longer term extension option, to use

the vessel to transport its O&M turbine technicians into the 88 turbine Sheringham Shoal Offshore Windfarm.

This is located from 9-17 miles off the coast of North Norfolk in the southern North Sea, and Umoe Firmus is operating from the port of Wells-next-the-Sea in Norfolk where the windfarm's O&M base is located.

A DEVELOPING INDUSTRY

Leo Hambro, Tidal Transit's Commercial Director believes the offshore wind industry will change considerably over the next decade, saying: *"Offshore wind is a young industry which is developing very rapidly, and announcements such as £2.5 billion confirmed funding for the East Anglia One offshore windfarm, stimulate further growth and development throughout the supply chain."*

"Vessels are of course a vital element of this supply chain, and vessel design and technology will need to continue to develop in order to meet developers' and operators' stringent HSE policies and demanding financial models."

"Our plans for the development and growth of Tidal Transit will ensure that our fleet can always offer 'the right vessel for the job'."

Tidal Transit

[Click to view more info](#)

[Click to view video](#)



Crew transfer contracts commence for Statoil

MPI Workboats has been awarded two long-term contracts with Statoil on the Dudgeon offshore windfarm. MPI Napoleon and MPI Snowball will be providing crew-transfer support, with the first vessel having commenced her 18-month contract earlier this month. The second vessel will start a three-year contract later in 2016.

DUDGEON OFFSHORE WINDFARM

The Dudgeon offshore windfarm is an exciting GBP 1.5 billion project that will harness offshore wind to power more than 410,000 UK homes. This 402MW offshore windfarm, to be located some 20 miles off the North Norfolk coast, will be developed and operated by Statoil and should start generating electricity in early 2017.

Contracts were signed in a ceremony held in Bergen, Norway last month, which was attended by MPI Workboats' General Manager, Leslie Robertson.



MPI SNOWBALL AND MPI NAPOLEON

The newest additions to the Workboats fleet, BV-Class 22m vessels MPI Snowball and MPI Napoleon, are excellent, all-round vessels. This versatility, combined with the positive and flexible attitude of the MPIW team, were major factors in securing these contracts.

The company is confident that their vessels will provide a valuable contribution to the project and wish both vessels and their crews safe and successful operations.

PIONEERS

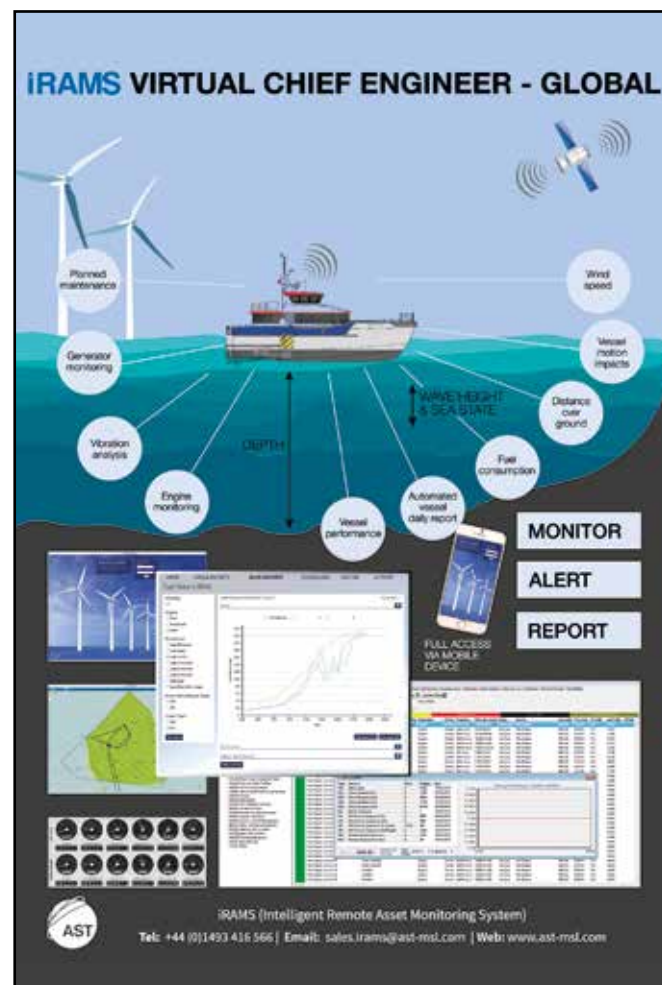
MPI Offshore, based in Stokesley (UK) and Breskens (the Netherlands), has been pioneering the offshore wind-turbine-installation business since 2003, when the first dedicated wind-turbine-installation vessel, MPI Resolution, was delivered. During the past 12 years MPI has been involved in numerous windfarm construction projects in nearly all countries around the North and Baltic Seas.

DEDICATED VESSELS

MPI operates four dedicated wind-turbine-installation vessels, as well as a fleet of 14 workboats. In addition, MPI provides a range of engineering, consulting, manpower and equipment rental services.

The company operates a fleet of 14 specialised workboats in various sizes, configured for crew transfers and survey duties, including subsea-support duties.

MPI Offshore



New 26m Windfarm Service Vessel Order

Alicat Workboats Ltd of Great Yarmouth, builders of aluminium workboats, have recently received an order from Dalby Offshore for the purchase of a brand new 26 metre Windfarm Service Vessel (WFSV).

ONE OF MANY

The 26m aluminium catamaran will be the eighth vessel Alicat Workboats will have built for Dalby Offshore and adds yet further diversity to the company's significant fleet, which with this acquisition, will stand at twelve vessels in total. It will however be the first 26 metre South Boats IOW design to be built by sister builder Alicat Workboats in Great Yarmouth. The vessel will be adapted to Dalby's requirements and have an element of innovation incorporated.

FEATURES

The class certified vessel will feature for the first time, Twin MAN V12-1650 main engines coupled to Hamilton HM721 water jet propulsion for speeds up to 30 knots and class leading bollard pull. This package of power train will make the vessel one of the largest and the fastest in the renewables industry.

The vessel will have a resiliently mounted superstructure ensuring low noise and vibration levels for the industrial personnel whilst passing to and from site, and fore and aft cargo decks capable of carrying 20 tonnes of equipment. The South Boats IOW 26 metre WFSV has been proven on both construction and O&M projects and is known for its high specification, spacious saloon and wheelhouse, excellent seakeeping, load bearing capabilities and of course reliability.

The vessel will be capable of carrying 24 passengers and have onboard accommodation for 8 passengers plus crew.

EXPANSION

Dalby Offshore have continued to expand not only their fleet but also their operations overall with bases now in Beverley and Scarborough in the North of the UK and Lowestoft in East Anglia. This latest vessel will follow the delivery of 23 metre Alicat vessel 'Dalby Don', delivered to Dalby at the end of 2015.

COMMITMENT TO UK CONTENT

The Alicat Workboats and South Boats IOW ranges of vessels are built in the UK, ensuring high levels of quality and attention to detail but with a specification ensuring competitive pricing, reliability and class leading capabilities. Dalby emphasise their commitment to UK manufacturing and 100% UK content through build to operation.

Stuart McNiven of Dalby Offshore: "We are delighted to confirm this order with Alicat Workboats for the Dalby Ouse. Dalby Offshore is proud of its ability to react to client requirements and now has a diverse range of vessels to offer that can satisfy any requirement on any project. The South Boats IOW 26m is a proven vessel benefitting from significant modelling and research and we look forward to her delivery this year."

"This cements our position in our chosen market and with the order of two sister vessels in 2017, we see this as one of the largest orders placed in the sector to date. We certainly believe this vessel will be one of the stars of the show in June at Seawork 2016, when it will be delivered."

