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COMMUNICATION HUB FOR THE WIND ENERGY INDUSTRY

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Phil Harris, Managing Director, Norcom Technology

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WORKING AT HEIGHT

Preparing this feature gave us an insight into a world which I personally feel rather nervous to say the least – just looking at the fantastic images which our contributors presented to us made me feel quite queasy!

We do present some very difficult access challenges within our industry so please join us in a world which few of us mere mortals experience.

INDUSTRY LEAD ARTICLE – ‘SOCIAL VALUE – A NEW PRESSURE POINT FOR ENERGY FIRMS?’

Energy firms could be on the way to becoming known for being socially responsible, in line with a raft of new rules encouraging them to deliver ‘social value’ through their work – Fareita Udoh from Achilles UVDB discusses the issues and provides some sound advice.

RENEWABLEUK 2014

An extremely positive event held in Manchester recently for all involved in the industry – we present a substantial feature within our pages highlighting some of the issues discussed and the announcements made.

Following edition will go into more detail regarding some of the subject areas involved.

POET'S CORNER

When visiting the RenewableUK event we met a poet (Matt Harvey) who has a keen interest in renewable energy – we start a ‘Poet's Corner’ feature, which can be found opposite the inside back cover, with Matt being our first contributor.

Please feel free to send in your poetry or prose if you feel so inclined – anything relevant to the industry will suffice.

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.

JANUARY/FEBRUARY 2015 – ISSUE 26 (Editorial deadline 15th January)

- **Spotlight on Aberdeen** (Sponsored by Reef Subsea)
- **Risk Management**
- **Professional Services - Planning Consents**
- **Specialist Lighting**
- **Protective Coatings**
- **Unexploded Ordnance** (Sponsored by Ramora)
- **O & M** (Sponsored by Green Marine Solutions)
- **Blade Construction & Repair**
- **ROVs**
- **Fall Prevention & Arrest**
- **Crew Transfer**
- **Installation Vessels** (Sponsored by Fred.Olsen Windcarrier)

Regular updates can be found on the ‘Forthcoming Features’ tab on our website in the magazine section.



D. McGilvray

Duncan McGilvray
Editor | Wind Energy Network

www.windenergynetwork.co.uk

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WORKING AT HEIGHT

The cover image from Windtex Engineering we felt captures exactly what it feels like to be one of our brave engineers. The feature we are sure will give you more of an insight into this challenging environment.

MARINE SURVEYS

Any project will commence with a survey of the area to be developed. You will find helpful advice from the experts in the industry in this requested feature – you may be surprised at the amount of work and expertise involved prior to any subsequent planned construction.

EMPLOYING APPRENTICES

A subject dear to my heart – the development of young people is the most important area of the industry. Companies and organisations of all sizes report on their initiatives as the industry experiences rapid sector growth.

WIND TURBINE CLUTTER

A subject area of interest especially in areas around airports – hear about the latest developments in the field in this interesting feature.

Duncan McGilvray
Editor | Wind Energy Network

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SOCIAL VALUE

A NEW PRESSURE POINT FOR ENERGY FIRMS?

ENERGY FIRMS COULD BE ON THE WAY TO BECOMING KNOWN FOR BEING SOCIALLY RESPONSIBLE, IN LINE WITH A RAFT OF NEW RULES ENCOURAGING THEM TO DELIVER 'SOCIAL VALUE' THROUGH THEIR WORK.



CREATING A LEVEL PLAYING FIELD FOR SMES

The EU, responsible for regulating scores of energy firms, recently unveiled a number of new procurement rules designed to create a level playing field for small and medium-sized enterprises. This includes requiring companies to explain why a contract has not been split into smaller lots and only being able to specify suppliers have a minimum turnover of up to two times the contract value.

The UK Government is playing its part with David Cameron's CSR adviser, and former United Utilities Group CEO, Philip Green writing to the nation's 50 largest companies asking them to reveal how their suppliers helped deliver social value.

WIND INDUSTRY

Meanwhile the Government itself is encouraging wind firms to enter into Local Enterprise Partnerships, to open up supply chain opportunities for all companies able to compete on price and quality – irrespective of their size.

LEADING THE WAY

Wind farm giant DONG Energy is leading the way with a new commitment to involve SMEs in maintenance work whenever possible to level the playing field between small and large companies.

In order to help identify SMEs and the best companies to work with, DONG Energy has been working with supply risk management company Achilles to set up an online supplier information portal which allows suppliers to register for free on a centralised database. The database complements Achilles UVDB, an existing collaborative, pre-qualification community across the UK and Europe which independently assesses the risk of more than 1,000 supplier companies.

SEEKING SMALLER SUPPLIERS

DONG Energy Head of Strategic Supply Chain, Joachim Steenstrup, said the company, with the help of Achilles UVDB, was seeking smaller suppliers to work on their wind farm developments along the English coast, including the West of Duddon Sands and Westernmost Rough offshore wind farms.

"We will be using local suppliers to maintain (the wind farms) and keep them running," Mr Steenstrup said.

"Using Achilles UVDB is our way of ensuring a transparent supply chain at the same time as levelling the playing field between large and small businesses," he said.

Achilles UVDB account manager Fareita Udoh said the mounting government pressure to include social value as a part of their business model meant companies would need to change their way of thinking.

WHY IS IT IMPORTANT TO USE MORE SMES AND WHAT IS DONG ENERGY'S AGENDA?

"There are some simple steps all companies need to take to understand their suppliers and increase their social value," Ms Udoh said.

"If companies take these points into account, they will be more than prepared for regulations being implemented around the world."

THREE TOP TIPS FOR ENSURING SOCIAL VALUE IN YOUR SUPPLY CHAIN...

1 Invest in a proper system to manage information

Companies need to invest in a proper system to manage information about their supply chain. Accurate and up-to-date information about suppliers allows a company to easily identify where improvements can be made

2 Work collaboratively

Working collaboratively with others in the industry not only helps a company increase their standing in a community but halves costs and decreases the burden on suppliers. Achilles has found this works best by including a social value questionnaire in industry pre-qualification communities

3 Map the supply chain

The growing pressure to also report on suppliers' social value efforts means businesses must have visibility across their entire supply chain. By asking businesses about their suppliers, buying organisations can then question those suppliers about their social value activity

Fareita Udoh
Achilles UVDB

Achilles is one of the world's largest service providers of global supply chain risk management solutions working in 22 countries.

PRESTIGIOUS AWARD FOR ENGINEERING EXCELLENCE

AT THE BRITISH ENGINEERING EXCELLENCE AWARDS IN LONDON RECENTLY, ROYAL IHC'S HI-TRAQ TRENCHING MACHINE AND TOOLING PLATFORM WON THE AWARD FOR 'MECHANICAL ENGINEERING PRODUCT OF THE YEAR'.

WORLD FIRST

Hi-Traq is the first 4-tracked subsea vehicle with fully independent suspension and steering. This gives unrivalled maneuverability and ability to cope with the full range of shallow-water terrain. The vehicle was originally conceived as a dedicated trencher for cable burial in offshore windfarms but is also being developed as a multi-purpose tooling platform for a wide variety of subsea installation, IRM and decommissioning works.

PRIDE

Ralph Manchester, Chief Engineer for Subsea Vehicles at Royal IHC's UK subsidiary - IHC Engineering Business (IHC EB), commenting on the award said "We are enormously proud of the Hi-Traq project; in testing our development machine has proved that the technology works and we look forward to seeing the vehicle in operation."

EUROPEAN REGIONAL DEVELOPMENT FUND (ERDF)

The project was internally funded by Royal IHC with support from the ERDF. Charlotte Pugh, Hi-Traq Project Manager at IHC EB, said at the awards ceremony "The design and build of Hi-Traq was a real team effort; everyone involved will take great satisfaction from this fantastic award."

DESIGN TEAM OF THE YEAR 2011

For IHC EB, this award follows on from winning the BEEA 'Design Team of the Year' in 2011, for the Saipem FDS 2 J-lay system. The equipment is one of the offshore industry's most versatile pipelay systems, capable of installing large diameter subsea pipelines in water depths of up to 3,000m.

MAJOR ACCOMPLISHMENT

Winning these awards is a major accomplishment for both the business and every employee; working together to achieve something great, the future for this Northumberland based business has never been more exciting.

Royal IHC (IHC) is focussed on the continuous development of design and construction activities for the specialist maritime sector. It is the global market leader for efficient dredging and mining vessels and equipment – with vast experience accumulated over decades – and a reliable supplier of innovative ships and supplies for offshore construction.

INNOVATION

Technological innovation will remain the company's underlying strength through its continuous investment in research and development and it also helps to safeguard a sustainable environment.

IHC Merwede Holding BV (IHC)

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[Click to view video](#)



SNOWTOWN II

SOUTH AUSTRALIA'S LARGEST WIND FARM

The second stage of South Australia's largest wind farm was officially launched recently, ahead of time and under budget.

Trustpower-owned Snowtown II consists of 90 Siemens 3.0 MW wind turbines, producing around 989 GWh per year, roughly equivalent to the power required by 180,000 homes.

Trustpower Chief Executive Vince Hawksworth said that the project represented a major step towards a sustainable future.

"Climate change is an issue affecting the lives of everybody. Those of us lucky to live on either side of the Tasman Sea have become increasingly aware of that, and the impact it can potentially have on

Local supply and services contracts in excess of \$75 million were awarded, including fabrication of 20 towers by Whyalla engineering firm E&A Contractors and civil and electrical installation works by Civil and Technical Constructions and Consolidated Power Projects.

RENEWABLE ENERGY FUTURE

Premier Jay Weatherill said the wind turbines are an important part of the state's renewable future.

"This plant confirms South Australia's commitment to being the nation's leader when it comes to providing efficient renewable wind energy programs. It is a key platform in our plan for renewable energy to supply 50 per cent of the state's annual power by 2025," Weatherill said.

Clean Energy Council Acting Chief Executive Kane Thornton congratulated the state for its investment in renewables, but warned against wider uncertainty in the sector due to a lack of clarity on the Federal Government's position on renewable energy.

"Analysis by Bloomberg New Energy Finance shows that Australia is having its worst year for clean energy investment in more than a decade. This investment freeze is likely to continue while the Federal Government's review of the policy is creating so much uncertainty across the sector," Thornton said.

our lives and our country's economies if we don't all play a part in changing our ways," Hawksworth said.

"This project is another great step in the transformation to a sustainable electricity generation environment, and Trustpower is proud to be investing in that."

COMMUNITY COOPERATION

Siemens brand ambassador Cadel Evans, professional racing cyclist and winner of the Tour de France, led a community ride of Snowtown residents to the wind farm.

The project has been marked by strong community cooperation. Local landowners who have the turbines installed on their property receive alternative income and can continue to graze the land, while other businesses have been able to hire extra staff for the duration of the project.



COMMUNITY EVENT

Premier Jay Weatherill, Siemens Australia CEO Jeff Connolly and Trustpower Chief Executive Vince Hawksworth launched the wind farm at a community event.

"It's good for the economy, good for the environment and, importantly, good for the local community. Snowtown Stage 2 demonstrates what can be achieved when combining German technology with South Australian know-how and New Zealand investment," Siemens CEO Jeff Connolly said.

ORIGINAL SNOWTOWN PROJECT

The turbines are located north and south of the original Snowtown project, which consists of 47 Suzlon 2.1 MW turbines. That project has been in operation since 2008, producing 345 GWh per year.

DUTCH-GERMAN COMPANY WIND MINDS JOINS TRADE MISSION TO JAPAN AND KOREA

Four Dutch and German consultancies in the field of offshore renewable energy have teamed up and established a new international consultancy company Wind Minds with the objective to combine all their expertise and experience in developing and building new offshore wind farms in North West Europe, America and Asia.

EXPERIENCE AND KNOWLEDGE

The four companies combined employ over 100 specialist with over 15 years of experience and were directly involved in over 40 offshore wind projects in Northwest Europe, the US, Canada and Asia.

Together they have expert knowledge which covers all phases of a wind farm life cycle, from feasibility studies to development and construction management to technical due diligence. "With Wind Minds we have created a one stop shop for developers, investors, governments and utility companies.

Our focus is to be a pro-active partner for our clients, providing them with independent consultancy in all disciplines related to offshore wind power" says Arno Verbeek of Pondera Consult. Other participating companies are MECAL Independent experts, Ep4 Offshore, and BBB Umwelttechnik GmbH.

WIND ENERGY – THE FASTEST GROWING ENERGY SECTOR IN EUROPE

According to Wind Minds the European energy future is being shaped by offshore wind farms. North West Europe offers excellent opportunities for offshore wind power.

"Offshore wind energy is the fastest growing energy sector in Europe – At this moment sixteen new offshore wind farms are being built, producing nearly 5 Gigawatts of sustainable power when constructed. Europe now has 73 offshore wind farms in 11 countries, with a combined capacity of 7.5 Gigawatts." said Arno Verbeek.

INDUSTRY SUPPORT

Wind Minds will use this trade mission to further promote their offshore wind expertise in Japan and Korea. Arno concluded: "We are already based in Asia which allows us to closely support the development and construction of offshore wind farms in this region. Similarly, because of our North-European background we can support Asian companies in obtaining a market share in Europe."

Wind Minds



FIRST TARGET COUNTRIES

One of their first targets are Japan and Korea, countries being visited when Wind Minds joined the trade mission of Dutch Minister of Economic Affairs Henk Kamp recently. This mission accompanied King Willem Alexander and Queen Maxima during their state visit to both countries.



Who's looking out for offshore wind?

Royal HaskoningDHV is the UK's leading offshore renewable energy consultancy. We have a 100% consent rate and can help you with EIA, HRA, HSE or technical engineering. We offer world class expertise in:

- Project consenting services
- Pre-construction services
- CDM and H&S
- Port and harbour design and studies





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CONTRACT AWARDED FOR DUDGEON OFFSHORE TRANSFORMER STATION

Sembmarine SLP Limited (SLP) a member of the Sembcorp Group of Companies announced recently that it has been awarded a contract to design and build the offshore substation platform for the Dudgeon Offshore Wind Farm.

JOINT VENTURE

The contract has been granted by Siemens Transmission & Distribution Limited, who was awarded the contract for the Electrical System Infrastructure by the wind farm's developer Dudgeon Offshore Wind Limited, a joint venture between Norwegian Energy firms Statoil and Statkraft and Abu Dhabi based renewable energy company, Masdar.

RESPONSIBILITIES

SLP will work closely with Siemens and will be responsible for the design, engineering, procurement, project management and construction of the platform's jacket substructure and topside. Siemens will provide the transformers and high voltage electrical distribution technology.

The Offshore Transformer Station will be constructed at SLP's yard in Lowestoft on the UK's Suffolk coast (pictured) and will provide work for up to 300 employees over the next 21 months.

COLLABORATION

Sembmarine SLP's Managing Director – Paul Thomson said: "We are delighted that Sembmarine SLP's close working relationship with Siemens has resulted in this award and we will continue to collaborate as a team with Siemens to ensure a successful outcome for the project as a whole. One of SLP's main objectives has been to apply its long experience in designing and building offshore platforms for the oil & gas industry to the offshore wind business.

NEW GENERATION OFFSHORE TRANSFORMER STATION (OTS)

"The Dudgeon platform will be a new generation OTS based on our early success with the Thanet substation previously delivered to Siemens. We look forward to making this another successful SLP project delivered safely, fully complete and on time, and one of many future offshore substations that we build in Lowestoft."

Sembmarine SLP

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CHINA MEETS EUROPE AT THE DNV GL MARITIME HEADQUARTERS IN HAMBURG

The future of EU-China relations, the country's investment in Europe as well as sustainable growth and environmental protection in the Chinese economy were just some of the topics on the agenda at the 6th Hamburg Summit held recently. To foster new relationships and honour key players for their efforts in European-Chinese cooperation, the world's largest classification society DNV GL hosted a dinner in its global maritime headquarters in Hamburg.

COMMON FOCUS

A common focus on increasing sustainability by using greener energy sources has become an instrumental part of the cooperation between East and West. "Both China and Europe have been at the forefront of setting ambitious goals for renewable energy generation to power a low carbon future. Recently, China decided to make certification of new types of wind turbines mandatory. We have already established a partnership with a Chinese wind turbine blade

CHALLENGE

Even though balancing sustainable economic growth and environmental protection remains a challenge, Ørbeck-Nilssen stressed that this is achievable: "International regulations to set higher standards, incentives for the industry to become cleaner, a level playing field, as well as global collaboration will play a crucial role in tackling this issue," Ørbeck-Nilssen emphasised during a panel discussion with delegates from Ansteel Group, Minmetals Corporation, Siemens and Roland Berger Strategy Consultants.

WORKING TOGETHER

"China and Europe have been seeking exchange and a fruitful relationship for several decades for now. Thanks to the active contribution of many organisations and interest groups the relations between China and Europe have never been closer," said conference Chairman Nikolaus W. Schües, the former President of Hamburg Chamber of Commerce and the owner of the German shipping company Reederei F. Laeisz.

CHINA-EUROPE AWARDS

To award its contribution to creating a deeper mutual understanding between China and Europe, Schües presented the 'China-Europe Friendship Award' to the China Federation of Industrial Economics (CFIE). The car manufacturer BMW received the 'China-Europe Sustainability Award' for its outstanding efforts to follow ecological principles and successfully implemented sustainability in its business strategy and actions.

HAMBURG SUMMIT

The 'Hamburg Summit' was created by the Hamburg Chamber of Commerce in 2004 and has grown to be the most relevant Sino-European economic forum internationally.

This year it attracted 500 experts from the business, political and academic world, who discussed the state of the Sino-European economic relations – including Chinese Prime Minister Li Keqiang, Martin Schulz, President of the European Parliament, and Dr. Frank-Walter Steinmeier, Minister of Foreign of the Federal Republic of Germany.

DNV GL

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Some of the 250 high profile summit participants meeting at DNV GL maritime headquarters in Hamburg

COMMITMENT

"We are committed to China and will continue to strengthen this commitment in the future. Our vision is to have a global impact for a safe and sustainable future. To achieve this, we need a global collaboration. That is why it is so encouraging to be a part of the Hamburg Summit," said Knut Ørbeck-Nilssen, President Maritime at DNV GL, when he addressed more than 250 dinner guests in the Hafencity.

manufacturer for certification of its products to improve the reliability and quality of blades produced in China." Ørbeck-Nilssen explained.

JOINT PROJECTS

In the maritime sector, there are many joint projects underway as well. Amongst others, DNV GL has just signed an agreement with Sinopacific shipyard for a series of ground-breaking ethane-fuelled carriers, which emit significantly less carbon than diesel-powered vessels. Using liquefied natural gas (LNG) as shipfuel is about to become another integral part of China's low-carbon strategy, especially in short-sea and river shipping.

ROPE ACCESS EQUALS SAFE ACCESS

Phil Turner (from Windtex Engineering Limited) shares some helpful insight into a concern that affects all businesses (not only in the wind energy industry) that have engineers working at height and how he responds as a responsible business owner to this very real risk to his workforce.

STATISTICS – CHALLENGE AHEAD

Health and Safety Executive statistics for 2013 show that 31% of fatal injuries were the result of falls at height, with an estimated 750,000 working days lost from non-fatal injuries. A total reported 5713 falls from height in the UK, (HSE - slips & trips and falls from height in Great Britain, 2013) a grim warning indicating that there remains a serious occupational Health and Safety challenge ahead.

Despite numerous campaigns designed to raise awareness about the concern, working at height still remains the most common cause of workplace fatalities/injuries in the UK, costing industry tens of millions of pounds in lost productivity, sickness pay and expensive compensation claims.

WIND INDUSTRY

The wind turbine industry is no different to any other sector when it comes to the risks of working at height. As new inexperienced technicians move into this demanding workplace, standardised safety practices and the need for continuous improvements and regular reviews, has never been more crucial.

The growing use of rope access as a means of maintenance and inspections of wind turbines is no exception when it comes to working at height safety issues. When entering a wind turbine, a rope access team will initially employ standard fall arrest equipment to access the nacelle and rotor. Then using specialist ropes in the same way that they might use them to work on a chimney stack or offshore oil rig, the rope technician can make preparations to begin their maintenance task.

GETTING DOWN TO DETAIL

After connecting the double ropes to anchor points and then isolating the rotor, the technician is able to safely descend down the tower or traverse around the turbine blades using standard techniques. If this all sounds somewhat precarious, then consider how it feels to be undertaking work on Big Ben or working inside a cooled waste incinerator utilising confined space practises. All of these tasks are routinely and regularly dealt with by rope access engineers. For the well-trained and experienced IRATA rope access worker, the wind turbine holds no surprises.

TRAINING AND SUPERVISION

It is without doubt that the extremely high level of training and supervision must be continually given to the rope access workforce within wind energy companies (without compromise), this will maintain our safety record that is unrivalled throughout the working at heights industries.

WORKING TO ESTABLISHED INDUSTRY PROCEDURES

Just as rope access technicians clean the windows of the largest hotels across the world, they also routinely carry out maintenance on wind farms that are becoming increasingly more widespread on the UK landscape, both offshore and on land. They do this in the knowledge that a skilled rope technician is trained to work safely and efficiently to a set of established industry procedures. A recognised procedure that is statistically safer and not as restrictive or expensive as the use of access platforms and baskets.

Rope access is undoubtedly the way forward!

Phil Turner
Managing Director
Windtex Engineering Limited

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WORKING AT HEIGHT (WAH) THE RISKS & REGULATIONS

In a direct attempt to reduce the risk exposed to anyone whilst WAH and to prevent any unnecessary deaths or injuries, the Work at Height Regulations 2005 (S.I. 2005/735) were introduced (followed shortly after by the Work at Height Amendment Regulations 2007 [S.I. 2007/114]).

To summarise, these regulations are built upon the premise of avoiding WAH whenever possible, however in many industries (wind energy, offshore, construction, etc.) this is not always a viable option and in these instances the key focus must be on risk avoidance and minimisation.

ANALYSIS

John Hare and Michael Johnson (2009) re-iterated the prevalence of this risk by using investigation reports and RIDDOR to analyse a sample of 67 offshore incidents, involving both fatalities and major injuries, they subsequently concluded that falls from height were amongst the three most common types of accident to occur within the industry (now regarded as the fourth most common according to a 2013 Statistics Report released by the HSE).

EVER-PRESENT RISK

Despite this progress the risk posed by WAH is, as it always will be, ever-present and thus so is the need to embed proper preventative and responsive measures within all WAH operations (with preventative measures taking priority).

EXAMPLES INCLUDE...

- Providing the workforce with the essential safety training/WAH techniques required prior to commencing work on site
- An intricate permit to work system & better monitoring of the workforce
- Proper PPE & fall prevention/fall arrest measures
- Having an established adverse-weather policy

WAH WITHIN THE WIND ENERGY INDUSTRY

Although the previously referenced case study by Hare and Johnson (2009) refers to accidents within the offshore industry, the very nature of producing wind energy on a large-scale basis harbours some equally, if not more, severe risks with regards to WAH; especially when you take into consideration that wind turbines (on average) are constructed of 116-ft blades atop a 212-ft tower (amassing together to create a staggering total height of 328-ft).

UNFORESEEN CIRCUMSTANCES

Charles Anglin (RenewableUK's Director of Communications) stated that "In stressful situations any power equipment may develop faults and that's true of gas, nuclear, oil and is also true of wind." Therefore although a key preliminary focus should be placed on risk prevention and minimisation whilst WAH within the wind energy industry, unforeseen circumstances can still ultimately arise as a result of human or mechanical error - consequently making it crucial to ensure that effective emergency response measures are also in place.

CSC EXPERTISE

As a result of CSC's extensive expertise within these areas of the wind energy industry, the company was specifically chosen by several contractors and suppliers to provide a large proportion of the required training for the 'Scroby Sands Wind Farm Project' (Round One).

ETHOS & SPECIALISED WAH COURSES

Over nearly two decades the company has earned a globally renowned reputation within the energy sector, as well as numerous other fields, for their effectiveness in inaugurating comprehensive safety management systems and for their competency in delivering & customising a wide array of high quality safety training courses (encompassing a diversified range of accreditations).

