



WindEnergy

NETWORK

COMMUNICATION HUB FOR THE WIND ENERGY INDUSTRY

**UNEXPLODED
ORDNANCE**

**SPOTLIGHT
ON EAST OF
SCOTLAND**

**SERVICING
OFFSHORE**





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'SPOTLIGHT ON' THE EAST OF SCOTLAND

Our regional focus in this edition features the East of Scotland. We visited the area recently and there is a very positive atmosphere.

As you will see it is a very substantial feature and the overall theme is one of excitement and forward thinking which will ensure Scotland is at the forefront of the wind energy industry – other specific areas of Scotland are planned for future editions.

MOVING ON

We keep hearing of companies and organisations merging, taking on staff and also moving to larger offices, which is great news for the industry generally.

We don't like to miss out so we have moved too! – hence the new image of your editor in front of our new offices.

ENERGY BILL AND THE GREEN INVESTMENT BANK

With the recent publication of the Government's Energy Bill and the official launch of the Green Investment Bank, the industry has certainly been given a substantial boost.

We have received many comments from various organisations so we have selected the most informative to give our readership a balanced view within the industry in this edition's lead article.

SERVICING OFFSHORE WINDFARMS FEATURE – PART 1

We have received so much interest to this subject area that we decided to split the feature in to 2 separate parts. The breadth of services and skills available by the companies involved is considerable.

UNEXPLODED ORDNANCE (UXO)

Rather a daunting subject area and one which we were asked to cover because of its importance within the industry. As well as the subject area giving us a great cover image we feature articles and guidance from our experts on the necessary tasks involved.

MAGAZINE AND WEBSITE INTERACTION – QR CODES

You will notice that we have changed our pink and green flashes indicating more information online. QR codes have been substituted which means that you can scan the code with your smart phone and it will direct you to the featured company/organisation micropage held within our website so that can learn much more in all sorts of formats.



WIND ENERGY NETWORK SKILLS GAP INITIATIVE

We continue in this edition with 2 areas of interest...

- A general area where educational establishments are making considerable progress
- Our next target area – Universities

WIND INDUSTRY CAREERS (WIC) STEERING GROUP

Our industry steering group met for the first time during RenewableUK's event in Glasgow recently. Strathclyde University was the very apt venue for the inaugural meeting and we pass on our thanks for all present.

The first meeting was merely to discuss the issues and set policy for moving forward – notes on our discussions will be circulated in due course with a further meeting scheduled for February 2013 in London. We will keep you informed on further developments.



D. McGilvray

Duncan McGilvray
Editor | **Wind Energy Network**

www.windenergynetwork.co.uk

UXO

UNEXPLODED ORDNANCE

Cover Image: **Courtesy of Ramora UK**

The cover image was supplied by Ramora UK – quite a stunning image we hope you will agree. We have been discussing this subject area with prospective contributors for some time now and thought it worthy of a special feature.

Articles within the feature range from general information to an actual case study following the procedures necessary to make safe UXO found on the ocean floor – an occurrence which happens more often than the layman thinks.

SPOTLIGHT ON EAST OF SCOTLAND

A wide range of articles from small companies to multi-nationals as well as organisations, educational establishments and membership groups are featured.

We were asked to cover the whole of Scotland, however we found that there was so much going on that we had to split the area into 3 parts, to give interested contributors the opportunity to get involved.

We will therefore be covering the West of Scotland and the North of Scotland in future editions

SERVICING OFFSHORE WINDFARMS – PART 1

This growth area has such long term potential in the industry, that we felt it necessary to feature in more detail and it has proved to be with far too much editorial to fit into one edition.

Part 2 is scheduled for the next edition.

Duncan McGilvray
Editor | **Wind Energy Network**



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ENERGY BILL AND THE GREEN INVESTMENT BANK A POSITIVE POINTER IN THE RIGHT DIRECTION

With the recent publication of the Government's Energy Bill and the official launch of the Green Investment Bank, the industry has certainly been given a substantial boost.

We have received many comments from various organisations so we have selected the most informative to give our readership a balanced view within the industry.

As mentioned in our last edition we will be introducing a new Finance Feature to the magazine and we look forward to bringing you advice and helpful information from our experts in future editions.

GREEN INVESTMENT BANK

Earlier this year the Bank was established as a public company, UK Green Investment Bank plc. Following state aid approval from the European Commission last month it is now operational as an independent bank and open for business.

In the period before state aid approval for UK GIB, investments have been made on commercial terms by BIS's UK Green Investments team (UKGI). To date, UKGI has committed £180 million to specialist fund managers to co-invest equity in smaller waste infrastructure, energy from waste, and non domestic energy efficiency projects. Assets built up by UKGI have transferred to the UK GIB.

Department for Business Innovation & Skills

Vince Cable, Business Secretary

"The Green Investment Bank - a key coalition pledge - is now a reality. It will place the green economy at the heart of our recovery and position the UK in the forefront of the drive to develop clean energy."

"Three billion pounds of government money will leverage private sector capital to fund projects in priority sectors, from offshore wind to waste and non domestic energy efficiency, helping to deliver our commitment to create jobs and growth right across the UK. Having the headquarters in Edinburgh is a powerful vote of confidence in the Union, and a testimony to our commitment to helping Scotland lead the green revolution."

Edward Davey, Secretary of State for Energy and Climate Change

"The Green Investment Bank will help attract the capital required to allow the green economy to blossom, encouraging investors to market and kick-starting low-carbon and energy efficiency projects. In combination with our electricity market reforms, there will be lasting economic benefit as a result, with new expertise and jobs created, that will give the UK a competitive edge."

Lord Smith, UK Green Investment Bank Chair

"The Green Investment Bank has the potential to be a game-changing component of the UK's low carbon economy, and a profitable centre of excellence in specialist and renewable investment.

"Over the coming months and years, I am confident that our excellent team will put its many years of expertise to work on building the foundations of that sustainable economy, and facilitating the important investments that will ensure its long-term good health."

www.bis.gov.uk

REA Chief Executive Gaynor Hartnell

"We are pleased that the first investment is a bioenergy project. We hope that biomass and waste-to-energy – as well as offshore wind – will form a significant component of the Bank's activity. It is important to get as much leverage as possible from the initial £3 billion and investment in a diverse portfolio of renewable technologies will be helpful. As the Bank's funding expands in future, it would be fantastic if it could follow in the footsteps of the German state-owned bank KfW."

www.r-e-a.net

Michael Moore, Secretary of State for Scotland

"The UK Green Investment Bank is now ready to have a real and positive impact on investment in our green and renewables sectors that will take them into new areas and opportunities. We have the best of both worlds: a headquarters in Edinburgh, at the centre of Scotland's thriving businesses and asset management, coupled with a team based in London, the world's leading financial centre.

"The next step is to put that expertise into action and mobilise the additional investment we need to take the UK towards a greener economy. This is the first bank of its kind in the world and this government has delivered it for Scotland and the rest of the UK."

Dr Gordon Edge RenewableUK's Director of Policy

"Now that we've been able to read through the long-awaited details, it's clear that the Bill will create a strong framework for investment. RenewableUK is looking forward to refining those details with the Department of Energy and Climate Change during the Bill's passage through parliament."

"So far this bill is on track and on schedule, but we can't afford any slippage if we are to avoid a hiatus in investment around 2017, when the financial support mechanism switches from the Renewables Obligation to Contracts for Difference."

"The Bill provides welcome clarity on how CfDs will be allocated, reducing the financial risk to developers. We also welcome the move to set up a Government-backed body, or counterparty, to write the contracts. This will decrease risk and lower the cost of capital. On initial reading, there are some other terms which may need further clarification – for example we want to make sure that if any significant changes are made to the regulatory environment in the future, developers who've signed contracts should not lose out financially."

www.renewable-uk

Maf Smith, RenewableUK's Deputy Chief Executive

"The opening of the Green Investment Bank comes at a crucial time for the renewables sector, the day before the publication of the Energy Bill which will set the framework for the entire energy industry for decades to come. Today's unequivocal assurances on investment, from some of the biggest hitters in the Cabinet, provide further tangible proof that the renewables sector is regarded by those at the heart of policy-making as one of the main engines for growth. We trust that a similar message will be forthcoming in the Energy Bill so that we can deliver more than 88,000 jobs in the wind wave and tidal sectors alone by 2021."

ENERGY BILL

John Cridland, CBI Director-General

"This package will send a strong signal to investors that the Government is serious about providing firms with the certainty they need to invest in affordable secure low-carbon energy.

"We now have political agreement on this critical issue and the Government should get the bill on the statute books as quickly as possible.

Dr Tim Fox, Head of Energy and Environment at the Institution of Mechanical Engineers

"The publication of this new bill is good news for engineers, investors and the general public as it means we are a significant step closer to getting on with the job of building the major infrastructure projects needed to keep our homes warm, the lights on and industry working.

"With a looming energy gap for 2015, creating a stable regulatory framework for the energy sector is absolutely crucial for investor confidence.

"The fact that energy intensive industries will be exempt from the additional costs to encourage investment in low carbon power is also positive, as it means UK industry won't be placed at an unfair disadvantage when competing in international markets selling products such as steel."

www.imeche.org

Sam Pick, of the Renewables Network, Humber-based membership organisation

"It's very positive that government support for low-carbon energy will increase to £7.6 billion by 2020.

"This should provide stability and confidence for renewable energy developers to commit to the UK market.

"That in turn provides exciting opportunities throughout the supply chain for small British businesses to break into this high growth industry."

www.renewablesnetwork.co.uk

James Cameron, Chairman, Climate Change Capital and member of the Prime Minister's Business Advisory Group

"The Energy Bill will finally give government the tools to attract significant investment into our power sector at least cost. Investment can now flow - creating jobs, helping recovery, spurring innovation - while ensuring our long term economic competitiveness."

www.climatechange-capital.com

Maria McCaffery, RenewableUK Chief Executive

"This is a crucial announcement for the renewable energy sector. The news that there is rock solid support across Government for renewable energy, and clear evidence that Treasury and the Department of Energy and Climate Change are in step, provide the industry with exactly the kind of assurances we've been calling for. This blows the last few months of political infighting completely out of the water.

"This is proof that the Treasury really does get it – the renewable energy industry offers one of our best hopes for economic recovery. This will stimulate billions of pounds worth of investment in renewables, creating more than 88,000 jobs in wind, wave and tidal energy alone by 2021. It will enable us to hit our 2020 renewable energy targets, and make sure renewables can play their part in protecting UK consumers from unstable international power markets.

"The UK Government is sending a clear message that 30% of our electricity will be from renewable sources by 2020. The lion's share will come from wind energy, with 31 gigawatts to be installed by the end of the decade.

"The Government also clearly understands that renewables will be an important driver in decarbonising our electricity supply by 2030. That's great news. This will give investors the confidence they seek for the long term.

Those investors put £2.5 billion into the industry this year – this will now increase exponentially. Now it's full steam ahead, so let's get on with it."

www.renewable-uk.com

Alex Dawson, Chairman of Energi Coast, North East England's Renewables Group

"The Energy Bill will bring much needed clarity to the offshore wind sector that will drive investment and create opportunities for the supply chain.

"The North East is already a key location for offshore renewables activities with companies successfully serving early projects in the sector. Following the publishing of the Bill, momentum will build in the market and the next stage of projects will begin to come online with support from our supply chain, which is poised and ready to go."

www.energicoast.co.uk

DEPARTMENT OF ENERGY & CLIMATE CHANGE

"The commitment of the necessary budget for the renewable power sector to meet its share of the 2020 target, is very welcome news. This should help to draw a line under the recent politicking, which has been so damaging to investor confidence.

"Today's announcements finally give a suggestion that the Government is getting behind the renewables agenda, which promises 400,000 green jobs across power, heat and transport by 2020, along with a much more secure energy future"

www.decc.gov.uk

Ben Caldecott, head of policy, Climate Change Capital

"The £7.6bn financial commitment, together with the creation of robust, new price-certain contracts, are significant victories that have created a framework for investment to flow."

"As investors and investment advisors, we are not unduly concerned about the current lack of a decarbonisation target in the Energy Bill, which is after all, meant to be implementing robust targets already enshrined in law. There is already a clear legal commitment to build a cleaner, better energy system."

"By including a government backed counterparty for new contracts, investors will have certainty allowing for a lower cost of capital and a better deal for consumers."

IT'S ALL ABOUT YOU!

NEW CONTRACTS BOOST ODE'S INTERNATIONAL RENEWABLES' AMBITION

International engineering contractor ODE has extended its overseas growth in renewables with a major contract for a new German windfarm

With a 30-year history in the energy sector, the London-based company is determined to use its extensive UK windfarm background to expand into emerging European and US markets.



"These contracts add significant strength to our international foothold," said ODE Chairman and Managing Director Peter Godfrey. "Both support our ambitions to drive deeper into the European and American renewables markets, taking with us UK knowledge, skills and lessons we have learned from windfarms such as Ormonde, Robin Rigg, Gwynt y Môr and Scroby Sands - and from the German DanTysk site off Germany, where we're providing technical assistance on the foundations of the substation platform, living quarters and turbines."

EUROPEAN 100GW MILESTONE

He was encouraged by the rapid growth of the European wind industry over the past few years, smashing the 100GW milestone for installed wind power capacity. Extensive opportunities are opening up in Europe and ODE intends to be involved.

IBERDROLA

Iberdrola – Spain's largest energy group and the world's largest operator of renewable energy projects – is developing an offshore wind project pipeline which amounts to more than 11,000MW in Northern Europe, most notably the UK, Germany and France. In 2013, Iberdrola will be commissioning West Of Duddon Sands, its first UK offshore windfarm, with 389MW installed capacity located in the Irish Sea. The construction of this facility, jointly developed with Dong, currently employs some 500 people.

"In Germany, the targets for renewables are ambitious and there are many challenges, particularly with grid connection. Along with many other companies, we hope that the new regulation proposed by the German Government will help reduce risks and ease the bottleneck. Sourcing expertise from the UK will be important and we're convinced our local knowledge can make an essential contribution to achieve those targets," said Mr Godfrey.

ODE

www.ode-ltd.co.uk

IBERDROLA WIKINGER WINDFARM

It has announced a project management and engineering support services contract for the £1.6bn Iberdrola Wikinger windfarm planned in the Baltic Sea.

The 18-month deal is for a windfarm up to 80-turbines located around 30km off the Island of Rügen. Wikinger will be one of the largest projects in the Baltic Sea and Iberdrola's first in Germany.

US LAKES AND THE GULF OF MEXICO

Meanwhile, ODE hopes soon to have teams working on two offshore wind farm demonstrator projects in the US, these being in the Lakes and the Gulf of Mexico, where the companies have been working against intense competition for funding from the federal government. A decision is likely to be made later this year, but ODE is optimistic of success with both projects.



UK'S MOST POWERFUL ONSHORE WIND TURBINE DELIVERS TO THE GRID

REpower's 3.4M104, the UK's most powerful onshore wind turbine, is now delivering power to the grid for the first time at Hainsford Energy's Blyth Harbour Wind Farm in Northumberland.

OPEN DAY

This historic first phase of the Blyth Harbour Wind Farm re-powering project was marked by a special 'open day' event for REpower's clients and partners, in collaboration with Hainsford Energy and the Port of Blyth.

Port of Blyth Chief Executive, Martin Lawlor, confirmed he was delighted to see the pioneering turbine erected in Blyth commenting: *"This important development re-affirms Port of Blyth's position as a leading renewable energy focused port, with the handling capacity for the largest turbines, as a home for major developments in wind and biomass, as well as having the facilities to accommodate renewable energy related manufacturing and service companies and will only assist in attracting further significant investment to the Blyth estuary."*

sector in the UK. Using larger capacity turbines like this means that onshore wind farms can be even more productive in relation to their size and REpower is leading the way in this respect. It is essential for the future of the industry that we generate more power from available sites. The re-certification of the turbine demonstrates REpower's commitment to develop turbines that provide our customers with high yields in all wind conditions – the new certification will make the 3.4M104 ideally suited to windier conditions in UK sites."

Charles Rose, founder and owner of Hainsford Energy said: *"The 3.4M104 represents the first phase of the Blyth Harbour Wind Farm repowering project – the original nine 300KW turbines were part of one of the first onshore wind farms in the UK. Subsequent phases will see three further 3.4M104 turbines erected along the East Pier. We are also delighted to be working with REpower UK again, following a long standing relationship which goes back to 2006 when REpower supplied the turbines to Hainsford's first repowering project the Caton Moor Wind Farm."*

Hainsford is one of the UK's longest established renewable energy companies, owned by Charles Rose, who has been at the forefront of developing renewable energy and pioneering the repowering of existing wind farms in the UK for many years, as well as developing wind energy internationally in Europe, Southern Africa, Australia and Latin America.

Since its launch in 2004, REpower UK has delivered forty three onshore wind farms in Scotland, England and Wales and two offshore wind farms: Project Beatrice in the North Sea and its largest offshore contract to date, Ormonde wind farm. Owned by Vattenfall, this offshore wind farm in the Irish Sea consists of the thirty REpower 5M wind turbines with a total rated output of 150 MW.

REpower
www.repower.de

Hainsford Energy
www.hainsford.com

The REpower 3.4M104 was sold to Hainsford Energy in January 2012 for construction on land adjacent to the East Pier at Blyth Harbour as the first phase of the repowering of the Blyth Harbour Wind Farm, which was originally built in 1992. The 3.4M104 produces more power than the original nine 300KW turbines combined. A single wind turbine of this model can provide power for nearly 2,000 homes.

REPOWER ANNOUNCEMENT AT HUSUM

At the recent HUSUM Wind Energy fair in Germany, REpower also announced the expansion of their 3 megawatt turbine series which will see a re-certification of the 3.4M104 machine for higher wind speeds.

Rick Eggleston, Managing Director of REpower UK comments: *"The 3.4M104 signals the future of the onshore wind*



TURBINE ACCESS SYSTEM (TAS) WINS FURTHER CARBON TRUST FUNDING

Houlder and BMT Nigel Gee have announced that their jointly developed Turbine Access System (TAS) has been awarded additional funding by the Carbon Trust under the Offshore Wind Accelerator – Access programme. The additional backing will be used to develop an integrated bow roller

mechanism to further enhance its operability as a safe, reliable and predictable transfer platform.

INNOVATIVE DESIGN

The hydraulically damped rollers will allow the vessel to push up to the boat landing on the turbine foundation structure in the conventional manner and the integral damping system will reduce and control the vessel motion thereby eliminating the sudden movements of the vessel, which can occur with conventional fender systems.

The development of the integrated bow roller unit will also enable shipbuilders

to rapidly install TAS for both new build and retrofit Windfarm Support Vessels.

DELIGHT

John Bonafoux, Managing Director of BMT Nigel Gee, commented: *“The whole TAS team is delighted to have secured this support from the Carbon Trust, especially as it comes hot on the heels of our successful trials at Rhyl Flats offshore windfarm”* He went on to say: *“The patented TAS system has benefitted from significant development effort by both companies and interest is now being shown by a wide variety of operators”.*

BMT Nigel Gee
www.bmtng.com

Houlder
www.houlderltd.com



ZEPHIR 300 APPROVED BY THE ENERGY RESEARCH CENTRE FOR THE NETHERLANDS

The Energy research Centre for the Netherlands (ECN) has completed a 12 month offshore measurement campaign with the novel ZephIR 300 system as part of a 4 year campaign within the Dutch project “Meteorological Research Wind at Sea” where the ZephIR has been compared against the 108 metre Met Mast Ijmuiden (MMIJM) at the ECN Wind Turbine test facility EWTW.

CORRELATION

During a 60 week continuous period availability of the ZephIR was measured at over 98%, with the only period of unavailability being attributed to a mast power supply failure from which the ZephIR was being powered.

Correlations during the measurement period were excellent and as such data has been delivered to the wind energy industry on behalf of the Netherlands Ministry of Economic Affairs, Agriculture and Innovation. ECN’s initial conclusion is that ZephIR can be considered as a valid stand-alone system for wind resource assessments, especially given the industry’s tendency towards higher hub heights.

TECHNOLOGY

The core technology behind ZephIR – continuous wave lidar – allows for very low measurements down to just 10 metres from installed level, essential on offshore platforms, such as this installation, which are already raised well above sea level.

Minimising the deck space required by the remote sensing device in this deployment took advantage of one of the many benefits of continuous wave lidar. With up to 50 samples taken from the full 360 degree scan, losing just a few samples where the scan intercepts the structure, has no adverse effect on the data gathered.

Commenting on the project, ECN’s Wind Energy Co-ordinator of Experiments & Measurements, Henk Oostrum noted: *“ZephIR is very capable of providing high quality, 10 minute average wind speed and direction data at all heights well above traditional tall mast heights. Correlation is excellent to our IEC compliant mast and site. ZephIR can therefore be considered, in our initial opinion, to be used in a stand-alone application for wind resource measurements.”*

ACCREDITATION

Measurements at the EWTW and MMIJM are in accordance with IEC 61400-12. All masts are equipped with Thies class 1 cup



Courtesy of ECN

anemometers and wind vanes as well as WindSensor p2456a cup anemometers. All calibrations are performed in a MEASNET approved wind tunnel and are covered by ISO 17025 ILAC accreditation. On the announcement, Ian Locker, MD at ZephIR Ltd. commented: *“This is an exciting development in the ZephIR programme – we never imagined that we would actually be operating within a met mast structure. The work that ECN has done independently, and now publicly, verifies not only the excellent core performance of ZephIR compared to a mast but also the ability to be deployed in this unique way. In both onshore and offshore applications, ZephIR has been proven to operate in a stand-alone manner providing finance-grade wind measurements for the progression of wind farm development and on-going performance analysis and optimisation.”*

Natural Power
www.zephirlidar.com

ALNMARITEC OPEN WIMBOURNE QUAY REPAIR CENTRE

Alnmaritec, based in Northumberland, is best known for the design and build of commercial workboats. Recently the company officially launched its new Wimbourne Quay Repair Centre at the historic Port of Blyth site.

SERVICES TO CLIENTS

With 150m of berths/quayside frontage and over 100,000 square feet of covered workshops the new repair centre is in a position to provide services to a wide variety of clients, as Managing Director Chris Millman explains, *“Alnmaritec has a reputation for providing high quality new build workboats but we can also utilise the enormous depth of expertise within our workforce to undertake all types of boat repair projects. We have over 120*

highly skilled craftsmen with the ability to deal with all aspects of maintenance, refit and repair.”

GLOBAL SERVICES

However it’s not just at the 5 acre Blyth site that Alnmaritec provide these repair services. Mr. Millman said *“we support clients and their projects all over the world in terms of maintenance and repair. As an example we’ve had men working in West Africa continuously for the last four months on various projects for different clients. We’re happy to provide these services wherever the client needs them, not just at our own facility.”*

FACILITY FEATURES

At that facility however there are a number of impressive features, from the 100 tonne boat crane to the paint facilities and the mechanical and electrical workshops. All of which is designed to ensure that any client, from a fisherman with one boat to a multi-national with a large fleet, can expect the same highest quality service from the Alnmaritec team.

Alnmaritec
www.alnmaritec.co.uk



FIRST APPRENTICESHIP AT TIDAL TRANSIT

With apprenticeships and careers in the UK’s rapidly expanding offshore wind industry currently high on the national training agenda, Tidal Transit is pleased to have been able to take on its first young apprentice.

Kerry Crompton, who is from Docking, Norfolk joined the company recently to undertake an 18 month apprenticeship in Administration. Her training will be totally work-placed based, although staff from the College of West Anglia in Kings Lynn will undertake a regular assessment of her personal progress through specific task allocations.

Kerry will undertake a wide variety of tasks across Tidal Transit’s spectrum of operations; she is currently helping manage the company’s Norfolk fishing trips activities. In her leisure time Kerry likes to play netball and socialise with her friends.

CONTINUED GROWTH

The continued growth in demand from offshore wind farm developers and contractors to charter Tidal Transit’s state-of-the-art personnel transfer vessels has created rapid growth for this young

company, and in welcoming Kerry to the company Commercial Director Leo Hambro said: *“Like many of today’s young people, I believe that Kerry has the personal attributes to succeed in this dynamic offshore renewable energy industry. She is on a steep learning curve, but with the support of The College of West Anglia and the team here at Tidal Transit I am confident that*

she will make a great success of this apprenticeship.”

Leo added: *“I hope this is the first of a number of apprenticeship opportunities that we shall be able to offer to North Norfolk’s young people.”*

Tidal Transit Limited
www.tidal-transit.com



**Kerry Crompton
and Leo Hambro**

FENDERCARE MARINE RECEIVES INTERNATIONAL MARINE CONTRACTORS ASSOCIATION (IMCA) ACCREDITATION

Achievement demonstrates Fendercare Marine's commitment to the provision of a safe and professional service to its customers.

IMCA
IMCA is the international trade association representing offshore, marine and underwater engineering companies. It

us. From day one we have been working in compliance with IMCA recommendations and this accreditation is recognition of the standards that we strive to maintain."

DIVING

Fendercare Marine provides an extensive range of diving services and equipment for sale or hire. The company's own diving teams are trained and experienced in a wide range of techniques and procedures and are also a member of the Association of Diving Contractors.

MARINE DIVING SERVICES

"Since the launch of our Marine Diving Services division in 2010, the demand for our diving services has increased dramatically", said Fendercare Marine Group Business Development Director Martin Dronfield. *"As well as completing a number of diving and marine service contracts in the UK, we are now supporting our customers internationally including the provision of a 30-man team to support FPSO operations in West Africa. We see many opportunities to strengthen our capability in this area as part of the total package of solutions we offer both above and below the water and our IMCA registration is a significant step on the path to achieving this vision."*



AUDIT

Fendercare Marine is proud to announce it has received full membership accreditation from the International Marine Contractors Association (IMCA) following a recent audit.

is a respected voice around the world promoting good practice, particularly in the areas of health, safety and environmental standards, quality and efficiency and technical standards.

Fendercare Marine Diving Operations Director, Bob MacMillan said *"IMCA Accreditation is very important to*

Fendercare Marine
www.fendercare.com

[Click to view more info](#)

Royal HaskoningDHV
Consultancy Engineering & Management

Serving the Wind Industry

Royal HaskoningDHV - 8,000 professional environmental consultants, technical experts and engineers providing project consenting, H&S, technical and design services to offshore and onshore renewables projects across UK, Europe and the world for over 10 years.

royalhaskoningdhv.com

UNIVERSITY OF HULL TO DEVELOP VIRTUAL REALITY OFFSHORE WIND TURBINE

A 3D virtual reality 'cave' will be created at the University of Hull to provide the offshore renewable energy sector with an innovative training facility.

of Computer Science, and is part of the multi-million pound investment in renewables led by CASS, the University's business facing renewable energy and low carbon hub.



Emma-Jane Alexander

The virtual reality environment will give people working or training for roles in the green power industry the chance to experience the hostile, dangerous and complex conditions that they will face 'on the job'.

3D CAVE

The 3D cave will be located in the Hull Immersive Visualisation Environment (HIVE) at the University's Department

HIVE AWARD

HIVE has been awarded £240,000 Higher Education Funding Council for England cash through CASS to develop the two-year project, which will also see the strengthening of the partnerships between the University and industry with a view to commercialisation and generating income.

HIVE Coordinator Emma-Jane Alexander said: "The aim is to offer a training

service to industry and wind farm engineers to equip people with skills and support continuing professional development in the sector with greatly reduced risks and costs.

"The main aspect of the project is the 3D cave which will place people in an enclosed, constrained environment in which they have screens in front, to their sides and below them.

"This virtual space allows us to simulate the journey to an offshore platform via specialist vessel for instance, or prepare people for the feeling of standing on top of a wind turbine in the open sea and experience what can be a very hostile environment. We will also be able to simulate the different weather conditions and sea-states that engineers and transport operators will face."

SIMULATION AND VISUALISATION RESEARCH GROUP

The challenge of creating a uniquely interactive 3D space is complex and will be developed by a team of specialist software developers employed specifically for the project led by the University's Simulation and Visualisation Research Group. As well as using a 3D cave, the project will also seek to simulate the winching experience to and from turbine by helicopter, using a head-mounted display.

ATTRACTING YOUNG PEOPLE

The cave will also be used to provide young people with an insight into this type of engineering.

Emma-Jane Alexander added: "This is exciting technology and will be an inspiring experience. In addition to training for industry we will be able to show schoolchildren what it's like to be wind turbine engineer.

"The offshore environment is not suitable for a work experience students and this solution will allow users to practice and play without the dangers faced in the real world."

IMPORTANT INDUSTRY INNOVATION

Professor Stephanie Haywood, director of CASS, said: "The project has real potential and over the course of two years we expect to further develop our range of industry partners. The work is genuinely innovative and is of real importance to the sector."

University of Hull
www.hull.ac.uk

OFFSHORE INDUSTRY GATHERS AT LAUNCH OF FACTORY FOR WORLD'S LARGEST ROPES

Industry's biggest players watch UK Business Minister open state-of-the-art facility

Industry leaders from companies including Heerema, NOV, and Certex assembled in Northern England recently to watch UK Business Minister Michael Fallon open a facility that will manufacture the world's largest ropes.

BRIDON NEPTUNE QUAY (BNQ)

The event marked the commencement of manufacturing at Bridon Neptune Quay (BNQ), a state-of-the-art factory constructed by Bridon International which will produce the largest and most complex offshore ropes in the world. The facility will have the capacity to produce highly engineered ropes in package weights of 650 tonnes, boasting enhanced breaking loads, optimised bend fatigue performance, effective lubrication, and minimal rotation under load.

UNIQUE FACTORY FACILITIES

The occasion was marked by the switching on of the factory's rope-closing machine, which is the largest of its kind in existence. The machine, which was constructed to a unique specification by German engineering company SKET, will allow the company to produce far more complex ropes than had ever previously

Head Oddvar Hoydal, who noted how Bridon's highly engineered ropes could improve their companies' heavy lifting and deepwater deployment capabilities.

In addition to the switching-on of the facility's rope-closing machine, the opening event offered a range of technical seminars for attending industry leaders, designed to demonstrate Bridon's unique services offering. Focused on ensuring customers get the most out of Bridon's highly complex ropes, this package provides tailored support throughout a rope's development, installation and application.

ORDER DEMAND AND LOGISTICS CAPABILITY

Now operational, Bridon Neptune Quay is already taking on orders from major multinational operators, and its production schedule is designed to cater to the highest possible levels of demand. The factory's portside location, along with its state-of-the-art Takeup Stand for lifting reels directly from dock to vessel, will help Bridon to significantly improve logistics.



UK Business Minister Michael Fallon

Industry's biggest players watch UK Business Minister open state-of-the-art facility

advanced in the world, but will also be uniquely tailored to tackle 21st century offshore challenges”.

Business and Enterprise Minister Michael Fallon said: *“Companies like Bridon International are a great example of how Britain’s manufacturers are leading the world. Through Bridon’s innovations, the largest, most advanced ropes ever made are being sold around the world from Britain – and helping to solve the challenges our modern offshore industries face.*

“As a growing manufacturing company, Bridon are exactly the sort of firm the Regional Growth Fund was set up to support. I’m very pleased that we have been able to provide them with £2.2 million to help open this state of the art new facility.”

Peter Keith, Group MD CERTEX Division said: *“We are particularly excited about the complexity of the ropes that will be manufactured at Bridon Neptune Quay, as well as their enhanced bend fatigue life and reduced rotation and elongation. These technological advancements will make many new projects possible for our customers and I look forward to be able to offer these ropes from our CERTEX companies in the near future.”*

Bridon
www.bridon.com



been possible with such weights. Pulling the lever to activate the machine was UK Business Minister Michael Fallon, who praised Bridon for establishing a global technology leadership position through its consistent investment in innovation.

INDUSTRY VISITORS

Accompanying Bridon Chief Executive Jon Templeman at the event were a host of senior industry figures including Certex CEO Peter Keith and NOV Cranes Division

Bridon Group Chief Executive Jon Templeman said: *“I’m proud to announce that Bridon Neptune Quay is open for business, making the largest and most complex ropes the offshore industry has ever seen. We have worked closely with customers to understand the challenges they face in reaching greater depths in some of the toughest conditions on earth; thanks to this collaborative approach, ropes constructed at Bridon Neptune Quay will not only be the most*

NEW OFFICES FOR NPRIME

NPRIME LTD BASED IN SHEFFIELD, IS PROUD TO ANNOUNCE THE OFFICIAL OPENING OF THEIR NEW PREMISES.

SPECIAL GUEST

Prof. Keith Ridgway, CBE, Research Director at AMRC with Boeing (Advanced Manufacturing Research Centre) at the University of Sheffield will officially open the expanded test facilities.



TRAINING FACILITIES

As a testing and analysis company specialising in data acquisition, measurement and telemetry and boasting such as Caterpillar, Jaguar Land Rover, David Brown Gears, Lloyds Register and BAe Systems among its clients, Nprime Ltd is moving into a new test facilities to enable better instrumentation of components and provide onsite training services. The training facilities have up to date video conferencing and teaching equipments. Data loggers, data acquisition and telemetry hardware are available for full hands-on learning.

Ciarán O'Shea, Managing Director said: *"We are excited about the move, which will allow us to provide improved services to our customers and help us develop our training programme."*

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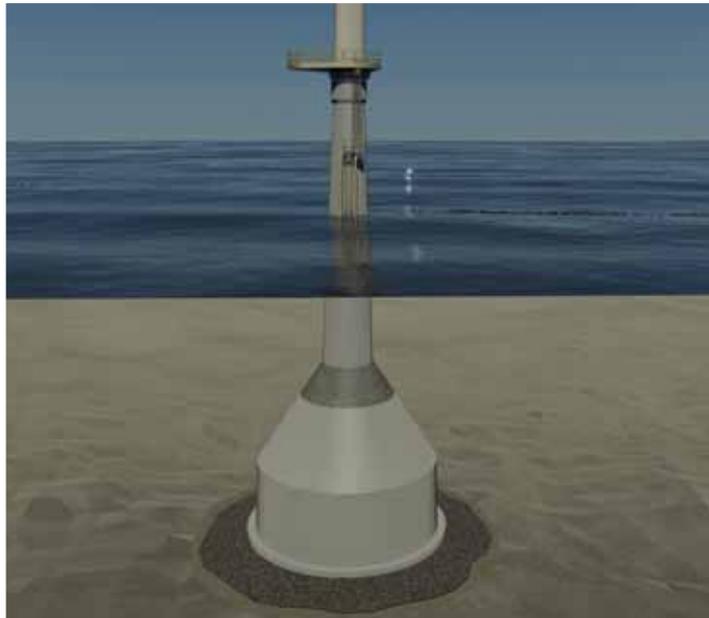
MARINE REPORT RECOMMENDS INSTALLATION OF CONCRETE GRAVITY BASES FOR DEEP WATER OFFSHORE WINDFARMS

The impact on the marine environment of offshore windfarms is an important issue. A new report supports the inert placement of concrete gravity bases against the disruption of driving steel piles into the sea bed.

MARINE REPORT

The report, 'A Review of Marine Environmental Considerations Associated with Concrete Gravity Base Foundations in Offshore Wind Developments' by marine consultancy MarineSpace Ltd with specialist input from ABPmer and Fjordr, examines the environmental impact of concrete gravity bases with particular reference to the issue of placing offshore wind farms in the deeper waters associated with the Round 3 offshore renewable programme.

Commissioned by MPA The Concrete Centre and the Offshore Wind Gravity Foundation Interest Group, it focuses on the potential environment footprint of concrete gravity bases compared with other foundation solutions for offshore windfarms.



seabed habitats and relatively benign water conditions. For these sites steel monopoles have been the foundation construction of choice. However, the water depths of 20m – 60m, more exposed conditions of up to 200km from shore and mixture of seabed types of the Round 3 sites will call for a different construction approach such as concrete gravity bases, tripod, steel jacket, suction caisson and floating platform.

CONCRETE GRAVITY BASES

Concrete gravity bases, due to their robustness and minimum maintenance, look set to have the advantage over other solutions when the harsh marine conditions of the deeper waters of Round 3 are considered. In addition the report has found that, when compared with other foundation solutions, concrete gravity foundations offer particular environmental benefits.