LONG TERM RELATIONSHIP

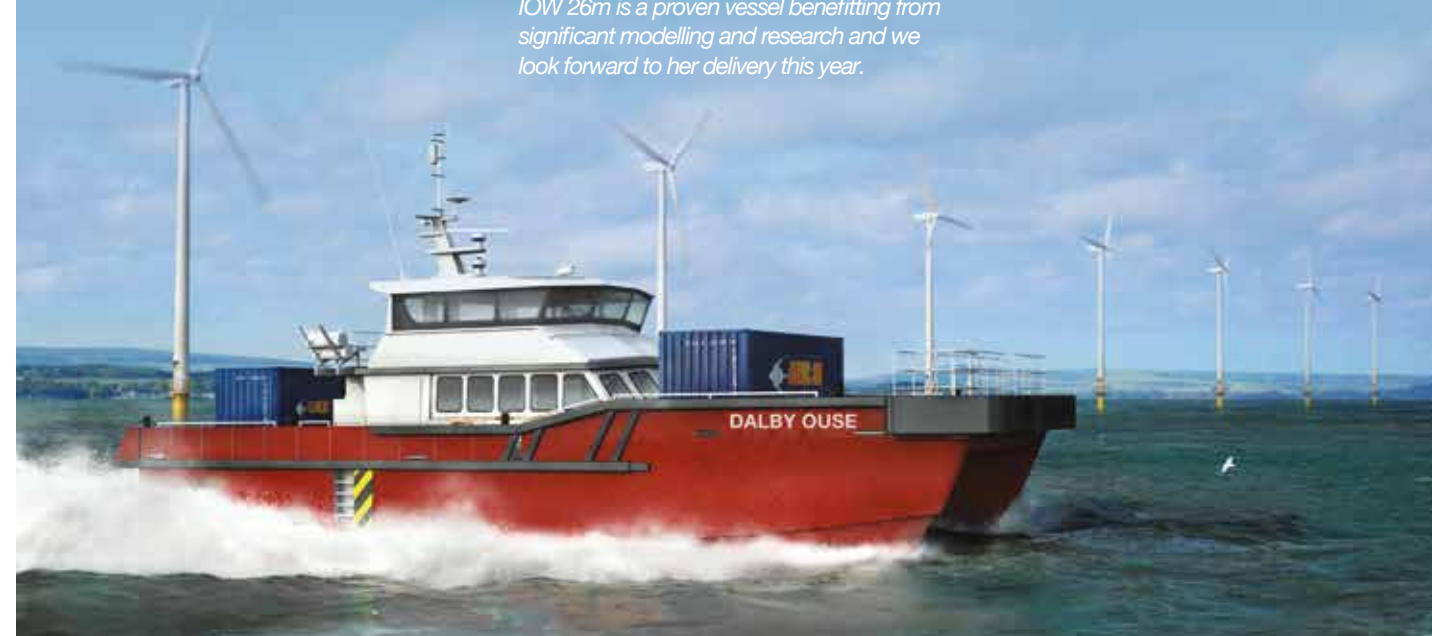
Steve Thacker of Alicat Workboats Ltd said "We are very pleased to be continuing our relationship with Dalby Offshore. For the last three years we have delivered two vessels per annum to them and proud to be continuing this supply into 2016."

"This demonstrates Alicat's ability to offer the correct product for the specified requirement drawing on a vast portfolio of designs and ability to tailor specifics to meet client and project demands. We thank Stuart McNiven and the Dalby Team for yet another significant order, this ensures that the Great Yarmouth facility has visibility of long term orders and the security that brings."

RESEARCH AND DEVELOPMENT PROGRAMME

Ben Colman of South Boats IOW Ltd said "The South Boats IOW 26m design was the first hull form to be developed following an extensive hull form research and development programme. The 26m offers very low noise levels combined with reduced vessel motions to ensure that crew and technicians remain within accepted guidelines for human factors and sea sickness ensuring that the vessel can operate in the harshest environment and delivering technicians fit and able to fulfil their tasks offshore."

Alicat Workboats Ltd





SeaZip continues fleet expansion

In a celebratory atmosphere, marking the sustained growth of its fleet, SeaZip Offshore Services has taken delivery of two Damen Fast Crew Suppliers (FCS) 2610. Continuing the company's vessel-naming trend, the new additions will be known as SeaZip 5 and SeaZip 6. The offshore service provider now has six Damen FCS 2610 vessels in its fleet.

WORKING TOGETHER

"Once again, it's a great pleasure to work with SeaZip Offshore Services," states Damen Sales Manager (Benelux), Roel van Eijle. "We are proud to be involved with the development of their fleet since day one. An April delivery suits their needs perfectly – these two vessels can get to work straight away as this year's offshore wind O&M period begins."

EXTRA LOADING

A key modification made to both vessels was to increase their draught. Jan Reier Arends, SeaZip Offshore Services Managing Director, highlights the importance of this design rethink: "By strengthening the hull in certain areas, the vessels are able to sit 5 cm lower in the water. This will allow us to load an additional 5 tonnes of cargo – this is a 25% increase of loading capacity. We will be able to carry a lot more equipment and materials."

The new vessels exhibit a number of additional adaptations, says Jan: "You can call this fine tuning – coming from lessons that we have learned from the earlier SeaZip vessels. For example, together with the fender supplier, we have improved the bow fenders."

POOL OF VESSELS

The SeaZip 5 and SeaZip 6 will join their four sister vessels – SeaZip 1, 2, 3 and 4 – in what Jan describes as a pool of vessels. "Together with our conservative financing strategy – we are financed approximately 60% from bank loans and 40% from private equity investors – having a pool of vessels means that we are well positioned to handle market fluctuations."

SeaZip Offshore Services, part of the JR Shipping Group, has taken delivery of six FCS 2610 vessels in no less than three years. "We have a good working relationship with Damen. This helps a lot when we are discussing new concepts and new vessels. The technical communication with the new build department, in particular, is very supportive. When brainstorming over the SeaZip 7 and 8, for instance."

NOT JUST OFFSHORE WIND

Damen's FCS 2610 has become the industry standard for fast, safe and comfortable supply of crew and materials to offshore windfarms. Well-known to the offshore wind industry, the beneficial characteristics of the design have not gone unnoticed by other offshore industries either.

Features such as speeds of up to 25 knots, excellent seakeeping, comfortable accommodation and fuel efficiency are by no means applicable only to the offshore wind industry: they are equally valuable to a wide spectrum of offshore sectors.

For example, the SeaZip 4 is about to commence its second season providing logistics support to Heerema Marine Contractors in their installation and decommissioning operations in the oil and gas sector. Furthermore, notes Jan, an additional SeaZip vessel is currently working on a North Sea salvage contract.

Damen



North Sea considerations for workboats

For the majority of conventional-sized vessels issued with certification under international frameworks there are few significant differences between the North Sea jurisdictions under consideration when it comes to requirements for conventional cargo and passenger vessels.

However, offshore industry vessels, of which there is a broad mix spanning different activities, fall into more specialised categories not well aligned with the requirements of conventional deep-sea shipping and thus the interpretation and application of international framework varies between flag states.

WINDFARM MAINTENANCE VESSELS

Various also known as service and maintenance vessels, wind service operation vessels or simply offshore service vessels (as used in other offshore industries), this vessel type is a relatively recent addition to the offshore wind industry which has been introduced as larger windfarms are constructed further away from shore-based logistics.

SELF-ELEVATING UNITS

Self-elevating units, or jack-ups, are used for a variety of development, construction and maintenance activities in offshore wind which often form the principal activities in establishing and maintaining the windfarm.

OFFSHORE SERVICE CRAFT

Small service craft (of less than 24m in Load Line length) are not subject to the majority of international conventions. In general they are engaged on domestic voyages as commercially operating cargo vessels and therefore are certificated under national legislation. It is increasingly common for service craft certificated under national legislation of one flag state to operate within the jurisdiction of a different port and/or coastal state.