However with specific reference to WAH and WAH related activities the following courses are available...

- Working at Height & Rescue at Height
- Permit to Work
- Risk Assessment
- Harness User & Inspection
- MEWP (All Classes)
- Scaffolding (Mobile Scaffold Towers)
- Specialised Confined Space (Entry, Working & Rescue)
- High Voltage Awareness
- Ladder Access
- Manual Handling
- Fire & First Aid Related Courses

CSC

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WORKING AT HEIGHTS SAFELY

Last year falls from height were responsible for an estimated 750,000 working days lost in the UK according to the HSE, combined with slips and trips the number raised to a shocking 2 million.

In a sector where working at heights in excess of 75 metres is a daily occurrence for many, the training of the wind energy sector's workforce in height safety has never been so important.

CHALLENGES

In this emerging industry new height safety challenges are rapidly becoming apparent, as well as familiar hazards presenting themselves in new situations. Nationwide



safety training provider Safety Technology Ltd is one company striving to combat these hazards and ensure the safety of technicians working at heights on wind turbines across the UK and Europe.

ACCREDITATION

As a RenewableUK and Global Wind Organisation (GWO) accredited training provider, Safety Technology delivers training courses specifically designed for individuals working at heights in the unique and dangerous setting of onshore and offshore wind turbines.

The RenewableUK and GWO courses have been developed through meticulous analysis of the risks and hazards encountered in wind turbines and ensure individuals are trained in safe work practice as well as rescue and evacuation. Through working closely with leading wind turbine manufacturers, operators and owners in the development of course content, this industry-specific training guarantees end user safety requirements are met.

CORE SAFETY ISSUES

Safety Technology's Work at Height and Rescue (WAHR) training covers the core safety issues that technicians will face when working in turbines. The course is broken

down into nine modules which includes extensive practical training, as well as theoretical elements such as legislation, accident reporting and risk assessments.

Their mock nacelles, purpose built training towers and scenario based courses, ensure candidates are trained to cope with the real life hazards they are likely to come face-to-face with on-site, on wind farms.

LOCATIONS

With the wind energy hot spots in mind, Safety Technology has located its specialist training facilities in the North, South, East and West of the UK, as well as having international centres in Ireland, Germany and the USA. This ensures trainees will never have too far to travel, minimising the impact training can have on their clients' operations.

VITAL ROLE

With turbine technology developing at a rapid pace, the spotlight on safety shows no signs of wavering. The importance of accessible safety training which has evolved with the industry will be paramount in securing this industry's success and training providers such as Safety Technology will continue to play a vital role in the supply chain.

Katie Dawes
Safety Technology

LIGHTNING STRIKES FOR METEOGROUP!

MeteoGroup recently won the contract to provide critical lightning information services to Sheringham Shoal Offshore Wind Farm off the Norfolk coast. Scira Offshore Energy Limited selected the company to provide comprehensive lightning forecasting, consultancy and monitoring services.

SERIOUS RISK

Lightning poses a serious risk to the maintenance personnel who travel daily to and from an onshore base to work on the inherently exposed 80 metre high wind turbine towers.

Therefore, accurate detection and forecasting support is crucial for safe and efficient operation on the site which is located between 17 and 23 kilometres off the UK's Norfolk coastline and operated by Statkraft - Europe's largest generator of renewable energy.

LIGHTNINGTRACKER WEBPORTAL

At the heart of MeteoGroup's service is the LightningTracker webportal which provides precise, real-time lightning detection data. This is supported by customised longer

range 24 hour and five day forecasting for the Sheringham Shoal area.

Once lightning is detected within a given radius of the site, forecasters will contact the operation and maintenance base to ensure the appropriate people are alerted to the potential danger. The company's expert meteorologists are also available 24/7 if further assistance is required.

OBJECTIVE

The objective is to ensure the wind turbines operate at maximum capacity whilst keeping engineers and technicians safe by clearly identifying either potential hazards or safe weather windows. Accurate and reliable data will help the company make day-to-day operational decisions and fulfil its duty of care to personnel working in such an exposed environment.

WELL ESTABLISHED

Chosen based on quality of service, the company is well established in the offshore sector and provides bespoke services for many different types of offshore operations. It has also invested in the best possible

lightning data from a high density network of sensors which, due to advanced detection technology can locate even relatively weak lightning signals. A second, complementary detection network guarantees resilience and optimal European coverage.

SHERINGHAM SHOAL

The 317MW Sheringham Shoal Offshore Wind Farm has 88 wind turbines and Statkraft expects it to generate around 1.1TWh of green energy per annum - enough clean energy to power almost 220,000 British homes. Compared to fossil fuels this represents an annual reduction of around 500,000 tonnes of CO₂ emissions.

MeteoGroup



WORKING AT HEIGHT SAFELY & EFFICIENTLY

- "It'll never happen to me"
- "I've done it dozens of times before"
- "I'll be OK"
- "I'll just nip up and do it, no need to go to the stores for safety kit"

COMPLACENCY

Complacency is undoubtedly one of the principle dangers of working at height. Every year the International Marine Contractors Association (IMCA) produces 'Safety and Environment Statistics for IMCA Members' as a useful insight into the performance of a company and industry sector. They cover fatalities, injuries and environmental indicators supplied by contractor members (many of whom are increasingly involved with the offshore renewables sectors).

These act as an invaluable record of performance each year and enable IMCA members to benchmark their performances.

Working at Height		
The Hierarchy of Risk for Working at Height		
The further you descend the hierarchy of risk, the higher the risk of the task		
Hierarchy of risk	Method of protection	Example
Avoid	Don't work at height	Is the work necessary? Can it be done another way?
Prevent	Collective protection	Permanent barriers, handrails and edge protection
Prevent	Collective protection	Temporary barriers and equipment, e.g. scaffolding, man-riding basket
Prevent	Work restraint	Restraint lanyards and harnesses
Minimise	Work positioning	Work positioning lanyard (with fall arrest equipment as back-up) or rope access
Minimise	Fall arrest	Fall arrest equipment, e.g. inertia reels, fall arrest lanyards, safety nets
Minimise	Potentially none	Ladders or portable platforms (used with working at height PPE where practical)

Never take shortcuts when at height. There is no situation which justifies the risk!

The highest number of LTIs was caused by being struck by moving/falling objects (23%); falls on the same level (including slips and trips) accounted for 20% of LTIs; 'struck against' for 13%; and falls from height 10%.

LOWERING THE POTENTIAL DANGERS

Aware that falls from height (which can not only cover going up to fall down, but falling down things like stairwells, hatches etc) continue to rate highly. IMCA has over the years produced items to help lower the potential for injury or death by producing a 'Working at Height' safety DVD (largely with the offshore oil and gas industry in mind, but just as relevant to the offshore wind industry) and viewable online; a safety poster and useful pocket safety cards to act as constant reminders of the dangers.

2013 SURVEY

A record number of companies took part in the 2013 survey, based on over 1,300 million man-hours of work on and offshore (statistics were provided by companies and organisations representing around 67% of the contractor membership).

Encouragingly we have seen lost time injury frequency rates (LTIFR) drop to the lowest figure since we began collecting data. However, there is still room for improvement in our constant quest for the 'holy grail' of zero incidents.

LOST TIME INCIDENTS (LTIS)

The main injury/incident figures continue to 'flatline' or improve only slowly. There were fewer fatalities in 2013 than in 2012; but LTIs remain broadly constant.

POCKET CARDS – SIMPLE 'DOS AND DON'TS'...

- Always conduct a risk assessment and obtain a permit to work before starting
- Ensure there is adequate rescue provision in place
- Do not work at height alone or when you are tired – work with a partner and take adequate breaks
- Don't over-reach
- Ensure you are attached securely to a sufficiently strong anchorage point all of the time when you are working at height
- Always use tool bags and /or tie-off tools to prevent dropped objects
- Ensure the area below the work is properly cordoned off so you cannot work above people
- Keep an eye on weather (and sea conditions)
- Remain aware of potential hazards and especially of simultaneous operations

Jane Bugler
Technical Director
International Marine Contractors Association (IMCA)



SCROBY SANDS

A CASE STUDY

Due to their extensive experience of working at height in a variety of industries, Abfad Limited were awarded a tender by E.ON Climate & Renewables UK Ltd to provide maintenance and restoration work using rope access techniques on one of their met masts, at Scroby Sands off the coast of Great Yarmouth.

THE PROJECT

The project details provided by E.ON were to fabricate new ladder sections and eight clamps, remove existing damaged ladder sections, blast clean the structure to SA2.5 and apply a protective coating, install new clamps and tighten using Hydratight hydraulic equipment, then install new access ladders to the structure.

GAINING ACCESS

Existing ladder sections were damaged and structural steel beneath walkway gratings and mast steel was highly corroded to sea elevation. Once rope access technicians gained access, existing ladder sections were removed prior to blasting corrosion from the structure.

PATENTED MAGNETIC POSITIONING AID

The company's rope access teams use their own patented magnetic positioning aid when working on ferrous structures in addition to rope anchors, this is particularly useful when blasting and spraying as it securely positions the rope access technician to the structure and allows them to perform required work with precision. After all blasting work was completed, the met mast was spray coated with a protective coating in order to protect it from further corrosion.

INSTALLATION TECHNIQUE

Once new ladder and clamp sections were fabricated and coated ready for installation a technique had to be agreed to install from support vessel to mast structure during sea swells to ensure during lifting process the support vessel deck was not damaged

This was achieved by using powered (battery) winches to lift the clamps and ladder section into place swiftly and hold them steady while they were installed by Abfad personnel using rope access techniques. Once installed these clamps were then tightened to specifications using the Hydratight hydraulic equipment. To complete the project final commissioning checks were performed, again using rope access methods.

COMPLETE SUCCESS

All parties considered the project a complete success and the company was asked to later return to the met mast at Scroby Sands and perform NDT inspections to the structure. During this visit they also performed tightening of all bolts on the structure to complete the work specification.

Abfad Limited



GIANT OAKS FROM ACORNS GROW

QUO VADIS CONFERENCE 2014 HAMBURG

In 2007, Kevin and Sigrid Donovan organized a conference for owners and operators in the wind energy sector. It was held at SKF's facility in Luton with 36 delegates, a number of which were SKF employees. The focus of this first conference was to provide an outlook as to what the future of the wind industry could look like and this was reflected in the name that they gave to the conference – Quo Vadis – Latin for “where are you going?” One thing that Kevin and Sigrid could not have foreseen was just how Quo Vadis would grow in the ensuing years to be the very unique and influential annual gathering that it has now become.



8TH QUO VADIS CONFERENCE

The location for the 8th Quo Vadis Conference was the city of Hamburg and the venue was the Hotel Hafen, a landmark building towering over the river Elbe in the heart of the busy harbour area.

There are many features that make Quo Vadis a unique event. Firstly, attendance is by invitation and this is so that owners and operators can be brought together in an environment that encourages mutual support and sharing of experiences. This enables turbine OEMs to be excluded from the event and this helps to create a platform for sharing.

FAMILY ATMOSPHERE

Then there is the family atmosphere. The wind industry is a close knit community and this is even more so at Quo Vadis with Kevin and Sigrid's direct involvement with each of the attendees. This year there were over 80 delegates at Quo Vadis, most of whom had been at previous Quo Vadis conferences and this aspect of return visitors is what makes Quo Vadis really special.

For those returning to the event, it is a time to catch up with friends from the industry, and for those attending for the first time – they are all welcomed into the family. Kevin and Sigrid work hard at this by creating space throughout the two days for people to have time together in both a relaxing and informative environment.

SOCIAL EVENTS

Everyone is invited to arrive on the day before the conference, and this year a bus tour of Hamburg was laid on followed in the evening by a dinner in the Au Quai restaurant, a specialist fish restaurant right on the water front.

CONFERENCE

The conference too has its own unique atmosphere. This is in large part down to the style and confidence with which Clifford McSpadden, co-director with Kevin Donovan, leads the whole event. At last year's Quo Vadis in Berlin, Kevin and Clifford introduced GWA Supplies, the business that sources parts and consumables for wind turbines, and they were able to report that they had listened, learnt, and had grown in this past year in both the quantity and the range of components supplied to the industry.

SPEAKERS

Delegates heard from a wide range of speakers during the day...

- Maria McCaffrey, Chief Executive, RenewableUK**
 Maria highlighted the challenges that the industry is facing on both a political and financial basis, and how the industry is rising to these challenges with a pledge to be the least cost form of energy generation by 2020. She highlighted the fact that in the UK, wind contributed to a record 24% of the generated electricity – so wind energy is no longer an alternative, it is now a core producer.
- Richard Granger, Schaeffler Technologies**
 Richard presented the problems associated with 'white etched cracking', a phenomenon that occurs when the metal in bearings is hardened more than the original material, and he explained how surface treatments are being developed to address it.

CONTINUED...

- **Jason Halsey, Power Plant Manager – Sheringham Shoal, Statkraft**
Jason shared how he and the team at Sheringham had the objective of safely undertaking WTG operations (from Siemens) with no drop off in availability, and all within a 7 month period. This has been a pioneering project within the industry and is a model that many others can learn from.

- **Keir Harman, Regional Head of Asset Operations and Management, DNV GL**
Keir asked the question 'how do wind farms perform in the long term?' and addressed the three main causes of poor performance: wind, availability, and the power train. The conclusion was that whilst each of these can vary over time, a correctly maintained wind turbine should show not drop off in performance as it gets old.
- **Richard Smith, Principal Engineer, Romax Technology**
Richard focused on main bearing failures, and introduced the practice of flushing bearing grease as a means of extending the operating life of bearings.



- **Markus Billman, Fraunhofer IISB**
Marcus took a lot of the mystery out of the electronics that operate in the heart of a converter. By the end of the presentation, there was a better appreciation of the IGBT and the demands made on it performing in the field
- **Scott McSpadden, Material Logistics and Client Manager, GWA Supplies**
Scott compared the operating data that is accumulated in all shapes and formats with metal ore that can be mined. In its natural state it is of limited use. However, by converting this data (ore) into knowledge (metals and alloys) it can be a powerful management tool. This approach has been used to develop SPUD – the spare parts usage database – that is a tool for forecasting and budgeting spend on spares using historic data.

QUO VADIS HALL OF FAME
At last year's event in Berlin, Sigrid Donovan introduced the Hall of Fame, highlighting three delegates who had attended each of the seven Quo Vadis events. Well, this year Jon Beresford, Huw Smallwood and Steve Higman were back for the eighth time and retain their position in the Quo Vadis Hall of Fame, and if the feedback from this year's event in Hamburg is anything to go by – they will all be back next year.

SPONSORSHIP
Quo Vadis is a free to attend conference, and this can only be provided through the support of the sponsors Schaeffler UK Ltd., DNV GL and Romax Technology as well as the exhibitors: GasTOPS Canada, Hove A/S, Morgan Advanced Materials, Renewable Advice, Winergy, ZF Services.

POSITIVE DELEGATE COMMENTS
There were many positive comments from delegates Alex Grimwood, Marketing Manager for Renewable Advice who attended his first Quo Vadis summed up for all by stating...

"It has been incredible. No other exhibition or conference that I have been at comes close. I have got to meet so many great people over these two days."

And Stuart Naylor, Fred Olsen Renewables added... *"My sincerest thanks for organising what was for me the best Quo Vadis yet, a brilliant atmosphere and some of the most relevant and informative speakers. Each year this feels like less of a conference and more a group of likeminded folk getting together to discuss how to take the industry forward."*
Stuart Naylor, Fred Olsen Renewables

Global Wind Supplies (GWA Supplies)



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MARINE CO-ORDINATION NEW RESPONSIBILITIES: NEW COMPETENCIES

TODAY'S OFFSHORE WORKING ENVIRONMENT IS AN EXTREMELY BUSY PLACE WHERE MONEY CAN BE MADE OR LOST QUICKLY.

To help maximise profitability, Green Marine Solutions (GMS) has redefined the tough modern demands now made of a key project team member who can save millions of pounds at sea – the marine co-ordinator (MC).

By upgrading the MC's basic wind industry role, they are showing operators how to make major gains from new technology, cost-structures and online communication. In parallel, they are also launching the UK's first dedicated training course for professional MC development.

RADICAL CHANGE

The MC's core job is changing swiftly. Traditional skills are fast becoming redundant. New competencies are needed.

MC's have two distinct roles. On large construction projects, groups of MC's - with different but complementary skills – often work as a single integrated team to bring specialist vessels, highly-qualified technicians and time- and cost-sensitive tasks together successfully.

However, as completed projects move on into the operational phase, these shared responsibilities often fall very quickly onto a single set of shoulders.

GMS' goal is to ensure that all MC's can be equipped with very broad shoulders!

ALONE ... AND NOT ALONE

Construction is a hectic time with big budgets and ample resources and skilled people on site. MC teams are correspondingly large.

During operation and production, everything changes. Budgets shrink. Profitability is much more important. A single MC can easily feel that he or she is now working alone.

However, MC's are not alone, even when working remotely across many different sites. In today's digitally-connected world of work, many different data sources and authoritative advice can be instantaneously available to back an MC's own judgement.

REAL-TIME OPERATIONAL ASSET MANAGEMENT (ROAM)

Well-selected and carefully trained MC's can now have cost-effective access to real-time project data, analysis and online co-ordination tools. GMS has developed its unique ROAM (Real-time Operational Asset Management) system to break new ground in this area.

Systems such as ROAM give a constantly updated picture of the position and working status of key assets many miles, or kilometres, apart. But MC's must be trained to make the most of these aids.

MC's – wherever they work – also need to be able to talk instantly to other co-ordination experts who can bring experiences and expertise from related areas to add to their 'firepower'.

This is why GMS MC's are in constant touch with home base and a broad panel of other marine experts within the company. It is unusual for MC's recruited from agencies to have this external support.

NEW COMPETENCIES

However, these strategic changes have not yet filtered down to many parts of the wind industry. As a result, valuable commercial bonuses are being lost.

By tradition, almost all marine co-ordination tenders still request a CV that includes Master Mariner qualifications. This senior requirement targets candidates from a broad range of professional backgrounds – oil & gas, fishing, deep sea, or crew transfer vessel skippers.

The wind farm operators' dilemma is knowing how well a particular candidate's accumulated experience is matched to the ability to make complex decisions wisely and quickly on fast-moving projects.

LARGE FLEETS

Offshore construction sites can potentially involve up to 30 construction vessels. Each needs accurate time scheduling, plus a detailed understanding of operational limitations. If things go wrong, cost-effective contingency plans are essential. Health & safety is paramount. Vessels often work in time-sensitive charter windows. Weather can be highly-unpredictable.

It is vital for MC's to have a firm mental and digital 'fix' or 'situational awareness' on all combinations and possibilities.

The challenges are even more complex when large fleets and many different sub-contractors are spread far apart across, say, a 120 turbine deep-water offshore site. The inevitable conclusion is that the era of time-served seafarers, equipped with little more than a radio and remote computer link, is being overtaken by the sheer complexity of the modern task matrix.

Seafarer experience is often based on the linear command of ships and crew members using written procedures within subscribed boundaries. There may be no real relationship between past experience and wind industry challenges. This can be a problem where, for example, advanced logistical or specialised marine skills are needed. New competencies are essential.

GMS SOLUTION

GMS has amended and updated the definition of a modern MC to include a multiplicity of maritime and logistics skills linked directly to real offshore wind industry conditions.

For example, Coastguard professionals co-ordinate complex rescue and recovery operations in adverse conditions. GMS has a policy of recruiting this transferable skill-set into its own MC teams.

TAKING THE LEAD

Alex Harrison is a former Coastguard Officer and now leads GMS' marine co-ordination programme on operational projects. He has also helped to design the new course and the launch of a new MC training academy

TRAINED TO THINK AHEAD

"Coastguard officers are trained to prioritise tasks quickly as routine, important and emergency," he explains. *"They gather information rapidly from numerous sources, filter it and decide on action while constantly reviewing and re-evaluating the situation. The ability to foresee problems is vital."*

"For example, in a search and rescue mission I would see that a helicopter only has two hours of flying endurance and automatically be thinking ahead what I can do next."

"The skill is about developing mitigation plans and transfers very readily to the commercial environment with construction vessels," he adds.

GMS' bespoke MC course focuses on operational communications, emergency response, chart work, general maritime, meteorology, seamanship, plus IMO, IMDG and SOLAS.

Importantly, it also includes a special marine co-ordination module which looks at contemporary skills that MCs must be kept right up-to-date to do their job properly.

"Often it's about filling essential knowledge and skills gaps. Many candidates already have excellent partial skill-sets. The course is designed to ensure all-round competencies," concluded Alex.

Green Marine Solutions

[Click to view more info](#)

PROVIDING MARINE CO-ORDINATION AT BUTENDIEK OFFSHORE WIND FARM

Specialist Marine Consultants Ltd (SMC) has been working with Siemens, providing offshore marine co-ordination for a fifth Siemens Wind Power construction project.

The Butendiek offshore wind farm in the North Sea began construction in early 2014 and is due for completion mid-2015. SMC based on the UK Yorkshire coast, have been working offshore undertaking marine co-ordination for the 80 turbine site.

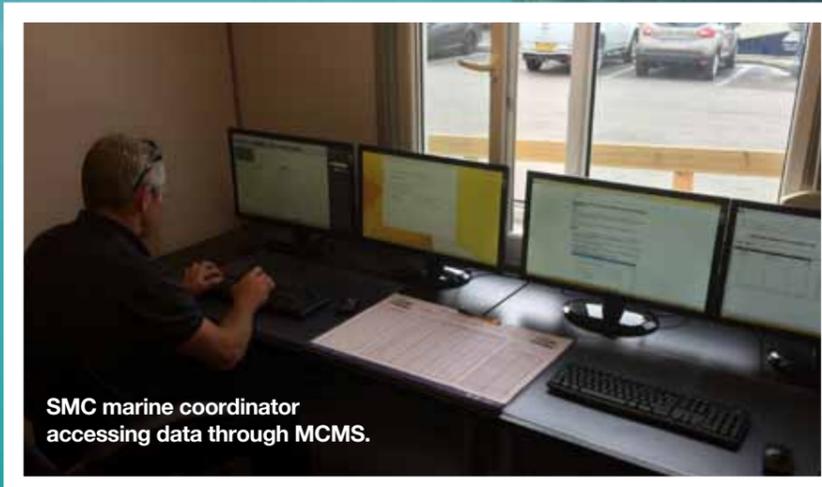
SPECIALIST SERVICES

The company provides specialist services to the offshore renewable and oil & gas sectors including HSE advisory services, marine co-ordination, client representation and vessel auditing.

This is the second time they have worked on a German offshore wind project supplying marine co-ordination and marks a milestone for the offshore specialists, with significant new innovations in their Marine Co-ordination Management System (MCMS).

MCMS

MCMS tracks personnel, certification and vessels offshore. Vessels using the CVDR daily reporting system can link directly to MCMS, allowing HSE statistics to be gathered in a unique way.



SMC marine coordinator accessing data through MCMS.

Comprehensive statistics relating to the wind farms construction are gathered and collated. This allows analysis of key up-to-date HSE statistics (push-ons, fuel usage, carbon footprint, vessel reliability) which can be securely accessed remotely.

WIND PROJECT PORTFOLIO

The company is currently supplying marine co-ordination services to six major wind farm construction and service projects in the UK and Europe, as well as working on two other wind farm projects supplying client reps. They have HSE advisors located offshore in Brazil, Asia, Canada and the US Gulf.

MD Ian Coates said *"MCMS has been developed to work from an offshore base, which gives a strategic advantage to projects stakeholders onshore."*

"Clients can access the latest statistics remotely to give them an immediate picture of critical factors necessary for the smooth running of an offshore project."

Specialist Marine Consultants Ltd

**'The Centre of Excellence,'
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HOTA was established in 1987 by the industry for the industry



HOTA provides Nationally Approved Training Courses for Renewable, Offshore, Maritime & Onshore Organisations including:

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More than 100 training courses are offered in the current training portfolio with time-abled courses running 51 weeks per year across its 3 major sites in Hull.