TENDERS

To date, The Crown Estate has offered five rounds of tendering for offshore windfarms. These include Round 1, Round 2, Scotland, Round 1 and 2 extensions and Round 3. The majority of Round 1 and 2 windfarm sites are located within 12 nautical miles of the UK coastline and are typified by shallow water, sediment

and minimum maintenance, look set to have the advantage over other solutions when the harsh marine conditions of the deeper waters of Round 3 are considered. In addition the report has found that, when compared with other foundation solutions, concrete gravity foundations offer particular environmental benefits.

BMT NIGEL GEE HITS HAT-TRICK IN 10 DAYS

BMT Nigel Gee Ltd, a subsidiary of BMT Group Ltd, the leading international maritime design, engineering and risk management consultancy, is pleased to announce that three new Windfarm Support Vessels built to a BMT design have been launched over a period of ten days from three different shipyards, two in Europe and one in Asia.

VESSELS

The vessels range from a 19.4m propeller driven conventional catamaran design to a 26m Extreme Semi-Swath (XSS), fitted with active motion damping systems consisting of T-Foils and interceptors.

Sea trials for two of the vessels have been completed, both of which have met all expected performance criteria. The XSS is currently in transit to the open sea in order for trials to commence in the coming weeks.

Ed Dudson, Technical Director of BMT Nigel Gee, comments: *"To finally see our designs come to life and take to the water is an extremely proud moment - so for it to happen three times in ten days is fantastic. We are confident that these vessels will set a new benchmark for quality and capability in the offshore*



During the development of Round 1 and 2 offshore wind farm projects, there was a general presumption that concrete gravity bases result in a considerable loss of seabed. However, increasingly, the impact of the area being 'over-shadowed' by the total foundation structure, for example the seabed area located under the lattice of a steel jacket and not just under one of the feet, is considered to represent the real loss of seabed. In this respect, the research carried out by MarineSpace found that steel jackets or tripods can result in larger seabed disturbance and loss than gravity concrete bases. This loss can only increase as the deeper waters of Round 3 necessitate larger foundations.

INSTALLATION IMPACT

The larger foundations required for deeper waters of Round 3 have a further environmental impact. Steel monopiles, tripod and jacket foundations typically rely on piles being hammered or drilled into position. The impact of installation is significant and this can have a severe detrimental effect upon marine life. In the shallow waters of Rounds 1 and 2 monopiles may be struck between 1000-7000 times depending on seabed conditions. With a weight of 225 T and delivering blow forces between 200 – 500 kJ per strike, piling hammers can a significant noise and vibration impact during an installation period that can take up to 4 - 7 days per foundation, excluding any weather downtime.

“No piling is required for gravity concrete bases. They are lowered into position,” explained Andrew Minson, Executive Director of MPA The Concrete Centre. *“The avoidance of piling noise installation is a major benefit of concrete gravity bases as the impact on marine life from piling noise is likely to lead to planning conditions being applied resulting in project delays and increased costs. With this in mind, retaining concrete gravity bases as an option through the planning process is a prudent priority for developers.”*

Monopiles, steel jackets, tripods and floating platforms all require drilling or hammer piling to secure then to the seabed. The noise and vibration impact of this will increase due to increased size of the foundations necessary for Round 3 deep water locations.

HABITATS DIRECTIVE AND THE MARINE STRATEGY FRAMEWORK DIRECTIVE

The resultant sound pressure waves from piling, drilling and hammering could be at levels high enough to cause death, damage and displacement of marine animals, sensitive fish species and some fish eggs and larvae. Domestic and international environmental legislation, such as the Habitats Directive and the Marine Strategy Framework Directive, now reflect the serious consideration of these possible effects. By comparison, any concrete gravity bases that require site preparation works will generate noise associated

with the dredging activity. Evidence from marine aggregate extraction operations demonstrates that dredging noise levels are barely detected above those associated with general dredger navigation and are no more noisy than merchant shipping sailing in the local area.

OTHER CONSIDERATIONS

Other environmental impacts to be considered include the impact of tidal currents, which for all options was found to be minimal, and the potential colonisation by marine life of new 'reef' areas. This reef effect is common to all foundations types and may result in local changes to biodiversity and habitat provision.

“Overall, the report found that the environmental impact from concrete gravity bases are broadly comparable to other foundation types with one major exception”, said Minson. *“The installation of concrete gravity bases is far more quiet and less disruptive than other foundation types. This offers a very significant advantage to those offshore developers choosing concrete gravity bases for Round 3 projects.”*

MPA The Concrete Centre
www.concretecentre.com

[Click to view more info](#)



wind market. We are now looking forward to these vessels entering service and continuing our support to deliver state of the art designs which are designed specifically to meet our customers' requirements.”

BMT Nigel Gee
www.bmtng.com

EVENTS AND WHAT'S NEW

AS YOU SEE BELOW WE CONTINUE TO FEATURE SOME OF THE MOST IMPORTANT EVENTS IN THE CALENDAR, SO THAT YOU CAN, AT A GLANCE, CONSIDER WHICH EVENTS TO SUPPORT. A MORE DETAILED LISTING IS AVAILABLE ONLINE.

THERE CONTINUES TO BE ISSUES WITH THE AMOUNT, SCALE AND COST OF EVENTS LAID ON FOR THIS FAST GROWING INDUSTRY. WE WILL ONLY FEATURE THOSE EVENTS WHICH WE BELIEVE ARE ORGANISED IN THE BEST INTERESTS OF THE INDUSTRY AS A WHOLE.

WIND TURBINE NOISE: SOURCE TO RECEIVER

WHEN 11 – 12 December 2012
WHERE Oxford
CONTACT www.ewea.org

THE SCOTTISH OFFSHORE WIND & SUPPLY CHAIN EVENT

WHEN 29 & 30 January 2013
WHERE Aberdeen
CONTACT www.scottishrenewables.com

EWEA 2013 ANNUAL EVENT

WHEN 4 – 7 Feb 2013
WHERE Vienna, Austria
CONTACT www.ewea.org

HEALTH & SAFETY 2013

WHEN 31 January 2013
WHERE Cutlers' Hall, Sheffield
CONTACT www.renewable-uk.com

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PLEASE CONTACT IF YOU WOULD LIKE TO BE INVOLVED IN ANY OF THESE FEATURES.



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GLOBAL WIND ENERGY-INDIA

ROB BELL FROM ARCHOMAI AGAIN CONTINUES HIS SERIES ON GLOBAL WIND ENERGY, THIS TIME FOCUSING ON INDIA

ARCHOMAI SPECIALISES IN LOGISTICS AND SUPPLY CHAIN THINKING AND PRACTICE IN EMERGING AND FRONTIER MARKETS

WIND ENERGY AND INDIAN GROWTH

In July 2012, India suffered the largest power outage in history affecting over 620 million people. That's 10% of global and 50% of India's population. As Rajiv Kumar, secretary general of the Federation of Indian Chambers of Commerce & Industry (FICCI), told the BBC *"Energy is like blood in your veins. It is as vital as that to economic growth"*, and there is no doubt that power shortages are slowing down the Indian Tiger.

CURRENT ENERGY SITUATION

Current installed capacity is 205,340 MW – 70% generated by fossil fuels - but this covers only 90% of demand. In recent years imported coal has doubled to over 60 million tonnes and, recent global set-backs like Australia's flooding and Japan's need to plug the nuclear gap and a falling off of chain coal imports further exacerbates energy security and growth strategies.

India has much to do to increase capacity across all energy sectors and needs a significant renewable dimension; wind power will play a major part.

ONSHORE AND OFFSHORE

Land based wind power is fraught with problems on land acquisition but, with a coast line of 7,516 km, India is one of the best markets for offshore wind energy. Recent estimates highlight a potential for between 270 and 300 GW of electric power capacity from wind energy alone. Currently, with an installed base of 24 GW (around 12% of India's total power generation capacity) India is in the top 5 of global wind power. Generating 45% of Indian wind power.

TAMIL NADU

The Southern State of Tamil Nadu leads and, without wind, the State would have gone dark when the Neyveli Lignite Corporation and the Tuticorin Thermal Power Station failed.

Tamil Nadu is the best location for putting up offshore wind farms with plans for a 500 MW offshore farm being considered.



RESEARCH – THE INDIAN OCEAN

Dr L R Chary of AMET Maritime University is leading research into wind power potential on a number of small islands and this could open up a wider Indian Ocean Study.

A wind monitoring station will track wind power and, with small islands dotting the continental rims of this huge ocean this research could have wider impact. The Indian Ocean accounts for over half container traffic and, 40% of offshore oil and 70% of all energy passes through it. Wind energy next?

ASSISTANCE

As with all power sources India needs help on the business model – finance, technology and operational support. Going into deeper waters and setting up floating wind turbine platforms will be a challenging proposition for India. Dr L R Chary's team at AMET are looking at how best to reduce O&M (Operation Maintenance) costs of offshore wind farms from the baseline of 23% for Indian installations. For example, wind turbines with contra-rotating rotors for offshore wind farms to effect economy of scale.

MINISTRY RENEWABLE ENERGY GROUP (MNRE)

Dr LR Chary sits on the MNRE Group working on Policy on renewables. To reduce dependence on fossil fuel-based power stations with a huge carbon footprint, low and no carbon sources are being prioritised. India proposes to add at least 4500 MW through offshore wind energy once the policy is in place. This policy is being heavily influenced by EU experience and this opens up significant opportunities for UK PLC.

MAXIMISING POTENTIAL

The Indian wind energy industry needs International partners to maximise huge potential; to plug technology gaps and explore wider synergies with oil/gas fields.

Given the busy ocean, other areas such as shipping lanes and the impact of hostile monsoon weather/sea conditions need better understanding. In parallel, India has a lot to offer in terms of smaller, scaleable solutions.

For example, speaking at the Wind Power 2011 seminar in India Steve Sawyer, General Secretary of the Global Wind Energy Council (GWEC) highlighted a small wind-solar hybrid system that is ideal for the fast growing market for efficient, cost-effective and sustainable sources of energy for local communities. And as UK PLC considers opportunities in India, we need to look wider at the Indian Ocean as a whole.

Rob Bell is CEO of Archomai, Visiting Reader at Aberdeen Business School and, a Member of the AMET Maritime University Advisory Board, India.

Rob Bell
Archomai
www.archomaico.uk

RENEWABLES DEVELOPMENT PROGRAMME WORKSHOP 2

COMPETENCE

FOR ME
THE ONLY
MEANING OF
COMPETENCE
IS THE
COMPETENCE
OF AN
ORGANISATION



Some people are happy to use the term in relation to an individual. I think that this can only be valid if one is talking about an individual performer. And even then, when you consider the classic individual performers, it is difficult to conclude that they are not in fact part of a larger team.

A golfer has his caddy, a boxer has his trainer and his seconds, a violin soloist has his conductor, and an artist has his muse.

There are very few people who are truly alone. 99% of people who have to deliver a result are part of a team, an organisation. When it comes to delivering a result it is the competence of the organisation that has to stand the test, to prevail and to succeed.

ORGANISATIONAL COMPETENCE

First of all let's look at the constituent parts of organisational competence and see how that differs from the more popular reference to personal competence. When I have heard people talk about personal competence I always understand them to mean skill, or expertise. That is good, as far as it goes but it doesn't go far enough when trying to improve the performance of a team or organisation. An organisation in our world is no more than a commercial team, so I shall use those two terms as interchangeable.

The constituent parts of organisational competence are...

- Expertise – the skill, craft or technical virtuosity of the individual
- Equipment – the tools or technical support instruments used by the individual and
- Environment – the workplace aspects in which the individual has to perform

Organisational competence is like a three legged stool. If any one of the legs is shorter than the others, then the performance of the stool is second rate. If the short leg is a lot shorter than the others then the performance of the stool is rubbish ... or firewood.

In the context of the ultimate team scenario American football, the concept of organisational competence can be understood in human terms more clearly. To make a successful play the team has to move as one. Each individual must execute their specific task in synchronisation with his team members

to create the successful score, or the successful defence.

How do we describe the competence of the team in terms of the three constituents?

EXPERTISE

The linemen, who play up front, operate as a team within a team. Their expertise as individuals is the application of explosive power with upper body strength and swift lateral movement with fast feet, whilst staying in complete balance in the face of a 23 stone opponent or two.

To develop this expertise, players have to practice specific drills until it becomes second nature to apply them in the game situation.

EQUIPMENT

The pads and the helmet are the visible equipment, but this category also includes the technical support instruments of the job. For the American footballer this must surely include the playbook.

This is the document that specifies what each player's task is for the given team play. Each offensive play is designed to manoeuvre the defensive players in such a way as to create space for a runner to make yards, or for a receiver to find free space to catch a pass.



ENVIRONMENT

Every player has their own job to do, but success depends on everyone doing their job perfectly....together.

The environment of their workplace has to be one of trust and consistent co-ordination. If one player moves too soon or too far then he exposes the team to the penetration of the opposition and, quite possibly, to the injury of a team-mate. The creation of this environment is the task of the coaching team and will be dependent on a philosophy of dedication to practice. The strategic goal of the team must be to finish the season on top. Their critical success factor (CSF) is to keep the team together, maintaining the highest level of performance by ensuring that the three constituents are kept at an equal level of provision.

THE COMMERCIAL WORLD

In the commercial world things are very much the same. Everyone in the team must have knowledge of, and commitment to, the strategic goal. With this the critical success factors can be identified, and the required competence(s) of the organisation can be built. In the case of an O&M team the cascade to competence might be...

- **Strategic Goal** – to contribute in every way possible to the supply chain achievement of a levelised cost of energy of £100/MwH by 2020
- **Critical Success Factor** – to minimise the time and cost of maintaining offshore turbine installations

COMPETENCE 1

Remote monitoring of turbine equipment

- Expertise – systems development
- Equipment – state of the art communications, monitoring tools & test facilities
- Environment – access to all relevant knowledge & freedom to fail and learn in pursuit of innovation

COMPETENCE 2

Faultless on-site service performance

- Expertise – faultless recognition of service need – methodical and thorough service execution
- Equipment – complete set of tools & materials maintained to the highest standard – everything to ensure shortest time between recognition of need & execution of maintenance
- Environment – safest possible working environment, continuous improvement of service capability and constant readiness and support

I don't imagine that this list is all that a professional O&M team could detail as the competences that could contribute the most to the achievement of the strategic goal, but I hope that it has illustrated the process and provoked some thought.

There are few teams that have the resources to invest in everything, but every team has the resources to properly identify the critical investment needs to deliver world class performance in their chosen field.

So, we are at the stage where you need to answer the three questions..

- 1** Do you have knowledge of and commitment to the strategic goals of your organisation?
- 2** If so, have you, as a team, identified the CSFs i.e. the factors critical to the successful achievement of those goals?
- 3** And has that CSF identification enabled you to specify the organisational competence(s) that your team needs to perfect?

If you have answered 'Yes' to these three questions then, I guess, you are hard at work to enjoy the delivery of world class competitive performance.

If you haven't answered 'Yes' then go back to Question 1 and work out what success it is that you want to create. Without that you will have no chance, as a team, to make it happen. It sounds simple doesn't it? But, the majority of teams that I talk to for the first time are not able to answer 'Yes' to question 1.

One of the biggest challenges to companies caught in the upsurge of renewable energy supply chain activity is to withstand the temptation that will be put in the way of their staff to leave and join one of the 'new teams in town'.

The companies that have already secured the commitment of every one of their team members to the strategic goals of the organisation will be the ones who will be best placed to meet this challenge and succeed, no matter who has arrived in town. Make sure that you are one of those.

'Competence' is just one of the workshops staged by Renewables Network Ltd to help SMEs to earn their place in the renewable energy supply chain.

John Britton
BCG Bridgepoint
www.bcg-bridgepoint.co.uk

Renewables Network
www.renewablesnetwork.co.uk

Making the Most of Meetings at Work:

PART THREE: ACTION AGENDAS

TRAINER AND MOTIVATIONAL SPEAKER FRANK NEWBERRY HAS BEEN HELPING PEOPLE TO GET BETTER RESULTS IN THE WORKPLACE FOR OVER 30 YEARS. HE IS CONVINCED THAT WE CAN ALL CONTRIBUTE TO MAKING MEETINGS AT WORK MORE PRODUCTIVE AND MORE ENJOYABLE.



In the first part of this series I explained that in workplace meetings the Executive Secretary supplies the engine oil that ensures the smooth running of the 'engine'. The 'engine' being the Committee or group of people who make the decisions that affect people in the workplace.

In the second part I explained how a Meetings Facilitator can help the Chair by keeping everyone at a meeting on track and helping break a 'decision deadlock' by proposing something like 'a trial period' to make sure the decision is not only taken, but that it is the right decision.

In this concluding part of the series I want to look at 'action agendas'.

AN AGENDA FOR ACTION

Now that we have a Chair in charge, a Facilitator to make sure everyone has a say, an Executive Secretary to chase down our action points - all we need now is a good agenda - an 'action agenda'.

SEQUENCING FOR SUCCESS

If you have suffered in silence at meetings where people have discussed matters at great length but decided nothing then maybe an 'action agenda' is just what you need. The 'action agenda' puts the agenda items in a sequence that promotes decision making and action. It puts discussion in its rightful place - at the very end of the meeting and only if we have any time left. I call this ordering of the agenda 'sequencing for success'.

THE ACTION AGENDA

The 'action agenda' of a meeting is in three main parts. The agenda items to be taken are separated into three categories. The categories are: first – 'information items' followed by 'decision items' and finally we have the 'discussion items'.

I really like the time continuum aspect of this sequence. INFORMATION may be old or new but it is usually information about the PAST – right up to the recent or immediate past. On the other hand DECISIONS often need to be taken by people now, in the PRESENT. Finally once we have made our decisions based on good information then we can take time to consider what we might do in the FUTURE. Here are some examples of each category – taken from typical workplace meetings:

Information Items - PAST

Information items can include (1) apologies for absence, (2) minutes of the last meeting, (3) progress reports on action points from previous meetings, (4) important updates, plus (5) announcements and notices from other sources. All these are needed so that the meeting can take all the known facts into consideration when it makes a decision or takes action.

Decision Items - PRESENT

When the meeting has all the information it needs it can make the decisions it has to make. Decision items can include (1) accepting the minutes of the last meeting as accurate, (2) asking for more information (rather than wasting time with debate or guesswork), (3) deciding to go ahead with a suggestion or (4) deciding against a proposal.

Discussion Items - FUTURE

When the people attending the meeting have made all the decisions they need to make (at present) they can turn their attention to what needs to be done in the future. Discussion items might include (1) Suggestions for a Christmas activity, (2) First thoughts on what the organisation needs to do to comply with new legislation coming into force next year, (3) Initial ideas on changing what we offer to keep pace with the latest trends, or (4) discussing how we can take the lead with new offerings to our customers and other stakeholders.

THEIR MEETINGS IMPROVE, THEIR DECISIONS GET BETTER

Over many years I have seen 'action agendas' repeatedly transform meetings and the effectiveness of organisations. At first people can resist having their contributions 'moved' to later in the meeting or to the next meeting. However, they soon learn that with skilful use of the 'information/decisions/discussion' sequence their meetings improve, their decisions get better and they even find time to 'shape the future' of their organisation.

So good luck with your 'action agendas'. May you be blessed with success in your workplace meetings.

If you are having problems and frustrations with meetings at work and you would like some advice that is specific to your situation you can get in touch with Frank directly via the contact tab of his personal website: www.franknewberry.com.



MASTS & TOWERS

FLI Structures are designers, fabricators and erectors of Masts & Towers to wind farms and can offer the below capabilities...

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BUSINESS DEVELOPMENT

WELCOME AGAIN TO ANDY MCLAUGHLIN...



ARE YOU REALLY LISTENING?

Asking your prospect all the correct questions is wasted if you don't hear what he or she says, either in words or more subtly in tones or partial hints. Being a good listener requires more than just keeping quiet while the other person is talking. Do you hear everything that is being said? Do you understand it completely?

Here are some tips on how to become a more effective listener:

FOCUS IN ON THE BASIC MESSAGE

Try to pinpoint the main ideas the person is expressing. Ask yourself what the speaker is trying to say. If you're not sure, ask. "Bill, I believe what I heard is-Am I on track?"

UNDERSTAND WHAT IS BEING SAID

Keep asking yourself if you understand what is being said. If you don't, ask for clarification - and keep asking until you are sure you fully understand. "Bill, I'm not sure I understand how this relates to that, can you help me out?" What you don't understand, you can't recall. Additionally, if you don't understand what is being said, your mind is more likely to wander and your listening effectiveness diminishes.

DON'T GET DISTRACTED

Don't let trivial things like the speaker's appearance or random noises divert your attention from what he or she is saying. Listen to the speaker's whole sentence.

Listen not only for content, but context. Anytime you catch yourself being distracted by something that draws your attention away from the speaker's words, make a conscious effort to focus back on the words.

LISTEN WITH YOUR "GUT"

The speaker's tone and body language will impart meaning. These subtle clues are quickly picked up by the unconscious mind and leave us with a particular feeling about the speaker. When you are left with a "feeling" about someone after a conversation - that they are sincere, they are hiding something, they can't be trusted, etc. - it is a sign that your unconscious mind has put two and two together and come up with an evaluation.

BECOME PERSONALLY ABSORBED

You can't listen effectively if you are only "going through the motions." Every subject has some interesting angle, some impact on you or something you can learn. In order to uncover those elements, you must first abandon your prejudiced or pre-conceived ideas. If you enter into a conversation with the notion that the other person has nothing of interest or importance to say, you will miss what is important.

GET INVOLVED

Keep your active attention on what is being said, and offer comments. If the situation permits, offer your own perspective on what is being said. Ask a question or relate a relevant story that reinforces what the person is saying, or represents a different point of view. Ask yourself how what the person is saying relates to other situations or experiences.

IN SUMMARY, LISTEN PROACTIVELY

There is more to listening than just passively hearing the words someone is speaking.

Andy McLaughlin
Sandler Training
www.centralnorth-east.sandler.com

BE PREPARED

NCOE TAKES A LOOK AT UXO IN CRISIS MANAGEMENT

At NCOE our goal is to generate business value for clients by delivering projects, that are efficient in both capital investment and long-term operation.

SYNERGIES

NCOE's previous articles highlighted the synergies between the mature oil and gas industry and the offshore wind farm industry.

OFFSHORE WIND

Crisis Management (CM) is another area whereby the wind farm industry can learn much from the Oil and Gas industry without having to start a fresh. Like so many other things in industry this has been developed through lessons learned over the years. Although some would say the two industries are very different with offshore platforms have personnel living on them and a hydrocarbon inventory. However, after further investigation one will realise that crisis management is on a wider scale, about the management of an incident's potential ability to impact company reputation, operability, viability or earning power.

RECENT BANKING CRISIS

We may all remember the recent event unrelated to safety which was the IT problem RBS, Natwest and Ulster bank customers had in June this year, where millions of customers couldn't get access to their money or their accounts for several days due to a software upgrade going wrong. This impacted at least three of the aforementioned categories. The size of the problem was on a scale far bigger and for a longer time than has ever happened at any British bank since they went computerised. I am sure the banks at the heart of the matter have now revised whatever crisis management procedure they had before the incident.

UNEXPLODED ORDNANCE

To return to the subject of the wind energy and oil and gas industries, one of the problems that can instigate CM is that of Unexploded Ordnance, which is most often encountered unexpectedly, during construction of facilities, particularly when excavation or dredging is underway.

Other less evident incidents which may initiate a company's crisis management system :

- Forecast of a severe storm which may impact operations – do you hope it's not too bad a storm?
- Public protest against technology used or the company – do you hope it doesn't get too much publicity?
- Recall notice from a supplier of a faulty component which has safety or environmental implications if was to fail – what if it effects all your installations?
- Damage and/or failure to a data centre which is key to operations – how will the operation continue?
- Pandemic incident e.g. bird flu – do you protect your company personnel?

Of course no system will prevent these incidents, but a management system will certainly mitigate the potential damage if such an event turns into a crisis or emergency for the company.

FOCUS

Crisis management is focused on the management and resolution of emergencies and crises that affect the business with the objective to keep the business operational before, during and after a disruptive incident.

STRATEGY

Every operating company should have a CM strategy in place that is backed with a response philosophy, response priorities and response process that are tested at defined frequencies through exercises.

Exercises provide an opportunity to validate plans, assess individual and team capacity and gain lessons learned to help increase response capability. A tiered response approach is appropriate dependent on the potential impact of the incident.

One would suggest the response priorities should be...

- People – employees, contractors, suppliers, customers
- Environment – air, water, land and areas of sensitivity
- Property – company assets, contractors, communities and third party facilities/offices
- Business – supply, production and reputation

LIVE PROCESS

CM is a live process that requires training to be put in place with routine exercises possibly on an annual basis. Training will ensure roles and responsibilities are clear and personnel competent for their role. Whereas exercises provide an opportunity to do the following...

- Validate plans (i.e., individual elements, inter-related elements or entire plans)
- Assess individual and team capability.

Lessons learned from exercises can be used to improve some or all of the following...

- Plans
- Processes
- Training programmes
- Individual skills
- Team skills

UXO AND CRISIS MANAGEMENT

Returning to UXO, we may question the relevancy within Crisis Management but, like many other risks faced by projects an UXO incident is one that can derail the momentum of a project if it arises where no planning and contingencies have been made for the occurrence.

In these circumstances project drivers such as schedule and costs will be impacted, however the severity of the impact will depend on the project's preparation, speed and effectiveness and being able to deal with an UXO incident.

Dealing with UXO contamination is normally not particularly difficult, dangerous, or technically challenging providing the process to mitigate the risk is properly managed and the work is conducted by appropriately trained, qualified, and supervised personnel - all the elements of CM.

MAINTAINING BUSINESS SUCCESS

Time spent developing a CM strategy is key to maintaining business success in challenging conditions, if your company has one in place then you are well placed to manage an incident. However, if your company hasn't got one then we at NCOE strongly advise you to consider starting one now. If an unfortunate event does happen, time will not allow you to create or fill the gaps in a CM strategy. The old adage 'be prepared' resonates deeply.

Newcastle Chambers of Engineering (NCOE)

www.ncoe.co.uk

[Click to view more info](#)

ALL IN A DAY'S WORK...

NAME

Dave Welch

OCCUPATION

MD of Ramora UK - Bomb Disposal Specialist

'DISTINGUISHED' WOULD BE THE WORD THAT COMES TO MIND WHEN DESCRIBING THE CREDENTIALS AND CAREER PATH OF DAVE WELCH, MD OF RAMORA UK, THE GLOBAL PROVIDER OF 24/7 REACTIVE BOMB DISPOSAL SERVICES, AND WHAT AN INTERESTING JOURNEY IT HAS BEEN ...

BACKGROUND

Joining the Navy at the age of 16 in Plymouth (HMS RALEIGH) he worked his way up through the ranks, and 23 years later had acquired expertise within Mine Warfare, ROV operations, Weapons Engineering, Royal Navy Clearance Diver and Senior Explosives Officer within bomb disposal. He is, to add to this impressive list, a special advisor to the Board at International Emergency Response. Whilst within the bomb disposal team he was responsible for the North Sea and

so now was his opportunity. So in 2004 Ramora UK was formed - a risk, but with a tenacious attitude, it began.

Formerly the military dealt with all bomb disposal emergency situations. Now Ramora follows the military expertise on a commercial footing and is therefore able to demonstrate all the skills routinely with the necessary capability, but to also minimise the costs. A commercial approach is vital when dealing with UXO offshore due to the vast sums of money that can be lost due to unnecessary shutdown.

PROJECTS

Due to the nature of his work, we can only mention generic case studies and not particular instances – suffice to say they respond to emergencies from life threatening to non-urgent. Always in a state of readiness, the team are perpetually checking their technical kit, Dave likens their role to that of a fireman, maintaining capability to operate on all levels – expecting that next call.

There are teams in readiness at all times to respond to any emergency, all vehicles are tracked around the country and may be diverted and despatched on a priority basis with support vehicles available with additional equipment. In most cases this is within 24 hours. However, in urgent cases the team can leave immediately and be on site in much shorter timescales.

RANGE OF SERVICES

The team have been called out to respond to all manner of jobs. They provide a non-urgent service around the country to coastguard locations for collection of flares which have expired and therefore may be volatile and potentially dangerous requiring safe disposal. They have responded to scrap yards that have unearthed bombs – a circumstance which involves liaising with police, evacuating the area and making safe or detonating the device.



Channels, however at that time there was a shift within the MOD to cease certain aspects of service beyond the 12nm limit. This had a significant impact on the Oil and Gas industry, and it was at this juncture he realised there was a business opportunity. At that point Dave owned a charter boat company on the sidelines

In this challenging society Ramora are called out more and more. They work very closely with the HSE and local agencies – should explosives require storage or collection Ramora can provide safe and secure removal and despatch.

DISPOSAL/DETONATION

Within the wind industry the team are called upon to check and in many cases remove UXOs. They provide a re-active service and are teamed with maritime divers and ROV specialists.

A subsea survey is undertaken. If an item of UXO is detected they must inform DECC or Maritime Management Organisation and apply for a permit. This can take anything from 4 days (exceptional circumstances) or anything up to several months – a bureaucratic stopper. However this ensures that the business operation is effective, thus allowing the progress of the project in an orderly effective manner.

Once underwater they use sonar to locate the UXO and connect elements of their Remote Explosive Ordnance Disposal System (REODS) to safely relocate or disposal of the item. Should the item need to be disposed of in situ, there is usually a team of 3, comprising of a Superintendent, and 2 man EOD team. ROVs are used for the entire operation unless conditions dictate diver intervention.

ROVS V DIVING

If the water is less than 30 metres they utilise the ROVs – however this can be a struggle. If recovering an UXO they can undertake a quick dive. Dependent on the tidal window, they usually have 50 minutes of dive time per tidal window (every 6 hours). Should the item be a small one they detonate approximately 250 metres away, however should it be a larger one the required distance for detonation is 1000 metres away.

SETTING A PRECEDENT

Ramora was the first commercial company to be called upon to remove pipemines from a number of sites around the UK. These have been discovered more recently when landowners are purchasing to build, searches are undertaken/geophysical surveys and UXO studies pending removal. It's literally a boom time!

MOTIVATION & ATTITUDE

A very down to earth and modest man, when asked to describe himself... "I don't do regrets or looking back, the past cannot be changed, find a solution." His motivation is life itself.

It is abundantly clear that this is a vocation to Dave. Holidays? – not had one since 1999, his weekends are his 'holidays'. He delights in watching people develop and credits his 'team' for the support within the company and making it all possible – all have a tenacious attitude and thrive on the adrenaline.

INSPIRATION

When asked if there is one person who has inspired him throughout his career, he could not attribute it to just one. His mother has been an inspiration to him, he never knew his father as he sadly died when he was young, an only child he had a strict upbringing which was the grounding for the future.

Throughout his career he has had exposure to very credible people who have taught him much. With this mixture of influences, he has aspired to many things. He mentions he has a special bond with his Grandfather, again whom he sadly did not have the opportunity to meet, however he has been told he is almost the double of him. His Grandfather was also in the Navy and had all the characteristics that Dave has, perhaps his guiding light – we are all said to have one!

AIMS & ASPIRATIONS

Looking to becoming a palatable replacement for the Ministry of Defence Bomb Disposal Teams Capable of undertaking ammunition/munition disposal and dealing with hazardous (explosive) waste, they have the skills, expertise and equipment to undertake this level of service.

UNUSUAL CIRCUMSTANCES

He and his team (some commercial) were posted overseas in North Africa to undertake a project. Suffice to say he was 'forcibly kept against his will'; overseas militaries have a different set of rules it would seem to here! He was arrested twice, questioned over the explosives he was holding (dispite of course all with the relevant licences). Not a pleasant situation to have your liberty taken. However his powers of negotiation succeeded and all were released! An intimidating and hugely uncomfortable situation for all to endure!

"I DON'T DO
REGRETS
OR LOOKING
BACK"

HOW TO UNWIND?

Marginally slowing down! Walking their exuberant Springer Spaniel (who was trained as 'sniffer' but not in an official capacity – more for leisure – a YTS!) In fact his four legged friend is an official stress buster and it has been mooted that he may well have a place on the team – in the office! Pre-requisite for new recruits to be a dog lover!

HOBBIES:

Leisure constitutes research! Dave has a passion for the subject of underwater counter-terrorism, and finds the psychology of this fascinating – the complexities of limpet mines and terrorist devices – and how to counteract these! He continues his quest for knowledge unstintingly!

WHAT THE FUTURE HOLDS...

To grow into areas and provide a service with the police/government as well as responding and moving forward with the wind energy industry.

There is no doubt that Dave is an exceptionally modest man who is an excellent orator and motivator and his passion and professionalism within this highly charged industry is likened to a luminary! If he reads this he will no doubt deny it! Upon our discussions I can confirm it!

Floss Chaffer
Wind Energy Network

EXPLOSIVES TECHNOLOGY

BLAST DESIGN TAKE US THROUGH THE PROCESS OF THE DISPOSAL OF UXO

SURVEY OF AREAS

As per Crown Estate's policy a sea bed survey is carried out up to 1km from any proposed offshore wind or tidal construction area or cable runs etc. As part of this survey they are looking for any UXO which in the North Sea would generally most likely be WW2 German air dropped ordnance or British.

STEP-BY-STEP PROCESS

An 'as found survey' is carried out by ROV which also includes a sonar sweep of the area – this is logged and saved for further use.

Once any potential identified ordnance is found they carry out another 'as found survey' and the information gathered is detailed into a spreadsheet as follows...

- Location on seabed to proposed development area, including co-ordinates – GPS waypoints
- Possible type of munition, photographic evidence, still pictures, video, measurements.
- Approx charge weight (by volume) then working out a max NEQ (Net Explosives Weight) as this is what will potentially cause any negative effects on marine mammals / existing pipeline / cables etc.
- Water depth
- Sediment / sea bed type
- Munitions description
- Potential diameter of crater that could be created and estimated released sediment
- Safe range for marine mammals & fish
- Injury range for mammals/fish and mortality rate – 25-40%
- Lethal range for mammals & fish – mortality rate 75-100%
- Distance to safety vessels/standby vessels/other third party DSV's/MV's etc



- Owner of proposed offshore scheme
- Specific Impulse on worse scenario detonation
- Peak & over pressure based on worst scenario detonation

COLLATION

After the above data is collated and firmed up then the actual type/make of ordnance is established, the method of disposal is planned along with marine mammal / fish mitigation procedures, third party safety distances, the technical design and deployment of the donar charge is then planned along with the Environmental Impact Study.

DONAR CHARGE DESIGN

A decision is made on the live explosive charge that will be used to initiate the found UXO – an assumption is made that the UXO is still live and capable of sympathetic detonation by a live initiated donar charge and on both the desktop assessment and the practical operation an estimate of safety distances is calculated.

In many cases however the UXO can have become desensitised by salt water ingress and therefore the intention is to use the least NEQ (Net Explosive Quantity) in the donar charge to initiate the UXO. This way, if the UXO fails to detonate NEQ detonating in the water is experienced and the lowest overpressure from the detonation affects marine mammals.

SUCCESSFUL DESTRUCTION

The aim is to sufficiently destroy the UXO so as to not leave any sizeable pieces on the sea bed which in future may still 'look' like an UXO even though it may be a piece of inert casing.

UNIQUE DESIGN AND FIRING SYSTEM

To achieve this criteria they use their own design of charge with a unique firing system.

They use two conical shaped charges of approx 2kg NEQ each which directionally face each other with the ordnance in the middle. Basically a single conical shaped charge is a directionally functioning charge which produces a molten jet travelling at over 9,000m/s. If you were to place say a 2kg conical charge with a 63° cone angle on top of a block of steel it would easily penetrate into the steel over 3ft-4ft.

If you then have two conical charges directionally opposed to each other where they are mounted in-line on either side of the UXO you create a 'collision' charge effect this is where you have two explosively formed jets meeting at approx 18,000m/s any explosive compounds in between will have the best chance to sympathetically detonate/produce a reliable detonation pressure shockwave and if not the whole

A decision is then made as to what deterrent mitigation systems to use, namely seal/dolphin/whale scarers that emit various frequencies of noise which is uncomfortable to each type of marine mammal.

A pressure pulse scarer for fish is then used, as they are not affected by the acoustic deterrents but need a small explosion producing a pressure pulse to

MOBILISATION

All explosives related equipment is tested, checked and mobilised.