SMALL SERVICE CRAFT STANDARDS

A brief comparison of the design and construction standards for small service craft to highlights similarities and differences between the national requirements. For the sake of simplicity, and to focus on the requirements relevant to the majority of the service craft market, this comparison only considers the requirements for small service craft of less than 24m in Load Line length (i.e. not subject to Load Line).



For Denmark, the UK and the Netherlands this restriction is explicit in the national requirements, while in the case of the German standard circular the size restriction for applying the standard is based on gross tonnage. However in practice there are very few vessels exceeding 24m in Load Line length which are also less than 100 GT.

RULES ACCEPTANCE

All jurisdictions will accept the rules of a recognised Class Society for hull construction standards, though the UK may also accept equivalent standards or first principles calculations.

**Martin Collingwood
Andrew Jackson Solicitors**

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Crew transfer vessels for Race Bank offshore windfarm

Seacat Services, based in the Isle of Wight, has been awarded a multi-million pound contract to provide crew transfer vessels for DONG Energy's Race Bank offshore windfarm, located off the North Norfolk coast.

The new crew transfer vessels will be used during the construction of Race Bank, and the vessels have been built in the Isle of Wight. All of Seacat Services' crew members on-board the vessel will also be UK employees.

This follows the recent announcement that DONG Energy has placed contracts with three different UK companies for the array cables at Race Bank.

STATE-OF-THE-ART VESSELS

Jason Ledden, Construction Project Manager for Race Bank at DONG Energy, said: "I am delighted to be using these state-of-the-art vessels, built right here in the UK, to assist with the logistics and construction of Race Bank."

"Placing contracts with UK suppliers whenever possible is a real priority for DONG Energy and we have already worked with Seacat Services for our Westernmost Rough offshore windfarm. The company's commitment to service, quality and safety meant there was no hesitation in using them again for our Race Bank project."

"These crew transfer vessels are part of a new fleet, and will help safely and efficiently transfer our engineers and technicians offshore to work on the construction of Race Bank's 91 wind turbines and two substations."



ON TIME AND ON BUDGET

Ian Baylis, Managing Director of Seacat Services, said: "The construction timeline for UK offshore wind projects requires highly capable partners to deliver projects in a manner that keeps developments on time and on budget."

"So far, we're proud to say that the UK maritime sector has delivered when it comes to supporting this growing industry. Our work with DONG Energy on Race Bank over the coming months will enable us to channel further investment into the local supply chain by providing opportunities for local crew and supporting services."

CONTINUING RELATIONS

"Furthermore, this contract award is a testament to the hard work carried out by Seacat crews on DONG Energy's Westernmost Rough construction project and we look forward to continuing our relationship with the project development team."

The Seacat Services crew transfer vessels are expected to be in operation at Race Bank until the end of 2018.

LOCATION

Race Bank is located almost 17 miles off Blakeney Point on the North Norfolk coast, and a similar distance from the Lincolnshire coast at Chapel St. Leonards. The offshore windfarm is being built from DONG Energy's construction base in the Grimsby Fish Docks.

Seacat Services



Leading global specialist

Strategic Marine is one of the world's leading specialists in shipbuilding, fabrication and engineering with operations located in Singapore, Western Australia and Vietnam producing high quality products for its clients around the globe.

WORKING TOGETHER

In 2011 Strategic Marine undertook a programme to develop and construct specialised vessels required for the growing and emerging windfarm operations in Europe. Working with BMT Nigel Gee to design the vessels it was recognised that with BMT's design expertise and Strategic Marine's high quality of construction that the vessels would give our clients a high performance product needed to tackle the demanding working environments these vessels would encounter.

INDUSTRY DEMAND

At present orders for windfarm service vessels which also include crew transfer have been very encouraging and demand has seen the need to produce market ready stock to reduce waiting times for our clients which in turn will allow our clients to capitalise on any commercial opportunities.

Since constructing the company's first windfarm vessels in 2012 they have built and delivered 19 vessels ranging from 19.4m up to 26m.

COMPLIANCE

The Stratcat26 windfarm service vessel is also the markets first vessel in its class compliant with both U.K and German flag state rules for the carriage of 24 technician and service personnel to offshore installations such as windfarms and platforms.

ENDURANCE AND SAFETY

Designed with the evolving and increasing demands of the offshore wind sector in mind the vessel is also available in multiple propulsion configurations such as Quad Volvo IPS, Quad Water Jet, Twin CPP or twin FPP. Strategic Marine has provided a platform that works with a greater level of endurance and a higher safety margin in harsh and demanding sea states.

FEEDBACK

Feedback received from clients has been extremely positive obtaining many repeat orders with our vessels being proven and exceeding the performance requirements of our clients whilst also demonstrating market leading fuel economy.

The team at Strategic Marine is constantly working to improve our products through research and development and better serve our markets through innovation.

FUTURE

The company is looking forward to what the future holds and continuing to provide their clients the innovative and market leading products that they are able to produce at very competitive prices.

Strategic Marine

New build vessel progresses well

Manor Renewable Energy (MRE) are on track to take delivery of their new 26m windfarm service vessel later this year. The vessel has received a great deal of interest with a large area of deck and over 50t of fuel/water capacity. This teamed with large ship style accommodation and 12 modern berths in 6 above deck is focused on providing an offshore 'project base' for diving, survey, temporary power campaigns, yet still remain extremely competent in day to day personnel transfer duties.

IDENTIFYING NEED

"We identified a need for this type of vessel after finding few vessels with the ability to house personnel on board for more than one or two nights and after following the success of the MO1 and MO2, we felt this design allowed us to build as big as we could at this time, yet still remain a very flexible vessel – more little ship than big boat" said Eric Briar, MRE Director.

FINALISATION

Working together with MRE and builders Manor Marine have been suppliers KPM, who have been engaged to help complete the design and supply the fit out. This has allowed the internal layout to be finalised and optimised to utilise every inch of available space and provide top quality accommodation for crew and clients alike.

Eric concluded; "We believe we have taken this type of vessel to the next level – later this year we'll see if the industry agrees."

Manor Renewable Energy



VESSEL SPECIFICATION

Powered by 2 x MAN D2862 LE466 (1029 kW @ 2300RPM) engines, through ZF 3055 A, 2.52:1 gearboxes to 5 bladed 43" x 45.5" propellers, design speed is 28kts. Maneuverability is assured by large rudders and 2 x 65hp thrusters; the vessel boasts a large bridge capacity, 2 office spaces, a mess room to seat 12 plus an additional 12 transit seats for passengers.

CONSTRUCTION

Currently under construction in Portland, Dorset, the keels were laid recently with all the full frames fitted and the bridge fabrication now complete. The bridge deck will be fitted out over the next few months and fitted separately to the two-tier accommodation decks.



Planned Maintenance Systems for Workboats

Planned Maintenance Systems (PMS) is typically a software application to monitor, alert and record all the routine and scheduled maintenance tasks required on a vessel to maintain its efficiency.

In years gone by this type of software maintenance tool was typically employed only on larger vessels with complex maintenance tasks and routines and very often were part of their class survey.

TECHNOLOGICAL PROGRESS

As workboats have technically become more advanced and complex in their own right the relentless drive to find operation savings, this thinking is changing rapidly and so have the economics.

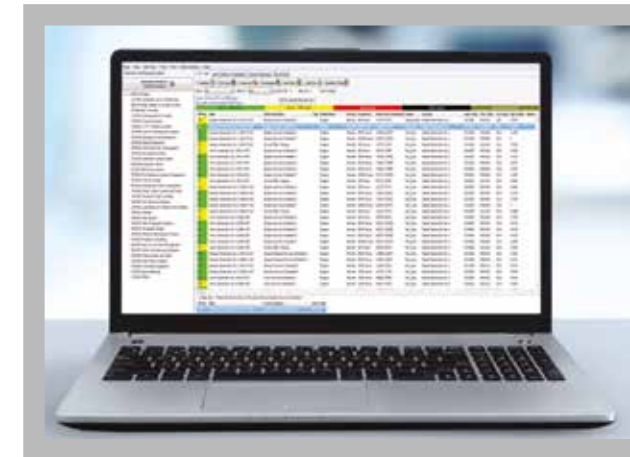
For example a routine 22 metre CTV work boat which can now very often cost between 2-3 million pounds with a drive train worth circa £250K. Maintaining, monitoring and protecting your most valuable asset with a PMS system to ensure optimum performance makes economic sense.