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GREEN AWARD

For apprenticeship programme

Mabey Bridge's industry leading apprenticeship programme has been recognised by RenewableUK's Wales Green Energy Awards 2014 with the company winning the Contribution to Skills and Training category. The UK's largest onshore turbine tower supplier's apprenticeship scheme was singled out for praise for the way it

welcomes and develops young people entering the workplace, providing a supportive and positive environment for apprentices.

The apprenticeship programme is now in its ninth year and the company currently employs 27 apprentices (approximately 5% of the total workforce). Such is the quality of the programme that 95% of apprentices are still with the company.



PROGRAMME FRAMEWORK

The apprenticeship framework has been developed with the company's partner Coleg Gwent, Wales' largest further education college. Apprentices are given tailored support and benefits throughout the process and attend college on a day-release basis for theory and practical training. They are each supported by an internal mentor and there is a dedicated training officer who oversees individual development programmes.

Mark Coia, Managing Director of Mabey Bridge Renewables said: *"We are extremely proud that the renewable energy sector has recognised the work the Mabey Bridge training team have dedicated to developing our apprentice scheme and hope that the demonstrable long term value of investing in such a programme inspires other companies to follow suit."*

INVESTING IN YOUNG PEOPLE

"If the UK and Wales is to reach its carbon reduction targets the industry needs to invest in young people to help design and build the renewable energy infrastructure of tomorrow. Long-term apprenticeship schemes that intelligently combine on-the-job experience and classroom learning have got to be part of the solution."

In February Mabey Bridge was recognised at the International Learning Awards winning the Bronze Award in the category of Apprenticeship Programme of the Year. The company also won Large Employer of the Year at the Apprenticeship Awards Cymru 2013.

Mabey Bridge

NORTH EAST TRAINING CENTRE

To engineer apprentices' future

A WORLD CLASS ENGINEERING COMPANY HAS LAUNCHED A TRAINING CENTRE AS IT LOOKS TO INSPIRE AND HIRE YOUNG TALENT IN THE REGION.

Industrial and Marine Hydraulics Ltd (IMH) opened its in-house training scheme for hydraulic engineers at its headquarters in Middlesbrough with over 50 attendees recently.



HIGH PROFILE SPEAKERS

Maria Dotsch, International Trade Advisor for UKTI was the esteemed speaker at the event. Other high profile guests included Andy McDonald MP for Middlesbrough, representatives of Tees Valley Unlimited, Entrepreneurs' Forum, Teesside University and more.

ADVANCED APPRENTICESHIP PROGRAMME

IMH, which offers services in engineering, design and manufacturing, employs over 40 people and is now hosting an advanced apprenticeship programme within the training centre.

Managing Director Nathanael Allison commented: *"I believe that the gentle recovery we are now experiencing in the economy is significantly supported by small and medium sized businesses; businesses just like us."*

"At IMH our strengths come from our technical expertise, our world class hydraulic knowledge. To ensure we continue our long term sustainable growth, we have to invest in passing on that knowledge from our experienced engineers to the next and coming generations of young people."

LONG TERM COMMITMENT

He added: *"This training centre is a long term commitment in nurturing engineers for the future, primarily for our internal staff, but also for the local economy by potentially delivering short basic hydraulic courses to other engineering businesses in the North East."*

The scheme, which is moulding its apprentices into hydraulic engineers, provides bespoke training courses at stage one, and is headed by IMH owner, Paul Griffiths.

BOOSTING ENGINEERING EXCELLENCE

Founded by Mr Griffiths over 30 years ago, the innovative firm won the Long-Term Contribution to Apprenticeships award by the UK National Skills Council in 2011 and is aiming to boost engineering excellence in the North East.

Industrial and Marine Hydraulics Ltd



APPRENTICES VISIT GREEN BRITAIN CENTRE

8 HETA Apprentices recently visited Ecotricity's Green Britain centre in Norfolk, a fantastic renewable facility to experience some first class training as part of their apprenticeship.

The centre is home to the UK's first megawatt class wind turbine as well as The Greenbird, the world's fastest wind powered vehicle, one of Britain's largest solar trackers and a wind turbine blade famously reported to have been detached by a UFO!

OBJECTIVE

The reason for the visit was the culmination of a week-long working at heights course run by Wind Turbine Technicians from Ecotricity's service centre in Louth. One of whom is himself an ex-HETA apprentice.

TAKING THE LEAD

HETA has become the first training provider in the region to offer City & Guilds Wind Turbine Technician apprenticeships to its clients and this year are training 8 young people in this exciting and challenging career.

They will complete a year on site at HETA's training centre at CATCH, Stallingborough learning a mixture of practical and theory skills in Electrical, Mechanical & Instrumentation skills.

The training will also include access to full operational turbines to enable the apprentices to experience some live maintenance as part of their training. In summer 2015 the apprentices will join their companies full time and work towards achieving their NVQ Level 3.

AMAZING EXPERIENCE

HETA Business Development & Marketing Manager James McIntosh said *"The training that this group of apprentices are receiving is fantastic and an amazing experience that they will use to forge a career in the renewables industry."*

"They have an enviable opportunity of being the first group of HETA Apprentices who will complete the City & Guilds Wind Turbine Technician Apprenticeship – a nationally recognised industry standard. We hope that the success with these 3 companies grow and we can train even more wind turbine apprentices for other companies as the industry develops further."

HETA



From back left clockwise Matthew, Kyle, Connor, Josh, Lewis, Emma, James and Josh about to climb into the nacelle of a functional wind turbine.

LAUNCH OF A NEW INDEPENDENT TRAINING SCHEME

Jones Bros Civil Engineering UK has been committed to recruiting apprentices since the company was founded in North Wales in the 1950s, to such an extent that it decided to launch its own revamped independent training scheme.

COMMITMENT

The trainees undergo Foundation Modern Apprenticeships working towards their NVQ Level 2 and the company runs its scheme through Construction Skills Wales. The company's commitment to recruiting apprentices has ensured a loyal, hard-working workforce, with many employees remaining with the company for many years.

The company says a strong, highly skilled workforce is crucial to service an increasing and wide range of diverse projects undertaken by Jones Bros across the UK in sectors including highways, coastal and flood protection, waste management

REMUNERATION

Young people recruited earn a wage from the outset. They initially undertake a 12-week course before going out to one of the company's many sites across the UK to gain several months' experience. A further eight weeks of training on a wider range of plant is then provided in Ruthin before achieving their NVQ and apprenticeship.



IN-HOUSE

Apprentices now complete their course at the company's purpose-designed training centre near to its headquarters in Ruthin, rather than having to travel to a national training college in Norfolk.

The young apprentices also undergo training at Jones Bros' 100-acre quarry site at the nearby Horseshoe Pass in Llangollen. There they learn how to operate the larger plant and machinery before sitting a series of verbal and practical exams.

facilities, and renewable energy, such as wind and hydro energy projects.

REAL CONTRIBUTION

Dave Gibson, Health, Safety, Environment, Quality and Training Manager at Jones Bros, said: *"Our apprentices make a real contribution to many of our projects. The best way to learn in this industry is by working on every stage of a development. "Because we have always invested in apprentice training, we benefit from a highly-trained, committed workforce. Even during downturns in the economy, including the most recent, we have continued to invest in our apprenticeship programmes because they are very important to us and this commitment pays dividends."*

ON-SITE TRAINING AND GUIDANCE

Several apprentices have recently received on-site training at Pen Y Cymoedd Wind Energy Project, under the guidance of experienced specialists from Jones Bros Civil Engineering UK and Balfour Beatty. The two companies are operating a 50:50 joint venture on behalf of developer Vattenfall to deliver infrastructure for the 76-turbine project.

SKILLS LEGACY

Like many of its projects Jones Bros is determined to leave a skills legacy in the area where the wind farm is being developed, between Neath and Aberdare.

Jones Bros Civil Engineering UK

HELPING THE UNEMPLOYED GET INTO OFFSHORE WIND INDUSTRY

Maersk Training is looking to the future of the renewables industry, with a search for the next generation of offshore technicians.

The training provider, part of the international Maersk Group, welcomed job seekers at the recent RenewableUK 2014 Annual Conference and Exhibition's careers day in Manchester, providing advice and information to those looking to take their first steps into the rapidly growing renewables sector.

CAREERS DAY

The careers day was free to attend via online pre-registration and ran from 9:30 until 16:00 on the Thursday of the 3 day event, the final day of the wider conference. Maersk Training's instructors and staff advised on their range of educational programmes and courses, including...

- Level 1 Certificate in Becoming a Wind Turbine Technician (Onshore and Offshore)
- Level 2 Diploma in Staying Safe in the Wind Industry (Onshore and Offshore)

Both have already seen a number of delegates find new work offshore.

TOUGH ECONOMIC TIMES

Stuart Cameron, UK Managing Director at Maersk Training, said: *"Tough economic times mean unemployment rates remain high. Encouragingly though, the offshore and wind energy sectors are expanding at a very fast pace, so there are great opportunities out there for people seeking employment."*

"We are also very committed to helping those who are less financially able to improve their prospects and that's why we offer funding for those who are over 19, have been a UK resident for the last three years and are unemployed, as well as an amount of subsidised places."

LATEST TRAINEES

Johnny Chung, Shane Taylor and Michael Weightman are the latest trainees to breeze into new jobs after graduating from Maersk Training's 'Staying Safe in the Wind Turbine Environment (Onshore and Offshore)' Level 2 Diploma. Johnny is now a wind turbine technician for Boston Energy, the same role that Shane fills at Holleman Heavy Lift in Romania, whilst Michael is an electrician at Windhoist.

WIDER OPPORTUNITIES

As well as practical, work-based modules such as electrical awareness, working at height and first aid training, Maersk's diploma courses offer instruction in other fields such as first aid, employability and career advice. Delegates are schooled in how to prepare an eye-catching CV and improve their interview technique.

LIFE-SKILLS

It's this focus on life-skills that 33-year-old Michael Weightman believes was instrumental in his success. He said: *"From the beginning I was given guidance on how to create a CV, improve my interaction and interview techniques and shown how to enter the world of LinkedIn and networking. I believe this will be the beginning of a long and rewarding career within the renewable and wind industry."*

Maersk Training

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Stuart Cameron, UK Managing Director of Maersk Training.



Condition monitoring savings not costs

Most hydraulic systems are contaminated with solid, liquid and gaseous particles, either generated externally or internally through fluids, component wear and tear, or just bad housekeeping.

These contaminants can cause system inefficiencies or system failures. One of the first questions asked when presenting or training about condition monitoring products is "How much is this going to cost me?" Our response is always "How much is this going to save you"?

Geoff Grant, Product Manager at MP Filtri UK looks at a few points where investing in condition monitoring can help you save costs.

PARTICULATE CONTAMINATION

We know that around 70 – 90% of hydraulic breakdowns can be attributed to particulate contamination. That's quite a high figure in anyone's terms if we can reduce this figure by 30 – 40% then surely there is a cost saving there.

So what are the costs of these breakdowns? The biggest cost is system downtime especially in production. Add manpower to this, the time to fault find as well as remove and replace the component that has failed. So is the question really - how long can you afford not to have your production working?

Components are being subjected to contaminants before actual component failure, therefore losing component efficiency right from the start. Whereas at new, the system will run at full pressures, loads and speeds. When contamination is a problem, over a period of time these can all be effected by causing wear and cracks at critical component surface areas and therefore begin to lose the efficiency of the component and how well it operates.

Sometimes the component may even stop operating due to the blocking of small orifices by large contaminants. Typically we are looking at component clearances of 0.5 micron up to 50 micron. It doesn't take much to block an orifice, to reduce or stop the flow of hydraulic media, hence stopping or slowing down the hydraulic application.



PRODUCT QUALITY

Costs can also be attributed to the product quality, scoring, wearing, and damaged components and finishes. Add all these together and the value can be quite high. How can we control this contamination problem and extend component life?

FIRST STEP

The first step is to add filtration. But which type of filtration do we install? Pressure, return, offline (Kidney loop) even a suction strainer. They all do a job but are they the right filter for the application?



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CONSIDERATIONS

We have to take each individual hydraulic application into consideration to see how it is operating, for example how sensitive the components are, flows, pressures, temperatures, environment and how critical the operation is.

Only after considering all factors are we able to select the filters to suit the application. But how do we know we have selected the correct filters? We can analyse the oil using several different methods, but the quickest and most efficient method is online.

ONLINE ANALYSES

We know that applications are becoming far more sophisticated, using high-tech products, thus creating finer tolerances and more critical component clearances. For that reason we recommend fitting low cost particle monitors.

Online particle monitors can analyse your systems 24/7 initiating internal and external alarms should any levels of contaminate or in some cases moisture levels change. These alarms can initiate external functions from simply putting a warning light on, controlling a traffic light sequence (red, amber, and green) turning an offline filtration Kidney loop system on, or even shutting down the system.

Protection is provided for your components and applications. Thus eliminating and reducing high cost breakdowns and unscheduled downtimes. All this for a relative small cost.

CAN I AFFORD CONTAMINATION MONITORING PRODUCTS?

So if your question is – 'can I afford contamination monitoring products?' the answer is – 'can you afford not to?'

BENEFITS

- Saving money on total cost of filtration eliminating unscheduled filter changes
- Constant system monitoring = predictive maintenance = cost savings
- Constant system monitoring = tracking system cleanliness = cost savings
- Prolonging major component life due to predictive maintenance
- Save time – high cost processes effectively monitored
- Predictive control – low cost, efficient method of system monitoring when system cleanliness levels are exceeded

CELEBRATING 50 YEARS

MP Filtri is celebrating 50 years in business this year. The company was founded in Italy and supplies a full line of contamination control to the fluid power industry.

MP Filtri UK opened their doors 25 years ago and act as the fluid condition monitoring wing for the MP Filtri group, both designing and manufacturing high quality instrumentation for portable, in-line and laboratory applications.

MP Filtri

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TECHNICAL DUE DILIGENCE ON WIND FARMS **THOROUGH TESTING TO TURN WIND INTO A WINDFALL**

When wind farms change owners, expertise is in high demand. As in real-estate and company acquisitions, risks unknown and hidden at the time of contract conclusion may be transferred along with the ownership of the turbines.



Possible consequences include incalculable costs, low energy production or liability risks that impact on returns on investment and the cash flow. Using case studies as examples the wind experts from TÜV SÜD and MWV Windenergie GmbH point out what to look out for.

As trading and sale takes place at all phases of wind-farm projects, the transactions involve various types of risk that will normally be uncovered by a due diligence review.

AN OVERVIEW FROM GREEN-FIELD PLANNING TO WIND FARMS IN OPERATION – FAR, FAR AWAY – PERMITS, APPROVALS, LICENSES, WIND REPORTS AND YIELD FORECASTS

To be eligible for a construction permit, the future wind farm must comply with all legal requirements. Particularly important in this context is the Act on the Prevention of Harmful Effects on the Environment Caused by Air Pollution (Bundes-Immissionsschutzgesetz), which also imposes secondary specialist requirements drawn from forestry law, nature conservation, construction law and other regulations.

In addition to the above, various technical aspects are crucial for the success of a future wind farm project...

- Is the foundation soil suitable for ensuring turbine stability?
- Do the wind conditions prevailing at the site promise high energy yields?
- Validated expert reports are needed to identify all possible risks

IN BLACK AND WHITE – EPC AGREEMENT, DELIVERY AND SERVICING CONTRACT

Who will pay for any additional costs and losses in energy production caused by unscheduled work for the construction of a heavy-duty access road? Is the purchaser entitled to claim compensation against the manufacturer if the turbine fails to reach its maximum capacity? Which services and replacement parts are covered by the service contract? These questions are examples demonstrating that contracts may include numerous pitfalls, which should be uncovered prior to contract conclusion to avoid critical issues having to be settled in court.

SEE THE WAY THE WIND IS BLOWING – SERVICE REPORTS, REPOWERING AND THE RISK INVOLVED IN THE EXTENSION OF THE WIND FARM

Thorough review of the operational data and reports is imperative for assessing the performance of an existing wind farm and uncovering weaknesses in wind farm management or wind-farm control.

Another risk concerns repowering and the erection of further turbines in the immediate vicinity: the erection of further turbines and the higher turbulence associated therewith will cause the energy yields of existing turbines to go down while their operating loads go up – quite often beyond the design limits.

THINGS MAY TURN OUT DIFFERENTLY – RENEWABLE ENERGY ACT, POWER PURCHASE AGREEMENT AND DIRECT MARKETING

The political and social framework conditions, such as funding under Germany's Renewable Energy Act, massively impact on wind farm income and thus profitability. However, these framework conditions develop dynamically, which involves additional yield risks that may be minimised through thorough analysis.

GRID CONNECTION, STABILITY, OPERATION AND MAINTENANCE

Inadequate servicing, makeshift repairs of operational damage, significant defects on foundation or tower, frequent failure of network systems – the list of possible defects that may be relevant for wind farm operation is long.

On-site inspection will provide information of the turbine's actual state of repair. In this context it is important to have a third-party partner such as TÜV SÜD, with the expertise to provide reliable assessment of the relevance of the defects.

Thomas Zirngibl
TÜV SÜD Industrie Service GmbH

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ED'S NOTE

This is an abridged version – we recommend you read the full article online through the QR Code/link



THE ROLE OF DUE DILIGENCE IN WIND ENERGY PROJECTS

Due diligence – an investigation or audit of a potential investment – generally refers to the care you should take before entering into an agreement or transfer actionable by another party. The type of due diligence undertaken will depend upon the nature of the project.

Due diligence might be undertaken in relation to any one or more of the following...

- Corporate acquisitions, business transfers or creation.
- Tender invitation evaluation and response, in which case consideration should be given to transparency, fairness and equal treatment. The purpose of the evaluation is to ensure which tender meets the needs of the project and provides value for money.
- To ascertain the risks which need to be addressed in a contract. These can include user risks, production risks (whether, ground, supply chain, design quality, legislation change or programme risks) and also pricing risks (tender, inflation, finance, cash flow, non-payment and insolvency). Risk registers are commonly used to assess risk and identify the percentage possibility of them occurring.
- From a contractor's point of view due diligence should be undertaken not only in relation to the project and the contract it has been asked to enter into but also in relation to the employer and any principal sub-contractors it engages.

Recent examples of the undertaking of due diligence and its effect in which the writer has been involved have included both on and offshore projects.

ONSHORE

In onshore terms a review of the proposed supplier of a product was undertaken as part of the commercial review of the terms and conditions of contract proffered by the supplier for the design, supply and installation of wind turbines.

It was clear from the due diligence that the structure being offered by the supplier was unsatisfactory, as were the terms and conditions being proposed, which did not adequately protect the client. Significant modifications were made to the terms and conditions firstly to ensure that the product and its performance were adequately guaranteed and maintained and secondly, that the manufacturer was adequately guaranteed so its performance was secured. This was crucial since the product was intended to have a design/operating life of up to 25 years and the payback period for the investment was a substantial number of years. Coupled with this the payment terms indicated significant down payments on execution of the contract and at various stages; it was essential that these were secured.

OFFSHORE

In offshore terms the risks are always greater due to increased uncertainties when conducting projects. In a recent project consideration had to be given not only to the technical requirements of the project and the information being supplied by a prospective employer in relation to conditions (particularly seabed conditions), but also the operational requirements of the project. Specifically there was a need to provide and secure the provision of intellectual property as well as the liabilities that might arise as a result of the project's execution. Again, the prospective life of the supply was 30 years and significant modifications were required to mitigate future liability.

FUNDAMENTAL TO A PROJECT'S SUCCESS

Carrying out effective due diligence is fundamental to a project's success both from the employers and the contractors point of view. Whilst it cannot guarantee success the due diligence process can identify issues which need to be addressed and potential weak links which need to be dealt with.

Martin Collingwood
Construction Law Specialist
Andrew Jackson Solicitors

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COPING WITH THE GLARE OF DUE DILIGENCE

As the Scottish market for deals involving wind projects heats up post referendum, Pamela Todd, a Partner in the Energy team at Harper Macleod, considers some key points to consider as part of the due diligence process such deals entail.

POSITIVE SIGNS

There is a lot of activity in the wind energy market at the moment and it feels as if the greater certainty about Scotland's future following the outcome of the referendum vote has flushed through a larger number of deals in which projects are being sold, financed or re-financed or otherwise invested in.

Carrying out an appropriate level of legal due diligence into a target project or company is an important aspect of a potential purchaser, investor or lender's decision making process and is key to assessing whether or not the deal is worth doing. For the target company or owners of the target project, the process may well be a time consuming and often painful one.



PROPER PRESENTATION

Most purchasers, lenders and investors understand these points very well, but this is often not the case for the owners of the target projects or companies. Their efforts and expertise will be in creating a business or project and they will generally find themselves unprepared for the level of scrutiny that a legal due diligence exercise entails.

CLEAR UNDERSTANDING

Regardless of which side of the transaction you are on, having a clear understanding of what level of diligence is appropriate is important from the beginning. Acquiring a project by purchasing the individual contracts, consents and property assets will require a different approach to acquiring the same project by purchasing the company. Personal contracts or consents and restrictive alienation provisions will present a greater problem in the first case and debt and change of control clauses will present an issue in the other.

A good grasp of what is to be gained from the diligence exercise is key. Understanding every potential flaw will provide the purchaser or investor with ammunition to negotiate a reduction in the purchase price, or increased warranties or indemnities from the seller.

THE BIGGER PICTURE

Keep the bigger picture in view. With larger projects, larger teams will be engaged in examining different aspects of the target. As well as checking the detail of the documents presented by the project owner, however it is important to look for the cracks between them; satisfying yourself that each of the contracts presented in respect of a supply chain is important but it is also important to ensure that there are no links missing.

Well before exposing yourself to a potential purchaser's glare, engaging professional advisers with experience of the process to ensure that all of the required information is available and properly presented is a worthwhile investment.

BE PREPARED TO WALK AWAY!

One last point; having gone through the pain of either providing or garnering all of the information, be prepared to walk away from the transaction. From a seller's perspective, retaining the project and resolving the issues identified during the diligence process may be a better outcome than accepting a reduced price.

From a purchaser's or investor's viewpoint, the investment of time and effort into the diligence process might feel wasted if the deal is not done, but the wise will draw a line under flawed deals and move on, without regret.

Pamela Todd,
Partner
Harper Macleod LLP

MAXIMISING THE VALUE OF WIND MEASUREMENT EQUIPMENT

Prevailing is a resource assessment consultancy providing a wide range of high quality technical services to the wind industry worldwide. The Prevailing Wind Data Management Service helps clients maximise the value of wind measurement equipment installed on their site. Monitoring and fault identification leaves them better informed, while preventing delays and costs.

Collection of good quality wind data is a vital step to financing a project. Financial grade energy prediction requires at least a year of on-site wind data collected with a well specified mast. Problems with the monitoring equipment can result in missing or incorrect data.

These issues are common and can range from anemometer failure to a complete mast collapse – identifying these issues early maximises data coverage.

More subtle, but perhaps more significant, are issues which if left undetected, will result in poor quality data. Instruments may remain functional, but close inspection can reveal faults or changes that prevent confident onward use of the data. This lack of confidence translates to higher assessment uncertainty and worse financing terms.

COMMONS ISSUES INCLUDE...

- Anemometer or wind vane degradation
- Instrument mounting errors
- Wiring, logger and charging system faults
- Boom shifts or instruments becoming loose on their mountings
- Undocumented maintenance and changes
- Missing or incorrect documentation

Failure to detect these faults during the monitoring phase can result in a need to extend or repeat the measurement campaign, causing major delays to the project.