The vessel selected is chartered along with all appropriate equipment. Use of robotics and not divers is preferred.

ON SITE/DISPOSAL

- The PAM system is deployed
- Full time MMO's are in place – consideration is to time of year/species present etc), Scrammers are also placed
- The donar shaped charges are laid on the sea bed and firing cables run out to safe firing distances
- All local shipping, DSVs, MVs, coastguard, Navy etc. are informed and given an approx initiation time

PROCEDURAL STAGES

- The seal, whale, dolphin acoustic scarers are turned on, for approx 20-30 mins
- Once all systems are in place the MMO's give an agreed firing the go-ahead
- Activation of overpressure blast monitor
- Set off fish pressure pulse scarers and fire the shot

Successful detonations are identified by the effects on the surface and also the sound/effect on the bottom of the vessel – an inspection is then made by ROV.

FINDINGS WOULD BE...

- A crater on the seabed
- Very small pieces of UXO lying on the seabed

Any pieces bigger than a large paint tin are recovered and an 'as left' survey is carried out and full report is written up.

Blast Design
www.blast.co.uk

Ed's note – this is an abridged version. We recommend you visit Blast Design's microsite held within our supply chain register by scanning the QR code below or clicking on the pink flash in the online magazine.

[Click to view more info](#)



UXO will be destroyed into very small pieces due to the effect of the collision charge.

Blast Design use plastic explosives in the shaped charges along with an EBW (Exploding Bridgewire) Firing System to initiate the charges, this requires an all fire current in excess of 3,000volts and 1,000amps, which ensures a safe environment for initiation.

OPERATIONAL PLANNING

Once the donar charges and firing system is agreed along with the data collected from the 'as found' survey, the Environmental Impact Study, Risk Assessment and Operational Procedures are put together along with operational meetings with key personnel is carried out.

MITIGATION METHOD

The mitigation method is then agreed based on the NEQ of the UXO – distances, mitigation methods etc. This would include a seabed anchored PAM system (Passive Acoustic Monitor), this will pick up the vocalisations of marine mammals which will track them from/to the target or danger area.

scare them away. Again Blast Design have designed their own 'pressure pulse' grenade for this purpose which after the pin is pulled out and deployed in the water, it sinks and initiates 4 tiny explosions.

PAM SYSTEM

The PAM system operates full time while on UXO site – the acoustic scrammers are put on within 30min of detonation and the fish and the fish pressure pulse grenades are fired 2 minutes before detonation.

They also have a minimum of one MMO (Marine Mammal Observer) and one PAM technician out on every UXO operation. All members of the vessel are potential MMO's on every trip – it is all the responsibility of all personnel to look out for marine mammals.

UNEXPLODED ORDNANCE A RECOGNISED THREAT

The potential for UXO within proposed offshore wind developments has become a recognised threat in recent years. Risk reduction to ‘As Low as Reasonably Practicable’ (ALARP), is not only a legal requirement, but is also a consenting, insurance and project financing issue, and as such can become a serious obstacle to the overall development of the site.

SEABED SURVEY

An early stage in ensuring the consenting area is free from UXO involves a detailed seabed survey using a high-resolution side scan sonar, and a magnetometer positioned close to the seabed.

The magnetometer is used to detect variations in the total magnetic field of the underlying seafloor and sub-seabed geology on the basis of anomalies in the Earth’s magnetic field, caused by the presence of ferrous iron on, or below, the seafloor.

Materials high in ferrous or ferric compounds may include wreck debris, pipelines, sites of archaeological interest, volcanic rocks, and clearly, UXO.

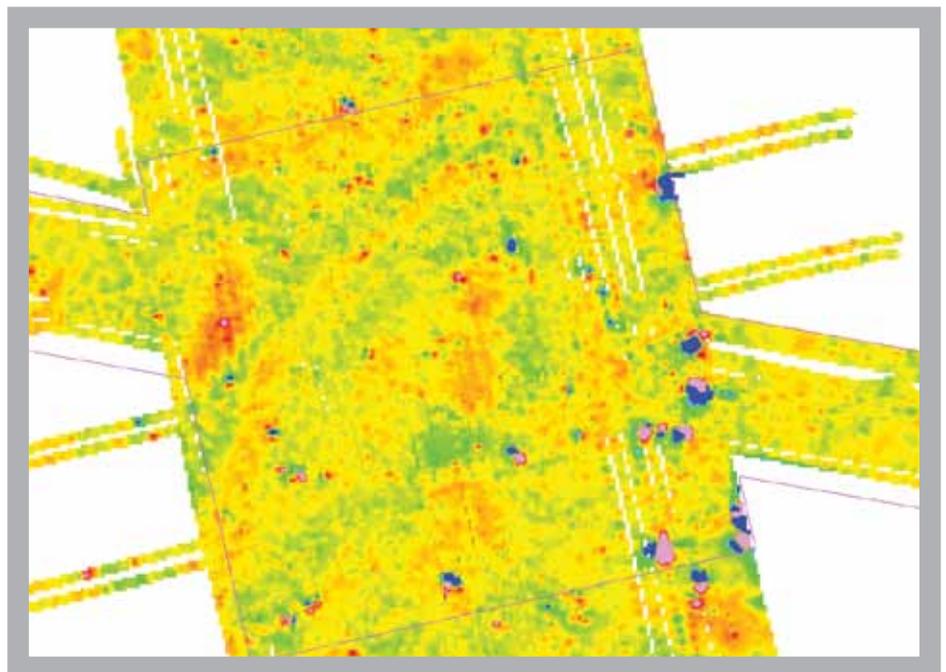
OSIRIS PROJECTS – A CASE STUDY

Osiris Projects were commissioned to perform such a survey for a major Round 2 development.

A WW2 50kg bomb was identified by specialist UXO consultants to be the smallest threat on-site, which required the magnetometer data to have a maximum lateral spacing of 5m, and a maximum vertical height from seabed of 3m.

SPECIALIST PROCEDURE

The company developed a simple but effective tow configuration allowing multiple magnetometers to be deployed simultaneously whereby each magnetometer is deployed in a ‘piggy-back’ arrangement behind a side scan sonar fish and controlled from separate winches.



This allows the towing height of each fish to be controlled independently and equipment deployment and recovery time is drastically reduced compared to a towed array setup. Each magnetometer is fitted with a USBL beacon for accurate and independent positioning.

On this project, the magnetometer towing configuration delivered a mean fish height of 2m above seabed - exceeding the client specification - and the accurate positioning allowed areas of infill to be quickly identified resulting in almost complete coverage of the site.

DATA

Data was processed and interpreted using Oasis Montaj with UX-Detect extension, which allows accurate localisation and analysis of UXO targets which were then or interpreted by the company’s specialist processing geophysicists.

In-depth profile-by-profile analysis of the data, as opposed to automated target picking algorithms, ensured that all anomalies were analysed and that many geological anomalies could be rejected on the basis of their morphology, thus narrowing the number of relevant targets delivered to the UXO Consultants.

OUTCOME

Dive investigations, conducted by specialist commercial diving contractor, corroborated potential targets identified by Osiris Projects, and fortunately the site was free from UXO.

Osiris Projects

www.osirisprojects.co.uk

[Click to view more info](#)

EXPLOSIVES CLEARANCE AND RISK ASSESSMENT

RPS EXPLOSIVES ENGINEERING SERVICES

RPS Explosives Engineering Services (EES) has a comprehensive grounding in all aspects of UXO, explosives clearance and risk assessment, both in the UK and globally.

MANAGING PROJECTS

Their experienced team manages projects with a risk from UXO, saving time and money, and ultimately protecting people and assets. The company is dedicated to providing a pragmatic, site specific approach to mitigating the risk of explosives and UXO.

MARINE EXPERIENCE

Within the marine environment RPS have significant experience in UXO risk

management, supporting their numerous Oil & Gas and Renewable Energy clients.

WIND ENERGY INDUSTRY

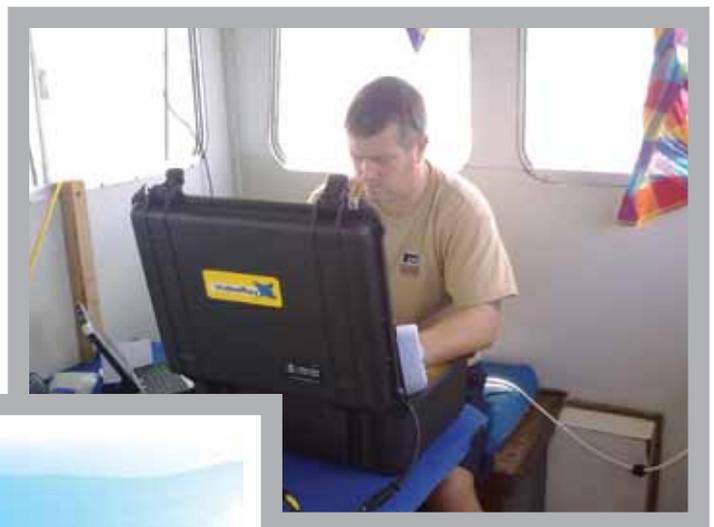
Over the last 6 years they have worked on a number of wind farm projects

in the North and Irish seas providing in-depth risk assessments including survey and mitigation design. RPS was actively involved in the Sheringham Shoal Wind Farm, off of the Norfolk coast, for Scira Offshore Energy Limited.

They worked with both Statoil and Emu providing UXO expertise for the survey data collected, analysing and selecting targets with the potential to be UXO that required further investigation or avoidance.

DISCOVERIES

Based on the data reviewed and assessed by RPS an old ship's cannon and a WWII Air 250lb air dropped bomb were located by divers during investigation of the



"By harnessing the unexploded bombs buried here, we've doubled our energy output."

targets. The bomb was removed by Explosive Ordnance Disposal Experts allowing safe installation of the wind farm turbines and cables.

ROV USE

Since this time RPS continue to support the offshore wind energy industry providing survey, data analysis and risk mitigation support. A recent addition to their arsenal is a mini-ROV (VideoRay) with camera and multi-beam sonar, which can be used to efficiently identify surface targets thus avoiding deployment of costly divers or specialist work class ROV spreads.

RPS Explosives Engineering Services (EES)

www.rpsuxo.com

THE LEGACY OF CONFLICT

THE LEGACY OF BRITAIN'S INVOLVEMENT IN CONFLICT CONTINUES TO HAVE AN IMPACT ON COMMERCIAL ACTIVITIES TO THIS DAY

Unexploded Ordnance (UXO) is encountered on a relatively frequent basis by companies involved in the construction or maintenance of offshore wind farms and other energy sectors.

POTENTIAL RISK

The fact that there is a potential risk of UXO on these sites around the UK should not come as a surprise. The National Archive suggests that in excess of 60,000 munitions remain unaccounted for in the North Sea alone.

Other reports suggest that 1 in 10 of bombs dropped on the UK and its surrounding waters failed to detonate.

FACING REALITY

On the day all of this becomes relevant to your project due to a UXO discovery the question is what to do next? When the project manager of a large wind farm construction project on the East coast had such a scenario he was initially unsure.

PERHAPS THE MILITARY WOULD HELP?

Unfortunately, they no longer provide a guarantee of support to commercial operations and do not undertake any work outside the 12 mile limit. Unless there is an immediate threat to life, a military response is extremely unlikely. Within 24hrs of being told this, the project manager called Ramora UK.

RAMORA UK

Since 2004, Ramora UK has been working with the oil and gas sector to fill the gap left by the Ministry of Defence and also provide some technology based solutions to this complex problem.

CASE STUDY – UXO DISCOVERY

Following a short telephone conversation, the Ramora UK Senior Explosives Officer was invited to an emergency meeting in Harwich. Less than six hours later, the meeting was underway and despite the aim being to gain an understanding of the options available, the outcome was an immediate mobilisation of the full Remote Explosive Ordnance Disposal System (REODS).

MOBILISATION

Less than 36 hours after this initial meeting the full REODS system had been mobilised with vessel, Explosive Ordnance Disposal (EOD) team and ROV to undertake an initial assessment of the UXO.

SKILLS AND EXPERIENCE

Utilising the skills and experience of former Royal Navy Clearance Divers, under the direction of a Mine Warfare and Clearance Diving Officer, the team are well versed in such operations and quickly determined the type of UXO and the disposal methodology.

EQUIPMENT

With all the equipment, including explosives, embarked as a standard protocol, the team had everything necessary to undertake the safe disposal of the munition with minimal fuss.

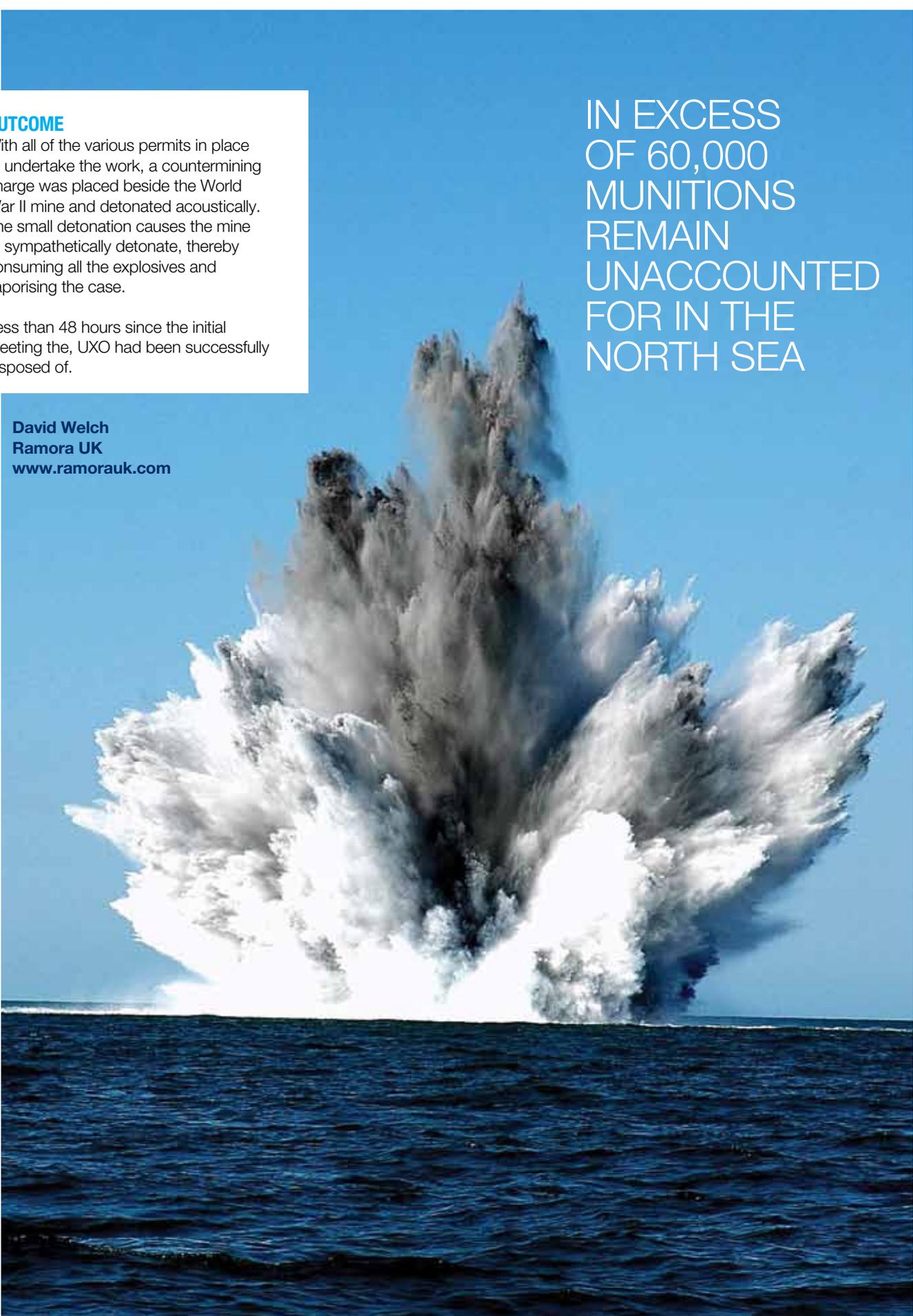
OUTCOME

With all of the various permits in place to undertake the work, a countermining charge was placed beside the World War II mine and detonated acoustically. The small detonation causes the mine to sympathetically detonate, thereby consuming all the explosives and vaporising the case.

Less than 48 hours since the initial meeting the, UXO had been successfully disposed of.

IN EXCESS
OF 60,000
MUNITIONS
REMAIN
UNACCOUNTED
FOR IN THE
NORTH SEA

David Welch
Ramora UK
www.ramora.uk.com



QUO VADIS EVENT LEEDS CASTLE KENT

AROUND 3 YEARS AGO WE HEARD ABOUT THE QUO VADIS EVENT AND THE WORK OF KEVIN DONOVAN AND HIS TEAM AT WINDPOWER RENEWABLE SOLUTIONS.

Since then we have featured not only the conferences but also many industry specific initiatives, which could be described as being 'in the best interests of the industry'. For example the Global Wind Alliance and a selection of their members.



This is a 'by invitation only event', is free of charge and is limited to windfarm owners and O&M providers. The reasoning is quite clear – concerns can be raised, discussed and solutions sought for the good of the industry as a whole.

The Leeds Castle event was their 6th conference and it goes from strength to strength, which proves its worth to the industry.

We were honoured yet again to be invited to help with that focus and intent.

QUO VADIS EVENT

Kevin, Sigi and their team continually look for a venue that will do justice to the previous years' events and Leeds Castle certainly fitted the bill.

Delegates from 19 major European utility companies came, saw, and were conquered by Leeds Castle in Kent. We were even blessed with superb weather – quite a surprise for November!

UNIQUE OPPORTUNITY

On the evening prior to the conference, the delegates gathered for the traditional pre-event dinner. This, together with the breaks during the conference, formed an important part of the continued success of the event. The fact that the delegates can talk openly to like-minded people in the industry is a unique feature that only Quo Vadis provides.

Kevin commented *"We are fortunate that we work in this industry and therefore it is rewarding to be able to give something back. Hence the conference is free for invited guests to attend and it is our intention to continue in that vein for future events. However, the fact that the number of delegates has increased significantly means that we are dependent upon our loyal sponsors and exhibitors who help us finance the event."*

MAIN SPONSORS

Together with Windpower Renewables Solutions this year's event was co-hosted by Schaeffler INA/FAG. Other main sponsors were GL Garrad Hassan and Stork Technical Services.

QUO VADIS CONFERENCE AND SPEAKERS

Welcome and introduction – Kevin Donovan from Windpower Renewable Solutions welcomed all present, explained why we were assembled and introduced our chairman for the day.

Chairman – Clifford McSpadden, from the Global Wind Alliance is always worth listening to – he has an air of confidence which is infectious and results in the audience becoming very much involved in all the presentations and Q & A sessions.

There then followed various presentations from leaders in their field of expertise which proved to be interesting, informative and above all professionally delivered with the right amount of appropriate humour.

- **Elias Decker, DONG Energy**
'Offshore Wind – The lasting legacy'
- **Ian Pledger, Schaffler (UK) Limited**
'Condition monitoring in wind turbines'
- **Tim Morgan, E.ON Climate & Renewables** – 'How to save with a SPARES strategy'
- **David Hamill, Stork Technical Services** – 'Corrosion protection of wind turbines'
- **Thomas Stalin, Vattenfall** – 'The pink elephant in the drive train'
- **Michael Wilkinson, GL Garrad Hassan** – 'SCADA-based condition monitoring – joining advanced analytic techniques with turbine engineering'

QUESTIONS, DISCUSSION AND NETWORKING BREAKS

Yet again we experienced a well thought out format featuring relatively short presentations broken up by question and answer sessions, comfort breaks and networking opportunities.

ADJOINING EXHIBITION

The opportunity for relevant organisations and companies to exhibit was given and the stands were extremely busy, both in offering more detailed valuable advice, highlighted in the conference proper, as well as providing information on their relevant products and services.

SUMMARY

We can certainly report that many of the delegates made their feelings known to us personally that the efforts made by Kevin and his team was very much appreciated by the industry generally. In addition to what has been achieved by setting in train something which helps the industry as a whole.

Windpower Renewables Solutions
www.windpower-renewables-solutions.com

OGN AQUIND

NEW FACTORY APPROVAL

Offshore Group Newcastle Limited is pleased to announce that the planning application for a new 36,000sqm offshore wind fabrication facility was approved by North Tyneside Council recently.

WIND FABRICATION FACILITY

The 36,000sqm building will house an offshore wind fabrication facility, where jacket foundations for offshore wind turbines will be produced, including the innovative Triton foundation. The Project has the potential to create up to 700 local jobs and represents a £50m investment, supporting the growth of the offshore and renewable sectors in the local economy.

Graham Kennedy, Director and Chief Technical Officer for OGN and its subsidiary Aquind comments: *"The achievement of this milestone is excellent news, both for OGN and the North Tyneside area in general and we are delighted that North Tyneside Council has supported this project. We will create around 100 jobs during the construction of the facility and then 700 new sustainable jobs for local people in its operation, plus many more in the regional supply chain. We look forward to working with the Council and local residents as we take this exciting development forward".*

David Edwards, Chief Executive Officer for OGN adds: *"This project will allow us to satisfy a growing demand from the Offshore Wind sector in the coming years and create new long term jobs in a state-of-the-art manufacturing facility. I am proud to be able to bring*

such an opportunity to the region where I was brought up, and I appreciate the support that we have had from the North Tyneside Council in this matter."

CONSTRUCTION

OGN hope to start construction in 2013 and have the facility up and running in 2014 ready to achieve full capacity in time for the deep water offshore wind farm developments around 2015.

Mark Brooker, senior planner at Storeys Edward Symmons, which has submitted the planning application on OGN's behalf, comments: *"We've worked hard with the council to get the application to committee so that this decision could be taken into consideration when OGN's application to the Regional Growth Fund is considered. It will also create and*

safeguard jobs in the supply chain, and bring trade to local businesses. This is all great news for the area. The Secretary of State for Business, Innovation and Skills, local ward councillors, our MP and the elected mayor have all visited the site and we are very pleased with the support we have received from them."

The fabrication halls at Hadrian Yard B will be demolished to make way for the new facility measuring 300m by 120m, which will comprise three 40 metre wide parallel production lines each leading to a dedicated painting bay. The office block and car parking at Yard B will be retained and refurbished. Work is still being undertaken in conjunction with the Council on how best to soften the visual impact of the building on the area.

Aquind
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 W: www.safetytechnology.co.uk

SOIL MACHINE DYNAMICS (SMD)

INNOVATIVE EQUIPMENT FOR THE WIND INDUSTRY

SMD is the world's leading subsea equipment manufacturer committed to high quality and performance backed up by thorough engineering and solid support.

EXPERIENCE

Founded in 1971 as Soil Machine Dynamics Ltd, SMD is headquartered in the United Kingdom with offices in Singapore and Houston. SMD provides

most powerful trenching ROV, Trenching Tractor and fall pipe ROV. SMD cable and pipeline ploughs have successfully trenched multiple cables and pipelines across the globe.

NEW OPPORTUNITY

The decline in the telecoms industry around 2004, followed by the growth of offshore wind and marine renewables markets created a new opportunity. In order to address these emerging markets they have adapted their existing range of subsea ploughs and trenching vehicles to focus particularly on the subsea power and control cable infrastructure for the marine renewables industry.

NEW CHALLENGES

Offshore wind farm installations presented a new range of challenges which called for a series of product innovations. Vehicles are required to operate in harder seabed conditions to bury cables up to five

INNOVATIVE INDUSTRY SPECIFIC EQUIPMENT

SMD has used its expertise, developed from working with telecoms cabling in the marine environment, and adapted existing products to develop a suite of proven trenching systems tailored to Offshore Wind and Offshore Power Cable installation, providing effective solutions to this growing industry.

For example, reduced visibility and strong currents directly impact on the ease of vehicle recovery; therefore an umbilical guided recovery system has been developed to allow quick and easy recovery in low visibility, high sea-state conditions.

The QT1000 and QT1400 vehicles were specifically developed for offshore wind installation. Both vehicles are designed to operate in shallow water, high current conditions, with low visibility, and to work with larger less flexible product which is typical of Offshore Wind Farms. The QT1400 offers multiple tooling providing operators with the ability to tackle any seabed conditions with one machine, therefore reducing cost.

INCREASED PRODUCTIVITY

Vehicles use tooling engineered to increase trenching speeds, increasing productivity and in turn reducing customer costs. They are the only company which can offer customers a suite of deck equipment to launch and control their trenching vehicles, providing a level of assurance and risk mitigation, which once again helps to drive down costs and risks associated with installation.

SUMMARY

SMD's continual evolution and innovation in seafloor cable protection equipment has enabled the Offshore Wind industry to improve infrastructure at a rate which enables it to meet 2020 targets. Their customers are now able to deliver reliable and cost effective cable protection methodologies to wind farm constructors.

As a result of this SMD has seen its turnover relating to Offshore Wind grow from around 10% in 2010 to 30% in 2012.

SMD

www.smd.co.uk

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to the energy (oil & gas and renewable), telecoms, mining, military and scientific industries with an increasing number of vehicles more recently being manufactured for the Offshore Wind market.

They have delivered in excess of 100 subsea trenchers and ploughs with a long experience in providing a reliable solution for safely protecting cable and umbilical in hard ground. This includes the world's

times larger in diameter (and therefore considerably less flexible) in trenches up to three times deeper than previously required by the telecoms industry. This was a real step-change in the capability required.

In addition to the changes in cable handling, the vehicles themselves needed to be more manoeuvrable, operate in tidal conditions with poor visibility and be capable of protecting a cable which had already been installed on the sea bed.

TATA STEEL INCREASES EFFICIENCY OF OFFSHORE WIND FARM JACKET CONSTRUCTION

OFFSHORE WIND TURBINES ARE PLAYING AN EVER-INCREASING ROLE IN GOVERNMENTS' AIMS TO CONTINUE TRANSITIONING TO A LOW-CARBON ECONOMY AND MEET STATED GREEN AIMS BY 2020. RENEWABLE ENERGY IS ONE OF THE MOST COST EFFECTIVE METHODS OF PRODUCING POWER IN THE LONG RUN, ONCE THE CAPITAL COSTS OF THE INITIAL DESIGN, MANUFACTURE, ASSEMBLY AND INSTALLATION HAVE BEEN RECONCILED.

COMMITMENT

The UK is committed to producing 15% of its energy from renewable sources by 2020 and to meet this demand, manufacturers are continuously striving to produce wind turbines with increasing power outputs. Wind farms are being developed in larger numbers, deeper waters, further offshore and therefore almost inevitably requiring a move away from monopile construction to other alternative foundation structures.

EXPERIENCE AND TECHNICAL EXPERTISE

With a long-standing presence and significant technical expertise in the burgeoning global renewable energy and power sector, Tata Steel has reviewed the factors affecting the structural design of offshore wind turbine platforms, a significant part of the initial capital expenditure and has invested in new routes to support economical serial jacket production.

Current factors affecting the structural design of any wind turbine include...

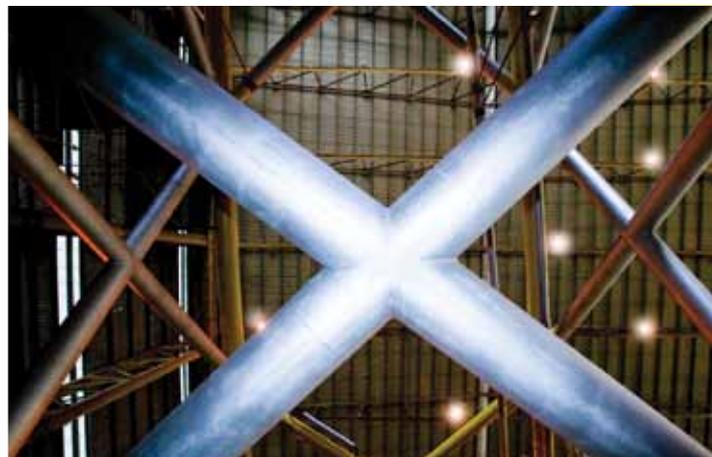
- The desire to improve the power output for each turbine to enable enhanced return on investment, leading to increased size and weight and enhanced structural stress and fatigue.
- Design guidelines based on offshore oil and gas installations
- Wind turbines being located further offshore in deeper waters
- Challenging government targets for the cost per megawatt-hour (MWh)
- Small wind farm developments are being replaced with multi stage large farms

PROVIDING COST EFFECTIVE SOLUTIONS

With stretching targets for cost per kilowatt-hour (KWh) having been set, Tata Steel has looked at how to minimise all the incidental costs including that of manufacturing, installing and maintaining the structure of an offshore wind turbine and there are several key factors to consider, in order to achieve cost effective solutions.

Design and assembly standardisation will be important in ensuring economies of scale within the sub supply chain. Small deviations from manufacturers optimised steel tube sizes have been adding significant additional costs. Close collaboration between the designer, fabricator and steel supplier will be required to ensure design integrity is optimised while maximising process efficiency and minimising costs.

Displacing the current supply of the bundle of individual tubes by steel suppliers with complete point-to-point assemblies will enhance fabricator throughput. Painted assemblies incorporating pre-prepared machined ends will enable swift assembly and welding by fabricators.



TUBE MANUFACTURING FOR OFFSHORE STRUCTURES

There are three primary methods for manufacturing tubes for offshore structures; three roll bending, JCO and UOE, the latter two indicating the shape during forming. In all cases submerged arc welding is the preferred option with both high production single pass welding and multi pass welding being adopted.

• Three roll bending

Three roll bending has been the traditional method of producing large diameter three to four metre cans welded for use in monopiles. It is a very flexible process with unconstrained diameters available and immense quantity flexibility, however it has a very slow throughput rate. High production volumes are being considered for developing wind farms and utilising this option for legs and braces is unlikely to be economic.

• JCO

The use of JCO bending machines have been more popular to meet legs and braces demand with structure volume enhancements as well as the material thickness increases arising from larger turbines. Like three roll bending, this manufacturing process is flexible with quick changeovers between differing tube sizes, allowing small quantities to be made economically. Plate is passed through the rollers, achieving a J shape, subsequently C and finally O prior to welding. This process has high forming power and thus becomes competitive for thick wall tubes, notable for legs and especially lower portions.

Local suppliers have the capability to more readily react to the almost inevitable changes in build programmes without the need to have large quantities of stock and capital sitting idle. The speed of local supplier reactivity with enhanced service level capabilities and reduced delivery lead times will assist to enhance fabricator production efficiency and mitigate the potential for late deliveries. Additionally, moving high-density materials is expensive, so local supply offers economic benefits.

DEDICATED PROCESSING CENTRE

The company has another dedicated processing centre that is based next to the plate mill in Scunthorpe, which allows Tata Steel to supply plate to wind turbine and tower manufacturers at exactly the right time in their production process. It also allows Tata Steel to carry out further processing of its plate, reducing overall lead times within the supply chain and reducing processing and stocking costs downstream.

The cutting machines cut the plates into shapes in preparation for fabricating into conical towers. The edges of the plates can also be prepared ready for welding together to produce the towers.

CLOSER COLLABORATION

Tata Steel is confident that if the industry forms closer collaboration throughout the supply chain between owner/operator, designer, fabricator and steel manufacturer, it can enable cost effective design and minimise manufacture assembly and installation costs.

In addition, the use of local suppliers to minimise finance tied up in stock and transportation costs is one of the key factors to support economical serial jacket production.



• UOE

The third and most cost effective tube manufacturing process, UOE, refers to the shapes determined during the phase production, with flat plate initially bent into a U, followed by an O as the plate forced round in dies. The E then results from the use of an expander to enable the tube to be delivered to specific tolerances. With the initial high capital and set up costs for each tube size, this process combined with single pass submerged arc welding becomes a cost effective route for large quantities of tubes.

SUPPLY

Supply of assemblies in an agreed specific build sequence minimises storage requirements while reducing the potential for tube damage. Minimising the stock within the supply chain is extremely beneficial for reducing cost and aiding cash flow.

DEDICATION TO OFFSHORE WIND

Components will be manufactured from tubulars at Tata Steel's new offshore processing centre at Hartlepool and prepared for welding into the finished structures, shortening throughput times and improving cost efficiency for customers, who will be able to source all steel components from a single supplier. Preparation work will include cutting-to-length, welding, shot blasting, coating and end-profiling. Materials will then be stored for shipment in kit form to fabricators in the UK and mainland Europe using local deepwater ports and the UK rail network.

In addition to tubulars for jacket foundation structures, Tata Steel is also able to supply smaller sized tubes and sections suitable for all primary and secondary steel work within wind turbine fabrications.

Ian Davies
Tata Steel
www.tatasteel.com

[Click to view more info](#)

GERMAN EXPERIENCE PRIMES TAG ENERGY SOLUTIONS FOR UK WIND PROJECTS

TAG Energy Solutions believes its ability to successfully deliver a project for the German offshore wind market is the perfect preparation for upcoming UK developments.

The North East England-based company played a part in the delivery of steel monopile foundations for the Riffgat Offshore Wind Farm, which is located North West of the German island of Borkum.

The monopiles, which measure 60.2m in length and have a diameter of 6.5m will be utilised to support Seimens 3.6-120 wind turbines on the wind farm being developed by German Groups EWE and ENOVA Energiesysteme GmbH & Co.KG.

TAG Energy Solutions, which operates a 170,000 square metre, state-of-the-art riverside facility that has the capability to deliver up to 100,000 te of steel foundations per annum, was able to bid for and win the project after it secured accreditation required to operate in the German market.

ACCREDITATION

Following a successful audit, TAG Energy Solutions was certified to DIN 18800-7 Offshore Standard, which is required by foundation suppliers to developers of German offshore wind farms.

This accreditation verifies the suitability of primary steel structures and structural engineering, which includes TAG Energy Solutions' range of offshore wind turbine solutions including monopiles.

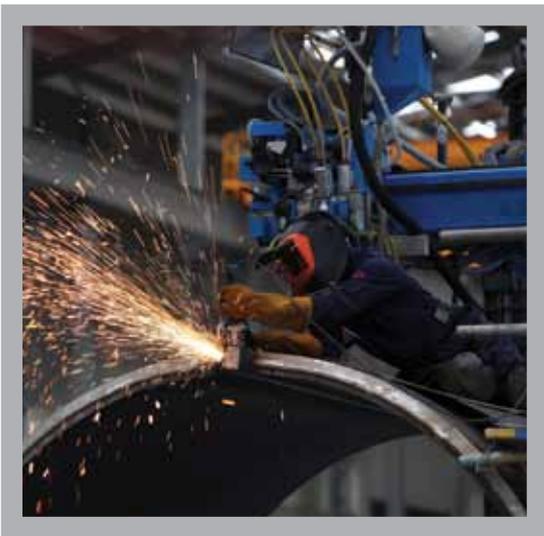
Following the award of the DIN 18800-7, TAG Energy Solutions has achieved a full suite of certifications from accreditation bodies required by its sector. Most recently, the company secured internationally-recognised welding certification, ISO 3834 Part 2.

THE GERMAN MARKET

John MacAskill, Business Development Director at TAG Energy Solutions, said: *"The ability to manufacture for the German offshore wind market, often perceived as difficult to penetrate is a real advantage for a British company with ambitions to serve upcoming UK projects. The standards expected by the German market are exceptionally high and the feedback we received for our work was extremely positive.*

"We are positioned to work with E.ON on the delayed Humber Gateway project and are well prepared to be able to deliver for future Round 3 developments. The Riffgat project had put us in good stead to become a key part of the supply chain for UK and European offshore wind developments."

TAG Energy Solutions
www.tagenergysolutions.com



VINCE CABLE VISITS THE HALEY GROUP

Vince Cable took time away from his Parliamentary duties this week as he made a visit to the Haley Group headquarters in the South West, to meet representatives of FLI Structures and their sister company Haley Engineering. FLI and Haley Engineering work together on many of their projects assisting one another in meeting manufacturing demands.

ONSHORE AND OFFSHORE UK WIND FARMS

FLI Structures is the UK's largest mast, tower and screw pile manufacturer in

the UK and is part of the Haley Group, along with Haley Engineering, Alan Dick Radar and Cellular and George Jackson LTD. FLI is the leader in the supply of the UK's meteorological masts with a market share of over 50% for both, onshore and offshore UK wind farms.