Relying on simple spreadsheets or paper records to keep on top of your vessel maintenance can only take you so far compared to an advanced Planned Maintenance System which can be automated and alerts you to what tasks are due on the vessel and from onshore.

PREVENTION IS BETTER THAN CURE

'Prevention is better than cure' has never been so true particularly with the cost of a turbo failure on a high performance engine can be £40K and the inevitable downtime and disruption to your business and reputation.

PMS systems today reduce the administration involved in managing routine preventative maintenance, reporting and have many advanced features to help increase operational efficiency for example...



- Predictive maintenance
- Root cause analysis
- Automation of vessel data reporting
- Defect reports

STAFF COMMITMENT

Successful examples of implementing a new PMS systems require an investment in time, training and commitment by all the staff. If you are thinking of introducing a new PMS system, the most important investment at the outset is the initial population of the PMS of the vessel data which is a skilled task normally undertaken by a Chief Engineer.

The population of vessel data is a one off task however like most things in life, 'you get out what you put in'. The initial population for a CTV work boat will normally take a suitably qualified engineer 1-2 days depending on the complexity of the vessel.

The cost of introducing a PMS clearly is a factor but can pale into insignificance when compared to avoiding an expensive engine repair and unplanned maintenance days. It can very often add less obvious benefits with the more advanced PMS systems for example providing HSE reporting for clients.

iRAMS

One new solution which has focused on this sector is iRAMS/Planned Maintenance System from AST Marine Sciences which has been developed specifically for the maritime work boat market.

This innovative solution can play an integral part of any vessels SEEMP strategy, reducing emissions and meeting compliance regulations. Remote vessel management offers reduced down time for unplanned engine maintenance, automation of daily reports, reduced fuel consumption, (including monitoring Skipper behaviour) and combines engine diagnostics and automated vessel efficiency reporting.

Vessel PMS applications has been widely adopted for many years in the larger fleets however what is new is by integrating a new AST maritime remote sensing and engine diagnostic system, iRAMS with a PMS now offers a solution providing the 'right information at the right time'.

SPECIFICS

Operating globally via satellite, iRAMS will be of particular interest to vessel operators with limited engineering resources on board as it provides a range of engine logging data and diagnostic information shore side via the GUI. Combined with a range of configurable alerts, sent via SMS or e-mail to the Operations Manager or Fleet Engineer, the system provides early warning alerts of anomalies before they become problematic.

Included in the iRAMS GUI is 'spatial mapping data', offering detailed global windfarm locations. This enables users to set geo-fences/alerts around particular windfarms, or even individual wind turbines, notifying when a vessel arrives or departs its destination. AIS data can also be fed into iRAMS and displayed on the GUI mapping, allowing the geo-fencing alerting function to be available to all AIS vessels.

REPORTING

The reporting functionality of iRAMS has been developed to improve vessel efficiency allowing users to create automated reports that are e-mailed on a daily/weekly/monthly basis using either user defined parameters or pre-set comparison reports e.g. engine hour v fuel consumption.

Sam Woodcock
Technical Director
AST Marine Sciences

[Click to view more info](#)



Is your business looking to capitalise on Hull's emerging renewable energy sector?

Find out how the Green Port Growth Programme* can help.

Assistance and funding opportunities are available for:

- Business Support and Advice - provide support in areas such as H&S, Quality Management and Accreditations
- Employment and Skills Development - wage subsidies for Level 3 Apprenticeships and training subsidies
- Business Grants
- Research, Development & Innovation
- Connecting With Buyers - through the Green Port Hull Supplier Directory

Contact the business support team on Tel: +44 (0) 1482 391639 or visit www.greenporthull.co.uk



*Businesses must be located in Hull and the East Riding of Yorkshire

Sailing into the world of renewables

The Humber region is ideally placed to become a global centre for green energy. It has the supply chain infrastructure, transport links, coastal position and support industries to attract renewables businesses to move into the area.

LOCATION

The Humber's proximity to a third of the country's designated major windfarm development zones puts it in prime position to play a dominant role in reaching the UK government's 2020 renewable energy deadline.

To help the industry meet this target, the government designated nine 'Round 3' windfarm development zones, chosen because the required facilities would be operational in time for 2020. Three of these zones are within 12 hours' sailing time from the Humber, essentially making the region responsible for a large proportion of the UK's progress in renewable energy.

SEAHORSE MARINE

The region's maritime resurgence is the reason that, in 2010, Seahorse Marine, a manufacturer of High Density Polyethylene (HDPE) workboats, left its base in Vancouver, Canada, and returned to its roots in Hull, East Yorkshire. As the renewables industry grows, so does its work in the sector, so it made sense for the company to be based at the heart of the Humber.

Vickie Prince, Business Development Director at Seahorse Marine, explains: "We design and manufacture a number of vessels, including vessels suitable for offshore wind. These include dive boats, both with built-in and portable equipment, to enable diving engineers to assess and maintain wind turbine foundations, and fast response crew transfer boats.

"We also build survey vessels. We've recently supplied boats to Dutch company Van Oord, a leading international contractor that specialises in dredging, marine engineering and offshore projects. They are carrying out surveys in the Caspian Sea on behalf of energy giant Chevron, to scope out a new oil terminal in Kazakhstan.

CURRENT R&D PROJECT

"Our current R&D project is a new vessel design that incorporates the seagoing capabilities of the Seaviper RCB and the functionality of the Optimus workboat. Combined with an intelligent operation control system, it will be a vessel that can be precisely positioned and manoeuvred alongside offshore structures such as wind turbines. The test vessel is scheduled for release at a demonstration event in Hull in May 2016.

"Opportunities in the energy sector, especially offshore wind, are only going to grow thanks to the likes of Centrica, Dong Energy, E.ON, RES Offshore and Siemens establishing operations and maintenance bases in the Humber region. It made sense to move back here and capitalise on our maritime heritage."

ACCESSING GUIDANCE ON NEW OPPORTUNITIES

In an industry that is still relatively new, Seahorse Marine required a little guidance on accessing new opportunities in the offshore wind sector. Its HDPE vessels bring many advantages to renewables businesses due to their flexibility, lightness, cost efficiency and use of recyclable environmentally-friendly materials that do not require anti-fouling, which can contaminate the marine bed. They are also naturally buoyant, with a 0.98 density rating, and can be built quickly (8x3m vessel with a four-crew wheelhouse can be manufactured in 14-16 weeks) without the use of glass reinforced plastic (GRP) moulds.

However, in an industry with stringent procurement processes, Seahorse Marine needed to showcase its products to the right people.

TARGETING SECTOR BUSINESSES

Vickie added: "Our products are ideal for the renewables industry, but targeting businesses in this sector is hard. There's a lot of hype and talk in the media about what investment these large energy companies are making, but little about how local SMEs can contribute or access supply chain opportunities on their own merit, as the large corporates expect SMEs to partner as tier 2 or 3 suppliers."

CONTINUED...





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GREEN PORT GROWTH PROGRAMME

It was at a Green Port Growth Programme (GPGP) networking event that Vickie found out about the support available. The GPGP is designed to capitalise on renewable opportunities and to develop indigenous business growth within the renewable sector securing long-term economic growth and creating employment for the region. It has an investment of £25.7m, which is supported by the Regional Growth Fund.

The programme, developed by Hull City and East Riding Councils and private sector partners, aims to provide continual support to help local businesses recognise and embrace potential opportunities within the renewables sector.