TRAINED AND RESPONSIVE TEAM

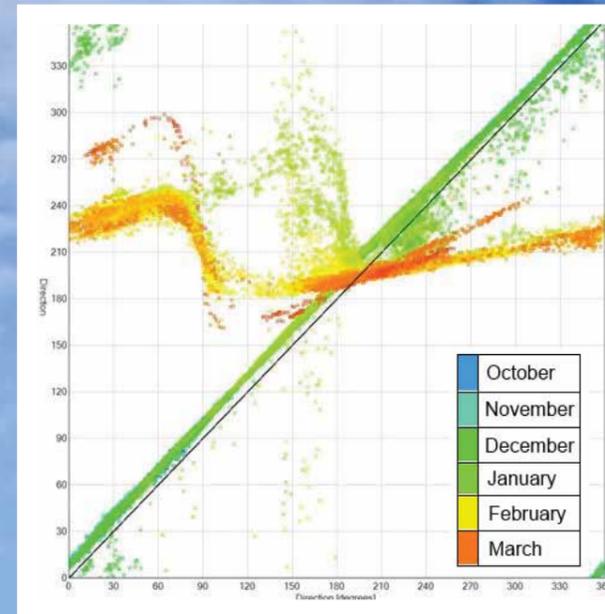
Prevailing ensures that all monitored masts are checked daily by an attentive and responsive team of wind analysts. All staff are fully trained in financial grade analysis, able to advise with confidence on any detected faults, and work with maintenance contractors to ensure rapid resolution.

PRIORITISATION AND DECISION MAKING

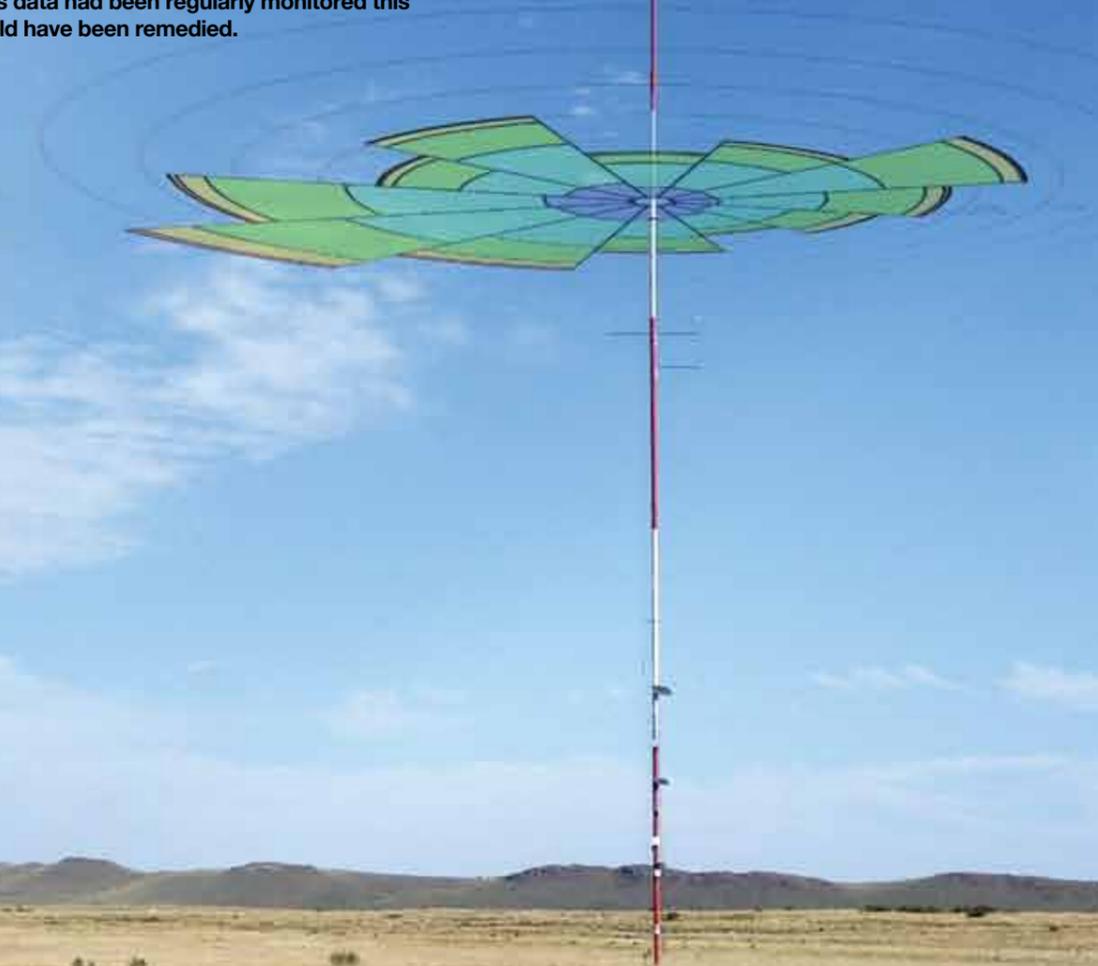
Alongside accurate and secure data collection, a good wind data management service will also provide project prioritisation and decision making tools. Continuously updated analysis results such as long-term correlation provide an early indication of wind farm performance, long before a year of data is available.

Confidence in this prediction increases gradually as the data set grows, providing an accurate input for financial modelling before a formal assessment is completed. The Prevailing Wind Data Management Service provides automatic long-term resource estimates each week, for a fast and efficient route to project finance.

Prevailing Wind Data Management Service



There is clearly a serious issue with one of these wind vanes – if this data had been regularly monitored this problem could have been remedied.



INCH CAPE OFFSHORE LIMITED LIGHTS UP WIND FARM WITH ZEPHIR LIDAR, SUPPORTED BY SGURRENERGY

September 2014 saw an iconic installation of wind monitoring equipment that combined both traditional and modern equipment but with one thing in common – light.

BELL ROCK LIGHTHOUSE

The historic Bell Rock lighthouse, 17km off the Angus coast is now home to a ZephIR 300 wind lidar thanks to Inch Cape Offshore Limited capable of measuring wind speed and direction from the platform up to 200 metres without the need for conventional mast-based anemometry.

The equipment will augment wind measurements from onshore sources and from a dedicated offshore met mast that is expected to be installed in 2014.

The wind data provides a real opportunity to enhance the energy assessment and revenue forecasting, which is an essential part of design refinement and the overall business case for the project.



INSTALLATION

The installation of the unit was carried out by SgurrEnergy who designed and fabricated the unique support structure which secures the ZephIR device near the top of the lighthouse.

Critically, the design and installation was optimised to reduce time spent offshore to minimise impacts on the lighthouse operation and the structure itself and keep project costs as economically viable as possible. Successful installation was completed safely by a range of specialists under the supervision of SgurrEnergy and the Northern Lighthouse Board.

ENHANCING UNDERSTANDING OF OFFSHORE CONDITIONS

Stephen Kerr, Inch Cape Project Director said: *"We are delighted that the ZephIR 300 lidar has been installed safely, on time, and is performing well. Wind data collected from this location will greatly enhance our understanding of the conditions offshore. We have worked closely with the ZephIR team and the Northern Lighthouse Board throughout the design and deployment on this iconic lighthouse and thank all parties for their ongoing support."*

LANDMARK PROJECT

Ian Locker, Managing Director: *"It is fantastic to see such a landmark project delivering the installation of the original lidar technology, ZephIR 300, with the support and backing of SgurrEnergy, for developer Inch Cape Offshore in this exciting Inch Cape Wind Farm project."*

"Offshore, ZephIR is the first choice of lidar with its unique low 10 metre measurements essential when deployed on taller structures such as this lighthouse."

"Further, with no need for annual calibration and an extensive service interval as standard, ZephIR makes perfect sense in applications where lidars need to be left installed for long periods of time such as offshore, mounted on turbines, and for long-term Energy Assessment campaigns onshore."

ZephIR Lidar

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IT'S ALL ABOUT THE DATA!

When looking at the financial feasibility of any given renewable energy project, quantifying the available resource is the cornerstone of a successful project. While there are a number of ways this can be achieved, for the vast majority of projects there is no substitution for onsite measurements.

5 FUNDAMENTAL QUESTIONS

Ian Ravey, Head of Measurement Services at RES, answers 5 fundamental questions on how to achieve excellent wind data.

WHERE DO I START?

Good question! – having decided to take a project from the pre-feasibility to full site assessment phase, you must define your objectives regarding data quality, availability and uncertainty and plan your measurement campaign (and budget!) around them.

Choosing inappropriate instrumentation, technology, mast or measurement configurations can have a major impact on measurement uncertainty, which in turn directly impacts financial uncertainty. Getting measurements wrong can delay projects, seriously impact on financial return, and in some cases completely kill off the project.

Understanding this at the start of the project planning phase is key and should be the main driver throughout your measurement campaign.

HOW AND WHERE DO I MEASURE?

Well, ideally at the proposed turbine hub height in a location central to the planned wind farm layout and at an appropriate distance from complex features such as steep slopes or forestry. Logistically, however, this is not always possible.

Wind speed can vary greatly from one part of a site to another and, unfortunately, it is not economically viable to measure everywhere. Choose a measurement location that best represents the 'average' flow conditions on the site and then use an appropriate wind model to assess the wind flow conditions at the proposed turbine locations.

The most common way to measure wind speed is to install a meteorological mast with a set of cup anemometers in a central location away from steep slopes or ridges. However, the size and complexity of the site influence measurement strategy; the bigger and the steeper the site, the more measurement positions you'll need to avoid uncertainties at individual turbine locations.

Extrapolating wind speed using the shear profile will increase your overall uncertainty too, particularly on complex or thermally driven sites where the shear profile is difficult to model. To reduce uncertainty in long term predictions, measure at hub height.

WHAT IS THE BEST TECHNOLOGY FOR MY SITE?

We firmly believe that Remote Sensing Devices (RSD's) and meteorological masts are complementary technologies. We own and operate 10 such devices and they form an essential tool in assessing flow at specific turbine locations across large sites or reducing shear uncertainty where installing a hub height mast is not a possibility.

While RSD's offer many logistical and safety advantages over large masts, and can characterise the wind field up to 300m above ground, there are fundamental differences in how RSD's and point measurement systems such as anemometers operate.

Unlike an anemometer, which measures the wind flow at a single point in space, LiDARs and SoDARs are volumetric sensors, measuring the flow at points on the outside of a measurement cone at the required heights. Simple trigonometry is used to calculate horizontal and vertical wind speeds directly above the device. This means that the higher the measurement the greater the volume.

Though not a problem when measuring the wind resource in flat homogenous sites where the flow through the volume is fairly uniform, this can be a problem in complex terrain where you can expect highly turbulent non-uniform flow through the measurement volume. This can cause additional uncertainty in the measured data – something we most definitely need to avoid.

DO I NEED TO MEASURE ANYTHING ELSE?

Yes! – although wind speed is the most important measurement to assess how much energy your site will produce, wind direction also needs to be measured in order to optimise your wind farm layout and minimise the energy loss due to turbine wake effects.

Also, as the available power in the wind depends on the density of the air, the measurement system should include temperature and pressure sensors to calculate the site average air density.

HOW DO I BRING IT ALL TOGETHER?

There are a number of issues you will need to address during the planning and measurement design phase: power supplies, data management, site access logistics to name but a few! You will want to maximise your return on investment by ensuring high data availability and no gaps.

Keeping sight of your objectives and using qualified, experienced contractors, who fully understand all aspects of the process (as well as the impact of poor installation) from the system design to the mast installation, is a big advantage.

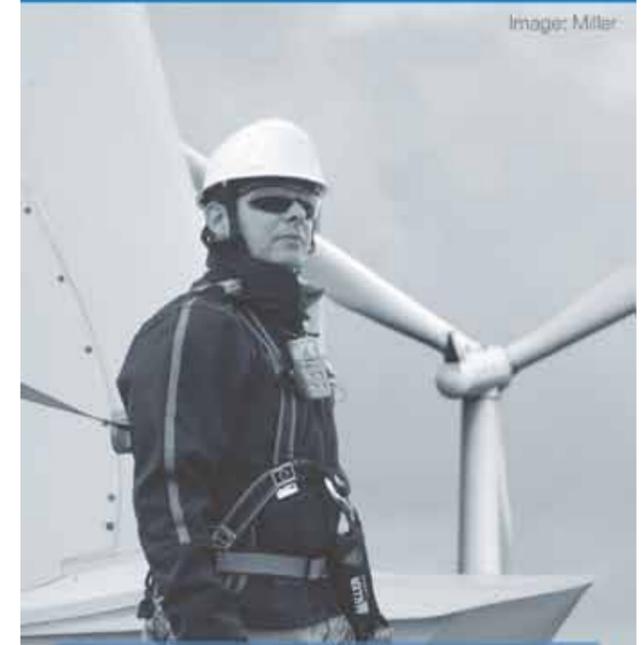
Installing a mast on-site or renting and deploying a RSD is an expensive process. It can be easy to get caught up in the cost of the installation or the time taken to get it right and there is a temptation to try and cut corners through cheaper sensors or inappropriate equipment, masts or contractors.

Obtaining high quality data takes time and needs planning, so ensuring you have the best advice and that your project team understand the imperatives, will go a long way to a successful measurement campaign making all the effort worthwhile.

If I could offer one piece of advice it would be to never lose sight of why you are doing this – it is quite literally is all about the data!

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HOW WILL MET MASTS OF THE FUTURE COLLECT THEIR DATA?

As remote sensing is maturing, met masts must enhance their strengths in order to provide measurements complimentary to those taken by SODAR and LIDAR. A key strength of met masts is precision – the ability to state ‘at this point in space, the windspeed is exactly this’, rather than ‘within this volume, the average windspeed is this.’

How can this ability be improved? Our own data management guru and senior instrumentation engineer at Chillwind, Thomas Chase, discusses advances in data collection methods.

CURRENT SITUATION

A met mast datalogger receives data from its instruments in a range of methods. Analogue voltages and currents are used, as are frequency signals and some serial signals.

Each of these has inherent strengths and weaknesses: analogue signals are simple to implement, but susceptible to interference, can be affected by the long wires necessary, and require stable circuitry for accuracy. Frequency signals offer a good combination of accuracy and simplicity, but don't offer much scope for the transmission of more than a single value per wire.

A range of serial protocols are in use, and are essential with instruments like ultrasonic anemometers because of the sheer number of different parameters they can measure.

ADVANTAGES OF SERIAL FOR ALL INSTRUMENTS

Because serial communications are digital, they are unaffected by long leads. Properly designed and implemented, they are practically immune to noise, and error correction closes the gap between ‘practically’ and ‘totally’.

Besides from improved accuracy, what other advantages can we gain from using a serial communications bus for all instruments?

The answer goes beyond data to metadata. This ‘data about data’ provides a context for the data itself. For example, each instrument could send its data to the logger, packaged with its serial number, and the instrument's current state of health.

Now measurement campaigns generally last beyond the life of an instrument, refurbishments are routine. Instruments that provide their metadata will eliminate programme changes, and that perennially awkward need to change calibrations in the logger synchronously with changing the instrument.

Given that each instrument will need an internal microprocessor to engage in serial communications, they will also have the capability to have their calibration values programmed in at the wind tunnel.

Imagine too, that a need has been recognised for an additional instrument – this new instrument can be mounted, power and data lines connected, and it will introduce itself to the logger which will then automatically start recording the data sent.

PROBLEMS TO OVERCOME

Currently, the idea of a complete plug-and-play instrument set on a met mast has hurdles to overcome – first would be the definition of a standard protocol for instruments to handshake with the logger and send data and metadata.

Second is cost – the ideas posited here are technically feasible, and inspired by current technology in the automotive sector, but development of these instruments would take time and therefore money. In the end, this money spent will recoup itself via increased data assurance.

Chillwind Ltd



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PROVIDING HIGH-RESOLUTION INTERACTIVE 3D VISUALISATION TOOLS

ADUS DeepOcean has established itself as the world leader in shipwreck survey and visualisation, working for international salvage companies and government agencies, on large-scale wreck removal and monitoring projects.

The company's work has expanded to include the visualisation of a variety of other manmade structures subsea, which require detailed investigation and monitoring, such as oil & gas seabed infrastructure, and offshore renewables assets. They have recently completed a contract to survey all in field assets for SSE's Greater Gabbard Offshore Wind Farm.

HIGH PROFILE SURVEYS

Previous high profile surveys have included that of the sunken Deepwater Horizon oil rig in the Gulf of Mexico, which lies at a depth of 5000ft, and was the cause of the largest oil spill in US history, and the Costa Concordia in Italy.

Of interest to those engaged in subsea operations is that unprecedented levels of detail can now be obtained on structures almost regardless of depth, utilising recent advances in high frequency multi beam sonar technology and also subsea laser, combined with improved positioning capabilities and the unique methodologies and visualisations developed by the company.

COSTA CONCORDIA

Precise assessment of the damage sustained on the starboard side of the Costa Concordia was possible as a result of the ADUS DeepOcean survey conducted immediately after the ship was pulled upright in September 2013, an event which was covered by the world's media.

GROWING DEMAND

In response to growing demand for ultra high resolution (sub-centimetre) surveys for inspection maintenance and repair (IMR) protocols, the company has recently undertaken a series of trials in order to quantify the resolution achievable for dynamic surveys (i.e. from a moving vessel or ROV) using terrestrial and subsea lasers.

Lasers were used to image and measure a concrete target (in air and then subsequently underwater) with calibrated indentations and deformities of known dimensions designed to simulate ice scarring.

TRIAL RESULTS

The results of the trials showed that sub-centimeter resolution can be achieved dynamically using subsea laser systems (i.e. deployed from a moving survey vessel in this instance). Scarring and surface defects of less than 20mm could be identified. Information derived from standard hydrographic surveys or video footage is readily available to those engaged in asset management but often lacks detail or is not metrical in nature.

SIGNIFICANT VALUE

So, in 'asset management' terms the value of high resolution metrical data subsea is significant, allowing a precise and measurable 'snapshot' of the asset to be created at a point in time, with an ability to easily derive accurate measurements directly from the data.

This can then provide an effective means by which change over time can be assessed – a fundamental in terms of successful asset management, and essential for the purposes of informing subsequent intervention strategy in the renewables and oil & gas sectors in particular.

ONGOING R&D PROGRAMME

ADUS DeepOcean have an ongoing R&D programme based at Dundee University and are continuing to exploit advances in visualisation technologies specifically for the benefit of oil & gas and renewables sectors.

Mark Lawrence MPhil
Managing Director
ADUS DeepOcean

[Click to view more info](#)

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Costa Concordia immediately after
Parbuckling operation in September 2013

FIRST FLIGHT WIND CONVENES FOURTH STAKEHOLDER PANEL



The venue for the fourth independent community stakeholder panel meeting was the Life Adventure Centre in Annalong.

At the meeting the panel was updated on key project milestones for First Flight Wind, including the conclusion of some offshore surveys.

COMMUNITY ENGAGEMENT

They were also presented with proposals for community engagement activity for the onshore grid connection works. This engagement is expected to begin in 2015 and the panel's input was welcomed.

The independent community stakeholder panel formed in February 2013, with its function to ensure that First Flight Wind remains committed to informing and consulting with the community on the development of the offshore wind project.

PERSONNEL UPDATE

The Chair of the group, Dr Conor Patterson paid tribute to outgoing members of the panel, Audrey Byrne former Chair of the Newcastle Chamber of Commerce, Michael Curran, formerly Louth County Council, and Councillor Jimmy McCreesh who stepped down as a Newry and Mourne Councillor earlier this year.

He then welcomed two new panellists - the new Chair of the Newcastle Chamber of Commerce Eric Ruddle and Padraig O'Hora from Louth County Council.

First Flight Wind

First Flight Wind is a consortium comprising B9 Energy, DONG Energy and RES



The First Flight Wind Community Stakeholder Panel held their fourth meeting at the Life Adventure Centre in Annalong.

(L-R): Chair of the First Flight Wind Community Stakeholder Panel Dr Conor Patterson welcomes new panellists, Eric Ruddle Chair of the Newcastle Chamber of Commerce and Padraig O'Hora of Louth County Council.

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- Positioning of Subsea Equipment

ORCADIAN SUCCESS

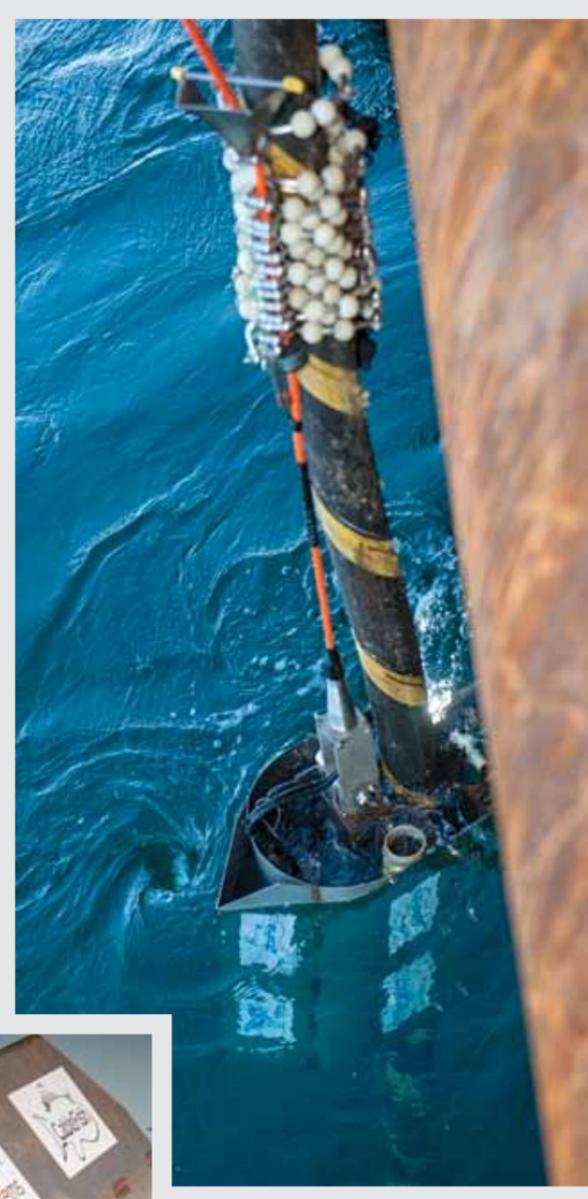
“Insurers consider subsea power cable connections to be the most critical element of offshore wind farms today, with cable related issues amounting to 80% of the claim costs.”

DNV GL

The installation of subsea power cables in shallow waters is notoriously risky. Thankfully, the application of new guidelines and technological innovation are addressing the challenges faced by the industry.

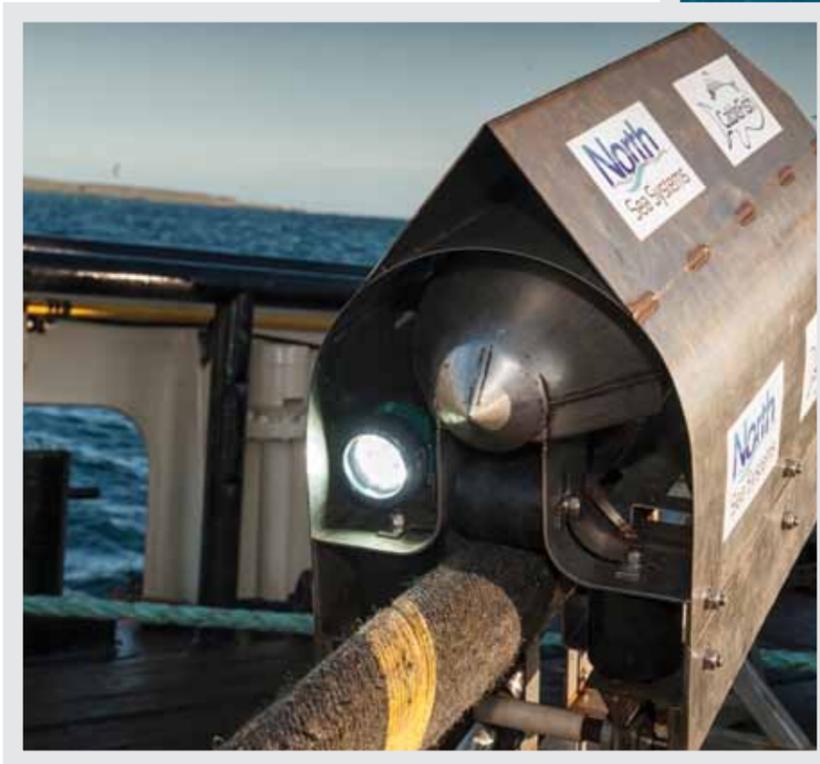
TOUCH-DOWN MONITORING

North Sea Systems have just completed trials in Orkney of a survey system that provides a cost effective solution for touchdown monitoring and cable route survey at wind farms. Their CableFish system is specifically designed to undertake these operations, which it does using a survey platform that rides down the cable to the touch-down point.