DISCUSSIONS

In discussions about the steel sector as a whole Bill Haley, Haley Group Director thanked the Business Secretary for the Government's continued support for the Building Schools for the Future Programme, which has meant an increase in steelwork

for school construction projects since 2008, but raised his concerns about the 43% drop over the last four years in demand for steelwork as a whole resulting from the depressed state of the construction industry, in turn highlighting the opportunities which might be presented by borrowing to invest in large-scale infrastructure projects around the UK.

Vince Cable explained he understood how serious the lack of demand was for construction businesses, but warned that the Treasury would want to weigh up the benefits of infrastructure projects against the risk that markets would react negatively to increased Government borrowing, even at historically low interest rates. Vince agreed that The Haley Group was well-placed to benefit from the development at Hinkley Point, as Electricité de France had expressed a wish to engage local companies in supply chain contracts for this project.

FACILITY TOUR

The Business Secretary was then shown around the Haley group facilities and took part in some of the manufacturing activities including being asked to prepare the first steel beam for fabrication, ready for Haley's 100th School building project.

The Haley Group employs 145 people between four companies.

FLI Structures
www.fli.co.uk



Vince Cable with Bill Haley

[Click to view more info](#)

SUPPLYING OFFSHORE WIND TURBINE FOUNDATIONS

The UK offshore construction industry is probably the best suited to provide offshore wind developers with the adequate supply of foundations. It is based on decades of offshore experience, strong traditions of marine engineering as well as an outstanding track record for innovation.

It is an area where it is probably the easiest to secure a large share of the UK content. However, it is also a segment of the supply chain that has been consistently overlooked in the UK by developers, the Government and industry experts.

STEEL OR CONCRETE

When we talk about foundations, there are largely just two materials to choose from – steel or concrete. We believe that steel is going to be the main material for offshore wind foundations in the coming 10-20 years.

Future large offshore wind developments are about scale, speed and repeatability. In other words, the offshore wind supply chain will need to deliver a large number of foundations in a very short timeframe and to find a way to transport and install them safely and cheaply. And this is where steel wins over concrete.

While concrete gravity based structures have some benefits, concrete foundations are very large and heavy, their transportation in big numbers is very questionable and their installation requires lots of seabed preparation.

WATERFRONT CONSTRUCTION CAPACITY

There is also not nearly enough waterfront construction capacity to produce them in large numbers. They will have certain market share in areas where a steel foundation can't be used due to some conditions, but we don't see how these structures can be supplied in hundreds every year.

OIL & GAS INDUSTRY EXPERIENCE

This also matches the experience of the Oil & Gas industry where concrete foundations are typically used for gigantic platforms like Thor in Norway.

While offshore wind farms go further from shore, into deeper water and use larger turbines, the jacket or space frame foundations become the solution of choice.

JACKET STRUCTURES

Jacket structures are easily adaptable for a range of turbines, sea floor conditions and water depth. They also give some flexibility as to the installation arrangement that can be driven piles, drilled piles or suction buckets. The installation process can also be optimised to expand the offshore window while using not so expensive vessels. Finally, they can be produced in a mass-manufacturing fashion.

These are the core points underlining our approach to the offshore wind market as a foundations supplier.

AQUIND

AQUIND has developed an innovative three-legged jacket foundation for offshore wind turbines that they call Triton™. This design is primarily targeted at wind turbines in the 5-6MW range and water depths of between 30m and 60m, but can also be used in shallower waters.

It covers most of Round 3 and STW wind farms. The foundation has a number of novel features aimed at reducing installation costs and enabling installation to take place in rougher sea conditions than is often possible. Triton has been demonstrated to work for both sand and clay seafloors.

THIRD PARTY ANALYSIS

An analysis by a third party has also shown that Triton will work with a range of leading 5 and 6MW turbines. AQUIND™ is continuing to expand the list of design cases.

A DIFFERENT APPROACH

Triton™ has also been developed specifically with low cost mass production in mind. Conventional Oil and Gas offshore Jackets are all of a bespoke design and hence by necessity tend to be constructed by traditional manual methods. Such an approach is not feasible for the offshore wind industry as it would be both too costly and time consuming. A typical Oil and Gas Jacket can take 18 months or more to construct. A different approach is required when over 5,000 offshore wind turbine foundations are required by Round 3 areas in the next ten years.

To achieve these levels of production, they look to reduce the number of structural elements and joints while also standardising these elements and operations as far as possible. This is where the company works with a number of steel suppliers to see if they can use as much as possible lower cost off-the-shelf rolled products rather than custom-made tubulars.

OFFSHORE WIND STRATEGY

This leads to the second part of their strategy in offshore wind. The group plans to build a new 36,000m² automated manufacturing plant at its Hadrian Yard in Wallsend. This will be the most optimal offshore construction location for many of the Round 3 projects. The company's target is to achieve the throughput of 100,000te of jacket foundations per year (approximately 3 Triton foundations per week).

The new plant will be able to produce any type of jacket foundation, including Triton, as well as modules and foundations for substations and other offshore structures.

UNDERCOVER FACILITY

Most importantly, the new facility will allow building complete structures undercover, without weather interruptions and with a minimum impact on surrounding areas.

The North Tyne Council granted planning consent in September 2012. OGN has also been approved for a £4.5m Regional Growth Fund Grant, which is expected to provide over 700 long term sustainable jobs.

Aquind

www.ogn-group.com

[Click to view more info](#)

KEEPING AHEAD OF THE GAME OFFSHORE

As more round one wind farms move into production and round two wind farms move into the construction phase, so the activity of the wind farm supply vessel sector increases. It is not unfair to say that wind farm developers have had to embrace new thoughts and ideas whilst proceeding through the planning and design of offshore wind farms. Similarly, they will have to embrace new thoughts and ideas when it comes to dealing with marine transfers.

ACCESSIBILITY

Unlike onshore assets which are in general readily accessible in all weathers, the marine environment is not so kind. Not only is the physical landscape very different between onshore and offshore wind farms, but so is the legal and regulatory landscape.

Largely speaking, onshore facilities are subject to exactly the same regulations as any other onshore factory or industrial concern. However at sea a wholly different set of rules exist, which are regulated by a number of different authorities. Again, in many respects there is nothing special about offshore renewable energy compared with the regulation of any other marine activity, but it is nevertheless a specialised area requiring specialist advice.

In many respects compliance with marine health and safety and other regulations will be a matter for the vessel operator. There are, in certain circumstances, implications for those chartering such vessels. This of course leads onto the need for specialist advice by both parties relating to the hire agreement or charter, for such vessels.

ACCIDENTS

Generally speaking, in the event of an accident onshore the Health & Safety Executive will take the lead, unless there is some suggestion of manslaughter or murder - in which case the police would become involved. This is not the case in the marine environment as the HSE has limited jurisdiction. In general, investigations into regulatory breaches at sea are conducted by the Enforcement Unit of the Maritime and Coastguard Agency. This small team will respond quite rapidly where necessary to a marine casualty to ensure that the circumstances of the incident are investigated as quickly as possible. This helps to ensure that the evidence is still fresh in everybody's minds and it is possible for physical evidence to be collected, such as copies of log books or electronic records from Vessel Management Systems.



THE ENFORCEMENT UNIT

The Enforcement Unit gains most of its powers from the provisions of the Merchant Shipping Act 1995 together with Regulations made thereunder. It is often quoted that there are more offences that can be committed by a seafarer going to sea than a driver taking his car on the road. Whilst this may or may not be the case it is certainly true that marine regulatory offences are often technical in nature and require specialist advice. Quite apart from anything else it helps if there is an understanding of basics such as marine terminology practice and procedure. The enforcement officers will certainly know the marine environment back to front and it is therefore essential that those advising ship owners or wind farm operators are similarly well informed.

In addition, it should be noted that although it is the MCA Enforcement Unit which is investigating this will nevertheless be a criminal investigation in just the same way as if it were a police investigation. All the same rules concerning legal privilege, disclosure of evidence and the protection of human rights apply to those being investigated by the MCA Enforcement Unit, as they do to somebody being interviewed by the police for an offence such as theft, murder or manslaughter. Again there is therefore need for specialist advice relating to the operation of the criminal law.

MARINE ACCIDENT INVESTIGATION

In addition any marine casualty will be investigated by the Marine Accident Investigation branch, which has sweeping powers to investigate marine casualties and incidents. However, its role is to investigate incidents with a view to disseminating information and learning lessons so as to prevent similar incidents in the future.

These reports cannot be used in a court of law but nevertheless its investigations can often lead to issues which are relevant to the MCA's criminal investigation. It is not uncommon for matters arising from the MAIB investigation to transport themselves into a case which eventually becomes before a criminal court.

In limited circumstances the HSE may well have powers of investigation, especially relating to incidents occurring on turbines of offshore structures or incidents occurring in port, or on gangways and ramps from port side facilities to a vessel. It should also not be forgotten that Port Authorities will have some rights to commence criminal investigations and bring prosecutions for offences contrary to port byelaws.

SUMMARY

In the unfortunate event of an incident it is likely that all of the potential regulating authorities will descend at the same time and there are memorandums of understanding between them as to which one has precedence – although it should be noted that this isn't always followed.

Specialist maritime knowledge coupled with experience and knowledge of the criminal law is an important factor in protecting the interests of everybody who may be involved with an incident occurring on an offshore support or transfer vessel.

Andrew Oliver
Andrew Jackson Solicitors
www.andrewjackson.co.uk

[Click to view more info](#)

WIND TURBINES GO BACK TO BASICS

Renewable energy generation simplifies its technology, as wind installations begin to reject gearboxes in favour of the good-old direct drive turbines, states a new report by energy experts GlobalData.

ADVANTAGES AND DRAWBACKS

The new report discusses the advantages and problems associated with advanced technology in the wind power industry. A gearbox allows the generator's internal shaft to spin 50–250 times for each rotation of the turbine blades, and provides advantages including low noise levels and high efficiency. However, drawbacks include a high level of maintenance and low reliability.

EXPECTATIONS

The global wind turbine gearbox market is dominated by Winergy and China High Speed Transmission Equipment, who combined accounted for a 52% share of global wind turbine gearbox production in 2011. The total amount of gearbox units installed in the global wind market increased from 9,075 in 2006 to 21,192 in 2011 at a Compound Annual Growth Rate (CAGR) of 19%, but an increase in average turbine size and growing prominence of direct drive systems is expected to result in a decline in turbine installations with gearboxes during the forecast period, from present levels to 12,662 by 2020.

DIRECT DRIVE TECHNOLOGY

In contrast, direct drive technology does not use a gearbox, offering slow movement of all the parts of the wind turbine systems and therefore reduced wear and tear of the system and superior reliability. Direct drive turbines have been in the wind power market for a long time, but have gained increasing popularity in recent years due to the low reliability and high refurbishment costs of gearbox components.

Enercon GmbH of Germany and Xinjiang GoldWind Science and Technology Company Limited of China are major companies manufacturing direct drive turbines, and both are perfecting their industry offerings. Enercon's annular multiple poles generator reduces the number of moving components used, while Xinjiang's GoldWind uses permanent magnet direct drive technology.

This increases reliability substantially, and reduces maintenance costs and time, increasing production time and therefore providing improved returns. However, the cost of permanent magnet generators depends upon the cost of rare earth materials such as Neodymium.

The share of global wind turbine installations accounted for by direct drive turbines has grown from around 18% in 2006 to 22% in 2011, and is expected to increase to 29% by 2020, with wind turbine manufacturers such as Siemens and GE shifting from gearbox turbines to permanent magnet direct drive turbines.

GlobalData
www.globaldata.com

CHANGING UP A GEAR DIRECT DRIVE V GEARBOX

If the wind industry achieves its forecasted growth, there will be more pressure than ever on wind turbines to last longer and operate with better productivity. A smooth operating gearbox is crucial to delivering a fully functioning, long lasting turbine.



GEARBOXES

Gear boxes are lubricated with oil, and direct drives generally use grease for lubrication. The reputation of gearbox turbines has been somewhat challenged because of reportedly high failure rates. On the other hand a major turbine manufacturer has reported that the mean age of their turbines is 23 years, with excellent gearbox reliability within that.

DIRECT DRIVE

Conversely, direct drive turbines have been criticised for costing more and weighing more than the gearbox alternatives, although lighter weight options are now being developed.

CONFLICTING VIEWS

So there are different, often conflicting views on which type of system is more

favourable. What is clear, however, is that improvements in both technologies will continue as the wind power industry grows. At the moment gearbox turbines provide the majority of systems.

LUBRICATION ESSENTIAL

Therefore lubrication is essential to eliminate many of the problems of gearbox maintenance.

In order to determine the right lubricant it's important to identify the differences between the direct drive systems and gearboxes that power the turbines.

The right lubrication can help to enhance performance, lifetime and productivity, as well as reduce downtime – all of this can help to deliver commercial benefits and competitive advantage.

Daryl Luke
Castrol Industrial
www.castrol.com

WIND TURBINE DRIVETRAINS GEARED V DIRECT DRIVE

Turbine reliability is key to maximising power generation and ultimately it is a direct influencer of cost and profitability. With wind turbine operators focused on driving down the cost of energy, David Brown has worked with numerous collaborators, from customers, industrial partners and academia, designing and developing drive train solutions to deliver these cost efficiencies. Through evaluation of numerous multi-MW wind turbine drive train concepts the company has now identified the optimum solution for offshore systems – an integrated, geared drive train.

RESEARCH AND DEVELOPMENT PROGRAMME

The company's targeted R&D programme addressed both gearbox and generation equipment including novel axial flux generator technology, for both geared and direct drive configurations. Research showed each option has distinct characteristics that strongly influence both reliability and lifecycle costs. For example, the conceptual simplicity of a direct drive may appear to offer the most elegant

solution, however gearboxes have been proven in a broad range of assurance critical industries to be a highly efficient and reliable means of converting the low speed, high torque of a rotor shaft to a condition optimum for a cost effective, efficient generator.

RELIABILITY PARAMOUNT

Ensuring reliability of the turbine driveline is paramount to availability and begins with performance specification and design. The highly variable nature of the wind power generation environment can make identification of service duty challenging, yet any inaccuracy in the specification of the load regime can significantly compromise drive train component reliability. Such risks apply to both direct drive and geared turbines, however the smaller scale of geared system driveline components simplifies the task of design for service reliability.

ACCESSIBILITY CONSTRAINTS

In addition, accessibility constraints offshore lead to the necessity of modular drive



train architectures that simplify the task of assembly and installation and geared drive trains intrinsically provide this. With a geared drive train all subsystems and components can be removed and replaced with no disturbance to the primary hub/blade assembly, rotor mainshaft and bearings.

CONCLUSION – INTEGRATED GEARED DRIVE TRAIN

With all this in mind it is a truly integrated geared drive train that offers the most reliable, cost effective and efficient solution to the industry's need to drive down the cost of energy. The direct drive train has higher acquisition and installation costs due to larger, heavier components and is relatively unproven technology in the offshore wind environment.

Structural design, thermal effects, assembly and maintainability are also challenging for multi-MW scale direct drive generators. By contrast, geared or integrated medium speed generators utilise proven technologies, offering turbine operators higher reliability and the least risk.

These lower weight, compact and modular configurations facilitate manufacture, installation, maintenance and where necessary, removal. Engineered with integrity, the combination of these benefits of a geared drivetrain system provides a robust solution to the goal of minimising the cost of energy production.

David Brown
www.davidbrown.com

GEARBOX V DIRECT DRIVE IT IS LARGELY ABOUT MONEY

The choice between using gearboxes or direct drive systems to convert the blade rotation of wind turbines into electricity comes down largely to money.

Doesn't it always?



THE BASICS

Choose a gearbox and get proven technology, that does the job – but suffer issues of reliability, turbine downtime and too many technician visits. Pick a direct drive system and you've eliminated the technically most complicated and vulnerable part of the turbine - but paid the penalty for higher capital cost in the drive train, generator and nacelle.

RETURN ON INVESTMENT

Other than health and safety, it's about how much money the turbine generates over its life, minus the installed capital cost and the lifetime operations and maintenance – and the stakes rise massively offshore. So what horse do you back?

LIQUID FRICTION REDUCTION

At Lofrix they know they can improve the gamble whatever the choice, and their on-going work with Huddersfield University and some major wind turbine operators in the UK supports that. Lofrix liquid friction

reduction products boast millions of hours of commercial application and remarkable results across a wide range of industrial sectors.

Already in 10% of the UK's large wind turbines, Lofrix reduces turbine failures by lowering friction on bearing and gear interfaces. Dramatically reducing component wear, hence lubricant particulate contamination, it maintains oil quality, and substantially lessens unscheduled maintenance - positively impacting on the life of gearboxes, hydraulic systems, and bearings.

JURY'S OUT

The jury is out on the gearbox versus direct drive case, but treating either system with Lofrix will considerably lengthen operating life and increase returns.

Lofrix
www.lofrix.com

HEALTHY FRICTION DIRECT DRIVE VS GEARBOX WIND TURBINES

The competition between direct drive and gear box wind turbine technology only seeks to strengthen both technologies, ensuring improved reliability, affordability, easier and less frequent maintenance.

RECENT COMPARISONS

Gearbox wind turbines have gone through a number of significant improvements in recent years reducing the frequency of the gearbox failures and adding to their reputation of being reliable. However they have come under strong competition from newer direct drive machines that are; simpler and more efficient but questionably more expensive, heavier and whose longevity is yet to be proven.

HISTORY

Historically, most conventional wind turbines have a gearbox located centrally in the drive train, that takes the low rotation speed shaft - coupled to the wind driven rotor - and increases the rotational speed through the gearbox to a high speed shaft sometimes as much as a hundred times to reach the required grid frequency, helping to reduce the size of the generator needed in the process.

INDUSTRY RESPONSE

As a response to growing concerns over the operation and maintenance costs of larger wind turbines, direct drive wind turbines have been developed where the gearbox has been removed and the rotor shaft is fed directly to a synchronous generator.

This uses less moving parts, potentially creating an even more reliable machine, reducing operating and maintenance costs over the long term and helping make electricity from wind more competitive.

Many newer direct drive variants use permanent magnets which are made out of rare earth materials such as Neodymium, whose future supply is unknown and in recent years have seen sharp increases in price.

DEVELOPMENTS

The developments in direct drive technology are forcing traditional gearbox designs to become cheaper, lighter and more efficient. This healthy friction is set to ensure that both wind turbine technologies help drive up efficiency and reliability whilst driving down operating costs within the industry.

ICE Renewables sells a range of tried and tested medium scale gearbox wind turbines and will shortly be introducing a new 100kW direct drive machine to the market.

Julian Martin
ICE Renewables
www.icerenewables.com



GEARBOX V DIRECT DRIVE?

.....OR IS THERE ANOTHER WAY?

The debate as to whether or not the conventional wind turbine drive train with a gearbox at its centre or whether the direct drive concept is better has been aired for many years now and the arguments from both sides are well known.

PERSONAL BIASED CONSIDERATION

Naturally depending on where you stand your argument will tend to favour what is best for your business and objectivity may be skewed towards personal considerations. It is clear however that both sides of the argument have positives and negatives, nothing is perfect. In an ideal world we would be able to keep all the positives and lose all the negatives, but this is never going to be completely possible. It should never however stop us from trying. If we never try we will never succeed.

SIZE AND WEIGHT

The resultant increase in component sizes to meet this massive increase in generation capacity is also massive and it is becoming a potential limiting factor to the economics of turbine growth. The two companies from Finland; one a gearbox manufacturer (Moventas) and the other a Permanent Magnet Generator manufacturer (The Switch) clearly identified size and weight as becoming limiting factors in both conventional and direct drive turbines and decided that a solution needed to be found.

OTHER CONSIDERATIONS

Size and weight were not the only considerations taken into account by Moventas and The Switch. Other factors were carefully considered with the goal of reducing the cost of generation.

One such consideration was the ability to perform service to the unit on site in the nacelle. This consideration was particularly relevant with the increase in the number of turbines being situated offshore. The costs associated with lifting a gearbox or, as is in some cases a complete nacelle, from an off-shore turbine is extremely high and can only be achieved using specialist lifting

vessels that are not always available and may have limited operating windows due to weather constraints in certain areas.

EASE OF SERVICE

Considering ease of service is of course important as it is a universal truth that all machines have the potential to fail, therefore it is important to make provision for this when you design. It is also a good idea to design something which will be as reliable as possible and this became an important driver for Moventas and The Switch and can be summed up in the statement below.

“Increasing reliability by reducing system complexity is key in reducing cost of wind energy production”

REDUCTION OF COMPLEXITY

So in order to increase reliability the complexity of the system must be reduced. On a drivetrain level the result is the integration of the independent main components into a hybrid system. On the gear level, the result is fewer components used. The design concept is based on load sharing techniques and the result is minimisation of total mass, with optimised and verified load sharing between the components transmitting the load and the resultant medium speed technology ensures the highest availability and annual energy yield.

COMPARISONS IN REDUCTION

The gearbox and generator combination that has been developed in partnership between Moventas and The Switch is half the size and weight of direct drives. When compared to conventional drive trains the overall length is significantly reduced and also weight reduction is achieved. Lower weights and smaller physical size provides the opportunity for reduction in the total turbine manufacturing costs as towers and foundations are not supporting such heavy weights and sizes.

Total nacelle size and weight is dramatically reduced. Further savings are made in reduction of transport costs associated with larger heavier structures in the multi-MW turbine classes.

The stated goal is – “reduce the cost of wind energy production”

To achieve this

- An increase in reliability based on simplification of the system complexity is needed
- Size and weights need to be significantly reduced
- Total life time costs need to be reduced by making total service possible on site
- Use best technology to increase annual yield

The result is – Fusion Drive from Moventas and The Switch.

Moventas
www.moventas.com

[Click to view more info](#)

[Click to view video](#)

The Switch
www.theswitch.com



FOCUS – REDUCING THE COST OF WIND ENERGY PRODUCTION

Some years ago two companies in Finland put their thinking caps on and tried to picture where the future of wind turbine technology would take us and their stated goal was to reduce the cost of wind energy production.

It was clear that ever larger wind turbines would be the order of the day as our industry has accelerated from kW class to multi MW class turbines in a very short period. Our industry is still an infant but turbine generation capacity has leapt from 100kW to 7MW and beyond in only 30 years.

20 QUESTIONS

DAVID MOSS

WHO ARE YOU?

David Moss Service Sales Manager,
Moventas Gears Oy

WHAT BROUGHT YOU INTO THE INDUSTRY/YOUR POSITION?

A combination of need and interest brought me to Moventas. As an ex-pat Sales Manager with a background in engineering products and companies Moventas was one of a small number of companies in the Jyväskylä (in Finland) area that represented opportunity to use my talents. After a year of knocking on their door they finally let me in.

FAMILY STATUS?

I have a Finnish ex-wife and two children of dual nationality.

WHO IS YOUR HERO AND WHY?

Nelson Mandela. Anyone who can spend so long in prison under such an abhorrent regime, and then when in a position where he could have exacted bloody retribution, the man did quite the opposite. He created what he called the rainbow nation. In a rainbow there is no black or white. A defining moment for me is when he wore the No 7 shirt of Francois Pienaar, the South African Rugby Captain, the day they won the Rugby World Cup. For many years South African Rugby represented so much that was bad in that country. This single gesture did so much to change attitudes in South Africa and around the world. It still brings a lump to my throat.

WHAT ANNOYS YOU THE MOST?

Poor quality and a lack of attention to detail. Both usually derive from a don't care attitude.

WHAT WAS YOUR WORST HOLIDAY AND WHY?

The last ever family holiday I had as a kid. For the first two days I had food poisoning and lived in the not so luxurious toilet block of a mid-1970s camp site. My parents, older brother and two older sisters, confined to our tent on a campsite near Ilfracombe in Devon. It poured with rain every day, the campsite flooded and cars could not get because the steep entrance to the site was just an unmade road that became a mud slick.

WHAT IS THE BEST ADVICE YOU HAVE EVER BEEN GIVEN?...

- "Measure twice, cut once"
- "Aviation and alcohol don't mix." The latter of which you will understand later.
- "Never ask someone to do what you aren't prepared to do yourself"
- "Finish what you start"
- "If you don't know, ask"
- "Don't give what you can't take"

WHAT IS YOUR FAVOURITE SMELL?

A scent of freshly cut grass on a cricket field. As a cricketer at Long Ashton near Bristol we all had to play our part in the ground and pavilion up-keep. Cutting the outfield took about 3 hours on a sit on motor mower and this was usually done the evening or the morning before the match. The smell invokes memories of the best of British summers, sport, competition and friendship.

WHAT DO YOU DO IN YOUR SPARE TIME?

Now living in Finland, activities are heavily dictated by the environment and the natural surroundings. In the winter I downhill and cross country ski with my kids and with my girlfriend. In the summer as we have so many lakes I kayak with the kids, wind surf and enjoy long distance cycling. I also write song lyrics for my sister-in-law who is a professional musician.

WHAT SPORT DO YOU PARTICIPATE IN/WATCH THE MOST?

Rugby is my favourite sport. In the UK I played for many years and in Finland I coached the Jyväskylä men's team for two seasons and the Jyväskylä ladies' team for one season. Rugby is a sport that breaks bones but makes friends for life. I can attest to both. It is also an attitude. To play well you have to commit and there are few sports where you put your body on the line in defence of your team. If you carry over this attitude from the rugby pitch into your business life, you won't go far wrong.

WHAT IS THE MOST BIZARRE SITUATION YOU HAVE FOUND YOURSELF IN?

In 1989 I flew home from the USA on an almost empty Pan Am 747. This was about three weeks after the Lockerbie disaster. A very drunk American woman on the same flight decided that I was a rock star and that she had all my albums! My only defence was to try and tell her I was not a rock star but although impressed, was just a Catholic Protection Salesman. She wouldn't accept this as the truth and proceeded to remove as many of her clothes as she could to show her appreciation of my music! A very stern hostess and a steward arrived to drag her away.

The funniest thing was the flight steward who assisted the hostess to pull the lady off me when asked by said lady,

*"what do you think of my breasts?
Not bad for a girl of my age?"*

"I can't say I noticed madam"
the steward replied

"Faggot!"
she spat at him.

"That's right madam"
said he.

aviation and Alcohol don't mix!

WHAT IS YOUR FAVOURITE MUSIC?

I have Rolling Stones live CD with 'Paint it, Black' and 'Sympathy for The Devil' on it. I play this more than most in the car and what I am very proud of is that my son, when he was only ten years old, told me to turn it up as 'Sympathy for The Devil' was his favourite record. As for other music it depends what I am doing. In the gym I like to listen to The Ramones as I get more done. If I want to relax, some Miles Davis, but probably my all-time favourites would be The Clash.

WHO WOULD YOU CHOOSE TO SPEND A ROMANTIC EVENING WITH, OTHER THAN YOUR CURRENT PARTNER?

I'm not sure about a romantic evening as you can never really know what someone is like until you have spent some time with them. Someone I always felt was beautiful as a young woman and who I have found interesting when I have seen her interviewed on a number of occasions in recent years was Lauren Bacall. However if she is not available then the Jamaican Ladies 4 x 100m relay team would do nicely.

IF MONEY WAS NOT A FACTOR WHAT WOULD YOU BUY TOMORROW?

A big, ocean-going motor yacht. My first employment was as a marine engineer working for the Peninsular & Oriental Steam Navigation Company better known as P&O. I love the sea and I love to travel. This would allow me to do both. This is of course only after solving world poverty, hunger and people trafficking!

WHICH 3 WORDS WOULD BEST DESCRIBE YOU?

Fit, bald and fifty. How would I like to think others see me: honourable, dependable, fun.

**WHAT TALENT WOULD YOU LIKE TO HAVE?**

To be able to sing in such a way that people want to listen instead of making dogs howl. The human voice is the most powerful and moving of all instruments.

WHAT MAKES YOU ANGRY?

Injustice.

WHAT LAW WOULD YOU LIKE TO SEE INTRODUCED?

Laws are always difficult as we tend to have knee jerk reactions to things that make us angry, especially on big issues. "Measure twice cut once" was advice I was given in my days of being an engineer

SHE PROCEEDED TO REMOVE AS MANY OF HER CLOTHES AS SHE COULD TO SHOW HER APPRECIATION OF MY MUSIC!

working on large LPG plant. This is more than just about cutting something to size to make sure it fits first time, it is about considering your actions and their implications before taking action. So, no major laws from me as I am not qualified in this area.

Something simple however: I notice living in Finland just how clean the place is and how little litter there is. When I come home to the UK it is quite the opposite and people think nothing of littering. My solution. An instant fine for littering, £10 or the option to pick up what you have dropped plus another ten items and bin them to avoid the fine.

WHAT PROMINENT PERSON WOULD YOU LIKE TO MEET?

Nelson Mandela.

WHAT BOOK ARE YOU READING AT PRESENT?

I have just finished One Thousand Years of Annoying the French by Stephen Clarke. This is a great read from a humour and a history stand point. I thoroughly recommend it.

WHAT CAR DO YOU DRIVE?

A Ford Mondeo Estate. Diesel.

WHERE WOULD YOU LIKE TO BE 10 YEARS FROM NOW?

On my big ocean-going motor yacht somewhere warm.

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MORE POWER FROM THE WIND

When considering generation costs for wind turbines, it is a simple matter of principle. Dr. Eng. Andreas Vath, Sebastian Schmidt and Stuart Williams of Bosch Rexroth recommend transmission concepts that rotate at medium speeds and use differential gearboxes.

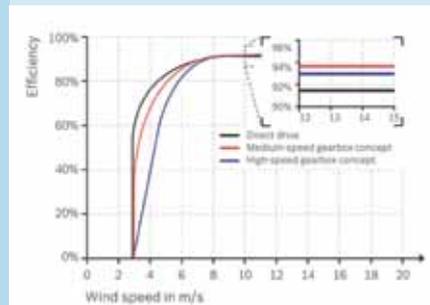
Growing electricity consumption in Europe has increased the demand for wind energy. Since the number of suitable onshore sites is limited, many offshore projects are currently being carried out. Modern wind turbines can generate up to eight megawatts of power and coming generations are to deliver as much as ten megawatts. The operators are always conscious of keeping generation costs as low as possible and this is arrived at from the sum of all the costs required to convert the wind's energy into electrical power. The key to greater profitability is to be found in a highly efficient and reliable drive concept. Here operators of offshore wind farms will have to make a fundamental decision when selecting the drive concept. The choices are:

- Direct drives, without gearing
- Medium-speed drive concepts with gearboxes
- High-speed drive concepts with gearing

The decision needs to be based on solutions with high efficiency levels, but also with the lowest possible installation and maintenance costs.

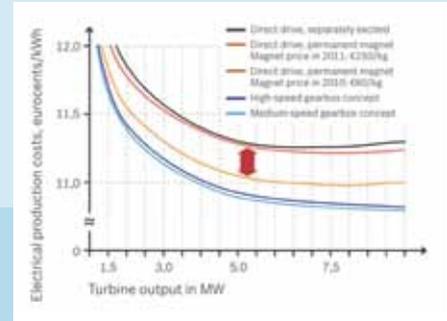
COMPARING EFFICIENCY

If the wind speed, rotor blades, tower, and system controls are identical, then the energy yield for offshore wind farms will depend exclusively on the degree of efficiency for the power train. Direct drives achieve high efficiency, particularly at lower wind speeds. But this falls off with stronger winds. This is due to a rise in thermal losses in the copper windings as the power levels rise. High-speed concepts are attractive, although they, in turn, have a problem with idling losses in the gearing stages when less wind is available.



If, for the purpose of comparison, we assume a 25-year service life and an average wind speed of nine meters per second, then using a medium-speed concept is advisable. Eliminating the high-speed gearing stage will reduce the losses incurred and the efficiency of the remaining two-stage transmission rises to more than 98 percent. Thanks to the low thermal losses of the medium-speed generator, it achieves 98.3 percent efficiency. Given the 97.5 percent efficiency for the frequency inverter, the overall efficiency for the entire power train is 94 percent – the top value in the wind speed range relevant for offshore facilities. Even at lower wind speeds, the gearing losses are reduced thanks to the elimination of the high-speed stage. Seen over the entire life of the system, the operators of offshore wind farms will profit from the maximum energy yields.

Comparison of the investment costs In offshore facilities, power generation costs will basically fall as the size of the wind turbine increases due to the high fixed costs for planning, installation and maintenance. But despite all of this, there are differences in the individual concepts. The investment costs are the highest for direct drives, this being due to the large amount of raw materials used – regardless of whether a separately excited or a permanent-magnet concept is implemented.



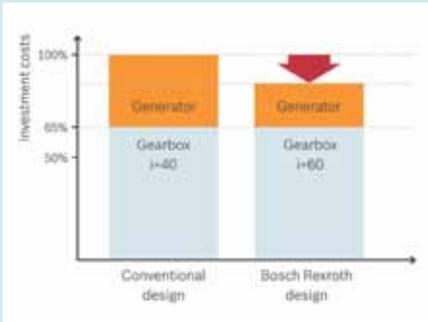
Direct drives with separately excited synchronous generators require large amounts of copper and steel, while permanent-magnet generators need expensive rare earths. Due to reduced materials consumption and the lower investment costs that entails, the electrical generation costs for concepts using transmissions are lower than for direct-drive solutions. Just as was the case in comparing the degree of efficiency, the medium-speed drive train fares better than the high-speed solution.

INFLUENCE OF THE STEP-UP RATIO IN MEDIUM-SPEED CONCEPTS

The gear ratio plays an important part in reducing power generation costs. There are two major concepts on the market today, in competition with each other: the conventional design with two planet sets and the REDULUS GPV-D differential gearboxes made by Rexroth. This latter concept, with a power split, comprises two planetary stages and one differential stage. This gearing concept makes possible a particularly broad range of transmission ratios. As a result, it satisfies all the requirements of today's system concepts and is distinguished by great reliability, since there are no components which rotate at high speeds and would thus be susceptible to wear.

DEVELOPMENT AND VALIDATION

In order to track down optimization potentials – like gear ratios – as early as possible, equipment manufacturers work closely with Bosch Rexroth right from the development phase. The amount of effort invested here is considerable. The concept's service life is examined using analyses at the system level, multibody simulations, and finite element methods. In addition, detailed calculations of the dynamic loads for individual transmission components provide the basis for optimized gearbox engineering. At every development step the prototypes are also subjected to



The overall impact of the transmission ratio becomes clear when making a direct comparison of investment costs for the conventional design and for the differential gearbox. The conventional concept, comprising a generator and gearbox with two planet sets, is limited to a step-up ratio of 40. Thus the generator shaft rotates 40 times as fast as the rotor blades in the wind turbine. In that configuration, 65 percent of the investment costs for the power train will be devoted to the gearing and 35 percent to the medium-speed generator. With the REDULUS GPV differential gearbox made by Rexroth, it is possible to achieve gear ratios of 60 in medium-speed rotation concepts.

The generator then has to deal with less torque at the same rated output. When using the differential gearing, the generator costs can be significantly reduced when compared with other concepts for medium-speed operation, since the costs vary almost directly proportionally to the torque to be handled.



tests on highly modern gearbox test beds and have to pass extensive field testing. The results are used in further development of the products and thus can bring about a significant increase in quality and performance – for the gearbox in particular, but also for other components.

SUMMARY

The drive components have a great influence on the efficiency and reliability of drives and, in turn, on the profitability of offshore wind turbines. Drive train concepts designed to rotate at medium speeds unite the decisive advantages of both of the other solutions.

Just as in the high-speed designs, the high efficiency at full load and the low materials costs are convincing. The high partial efficiency and the concept's great reliability are comparable with direct drives. Employing the Rexroth differential gearbox can additionally lower electricity production costs. With its help, wind farm operators and equipment manufacturers are thoroughly equipped to deal with future developments.



Bosch Rexroth AG
www.boschrexroth.co.uk

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THE BOW-TIE METHOD

AN ELEGANT SOLUTION?

In a previous issue, Risktec discussed the steps of an effective risk management process and highlighted the importance of risk assessment/analysis within this process. A number of differing techniques are available for assessing or analysing risk (e.g. risk assessment matrices) and in this issue, Risktec focuses upon a powerful and increasingly popular risk assessment technique, the Bow-Tie method.

WHAT IS A BOW-TIE?