Vickie continued: "The Green Port Growth Programme has provided us with excellent support, guidance and funding to support our development within the Humber area. They are very knowledgeable about the challenges SMEs such as ourselves face and are a valuable partner within the renewables sector. We are mid-way through implementing ISO 9001 (quality), 14001 (environmental) and 18001 (occupational health and safety), standards which businesses expect to see and which we acknowledge are accreditations that give us even more credibility when approaching some of the bigger firms.

"We have gained funding for events such as Seawork, which we attend every year, to help with our marketing and networking efforts. A lot of our business comes through recommendations, but we recognise the importance of being able to promote ourselves better. Through the GPGP, we've obtained assistance with marketing activities, company branding, website, corporate brochure and effective use of social media such as LinkedIn, Facebook and Twitter. Our new website will be available with French, Arabic and Spanish pages to respond to an international client base and allow us to communicate better with these target markets.



SUPPORTING A LONG-TERM COMMITMENT

"Finally, the employment and skills strand of the programme is supporting our long-term commitment to employing local people through funding for four apprentices. They cover mechanical engineering, electrical engineering and fabrication, all of which are key to Seahorse Marine's manufacturing activities. Not only does this help us retain quality staff it's also supporting career development within STEM subjects and addressing the skills gap in the city."

AN INCREASE IN BUSINESSES CAPITALISING ON SUPPLY CHAIN OPPORTUNITIES

The Green Port Growth Programme delivers activity through six business strands...

- Employment and Skills Development
- Site Assembly
- Inward Investment
- Business Support and Advice
- Business Investment Grants
- Research, Development and Innovation (RDI)

Dawn Hall, Project Manager for the Business Support strand, is seeing many local companies make the most of supply chain opportunities.

She commented: "To date, we have supported 227 businesses through the programme and undertaken over 100 reviews and diagnostics on companies to assess their current operations. This includes systems, accreditations, sustainability, goals, partnerships, market profile, sales plan, skills and finance to ascertain their potential opportunities within the renewables sector. So far, financial assistance has been awarded to over 30 companies to support their growth into the renewables sector, and we have helped create 72 jobs.

"However the support doesn't end once funding has been handed over. The renewables sector, especially in the Humber region, is constantly evolving, so we have made it a priority to keep businesses informed of what is happening in the sector through a monthly news round-up. We have recently published our 35th issue. In addition, we also run a successful Business Directory, which is used to identify potential suppliers. More than 260 companies are registered.

DEDICATED SUPPLY CHAIN CO-ORDINATOR

"We have also appointed a dedicated supply chain co-ordinator who is helping to open doors for local businesses. This includes data collection on opportunities and improving relationships with developers and original equipment manufacturers (OEMs), for example. Since the role's inception, we have helped companies engage with key players in the renewable energy industry, such as Siemens, Energy Works, Dong, SSE and Clugston.

"Another incredibly important part of the Business Support strand is our workshops. As a result of the positive feedback, we continue to expand our events programme, with 28 having been delivered. We have recently developed a series of business growth workshops, to run on a rolling basis throughout the year, and we are constantly listening to local businesses so that we can tailor our events to meet their needs."

Green Port Hull

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Subsea Umbilicals Advice

As many of our readers know we visit relevant industry events and discuss areas of interest which would help our readership and therefore the industry. The subject of Subsea Umbilicals has often been brought up and so we welcome Subsea Innovation as sponsors of the feature and experts in the field to give us some much needed information.

We let Chris Wann, Subsea Innovation's Business Development Manager give us his expert advice...

UMBILICALS AND SEALS

Subsea Innovation, formed in 1985 by a team of experienced engineers and diving professionals, has proved itself as a company dedicated to delivering state of the art engineering products to the offshore oil & gas and energy industries throughout the world.

From seabed to topside the company and its staff have forged a track record for the supply of sealing, hang off and clamping solutions for all sizes of flexible along with machinery required to manufacture and install these systems.

Our most popular system achieves this via a structural clamping element fitted with our SIgrip high integrity collet system. The system is pre activated during the hang off operation to provide the required clamping force to prevent movement. Any further changes in hang off load, both in tension or compression, cause the clamping system to increase the clamping pressure and as such it is self-energising under use.



HANG-OFF ASSEMBLIES

At the topside the main purpose of a riser hang-off system is to provide a structural support between the riser or umbilical and the J or I-tube. Sealing elements are also used to ensure a pressure tight seal is provided against the medium inside the tube.

Collet sections are sized during the design phase to ensure that the maximum clamping load on the product cannot be exceeded within the design parameters. Structural support can also be achieved by resin potting, armour wire clamping and specific fittings required for Grayloc type connectors amongst others.

Our proven SISeal sealing elements are provided above the supporting section and are energised following successful hang-off via the interface plate on the top of the unit. Double seals with a testable annulus ensure that a seal is achieved prior to the completion of installation.

We can also provide T's for fluid filling the tubes, electrically insulating hang off systems and also design to account for seismic loads as required by the client.

Temporary hang-off clamps, custom designed to be compatible with the full assembly, can be provided to ensure a safe hang-off operation when a crane cannot be used to support the flexible following pull in. These systems are all FAT tested with the final assembly to ensure total piece of mind for the client.

SEALING TECHNOLOGY

On the subsea side we offer passive and active I and J-tube sealing systems for all flexibles using our field proven SISeal system.

Passive seals provide a simple cost effective solution for lower pressures. These seals consists of a nylon body with a number of high integrity elastomeric sealing disks. The assembly is pre-tensioned onto the flexible before being simply pulled into the J-tube via a topside winch.

ROV or diver activated seals provide an engineered solution against higher pressures and can be tailored to suit many differing applications or challenges off-shore. Fitted and positioned whilst un-activated, the sealing elements

All our seals are available as a split or one piece construction depending on termination requirements and can be build up subsea or on deck. The active designs are easily removable and can be repositioned or redeployed as required.

The bespoke element means that specialist requirements can be catered for and we have in the past designed systems that seal over existing failed seals or take into account awkward exit angles.



INSTALLATION SUPPORT

Our offshore qualified technicians and suite of rental activation equipment can be supplied to ensure a quick, trouble free installation of all of our sealing and hang off products.

UMBILICAL HANDLING EQUIPMENT

Subsea Innovation can also supply belted or tracked tensioners, under roller and positive engagement take-up and pay-off stands, taping heads, accumulation

systems, bend testing machinery and roller transfer tables required for manufacture and load out of flexible products.

FACILITY AND REFURBISHMENTS

The design, build and testing of all our products is conducted in house at Subsea Innovations UK headquarters. The 40,000Sq/ft purpose built facility serviced by two 25Te and two 5Te cranes provides us the perfect environment for the survey and factory refurbishments of sealing and cable handling systems. All work carried out and new parts supplied come fully warranted for additional piece of mind.

UNRIVALLED SUPPORT

All systems delivered are supported by a team of experienced engineers with a complete database of both technical and construction information that is retained electronically and has been maintained since the company was established.

Technical support services offered include on-site commissioning, servicing and repairs carried out by qualified service engineers. This is complemented by a comprehensive spares programme and a large stock of both major and minor components.

Chris Wann
Business Development Manager
Subsea Innovation

[Click to view more info](#)

[Click to view video](#)



are then squeezed either by stud-bolts or hydraulically via a flange and piston system. All versions feature mechanical locking once activation is complete and double seals with a testable annulus ensure that a seal is achieved prior to the completion of installation. Friction and bolted flange connections can be provided along with full plugs of the same construction but without the cable entry.

HOLDBACK/RECOVERY CLAMPS

Available for rental or new product purchase are flexible Holdback Clamps suitable for providing a clamp on lifting point in order to enable anchoring or recovery to a platform/vessel. The clamps come complete with remote installation tooling.