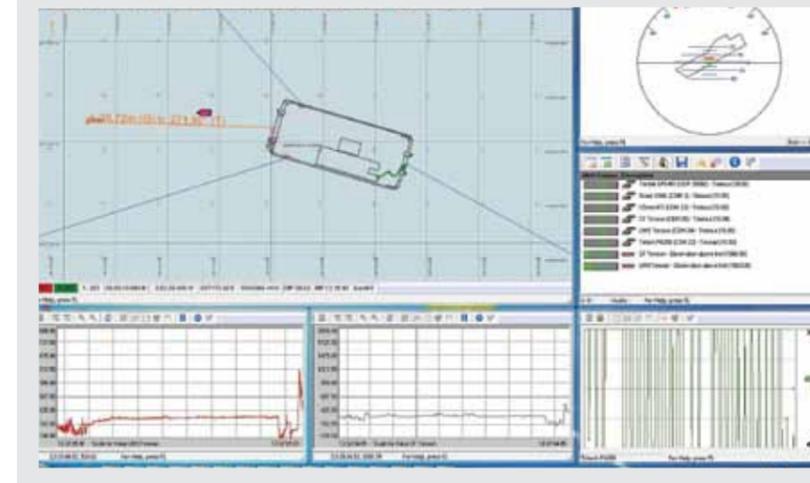
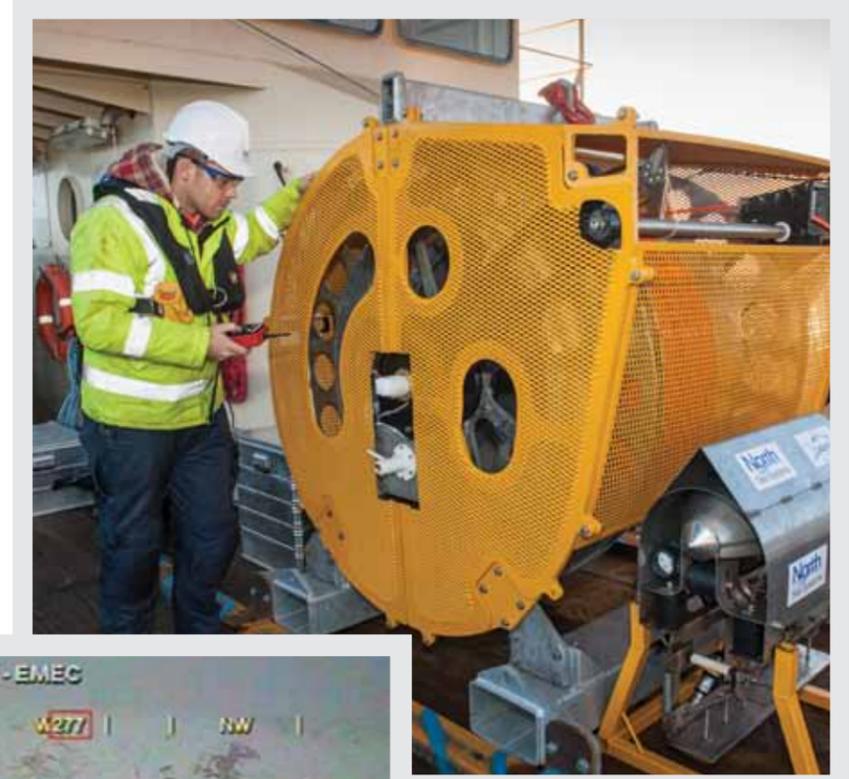
CHALLENGE

The imperative of a cable survey is to obtain detailed, accurate and continuous monitoring and recording of the entire cable route. The challenge at wind farms is that these cables must be threaded around infrastructure and obstacles while negotiating shallow water, strong tides and unpredictable sea states. Vessels become restricted in their movement due to the constraints of a ROV and such methods become impractical and costly.



SOLUTION

CableFish solves these issues by riding down the cable from the installation vessel. From this stable platform a range of sensors and instruments can be operated including cameras, an altimeter, a motion sensor and a USBL beacon. A custom-designed winch is used to control the depth of CableFish, and the video and data feeds are fed directly into the vessel's survey system.



ORKNEY TRIALS

North Sea Systems trialed CableFish at the European Marine Energy Centre (EMEC), Orkney, in November. The system was put through its paces in these tidally-renowned waters and results have been impressive with high quality real-time video imagery and coordinates reliably relayed to the vessel via its fibre optic umbilical.

CableFish can be operated in up to 6 knots currents, does not impede the speed of cable lay and can be adjusted for different cable diameters. With its purpose built and wirelessly operated winch, the system is also very safe to use and has been fully tested to offshore standards.

COMMERCIALLY READY

CableFish is around 25% the cost of an equivalent ROV survey and represents another exciting opportunity for the industry to reduce risk and drive down the cost of wind energy. North Sea Systems are now working with offshore operators to tailor the system to their specific needs.

North Sea Systems

THE CHALLENGE

MANAGING THE PAST WHILE DELIVERING ENERGY FOR THE FUTURE

The UK is famous for its heritage, and rightly so. The country contains a wealth of archaeological and historic features ranging from the remains of human ancestors 500,000 years ago, to prehistoric monuments such as Stonehenge, the Standing Stones of Stenness; Roman remains such as Hadrian's Wall and the towns of Silchester and Wroxeter; numerous medieval castles & churches throughout the country; 18th & 19th century country mansions, frequently within designed grounds and parklands; 19th century industrial remains through to WWII and Cold War structures.

RECENT PLANNING DIFFICULTIES

Over recent years the historic environment has become an increasingly problematic for wind farm developers promoting on-shore wind farm schemes through the planning system. Although wind farms tend not to have particularly significant direct impacts upon archaeological remains, historic buildings and the historic landscape, there is a perception by many involved in the planning system, that the presence of wind turbines in the landscape can have drastic adverse impacts upon the setting of these heritage assets.

PRINCIPAL ISSUES

The principal issues presented by the historic environment are the potential physical impact upon buried archaeological remains and the potential impact on the setting of listed buildings, scheduled monuments, registered parks and gardens, World Heritage Sites, conservation areas and other designated heritage assets.

Due to the relatively small size of the footprint of wind turbines and their associated infrastructure, wind farms and single turbines generally do not have significant direct impacts upon below ground archaeological remains. However, local planning authorities increasingly expect at least some form of archaeological evaluation to be undertaken pre-determination of planning applications.

CONSIDERABLE VARIANCE

The scope of such work can vary enormously from scheme to scheme across the country and consequently can present a financial and planning risk at early project planning. Typically archaeological evaluations for proposed wind farms comprise of a geophysical survey but may also include other techniques such as trial trenching or fieldwalking.

In the event that a proposed wind farm will have a direct physical impact on archaeological remains, there may be a need for mitigation works such as micro-siting turbines to avoid the remains or archaeological excavation ahead of construction commencing.

GREATEST RISK

It is the issue of the potential effect on the setting of designated heritage assets that poses the greatest risk from heritage to the securing of planning permission for wind farms and single turbines.

The issue of what constitutes setting has been the subject of a long debate within the heritage profession but following inclusion of a definition of setting in Annex 2 of the NPPF and the guidance issued by English Heritage in 2011 entitled Setting of Heritage Assets, there is a greater degree of clarity on what is the setting of a heritage asset than there was previously.

However, it remains a potentially complex contentious issue for single to multi turbine on-shore schemes in relation to nearby individual or multiple designated heritage assets.

BARNWELL MANOR WIND FARM

A recent Court of Appeal ruling on the proposed Barnwell Manor Wind Farm has resulted in the implications of Section 66 of the Planning (Listed Buildings and Conservation Areas) Act 1990 to the industry being extenuated. Section 66 requires that a Local Planning Authority and the Secretary of State should have special regard to the desirability of preserving a listed building or its setting.

This has led to current position where harm to the setting and significance of a listed building arising from a proposed development, such as a wind farm, having to be regarded as more harmful than many other environmental considerations and thereby requiring a higher level of public benefit from the proposed development to justify this harm.

Given the height of wind turbines, a proposed wind farm or single turbine frequently has the potential to effect the setting many listed buildings within a wide area, so consequently, Section 66 of the 1990 Act poses a particularly tough challenge to the wind industry.

OVERCOMING POTENTIAL PROBLEMS

The key to overcoming these potential problems is the early involvement of heritage consultants in project planning in order to flush out, pin down and resolve the key heritage issues while there is scope for flexibility in the numbers and layout of turbines.

This enables greater certainty in delivering a robust historic environment assessment in planning applications and Environmental Statements and a stronger case when the historic environment becomes contentious issue at a Public Inquiry.

SPECIALIST ADVICE

CgMs (which has recently become part of the RPS Group) has developed a specialism in advising on-shore wind farm developers, and their environmental advisors, on the impacts of proposed schemes on the historic environment. CgMs is the largest independent heritage consultancy with offices across the UK, providing advice on resolving the often conflicting demands of conservation and achieving profitable & sustainable renewable energy developments.

The company prides itself in understanding our client's business and projects and responding positively to their aims and objectives. The company's services are tailor made for each client to provide a responsive and flexible approach to instructions on a project by project basis.

CgMs

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CULTURAL HERITAGE LOOKING BACK TO THE FUTURE

Brandon Mason, Business Development Manager for Maritime Archaeology Ltd, looks at the opportunities and risks afforded by cultural heritage.

The future of the wind industry may be bright. With new international wind developments and South Humber set to play a key role in renewables, it's an exciting time for the years to come – but what of the impact on our past?

Internationally, policies and guidance on the impact on cultural heritage for wind project developers are often limited to environmental impact assessments (EIA), protection guidance and mitigation strategies. Indeed, at a push, the development and consents process only accounts for around 4% of a wind farms capital costs* so it's not too surprising that – along with other EIA areas – reaching an agreeable strategy for cultural heritage can be deemed as a quick win.

OBLIGATION OR OPPORTUNITY?

Both on land and offshore, a development's effect on cultural heritage needs to be carefully managed. Wind farms evoke passionate public reactions which, at times, carry the risk of cultural nimbyism, especially at public consultation stages.

Furthermore, beyond archaeological and geophysical assessments, core sampling and other studies involved in EIA reporting, complex (and sometimes expensive) mitigation strategies can leave industry perceiving cultural heritage to be on the opposing side to progress.

UTILISING THE PAST

At Maritime Archaeology Ltd, they believe that cultural heritage is a greatly underused resource beyond planning and consent. For example, beyond identifying the impact on designated and undesignated historic features such as submerged landscapes, studies of environmental conditions on historic vessels can also inform planning decisions for turbine foundations and contribute to coastal process surveys.

Heritage can also be an invaluable tool for developers seeking stakeholder and community buy-in. Statistics and media headlines provide plenty of evidence of people passionate about the historic environment. This is why they always recommend developers engage an archaeologist early on to assist not only in assessment but also to consult on demonstrating responsible development.

NEW APPROACHES FOR FUTURE SOLUTIONS

Some of the most exciting developments for using cultural heritage are in Integrated Coastal Zone Management (ICZM). As part of an Interreg funded EU project, a study recently sought to use undervalued resources to address data gaps in measuring long term coastal change.

The Arch-Manche project used archaeology, historic art and maps in combination to provide an innovative perspective on long-term coastal impact and a tool-set for coastal managers.

JOINED UP THINKING

In the future, this knowledge is set to go further. The PriME-C project (Partnering for Risk Management and Engagement on the Coast) is joining together the work from nine EU projects to establish current best practices in coastal risk management and engagement across the Channel – Southern North Sea region.

It is highlighting the need to gain a firm understanding of environmental risks, pro-actively plan to adapt to change and encourage local ownership in coastal management.

Therefore it seems that the past can and should play a part in shaping the future of our coastlines - way beyond the limits of just mitigation.

Brandon Mason
Business Development Manager
Maritime Archaeology Ltd

[Click to view more info](#)

*Crown Estate: Guide to an Offshore Wind Farm 2013



RISK MANAGEMENT AND POST-CONSENT SUPPORT PERSPECTIVES OF A MARINE CULTURAL HERITAGE PROVIDER

With the continuing development of the regulatory framework the marine historic environment is increasingly regarded as one of the key considerations when managing potential risks to a development.

LEADING CULTURAL HERITAGE PROVIDER

Wessex Archaeology Coastal and Marine are a leading cultural heritage provider, offering pre and post consent support to offshore renewables developments since 2001.

Their experience has shown that effective management of the key risks associated with the marine historic environment (such as the remains of ships, aircraft and submerged prehistory) is dependent on early identification in the pre-consent phases of a development which will provide a sound basis for effective mitigation and support into the post-consent construction phase.

SOME OF THE KEY RISKS ASSOCIATED WITH THE HISTORIC ENVIRONMENT INCLUDE...

- The severity of potential direct and indirect impacts of the development
- Financial and time risks associated with the uncertainties of the consenting process – will a development gain consent based on the full understanding of the regulatory systems in place?
- Financial risk associated with balance of expenditure during both the pre and post-consent phases – will the quality and quantity of data gathered satisfy the requirements of the regulator, industry guidance and best practice?
- Physical risk to a development post-consent – will the location of infrastructure take account of not only the identified archaeological remains, but also the more nebulous anomalies, including sub-seabed features and deposits?

Taking these risks into account and once consent has been granted, how can developers and the regulator be confident that a potential crisis has been effectively identified and mitigated?

SOME OF THE KEY CONSIDERATIONS INCLUDE...

- The importance that advice to clients is given as early as possible and is well argued, consistent, in line with the regulatory framework and project-specific issues identified in the Environmental Statement.
- Direct discussion with the development design team to ensure a full understanding of the key cultural heritage risks and how best to mitigate them.
- Ensuring there is a robust Written Scheme of Investigation (WSI) and protocols developed through consultation with the regulator and the developer.
- Ensuring the historic environment has been fully considered through the provision for archaeological specialists to engage in surveys – during the design, deployment, and assessment phase.

AVOIDING PITFALLS

In this way potential pitfalls can be avoided and support can be provided to developers at every stage of the post-consent process. Of note is the guidance for the development of effective WSI's for offshore development and the Offshore Renewables Protocol for Archaeological Discoveries (ORPAD) which is funded by the Crown Estate and administered by WA Coastal and Marine. This includes the provision of free awareness training for developers and their sub-contractors.

EFFECTIVE PARTNERSHIP WORKING

Lastly, it is important to stress that these aims are best achieved through effective partnership working ensuring consensus is achieved throughout the life of a project.

Wessex Archaeology Coastal and Marine

Thanet wind farm under construction © Wessex Archaeology



VISUAL RESIDENTIAL AMENITY ISSUES HOW TO ADOPT A ROBUST APPROACH . . .

The perceived impact on the views and outlook of nearby residential properties is increasingly appearing as a reason cited when refusing planning permission for wind energy development.

PRECAUTIONARY APPROACH

Typically environmental assessments will not forensically examine the impact on the nearest residential properties to a proposed turbine. In the absence of such information, a case officer will adopt a precautionary approach.

DETAILED INFORMATION

One reason is all that is required for a refusal either by the local planning authority or at an appeal. It is therefore key that sufficient detailed information is submitted to demonstrate to the case officer or inspector that relevant affected properties, when viewed objectively in the public interest, will remain an attractive place in which to live with the wind energy development operational.

RESIDENTIAL VISUAL AMENITY STUDY

Such a residential visual amenity test has been rehearsed through a number of Inspectors' appeal decisions.

Undertaking a Residential Visual Amenity Study (RVAS), at the application or appeal stage, provides the opportunity to address this issue by examining the nearest residential properties to establish whether a proposed turbine would have an overbearing or overwhelming affect upon the property's outlook.

A RVAS reviews the hierarchy of the property's elevations and their orientation in relation to the proposals, the degree of fenestration, use of the rooms on each floor, the distance of the property from the proposed development, the views from the property's curtilage including the garden and other areas, the horizontal and vertical arc of view affected by the turbines, and the screening effect of vegetation and built form in the intervening distance.

These are examples of factors that can mitigate and militate against the visual impact upon a property so whilst a turbine may be visible, it may not be so dominant that it would cause an unacceptable level of harm to a property's visual amenity.

TIME AND EFFORT

The time and effort incurred in undertaking the robust forensic approach of a RVAS can help secure planning consents and deliver operational wind energy developments.

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MEETING THE DEMANDS OF THE ENERGY SECTOR

elements, including working at height and platform integrity, FOET, which includes helicopter escape exercises and emergency breathing instruction, and BOSIET, which meets initial offshore safety and emergency response training requirements.



Capturing the sources of energy needed to power the modern world is a sizeable challenge - which places constant demands for expertise on those working to do it.

That is why it is an arena best served when the needs of industry and individual come together so that the right training is provided for each specific working environment.

The best training providers balance experience of running their core curriculum courses with an ability to respond quickly and effectively to changes in industry requirements.

SOUTH SHIELDS MARINE SCHOOL (SSMS)

South Shields Marine School, South Tyneside College, combines these two elements to meet the demands of the long-standing oil and gas industry and the newer, fast-changing and rapidly growing offshore renewables sector.

Training for offshore oil and gas remains one of their key sectors and SSMS, which has established a world-wide reputation for excellence since the 19th Century, is at its forefront in this region and beyond.

EXPERIENCE

It has a wealth of experience in operating high-quality courses, such as MIST, which introduces fundamental safety

And it leads the way in Compressed Air Emergency Breathing System (CA-EBS) training, which became mandatory for everyone travelling offshore by helicopter on September 1, as well as HUET which provides helicopter passengers with an understanding of escape procedures.

OFFSHORE RENEWABLES SECTOR

The marine school has also quickly adapted its vast experience to meet the training challenges of the offshore renewables sector where legislation has grown more rigorous in meeting the safety needs of this new technology.

There has been a steep increase in the number of people required to transfer from vessel to platform and a significant recent development has been Renewable UK (RUK) and Global Wind Organisation (GWO) – the industry bodies responsible for safety – formulating a single programme, Marine Safety Training (MST) that provides the skills to work safely within this field both in the UK and worldwide.

The two-day accredited MST course provides the basic training and competence required for those intending to work in the offshore wind energy sector, addressing the significant health and safety issues.

In marine training it is more than confident that existing standards are being met and new regulations implemented.



RESPONDING TO INDUSTRY NEEDS

For example, it has responded to major revisions of the STCW, otherwise known as the Manila amendments whose new requirements include training in modern technology, leadership, management and teamwork and piracy awareness.

South Shields Marine School also inspires people to specialise by learning specific skills through training in such areas as electrical maintenance and marine installation and controls, which includes instruction in basic control theory.

STATE-OF-THE-ART KONGSBERG FULL MISSION BRIDGE SIMULATOR

These refinements and advances in their extensive programme of training complement major improvements to facilities, boosted to a high degree by a multi-million pound upgrade last year which included the installation of a state-of-the-art Kongsberg full mission bridge simulator.

INVESTMENT

A £3.3m programme of classroom and workshop development of marine workshops and associated classrooms will increase the marine school's capacity for engineering and technology training, including welding certifications, in the years ahead.

PROVIDING WORLD-CLASS TRAINING TO INDUSTRY

South Shields Marine School is a leading provider of training to industry, as evidenced by its recent work with Green Port Hull, in which it successfully delivered navigational assessment and study on the impact of the £165m Green Port Hull project.

Green Port Hull is a landmark moment for the Humber region, promising regeneration and the creation of around 1,000 jobs - 550 at the blade factory and 450 at Green Port Hull.

The marine school re-modelled the 3D geographical area and developed suitable wind turbine installation vessels for the trials, after being approached by ABP Humber. This allowed ABP and Siemens to run berthing manoeuvres as well as full river estuary transits, in order to identify any potential problem areas.

WORKING TOGETHER

Paul Hodgson, Technical and Projects Manager at South Shields Marine School, said: "We are delighted to have been working with ABP, supporting them and partners Siemens with this project.

"South Shields Marine School is a leading provider of training and technical support to industry, as evidenced by our recent work with Green Port Hull, as well as FRSU Jebel Ali, Dubai Supply Authority, Forth Crossing Bridge Constructors Consortium, Henry Abrams and the Aircraft Carrier Alliance.

"Our simulator facilities allowed us to 3D model the port area and a suitable vessel, capable of manoeuvring within Green Port Hull and installing wind turbines.

"These simulation exercises allow the berth designs to be fully tested at the planning stage, prior to construction commencing."

MEETING ROUND 3 REQUIREMENTS

Green Port Hull is planned to be operational to meet Round 3 requirements in early 2016. The start of production at the blade factory is scheduled to be in the middle of 2016 with full production levels reached from mid-2017 onwards.

LONG TERM RELATIONSHIP

South Shields Marine School has had a long and fruitful relationship with the Humber and Hull.

Paul commented: "We have a commitment to the Humber region, providing ongoing training and work for other operators using the river.

"We have worked on many different projects on the Humber over the years. These include trials for Immingham Outer Harbour, Humber Sea Terminal, Able UK, Humber Bulk Terminal and the Grimsby Outer Harbour Car Carrier Terminal which came into service last year.

"As well as Pilotage Training, we work with other Port users, such as P&O Ferries and Cobelfret/ Euroship Services. We have modelled ships for both these companies and they regularly send Masters and Mates to us for Shiphandling and Tug Assistance training."

IMPRESSIVE PROFESSIONAL APPROACH

Gary Clay, a Humber Pilot and Principal Consultant at Extremis Marine, said: "As a long-term customer of South Shields Marine Schools' Simulation Centre, we are continually impressed with their innovative and professional approach to projects.

"With a wealth of simulation knowledge from a dedicated team of backroom and lecturing staff they are one of the few simulation centres in Europe to offer an all-round package with 'in-house' area and vessel modeling coupled with state-of-the-art simulation suites and briefing rooms. A first class centre for marine simulation."

**South Shields Marine School
South Tyneside College**

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NEW UNIQUE MARINE MODELLING FACILITIES

The Rt. Hon. the Lord Heseltine CH was amongst the first to see some of the world's most sophisticated marine modelling facilities in operation recently when he officially opened HR Wallingford's UK Ship Simulation Centre and the Fast Flow Facility at Howbery Business Park in Oxfordshire.

"We can now look at the way waves and currents move sediment on the seabed in deep water at a large scale and understand what this means for fixed or floating structures such as marine terminals, offshore wind turbines, wave and tidal energy devices, telecommunication and power cables and pipelines."

"Modelling large structures and arrays without compromising on scale will help us to reduce uncertainty, optimise designs and more effectively minimise project risks for our clients during the very early stages of a project."

SHIP SIMULATION CENTRE

The UK Ship Simulation Centre houses the latest evolution of HR Wallingford's advanced navigation simulation technology: four real-time ship simulators, including two dedicated tug simulators. Each simulator is a functioning ship or tug's bridge surrounded by a 360-degree simulated environment.



Developments in the ocean can be high risk; fast moving deep water, powerful waves and the ever shifting seabed present significant technical challenges. These new facilities will be used by HR Wallingford to simulate the conditions in coastal and offshore waters, allowing them to assess and improve the way structures perform in the complex marine environment before they are built for real.

FAST FLOW FACILITY

The Fast Flow Facility is the most recent extension to HR Wallingford's extensive physical modelling facilities. The 75m long, 8m wide dual-channel flume can hold a million litres of water, generate 1m high waves and produce fast tidal currents to simulate the way waves, tides, sediments and structures interact.

Professor Richard Whitehouse, Technical Director of the Fast Flow Facility, said: *"What makes the Fast Flow Facility unique is the way we can simulate sediment movement, big waves and fast tidal currents at the same time. No one else can do this, certainly not at such a large scale."*

The four simulators can be run separately or together to allow different vessels in the same simulated environment to interact. They can also link with the six simulators located in HR Wallingford's Fremantle Ship Simulation Centre in Australia.