The Bow-Tie method, so called because it describes the management of risk in the shape of a bow-tie, is an extremely powerful way of clearly illustrating how risk is being managed within an operation, business etc. It helps ensure that risks are managed rather than just analysed, partly by going beyond the usual risk assessment 'snapshot' and highlighting the links between risk controls and management systems.

A bow-tie diagram provides a readily-understood visualisation of the relationships between the causes of business upsets (hazards which, if realised, could compromise business objectives e.g. impact on health, safety, the environment, operations etc.), the

escalation of such events, the controls preventing the event from occurring and the preparedness measures in place to limit the impact (see *Figure 1*). The power of a bow-tie diagram is that it provides an overview of multiple plausible scenarios in a single picture.

BUILDING THE BOW-TIE

A bow-tie diagram is built by asking a structured set of questions in a logical sequence (see *Figure 2*). The completed bow-tie illustrates the hazard, its causes and consequences, the controls to minimise the risk, and a list of the critical tasks undertaken to ensure ongoing integrity of these controls.

Bow-ties are best constructed via facilitated workshops involving people who are regularly confronted with the risks. This is proven to be the most effective way of identifying real controls and capturing current practice. Honesty is an essential ingredient during these sessions if any weaknesses in controls are going to be uncovered. To encourage honesty, the workshop needs to be run in an open and engaging fashion, and an independent facilitator can often help to create such an environment.

To provide a practical example of a completed bow-tie, we can again look at our multi-purpose "Tiger in Cage" analogy. In this example, wild animals (i.e. tigers) are the hazard, with the top event (i.e. when control of hazard is lost) being tiger escape from the cage. The threats, consequences, barriers and recovery preparedness measures for this scenario can be easily understood at a glance as illustrated in *Figure 3*.



Figure 1: The Bow-Tie

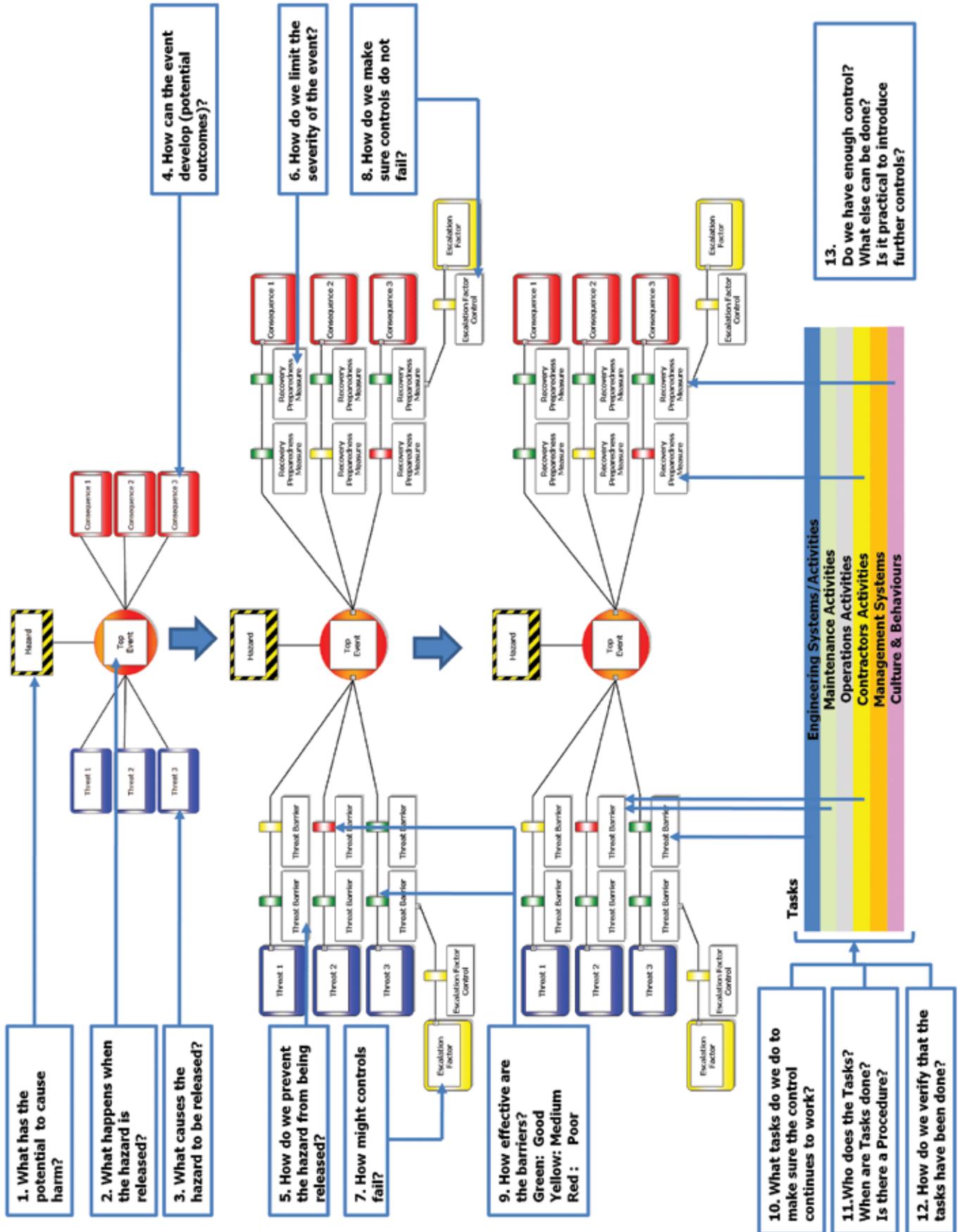
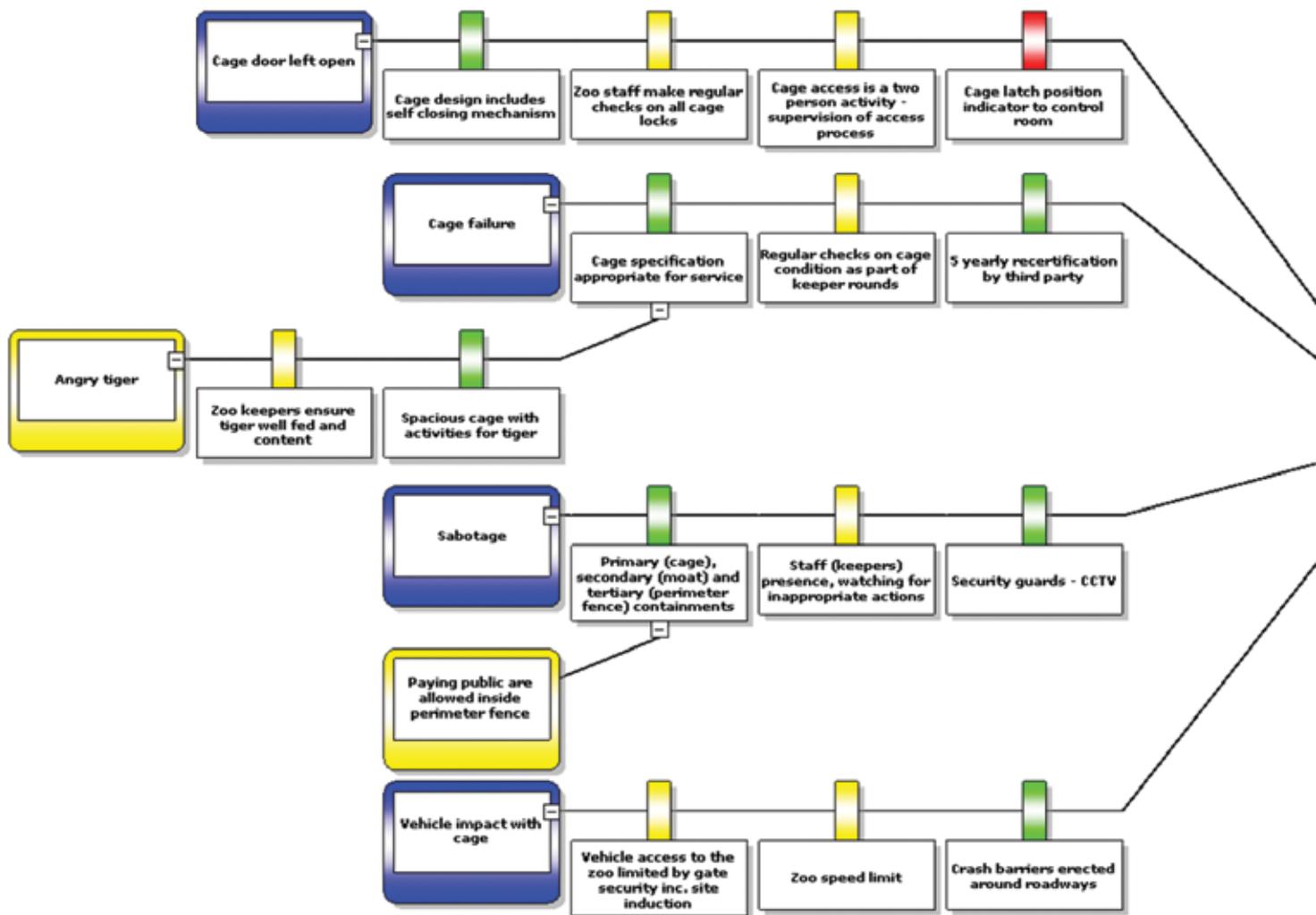


Figure 2: Building the Bow-Tie



BENEFITS OF THE BOW-TIE METHOD

1. Logical, structured understanding

Risk assessments can have a tendency to concentrate on the level of risk only, rather than considering all aspects of the management of risk. The structured approach of the bow-tie forces an assessment of how well all initial causes are being controlled and how well prepared the organisation is to recover, should things start to go wrong. This logical approach often identifies gaps and issues that are missed by other techniques.

2. Clear communication and improved understanding

By visually illustrating the hazard, its causes and consequences, and the controls to minimise the risk, the bow-tie can be readily understood at all levels, from senior managers and operations personnel, to regulators and members of the public.

3. Greater ownership

Bow-tie workshops encourage participation and stimulate communication between key stakeholders, whether from the company, contractors or external parties, who all have a role to play in managing risk and yet may not be involved in more traditional techniques. When people feel involved they tend to 'buy-in' to the process. When action is taken based on what they say, people will take ownership. All of which lends itself to more effective risk management.

4. Efficiency gains

Bow-ties help identify where resources should be focused for risk reduction (i.e. prevention or mitigation), thus reducing the volume of safety analysis, leading to a potential reduction in unnecessary/lower importance barriers.

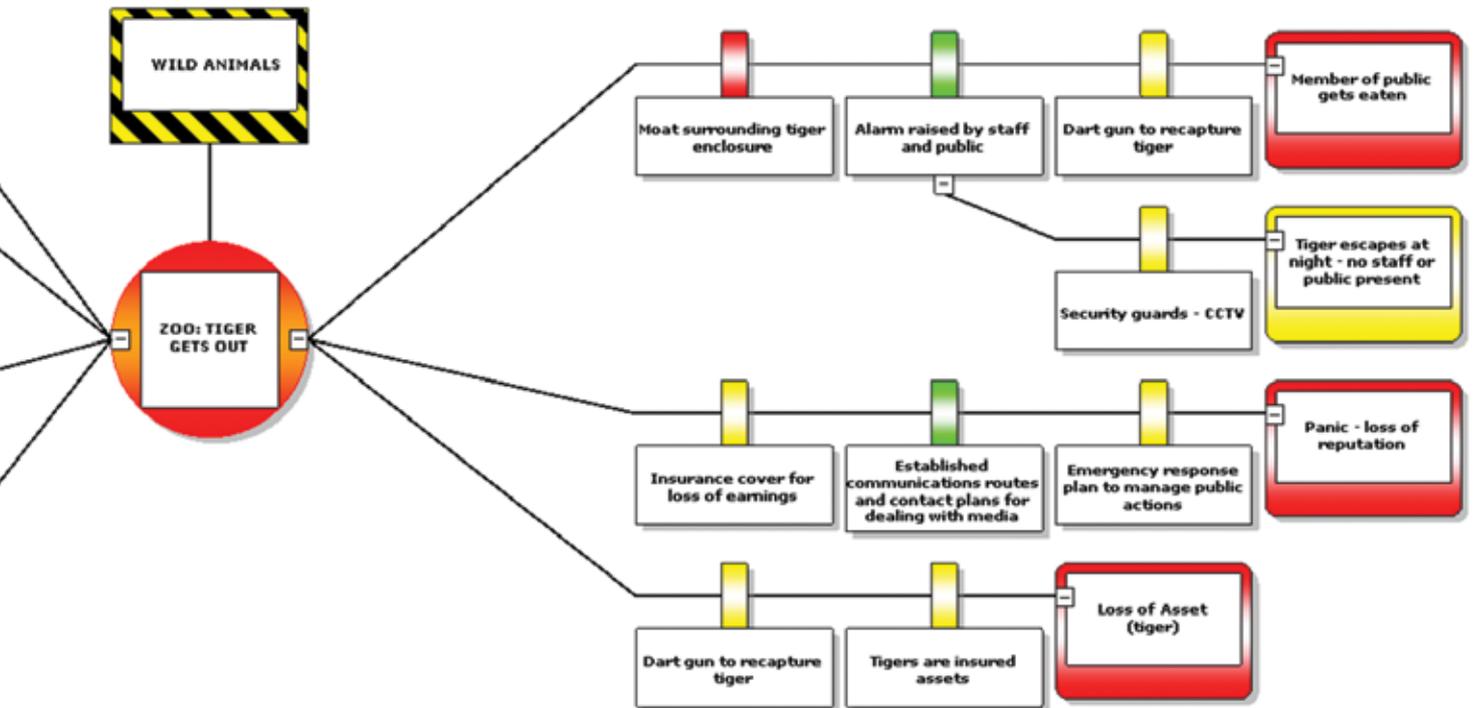
5. ALARP demonstration

Bow-ties are an effective tool for qualitative demonstration that hazards are being managed to a level which is As Low As Reasonably Practicable (ALARP). The bow-tie diagram clearly identifies all existing barriers in place to prevent realisation of a hazard, and prompts operators to ask "is there anything more we can reasonably do?"

6. "Future proof" risk management

Unlike other risk assessment techniques, the bow-tie illustrates not only what controls are currently in place, but, through the use of critical tasks, why they will still be there tomorrow.

Figure 3: "Tiger in Cage" Bow-Tie



SO WHERE DO BOW-TIES FIT IN?

Bow-tie diagrams can be generated for every hazard identified for any particular operation at any point in its life cycle. However, it is clearly not appropriate, efficient or cost effective to construct diagrams for all identified hazards. Bow-tie diagrams are most commonly used, and realise the largest benefit in analysing major hazards.

The Risk Assessment Matrix, discussed in a previous issue (see February/March 2012), can be utilised as a “screening” tool to identify major hazards requiring further investigation, with bow-tie diagrams clearly identifying the controls/mitigations against such hazards.

LIMITATIONS OF THE BOW-TIE METHOD

Of course bow-ties are not the panacea for all risk management problems. If you want to quantify your level of risk in absolute terms then the bow-tie method will not help directly. Similarly, if you want to model complex inter-relationships between your risk controls, there are better ways than using bow-ties.

As with all risk assessment techniques, the quality of the information output is dependent on the quality of the individuals leading the workshops/assessment and the team assembled to assist. The danger exists that, due to the apparent simplicity of the bow-tie diagram, such assessments are undertaken by inexperienced personnel and without the direct input from all involved parties (operations, maintenance etc.). In such a scenario, bow-ties could be generated which do not represent the on-site operations and omit key threats, consequences or controls.

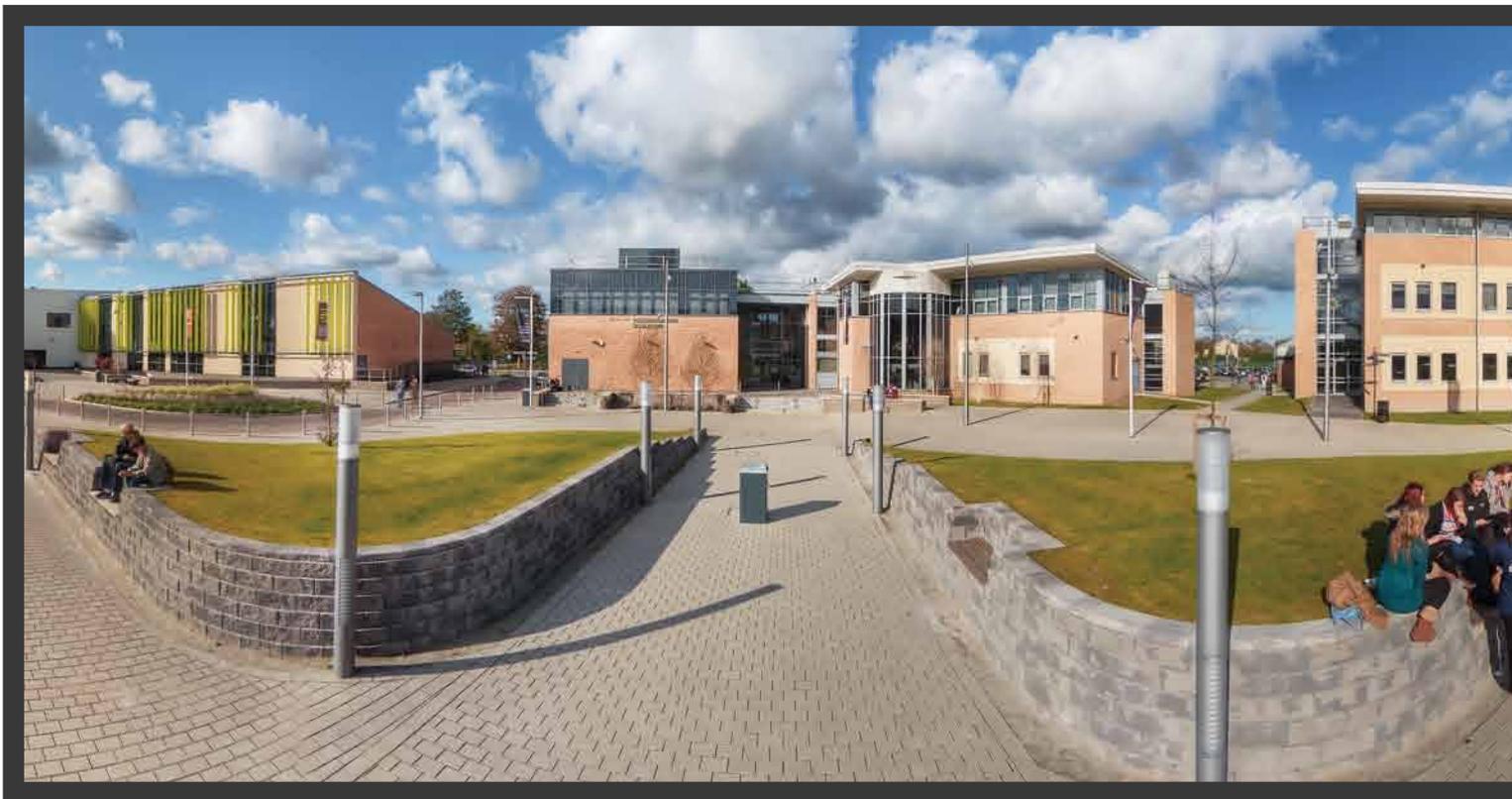
In summary, a number of differing techniques are available for assessing risk. However if you want to remove the mystique of risk management and obtain insights into your risk controls that are easy to understand and easy to communicate, then there is no better method than bow-ties.

James Sneddon
Risktec Solutions Ltd
www.risktec.co.uk

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POWERSKILLS UK

TRAINING A NEW BREED OF WIND FARM ENGINEER



The considerable investment in renewable energies in Yorkshire and Humber, including construction of the world's largest offshore wind farms, has proven to be a major business catalyst for different service provider organisations.

Powerskills UK, a unique training organisation, has responded rapidly to providing a range of cutting-edge engineering training options to help meet an almost overnight skills gap.

SELBY COLLEGE

Powerskills UK is located in the market town of Selby in North Yorkshire, where it operates from state-of-the-art facilities on the newly-built £35m Selby College campus.

The organisation has very solid roots, based on many years of successful partnership working; supporting the training needs of the large power stations in the area and a burgeoning engineering sector. Powerskills UK has seen its customer base rapidly expand based on its reputation for delivering bespoke training that matches employer needs.

As Ann Dobbs, Director said, “We were originally approached by a group of employer partners who were frustrated by the lack of specialist training available locally and wanted to develop a tailored employee skills programme. This followed an unprecedented demand for trained engineers in Yorkshire and Humber as a direct result of the estimated £14 billion investment by 2015 in renewable energy production in the region. The demand for trained staff quadrupled in as many weeks leaving a skills gap that could not immediately be filled locally with existing employees.”



Ann added, *“As Powerskills UK delivers training tailored to industrial requirements, we were able to respond extremely quickly offering Apprenticeship training to younger employees by incorporating on-the-job training with theory based off-the-job support in the classroom. We also provided up-skilling support for older workers; ensuring they were more than capable of meeting the new challenges created by the North Sea wind farm development.”*

DOOSAN POWER SYSTEMS – SPONSORED FACILITIES

Employer organisations may choose to have training delivered off site in the two Doosan Power Systems sponsored facilities. If customers prefer training to

be delivered on site, Powerskills UK has a dedicated team of staff able to work around work rotas and shift patterns.

BESPOKE TRAINING

The types of services offered varies from customer to customer, but includes bespoke training designed to suit an organisation’s specific needs, vocational training based around Government-funded learning including Apprenticeships and higher level skills courses right up to and including Foundation Degree courses. Using only time-served Engineers, staff specialise in different trade disciplines including Autocad, 17th Edition Electrical, Machining, Hydraulics and Pneumatics, Welding Fabrication and Steelwork Erection amongst a growing list.

EMPLOYER PARTNERSHIPS

As Ian Muir, Powerskills UK Area Manager confirmed, *“Our partnership with power sector employers is unique in its shared mission; all parties understand the need of education and business to work together, to open minds, develop skills and build knowledge, to better prepare employees for the challenges that they will face in what has rapidly become one of the country’s growth sectors.”*

Selby College
www.selby.ac.uk

WIND INDUSTRY PROVES UPLIFTING CAREER CHOICE FOR EX-SOLDIER

After three tours of duty in Iraq, a former soldier is now flying high in a new career in the wind industry thanks to Maersk Training, Newcastle.

JOEY CALLAGHAN

Joey Callaghan, 28, from Pemmaenmawr in North Wales joined the army at 16 after leaving school with few qualifications. However after seven years service, including three tours of duty in Iraq, Joey felt he had seen enough and left the army to look for a new career.

CAREER CHOICES

When weighing up his career options, a friend recommended Joey contact Maersk Training in Newcastle, which specialises in wind, renewable and offshore training and is the first and only centre in the UK to offer courses approved by the Global Wind Organisation (GWO).

GLOBAL WIND ORGANISATION PROGRAMME

The GWO programme is a globally recognised standard and is often the first step for those wanting a worldwide career in wind power - currently only a few centres globally have GWO approval.

In just two weeks, Joey had completed a suite of specialist wind training courses including electrical awareness, rope access and Siemens level 2 and 3 technical training. With Maersk Training's help, Joey then applied for a number of related jobs and within just six weeks got his first job working in the wind industry.

PROGRESS

Five months on, Joey is working offshore on a wind turbine and has never been happier.

He said: *"Although I had to invest my own money in the training courses, I've never looked back and have made that money up, as well as much more, in just four months working in the wind industry. It's a fantastic career to be in - the opportunities are endless and with great shift patterns I end up spending one week at home out of every three.*

"After having a varied and hard-working career in the armed forces I was unsure what employment I would find in the civilian world. I knew that the wind and renewable industry was expanding fast, but with no direct experience or qualifications I didn't know where to begin. The staff at Maersk Training really helped me by putting together a suite of wind courses which would maximise my chances of employment. Once I completed my courses they even helped suggest companies they knew were recruiting.

"It only took me a few weeks to get my first job in the wind sector and the fantastic experience I gained meant I could move very quickly into my dream job, working on an offshore wind farm.

"The benefits in the industry are good, you are part of a close team and I am learning and developing my skills every day. Maersk was incredibly helpful and provided me with a superb standard of training. They spent a lot of time going over the little things with me, which has made a huge difference in helping me



get into the industry and develop my career quickly. Five months ago I never thought I would be where I am now."

MAERSK TRAINING

Alison Isbister from Maersk Training, who worked with Joey to help him find his first wind sector job, said: *"The global wind industry is experiencing unprecedented growth and there are many resulting skills shortages that need to be plugged. This means the opportunities are endless for both business and individuals, with some people earning salaries of up to £1,500 per week. We are delighted that we have been able to help Joey and many others like him get into the industry. Many people are taking advantage of the fact that they can get certified in a GWO approved course and be ready for the possible upcoming certification changes in the industry as early as first quarter 2013."*

Maersk Training Newcastle
www.maersktraining.com

[Click to view more info](#)



= [Click to view video](#)

WIND ENERGY TRAINEES – SHERINGHAM SHOAL OFFSHORE WINDFARM

Norfolk based wind farm operator Scira Offshore Energy has employed its first trainee and now begins the search for its second as Scira prepares to take over the full operation of the 88 turbine Sheringham Shoal Offshore Wind Farm now that construction is virtually complete.

LOCAL FOCUS

With its focus clearly on encouraging local people into a career in the growing renewables industry, Scira welcomed 22 year old Gary Lorimer from South Creake, to its marine co-ordination team and is now advertising a new opportunity.

Advertisements will appear in the local Norfolk press for a trainee mechanical engineer, with East Anglian agency Cooper Lomaz co-ordinating the recruitment campaign on Scira's behalf. The successful candidate will benefit from a comprehensive structured two year training programme.

COMMITMENT

HR & Communication Manager Liz Hancock said, *"Gary's appointment, and the creation of a second trainee opportunity, shows we are committed to supporting the development of local people, to ensure they are well positioned*

to be able to take advantage of the varied skilled positions that will be created by the offshore wind industry in this region."

GARY LORIMER

Gary began working with Scira in September 2012 and came to the role with experience on fishing vessels working out of Wells, as a deckhand on a survey vessel based in Edinburgh and also a period at London Array Offshore Wind Farm.

He is thrilled with the appointment and said: *"This is a great opportunity for me and I'm going to work hard to make the most of it."*

NETA TRAINING TRAINING TOMORROW'S WORKFORCE TODAY

NETA Training has over 35 years experience in the provision of technical and vocational training to many of the industries and organisation in the North East region including fabrication, oil and gas, energy, process and construction. With courses covering a range of disciplines from Mechanical Engineering, Welding, Scaffolding, Rigging, Electrical and Instrumentation, H&S and Logistics.

INDUSTRY RELATIONSHIP

The close relationship with the industries it serves has enabled the company to constantly develop resources which meet the specific requirements of employers and individuals.

ACCREDITATION

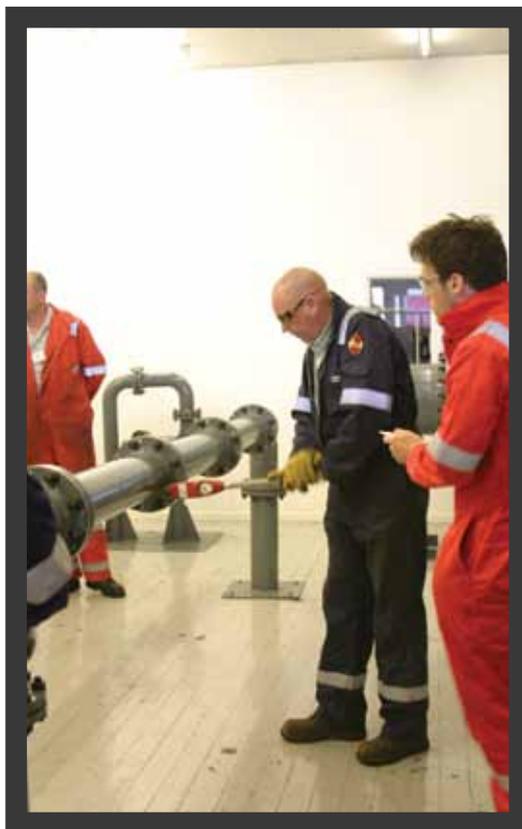
With accreditations from many of the leading awarding bodies such as ECITB, EAL, City and Guilds, Edexcel and NASC it was approved as the first Centre of Vocational Excellence for Engineering Construction, and was also the first independent training provider to achieve certification in the Training Quality Standard (TQS) with excellence in Engineering.

They work with over 700 companies and provide training to over 7000 delegates each year, as well as supporting the development of young people

Ms Hancock added that Scira will adopt a multi-pronged approach in its commitment to ensuring local young people of all ages and backgrounds are prepared for the current, and upcoming, wind energy industry opportunities.

LOCAL EDUCATION RELATIONSHIPS

"We have an ongoing relationship with Alderman Peel High School, participating in careers days and student projects, and recently announced a bursary fund open to 16-18 year old students from low income families who wish to study a BTEC Level 3 Diploma in Engineering at one of three Norfolk colleges - College of West Anglia, Great Yarmouth College or City College," she said.



into the engineering sectors through their apprentice and BTEC schools programmes.

PRACTICAL TRAINING FOCUS

With the emphasis on practical training in simulated work related environments they utilise purpose built facilities in four training centres, and are well placed to support the growth of the Renewable Energy Industry in the North East Region.

PROACTIVE AND FLEXIBLE APPROACH

A proactive and flexible approach has ensured NETA has regularly been at the forefront of new innovative training, and the company is regularly the first to invest in the training needs of today.

They constantly strive to develop new training programmes which will develop and enhance the industry and the individuals working within it.

CONTINUOUS IMPROVEMENT POLICY

As part of their policy of continuous improvement they have recently developed a range of programmes covering elements of renewable energy such as Solar PV, Solar Thermal and Ground Source Heat Pumps, and are currently looking at programmes for the Wind Sector. NETA have also received accreditation from ECITB to deliver training programmes in the area of Mechanical Joint Integrity and will soon be opening a new bespoke facility to deliver this training.

COLLABORATION

NETA are happy to collaborate with many different organisations and are currently one of the preferred providers of training in conjunction with the National Renewable Energy Centre (NAREC) in Blyth.

BESPOKE TRAINING

Their key strength has been the ability to develop learning programmes which meet specific client requirements rather than limiting choice to standard course availability.

NETA looks forward to not only supporting their existing customer base but also developing relationships with new companies operating or looking to develop into this exciting new sector of the industry.

NETA Training Group
www.neta.co.uk

"As one of North Norfolk's largest employers, and being at the forefront of the local wind energy industry, we strongly see the education and career development of the next generation as a key responsibility."

Scira Offshore Energy
www.scira.co.uk

Scira's first trainee recruit, Gary Lorimer from South Creake



TURBINE CONTROL WORKSHOP SHOWCASES GREEN ENERGY AMBITIONS

New wind turbine control technology being developed at the University of Hull was top of the agenda at a prestigious two-day workshop in Hull last week.

Some of the world's leading turbine manufacturers attended the workshop, providing an opportunity to share cutting-edge intelligence on making offshore technology more reliable and efficient.

UNIQUE RESEARCH

Delegates were given an insight into unique research by Prof. Ron Patton of the University of Hull's Department of Engineering into developing sophisticated Fault Detection and Diagnosis and Fault Tolerant Control systems capable of maintaining high levels of performance in a range of wind conditions and improving fault detection and repair.

SUSTAINABLE CONTROL OF OFFSHORE WIND TURBINES EVENT

The event showcased the University's leading role in developing robust control systems, which could hold the key to harnessing more of Britain's wind power as the country's renewable energy sector prepares for a period of unprecedented growth.

"There is more and more interest in offshore wind energy in the UK as a major renewable energy source for electric power," said Prof. Patton.

"While the technology is proven, it is still evolving and our aim is to make the next generation of wind turbines more cost-effective, reliable, safe and easier to maintain."

CONTROL SYSTEMS

Control systems being showcased at the event indicate it is possible for offshore wind turbines to provide sustainable electrical power over a wide range of wind speeds and to survive undamaged in bad-to-extreme weather.

Tested using an advanced simulation of a 4.8MW turbine, they can also be used to provide constant condition monitoring, detecting and 'self-repairing' of faults before they become serious.

"It also limits the operating power/ turbine speed to some specified values to prevent the turbine from unsafe operation under high wind conditions, thus reducing maintenance requirements. Since around 15 per cent of the whole-life cost of offshore wind energy comes from maintenance issues, fault tolerant control can make a further significant contribution towards cost reduction.

"The large fluctuations in wind speed and energy offshore means that the turbine must work in a very harsh and demanding environment. Increase in turbine size to multi-megawatt capacity gives rise to an increase in probability of turbine system faults and control system faults, as well as structural faults due to material fatigue.

"Current offshore wind control technology does not allow for sufficiently efficient operation with wind speed variations. The University of Hull work



Left to right, Prof. Kathryn Johnson, Colorado School of Mines; Prof. Ron Patton, University of Hull; Dr Peter Odgaard, KK-Electronic, Ikast, Denmark; Prof Jacob Stoustrup, Aalborg University, Denmark, and Dr Ervin Bossanyi, Garrad-Hassan.

CASS

The workshop is hosted by CASS, the University's business-facing hub for renewable energy and the low carbon economy.

Prof. Stephanie Haywood, director of CASS, said: *"To make offshore wind financially viable, costs need to be reduced from £150/MW to £100/MW.*

"Fault tolerant control of offshore wind turbines can both increase the amount of power converted from wind into usable electrical power, making them more efficient and reducing the cost per watt.

offers a solution through combining estimation and monitoring with fault-tolerant control and self-repair.

"The enhanced control systems could be added to existing turbine designs, so a short timescale is possible, but realistically this might be three to five years."

University of Hull
www.hull.ac.uk

TRAINING THE ENGINEERS FOR THE FUTURE OF SCOTLAND'S EAST COAST WIND INDUSTRY

The East Coast of Scotland is set to become a major centre for wind energy over the coming decade. To service this development the region will need a significant injection of highly trained and technically innovative engineers. Training these engineers is the task being undertaken by the Wind Energy Centre for Doctoral Training (CDT) at the University of Strathclyde in Glasgow.

BEATRICE DEMONSTRATOR PROJECT

Since the Beatrice demonstrator project in 2007, one of the world's first truly deep water projects, the East of Scotland has been a leader in wind innovation. According to CDT Director, Professor Bill Leithead: *"With the greatest offshore wind resource in Europe and the strength of its offshore sector, the East Coast of Scotland is ideally placed to benefit from the substantial economic and employment opportunities that will undoubtedly arise over the next decade."*

The research being carried out by the CDT is relevant to a number of test and development sites which have been marked off the East Coast. These include the site for Statoil's latest floating turbine - Hywind 2.

FLOATING WIND TURBINES

CDT student Roberts Proskovics has worked with Statoil and Lloyd's Register on dynamic modelling of floating wind turbines. *"Initially this involved looking at different types of floating wind turbine concepts and comparing them," he says. "This work was followed by a more detailed analysis of unsteady aerodynamic and hydrodynamic effects associated with floating spar-type (Hywind) wind turbines."*

CENTRE FOR CHARTERED ENGINEER TRAINING

Engineers at the CDT are given the chance to develop their in-depth theoretical skills through a PhD project linked closely with an industrial partner. In addition they are expected to develop their professional and personal skills through a growing professional training scheme. This has been so successful that the Centre has become the first academic institution to be recognised by the IET and IMechE as a centre for Chartered Engineer training.

OFFSHORE WIND PROJECTS

The building and operation of offshore wind is an important area for research at the CDT. The knowledge and skills developed will be important for the three commercial scale wind farms proposed for the East coast: Neart na Gaoithe (420MW), Inch Cape (905MW) and the huge Firth of Forth Array (3.5GW).

RESEARCH

Iain Dinwoodie and Graeme Wilson are building models to inform the effect of wind and sea states on the reliability of

offshore turbines and consequently on the operation and maintenance of the fleet. Graeme says: *"Little research to date has investigated how weather and site conditions affect wind turbine reliability. I am exploring how wind turbine failure modes are coupled to environmental conditions."*

LINKS WITH INDUSTRY

The Wind CDT has close industrial links with several companies related to East Coast developments. Gamesa funds a number of PhD students looking at the design of future wind turbine control systems. Among them is Saman Poushpas, who says: *"Innovation in the control of turbines, and importantly in groups of turbines, will raise power outputs and can significantly reduce fatigue loading."* The proposed developments for offshore wind turbine manufacture at the Port of Leith and in Methil have the potential to offer further links between the CDT and the area.