Controlled flow excavation systems

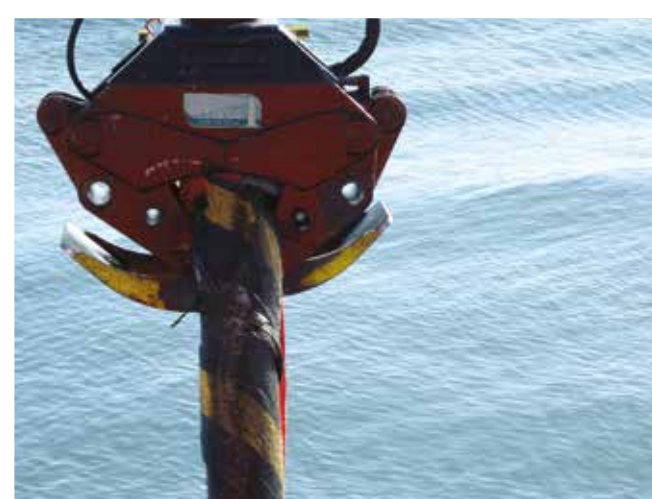
SeaVex is a hybrid subsea excavation system which is extremely adaptable, compact and controllable. The equipment houses a large single cast counter-rotating impellor complete with direct drive and torque restrictor driven by a powerful compact 320kw hydraulic motor.

As well as the SeaVex units being utilised for cable and pipeline trenching, the units can also become a dual system to be operated for trunk line excavation, sand wave clearance and seabed preparation.

USAGE

The unit is typically used in the vertical plain, or when mounted within an articulation cage, may be tilted 45° from the vertical to increase the operational scope – this development allows pre-trenching operations within a closer range for umbilical entry in to J-tubes, for deburial of the umbilical at the J-tube entrance or for deburial operations of jack-up rigs which have become stuck.

SeaVex tackled seabed sediments of 25kPa-40kPa without the assistance of jetting lances on this project. The successful lowering of this cable will allow a second submarine cable to be laid safely perpendicular over the buried cable later in the season.



The subsea hydraulic cable grab had been built to client specification for this project and was delivered within a 6 day turnaround to Liverpool Port ready for operations.

SUBSEA ENGINEERING SOLUTIONS

The company delivers engineering solutions for subsea cable installation, maintenance and repair and work with clients across the offshore oil & gas, submarine telecoms and renewable power industries.

IN-HOUSE EXPERTISE

Their in-house expertise includes highly skilled and experienced offshore technical professionals and onshore engineering management and operational support teams. They develop subsea cable handling and burial solutions, including vehicle and handling systems, with a proven track record in taking projects from concept design, delivery, testing and on-going support.

INNOVATIVE ENGINEERING SOLUTIONS

The company delivers innovative engineering solutions by combining state of the art technology with knowledge gained from real operational experience. Pharos offshore personnel are experienced in all major manufacturers of remote operated vehicles, plough systems and launch and recovery systems and their multi-disciplined team have an extensive track record in subsea trenching, survey and ROV support.

Pharos Offshore

The unit will be employed throughout 2016 for several key scopes to come in the offshore wind and oil and gas markets and remains a valuable asset within the offshore industry, delivery bespoke controlled flow excavation solutions, globally.

CASE STUDY – SUCCESSFUL RECOVERY OF FAULTY CABLE

Pharos Offshore's Hydraulic Cable Grab and offshore personnel have successfully supported and completed the recovery a faulty cable section on the Walney offshore windfarm aboard the Edda Fonn vessel.



PHAROS OFFSHORE

7 members of Pharos Project Crew recently teamed up on-board the DPV Supporter to utilise the tooling to successfully lower one energised subsea cable down in to a 3.75 metre deep protective trench from a 1 metre stand-off distance in the German North Sea.

DREAM TEAM

Subsea cable protection specialist, Tekmar Energy, has bolstered its industry track record after being awarded a major contract with DONG Energy to supply 189 cable protection systems (CPS) on its Race Bank offshore windfarm in North Norfolk.

TEKLINK MECHANICAL LATCH SYSTEM

The company will provide its seventh generation TekLink mechanical latch system, which includes a specially-developed quick connect design that significantly accelerates CPS assembly time, complete with the array and export cables and bellmouths.



Tekmar's James Ritchie seals the Race Bank contract with DONG Energy's David Summers.

The contract represents the ninth DONG Energy project that Tekmar has worked on and is the fourth successive contract following the recent announcement that is providing DONG Energy with its innovative cable protection systems on the Burbo Bank extension project in the north-west coast of England.

RACE BANK WINDFARM

For Race Bank, Tekmar has worked with DONG Energy to engineer a standardised CPS design for the project which offers maximum flexibility during the installation activities offshore. These systems will be delivered from its manufacturing facility and headquarters in Newton Aycliffe, County Durham.

EXCITING DEVELOPMENT

Jack Simpson, at Tekmar Energy, said: "Race Bank is an exciting development to be involved in and with such a high volume of CPSs required, it is a huge verification of our market-leading products and our commitment to continually advancing our suite of technologies. We take great pride in developing strong relationships with our clients to ensure the highest standards are met and as such, we are widely recognised as the CPS supplier of choice."

"It is also another endorsement of the North-east of England's energy credentials. The region's supply chain is starting to earn a reputation through increasing industry demand for the engineering, manufacturing and specialist capabilities that are rooted here."

LOCATION

Located approximately 16.8 miles off Blakeney Point on the North Norfolk coast, Race Bank covers an area of around 75km² and has a capacity of up to 580MW which could generate enough electricity to power over 500,000 homes a year. The project could also realise a potential annual carbon saving over more than 830,000 tonnes of CO₂.

EXPERIENCE

With more than 30 years' experience, Tekmar is a market leader in the design, manufacture and supply of subsea cable, umbilical and flexible protection systems for the renewable energy and oil & gas industry.

Tekmar

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AWARD WINNING COMPANY HAS EXTENDED THEIR RANGE OF INNOVATIVE ENVIRONMENTALLY ACCEPTABLE WIRE ROPE LUBRICANTS

Swan Industrial Drives Limited, a Hull based specialist supplier of lubricants, bearings and power transmission products were recently awarded the coveted Key Independent Distributor of the year award from Rocol Lubricants. This award shows the close working relationship that Swan have developed with the market leading specialist lubricant manufacturer Rocol.

REPUTATION

The company only supplies the highest quality products. Their membership of the IADA purchasing group means that they are continually working closely with all of the leading manufacturers within the engineering industry, supplying to customers in Yorkshire, The Humber and Lincolnshire. They are also able to offer a same day delivery service due to their impressive local stock holding.

NEW PRODUCT LAUNCH

Rocol have added two new products to their environmentally considerate Biogen range to complement their existing Wireshield product, a market leading success due to its 'no compromise performance and green credentials'. These new products are the Biogen Spray and the Biogen Fluid.

All three products provide lubrication for wire ropes and ROV umbilical's across a number of industries including offshore, subsea, port and docks, shipping, dredging, deep sea fishing, mining, construction and general lifting.



Ian Turner, General Manager, Swan Industrial Drives (centre) being presented with the award by Andy Howard Regional, Sales Manager (Northern Europe) Rocol (left) and John Robinson, Sales Manager (Industrial Products) Rocol (right)

TECHNOLOGY

The new fluid and spray are based on the technology behind Biogen Wireshield, which is a US Vessel General Permit (VGP) compliant lubricant for wire ropes and other products such as ROV umbilicals.

ADDING NEW DIMENSIONS

Brendan Kendrick, Business Development Director at Rocol, said: "The addition of a fluid and a spray to the Biogen range adds new dimensions to our customer offering. Both products save time and

generate efficiencies, particularly in relation to applications that have limited accessibility and require a specific application method."

"Corrosion is a huge and costly issue in many industries, especially marine and offshore, and it's important to maximise the life of equipment to ensure project efficiencies. Both new products exemplify our drive and commitment to develop and deliver market leading products in this specialist area."

PROTECTION

The Biogen technology helps provide protection, guarding wire ropes and other equipment from the onset of corrosion – a primary cause of equipment failure in most extreme environments.