Dr Mark McBride, Manager of HR Wallingford's Ship Simulation Centres, said: *"Safe and reliable navigation is a fundamental requirement of marine development projects, especially with the growing challenge to access new and more demanding locations. We use the simulators to support the design of ports, harbours and marine terminals, to refine operations in the marine environment and to provide specialist pilot training."*

"Our new simulator suite uses state-of-the-art technology and they combine HR Wallingford's extensive hydraulic modelling capabilities with ship handling models."

"What adds real value for our clients is the support of our expert team of experienced maritime engineers, master mariners, pilots, tug masters, naval architects and software modelling experts, all underpinned by HR Wallingford's broader maritime and coastal engineering capabilities."



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VISION AND FORESIGHT

Dr Jane Smallman, HR Wallingford's Managing Director, said: *"I'd like to thank Lord Heseltine for joining us to open the UK Ship Simulation Centre and the Fast Flow Facility."*

"These new world class facilities are part of a £3 million development by HR Wallingford to extend our internationally recognised expertise in maritime and coastal engineering."

"It's the vision and foresight of our staff that drives these technical developments forward, allowing us to give our clients advice and solutions informed by leading edge science and technology."

HR Wallingford

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DEMAND FOR TRAINING COURSES DRIVES STAFF EXPANSION



Alex Valverde,
dynamic positioning
training instructor.

Alex commented, "Having the operational background is very beneficial when it comes to teaching because there is no better way to direct people and help them learn than through your own experience."

OPPORTUNITY

"When the opportunity came up to relocate to Aberdeen, I did not hesitate to put myself forward for the role. The Aberdeen centre has an excellent reputation, not just within the company worldwide, but within the industry as a whole."

I was very keen to be part of the centre as it continues to thrive.

"I was aware that it was a very busy centre, but nothing could have prepared me for such a high level of demand. We are working with students not just from the UK, but from all over Europe and the United States. They are prepared to travel because of our track record in delivering very high quality training courses."

SPECIALISED TRAINING

Euan Duncan, Training Manager at Kongsberg Maritime Ltd, adds, "Due to the specialised nature of the training that we offer, it can be difficult to recruit DP instructors with the level of expertise and skill that we require."

"We are very fortunate that Alex made the

decision to relocate to Aberdeen after building up a very successful career in Brazil. He will ensure that the training centre is in the best possible position to react to the continued demand for training from the industry, which shows no signs of slowing."

Kongsberg Maritime

[Click to view more info](#)

[Click to view video](#)

SPECIALIST SIMULATOR TRAINING

The company has strengthened its team of instructors due to increased demand for its training courses for personnel in the marine sector. Alex Valverde has joined as a dynamic positioning instructor to deliver training on the firm's K-Sim Offshore (Offshore Vessel Simulator) - a specialist simulator which only a handful of people worldwide can provide instructor training on.

Kongsberg Maritime Ltd has delivered 342 courses at its training centre in Westhill, near Aberdeen, so far this year. This is an increase of almost 40% compared to the total number of courses run in 2013. The number of delegates attending courses this year has also increased by 25%.

ATTRACTING DELEGATES GLOBALLY

Delegates are travelling from locations across the world to access training on the K-Sim Offshore, which is the only one of its kind in the UK. The 3D simulator provides students with a realistic training environment to put into practice theory from the classroom.

He has joined the team at Westhill from Kongsberg Maritime's office in Rio de Janeiro, Brazil.

DIRECT EXPERIENCE

Starting his career as a deck officer on an anchor handling vessel and then a drill ship, Alex worked his way up to 3rd officer DPO and gained direct experience in operating the systems in which he is now instructing.



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SUBFLEX™ Cable Protection Systems

SUBSEA ENERGY SOLUTIONS HAS BEEN FOUNDED AS A DIRECT REQUEST FROM THE RENEWABLE ENERGY INDUSTRY FOR THE NECESSITY FOR INCREASED COMPETITION, REDUCED SYSTEM COSTS AND ENHANCED SOLUTIONS, WITHIN A LIMITED CABLE PROTECTION SYSTEM MARKET PLACE.

DEMAND FOR COST REDUCTION

Subsea Energy Solutions, an ISO9001 : 2008 registered company, has risen to the urgent industry challenge for the demand for offshore wind farm long term sustainability, through means of cost reduction. With industry assistance, Subsea Energy Solutions can significantly contribute towards the reduction of offshore wind farm design, construction, operational, maintenance and de-commissioning costs.

EXPERIENCE & INDUSTRY ADVICE

With our industry and project wide experience, the unique patent pending SUBFLEX™ Cable Protection System offers many unrivalled and unparalleled technical and commercial features.

Subsea Energy Solutions have sought industry advice during the development of the SUBFLEX™ Cable Protection System and taken into consideration many requirements such as purchase cost, rapid offshore assembly, rapid installation, rapid burial, enhanced cable protection, elimination of maintenance requirements, standardisation of components to name just a small selection of features.

CABLE INSTALLATION IMPORTANCE

Offshore windfarm cable installation is a high cost / high insurance claims theatre and it is well documented that 70% of insurance claims from windfarm operators relate to cable damage, so there has never been a greater, more important time, for the renewable industry to come together and support a rapidly emerging company in developing a fully coordinated and fully standardised approach to monopile J-tube & J-tube-less installations.



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ONE SIZE DOES NOT FIT ALL IN THE WIND ENERGY SUPPORT BUSINESS

"It takes special expertise and a lot of experience to deliver the specialist support the renewables sector demands," says Anthony Mollet, GAC UK's General Manager.

He should know – the GAC Group has been providing shipping, logistics and marine services for more than 50 years and has been involved in several major on and offshore wind energy projects in the UK, including Walney 1 & 2, London Array and Westernmost Rough.

That track record has taught Mollet and his colleagues – both in the UK and at GAC offices in more than 40 countries around the world – that there is no 'one size fits all' solution to meeting the needs of the wind energy industry. It takes in-depth understanding of the challenges involved, whether that's in delivering heavy lift equipment for the construction of new wind farms on and offshore, handling all the agency needs of vessels or taking care of crew changes.

INDUSTRY KNOWLEDGE AND UNDERSTANDING

"It's not enough to simply tweak the details of a range of traditional logistics services or classic ship agency support to fit the needs of the wind energy market," says Mollet. ***"The right supplier needs to really understand the industry and the problems and priorities it presents."***

The Group has spent years studying the renewable energy industry and putting the knowledge gained into action. It is currently the only company in the UK that has the multiple expertise and capabilities to provide a wide range of services specifically tailored to the needs of the sector.

ON TIME, ON SPEC AND ON BUDGET

It works its global network, extensive resources and experience in developing and executing complex project solutions to provide safe and timely support to all aspects of the industry. Whether it's a single inland delivery or multinational, multimodal project, they have proven their ability to do the job on time, on spec and on budget.

CHOOSE CAREFULLY

"The well-worn adage 'Let the buyer beware' is just as important when selecting a support partner in the wind energy business as it is when buying a second-hand car," adds Mollet.

"What may appear to be the cheapest offer on paper could well turn out to be a costly choice once the hidden extras, unforeseen circumstances and costs, invoicing discrepancies and other factors come to light. There's also a danger that smaller, single service providers may not have adequate compliance systems in place."

Mindful of the huge range of criteria that have to be met, GAC operates worldwide in strict accordance with a comprehensive Code of Ethics covering everything from whistleblowing to anti-bribery.

Every single staff member is required to complete GAC's in-house Compliance & Ethics course. The Group is also committed to the highest standards related to Health, Safety, Security & the Environment (HSSE), underlined by its stringent global policy. And in the UK, wind energy players have the further assurance of GAC UK's ISO9001:2008, FPAL and TRACE accreditation.

HANDS-ON

Mollet and his team have had hands-on experience of providing specialist services for several key projects. That includes being entrusted with the task of arranging the transportation and delivery of oversized turbines to the Irish Sea, as well as all the ship agency requirements for the vessel that carried them from the Netherlands to Liverpool and co-ordinating the movement of multiple vessels of different types and sizes in and out from busy ports and quaysides.

It was a complex task that required careful co-ordination and constant communication. That project and others like it, allowed the GAC team to demonstrate the value of local presence and expertise.

"We found tremendous benefit arranging weekly meetings with the customers' procurement managers on site to review purchases and performance. Issues could be dealt with quickly and, most importantly, queries about costs and invoices were tackled on the spot. We reduced ageing receivables and allowed the customer to have timely and accurate invoices and receipts from GAC,"

Mollet adds; ***"Such proximity to the operation and dialogue with key personnel allowed relationships built on trust to grow and has ensured the company is at the table for upcoming projects elsewhere."***

RENEWABLE ENERGY SECTOR

The renewable energy industry is an area of growing interest throughout the GAC Group, worldwide. Colleagues throughout the world are following the activities of GAC UK in the sector, with a mind to applying the valuable lessons learned as renewable energy operations develop in their own areas.

While wind farms are popping up in new areas across North West Europe and the Americas, the market is maturing and the number of companies involved in the construction and maintenance is relatively small, compared to other traditional shipping and marine sectors.

Says Mollet: ***"It is essential to understand the customers' strategy and growth. GAC has built its own global network by matching the needs of our customers and positioning ourselves where we believe they will need our assistance and expertise."***



The benefit of wind and wave technology is, for some, yet to be proven. Public opinion is a major concern and where large wind turbines should be located is the source of great debate.

Some projects have failed to be sanctioned because of the wishes of local residents to proposed sites. And yet, a map of the UK shows a significant – and rapidly expanding – number of sites. Wind farms are here to stay and the customer base is growing!

GAC Group

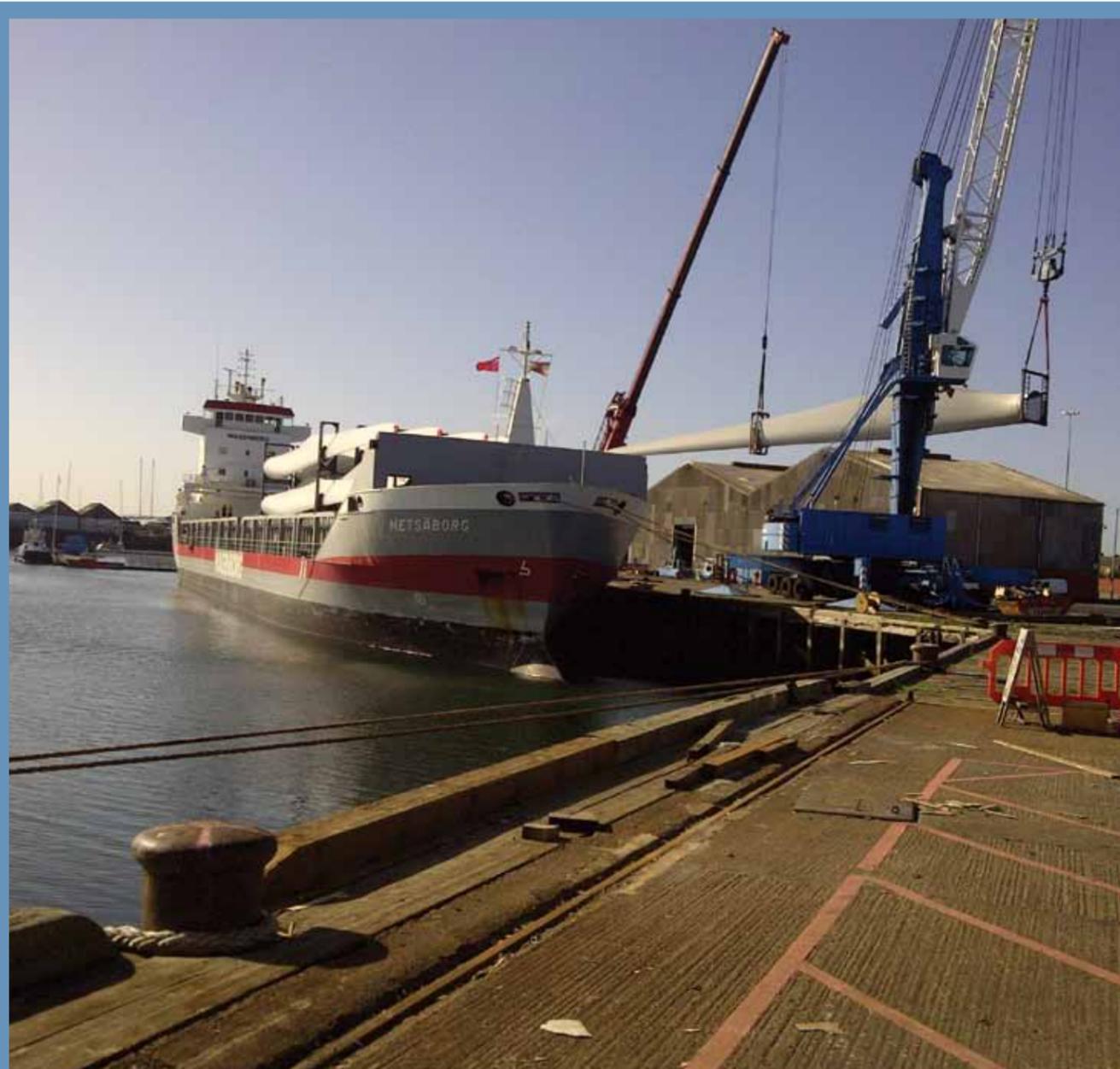
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TODAY AND IN THE FUTURE

Today, the drive to develop renewable energy sources is the focus for many governments and authorities. Developed, wealthy nations which have the means to buy and refine crude oil or import coal are instead choosing to lead the way with alternative technology and experimental scientific theory.

MORE THAN
75 YEARS
 AND COUNTING...

DAN Shipping & Chartering is one of the UK's leading independent ship agents within the power and energy sectors. With a combined experience of over 75 years in the industry DAN handles in excess of 12m tons of dry bulk cargo each year, predominantly coal and biomass.

**WIND INDUSTRY**

Other cargoes handled range from gypsum and scrap to aggregates and project cargoes. The company also has experience in the wind energy sector by handling wind turbines including blades and towers and they are well placed to expand their presence within the wind sector and keep pace with the ever changing environment of the energy industry.

TRUSTED PARTNER STATUS

The ability to rely on a trusted partner to look after your vessel and its cargo in port is vitally important. Some of the world's leading organisations entrust DAN Shipping & Chartering to handle their cargoes and ensure the safe arrival and departure of their vessels, relying on their expertise and strong local contacts to get things done with minimum fuss or delay.

JOHN GOOD GROUP

As part of the wider John Good Group, the company can trace its roots in the ship agency business back to 1833. The John Good Group is proud to represent a portfolio of some of the world's leading shipping lines with an enviable reputation as one of the UK's largest and most experienced independent ship agents.

With its head office in Hull, DAN Shipping & Chartering is ideally positioned to develop its activities in the wind energy sector on the Humber but also handles vessels on a regular basis in Immingham, Port of Tyne, Sunderland, Blyth, Hunterston and Ayr through its own office network. There is vast experience within the wider John Good Group of handling a full range of different vessel types and cargoes.

EXPERIENCE

With DAN's experience and first class reputation in the energy sector coupled with John Good's liner and port agency activities, the John Good Group is well placed to cater for all shipping requirements.

Group Managing Director, Alan Platt said: *"The John Good Group consists of a diverse range of companies allowing us to appeal to a wide range of blue chip customers whilst catering for a varied range of cargo types."*

"Since our acquisition of DAN Shipping & Chartering in 2010, we have become a recognised and respected service provider and partner to a host of leading organisations in the power and energy industry. Handling in excess of 10m tons of bulk cargoes each year gives our customers the confidence that we have the knowledge and expertise to handle their vessels efficiently."

OTHER SERVICES

The John Good Group also offers a host of other services including general worldwide freight forwarding, RO/RO shipping, customs clearance, warehousing and trucking.

The company also has a corporate travel arm of the business – Good Travel Management – that can support business travel needs with a comprehensive travel management service to save time and reduce costs.

DAN Shipping & Chartering

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Are you looking for a specialist service supplier with experience in the wind energy industry?

With 1300+ companies listed, it is the website to find an expert

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THE
 COMMUNICATION
 HUB FOR THE
 WIND ENERGY
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A PARTNERSHIP TO REINVIGORATE THE WATERS AROUND SUNDERLAND

A surge in traffic at a North East port has helped cement a two-year relationship with a major global shipping agent.

Port of Sunderland, which embarked on a masterplan in 2010 to reinvigorate its waters, has seen a rise in the number of vessels sailing into its berths. The increased traffic underlines a growing relationship with Dutch-owned LV Shipping, which opened a local office in Sunderland in March 2012, despite having an operation in neighbouring Teesport.

PORT INVESTMENT

It is expected that, with enhanced handling capabilities following investment in two cranes, one of which is a heavy lift crane, as well as a ro-ro ramp, the port will continue to see the volume and scale of handling projects it fulfils increase.

Matthew Hunt, Director at Port of Sunderland, said that he was pleased the port had been able to validate the shipping agent's decision to open a permanent base on the banks of the River Wear.

CONFIDENCE

He said: "LV's move to Port of Sunderland represented a major vote of confidence in the port, given that - at the time - we were relatively unknown as a port of call for a range of projects that we are now in a position to undertake."

"We have seen real changes at Port of Sunderland over the last four years, and we're starting to see that some of the major investment projects we have implemented - like the improved handling facilities we have, and work completed to ensure we have optimised our storage capacity - are adding real value to our offer. That's hugely encouraging for the future for the port itself as well as the guys at LV Shipping."

VESSELS HANDLED

Since setting up its Sunderland office, LV has worked with Port of Sunderland to welcome vessels including the Maersk Responder for a six-week lay-by; Team Oman, carrying out spooling operations; Peak Bergen, for a steel plate import project; and Sea Hawk, transporting cable reels from Norway on behalf of Reef Subsea.

INFRASTRUCTURE CHANGES

As well as investment in equipment that has bolstered the port's appeal, there have been significant changes to its infrastructure, with demolition projects and strategic land acquisitions to ensure the port is in the best shape to attract further investment. It was announced that work will get started on a new river crossing that will improve Port of Sunderland's links to key trunk roads the A1231, A19 and A1 over the next few months, and the port has also seen its rail connections re-established, some 20 years since the lines into the port were decommissioned.

PORT OF SUNDERLAND

FIRST-CLASS LOGISTICS PROVIDER

LV Shipping is a first-class logistics provider that offers integrated solutions of outstanding quality and operational excellence. Their global logistics network, proven track record, cutting-edge IT systems, in-house expertise and excellent customer service is proof of their dedication to fulfill a client's requirements.

EXPERIENCE

In the past LV shipping have arranged transport, storage, quay wall management and plant hire for installation projects inclusive but not restricted to offshore site surveys, cable dredging and instalment, foundations and topsides.

With an extensive and up to date vendor list they can assist with mobilisations/ demobilisation, project running, crew change, agency services and project cost management. LV prides itself on its ability to complete important tasks even in the most testing circumstances and timescales.

COST EFFECTIVE CHARTERING AND PROJECT KNOWLEDGE

With their in-house Institute of chartered shipbrokers fellows they can arrange cost effective chartering of vessels for equipment required to certain timescales to ensure client's projects run to very specific and integral schedules.

They also have in-depth knowledge of the project, offshore, dry cargo and heavy lift shipping industries, enabling them to deliver a complete ship broking service, can provide a service tailored to the specific needs of each customer, negotiating with ship owners to acquire access to vessels that are competitively priced and meet the individual requirements of the job at hand.

COMPREHENSIVE PACKAGE

LV shipping is able to offer a comprehensive package for shipping and engineering services incorporating...

- Vessel chartering
- Bunkering
- Design and fabrication of sea fastenings
- Lift engineering
- Precision lifting and installation of major packages
- Offshore marine support

LV Shipping & Port of Sunderland





Port Agency
Chartering
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RenewableUK2014 Manchester

Manchester was the venue for the 36th RenewableUK annual conference and exhibition with visitors from all over the world with companies and organisations from the wind, wave and tidal sector displaying at the exhibition.

We highlight the Conference and Exhibition, The Chinn Review, the Blade Repair and Inspection (BRAI) Launch and the ECOWindS Project.

CONFERENCE & EXHIBITION

GUEST SPEAKERS

Speakers included 150 experts speakers on the UK's technical expertise, latest innovations, policy experience and leadership with...

- Political Keynote Address from The Rt Hon Edward Davey MP, Secretary of State for Energy & Climate Change
- Political Panel Debate featured The Rt Hon Gregory Barker MP, Prime Minister's Envoy on Climate Change and Tom Greatrex MP, Shadow Energy Minister
- Business Leaders Debate: What a Difference a Decade Makes

And also included...

- Share Fair featuring Siemens, DONG Energy, Vestas Offshore Wind, Sembmarine and GROW:OffshoreWind
- Dedicated technology streams to Offshore Wind, Onshore Wind, Wave & Tidal and Small & Medium Wind
- Aviation Radar Mitigation Seminar
- Educational seminars dedicated to careers and landowners

The conference saw a high number of quality guest speakers from both inside and outside the industry who gave enlightening and topical insights in to the advances and debates surrounding the industry in 2014.



EXHIBITION

In addition to the large number of stands from a wide spectrum of organisations, the exhibition also housed two special pavilions, one showcasing developments in small and medium wind and the other focusing on wave and tidal energy. The whole exhibition was extremely well attended and allowed delegates the chance to learn more about industry-wide developments and see first-hand the innovative technologies that are progressing.

CAREERS FAIR

The final day of the conference saw the careers fair attended by high numbers looking to find out more about employment in the industry and highlighted the importance of investing in the workforce of the future.

SOCIAL AND SIDE EVENTS

There were also a number of high profile social and side events, including the exhibitors' reception and conference reception and the social highlight of the week, the Gala Dinner Awards, which was hugely successful.

THE CHINN REVIEW THE UK OFFSHORE WIND SUPPLY CHAIN: A REVIEW OF OPPORTUNITIES AND BARRIERS

This is such an important document for the industry that we believed we should reproduce it within our magazine and website for greater awareness.

The below is the Executive Summary – the whole document can be accessed through the QR Code at the end of this article.

EXECUTIVE SUMMARY

Offshore wind has a very substantial role to play in decarbonising the UK's power sector over the coming years. The UK has a vital yet extremely challenging target to

This is expected to grow to over 10GW by 2020, and to be a growing part of the energy mix in the 2020s as the UK decarbonises its economy and works to deliver the newly agreed ambitious EU greenhouse gas reduction targets for 2030.

SCALE OF THE OPPORTUNITY

This independent review set out to examine the scale of the opportunity for the UK supply chain from offshore wind deployment, to understand the supply chain's current capability and readiness to compete, and to explore key barriers. The aim was to make recommendations to industry and Government about a handful of actions that could make a big difference in the near term, and help industry and Government deliver the twin goals of cost reduction and UK jobs and investment.

Evidence was gathered from across the offshore wind industry, with 29 interviews completed and 13 questionnaires submitted and analysed. In the interests of neutrality, the scope excluded those parts of the supply chain where Siemens has a key interest: wind turbine manufacture, substation equipment and wind turbine maintenance.

FINDINGS

What is very clear in the findings is that parts of the UK supply chain have already experienced success: there is a great story to tell on operation and maintenance, array cables and substation manufacture in particular. The first challenge now is to make sure these successful sectors stand ready to meet the demands of the market and maintain their position, through innovation and scaling up to deliver on larger contracts. The second challenge is to seize the opportunities on offer for sectors which, to date, have mainly been supplied from overseas: towers, foundations and export cables.



Matthew Chinn reporting to Matthew Hancock, Minister of State for Business, Enterprise and Energy and Benj Sykes, Head of Asset Management, Dong Energy Wind Power. As co-chairs of the Offshore Wind Industry Council – November 2014.

reduce greenhouse gas emissions by 80% by 2050 compared to 1990 levels, and it is clear that several different low-carbon electricity generation technologies will be needed to deliver this commitment. As part of this transition, the UK is forging ahead with ambitious levels of offshore wind deployment: the UK already has the biggest offshore wind market in the world.

CONTINUED...



CHALLENGES

The evidence revealed a number of barriers which need to be overcome if a strong and sustainable supply chain is to grow in the UK. Different companies within the supply chain described different challenges, often related to the location, size and type of company rather than the product.