The continued development of the wind industry across Scotland, and particularly on the East Coast, will be enhanced by the dozens of engineers expected to graduate from the CDT over the coming five years.

University of Strathclyde
www.strath.ac.uk



RenewableUK 2012 Glasgow

THE 34TH RENEWABLEUK ANNUAL CONFERENCE IN GLASGOW THIS YEAR SAW OVER 5,500 PEOPLE VISITING AND ALMOST 300 COMPANIES AND ORGANISATIONS FROM THE WIND, WAVE AND TIDAL SECTOR DISPLAYING AT THE EXHIBITION.



ALEX SALMOND

Of special significance was the keynote speech by The First Minister of Scotland Alex Salmond, who talked passionately about the importance of wind, wave and tidal power to the future prosperity of Scotland, and announced a commitment

to a new target of generating the equivalent of 50% of Scotland's electricity from renewable sources by 2015.

THE STATE OF THE INDUSTRY REPORT 2012

The same day also saw the launching of The State of the Industry Report 2012, which analysed and highlighted the key aspects of progress in wind energy over the past 12 months.

GUEST SPEAKERS

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 2012.

EXHIBITION

In addition to the vast 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.



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, which as ever was hugely successful.

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.



RenewableUK
www.renewable-uk.com

ALL IN A DAY'S WORK...

NAME

Kirill Glukhovskoy

OCCUPATION

Director, Corporate & Business
Development (OGN Group/Aquind)

HABITAT

London

AGE

38

HOW IT ALL BEGAN...

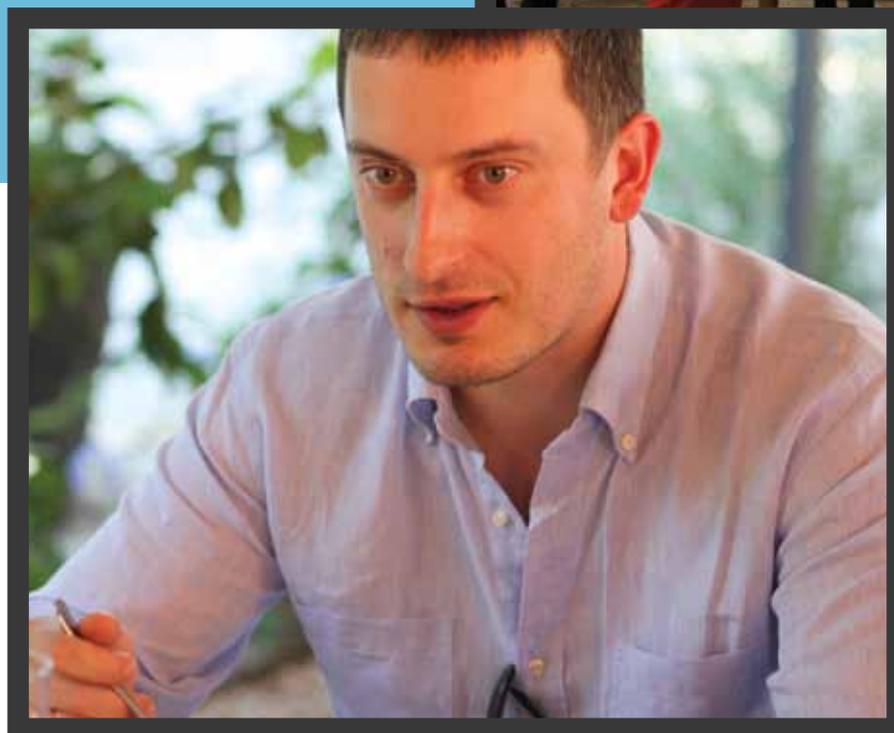
There is no doubt that Kirill is passionate about his work within the wind industry and this becomes abundantly evident when recounting his story of how he arrived at where he is today...

OIL AND GAS EXPERIENCE

Hailing from Russia with extensive experience in the Oil and Gas industry he was no stranger to working in extremes – literally. A field which demands strength of character and a dogged determination to succeed, but it has not all been plain sailing.

ARRIVING IN LONDON

Kirill came to London to study for a Masters degree in Law with the aim of advancing his career in law. Understanding of English law is a key expertise not only in law firms, but also in Russian companies with international ambitions and is indeed one of the major exports from Britain to Russia.

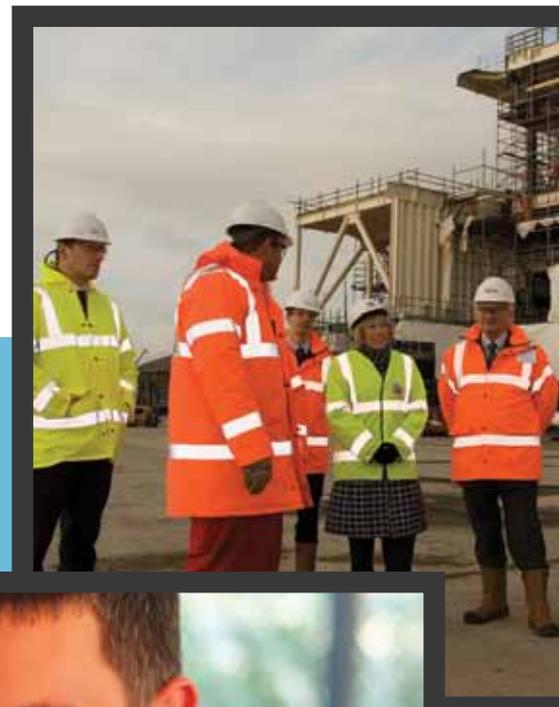


CHANGES OF DIRECTION

While studying he started considering alternatives. His friends, alumni of the London Business School, advised him to take a shot at MBA. He graduated from LBS Executive MBA in 2008 with the backdrop of Lehman collapse and the global financial crisis, and went to work for OGN straight away.

During his first two years he dealt with a number of things that were closely related to his legal background, including the acquisition of the company's new construction facility in Tyneside and the restructuring of the group.

But since 2010 the group's strategy in renewable energy markets has become his primary occupation.





“DO WHAT WE DO WELL, AND CONCENTRATE ON THAT. THEN DO IT RIGHT...”

RENEWABLE ENERGY

It was literally new beginnings - a new business direction for the company, a new operating model and even a new name – Aquind. It was an entrepreneurial challenge that required tenacity and thoroughness and foresight. A sharp learning curve, but he believes that the UK can become the leader in the offshore wind construction in the same way it was a trendsetter in offshore oil & gas and that people at OGN and Aquind will play their part.

WIND ENERGY

While operating in the same environment, offshore wind is significantly different from oil & gas. The strategy that Aquind has forged is based on using the knowledge and experience of the UK offshore oil & gas industry and applying it in a new setting with great potential for scalability.

GROWTH OPPORTUNITIES

He believes that in the next 10-15 years there will be a massive push for renewable energy in general and offshore wind in the UK as the most scalable clean energy source. It is an inspiring challenge, but also – achievable. His mantra is to **‘do what we do well, and concentrate on that. Then do it right...’**

CURRENT PROJECT

Currently working on launching the development of a new factory planned for 2014-2015 at Hadrian’s Yard in Tyneside (creating 700 jobs in the area) and working out the sources of financial investments required to carry out the project.

The role Kirill undertakes demands extensive travel all around the UK and Europe, forging new business relationships with companies and negotiations to ensure their projects are efficiently delivered and on target.

MOTIVATION

In a word - Challenge! With a background in litigation, he is used to dealing with uncertainty. However, if in court there is a long set of rules, the judgement day is set and everyone is invited; in business there are no marked roads to success and no scheduled proceedings. Creative and forward thinking applied to facts are the best counsels. That is what he likes about his current role – doing something new and challenging, but at the same time very tangible.

UNUSUAL CIRCUMSTANCES

In a previous job, he was due to attend a court hearing in Tomsk, Russia. With no direct flights on that day from Moscow, he flew to Novosibirsk. Setting off at 5am in what he describes as a ‘banger’ of a car – through 250km of wilderness in nearly minus 40 degrees – a life threatening journey not just a nail biting one – but he made it! Not for the faint hearted. He smiles inwardly when the British comment about the cold and snow – we have no idea!!!

HOBBIES

He likes spending time with his family and carves out some time for swimming, running and learning Italian.

ASPIRATIONS

He aspires to strive for Aquind to continually grow – however when asked what he would like to have achieved in 10 years the retort **‘Russians don’t plan too far ahead!’**

Fliss Chaffer

Wind Energy Network

[Click to view more info](#)

SCOTLAND'S OFFSHORE WIND STORY

Scotland has relied on the North Sea as a source of energy for more than forty years with the oil and gas sector reaping the benefits of the natural resources we have. While it is widely accepted that fossil fuels will one day run out, that doesn't mean we will no longer be an energy rich nation. Wind, wave, tidal and hydro power provide a significant proportion of our needs and will continue to do so for many years. We have had a strong story to tell in terms of energy production in this country, but it's time for a new chapter to begin, and offshore wind is about to make its big entrance.

Once again, Scotland will look to the hostile marine environments of the north seas to harness its energy, this time it's not what's under the seabed that counts but the wild winds that cut across it.

CURRENT OFFSHORE WIND SITUATION

Currently there is 190 MW (megawatts) of offshore wind in operation – the Beatrice demonstrator project and Robin Rigg with another 10GW (gigawatts) of resource earmarked for development around the coast. 2012 has seen the industry take huge steps forward to delivering this, with applications being submitted from Neart na Gaoithe, SeaGreen MORL and BOWL. We now have almost 4.5GW in the planning system already. If all of this capacity became operational, offshore wind would overtake hydro power as the second largest contributor to renewable electricity in Scotland with onshore wind remaining the primary source. All going to plan, we hope to see the first of the new offshore turbines erected around 2014 and generating electricity before 2017.

HUNTERSTON TEST SITE

Progress is also underway with a new three-turbine test site at Hunterston, thanks to an investment of £20 million from SSE and Scottish Enterprise. The test centre will be located at the port of Hunterston on the coast of North Ayrshire, a site already earmarked for potential renewables supply chain development in the National Renewables Infrastructure Plan.

EUROPEAN OFFSHORE WIND DEPLOYMENT CENTRE

A decision on the planning consent for an eleven turbine European Offshore Wind Deployment Centre can be built off Aberdeen Bay, is expected later this year from the Scottish Government. This too could help Scotland move a step closer towards achieving our ambition of becoming a global centre of excellence for offshore wind technologies, replicating the success achieved at the European Marine Energy Centre in Orkney for the wave and tidal sector.

INVESTMENT

Major investments like these are coming thick and fast into this industry. Technip, Subsea 7, Repsol, NGenTec, Samsung, Global Energy Group and Mitsubishi have all announced commitments to invest millions of pounds into Scotland, creating jobs and training opportunities for people across Scotland.

FUTURE GROWTH

In Dundee, SSE has signed a Memorandum of Understanding (MoU) with Forth Ports, Scottish Enterprise and Dundee City Council which could create up to 700 jobs in manufacturing for offshore wind.

Samsung are proposing £100 million and creating 500 jobs in Fife, Technip made Aberdeen its European HQ with an investment of £10 million and 300 jobs, while smaller, homegrown companies such as NGenTec continue to invest in potential game-changing technology.

More recently, Areva, one of Europe’s leading green energy players, announced its intention to locate its UK manufacturing based on the East Coast of Scotland, creating up to 750 jobs. Crucially, one of the key factors that drew it to Scotland was the emerging cluster of manufacturers and a strong offshore supply chain.

FLOATING TURBINE WIND PARK

Norwegian company, Statoil, have also set their sights on our shores to build a new floating turbine wind park. This innovative approach to offshore wind sees the turbine anchored with cables to the seabed, rather than using the traditional method of driving piles. The Scottish Government has been so interested in this approach to design and invention that they have offered an enhanced Renewable Obligation Certificate (the industry’s financial support scheme) to encourage more of this kind of development.

STRONG SUPPLY CHAIN

It’s this kind of depth and breadth of opportunity across the country that will inevitably encourage a strong supply chain of businesses and individuals to link themselves into this industry that is burgeoning at a rate of knots. The offshore wind sector will need more people to work in a huge variety of areas, including mechanical, civil and electrical engineering, health and safety, environmental assessment, project management and construction.

This growing workforce will help deliver the ambitions for the sector and enable Scotland to take centre stage as a critical destination for the research, development and construction of renewable energy technologies. We have the natural resources in our environment and in our people to make this a reality and the story is only just beginning.

Lindsay Leask
Scottish Renewables
www.scottishrenewables.com

[Click to view more info](#)

PRESSUREFAB GROUP

PERFECTLY PLACED FOR OFFSHORE WIND

Located next to Dundee Airport and only a short distance from the Port of Dundee, PressureFab Group is perfectly located to supply wind farms off the East Coast of Scotland.

ESTABLISHED HISTORY

With an established history of supplying quality certified steel fabricated goods to the offshore oil and gas industry, PressureFab Group's background, location and resources, ideally position them to manufacture wind turbine transition pieces, cable laying equipment and marine services products.

FACTORY REFIT FOR RENEWABLE ENERGY NEEDS

In 2013, PressureFab Group will move its current manufacturing into new premises and continue to grow its oil and gas division from there. In addition, they intend to refit their existing 125,000 ft² factory for renewable energy and other large heavy engineering projects.

As transition pieces are currently up to 15m long, 5m in diameter and weigh up to 110 tonnes, PressureFab Group plans to increase the ceiling in its 135m long main manufacturing facility by 7m to an overall overhead crane height of 16m. In this particular facility, PressureFab Group anticipates operating at least two 100

tonne overhead cranes, with a span of 18m on a 135m gantry.

BESPOKE FACILITIES

The upgraded facility will also include sophisticated boom welding capabilities and a 45m long bed for heavy plate cutting, bending and plate rolling equipment, capable of rolling up to 80mm thick and 3,500mm wide of offshore grade steel plate.

There will also be onsite blast cleaning and paint areas specialised in corrosion protection of large structures to be used offshore, as well as a final assembly facility for fit out work and electrical installation (ATEX zone equipment).

COMMITMENT TO RENEWABLES

Although the group's current focus is primarily on the oil & gas sector, it is committed to supporting the environment

and has already successfully completed work for the renewables industry. In 2010, PressureFab Group supported Ocean Power Technologies by designing and manufacturing their PowerBuoys for the European Marine Energy Centre's (EMEC) Pelamis Wave Power project in the Orkney Islands.

PARTNERSHIPS

The group is currently looking to identify potential partners for developments within



the UK & European waters, and for joint venture partners to manufacture and supply offshore wind components for the US and world markets.

PressureFab Group
www.pressurefab.com

AREVA SELECTS SCOTLAND

Energy development opens door to 750 jobs – First Minister welcomes location decision by French firm Areva

Areva, one of Europe's largest offshore wind energy players, confirmed recently that it will locate its UK turbine manufacturing site in Scotland.

The announcement, which was made during the First Minister's visit to Paris, could create 750 jobs in Scotland from manufacturing and the supporting supply chain.

STRATEGIC AGREEMENT

The company today signed an agreement with Scottish Enterprise, outlining its intention to locate nacelle and blade manufacturing facilities in Scotland.

NATIONAL RENEWABLES INFRASTRUCTURE PLAN

Currently, Areva is looking in detail at the offshore locations named in Scotland's National Renewables Infrastructure Plan (NRI-P), which offer the biggest potential for investors in offshore development.

The agreement was signed by Areva CEO Luc Oursel and Chief Executive of Scottish Enterprise, Lena Wilson, and was witnessed by the First Minister at the meeting.

First Minister Alex Salmond said: "Scotland shares Areva's vision of a cleaner tomorrow. Today's announcement provides a further boost to Scotland's position as one of Europe's key locations for offshore wind and takes us another significant step further in achieving our ambitious carbon reduction target.

"The manufacturing of nacelles and blades for these turbines in Scotland will deliver nationwide economic benefits as well as much welcome inward investment to the chosen location once that has been agreed."

"This is another powerful example of how attractive Scotland is for international investors - and is indicative of our shared energy future."

Luc Oursel, CEO of Areva, said: "Areva's industrial heritage and diverse portfolio has placed us firmly at the forefront of low carbon technological solutions. Scotland is known to be a pioneer in renewables and its commitment to offshore wind in particular was a key part of our decision to locate our future UK manufacturing base there. This new

HEIGHTS OF FITNESS

OCCUPATIONAL HEALTH FOR THOSE WHO WORK ON WIND TURBINES

Occupational health is about the effects of work on health and ensuring that people are fit for the work they do.

The renewable energy sector employs increasing numbers of technicians and engineers. The nature of their work presents its own occupational health challenges and employees who work on wind turbines need to have a certain level of fitness to carry out their duties safely.

STAMINA AND AGILITY

As soon as you take into consideration the height of wind turbines, it becomes apparent that this special group of workers will need to have plenty of stamina and agility. It stands to reason that a level of cardio-respiratory fitness as well as strong limbs and a healthy musculoskeletal system will be required for climbing. Good vision will be needed and the ability to hear direct and radio communications when working

in a noisy environment. They may have to work in confined spaces and are often exposed to harsh weather conditions. Working at heights is not for everyone and a robust and stable mentality is called for.

MEDICALS

Pre-employment medicals as well as periodic assessments need to be carried out to ensure that workers really are fit for their challenging work. Health promotion can be a valuable tool to help workers maintain their level of fitness and sometimes small lifestyle changes can lead to big improvements in health.

EXPERIENCE AND INDUSTRY SPECIFIC

Abermed has been providing occupational health services (including offshore medicals) to the oil and gas industry for over 25 years and the specialist expertise and understanding accumulated is directly transferable to the renewable energy sector.

The company has developed a specific medical assessment particular to those who work on wind turbines so that their level of fitness can be assessed accurately and industry guidelines are followed.

Abermed
www.abermed.com



facility is part of Areva's strategy to establish a manufacturing footprint that will cover the European market."

CAPITAL INVESTMENT

The location of additional turbine manufacturing in Scotland will increase the economic growth potential from renewable energy. Scotland's renewable industry has attracted £2.8 billion capital investment since 2009.

Scottish Enterprise Chief Executive Lena Wilson said: *"This announcement further demonstrates Scotland's position as a leading contributor to the low carbon agenda and ambition to deliver safe and sustainable energy through advanced technology."*

"Offshore wind is a key driver of the economic benefit of renewables and we will continue to work closely with Areva to support its development plans in Scotland, and create ongoing opportunities for wider industry growth."



First Minister Alex Salmond (centre) witnesses the signing of an agreement between Areva CEO Luc Oursel and Scottish Enterprise Chief Executive Lena Wilson, which opens the door to 750 jobs in Scotland.

Areva
www.aveva.com

Scottish Enterprise
www.scottish-enterprise.com

ABERDEEN REMAINS ON THE MAP

Aberdeen City and Shire’s rapid emergence as a centre of excellence for offshore renewables demonstrates the unique role that the region can play in helping to develop an industrial-scale offshore wind sector.

40 YEARS OF ENERGY EXPERIENCE

Key to the region’s success is its world-class energy expertise, gained from four decades of offshore oil and gas industry experience. These cutting-edge skills, combined with the region’s reputation for innovation and entrepreneurialism, underpins its industry leading position in offshore renewables, particularly offshore wind.

KNOWLEDGE SHARING AND THE SUPPLY CHAIN

Oil and gas related businesses and organisations across Aberdeen City and Shire are successfully supplying innovation, transferring skills and sharing their much-needed knowledge and capitalising on offshore wind opportunities across the world.

As a result, the region is also assisting in the development of the offshore wind supply chain which is essential for successful project delivery.

ABERDEEN RENEWABLE ENERGY GROUP (AREG)

Driving forward the region’s sustainable energy credentials is award-winning AREG, a private-public partnership which works diligently to position the North-East of Scotland at the forefront of renewable energy.

Established more than 10 years ago when renewables barely featured in the UK energy mix, AREG set out with the aim of making Aberdeen as famous for renewables as it is for oil and gas.

MARKET REALISATION

It is fast realising this ambition with AREG having significantly increased participation in renewables. Its membership has grown

to close on 200 members and spanning all renewable energy sectors - wind, marine, biomass, solar and district heating.

EUROPEAN OFFSHORE WIND DEPLOYMENT CENTRE (EOWDC)

AREG also supports the development of projects and infrastructure to create a leading renewable position in Scotland with one of its most high-profile developments being the innovative EOWDC.

The EOWDC - a joint venture with Vattenfall, Europe’s sixth largest generator of electricity, and Technip Offshore Wind Ltd, a leading provider of subsea

existing and well advanced offshore oil and gas supply chain skills and know-how into offshore renewable as well as anchoring jobs and investment in Aberdeen, Scotland and the UK.

“We strongly believe that this wealth of oil and gas experience, as well as its globally-recognised practices and industry collaboration, is essential if the UK is to meet its challenging targets for renewable energy power generation. It is also vital to capitalising on the global, multi-billion pound offshore wind market.

“Not only do we have the assets and engineering and technical skills but many oil and gas mechanisms such as recognised codes of practice, sharing of information and supply chain management are transferable.”

AREG MEMBERS

Among AREG members at the forefront of offshore renewables are Vattenfall, Technip, Petrofac, John Wood Group, JP Kenny Renewables, Senergy, Rotech, Fugro Renewables, Balmoral Offshore Engineering, NCS Survey, OEG Offshore, Divex, Blue Water Shipping, Bond Pearce LLP, Maclay Murray & Spens LLP and the Aberdeen-based Scottish European Green Energy Centre (SEGEC) which played a pivotal role in securing European funding for the EOWDC.

Ms McCorkindale said: *“A large part of AREG’s success is our aim to lead and participate in projects identified as having economic development value, and to promote the region both nationally and globally.*

“One of the most notable is the EOWDC off Aberdeen’s coast. The facility will accelerate the development of offshore wind in Scotland, the UK and Europe with the significance of the project having been recognised via a €40million European Commission grant.”

She added: *“A number of recent Government reports have also concluded that, with an enormous ramping up of installed offshore wind capacity expected in UK waters by the end of this decade, deployment centres like the EOWDC will play a vital role in helping to reduce the cost of generation in offshore wind and deliver more than £7billion in added value to the UK economy.”*

SUPPLY CHAIN EXPERTISE

The EOWDC also harnesses the region’s leading position in offshore renewables’ supply chain expertise which is reflected



Morag McCorkindale

engineering and construction products and services - will deploy up to 11 ‘first run of production’ offshore wind turbine models to demonstrate their capabilities.

RENEWABLE ENERGY ASSOCIATION AWARD

As a result of its achievements, AREG received national recognition by being awarded with the Best Region accolade at the Renewable Energy Association’s 2010 British Renewable Energy Awards.

Morag McCorkindale, Chief Operating Officer at AREG, said: *“Since AREG’s creation, our main objective has been to develop and build a local renewables industry. This includes transferring*

in AREG's fast-growing membership. Aberdeen City and Shire boasts more than 900 energy businesses including the largest concentration of subsea capabilities in the world.

"The EOWDC should enable advancements in design, efficiency, cost-effectiveness and productivity," said Ms McCorkindale. "This will help businesses take advantage of the vast offshore wind resource by building its associated supply chain and generating jobs."

SUPPLY CHAIN EVENT

Aberdeen City and Shire's renewables capabilities are also reflected in onshore wind. A recent supply chain event for Vattenfall's Clashindarroch onshore wind farm development near Huntly, Aberdeenshire, attracted very serious interest from more than 50 companies.

Ms McCorkindale said: *"The strong turnout is another clear indication of Aberdeen City and Shire's extensive supply chain capabilities in renewables. Projects like*

Clashindarroch are key onshore wind developments that businesses want to become involved with."

Through its drive and commitment, the real business and economic benefits are being seen as a result of AREG's work. Together with its members, AREG is building significant momentum of the region's renewable energy credentials.

AREG
www.aberdeenrenewables.com

DUNDEE WATERFRONT REGENERATION

DUNDEE ONE COMPLEX



Blue Wave Maritime Ltd has announced that they are joining in the regeneration of the Dundee waterfront. They will be in the first wave of companies entering the new Dundee One complex at River Court.

ACTIVITY

The company is currently active in the UK defence, oil and gas and offshore renewable sectors, offering services from Warranty survey and client representation to vessel suitability surveys, navigational and environmental risk assessments. The office in Dundee is placing Blue Wave Maritime Ltd firmly at the forefront of the offshore renewable market in Scotland, providing qualified and experienced marine professionals to this new and burgeoning sector.

EXPANSION

Blue Wave Maritime Ltd were founded in April 2010 and are the world leaders in providing maritime professionals for warship commissioning and combat trials to the defence export market. This continued success has allowed an expansion to the offshore renewable market in 2011 and continued expansion into Dundee in 2012.

The company believes that they have an eclectic enough background that they will be able to offer informed, independent, marine advice to a still very new industry. We are not a big consultancy, but have a large amount of knowledge amongst the team. We believe the personal touch, certainly within oil and gas left the market a long while ago. Blue Wave Maritime

Ltd would like a return to local businesses thriving rather than much larger Aberdeen based organisations taking away the revenue.

OFFSHORE WIND SECTOR

The offshore wind market supply chain locally is slowly being put in place through Dundee Renewables and they are looking forward to regenerating Dundee as a vibrant marine city.

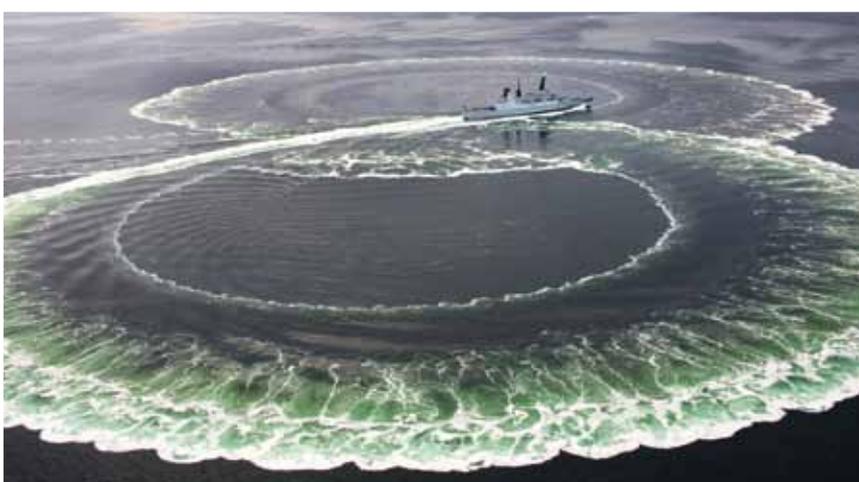
EXPERIENCED HEADS

John Davies and Andy Burton are the co owners of Blue Wave Maritime Ltd and have both served in the Royal Navy and merchant navy. John moving to Scotland to work as an Inspector of Lifeboats before moving into the the oil and gas sector. Andy has been heavily involved in marine co-ordination within offshore wind for the past two years.

It is interesting that, although the market is new, the main protagonists are enormously powerful and large organisations. Blue Wave believe it is up to small companies within the East of Scotland to be bold enough to compete against the larger Aberdeen based sector and ensure our own identity as a renewable.

Blue Wave Maritime Ltd
www.bluewavemaritime.org

[Click to view more info](#)



NEW AVIATION RADAR SYSTEM LAUNCHED TO REMOVE WIND TURBINE CLUTTER

A new technology, designed to solve the issue of wind turbines showing up on aviation radar displays¹, has been launched by Cyrrus Ltd² and AES Wind Generation Ltd³.

It was demonstrated recently at the RenewableUK annual conference and has been presented to Members of the Scottish Parliament and to a number of aviation stakeholders. The technology, known as SMARTENERTM, removes wind turbine clutter from radar displays, whilst avoiding some of the disadvantages associated with infill solutions.

TORMYWHEEL WIND FARM

SMARTENERTM, which stands for Small Area Real Target ENhancER, has been designed by Cyrrus for the wind developer, AES Wind Generation. The concept came about as a way to address objections raised by Edinburgh Airport and NATS to the developer's Tormywheel wind farm project in West Lothian.

The wind farm was granted consent in June 2007 with a condition requiring that an appropriate mitigation solution and implementation plan is put in place to address the objections raised. The technology utilises the fact once built the wind farm would be seen by four different radars.

SMARTENERTM

The SMARTENERTM system compares feeds from two or more radars and uses a patented process to work out whether each return is from a turbine or an aircraft. It requires no internal changes to the existing radar display or data processor. One of the major advantages of SMARTENERTM over other radar solutions is that there is no reduction in local radar coverage or issues with aircraft tracking.

Steve Hunter, Project Director at AES Wind Generation, said: *"Radar objections to wind farm developments are highly technical and have proven difficult to overcome. We are therefore delighted to have been involved in the development of a technology that addresses a complex radar problem at our Tormywheel wind farm site, and which could allow many other new projects to proceed into operation."*

Martyn Wills, Director of Cyrrus Ltd, added: *"Our system has proved itself to be highly effective. In over 1,500 hours of radar data trials, SMARTENERTM achieved a thousand-fold reduction in wind turbine clutter whilst maintaining uninterrupted presentation of validated aircraft tracks to the radar display screens. This will benefit airport operators and air traffic control, wind-farm developers and land-owners whose wind-farm proposals had previously been rejected as unviable."*

AVIATION AND WIND FARM PROJECTS

Aviation radar interference from wind turbines can be a major barrier to wind energy projects reaching construction and operation. RenewableUK reported in 2010 that at least 66% of all wind farm applications in the UK were subject to objections from the aviation sector. In Scotland alone, it is estimated that projects affected by aviation radar concerns amount to approximately 2,800MW of potential additional installed capacity.

Interference with aviation radar is a particular problem in the central belt of Scotland. There are three major airports in close proximity (Glasgow International, Edinburgh and Glasgow Prestwick) and the NATS long range en-route radar at Lowther Hill in the Scottish Borders.

AES Wind Generation
www.aes.com

¹ Given the size and speed at which turbine blades move they can be picked up on radar systems and can be difficult to distinguish from aircraft. If a wind farm is judged to potentially be visible on a radar display, an objection may be raised by the military (MoD) or civilian bodies (NATS or airport operators).

² Cyrrus Limited is a leading independent consultancy that focuses on bringing creative, contemporary solutions to the challenges facing the airport and air traffic industries. Cyrrus specialise in Communications, Navigation and Surveillance (CNS) and Air Traffic Management (ATM) programmes. For more information go to www.cyrrus.co.uk

³ AES Wind Generation is part of the AES Corporation, one of the world's largest power companies. It has over 2,000 MW (gross) of wind capacity in operation or under construction globally and a strong presence in Europe, with 336MW (gross) in operation or construction, and a development pipeline of over 1500MW across its European portfolio. More information about AES' UK wind projects can be found at www.aeswind.co.uk

DUNDEE

IN THE RIGHT PLACE AT THE RIGHT TIME

Renewables offers Scotland its biggest economic opportunity since the discovery of North Sea oil in the 1970s. Back then, Aberdeen quickly established itself as the key location for global companies seeking their share of Scotland's offshore 'black gold'.

This time, things look very different. It is Dundee that finds itself in the right place at the right time – right on the doorstep of the North Sea's fast-building wave of offshore opportunity.

PORT

To reap the offshore wind harvest, you need flat land – and you need it in the right place. Dundee has an enviable location for accessing Scotland's largest offshore wind development sites. No other port is closer to the action.

The port also has the advantage of deepwater access to support jack-up, construction and O&M activities and has a proven track record in offshore engineering and logistics.

ENERGY PARKS

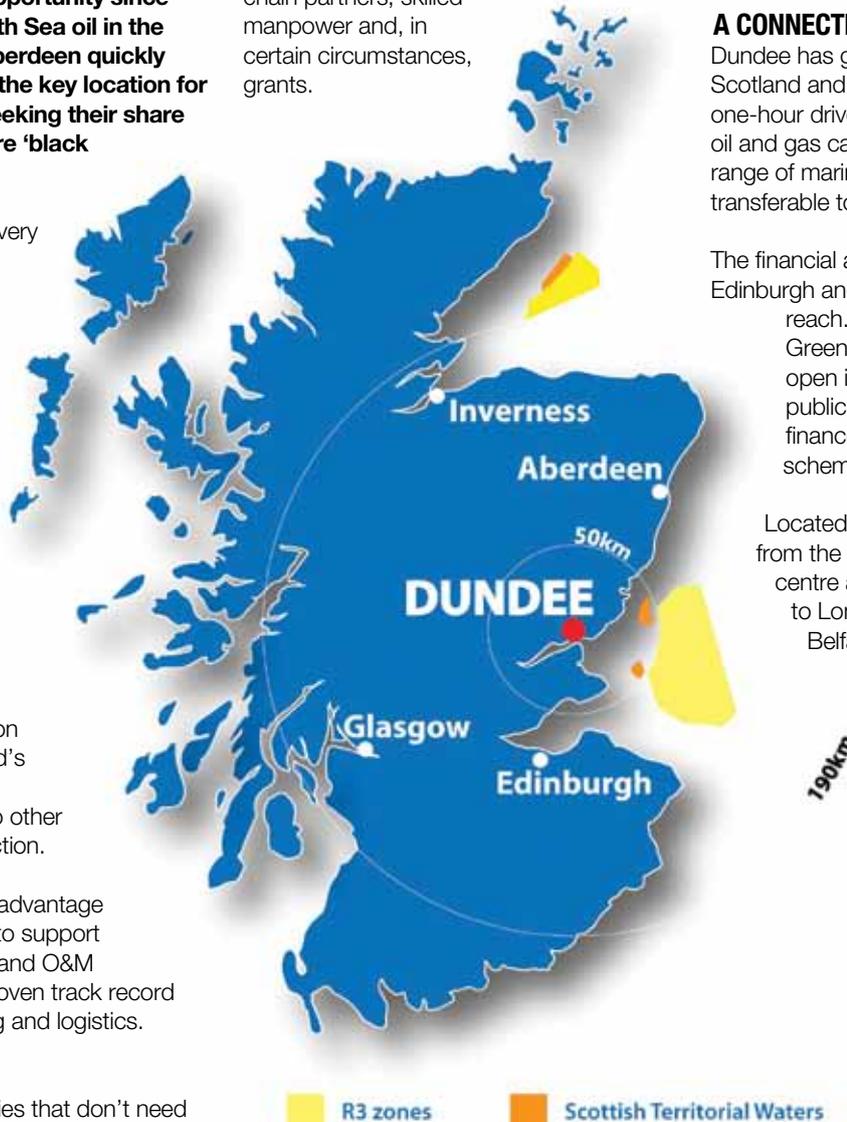
Supply chain companies that don't need to be located within the port can choose from three strategic development sites, all within easy reach of the quayside. Energy Park East, Energy Park West and Linlathen Park offer a total of 160 hectares available for supply chain operations.

Companies interested in locating in Dundee will find enthusiastic support from local and national planners. The Scottish Government's National Renewables Infrastructure Plan (NRIP) identifies Dundee as a strategic location for marine renewables.

A £70m National Renewables Infrastructure Fund (N-RIF) supports the development of sites at, and close to, the port for offshore wind turbines and related

developments. The Scottish Government recently granted the port enterprise area status for 'low carbon' activities.

Scottish Enterprise, the nation's key economic development agency, can support inward investors with advice and contacts for research, premises, supply chain partners, skilled manpower and, in certain circumstances, grants.



EDUCATION AND TRAINING SUPPORT

To ensure that the best knowledge, training and skills are brought to bear on extracting the full potential from the offshore renewables sector, Tayside's universities and colleges have combined forces to ensure that world class R&D and training is available for incoming investors.

Called 'Energy Training East', the alliance covers everything from technical apprenticeships to post-graduate teaching and research. The alliance also offers partnership opportunities for knowledge transfer, as well as an innovative and responsive attitude to inward investors.

Five academic institutions are all located within a 22-mile radius of Dundee Port...

- University of Dundee
- University of Abertay Dundee
- Dundee College
- Angus College
- Perth College

A CONNECTED CITY

Dundee has good links to the rest of Scotland and the UK. The city is only a one-hour drive from Aberdeen, Europe's oil and gas capital and home to a wide range of marine industrial expertise transferable to the offshore wind sector.