Biogen Fluid is a multi-purpose lubricant for ropes, chains, pulleys, springs, nuts and bolts. A high performance grease in a biodegradable solvent carrier, featuring advanced pseudoplastic rheology, the fluid version uses the latest developments in lubricating chemistries, to protect equipment from the onset of degradation.

Biogen Spray is for use on wire ropes as well as winches, hoists, large chains, nuts, bolts and springs. It is designed to provide users with a high performance aerosolised grease, for use in challenging conditions, while minimising any environmental impact. Both the fluid and the spray are ideal for use in subsea and onshore locations.

Swan Industrial Drives Ltd

[Click to view more info](#)

 = Click to view Swan video

 = Click to view Biogen video

PUTTING THE SOCKS ON EUROPE'S WIND FARMS

East of England manufacturers of cable socks (also known as Chinese Fingers), Albion Manufacturing's technical knowledge and experience has seen them attain 'preferred supplier' status in the cabling industry.

Already a longstanding supplier to industry giants such as Prysmian, ABB and JDR Cables, the company now has live enquiries and orders to supply all but one of the wind farms currently under construction, or due to commence construction, around the UK and European coastlines. As well as their European activity they are also exporting to various projects worldwide.

HISTORY

Established in the 1850's as wire workers Albion started to manufacture 100 wire rope pulling stockings over 60 years ago with much of their trade focused on the telecoms and mining industries. In recent years the major part of their manufacture is to the renewable energy industry. Albion's quality management systems are certified

by an UKAS accredited certification body and they have also been successfully audited by a number of their clients.

DESIGNED AND CUSTOM MADE

One of Albion's attractions is their ability to design and custom make cable socks to the exact specifications their suppliers require. Albion's innovative design ideas have enabled their clients to overcome array, export and turbine tower cable installation issues where safety, limited working space, time and abnormal loads have been critical factors.

Although essentially a consumable in the grand scale of a multi-million pound project cable socks are integral to the cable installation process.

NICHE PRODUCT IN A NICHE MARKET

Managing Director, Martin Nix said "Cable grips are niche products used within a niche market and knowledge of how variations of design and construction can affect performance is not widely understood. Understandably the offshore

and renewable energy industry are highly focused on health and safety and protecting their equipment and investment.

"It is for these reason that many of our clients rely on us to give them guidance in determining the correct designs for their specific application"

CONFIDENT FUTURE

With activity in European windfarm construction looking good for a fair few years and the fact that Albion are regularly attracting new clients they are confident business will be good for the foreseeable future.

Albion Manufacturing

[Click to view more info](#)





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MARINE ORDNANCE

WHEN OFFSHORE PROJECT DEVELOPERS ARE CONFRONTED BY THE THREAT OF UNEXPLODED ORDNANCE (UXO), THERE ARE VARIOUS PHASES FOR THE SAFE IDENTIFICATION AND DISPOSAL OF THE ITEM. SHOULD COMPANIES GET IT WRONG, OR IGNORE THE THREAT, IT CAN LEAD TO UNEXPECTED COSTS AND EXTENDED COMMERCIAL DOWNTIME. RAMORA UK, AS A COMMERCIAL BOMB DISPOSAL CONTRACTOR, UNDERSTAND THE SIGNIFICANT IMPORTANCE OF TIMELY AND APPROPRIATE RESPONSE TO THE THREAT OF UXO TO MARINE PROJECTS.

ASK THE EXPERTS

Ramora UK is a leading bomb disposal company with a proven track record of delivering high quality military comparable EOD solutions to a wide range of international clients. The company specialises in reducing the human and commercial risk posed by explosive munitions, repeatedly delivering industry leading solutions to a global client base.

Through its 24/7 Emergency Response Centre, they have provided UXO solutions from large scale projects through to one day UXO awareness training, to the investigation and disposal of Explosive Remnants of War (ERoW), ensuring these solutions are timely, cost effective and in accordance with relevant legislation and appropriate safety considerations.

The company has been working within many commercial sectors including; oil and gas, renewables and aggregate yards to fill the gap left by the Ministry of Defence in 2004 following their withdrawal from supplying EOD support to commercial projects. In the past few years alone, they have undertaken more UXO disposals, in the UK, than its military counterparts using various technology based solutions and have dealt with in excess of 770,000 ordnance items.

EXPERIENCE

Ramora UK's expertise derives from highly competent personnel, robust, proven procedures and bespoke equipment developed in house. All explosive related activities are undertaken by highly trained personnel, who often have former military experience, and who have attained the appropriate qualifications.

The company take competency and Continued Professional Development (CPD) seriously, recognising its core role in high safety and quality standards. In order to uphold currency, all operational staff must also hold a current EOD validation (licence) and have verified experience in the necessary field of operations.

All competencies are in accordance with recognised UK best practice, endorsed by HSE, MoD, MCGA and Crown Estates. Due to this experience, Ramora UK are currently playing a key role in setting the industry standards in explosives, introducing best practices and forming new legislation.

REODS

Ramora UK have successfully managed the safe disposal of thousands of items of maritime UXO thanks to their Remote Explosive Ordnance Disposal System (REODS). REODS is the only system in the world dedicated to the safe disposal of munitions within the maritime arena.

The REODS system utilises existing ROV technology to eliminate any diver interface thereby reducing both the human and commercial risk. The ROV has no limits to bottom time, is highly manoeuvrable even in strong currents and is controlled by highly experienced, fully qualified pilots under the supervision of a qualified EOD Superintendent.

Ramora UK's experience in Maritime UXO operations has enabled them to evolve both the REODS and their internal procedure to develop an extremely safe and efficient disposal process which is recognised across the industry.

EXPLOSIVES SAFETY SCHEME

Ramora UK are proud to have introduced their Explosive Safety Scheme (ESS), a money saving membership service available for clients around the globe who wish to understand all threats to their business and ensure they have proven and effective measures in place to respond.



Regardless of the location, ESS can provide overarching guidance, reassurance and response to any ordnance related incident. Should the threat of an item of UXO cause a project delay, ESS members can access on call EOD response teams who can be deployed at any time, regardless of time zone, to any site via the 24/7 ESS Emergency Response Centre.

Whereas, those who choose to ignore the potential for UXO discoveries, by neglecting risk management, will invariably encounter significantly elevated costs and risk as a consequence.

COORDINATED EFFORTS

Following confirmation that an item has been identified as UXO, or suspect UXO, the initial safety measures can be put in place within a matter of hours. Once Ramora UK specialists are dispatched to the scene, all appropriate efforts are coordinated to minimise potential impact to the project.

Normal regime can then be achieved at the earliest point possible, therefore, significantly reducing any commercial down time which may have been caused. Historically those who initially invest wisely, and entirely, in a UXO solution will reap financial and reputational reward in the longer term.

Ramora UK

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TOWER AND CABLE SUPPORT

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- UXO Risk Assessment incl. historical research
- UXO survey preparation, execution, processing and evaluation
- UXO identification and disposal
- High quality standard of vessels, equipment and highly efficient technology
- Experienced EOD professionals
- Research & Development of technologies

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HIGH RESOLUTION UXO SURVEY

The uncontrolled detonation of UXO is still a present-day risk in areas affected by World War munitions such as the North Sea. As part of UXO risk management an appropriate geophysical survey is required to assess and mitigate UXO risks.

MINIMISING RISK

The purpose of the UXO geophysical survey is to minimise these risks to a tolerable level and enable investigative and installation works to be undertaken safely. In response to the constant demand for higher-resolution imaging of the seabed and sub-surface sediments, the marine survey industry has to continually evolve and develop new techniques to acquire and process geophysical data.