However, the main barriers that industry raised cut across all sectors were...

- The need for clearer visibility and volume in the order pipeline and market
- The difficulties facing new entrants without a track record in offshore wind
- The challenges posed by the way risk is dealt with through the supply chain
- The need for industry to move towards a culture which better enables collaboration and the efficiencies which follow
- The need for a clearer support landscape



A series of recommendations are presented, addressing the different barriers. These focus primarily on...

- The need for clarity on the long term market, including a 2030 emissions target for the power sector
- Consistent messaging from Government
- Governments, developers and the supply chain working together to help new market entrants
- Actions on commercial issues, including bonding

RECOMMENDATIONS FOR ACTION

This report goes to the Offshore Wind Industry Council (OWIC). It contains recommendations for action for both industry and Government, with an expectation that these ideas – which have come from the industry itself – will be driven forward through the Council. Much of what was reported to the review team has been said before in recent reports or working groups, showing that action is clearly needed. OWIC needs to act promptly and decisively to drive forward actions that will make a tangible difference to opportunities for the supply chain in the UK.

COLLABORATION

Working collaboratively to deliver this programme and learning lessons from other industrial sectors will help the offshore wind sector in the UK achieve industry-wide efficiencies, cost-reduction and support sustainable jobs and investment.

However, this is a long-term industry involving substantial financial investments and, if the UK supply chain is to have a chance of succeeding in gap areas, the Government has to show its long-term commitment to supporting the market and do so consistently.

BLADE REPAIR AND INSPECTION (BRAI) LAUNCH

The Energy Skills Partnership has been working with RenewableUK's Renewables Training Network (RTN) and SESG to develop a UK-wide standard for Blade Repair and Inspection (BRAI) training. A successful pilot of the BRAI course was held at Ayrshire College for four key Scottish colleges in November, a licensing workshop will commence in late November 2014.

RAISING AWARENESS

ESP commissioned the composites master-class for Scotland's college staff to raise awareness of the significant opportunities presented by composites for the economy and in meeting the wind industry's skills needs. These skills will underpin the longevity and lifecycle of wind turbines. From a college perspective we recognise the need for common industry

standards, this works well across borders as they reinforce technical excellence.

ESP is looking forward to working with RUK and RTN to establish the Intermediate and Advanced BRAI courses.

WORKING TOGETHER

Jim Brown Director of Energy Skills Partnership said: "The Energy Skills

Partnership was keen to work with the RTN in developing these programmes to support the sector. We had already identified blades made of composite materials as a priority and have been working with colleges and blade manufacturers to develop the capability of Scotland's colleges.

"The training modules need to be industry-led and working with RTN was the obvious route. We're delighted to be in a position to support this initiative and look forward to working with the sector through its roll-out."

CATALYST

The Head of the RTN, Patricia Knightley, said: "The RTN was brought into being by the renewable energy industry to act as the catalyst in setting standards and training requirements for the wind and marine energy sectors. Industry has told us that there is a need for training and standards on blade maintenance, repair and inspection. In response we've brought together all those involved to devise a robust standard and set of modules that will address the skills shortages which exist in this area."

RenewableUK

[Click to view more info](#)



ECOWindS PROJECT

A workshop regarding the (European Clusters for Offshore Wind Servicing (ECOWindS) Project was held during the RenewableUK event. The project is an FP7 funded project, initiated by partners representing the four European clusters for offshore wind servicing (OWS)...

PROJECT VISION

To pave the way for new research and for understanding how the costs of offshore wind servicing can be driven down through research, innovation and cross-regional cooperation.

ECOWindS

- South Denmark
- North West Germany
- East of England
- Region Møre Norway

ED'S NOTE

This is just a short note on the project to tee up a much more detailed series of articles and features which will be included within future editions



FUNDING OPPORTUNITIES

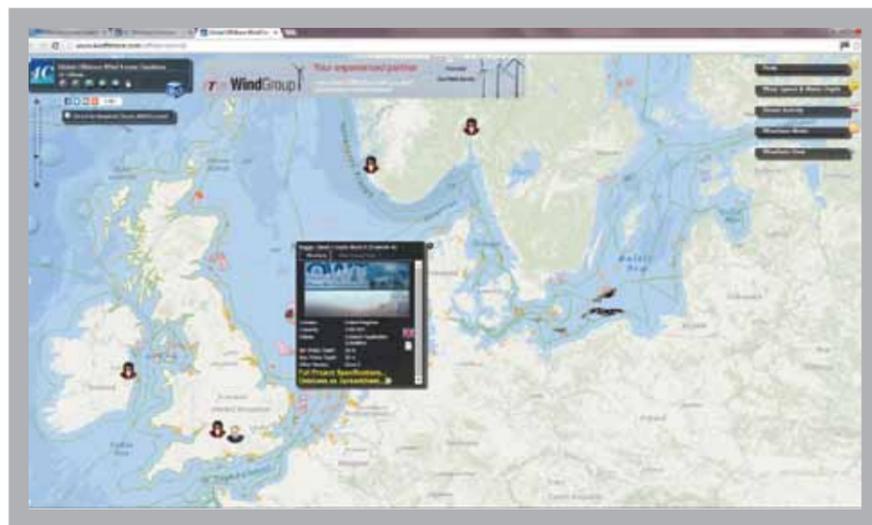
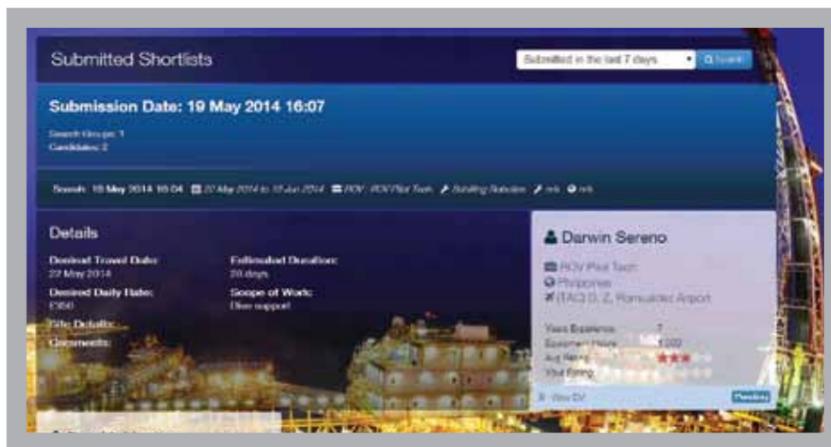
EAST OF ENGLAND SMES TO USE FUNDING OPPORTUNITY AS IMPETUS TO LAUNCH INTO OFFSHORE RENEWABLES SECTOR

SCORE is really making its mark in the East of England with over 20 SMEs across the region now benefitting from grant funding and a further 30 engaged in the project.

LAUNCH PAD

Richard Salmon, SCORE's Project Manager and Business Advisor comments: *"The East of England is brimming with businesses and start-ups with great products and services that benefit the offshore renewables sector and SCORE has acted very much as a launch pad to bring a host of innovative and exciting products and services closer to market."*

"With recent grant recipients based in Essex, Cambridgeshire, Norfolk and Suffolk, companies across the region are realising the opportunity SCORE presents and with funding available until March 2015, we urge companies with a great idea to get in touch."



RECENT SCORE GRANT RECIPIENTS INCLUDE...

- **IV Offshore** – the Ipswich-based company has secured a £30k SCORE grant to assist in the development of a database called 'IV Live', which allows offshore companies, HR departments 24/7 access to search and find contract staff, available for immediate deployment. This new database speeds up the process dramatically by saving HR teams having to call several recruitment agencies to find the type of applicant they are seeking.

James Kennedy, Associate Director of IV Energy, says: *"Securing the SCORE grant allowed us to commit more funds to this project ourselves. Delivering a high quality and efficient service to our clients is of the utmost importance to us and this new database will vastly improve the way our clients can search for particular candidates across the whole market."*

"The grant application process was made very simple by the team and their guidance was very much appreciated in allowing us to secure this funding."

- **4C Offshore** – leading online technical experts and insights company 4C Offshore, based at OrbisEnergy in Lowestoft, has also received SCORE grant funding to take forward its plans to increase the accessibility of its web portal, which contains over 10,000 pages of data and 130,000 fields of information relating to the offshore wind sector, making it the 'go to' place for those in the industry.

The company's website provides real-time data on offshore wind projects, tidal projects, ports, vessels, equipment, turbines, wind farm service vessels, offshore sub-stations and more. Users are also able to access data relating to seabed depths, cable route corridors, cable routes and grid connection points.

Chris Anderson, Managing Director of 4C Offshore remarks, *"The grant application process was really straight forward and very swift, which is exactly what we were looking for. Currently we attract approximately 500,000 visitors a year to our site, but this new development to our offering provides an opportunity to expand our service into the emerging offshore tidal industry, which is now moving to commercialisation."*

- **Wellton Energy** – located at Norfolk's Hethel Engineering Centre. Wellton Energy identified an opportunity in the market to provide on-the-ground assistance to companies seeking to drive forward their expansion or relocation to the East of England. Following extensive research into the potential of the idea, Wellton Energy launched its innovative inward investment service earlier this year.

Jason Brighton, Director of Wellton Energy comments: *"When companies look to relocate or expand, their main aim is to work with a local team that not only understands the needs of their specific industry, but can work with them to overcome the business legalities of setting up a UK operation."*

"The grant has also helped give us the commercial 'push' to create marketing materials to promote this service and plans are now in place to exhibit at the Manchester EIC Connect Show in November."

- **Le Mark** – awarded funding at the end of September, the Le Mark Group, based in Houghton, Cambridgeshire, was granted £8,000 to undertake the launch of its latest range of its Dirty Rigger heavy duty gloves, designed specifically to meet the demanding needs of workers in the offshore energy industry.

Developed in consultation with riggers and engineers working on offshore oil rigs, drill ships and wind farms around the world, the new Dirty Rigger offshore gloves provide protection to engineers against some of the harshest weather conditions nature can deliver.



The SCORE grant will be used to part fund a global marketing launch of its bespoke gloves.

Steve Exon, Non-Executive Director of Le Mark Group comments: *"We are very excited about our offshore range and the SCORE funding we have secured will enable us to undertake a substantial marketing drive, including exhibiting at LDI in November. A high profile entry in to the market will also enable us to steal a march on any competitors planning a similar product."*

"We have been impressed with SCORE on two levels. Not only was the grant application process very straight forward, with help available at every stage, but we have also benefitted from the relationships the SCORE team enjoys within the offshore industry."

"In our case Richard Salmon brokered an opportunity with one of the country's leading access and maintenance companies for the offshore energy sector and arranged for their engineers to test our gloves in the field and provide feedback. Such feedback, prior to agreeing the final design has proved invaluable."

"Whilst Le Mark has been established for over 30 years, SCORE funding is providing incredible assistance to a small division of a £5 million company, which will enable us to undertake a much larger marketing launch than would ordinarily be feasible."

OPPORTUNITIES

Richard Salmon concludes: *"With £25 billion being invested in the East of England's offshore renewables industry by 2025 and a further 800 turbines approved for the region, there are untold opportunities for companies to get involved and become part of the offshore renewable supply chain."*

"As work on East Anglia One is scheduled to start in 2016, the time is perfect for SMEs to think about how they can engage with the most exciting industry sector in the UK today and the SCORE team is on hand able to assist, both in funding and making industry introductions."

SCORE

[Click to view more info](#)

£40MILLION CONTRACTS INVESTMENT

Scottish developers Intelligent Land Investments (Renewable Energy) are negotiating almost £40million worth of contracts with investors from Europe and England for onshore single wind turbine developments.

In the wake of the decision in the Scottish independence referendum, a number of big players in the renewables sector from outside the country have come forward with ambitions to enter into formal partnerships with the company, which is based in Hamilton, Lanarkshire, Scotland.

FOCUS

ILI RE is an investment management company with a focus on the creation of planning gain for landowners and leaseholders through renewable energy projects such as onshore wind generation and hydro projects in Scotland. The company secures prime strategic sites for renewable energy installations and uses its expertise to steer through local authority planning processes. Once this is achieved and the site developed, a guaranteed revenue is created for the client through the government-controlled feed-in tariff programme, under which the power generated can be sold and channelled to the national grid.

PROGRESS

To date, 76 planning applications on behalf of landowners and leaseholders – many of them farmers – have been consented and a significant number of other applications are at different stages within council planning procedures at the moment.

The outside investors come into the equation once the application has been granted. This is due to the fact that many landowners cannot afford the high cost of the overall development, which can run into millions of pounds and which involves the purchase of a turbine, ground excavation and preparation, equipment installation and the construction of other infrastructure and services.

ATTRACTIVE FINANCIAL RETURN

With the approval of the landowner, the investor purchases the formal consent agreement from ILI RE and agrees to pay for all development costs on behalf of the landowner in return for a 90 per cent share of the revenue on a long-term basis. The 10 per cent share for the landowners makes for an attractive financial return without any additional investment for them.

Mark Wilson, CEO of ILI RE, has revealed that five significant organisations – two from Spain and one each from England, Portugal and Germany – whose identities cannot be revealed at this stage due to reasons of commercial confidentiality, have entered the Scottish market and are looking to partner with his company.

REMOVING UNCERTAINTY

He said: *“Now that the uncertainty over Scotland’s future has been settled in the referendum, the renewables market has turned a corner, and investors who were holding back are now committing to numerous projects in our country. I see this as a great time for Scotland, as the momentum for achieving renewable energy goals is really getting traction.*

“We are seeing directly all the good that these turbines are bringing. Not only do they give a much-needed lifeline to the farming community but local contractors are getting the majority of the construction work, meaning significant funds are going directly to the local community. All these positives before we even consider the benefits to the environment.

LANDOWNER BENEFITS

“We have structured a business strategy that puts the landowner first. We understand that word of mouth has been the reason for our growth over the years and we will endeavour to see that blossom.

“Presently ILI RE are working alongside set government strategies to push the growth for single rural turbines within the feed-in tariff. This is an opportunity like no other for landowners to benefit from a government-set feed-in tariff programme for the next 20 years.

“We promise to do our utmost to deliver for all landowners we work with. The ethics and values in our company are paramount. We are the only company of our type in Scotland set up to work specifically with development partners. Everyone else is trying to do the whole value chain by themselves.

“We are very proud of our reputation in the farming and renewable energy community. We have created a brand that we feel people know they can trust.”

COMMUNITY

ILI RE also enter into partnerships with community support groups and charities to spread the benefits of a local renewable energy installation. It is estimated that in the years to come, several million pounds will be shared out in this way. This figure will, of course, rise as further developments come on stream.

ILI have brought together some of the best minds and companies in the industry to ensure success for all involved. Their advisory board comprises energy industry executive William Landels, corporate financier Ramsay Duff, former politician and businessman turned writer and PR executive Michael Kelly, renewable energy technical expert Dr Keith Nicholson, construction industry executive Gordon Ash and land use advisor Gordon McCallum.

RENEWABLE ENERGY INCREASED INTEREST

Mr Wilson added: *“In recent years, the emphasis from governments on renewable energy sources over traditional carbon-based energy sources has increased dramatically. This, in turn, has opened up a new, potentially lucrative, revenue stream for those with the knowledge and experience of relevant markets.*

“The UK is one of the windiest countries in Europe, so much so that we could power our country several times over using this free fuel.”

Launched in 2010, the UK Government’s Feed-in-Tariff scheme guarantees, for 20 years, a set payment in addition to the existing tariff for electricity generated by smaller scale renewable energy developments.

FEED-IN-TARIFF

In April this year, however, the Department of Energy and Climate Change introduced a 20 per cent reduction in the payments for non-domestic small and medium-scale wind turbine developments – the sector into which the majority of British wind turbine manufacturers fall.

But Mr Wilson believes ‘medium wind’ is still a compelling investment opportunity for farmers and landowners looking to capitalise on their assets.

Intelligent Land Investments



HSEQ IS A KEY ASPECT OF O&M WITH TWO MAIN OFFSHORE WIND INDUSTRY FOCUSES – COMPLIANCE & MAINTENANCE AND EMERGENCY RESPONSE.

The first aims to prevent potential incidents and damage by keeping turbines in tip-top condition. Should the worst happen, the goal of the second is to put fully-trained rescue teams with proven trauma experience on site quickly.

Staff and stakeholders well-being is paramount. However, there are also sound business efficiency reasons - plus strong regulator drivers – for effective HSEQ.

OPERATIONS – MORE CHALLENGING

During construction, meeting all these objectives is relatively easy to do. Budgets are large, activity levels high with many skilled personnel, vessels, plus equipment on site.

However, the operational phase is very different and poses problems for many operators. Profitability is a priority. There are fewer skilled workers to call on. Budgets don't stretch to dedicated hospital vessels. Meanwhile, equipment begins to show signs of age, wear and tear.

Many farms face both risks and limited resources. Without innovative solutions they are vulnerable.

REGULATIONS AND DRILLS

The statutory HSE framework goes a long way towards defining what should be provided in the field.

Regular emergency and evacuation drills are mandatory in the oil & gas industry. Wind sector regulations take a different form. While the legal definition of offshore installations does not cover offshore wind farms and the offshore safety case regime (OSCR) and PFEER (prevention of fire and explosion emergency response) regulations do not apply, the Health & Safety at Work Act, MHSWR (Management of H&S at Work Regulations) and CDM (Construction Design and Management) do.

Full statutory details are online. However, the measures make it incumbent on employers to put appropriate procedures in place to prevent serious and imminent dangers and to make competent arrangements for evacuation. Places of safety are required. In addition work cannot resume until dangers are removed. Heli-operations are included.

DURING CONSTRUCTION

CDM applies in the construction phase. For offshore renewable projects, this means providing emergency procedures and arrangements. Information and training must also be given.

Again, preparations for foreseeable emergencies should include evacuation procedures. Working equipment is covered by the arrangements, as are the physical and chemical properties of substances and material on site. Merchant Shipping legislation also applies.

As a result, written emergency arrangements must be in place and tested through drills and other approved procedures. This needs to be followed through to operations.

LEADERSHIP – ALL CHANGE

Meeting these stringent requirements with finite resource is part of GMS's O&M strategy. A frequent question is who is responsible and qualified to make this happen?

During production, emergency response responsibility may fall on a single technician who has been on a GWO course that includes basic rescue at height and first aid training. Clearly, this is inadequate. However, the cost of a dedicated 'ambulance' boat and specialised emergency response teams is expensive.

To meet this challenge, Green Marine Solutions (GMS) has developed ground-breaking 24/7, 365 days-per-year integrated O&M service model. No substitute for experience

This is delivered by multi-disciplined O&M teams trained as all-round operators. Crucially, they also double up instantly to form highly-proficient search and rescue crews already present in field.

Because training is very different from reality, GMS team members are typically ex-forces engineers or emergency services personnel recruited for their professional training and experience in dealing with high stress emergency situations.

Meanwhile they can also ensure that essential safety and evacuation drill training is carried out regularly.

IMPROVING RECORD

The G9 Offshore Wind Health and Safety Association notes that marine and vessel operations, lifting operations and working at heights are the three key activity areas where urgent action is needed to reduce H&S incident severity and numbers. This is a prime focus.

Multi-disciplined teams in field can ensure full offshore compliance for essential life-saving, fire fighting and safety equipment. They also begin to strategically manage-out and minimise high-occurrence incidents that blot the industry's H&S record.

SMALL IS IMPORTANT

By providing a scheduled, documented and fully-certified round of key checks and services, GMS O&M teams ensure that numerous small factors which together make for a safe working environment are combined and covered properly.

A minor example might be untested and unfit fire extinguishers. These create a non-compliance. Extinguishers have to be maintained and inspected periodically, which is awkward - or is it? They can in fact be tested on site by competent teams as part of combined work scopes.

TURBINE TOP TO WATERLINE

Guaranteed davit performance is equally important. LOLER regulations and factors as mundane as keeping chains rust-free in water-tight lockers are vital when equipment must work properly in danger and in drills. CCTV systems must also function properly.

Boat landing point safety and fall arrest systems are critical. Without scheduled O&M servicing, access for other professionals is easily compromised. Substantial knock-on costs may follow.

There are wider human health and industrial safety issues too. The effects of guano are easily over-looked and under-estimated. Bird droppings can carry bacteria and fungi causing infections. The uric acid produced with a 3.0 to 4.5 pH value damages protective coatings and increases corrosion rates. Heli-deck net mesh rots. Aircraft wheels and human feet can slip. GMS controls these deposits – plus algae and marine growth where steelwork is exposed to the sea.

TOP-TO-TOE TURBINE BUNDLE

Proven on C-Power's Thornton Bank project, GMS now offers an ultra-efficient, one-stop-shop bundled top-to-toe turbine package of O&M services and all HSEQ certification. It is carried out in a single visit by a single vessel for one lump sum with no downtime weather costs.

SKILLED TEAMS + IT = DELIVERY

Co-ordination is clearly important too. For teams to move efficiently from site-to-site and prioritise-tasks, GMS has developed the ROAM system. Real-time Operational Asset Management, as its name suggest, produces, gathers and uses real-time 'live' data. It is currently unique and allows hour-by-hour re-scheduling as working conditions change.

ROAM brings two major advantages. Firstly, an immediate real-time track is kept on the position and status of men, machinery and vessels. This makes proactive O&M services possible far out at sea.

Secondly, ROAM keeps an accurate rolling log of all personnel and equipment certification, plus documentation requirements – with RAG (Red, Amber, Green) warnings automatically issued in advance.

Nothing is left to chance.

Green Marine Solutions

[Click to view more info](#)

HSEQ CHALLENGES IN THE O&M PHASE

FIRST GERMAN-WATERS CONTRACT AWARDED

Reef Subsea recently announced that it has been awarded a contract with AREVA Wind GmbH, to provide field support in the Global Tech I wind farm. The charter commenced in October and is anticipated to continue until at least February 2015, with the option to extend the contract further.

SIGNIFICANT PROJECT

This significant project will utilise the Reef Despina, a multi-purpose, environmentally friendly DP2 construction support vessel and will see the Reef Subsea team providing vital field support to AREVA Wind for the commissioning of eighty 5MW AREVA offshore turbines spread over 100km of coastline.

Duncan MacPherson, Chief Executive Officer at Reef Subsea, said: "We are delighted to have secured this work scope with respected client, AREVA Wind GmbH. We look forward to working with AREVA to add value to the Global Tech I project and build a long-term, mutually favourable relationship."

This is the first project Reef Subsea has secured in German waters and we see it as an excellent opportunity to continue building on our exemplary track-record; as well as being the first step in our strategy to ensure we are in the optimum position for future German wind farm projects."

BUSY 2014

This project win will conclude a busy year for the Reef Despina, Reef Subsea recently reported the safe and timely delivery of the Bøyla and Sierra L5 projects which, when combined with this latest assignment has resulted in the utilisation for the vessel for the full duration of 2014, including the forthcoming winter period – a very satisfying achievement.

DELIVERING COST-EFFECTIVE AND BESPOKE SUBSEA SERVICES

Reef Subsea is an established subsea specialist, delivering cost-effective and bespoke subsea services to a range of significant clients.

With operations in the UK and Norway, its experienced and knowledgeable team provides a range of services including installation and trenching of flexible products (submarine power cables, umbilicals and flowlines), post-trench burial of all subsea products, project management, engineering and QHSE management to the oil & gas, offshore renewables, power and telecommunications industries.

Reef Subsea

[Click to view more info](#)



Reef Despina



NEW OFFSHORE SERVICE VESSEL INSTALLATION

Ships Electronic Services (SES) are working with the Humber's premier shipyard, MMS Ship Repair, to supply and install comprehensive electronics systems on the yards new OSV MMS Crusader which has been designed to service offshore windfarms in the North Sea and other European waters.

NEW COMPANY

MMS has also launched a new company, MMS Offshore Renewables, which will operate up to 6 of the new catamarans which will all be built under DNV classification to R1 notation, which enables the vessels to work up to 150 miles from a safe haven. The MMS Crusader has been developed to service a multitude of roles within the renewable energy sector and can support development and construction, operation and maintenance at greater range than many other vessels currently available.