The financial and commercial centres of Edinburgh and Glasgow are within easy reach. The UK Government's Green Investment Bank is set to open in Edinburgh with £3 billion of public money to help companies finance early-stage renewable schemes.

Located just 5 minutes drive time from the Port of Dundee, the city centre airport has direct daily flights to London City, Birmingham, Belfast and Jersey.

A 21ST CENTURY CITY

Having made impressive progress on a £1 billion-pound regeneration scheme, Dundee is transforming itself into a very modern, stylish city in which to live, work, study and enjoy yourself.

The regeneration project is already reconnecting the city centre with the nearby Firth of Tay via broad, stylish boulevards. With the V&A at Dundee set to open in 2015, visitor

numbers are estimated to surge by up to half a million a year.

Already, the Malmaison hotel group is redeveloping a landmark listed building to meet its high class standards. Quick to spot an opportunity, other major hotel groups, leisure operators and retailers are seeking a share of the action.

Dundee Renewables
www.dundeerenewables.com

[Click to view more info](#)

TECHNIP OFFSHORE WIND PIONEERS VITAL STEP CHANGE IN SAFETY FOR CABLE INSTALLATION

A ground-breaking new technology which significantly reduces offshore array cable pull-in time by up to 60% and offers a vital step-change in safety practices has been pioneered by Technip Offshore Wind.

PULL-IN MODULE (PIM) – REDUCES TIME AND RISK

The integrated Pull-In Module reduces the risk of injury to personnel offshore and saves substantial operational time at each cable end with the innovation having been successfully launched and recovered more than 30 times without incident.

IDENTIFYING EXISTING OPERATIONAL PITFALLS

Technip developed the PIM after identifying pitfalls in existing methods of conventional lifting equipment used to install cables subsea and through J-tubes.

The safety challenges included: wires strained under tension on deck; the winch operator being remote from the work site; and the frame considered unsafe for personnel working at height.

The operational inefficiencies identified by Technip were: the frame was liable to swing around on the crane while also not being aligned or bolted down; the movement of a vessel was able to snap winch wires and a lengthy three hours preparatory work was necessary before installing cables.

Ron Cookson, Senior Vice President at Technip Offshore Wind, said: *“The challenges identified meant personnel were exposed to risk of injury while the cable pull-in operations required significant, costly vessel time. These difficulties can also be further exacerbated by environmental factors such as poor subsea visibility and strong currents.*

“When developing PIM, we aimed reduce the safety risks by removing vessel winch wires from operation and introducing compliance to industry standards. We also wanted to improve operations by reducing vessel dependency time as well as making the array cable installation process smoother and safer.

“As a result of its design, PIM has substantially improved safety during key operational phases and increased operational efficiency.”

SPECIFICATIONS

PIM is a three-leg tripod featuring a self-contained winch, equipment storage, and no bolted connections. It can be installed in any orientation and reduces damage risk to transition pieces.

As a result, it not only removes vessel winch wires from operation and is compliant to industry standards, but it fundamentally reduces vessel dependency and improves the speed of installation. It also provides on-board equipment storage and incorporates power supply for lighting and tools.

Ron Cookson added: *“Ultimately, PIM provides personnel with significantly safer work platforms for cable pull-in activities, while pull-in completion time is radically reduced by up to 60%. This is a major game changer for the industry and underpins Technip Offshore Wind’s market-leading position in offshore and infrastructure project management and its commitment to helping clients deliver projects cost-effectively, safely and on schedule.”*

Technip Offshore Wind
www.technip.com



INDEPENDENT INSURANCE BROKERS BRUCE STEVENSON

Bruce Stevenson is an independent Insurance Broker with offices in Edinburgh, Glasgow and London, who specialise in Renewable Energy Insurance for small to medium privately owned firms and large corporate organisations.

EXPERIENCE IN RENEWABLES

With over 20 years experience within the renewable energy sector, they have built a reputation with clients, consultants,



contractors and financiers as the leading insurance advisor to the sector.

CLOCHNAHILL ENERGY

A key geographical area for the firm is the north east of Scotland where they have the largest concentration of renewable energy clients. One of their clients is Clochnahill Energy near Stonehaven.

The wind farm is owned by the Gordon family of Inverbervie. The project consists of 4 Siemens 1300Kw wind turbines and the 5.2MW site generates enough electricity for approximately 5000 homes.

Construction work at the site started in March 2011 and was completed 12 months later. The project was funded through the Co-operative Bank and

Bruce Stevenson arranged the insurances for the project during the construction phase and once the project became operational.

A TYPICAL EXAMPLE

Clochanahill is a typical example of renewable energy project for Bruce Stevenson.

Conversations with the client began some considerable time before works even began on site. This helps building

the relationship with the client and understanding the project fully, to ensure all risks are identified and protected.

INSURANCE COVER

The insurance covers available for both the construction phase and operational phases were discussed, along with the likely insurance requirements the bank would stipulate and premiums indications for financial model purposes. Contractual obligations with turbine suppliers often have an impact on insurance requirements and this project was no different, which required contracts to be reviewed and the insurance for the project tailored accordingly. Once the insurances are placed, they continue to keep in regular contact with the client and site visits during construction and operation are common place.

PROVIDING A WORTHWHILE SERVICE

Despite renewable energy projects in the north east of Scotland covering a widespread geographical area, most developers know of each other and often the same contractors and project consultants are utilised. Therefore, it is important that they provide an excellent level of service to ensure they are the insurance brokers that developers want to speak to about their projects.

Bruce Stevenson Insurance Brokers
www.brucestevenson.co.uk

CORROSION PREVENTION

AN OPPORTUNITY WAITING TO BE GRABBED!!

Well that's how Ray Sams from Spencer Coatings sees it. With a history of over one hundred years manufacturing high performance surface coatings from their Aberdeen base, and a coating system with over twenty five years proven maintenance free performance, in a wide variety of aggressive environments including offshore north sea.

STANDARD INDUSTRIAL PAINTS

Standard industrial and marine paints have a limited life span and very few can show a proven twenty five years plus maintenance free track record.

The very nature of wind energy generating structures demands long maintenance free life especially offshore structures where on station repair and maintenance is enormously expensive and in some cases logistically difficult if not impossible.

ADDRESSING THE PROBLEMS

A change in approach is required to address these problems and conventional paint formulations need a severe up-grade to accommodate the in-service conditions faced by the wind energy generating companies.

With over twenty five years maintenance free performances, there is evidence and proof the aggressive operating conditions and accelerated corrosion issues can be successfully addressed, and there is technical data available to assist operators and owners with their long term planning to keep corrosion under control.

SPENCER COATINGS IN SCOTLAND

Spencer Coatings Ltd have had a long and successful working relationship with the supply chain network in Scotland including major off shore north sea operators and maintenance management companies, the Northern Lighthouse Board, as an exclusive supplier, Scottish Gas, Scottish Power, Highways Agency and Network Rail.



NEW CHALLENGES

The emerging and developing offshore wind market opens up new challenges to all, and they look forward to being involved with resolutions to at least some of these challenges in the fight against corrosion in one of the most hostile environments in the world.

Ray Sams
Spencer Coatings
www.spencercoatings.co.uk

[Click to view more info](#)

HEIGHTEC MAKING HEIGHT SAFETY SAFER

In 1997 the training division of Heightec – The National Access and Rescue Centre was established with the launch of their flagship training centre at their headquarters in Kendal (Cumbria). Since then they have developed a national network of specialist height safety centres, providing competence based height safety and rescue training to professionals in the work at height industry.

ABERDEEN

The Aberdeen centre, launched in 2008, is one of five purpose built height safety centres offering a comprehensive range of training courses for work restraint, work positioning, fall arrest and rescue.

SPECIALLY DESIGNED APPARATUS

The Aberdeen centre has specially designed training apparatus replicating realistic work situations, and is dedicated to the offshore oil and gas, renewable and energy sectors providing courses such as IRATA rope access, telecoms rigging and confined space training.

GLOBAL WIND ORGANISATION & RENEWABLEUK JOINT APPROVAL FOR WIND TURBINE SAFETY TRAINING

Heightec are also pleased to announce that, following a recent SGS RUK audit, they now have joint approval from the RenewableUK (RUK) and Global Wind Organisation (GWO) for the delivery of work at height safety training.

As a leading provider of RUK work at height and rescue training for wind turbines, Heightec is the first specialist training provider able to offer joint certification for both awarding bodies. This means wind turbine personnel who require height safety training to work onshore and offshore can now attend a single course at Heightec and comply with both standards. *“This offers a significant cost and time saving benefit to our customers. We can now train personnel to a recognised industry standard and issue joint RUK and GWO certification that will be accepted by the major wind turbine operators worldwide.”* said Chris Ware, Training Manager at Heightec.

NEW TOWER

The recent addition of a new 18m tower to their Aberdeen Height Safety Centre means the joint certification training course is now also available to clients all along the East Coast of Scotland. This tower also gives them the ability to run telecoms training courses in access, rescue and rigging.

EQUIPPING THE WORK AT HEIGHT INDUSTRY

Heightec not only provide height safety training, but also specialise in the design and manufacture of innovative harnesses, lanyards, rope devices and rescue products for vertical work at height and rescue.

NATIONAL NETWORK

They are the only UK manufacturer of technical fall protection and rescue equipment with a national network of dedicated height safety centres with venues in Aberdeen, Birmingham, Kendal and London.

They will also shortly be opening a trade counter at their Altens industrial estate site, providing an over-the-counter service for clients to buy ready-to-use work kits and rescue systems, as well as individual products such as harnesses, lanyards, rope devices and connectors. In addition to their standard product range we will also have fall arrest blocks for sale or hire and a block inspection service.

OPERATIONAL SUPPORT SERVICES

In addition to their height safety training and equipment supply, they also offer operational support services including expert safety auditing, consultancy, inspection and testing.

The Heightec Group Ltd
www.heightec.com



MAD FOR MARINE ENERGY WIND FOR SOUTH EAST SCOTLAND

The waters off the South East of Scotland are set to become an European hot spot for offshore renewables and Royal HaskoningDHV's team, based in Edinburgh and Glasgow, are a key part of this drive.



OFFSHORE WIND ENERGY SUPPORT

Royal HaskoningDHV, the international engineering and environmental consulting firm have nine offices in the UK. Working out of their Edinburgh and Glasgow offices

Royal HaskoningDHV is supporting several of the largest offshore wind developments in the UK. The offshore applications for the first phase, of over 1GW of offshore wind for the Firth of Forth Round Three Zone being developed by Seagreen Wind Energy (a joint venture between SSE and Fluor Limited) has recently been submitted to the Scottish Government.

Paolo Pizzolla, Royal HaskoningDHV's EIA project manager says: "Working on such a large site off the coast of Angus and Fife was a real challenge. This is one of largest infrastructure projects planned in Scotland, spanning the wind turbines up to 70km offshore to an onshore grid connection 20km inland to Tealing in Angus. As you can imagine there have been a number of environmental and consenting challenges to overcome."



Alistair Davison

LEADING CONSULTANCY IN SCOTLAND

Scotland's charge towards predictable energy from the sea is being led from many firms in South East Scotland. Royal HaskoningDHV are one of Scotland's leading consultancies supporting the wave and tidal boom across Scotland. Frank Fortune Royal HaskoningDHV's Technical Director leading many of these projects said: "We're delighted to have been at the forefront of tidal and wave energy project development for over nine years now. We're proud to be providing environmental consultancy services to support the consenting of a number of 'world first' developments including two very large tidal power projects in Orkney, the world's largest wave power projects in Lewis and two further tidal arrays in the west of Scotland."

"The buzz in the marine energy sector is all about Scotland at the moment and our team in Edinburgh and Glasgow are plugged in and ready to help." concludes Fortune.

Alistair Davison, Royal HaskoningDHV
www.royalhaskoningdhv.com

[Click to view more info](#)

COLLEGE INVESTS IN RENEWABLE FUTURE

With the renewables industry predicted to generate not just energy but £100billion over the next 10 years, Dundee College is taking steps to ensure people have the skills to fill the jobs needed to maintain this business.

SKILLS SHORTAGE

Having already identified a skills shortage in the industry, the college committed to ensure the infrastructure needed, in terms of the training and expertise, is in place to encourage growth in this industry in the city.

SUSTAINABLE INDUSTRIES INSTITUTE

Dundee College has launched SI2 – the Sustainable Industries Institute, by merging the expertise to be found in the construction, engineering and science departments.

"We see our commitment to the renewable energy as being vital to both

the growth of the industry and the future of certain trades and crafts in this area," said Dr David Gourley, director of curriculum development with SI2.

"We already have training facilities for welding and fabrication – two crafts which have been supporting the North Sea oil and gas industry since the very first rigs were towed to the Forties and Brent fields in the early 1970s.

"These skills are equally essential for the installation and maintenance of wind turbines.

"This area is set to be at the centre of renewable energy with offshore wind-turbines creating employment in the near future."

ARC CENTRE OF EXCELLENCE

In November Dundee College launched the Arc, a £500,000 centre of excellence for engineering, its Kingsway Campus.



The Arc offers a capacity to accommodate 40 welding students.

REACHING OUT

Dundee College is also carrying the renewables message beyond its own students.

At a recent Engineering 4 Life event, local S3 school pupils were introduced to a series of technologies connected with the renewables industry including calculating optimum performance of wind turbines – using table-top models.

Dundee College
www.dundeecollege.ac.uk

SKILLS AND TRAINING REQUIREMENT FOR THE RENEWABLES SECTOR

Carnegie College in Scotland, recognised early on that the Renewables Industry would offer an exciting future prospect for both business and the economy. They have invested in state-of-the-art facilities and equipment to allow for the development of a skilled workforce.

WHITLOCK ENERGY COLLABORATION CENTRE

Based at the College's Engineering Campus at Rosyth, the Whitlock Energy Collaboration Centre provides a facility and a service which allows key businesses in the Renewable Energy supply chain to come together to consider, discuss and move forward on issues relating to the future of the industry.

TRAINING

The College offers education and training from Modern Apprenticeships through to Higher National and bespoke training for Electrical Engineers, Turbine Technicians, Mechanical Engineers, Civil Engineers and Health and Safety Specialists.

Recognised as some of the best training facilities in the country, the campus facilities include; a 16 metre tower

enabling 'Working at Heights' training; a Fabrication and Welding Workshop with 48 fully-equipped welding bays; Mechanical Workshops and Analysis Lab housing an impressive up-to-date range of manual and computer controlled technology.



WORKING TOGETHER

As one of Scotland's largest providers of Modern Apprenticeships, they work regularly with leading engineering companies such as Siemens, Babcock Marine, Bi-Fab, Rolls Royce, SSE and the Weir Group.

EDUCATION AND TRAINING PROVIDER OF THE YEAR AWARD

The College's expertise and innovation was recognised in 2011 by the National Skills Academy for Power (NSAP) when

the College was crowned as the UK's Education and Training Provider of the Year for its commitment to the delivery of skills for the power industry. In addition, one of Carnegie's apprentices, employed by SSE, scooped the award as the UK Apprentice of the Year - Power.

WIND TURBINE TECHNICIANS

Carnegie is currently delivering the first 100 wind turbine technicians for the Renewables industry, fully trained and skilled with a new qualification: Wind Turbine Technician. The training is demanding and includes a large academic component, with an equal balance of vocational and practical training, together with essential health and safety elements, including working at heights and over water. Employers have been fully involved in designing and developing the standards for the qualification, and assisted by Renewables UK, and City and Guilds, the College has created a qualification unique to the UK, and possibly to Europe.

COLLABORATION

Working in collaboration and in partnership with major players, Carnegie College is leading the way to ensure the availability of the required skilled workforce for the future success of the renewables sector across the UK.

Carnegie College
www.carnegiecollege.ac.uk

BVG ASSOCIATES ANNOUNCE NEW OFFICE AND TEAM IN SCOTLAND

BVG Associates, a highly respected consultancy with expertise in wind and marine energy technology and supply chain development, has chosen to locate their new Scottish office in Burntisland, Fife.

The renewable energy sector is set to become one of Scotland's major growth areas in the next decade and Fife is perfectly located on the East coast of central Scotland, close to offshore wind developments in the Firth of Forth and the North Sea.

'OFFSHORE WIND TECHNOLOGY PATHWAYS FOR SCOTLAND'

To mark this milestone in the company's development, BVG Associates also simultaneously published a new report, 'Offshore wind technology pathways for Scotland', a bespoke study into the cost reduction pathways that apply specifically to companies and organisations north of the border.

MIKE WOODS ON THE TEAM

BVGA is also delighted to welcome Mike Woods, who will augment the team's expertise in wind turbine technology and wave and tidal energy generation systems.

Mike has 10 years' experience in the renewable industry, initially designing and developing wave power at Pelamis Wave Power, then assisting wind turbine design at Gamesa. He has a detailed,



Mike Woods

practical understanding of the technologies involved from concept generation through design, analysis and procurement to assembly and commissioning.

Now leading wave & tidal engagement at BVGA, Mike is keen to bring his experience to bear assisting and supporting the development of the industry.

EXPERIENCE

BVG Associates is skilled in offshore wind turbine technology, R&D, supply chain development and is committed to being at the heart of the renewable sector as it establishes. The company's Scottish client list includes wind turbine manufacturers and their supply chain, ports, developers, enablers and wave and tidal device manufacturers.

Zoë Barnes, head of BVG Associates Scotland said: *"We are pleased to have chosen Fife as the location of our new Scottish office as we feel the region is becoming a significant hub for the UK renewable energy industry. Mike and I, alongside the whole BVGA team, look forward to supporting the further growth of this exciting industry both in the region and across Scotland as a whole".*

BVG Associates
www.bvgassociates.co.uk

VENTO LUDENS SELECTS EDINBURGH, FOR ITS UK BASE

Vento ludens was founded in 1996 in Bavaria, Germany. The UK office has been working on renewable energy projects since 2005 and more recently their office in Switzerland was opened in 2008.

The UK team of 14 is based in the inspiring city of Edinburgh. Their key aim is to develop projects that are of the highest quality design, are sensitively sited and deliver the greatest energy output with the least impact on the natural environment.

FIRST UK WINDFARM

Their first UK wind farm in Aberdeenshire became operational at the end of 2011, and in August 2012 they were granted consent for a 21 MW Wind Farm in Moray. In addition, there are a further 64 MW in planning and a pipeline of projects at various stages of development.

COMMUNITY ENGAGEMENT

The local community are central to all projects. The process of community consultation is started at project inception in order to assess local opinion and to also effectively communicate the inherent benefits of each project. Carefully planned strategic consultation can

motivate, support, and deliver a valuable development. In fact, by engaging early and intensively with the local community and their representatives, there is an ability to speed up the planning process.

TRANSPARENCY

Regarding community benefit, Vento Ludens applies a transparent approach to all projects, which essentially involves working with the local community to find out...

- If there is scope to establish a community investment initiative

- What type of community fund would work for the local community and how they would like it administered
- What other benefits would be attractive to this particular community

Community benefit is high on the agenda both politically and within vento ludens. The recently published report "Securing the Benefits of Wind Power in Scotland. A New Concept for Community Benefit Provision" commissioned by the company, it seeks to ignite an industry wide debate on the future of Community Benefit.

Vento Ludens

www.ventoludens.co.uk



GLOBAL SOLUTIONS - KONGSBERG MARITIME

Kongsberg Maritime provide key technology & proven solutions to the global offshore renewable, oil & gas, subsea survey & construction, merchant marine industries & academic research institutes around the world.

SERVICES INCLUDE...

- Acoustic noise measurement, monitoring & impact assessment
- Autonomous underwater vehicles
- Robust underwater camera systems
- Fish stock monitoring & behavioral study
- Vessel dynamic positioning (DP), & navigation
- Integrated automation
- Multibeam echo sounders
- Hydro-acoustic/INS and DGPS position reference
- Attitude monitoring
- Scour monitoring

AUTONOMOUS ACOUSTIC NOISE MEASUREMENT SYSTEMS

Experts in the field, they provide autonomous acoustic noise measurement

systems which measure & monitor underwater noise during all stages of project development, installation and the ongoing operation and maintenance of offshore renewable structures. High quality data, in all accepted formats, is then readily available for post-processing, analysis, & impact assessment. Current clients include SSER, Aquamarine Power & MeyGen.

EQUIPMENT RENTAL SERVICE

From Aberdeen the company offers an Equipment Rental service supplying equipment including the small portable

Hydroid REMUS100 AUV. This small "man-portable" underwater vehicle can be programmed to carry out detailed hydrographic surveys, autonomously, in very shallow water to determine site & debris clearance, effects of scouring, regular inspection of seabed and foundations.

Kongsberg

www.kongsberg.com

[Click to view more info](#)



MALIN MARINE CONSULTANTS (MMC) NAVAL ARCHITECTS AND HEAVY LIFT ENGINEERS

MMC comprise a team of professional, multi-disciplinary engineers providing a diverse and flexible set of specialised skills. These are built on a wealth of practical experience from working transportation and heavy lift projects both technically and operationally.



PRACTICAL APPROACH

It is this combination of a deep rooted, practical approach to their way of working combined with an openness to new technology and techniques that places them in a strong position to tackle the many unusual and diverse challenges associated with the renewable industry, both on and offshore.

John MacSween, Managing Director of MMC said, *“MMC are regularly called upon to solve transportation challenges ranging from simple transport and access studies for relocating towers and blades to an inland location, handling and moving frames for heavy items such as nacelles and engineering of the full transportation solution for shipping and handling all components of a renewable device.”*

PROJECTS

Relevant projects include a series of transport and access studies for large blades to be delivered to congested inshore locations. Here MMC’s scope was to review and identify a route, liaise with local authorities regarding road and bridge capacities as well as document all street furniture that required removing. On two occasions, novel manoeuvres were proposed which allowed corners, previously identified as being un-passable, to be negotiated successfully, with all verified by a recorded trial run.

MATERIAL HANDLING

On the material handling front MMC are involved in several projects looking at bespoke lifting frames and handling frames

for the very large single lift items associated with next generation marine renewable plant. Here they are able to bring their knowledge and experience of both land and marine handling (cranes and SPMTs), sea-fastening and shipping to bear, to offer a holistic solution to our client’s requirements. In addition we have been contracted with design and operational scopes covering mobilising cable lay and accommodation barges.

DESIGN SUPPORT AND TECHNICAL SOLUTIONS

Finally, when the front end design phases are over, MMC have been able to offer this same team moving forward to assist any appointed shipper with design support and full technical solutions to the complex shipping and storage requirements of these valuable assets, such as stowage plans, sea-fastening design, mooring studies, RORO operations, semisubmersible ballast calculations and marine procedures.

Alternatively they have been able to offer to their client, third party verification of their shippers own technical proposals, where these are available both at tender and operational phases of the project, such as a recent review of suppliers proposals for a met mast installation.

Malin Marine Consultants
www.malinmarine.co.uk

FRASERBURGH HARBOUR

SERVICING THE NEEDS OF THE RENEWABLES MARKET

Fraserburgh Harbour is situated on the NE coast of Scotland, an ideal location to service the needs of the emerging renewables market. The facilities and supply chain within the harbour and wider area are set to become a key driver in this sector.

COMMITMENT

The Commissioners of the port are committed to diversity and as such are about to embark on an 18/20 month, £8 million project which will reconfigure the mooring for the strong fishing fleet, this development will free up an entire basin in the north part of the port with dedicated berthing and adjacent shore side areas for potential new business such as a dedicated O & M base.

FACILITIES AND SERVICES

The Balaclava Basins and North Pier offer 6.5 at MLWS and have approximately 1,000 metres of alongside berthing, a major part of which is currently used by commercial and oil supply vessels and will also be available to the renewable sector.

Fraserburgh Harbour also boasts excellent repair facilities including a modern dry dock and six berth shiplift both of which can service various vessels ranging from ferries, oil related vessels etc in addition to the existing fishing fleet. These repair facilities are supplements by the excellent support services covering the full range including engineering, coded welding, painting etc together with specialised trades of electrical engineering, navigation services and fabrication thereby ensuring an established engineering supply chain.

DEVELOPMENT

There are various prime areas for development immediately available within the port confines totalling approx 8,000 sq metres, one of which is adjacent to the Inner Balaclava quayside. Additional ground in the Fraserburgh area is also available.

INDUSTRY PARTNERSHIP

The local Banff and Buchan College is ideally positioned to be a key industry partner in the development and delivery of renewable and sustainable energy training in addition to the engineering courses they currently offer.



Fraserburgh Harbour
www.fraserburgh-harbour.co.uk

HIGHLANDS FABRICATORS A JOINT VENTURE

In 1972, and in response to the UK's entry into oil & gas production offshore a few years earlier, a joint venture company between Brown & Root and Wimpey, called Highlands Fabricators, was established and the Nigg yard was opened. At its peak, over a 30 year period, the yard employed up to 5,000 people and produced about one third of the UK's large offshore structures for oil & gas production. In 2002, the yard was moth-balled as no further orders were received and subsequently put up for sale by KBR (the owners).

GLOBAL ENERGY GROUP – ENERGY PARK

Global Energy Group saw a unique opportunity to acquire Nigg and develop the yard and port as an Energy Park, to attract work into the facility for oil & gas projects, Renewables and other energy related ventures. Global completed the purchase in October 2011 and have since embarked on an aggressive investment program to bring the yard back to life and refurbish/update its infrastructure.

CURRENT WORK UNDERTAKEN

The work that is currently undertaken includes: drilling rig repair/maintenance/upgrade; construction of structures for oil & gas subsea/topsides projects; yard and port logistics for energy related marine operations. The company has also worked on a number of marine tidal/wave prototype projects and hopes to obtain further work in future. Nigg was used a few years ago for the assembly of the Beatrice Offshore Wind demonstrator project. In the last year, the yard has employed up to 750 people at any one time and in future, after the introduction of other work, the yard could employ up to 1,500/2,000 people.

COMPANY STRATEGY – OFFSHORE WIND INDUSTRY

As part of the company strategy, a mix of energy contracts will be brought to Nigg, to ensure that employment opportunities for the local community and beyond, are sustainable going forward. The company has some exciting new business concepts that will be announced shortly, especially looking at the offshore wind industry, which is being developed around the Scottish Coastline.

Global Energy, with funding support from public sector agencies, opened Nigg Skills Academy to ensure that locally trained skilled tradesman are available to assist the company's expansion plans and assist in addressing the skills shortages within the energy industry.

LARGEST PRIVATE EMPLOYER

Global Energy are the largest private employer in the Highlands and Islands and in addition to Nigg, they have facilities at Rosyth, Dunfermline, Aberdeen and around the Inverness/Cromarty Firth area. With a projected turnover of £350 million and over 4,200 currently employed worldwide. The company is engaged in energy related work from construction, to inspection and quality management services, offshore accommodation, architectural work, fabrication and brownfield integrity support to offshore oil & gas operators. They also have a major presence in the market for Human Resource Management/Manpower Services.

Global Energy Group
www.gegroup.com



OPTIMISED ENVIRONMENTS (OPEN) A DESIGN PRACTICE WITH A CORE OF CHARTERED LANDSCAPE ARCHITECTS

At Optimised Environments (OPEN) they take their involvement in crafting the biggest landscape change since the industrial revolution very seriously.

Their work is diverse in nature and ranges from masterplanning and public realm design, on a city scale, to environmental impact assessment. Essentially OPEN is a design practice with a core of chartered landscape architects. Their team shares a passion for our landscape and we have the skills to be able to understand a complex set of technical requirements, working in three dimensions.

WIND ENERGY INDUSTRY

Their involvement in the wind industry began in the late 1990's through the process of Landscape and Visual Assessment, which is a component of the Environmental Statement. The design of a wind farm layout forms part of their input to the mitigation of its effects,

taking account of all other technical and environmental constraints.

Juggling many constraints amidst the overriding need to capture the wind (and following best practice in design) is often a tall order. However, with visual effects frequently being cited as a key reason for the refusal of planning permission, their clients recognise the importance of clear advice from the outset.

EXPERIENCE PAYS

OPEN's experience means that an increasing number of developers are turning to them for advice during initial project feasibility. Whilst it is impossible to predict how an application will eventually be determined, they are invariably asked to advise whether a site is defensible or if there are overriding reasons for which it is likely to be considered unacceptable in landscape and visual terms. They also provide strategic advice to clients who



wish to understand which areas have the greatest landscape and visual capacity for development.

Determining the most appropriate sites for development and designing them well is the key to the sustainable future of the on and offshore wind industry, in OPEN's opinion.

Optimised Environments
www.optimisedenvironments.com

[Click to view more info](#)

SHIPPING AND TRANSPORTATION SPECIALISTS

HASL are a long established team of specialists offering professionally engineered solutions to the most complex transportation needs of the renewable industry. They have the experience and expertise to undertake the shipment of heavy lift cargoes to any destination in the world.

ALL ENCOMPASSING LOGISTICS

All aspects of transportation such as shipping, road haulage, seafastening,



loading and discharging are carefully pre-planned. This includes road route surveys, rigging studies, deck strength calculations and seafastening design. Meticulous planning and personal supervision of each contract help to ensure safe delivery with often critical deadlines.

MARINE STABILITY AND EXPERTISE

HASL are particularly conscious of ship stability and the forces which can be experienced by heavy lift cargoes during sea-going transportation. Their in-house Naval Architects and Design Engineers are able to quickly and accurately draft stowage plans, assess deck strength and present well thought out and cost effective transportation solutions. Thereafter they can undertake design, detail fabrication and installation of appropriate seafastenings for the voyage.

SUCCESSFUL PROJECTS

Typical projects include the transportation of Marine Current Turbine supports from Methil to Belfast. HASL were contracted at very short notice to transport 1 off Quadrapod Foundation, 4 off Quadrapod Shoes and 4 off piles from Methil to Belfast. The weight of the Quadrapod Foundation was 110.0 Te, and each of the shoes were 26.2 Te. HASL chartered an appropriate vessel for this shipment,

with a forward Superstructure allowing stowage on deck of the large Quadrapod and shoes without any visibility issues.

The Quadrapod 4 legs were at different heights, 4 off timber packs supporting each leg were pre-laid on the vessel deck, securing of the cargo was by means of chains & bottlescrews. Vessel securing points were also utilised and D rings were also welded to assist securing. The shoes were landed to dunnage and secured by welded blockers. HASL then organised all labour, attended loading and liaised with the Marine Warranty Surveyor regarding comments on technical and operational documentation.

CURRENT PROJECT

This type of project represents only a small sample of the type of work HASL can undertake, and the company is currently transporting carrier sections for the MOD around the UK weighing up to 11,000 Te rolling on by SPMTs and floating off via submerging operations.

All this experience, skill and expertise are directly translatable to issues and problems faced by the offshore renewable sector.

Henry Abram and Sons Ltd
www.henryabram.co.uk

SKANSKA, SMIT MARINE PROJECTS, GRONTMIJ JOINT VENTURE CAPABILITY AND EXPERTISE

The waters around the UK have some of the World's best natural resources for wind, wave and tidal energy. Over the coming decades, the Offshore Renewable Energy market will grow to develop this potential.

The Skanska, Smit Marine Projects & Grontmij Joint Venture has been initiated to serve the needs of the UK offshore wind energy market and brings together significant capability and expertise in construction, marine installation and offshore wind engineering.

COLLABORATIVE AND HOLISTIC APPROACH

They have adopted a collaborative and holistic approach in developing an efficient and economic concept design for a concrete gravity foundation (CGF), which is aligned with the requirements of the construction and installation teams and flexible for use in all areas in water depths from 30-60m, over a wide range of soil conditions and turbine loadings.

COST REDUCTION

Costs have been reduced through applying mass production principles using proven construction techniques and adopting a float-out-and-submerge strategy which, allied to operational flexibility through having a large in-house fleet of vessels and no requirement for anything bespoke, takes full advantage of weather windows. The availability of suitable ports on the East Coast of Scotland with close proximity to the sites and access to good local labour, materials and supply chain is another major factor in reducing costs.

RIGOROUS PROCESS

The design has been subjected to a rigorous process of analysis, simulation and risk assessment involving industry experts from all relevant disciplines resulting in a high degree of confidence in the viability of the CGF concept.

CGF ADVANTAGES

The CGF enjoys a great many environmental advantages over other



foundation types. No piling or other works that might cause noise and vibration to disturb sea mammals is required.

Concrete is an inherently durable material with good resistance to wind and wave fatigue loading, which conveys many benefits including reduced maintenance. Finally, the CGF can be fully decommissioned returning the seabed to its original condition and all materials used during construction can then be recycled.

Skanska
www.skanska.co.uk

THE MAJOR INDUSTRY EVENT FOCUSED ON THE DEVELOPMENT OF RENEWABLE ENERGY IN SCOTLAND

5 CONFERENCES
UNDER ONE ROOF

600+ Delegates
60+ Exhibitors



ANNUAL CONFERENCE & EXHIBITION
18 & 19 MARCH
EDINBURGH
2013

DAY 1 - The Big Issues

- ★ Potential impacts of independence
- ★ Progress on reform of the electricity market
- ★ Costs and benefits of renewables
- ★ A vision beyond 2020
- ★ Unlocking investment
- ★ Building a new industry
- ★ Making renewables part of the mainstream

DAY 2 - The 4 Pillars

- ★ Electricity Market Reform Conference
- ★ Grid Conference
- ★ Planning Conference
- ★ Renewable Skills Conference



scottish renewables **REPRESENTING SCOTLAND**

CONFERENCE | RECEPTION | DINNER | EXHIBITION | SHOWCASE

scottishrenewables.com/events

SCOTTISH ENTERPRISE

Scotland has a renewable energy resource which is unparalleled in Europe. The seas surrounding Scotland are estimated to have a quarter of Europe's potential wind capacity, making the country well placed to become the centre of Europe's offshore wind industry.

PARTNERSHIP

At Scottish Enterprise they are working closely with partners in the public and private sectors to take full advantage of the opportunities presented by offshore wind. They are committed in developing a globally recognised wind industry and a strong Scottish supply chain.

NATIONAL RENEWABLES

INFRASTRUCTURE FUND

Investment of £70million National Renewables Infrastructure Fund has attracted strong interest from port operators and consortia looking to upgrade facilities to provide manufacturing, test and demonstration infrastructure for the offshore wind supply chain. Alongside other funding initiatives, such as the Offshore Wind Project Funding Call, POWERS, and the Renewable Energy Infrastructure Fund, this activity is helping create a world leading environment for the development of the industry.

INVESTMENT CONFIDENCE

Investment announcements from global players such as Gamesa, Samsung Heavy Industries and Mitsubishi Heavy Industries have already provided confidence for investment and expansion in crucial parts of the supply chain, as well as demonstrating Scotland's huge potential on the world stage.

RESEARCH AND DEVELOPMENT

Scottish Enterprise is supporting offshore wind R&D, which will help to reduce the cost of producing energy from offshore wind and speed up the deployment, and are supporting a number of funding calls in this area. For example, the transferable expertise from Scotland's oil & gas sector could help reduce the costs of the offshore wind by up to 20 percent.

Their free Offshore Wind & Supply Chain Conference, held annually in Aberdeen in January, offers an excellent opportunity to learn more about this growing industry. Also their Offshore Wind Expert Support programme, available to Scottish based companies, offers free advice and guidance designed to companies win future business in offshore wind.

Scottish Enterprise
www.scottish-enterprise.com/offshorewind



NEART NA GAOITHE OFFSHORE WIND FARM

Shepherd and Wedderburn is acting for its client Mainstream Renewable Power on the Neart na Gaoithe (Gaelic for 'Strength of the Wind') wind farm development, proposed for Scotland's outer Firth of Forth, more than 15km off the coast of Fife.

Subject to planning consent, Neart na Gaoithe will produce up to 450MW of renewable power – enough electricity to power 325,000 homes – from a 105 km² site with up to 125 turbines sited in water depths of 45 – 55 metres.

making a significant contribution to the Scottish Government's 2020 target to produce all of Scotland's electricity demand from renewable sources.

ADVICE AND GUIDANCE

Shepherd and Wedderburn is working closely with Mainstream on a number of core aspects of Neart na Gaoithe, including the overall consenting of the development. The firm is also advising on the contracts, grid connection and land arrangements needed for the project.