FUGRO GEOWING

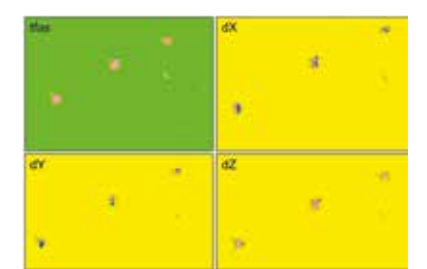
In 2015 and 2016 Fugro used their newly developed Fugro GeoWing on several UXO survey projects for the offshore windfarm and cable industry. The GeoWing is a 5m wide gradiometer frame mounted behind a remotely operated towed system (ROTV).

The gradiometer configuration of the GeoWing differs from a magnetometer configuration as it allows the geophysicist to calculate the X, Y and Z gradients manually. The analytical signal is then derived from the 3 gradients. The result shows the analytical grid (tfas), the vertical gradient (dX), the transverse gradient (dY) and the longitudinal gradient (dZ).

ACCURATE TRACKING ABILITY

The GeoWing's ability to accurately track the seabed at a set altitude means that no heading or altitude compensation is applied to the data. This manual approach allows background noise to be minimised and the number of false positives to be reduced, ultimately reducing the number of potential UXO targets that will require further investigation.

The detection range depends on the type of object to be detected. A system like the GeoWing, using caesium vapour magnetometers, can detect anything with a ferrous content so long as the correct line spacing and altitude above object is used.



Processed gradiometer data correlated to a German WWI minefield.

NEW APPROACH

Two GeoWings were deployed simultaneously on a project in the North Sea in March 2016. The swath of two systems was 13.5m, significantly reducing the number of survey lines normally required to collect high resolution data.

This new approach allows the acquisition of high resolution data whilst minimising the number of false positives, without compromising a client's operational schedule.

Fugro

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Fugro GeoWing

TECHNICAL DEVELOPMENT KEEPING ONE STEP AHEAD

In 1912, engineer Heinrich Hirdes founded the construction company Heinrich Hirdes in Duisburg, Western Germany at the age of 27 years.

LATEST TECHNOLOGY AND SPECIALIST PERSONNEL

As part of the Royal Boskalis Westminster NV group the company utilises the latest technology and highly specialist personnel which they use to find innovative and sustainable solutions for their customers.

These include the use of appropriate work class ROVs, the combination of gradiometer and EM survey methods during exploration and discovery as well as the development of innovative sensors and clearance tools.

COMPANY STRENGTHS

In combining their experience in this demanding and rapidly growing sector, the company's strengths focus on...

- UXO risk assessment including historical research
- UXO survey preparation, execution, processing and evaluation
- UXO identification and disposal
- Research and development of technologies

HEALTH, SAFETY AND THE ENVIRONMENT

The safety of personnel and the environment are the main objectives of the company – their experienced workforce constantly working to improve techniques and working methods in order to achieve the highest safety standards.

NINA PROGRAMME

Their NINA programme (No Injuries, No Accidents) was launched to create a working environment without accidents and incidents. This is supported by the regular offshore related safety training of our staff.

The company continues its traditions of highly motivated personnel coupled with modern technology and is ready and willing to face the tasks and challenges of the future.

Boskalis Hirdes

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Since the establishment of the company, Heinrich Hirdes and its employees have been working with high discipline, engineering performance, integrity and loyalty to the complete satisfaction of the customer.

COMPANY FOCUS

The intended aim of the company is to always be one step ahead with technical development and this has been constantly pursued and achieved from the very beginning.

Heinrich Hirdes Kampfmittelräumung GmbH was founded 1978 in Berlin in order to address the remaining dangers of the legacies of the 1st and 2nd World Wars in Germany, as the remnants of long forgotten battles are still hidden in the ground and underwater for decades.

UNIQUE CHALLENGES

Consequently, special challenges accrue which could only be solved by the combination of marine engineering and explosive ordnance disposal.

At the end of the World Wars and even after recent conflicts ordnance has been dumped in vast amounts of several million tons in the world's oceans. Due to the increasing development of renewable energies in the offshore sector and construction of harbour facilities, these legacies have become a threat to the safety of people, the environment and equipment.

To address these upcoming international challenges, the company was split into business units; Kampfmittelräumung Onshore and EOD Services Offshore in 2012 and Boskalis EOD Services (UK) Limited was also founded.

PIONEERS

As pioneers in their field they can look back on successful investigation and clearance of multiple export cable routes, windfarm sites and international harbour construction sites in the North and Baltic Seas.

The company is also involved in the consultancy and handling of unexpected ordnance finds during projects which are under construction.

RACE BANK FROM MINE FIELD TO ALARP CERTIFICATION

From 40 years' experience of seabed mapping and detecting various contacts on the seabed, the Swedish marine survey company MMT performed UXO inspections and excavations services of various contacts with option on disposal and removal at Race Bank offshore windfarm for DONG Energy Wind Power (2015). DONG Energy's Race Bank project is located off England's East Coast, an area situated in a region known for the presence of UXO.

PROJECT DETAIL

The project includes 91 wind turbine generators, two offshore substations and two export cables. Previous surveys have modelled a number of ferromagnetic and acoustic contacts at discrete locations as potential UXOs, which may impede windfarm component installation and therefore need to be verified and inspected visually for identification. Many of the ferromagnetic contacts were expected to be caused by objects buried by marine sediments.

METHOD

The ROV based inspection method used included electromagnetic pulse induction technology to verify non-ferrous and ferromagnetic contacts, excavation of buried contacts, visual inspection of contacts from side scan sonar, multibeam echo sounder and magnetometers.

After thorough data processing and interpretation by skilled specialists from both MMT and DONG Energy wind power consultants, the contacts that were suspected to pose a higher risk were investigated further. The following identification and classification resulted in 36 confirmed UXOs.

ROUTINE PREPARATORY WORK

Eleftheria Melelou, DONG Energy Site Investigations Project Manager, said: "As a routine part of the preparatory work before construction of an offshore windfarm, seabed surveys are carried out to ensure the seabed is clear of obstacles including unexploded ordnance. The number of items discovered was higher than expected and the most we have seen on a DONG Energy project to date."

UXO DISPOSAL

The next operation phase was disposal of the confirmed UXOs. The 36 confirmed UXOs were disposed by detonation onsite. The concern for wild life in the area was always high and precautions were taken to ensure the least possible environmental impact was caused, e.g. through close cooperation with the Marine Management Organisation and Natural England and using dedicated mammal observers to ensure the negative effects were kept to an absolute minimum.

MMT

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WIND ENERGY & UXO

Factors considered prior to site selection include the traditional skills of hydrographic surveyors – water depth, tidal flows and sediment types. Now some hydrographic surveyors can add UXO detection to their portfolio of skills.

WINDFARM LOCATIONS

Distance from shore and accessibility from a suitable servicing port have a large bearing on the location of a windfarm. Broadly speaking, windfarms are situated in water depths of up to 40m, out of a port accessible to larger vessels, and just off a main shipping route so as not to disrupt shipping lanes.



UXO Dummy Model

LIKELY UXO LOCATIONS

These factors can mean that suitable areas are likely to be relatively high in UXO. Unexploded bombs that were meant for port areas still lie on the sea bed. Excess ordnance from WWII was also dumped at sea; the minimum distance out of port to save on fuel, and just off the shipping lanes so as to pose least risk to the shipping activities of the time.

This UXO is still on the sea bed, often buried under layers of sediment that has accumulated, and many of the smaller items have been swept along the seabed to new locations.

POTENTIAL RISK

The potential risk posed by UXO on marine construction operations is obvious and real; awareness of this risk has grown in the last few years. It is now a significant factor in preparing a site for construction, and is aided by the information that hydrographic surveyors provide.

Using the right equipment and techniques, hydrographic surveyors accurately detect ferrous UXOs both on and under sediments on the seabed, and report these as targets for further investigation. Insight Marine Projects have provided this service to several windfarms, and have used dummy models laid on the seabed in known locations to prove the accuracy of their techniques.

Insight Marine Projects

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