NAVIGATION AND COMMUNICATIONS SYSTEM

To facilitate the long-range effectiveness of the MMS Crusader, SES is supplying and installing a complete navigation and communications system including Navmaster ECDIS, Raymarine Glass Bridge and Super HD Open Ray Scanner, Furuno Radar and Echo Sounder, KVH VSAT, FLIR Thermal Camera, Comnav Satellite Compass, Sailor VHF Radios and a Raytheon Anschutz Autopilot. SES will maintain and service the equipment during the vessels operational role.

EXPERIENCE

The company has supplied and installed navigational electronics and communication systems to the maritime industry for almost 40 years and has exceptional experience in developing systems for vessels such as MMS Crusader, this has been the first destined for the offshore windfarm market.

Managing Director of SES, Stephen Roper commented, "We are sure this will be the first of many vessels we will be working on for this sector in the future. Our experience in the type of electronics needed to keep these vessels working reliably and continuously is second to none."

"We are one of very few electronics companies working to ISO 9001 and it is no surprise that MMS themselves work to the same certifications. The offshore renewables market continues to develop and we are delighted to be part of this expansion."

Ships Electronics Services Ltd (SES)

KITTY PETRA STARTS WORK AT WESTERMOST ROUGH OFFSHORE WIND FARM

As a result of the intense wind farm activity around the shores of the UK, Tidal Transit's personnel transfer vessels (PTVs) are being kept fully employed. Within a week of finishing her contract in the seas off North Wales and returning to the UK's east coast, Kitty Petra will begin work on Westermost Rough Wind Farm off the coast of Yorkshire.

WESTERMOST ROUGH

At a distance of 8k offshore, Westermost Rough, under development by Dong Energy, will comprise 35 6MW turbines and once operational in 2015, will produce enough clean energy for around 200,000 British homes. Kitty Petra will be working for Siemens, the company that is manufacturing and installing the turbines, transporting commissioning technicians to the site. She will work out of Grimsby on a 24 hour/7 day basis, returning to port for shift changes, for at least the next 4 months.

In welcoming this next contract for Kitty Petra, Leo Hambro Commercial Director at Tidal Transit says: "This contract will present Kitty Petra and her crew with a demanding schedule, but one that she is very capable of fulfilling. It will also be an exciting phase for the company, as it is the first time that all our offshore wind farm PTVs will be working in the North Sea. Ginny Louise, Eden Rose and Tia Elizabeth are all working at the Sheringham Shoal Offshore Wind Farm out of Wells-next-the-Sea."

And another thing...

TIDAL BANDITS – NOVEMBER 2014

The male members of Tidal Transit all threw away their razors in support of Movember 2014 – the global campaign to promote awareness of men's health and well-being.

HISTORY

The Movember campaign has been running for ten years. In 2003, two Australian friends discussing changing fashion trends were mourning the passing of the 'mo' - the moustache to non-Australians.

INSPIRATION

Inspired by a friend's mother who was supporting a campaign in aid of breast cancer, they came up with the idea of encouraging men to grow a 'mo' during the month of November to raise money to help the fight against prostate cancer. That year 30 men took up the challenge.

FAST FORWARD

Fast forward to 2013 and there were 4,002,688 participating 'Mo Bros and Sistas' from 21 countries. In ten years the campaign has raised £346 million and funded 770 men's health projects - quite an achievement from hairy upper lips!

Tidal Transit raised **£1,143** And we congratulate them for their efforts in taking part.



Tidal Transit supplies purpose-designed charter personnel transfer vessels (PTVs) to the offshore wind energy industry, and employs 33 men in various capacities.

Commercial Director Leo Hambro is behind the campaign, and says: "This is the first time Tidal Transit, as a company, has taken part in the Movember Campaign and our team of 'Tidal Bandits' are fully behind it."

Tidal Transit

[Click to view more info](#)

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Kitty Petra

NEW WIND TURBINE GEARBOX OIL

ExxonMobil introduces new synthetic gearbox oil backed by seven-year warranty for main wind turbine gearbox applications.

Next-generation turbine gearbox oil can help maximise equipment reliability and availability – this is the first wind turbine gearbox oil backed by seven-year warranty, certified for aquatic non-toxicity applications by International Maritime Organisation (IMO).

WIND ENERGY HAMBURG

Recently at the 2014 Wind Energy Hamburg trade show in Germany, ExxonMobil Fuels & Lubricants redefined guaranteed wind turbine gearbox lubricant performance and protection with the introduction of Mobil SHC™ Gear 320 WT – the company's newest high-performance synthetic wind turbine gear oil.

WORLD FIRST

As the industry's first gearbox lubricant to be backed by a seven-year warranty, Mobil SHC Gear 320 WT is formulated to help deliver outstanding protection for critical turbine components over long oil-drain intervals – a critical consideration for wind farms, which often operate in harsh climates and remote locations.

EXTENSIVE TESTING

In extensive bench and rig testing, Mobil SHC Gear 320 WT has shown the ability to deliver the specific, key performance benefits needed to support wind turbines operating in a wide range of onshore and offshore conditions, including...

- Outstanding protection against micropitting and wear
- Reliable foam-control performance
- Exceptional water tolerance
- Superb oxidative stability and excellent viscometrics, even at temperatures as low as -45° Celsius (-49 Fahrenheit)

TEST RESULTS

"With its exceptional testing results and our unprecedented seven-year warranty, wind turbine operators can have peace of mind in the advanced formulation and performance capabilities of Mobil SHC Gear 320 WT," said Rainer Lange, Mobil SHC Brand Advisor-EAME, ExxonMobil Fuels & Lubricants.

"And as the operational capacity of new generation wind turbines soars from single to double-digit megawatt power, we are certain that Mobil SHC Gear 320 WT can help future-proof investments in new wind technology."

Subject to the terms and conditions of ExxonMobil Fuels & Lubricants' seven-year limited warranty for Mobil SHC Gear 320 WT, the company will bear any costs required and adequate to repair and/or replace any equipment damaged as a result of a lubricant defect or malfunction.

ExxonMobil

[Click to view more info](#)

Gear and hydraulic oil changes on wind turbines onshore and offshore across Europe and beyond.



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THE REQUIREMENT?

A clean sheet of paper

In 2008 C Speed took a clean sheet of paper and designed a radar system to mitigate wind turbine clutter for the benefit of airports and wind developers in the United Kingdom.

The company's engineering team focused on meeting the stringent requirements of governmental aviation regulators, commercial airports and military aerodromes. In addition, while the team would incorporate state-of-the-art technology, it would still need to be affordable for its aviation customers to acquire, integrate, operate and maintain -- including many that were anticipated to originate from the wind development community where radar technology was unfamiliar territory.

LONG HAUL

After months of work, C Speed's team agreed on a set of requirements that would result in an S-band, solid state, primary surveillance radar that would employ a traditional scanning antenna array. LightWave Radar was born.

In May 2013, nearly five years after setting out to design and build the world's first wind turbine clutter mitigation radar system, C Speed delivered, under contract the first LightWave Radar production system to Manston, Kent's International Airport.

In July 2013 Infratil Airports lifted its aviation objection of the developers project and in August 2013 the UK's Department of Environment and Climate Change (DECC) granted consent for the building of the developers wind farm because of LightWave Radar's ability to mitigate the clutter.

FAST FORWARD

Today it remains the first and only mitigation radar system for air traffic control that does not require terrain screening that has been purchased, installed, and integrated in the United Kingdom. Regardless of any other radar provider's claims of success or remarkable performance, no other radar or 'solution' provider in the world has successfully achieved this accomplishment.

In fact, the UK and EU landscape is filled with airports that have radar systems from the leading ATC surveillance radar companies in the world whose systems do not mitigate wind turbine clutter issues as they were advertised. And it was this situation, in part, that drove C Speed's team to pursue this market and to capture it.



1 First, a 'flash bulb' type radar, one that transmits an omni-directional beam with multiple 'listening' or receive beams is designed to just look up from within a wind farm. You will see them locating one radar in each wind farm which generates a much higher cost, is handicapped by a severely limited range of only 5 nautical miles and is massively challenged by requiring the airport to accept multiple data feeds which is highly undesirable. Also it is one of the most easily jammed radars that exist because while it is always emitting a pulse, it is also always listening. And when you are always listening, you will be jammed.

2 Second, it operates at L-band which is very risky as all airports operate their ILS at L-band as well. When the ILS is impacted by a nearby L-band emitter, aircraft experience a very dangerous situation. For this reason, L-band radars are traditionally employed for long range, en-route radar systems and are located away from a terminal airport.

3 Another X-band provider has resorted to 'blanking' techniques to remove clutter where turbines are present, however this creates holes in the coverage volume. And, they readily acknowledge on their own website that because they have to resort to 'blanking' to remove the turbine clutter, their probability of detection (the standard measure of a radar's ability to 'see' a target) drops all the way down to 58%. As such, seems unlikely to be accepted by the regulators as you must demonstrate predictable performance with a probability of detection of at least 80% and often 90%.

INDUSTRY STANDARD – S-BAND

The company's decision to design a traditional scanning radar that operates at S-band was driven by the fact that it continues to be acknowledged as today's industry standard. It has been globally adopted for over sixty years by aviation customers around the world. Every terminal radar at a major airport in the world operates at S-band. They do not operate at X-band, L-band or C-band.

GETTING DOWN TO DETAIL

There are scientific reasons for S-band being the standard. As well, it is the most cost-efficient and least susceptible to jamming than any other type of radar. And by operating at S-band, impacts from weather such as rain and snow are negated while X-band systems are significantly degraded.

Ask any air traffic controller what happens to their X-band surface movement radar when it rains. They will tell you they lose the ability to see vehicles moving on the aprons of the airport. Also X-band is not recommended for use at an airport location per the UK's Civil Aviation Authority's guidance on terminal surveillance primarily because the time you most need a radar is when you cannot use your own eyes. When there is heavy precipitation and when it is dark how can you operate an airport if you cannot see aircraft every time it rains?

ATTEMPTED ADAPTATIONS

While some other radar providers in the market have attempted to adapt other radar technologies to the wind turbine clutter mitigation market, they have still not seen success for several reasons.

TODAY AND THE FUTURE

Today, with multiple installations in the United Kingdom and the United States, LightWave Radar is now allowing airports and wind developments to co-exist as was planned five years ago. With LightWave Radar the issue of wind turbine clutter is now officially over.

David L. Colangelo
C Speed LLC

[Click to view more info](#)

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CHANGING THE WORLD OF RADAR

Rob Abbott, Aviation Director at Aveillant, UK-based radar company, explains how a key application for Aveillant's 3D Holographic Radar™ has been wind farms, to eliminate the effect that wind turbines have on air traffic control radars.



Solutions have traditionally focused on the problems caused by wind farms, rather than looking at the inability of radars to differentiate and remove wind turbine 'clutter' from images used by operators.

THINKING OUTSIDE THE BOX

Rob says: "What if, rather than charging across the landscape to fix the wind farm, which in the last 10 years has led to raising aerial heads, hiding turbines behind a hill (known as terrain masking), painting them with radar suppression material or just blanking them out on the radar screen – what if we turned around, walked back to the root of the issue and saw the radar as the problem? Where would we be then? Exactly where Aveillant is today."

Masking and blanking the area above and around wind farms is not the answer, although up until recent times this has been one of the only fixes available to an Air Navigation Service Provider (ANSPs). This doesn't provide an accurate picture of airspace and reduces the coverage required, contrary to the needs of an industry that has to be risk averse and needs to operate safely and safeguard airspace in order to facilitate the European aspirations of flexible airspace usage.

HOLOGRAPHIC RADAR ANSPS

These approaches are sometimes accepted as 'good enough' because they are all that's available and there is intense pressure to enable wind farm developments; however, in reducing risk, aviation is duty bound under the principles of ICAO safety management to use the As Low As Reasonably Practicable (ALARP) approach.

Even recent advances in standard radar technologies, which look to reduce the impact of turbine break through, still mean the aircraft are not presented to the display if they are co-incidental to the turbines being removed in that location. The safety argument becomes one of probability of loss, rather than detection.

Now with Holographic Radar ANSPs can, for less overall cost, have full, unrestricted coverage with no gaps due to blanking or masking, which begs the question, why would they choose anything else?

MAJOR ADVANCE

3D Holographic Radar is a major advance on the traditional rotating radar. Holographic Radar provides accurate measurement (or time on target) 100% of the time compared to rotating radar which is only on target 1% of the time. Astaring, static array radar, Holographic Radar provides a constant view of airspace at all times, never losing sight of the target. Through intelligent characterisation of all objects in its range using hyper fine



Doppler information, the radar can detect, differentiate and selectively remove clutter such as wind turbines, motorway traffic or trains, providing a clutter free view of what the operator wants to see.

PROGRESS

Rob continues: "For the past four years, 3D Holographic Radar has been in development and it is now one of only two mitigation solutions with safety cases underway in the UK. In 2013, we held public trials of the radar at Prestwick Airport, where it was independently assessed to have a probability of detection above the wind farm of above 99%, compared to Civil Aviation Authority (CAA) CAP 670 recommendations of 90%.

"At the site, our 3D Holographic Radar also continued to operate in severe storms with winds in excess of 90 miles per hour. This and our independently reviewed verification methods, has proved to the industry that Holographic Radar is not only extremely robust but can also easily achieve CAP 670 compliance."

It is not beyond the realms of possibility that excessive use of S and X-band to do a task which can be achieved with only 2 Mhz of L-band could cause issues in delivery of contracts which need to be safeguarded for 25 years in order not to jeopardise either operation of the airport or revenue for the wind farm, especially in an environment where people are not comfortable in discussing where liability for these potential future charges should lay.

INDUSTRY DECISION

Rob continues: "We are executing a contract with the CAA to demonstrate the ability of Holographic Radar to provide a spectrum-efficient alternative to S-band primary air traffic surveillance radar. The future looks exciting.

"The key now is to let the industry decide. Does it want to remain in the legacy world of conventional radar affected by clutter such as wind turbines or invest in a new approach? The feedback we are receiving from the market is that new technology is required, radar has to be fixed."

PROOF OF THE PUDDING

Rob concludes: "We are often told that there is too much risk, a conventional radar is risk-free. I know at least four airports who would disagree, with some radar installations taking longer than three years to gain approval.

Every project has risks and it is how you manage these risks that matters. Sometimes those people passionate enough to think they can change the world actually do. As Steve Jobs said, 'The point is that new technology will not necessarily replace old technology, but it will date it. By definition. It will eventually replace it'. Thank you."

Rob Abbott
Aviation Director
Aveillant

COST EFFECTIVE

Aveillant's 3D Holographic Radar has been developed to be more cost effective across its lifecycle. It outlives the traditional PSR and without any moving parts, maintenance is reduced, simple and can be performed without any disruption to performance.

Commercially available now, 3D Holographic Radar is being implemented across the UK and further discussions are underway with many airports and ANSPs across Europe. It's scalable to meet all coverage requirements, from small deployable units to regional solutions.

L-BAND

Rob says: "Our spectrum-efficient radar technology operates in L-band, as opposed to the congested S-band commonly used by the aviation sector and MOD. S-band is a sweet spot for mobile data transmission and so is in high demand by mobile phone operators. Ofcom is working to release 500MHz of radio spectrum below 5GHz, including 100MHz of S-band spectrum by 2020.

"This could leave many airports needing to modify or replace their radar with a difficult choice. The solution will not be to relocate wideband radars into L-band, there isn't capacity in the band. Even with an optimistic six month project to replace many of the elements of an S-band radar, the problem will be increased due to loss of operation or mitigation cover during the period. A wind farm lifetime is 25 years and airports need to ensure any potential risks during that lifetime are covered, including changes to the wider ATM system, legislation and wind turbine design, changes like these could cause some 'good enough today' mitigations to fail or at the best be less effective."

TELECOMMUNICATIONS TERMINAL EQUIPMENT DIRECTIVE (R&TTE)

In addition to the spectrum release programme the replacement of the current Radio and R&TTE 1999/5/EC by the Radio Equipment Directive (RED) is now underway and will be completed June 2017. Unlike the R&TTE the RED requires all equipment, including radar, to justify their use of spectrum and to be compliant.

HOW RADAR CLUTTER CAN HELP MITIGATE THE IMPACT OF WIND TURBINES

The term 'clutter' is often used by aviation stakeholders when referring to wind turbines, and the potential impact they can have on Primary Surveillance Radar (PSR) systems. You may be forgiven therefore for thinking that clutter is somehow a modern problem that is unique to wind turbines.

HISTORY

In fact, the problem of clutter has existed from the time of the first radar experiments in the 1930s. Clutter is by definition any unwanted reflected signals of sufficient magnitude to impede the job of detecting targets (i.e. aircraft), and in the real world an awful lot of things reflect radar signals.

Furthermore, it's not just large structures that cause clutter. High ground, buildings, road vehicles and even birds all have the potential to produce clutter, which the radar has to manage.

AVIATION RADAR

It's not surprising to learn that various innovative techniques have been developed over the years to allow primary radar systems to dynamically manage clutter and reduce the impact it has on radar performance. For aviation radar, a useful technique is the ability to separate the clutter according to whether or not it is from a moving object.

This is possible by looking for small changes in the frequency of reflected signals as a result of the Doppler Effect, and is referred to as Moving Target Indicator (MTI) filtering. As the majority of clutter is from non-moving objects, this technique vastly reduces the amount of clutter the radar has to deal with. However, this technique is far from perfect as the filtering process does not occur at the front end of the receiver chain, and hence strong signal clutter (from non-moving objects) can swamp the MTI filter.

REDUCING CLUTTER

For this reason it is essential to reduce the amount of clutter in the first place, and the only way to control this is through the design of the antenna. So, as well as producing a beam that is narrow in azimuth, radar antennas will also have a vertical pattern that is aligned to be above the horizon and reject (to as greater extent as possible) signals that are at low elevation angles.

Furthermore, the two-way nature of the radar antenna means that any reduction in the amount of energy transmitted by the antenna at low elevation angles is effectively doubled in so far as clutter reflections from objects located on the earth's surface.

SO WHY IS THIS IMPORTANT?

Many wind turbines are sited at low elevation angles relative to radar antennas, and are far from the only source of clutter that the radar will see. Due to the local clutter environment (irrespective of wind turbines) most radar antennas will operate with an upward tilt angle to reduce the amount of clutter they 'see' in order to ensure they perform efficiently.

The tilt angles and artefacts of the radar beam pattern are too detailed for airports and radar operators to take account of in their desktop assessments, so very often wind turbine planning applications receive objections that appear to be clear cut and indisputable. The reality is often very different.

With our ability to measure radar signals in the airspace immediately above a proposed wind turbine site we can clearly see the variation that occurs with height due to the antenna's vertical beam pattern. The results consistently show what has been described here, i.e. the need to focus the radar's energy into the sky not the ground to avoid clutter.

Furthermore, by being able to measure the strength of the actual radar signal at blade-tip height we can more accurately predict the amount of reflected signal that will be returned to the radar receiver, which will almost certainly be less than assumed in any desktop assessment.

REASSURANCE

This level of information can reassure the radar operator about the likelihood of detection, and help overcome objections.

So, if you have a wind turbine that has received an objection due to radar issues, it is entirely possible that clutter turns out to be the thing that helps rather than hinders you.

Aerostat

UNDERSTANDING THE ISSUES OF WIND TURBINE CLUTTER

Hearing the words 'Wind turbine clutter' is enough to send shivers down the spine of any wind developer or Air Traffic Controller (ATC). For many years, the wind and aviation industries have been trying to solve the problem that has held up or prevented many wind developments, as well as affecting radar and its technical capabilities. So what exactly is 'clutter', how does it affect radar and what is the effect of multiple turbines? This article presents an overview of the issue with a summary of possible mitigation solutions.

This could be...

- Give avoiding action and pass on the traffic information
- Pass on the traffic information and give avoiding action if requested

In controlled airspace, ATC operators are often able to disregard wind turbine clutter.

If a wind development consists of multiple turbines, then the radar may interpret the multiple clutter sources as a 'track'. A track is initiated by a contiguous set of three or more individual blips on a radar screen. This means that the radar displays a track



WHAT IS CLUTTER?

Wind turbine clutter is the appearance of unwanted radar returns on the operator's screen that are caused by detectable wind turbines. On standard primary surveillance radar (PSR), this clutter could be interpreted as a hovering helicopter, or an aircraft flying in and out of the radar's detectable range. Clutter is also sporadic in nature and the detectability of wind turbines will depend on a number of factors including wind speed and direction, turbine size and the intervening terrain to name just a few.

TAKING APPROPRIATE ACTION

In accordance with CAP 493- Manual of Air Traffic Services Part 1, it is stated that a 'a position symbol which cannot be associated with an aircraft known by the controller to be operating within the airspace concerned shall be considered to represent an unknown aircraft.' The action taken by a radar operator will vary based on the category of airspace and its proximity to known aircraft. In general, ATC may consider the area of clutter, alert a pilot and then decide on appropriate action.

that, to a radar operator, looks like that an aircraft transiting airspace. In this instance, some radar will estimate bearings and speeds for several rotations of the radar even if the turbines cease to be detectable. Again, a radar operator may choose to take or offer appropriate action to pilots in the vicinity of the clutter.

FINDING A SOLUTION

In some instances, mitigation can be applied to remove the clutter from the radar screen. Both technical and non-technical solutions exist, all with various benefits and drawbacks. The main solutions are presented briefly below. It is important to consider that not all solutions will be viable for a proposed wind development.

Layout Optimisation – by assessing the intervening terrain and landscape obstructions, it may be that a turbine can be re-located to remove it from line of sight to a radar. Alternatively, a reduction in tip height may also produce the same result. A combination of these techniques can be used to ensure that the largest possible turbine can be developed without affecting the surrounding radar infrastructure.

Blanking – in some instances, it is possible to remove the area of clutter from the radar operator's screen in the form of a blank. The blank removes the area of clutter but also prevents new tracks or continued tracks from being shown in this area of airspace. This solution is therefore not viable in areas of operationally sensitive airspace.

Radar Infill – this solution involves taking the feed from another radar which cannot detect the returns from the wind turbine. This feed can then be 'patched' in over the top of the affected radar's display, showing the now unaffected airspace. Aircraft returns can now be detected and continued through this area of airspace.

Clutter Tolerant Radar or Software/Hardware Updates – some current radar and those in development have or will have the ability to distinguish the difference between wind turbine returns and those from real aircraft in the surrounding airspace. Using this data, the radar can then present the information in various ways.

THIS INCLUDES...

- Blanking the radar returns whilst showing aircraft returns
- Dimming the clutter associated with the wind turbines whilst also showing aircraft returns
- Showing the clutter returns from the radar at a very high resolution, thus less of the radar operator's screen is subjected to wind turbine clutter, allowing for a clearer picture of the airspace

There are number of wind turbine radar mitigation technologies being developed that are likely to be the next technological milestone for the mitigation of new wind developments on existing radar. These technologies however are yet to gain approval from the Civil Aviation Authority (CAA). If this were to happen, then it is likely that the wind turbine radar issue would become less of a problem in the UK.

IN SUMMARY

Wind turbines can produce clutter, an intermittent distraction for air traffic controllers and potential safety hazard to aviation. There are a number of mitigation solutions available to wind developers and aviation stakeholders – these will become increasingly relied upon as the number of appropriate site locations without radar constraints reduces.

Pager Power

THE BALLAD OF FURTHER DOWN THE LINE PART 1



We left behind the them and us –
Divisions in the villages,
Uncivil tongues and civic fuss,
The laws of privilege –

To tax the molecules that rush
And pay their dues without a fuss
That rush for no good reason, but
The laws of physics say they must.

The energy that's everywhere-
We took its measure, learned its worth.
We pluck it from the vivid air,
We suck it from the living earth.

Now panels tilt and turbines stand
familiar reassuring sight –
around the town, across the land
there will be heat and light tonight.

And laid in fields or stood in rows
Slim sentinels stand surety –
Exposed as they themselves expose
The myth of landscape's purity.

On country acre, city roof
Alert, unblinking compound eye –
And standing tall without excuse
Regret-me-nots against the sky.

Matt Harvey, Poet



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