Shepherd and Wedderburn will also guide Mainstream through the planning requirements for the onshore element of the development. An application will be submitted to East Lothian Council later this year for a fully underground, 12 km power cable, which will run from its onshore location at Thorntonloch Beach through to Crystal Rig II wind farm, where it will connect to the National Grid.

Shepherd and Wedderburn
www.shepwedd.co.uk



Gordon Downie

CAPITAL INVESTMENT

The development is targeting a carbon payback period of two to three years and represents a capital investment of up to £1.4bn, making it one of the largest projects of its kind in Scotland. It will have installed capacity to produce up to 3.7 per cent of Scotland's current electricity demand,

REPOWER SYSTEMS SE A CASE STUDY

REpower Systems SE is one of the leading international manufacturers of onshore and offshore wind turbines with their head office based in Edinburgh and service centres across the country.

They are one of the UK's fastest growing wind turbine manufacturers with over 150 employees and more than 1GW worth of total signed contracts in the UK and has to date delivered 43 onshore wind farms in Scotland, England and Wales and two offshore wind farms...

- Project Beatrice in the North Sea
- 150 MW Ormonde wind farm in the Irish Sea

BEATRICE

The Beatrice Project was unique in the world as the first offshore wind project installed in water depths of around 45m. A floating heavy lift crane barge was used to install the fully pre-assembled wind turbines. The two REpower wind turbines are an extension of the existing offshore oil installation in the Beatrice Field. They are connected to the 33kV grid from the shore and provide a significant share of the electricity needed on the Beatrice oil rigs for oil exploitation.

The mission of this demonstrator project was to prove the feasibility and viability of deepwater offshore wind farms. The Beatrice Demonstrator is part of DOWNVInD (Distant Offshore Wind farms with No Visual Impact in Deepwater).

ONSHORE

Onshore, the company has expertise installing turbines in remote and complex areas as developers look further afield for sites. This ranges from logistics solutions, to additional grid capability.

BURNFOOT HILL

The Burnfoot Hill project for EDF was one example of complex logistical planning. The site, some 11km from the main road, presented several challenges; not least the transport of all the components up long steep inclines (15%) to the top of

a hill 600m above sea level. All thirteen turbines were installed only 28 days after first mobilising to site. This was especially successful given the extremely adverse weather conditions faced by the team. Despite this, the commissioning was finished ahead of schedule and the project was handed over to the client on time and on budget.

FUTURE DEVELOPMENT

Future development will also be focused on high wind speed sites in order to offer the consumer best value from wind and, in line with this, REpower recently announced the expansion of their 3 megawatt turbine series which will see a re-certification of the 3.4M104 machine for higher wind speeds.

REpower
www.repower-uk.co.uk



OFFSHORE WIND ACCELERATOR WAKES

Oldbaum Services has been elected to provide the LEOSPHERE group Instrument solutions for E.ON and the Carbon Trust as part of the Offshore Wind Accelerator Wakes work stream.

Oldbaum Services are a leading wind energy consultancy have been selected to provide the LiDAR (Light Detecting And Ranging) instrumentation solution for the Offshore Wind Accelerator Wakes Measurement Campaign.

OFFSHORE WAKES AND THEIR IMPACT ON WINDFARM YIELD

Hosted and managed by E.On Climate & Renewables on behalf of the Carbon Trust and Offshore Wind Accelerator Partners, this project represents a major effort to fully understand the complex issue of offshore wakes and their impact on wind park yield.

Andy Oldroyd technical Director of Oldbaum said *"This project is at the forefront of the scientific effort to understand the highly complex issue of offshore wakes, their formation, propagation and interaction within wind farms and their subsequent impact on energy production."*

Oldbaum are delighted to have been selected for this prestigious project, calling on our experience and expertise to provide vital data in the effort to understand this complex flow issue"

Stephen Wyatt, Head of Technology Acceleration at the Carbon Trust, added *"Wake effects has long been recognised as a vital area of research to the OWA Partners. The Offshore Wind Accelerator Wakes Measurement Campaign being carried out on E.ON's Rødsand II site, will both increase understanding of the physics behind wake effects, as well as improve prediction accuracy which will reduce financing costs."*



JOINT EFFORT

For this project Oldbaum teamed up with Leosphere and Avent Lidar Technology to provide 2 Scanning LiDAR stations (WINDCUBE 200S from LEOSPHERE) and 4 Nacelle LiDAR systems (2Fore and 2Aft looking WIND IRIS from Avent).

"This is a really pioneering project" said Alexandre Sauvage, President of LEOSPHERE. "Thanks to the combination of the WIND IRIS nacelle mounted LiDAR measuring capabilities with the WINDCUBE 200S 3D long range LiDAR ones, OWA will get for the first time a comprehensive characterisation of wake effects, at short and long distances. This represents a key leverage to increase offshore wind farm efficiencies and to reduce costs of wind energy".

"Building on the measurement programme defined by the Offshore Wind Accelerator Technical Lead, Frazer Nash Consultancy, and E.On Climate and Renewables requirements, Oldbaum felt that a common instrument approach using similar pulsed LiDAR technology would present the best technical solution to the measurement campaign, whilst reducing measurement uncertainty" stated Andy.

"All involved have worked hard to ensure a compressed timeline can be met to start data acquisition this year. This is a very challenging, exciting programme, and we look forward to receiving the first data streams and interrogating them to see what information they contain".

INDUSTRY BEST PRACTICE

The LiDAR systems are currently undergoing pre-deployment certification according to Industry best practice, and will be installed and operational before year end.

Oldbaum
www.oldbaumservices.co.uk

EYEMOUTH HARBOUR

SCOTLAND'S FIRST PORT OF CALL

The port of Eyemouth is situated 55°N, 02° 05'W on the south east coast of Scotland and centrally located just 50 miles south of Edinburgh and 70 miles north of Newcastle-upon-Tyne.

Historically, Eyemouth Harbour's primary activity was fishing, however, the port has a great deal to offer other commercial sectors including offshore wind.

OFFSHORE SUPPORT

The port's close proximity to the proposed offshore wind farm developments in the Firth of Forth makes it an ideal marine centre for supporting offshore operations, such as survey work and operations and maintenance.

COMPETITIVE LOCATION

Eyemouth is an ideal base for a range of on and offshore activity benefiting from high quality vessel access via Gungreen Deepwater Basin and the main harbour channel. Gungreen Basin offers 24/7, lock-free access for vessels with draught up to 2 metres and 13metres beam.

At Quayside, Eyemouth offers ample berthing quayage from Gungreen Basin as well as the Inner Basin at the Old Harbour.

Water Depth at Quayside – Gungreen Basin (deepwater basin)

- MLWS (low water) : 2m
- MHWS (high water) : 7.5m
- Tidal range : 5-6 metres

Main Channel – Inner Basin (Old Harbour)

- MLWS (low water) : 0.9m
- MHWS (high water) : 6.9m
- Tidal range : 5-6 metres

Quayside Length/ Weight Bearing

- Gungreen (Deepwater) basin: 280m
- Inner Basin (Old Harbour): 490m (including 130m serviced pontoon)
- Weight bearing capacity of quayside is minimum 120 tonnes (estimated based on current usage by HGVs)

PORT FACILITIES

Eyemouth has a range of existing support services including...

- Shipbuilding and repair yard
- Marine engineers and electronics
- Refuelling
- Grid & slipway facilities
- Chandlery
- Forklift, craneage and storage facilities
- Accommodation
- Training facilities

Other onshore facilities include a range of purpose built harbour buildings of 700m²(7,530ft²) including both commercial and office space to support local businesses. These are located just 2 miles off the A1 with direct access to Gungreen Basin via a recently built wide access road which avoids the town centre traffic.

GROWTH AND DEVELOPMENT

To accommodate further expansion, a further 7,115 m² (2.2 hectares) has been developed with initial site services adjacent to the main harbour buildings. Owned by Scottish Borders Council, these are available for immediate development.

There is also potential for further site development to incorporate new buildings and workshops either on land owned by Scottish Borders Council or Eyemouth Harbour Trust.

- Eyemouth Harbour Trust – Quayside and port land - 1 hectare (2.5 acres)
- Scottish Borders Council – 6.3 hectares (15.5 acres) – allocated for employment use in the Scottish Borders Consolidated Plan 2011

Scottish Borders Council recognises that appropriate renewables related developments would fit with the expected use of these sites and are supportive of proposals which incorporate renewables related infrastructure. No planning policy issues are anticipated on any of the current designated development sites.

WELL CONNECTED

- By road to Edinburgh, Newcastle-upon-Tyne, Berwick-upon-Tweed and Glasgow all well within 2 hours
- Rail services connect Eyemouth to all main UK destinations via Berwick-upon-Tweed rail station just 9 miles away
- By air, Eyemouth is within easy distance of major airports and a network of international destinations.

COMMUNICATIONS

The Scottish Borders has a long term goal to make sure that advances in broadband technologies benefit the area and telecoms companies are upgrading the bandwidth capability of exchanges in the area.

Eyemouth Harbour Trust
www.eyemouth-harbour.co.uk

[Click to view more info](#)



Experience on tap

Whatever the size or scope of your business, a Non-Executive Director (NED) can provide invaluable insight, guidance and stability when you need it most. Here Jim Doyle shares some of his experiences of taking this key role, revealing the extent to which a NED can prove invaluable – especially in unexpected circumstances.

It was June 2011 when, as the non-executive Chairman of a software company, I received some devastating news. After a short illness the Managing Director, one of the founders and major shareholders of the business, had died.

CONTINGENCY PLANS

Any board of directors needs to ask itself the question of what would happen in such an event – indeed, it is one of the key questions that they can expect their NED to ask them. The board must carefully consider the robustness of the company's Risk Register, and what contingency plans are in place in the case of such an adverse event, in this case the loss of a 'key person', at the highest possible level. Recognising the possibility of such a loss, and its ramifications, can be the basis for establishing financial cover from a commercial insurance policy. However, the suddenness and sadness of losing a colleague and a friend is not in truth something that one can emotionally prepare for. Such was the situation in which I found myself, effectively having to steady the helm while the Board itself was reeling from the shock.



Jim Doyle

IMMEDIATE CHALLENGE

My immediate challenge as the non-executive Chairman was to ensure that objectivity was kept to the fore across the small organisation. The company had to continue to fulfil its orders, to support and reassure its software customers, to improve and develop its current release, to maintain its Quality Assurance Systems, and to pay its suppliers and staff. The mantra 'Keep Calm and Carry On' is seen everywhere these days, but still it would not have been inappropriate if emblazoned on the company's front door.

THE WAY FORWARD

The Board obviously needed to debate its reaction to the loss of one of their own, agree between them the most sensible way forward in the immediate and medium term, and also carry its shareholders along that route. It was incumbent on the executive directors to reassure their teams that there was no need to be concerned about the ongoing health of the business. One of the features of this particular company is the 'large ticket' nature of its training systems: six figure purchases, bureaucratically slow by nature, aimed at medical and educational institutions, notwithstanding the current economic climate.

GLOBAL STRATEGY

The company's strategy remains global in scope, based on cooperation with sector specific local distribution networks, reflecting the timescales involved. Three months after the death of the MD, five systems were sold into Australia via our Sydney based distributor with whom we had established a relationship in 2008. This was as reassuring psychologically as it was commercially. It also reaffirmed the message that the company and its strategy are more than the sum of its parts. It was a creditable achievement that reflected the passion the MD had, and which his colleagues still have, for the business, which continues to look forward to an exciting future.

BOSTON EXHIBITION

It is interesting that this same company recently exhibited in Boston at a location impacted by Hurricane Sandy. Monday's seminars and presentations were curtailed at 2pm as a result of the superstorm, but by Tuesday normal business was restored. Perhaps bolstered by their experience of handling the bereavement of their friend and colleague, I am confident that the directors and staff on the ground in Boston had no difficulty in putting the inconvenience of a disrupted conference into its proper perspective.

VITAL SKILLS

A freelance director operating through a limited company can add value in a non-executive basis at little risk. If introduced by a trusted adviser, there are no upfront recruitment fees and no redundancy package if the chemistry proves inert. Accounting partnerships such as PKF, Baker Tilly, PWC and Grant Thornton maintain a panel of such NEDs, comprising professionals from many fields, and advisers can 'matchmake' suitable directors to businesses for maximum benefit.

APPROPRIATE ASSISTANCE

Financial institutions including large banks can often benefit by bringing in appropriately experienced interim panel members. Several years ago, I was called upon by a hotel business to construct a medium term P&L, balance sheet and cashflow on behalf of the directors, so that their bank could take an objective view of a business which had been 'flagged up' as living dangerously close to its covenant constraints and funding limits.

The bank had asked its advisers for an opinion, but the advisers, having discovered that no robust forecast existed, had to stand back from actually producing the forecast – as they would subsequently need to perform a due diligence exercise upon that forecast, and obviously could not do both. The forecast needed to be independently produced by the directors, approved by the directors and the results of the exercise owned by the directors, before the bank's advisers could meaningfully challenge the key assumptions built into the model.

So I was introduced, and we drew up a formal agreement between the hotel and my company outlining the scope of the work I would perform. The model was built using six years' retrospective monthly numbers as a foundation. Following detailed conversations to hammer out reasonable and robust assumptions with the directors, I was able to generate firm forecasts of the forthcoming 18 months, supported by recent experience of being a full time Finance Director within the leisure industry.

KEY CONCLUSION

The key conclusion was that the fundamental business was sound, profitable and cash generative. However, the long term loan's repayment structure, put in place at the point when the directors bought into the business, put too much liquidity pressure onto the business's ability to generate EBITDA over the short to medium term. The perceived trading problem manifested by the bank's internal 'overdraft warning' system was then fully understood. Assured by the conclusions of the advisers' subsequent 'due diligence' exercise, the ongoing relationship between the bank and the directors returned to a normal state of health, focusing on trading issues and positive discussions over future capital spend that would enhance the forecast performance over the medium to long term.

THE VALUE OF VERSATILITY

NEDs can also operate in the public sector – I have worked in this capacity on the Trust Board of an Acute Hospitals Trust. Company law dictates that all NEDs of a private sector business share the same legal responsibilities and obligations as the executive directors. Taking on those legal responsibilities as a layman operating within the medical field should not be taken lightly, but the value that one's commercial experience can add to a Trust Board makes such a role an interesting and rewarding one to both parties.

UNDERSTANDING BUREAUCRACY

Understanding the bureaucratic nature of the NHS is as intellectually challenging as it is time consuming. The monthly Board Pack was encyclopaedic. Certainly, holding Trust Board meetings in part in public session was a new experience for me. During my time as a NED I chaired Consultant Appointments Committees (having first taken the required HR training courses), sat on the Capital Project Board that had delegated powers to oversee the building of a new cardiac unit and a new oncology facility, and I learned a great deal about senior employee reward and retention issues as a member of the Remuneration Committee.

The professional challenge of helping a Trust Board achieve non-profit objectives should not be underestimated. When one's organisation can be punished by having too large a financial surplus at year end as well as having a deficit, it does cause the grey cells to operate in a different way! In a Trust whose income is £1m daily, £365m pa, achieving a break-even position allows a tolerance of less than 0.3% of turnover.

THE BEST WAY FORWARD

Any board of directors wishing to appoint a NED can expect to gain from experience accumulated from other industries and sectors. They can also expect to be challenged. A creditable NED will walk away from a board that he or she believes is taking the wrong path, but by challenging from an 'I'm on your side' perspective, their overriding aim should always be to find the best way forward, to be constructive, and to be an invaluable ally.

There are very few business decisions that are so low in risk and cost, and yet which offer so much potential value, as the appointment of a credible, professional non-executive director. Their ability to move between companies and sectors, to constructively challenge the status quo, and their willingness to share their experience and ideas can fertilise business growth.

Jim Doyle
www.jadfms.co.uk

[Click to view more info](#)

SAAB

COLLABORATING WITH AVEILLANT TO DEMONSTRATE WINDFARM RADAR CLUTTER SOLUTION

Saab Sensis Corporation and Aveillant will provide a technical demonstration of an end-to-end wind farm radar clutter removal solution that can be integrated with operational Air Traffic Control (ATC) systems.

The programme will demonstrate that seamless, clutter-free ATC surveillance data from non-co-operating targets can be produced using Aveillant's 3D Holographic Radar™ along with existing Primary Surveillance Radar (PSR). Saab Sensis' fusion technology will generate a combined output in the common ASTERIX ATM format from Aveillant's 3D Holographic Radar™ and data provided by NATS from Glasgow International Airport's PSR.

SECONDARY DEMONSTRATION

A secondary demonstration will incorporate Saab Sensis Wide Area Multilateration (WAM) data with the PSR and Holographic Radar™ data to illustrate the ability to use both cooperative and non-cooperative surveillance sources. WAM uses a distributed system of non-rotating sensors that triangulate an aircraft's position based on transponder signals, either passively or through interrogation, providing once-per-second update rate.

ADVERSE INTERFERENCE

Future growth and expansion of wind farms is being hindered due to the adverse interference wind turbines have on air traffic control radars in operation near wind farms. In recent years, several proposals have been made to mitigate radar interference, but no reliable zero-degradation solution currently exists.

"A true solution to wind farm radar clutter is in high demand, but thus far has not been achieved," said Ken Kaminski,

senior vice president of Saab Sensis. *"Our expertise in radar data integration is well suited to addressing the challenge of fusing Aveillant's Holographic Radar™, PSR and other sources into a single surveillance feed for ATC."*

"Seamless integration of technologies has been perceived as the great unmet challenge of the wind farm and radar issue. This collaboration should make that concern a thing of the past," said David Crisp, chief executive officer of

Aveillant. *"Holographic Radar represents the future of wind farm clutter solutions. Wide Area Multilateration is recognised as an effective replacement for secondary surveillance radar for aircraft separation. Because both systems are 3D and have high-frequency reporting, Saab Sensis was an obvious partner to help create the next generation of radar."*

A DIFFERENT SOLUTION

Aveillant's Holographic Radar™ clearly distinguishes between moving objects with differing behaviours and 3D trajectories. Unlike the current generation of ATC radars that scan a narrow beam using the familiar rotating antenna, Holographic Radar™ constantly looks in all directions at once.

Their solution continuously measures the dynamic characteristics of each individual target, as a result it sees both wind turbines and aircraft and can tell the difference between the two. Aveillant has recently deployed its system at Cambridge Airport in the United Kingdom which will provide a long term proving ground for optimisation of the technology.



COMBINATION

Saab Sensis' fusion technology combines primary plot extracted data from the local Airport PSR with either the co-mounted Secondary Surveillance Radar (SSR) (when operating in combiner mode) or with a remote asynchronous SSR site (when operating in Assignor mode).

Aveillant
www.aveillant.com

Saab Sensis Corporation
www.saabsensis.com

UK PORT AGENCY SERVICES FOR 3 X WIND TURBINES PROJECTS INTO THE UK

Abnormal Load Services (International) Limited (ALS) has provided UK Port and Vessel agency services for three renewable energy projects: 3 x N80 R 60 wind turbines for Lairg Wind Farm via Invergordon in the Scottish Highlands and Phase 1 - importation phase for Drone Hill Wind Farm located in the Scottish Borders for 9 x wind turbine towers from 3 vessels.

LAIRG WIND FARM

It is expected that the 3 x 2.5 MW turbines will produce enough energy to supply over 3,500 homes.

ALS facilitated the use of mobile cranes for the 801 Ton cargo as a gearless vessel had been fixed as a more cost effective method than a heavy lift vessel for this shipment,

and to overcome extreme congestion at the port, ALS identified and provided alternative laydown and storage facilities at a site a short distance from the port.

An ALS project manager attended the vessel/port and supervised the 2-day discharging and cargo rotation programme, which also included cargo inspection and interchange documentation, as well as scheduling & crane management of the subsequent delivery programme from storage to site.

DRONE HILL WIND FARM

ALS has also completed the Phase 1 - importation phase for Drone Hill Wind Farm located in the Scottish Borders.



This first phase involved using both mobile and port cranes to discharge and place into sequential quayside storage of 9 wind turbine towers from 3 vessels.

ALS completed phase 2 in Spring 2012 consisting of an additional 13 towers to complete the project. The 22 x 1.3 MW turbines are expected to power 16,000 homes.

GORDONBUSH

ALS subsequently handled a further shipment of seven wind turbines for Gordonbush Windfarm also via Invergordon.

Abnormal Load Services
www.abnormal-loads.com

REPRESENTING MERSEYSIDE'S MARITIME SECTOR SMEs IN THE WIND ENERGY MARKET



Mersey Maritime Limited
Monks Ferry, Birkenhead,
Wirral CH41 5LH
Telephone: +44 (0) 151 647 4747
Email: support@merseymaritime.co.uk

Mersey Maritime represents the interests of the 1700 companies that make up the region's thriving maritime economy, helping to boost business growth and investment, and position the Maritime Sector at the heart of future growth opportunities in the wind energy market. Our Maritime Sector Development Programme is supported by the European Regional Development Fund (ERDF), which helps fund our activity with small to medium sized enterprises, towards achieving business growth.

The excellence of the port facilities, supply chain shipping and distribution, manufacturing capability, support vessels and professional services that exist on Merseyside presents us with a unique opportunity, in partnership with the Liverpool LEP, Liverpool Vision and Merseyside's local authorities, to explore our region's collective offer and play a major role in servicing wind energy developments off the Northwest coast.

To find out how Mersey Maritime can help your business, visit
www.merseymaritime.co.uk

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KEEPING THE TURBINES TURNING....

The UK's current installed offshore wind capacity is greater than the rest of the world's combined, with a further 45GW set to be added as Round 3 projects come onstream. Of these, the Irish Sea developments, in particular, represent excellent opportunities for maritime sector companies based on Merseyside.

MERSEY MARITIME

Assisting them to enter or expand their business into what, for many, is a new but closely related market is Mersey Maritime, the sector representative body for the region's maritime industry.



PARTNERSHIP

This private/public sector partnership works on behalf of the 1700 companies that make up the ports and maritime sector on Merseyside and is currently administering a sector development programme for small to medium sized businesses that is supported by the European Regional Development Fund (ERDF).

MEMBER COMPANY CASE STUDIES

The case studies highlighted here represent three different examples of the world class expertise that exists on Merseyside and how Mersey Maritime's ERDF supported programme is assisting companies like these to realise growth plans in the wind energy market.

FPI NORTHWEST LIMITED

An independent fluid power engineering company, specialising in hydraulics and pneumatics.

Set up in 2002, the company has already seen rapid growth in the wind energy market, with O&M contracts to

supply services ranging from technical support and advice on equipment and maintenance, to diagnosing problems with wind turbine hydraulics such as cylinders and accumulators; and preventing contamination.

The company's time-served engineers are highly skilled and able to respond quickly to supply, design, build or service enquiries, but as one of the few quality accredited companies to offer a complete package, FPI NorthWest also provides bespoke training.

FPI Director Colin Walker, who is also a committee member of the BFPDA (British Fluid Power Distributors Association) said:

"Mersey Maritime's Maritime Sector Development Programme, which is supported by ERDF, is helping us to focus on business opportunities around wind energy. We're excited by the potential of developments across the North West and are laying firm foundations now to prepare for future projects."

FPI NorthWest
www.fpi-northwest.co.uk

ATLANTIC ENGINEERING LTD

Widely recognised for its specialist engineering services, offering innovative engineering solutions in both specialist welding and precision machining services.

The company has centre lathes sized up to 17.5m between centres, a four-axis vertical machine centre and a lifting capacity of 25 tonnes and holds approvals from the major classification societies for its repair and refurbishment processes.

The Merseyside based company was recently approached by First Subsea, the UK's leading supplier of subsea mooring systems, after two main beams of a 2600 tonne Subsea Mooring Connector (SMC) test rig developed cracks during the initial Minimal Breaking Load testing.

The failure of the beams was preventing contractual Proof Load Testing to

be carried out. Atlantic Engineering responded quickly, working 24 hours a day to enable First Subsea to complete their project and avoid delays.

Joint Managing Director Les Molyneux said: *"Atlantic Engineering has the capacity and expertise to handle both planned and urgent work. We work with many companies of all sizes including blue chip companies with extremely high value components."*

"We can see real potential to expand our services into the wind energy sector and the support we are receiving through the Maritime Sector Development Programme is making a real difference to how we promote ourselves in this new and exciting market."

Atlantic Engineering
www.atlanticeng.com





MERSEY
MARITIME

MARINE TURBO ENGINEERING LTD

An independent company with expertise that can be applied to any engine based turbo charger for servicing, repairs, supplies and fitting.

This highly transferable expertise has led MTE to expand its services into the wind energy market, meeting demand for services such as dynamic balancing and rotary analysis.

MTE's Merseyside base makes it ideally placed to support the wind energy industry and offshore projects around Liverpool Bay. Services include provision of emergency breakdown support, planned maintenance, overhauls and the performance & economy of turbo chargers that are essential to maximise the uptime of equipment and keep vessels in charter e.g. tugs, dredgers, workboats, support and towing vessels.



Managing Director Mark Dean said: *"MTE's highly skilled team gives our clients a real 'comfort factor', with continuity of specialist engineers and aligned stocks of fleet spares. This allows us to react quickly to our customers' needs and reduce their expenditure when faced with a turbo charger failure or breakdown.*

"Business consultancy support financed by the European Regional Development Fund has given MTE a valuable edge in positioning the company to win more work."

Marine Turbo Engineering
www.marineturbo.co.uk

TEN NEW HELICOPTERS ON ORDER

NHV Helicopters, whose UK base is in Norwich, has confirmed an order for ten new aircraft from Eurocopter.

The deal, worth about €50million (Euro), will see the phased delivery of the EC175 helicopters from the manufacturer's facility in Marseille, France, between 2013 and 2015.

SERVICES

The newly-launched aircraft is a multi-role, twin-engined helicopter designed to undertake a range of services, including offshore crew transfer flights, search & rescue operations, security roles and emergency medical flights.

SPECIFICATIONS

The EC175's 434 cu ft cabin is the largest in its class. Configured for offshore oil and gas operations, the EC175 can transport 16 passengers a distance of 135 nautical miles and back or take 12 passengers on a return journey of 190 nautical miles.

It features extra-large sliding doors on both sides of the aircraft, providing unobstructed access to the flat-floored cabin and easier exit in case of emergency.

MAJOR INVESTMENT

Colin Hancy, NHV's Norwich-based UK Commercial Manager, said, *"This deal represents a major investment for NHV. We operate throughout Europe, Africa and South America, and are looking to further expand our global services in offshore oil and gas and wind farm development.*

"We are also looking to expand our operations at Norwich airport, which currently include the transfer of service and maintenance crews to Tullow's Ketch and Schooner gas production platforms about 90 miles off the north Norfolk coastline. We've also just completed a three-month contract for Shell, flying maintenance crews to various gas production platforms in the UK and Dutch sectors of the Southern North Sea.

"The additional helicopters will bring our worldwide fleet to nearly 40, and their introduction will give us greater flexibility and the capacity for much more additional work."

Formed in 1997, NHV has its headquarters in Ostend, Belgium, providing a range of helicopter services and transport operations for civil and military clients. Work includes offshore hoisting and deck landings, passenger, freight and medical transport, search and rescue operations, pollution control and sling procedures.

NHV's UK operation is based at the Klyne Business Aviation Centre at Norwich Airport.

NHV Helicopters
www.nhv.be



Colin Hancy, Commercial Manager, NHV Helicopters



REDUCING MAINTENANCE COSTS

High Voltage Partial Discharge (HVPD) are experts in the field of on-line partial discharge (OLPD) condition monitoring. They supply onshore and offshore renewable customers in the UK and overseas with OLPD solutions for the condition monitoring of in-service high voltage (HV) cables, switchgear and transformers.

CASE STUDY

A recent PD test, monitoring and preventative cable repair project for a major offshore wind farm in the UK illustrated how the OLPD insulation condition monitoring can lead to significant maintenance and operation cost reductions.

TESTING AND DIAGNOSTICS

Initial on-line PD testing to assess the insulation condition of two 33 kV export cables connecting the offshore wind farm to shore, indicated high PD activity levels in one of the cables. Additional diagnostic and cable mapping tests identified the source of PD activity at one of the land section cable joints. The wind farm operator decided to replace the unreliable joint during a planned maintenance outage and the cable was re-tested. The post repair PD measurement results were acceptable and the weak point (the 'incipient fault') in the cable's HV insulation had been removed.

COST BENEFIT ANALYSIS

The total cost of this planned, preventative maintenance repair was around £10,000 whilst the estimated cost of a previous unplanned outage was £127,000. According to UK Government's Department of Environmental and Climate Change (DECC), such cost reductions are essential to drive down the operational costs of offshore windfarms.

COST REDUCTION TARGET

DECC have put a target of reducing the total cost of offshore wind generation by 25% from the present 'typical' lifecycle cost of £135/MWh (for a 500MW windfarm) to below £100/MWh by 2020. HVPD believe that these cost reductions will only be achievable through the application of condition monitoring technology such as the HVPD OLPD monitoring.

HVPD

www.hvpd.co.uk





MERSEY
MARITIME

ZF SERVICES UK GEARS UP FOR MEETING OFFSHORE WIND SERVICING REQUIREMENTS

OVER THE PAST THREE YEARS, ZF SERVICES UK LTD HAS EMERGED AS A LEADING MULTI-BRAND GEARBOX SERVICE PROVIDER TO THE OFFSHORE AND ONSHORE WIND TURBINE ENERGY SECTORS.

ON-SITE FAULT FINDING AND DIAGNOSIS

With the current demand and strong forecast growth in the offshore market, the company is finding increased requirements for on-site fault finding and diagnostic support for offshore wind farms located in UK as well as international waters.

24/7 FIELD SUPPORT SERVICE

In response, ZF Services UK Ltd provides a 24/7 field support service for offshore wind turbine operators through a team of specially equipped technicians with industry approved training in working at height and sea survival.

Technicians are readily available to attend wind farms located in UK coastal waters and estuaries as well as worldwide. They assess gearbox component condition and undertake fault diagnosis by using the latest endoscopic equipment for determining the condition of gear teeth, bearings and shafts. Oil analysis is also used to detect abnormal and elevated particle content, which could be a sign of unusual bearing or gear wear. If necessary, high-speed bearing and shaft changes can be made in the field.

IDENTIFICATION OF NEEDS ON-SITE

The level of sophisticated diagnostics deployed enables technicians to identify if or when individual gearbox units will require a workshop repair or full overhaul.

LARGER REPAIRS AND OVERHAULS

Where it is necessary to undertake larger planned or unplanned repairs and overhauls, gearbox units are shipped to ZF Services UK Ltd's extensive workshop facility in Nottingham.

All MW offshore gearboxes undergo rigorous full load testing on ZF Services' industry-leading 4MW test bench, which is dedicated to the repair and overhaul business and is located at the service facility in Dortmund, Germany.

COMPREHENSIVE FIELD SERVICE

Dave Morgan, Business Manager, Wind Turbines, ZF Services UK, commented: *"Apart from helping to minimise downtime by more quickly identifying and solving problems on the spot, or even preventing them altogether, our comprehensive field service enables operators to optimise their routine maintenance planning by incorporating regular on-site gearbox health checks."*

ZF Services
www.zf.com

[Click to view more info](#)







MERSEY
MARITIME

PORT OF RAMSGATE

A THRIVING HUB FOR THE OFFSHORE WIND INDUSTRY

Five years ago, the Port of Ramsgate in Kent was best known for its cross-Channel ferry service to Belgium. Today it has a new reputation as a thriving hub for the offshore wind industry.

SERVICING OFFSHORE PROJECTS

Both the 300MW Thanet Offshore Wind (TOW) and the nearly-complete 630MW phase 1 of London Array – which will soon claim the title of the world’s largest offshore wind farm – have made Ramsgate their home.

Set on 32 acres of land, Ramsgate is one of the largest municipal ports in England and Wales, and the owners, Thanet District Council, are keen to secure investment that has knock-on advantages for the local economy.

FACILITIES

The port can accommodate vessels of up to 180 metres in length with 6.5 metres draft and has the capacity to handle multi-decked vessels. With easy access to the open sea, it takes an average of 10 minutes from berth to clearing a buoyed

SUPPLY CHAIN AND TRAINING SUPPORT

The wind farm industry is already making its presence felt as the supply chain spreads into the local economy.

Local colleges and training providers have developed new courses to help students and residents gain the skills they need to work in the offshore wind sector, and East Kent College has planning permission for a new Centre for Environmental Technologies to support this. The area’s maritime expertise is in demand – whether it’s providing crews for the wide range of boats needed to build and maintain a wind farm or the chandlery supplies and support services they require. Recruitment agencies, the local airport, IT businesses, specialist manufacturers, accommodation and leisure providers, welding companies, equipment suppliers and many more have all plugged into the offshore wind economy.

Image courtesy of London Array



STATE-OF-THE-ART OPERATIONS AND MAINTENANCE BASE

And the port itself is home not just to the headline names of TOW’s owners Vattenfall and London Array, which has invested in a multi-million pound, state-of-the-art operations and maintenance base there. Key suppliers such as Siemens, Vestas and Visser & Smit have joined them there, too.

“Ramsgate is in an excellent position both geographically – at the south eastern tip of the UK – and in terms of the skills and services it can supply, to support the offshore wind farm industry,” said Peter Symons, Business Development Director of Locate in Kent, the county’s inward investment agency.

“In a little under five years, the port will have seen the construction of two of the largest offshore wind farms in the world and is now set to serve for at least the next 20 years as their operations and maintenance base.”

As well as serving as the construction management centre for the two wind farms, the Port of Ramsgate will serve as their longterm operations and maintenance base.

INVESTMENT

It’s a welcome payback for Ramsgate, which has seen substantial public and private sector investment to make sure it serves the needs of the offshore wind farm industry.

channel and access is possible at all states of the tide and in most weather conditions.

For those companies that do not need to be on the seafront, there are also complementary facilities a few miles inland at Manston Business Park to accommodate potential wind farm-related businesses.

“Meantime, Ramsgate is placed to assist both with the extension of existing Round 2 wind farms projects as well as the emerging Round 3 projects. It’s a very exciting prospect.”

Port of Ramsgate
www.portoframsgate.co.uk



HARWICH NAVYARD

The Navyard is a privately owned port situated on the Essex coast. Navyard Wharf is operated by Harwich Dock Company Ltd a Competent Harbour Authority (CHA) and part of Mann Group.

Mann & Son (London) Ltd is the agency and forwarding company. The port is situated at the mouth of the river Stour, one and a quarter miles seaward (east) of Parkeston. There are over 4 hectares of land, with 3 berths and a total of 12,650 m³ undercover storage space situated there.

WINDFARM SUPPORT

Whilst it has a rich history, these days it is now at the forefront of wind farm support. It's location makes it an ideal port for vessels requiring bunkers, foul weather

shelter, stores & crew change as well as mobilising / demobilising.

EXPERIENCE

The port has experience in all manner of offshore wind farm activity which includes supporting the Gunfleet Sands and Greater Gabbard Offshore wind farms projects, and to a minor extent London Array. Siemens Energy Service chose Navyard for their "Hercules" retro fit project on Gunfleet Sands – which included an office and warehouse space. Siemens STDL continue to operate out of Navyard.

SUCCESSFUL PARTNERSHIPS

Mann & Son (London) Limited, a sister company have also acted as agents for Fluor, MENAS, Seajacks and Van Oord. Having this ability built in has led

to successful partnership's being forged with other sub-contractors involved in such projects. Vessel chartering is another activity Mann & Son (London) Limited have experience.

Whilst there is a lull in current projects until the start-up of Round 3, the Navyard remains busy with the inner berths having pontoons and used exclusively as a small boat harbour. The regular supply of MGO low sulphur bunkers is met by our partnership with Allantone Supplies Ltd.

Mann & Son
www.mannlines.com

[Click to view more info](#)

LIFE AS AN OFFSHORE WIND TURBINE TECHNICIAN

Since the first offshore wind farm was installed 11 years ago in Denmark, the offshore wind energy industry has grown and grown across the globe, and so have the number of men and women working to operate and maintain it.



EXPANSION

In 2008 offshore wind power contributed 0.8 GW of the total 28 GW of the wind power capacity. As of 2011 offshore wind capacity has now reached 3.16 GW with 15 GW more expected before 2014. As we depend more and more on offshore wind for clean energy, we are also relying on the successful operational functioning of these farms, and the technicians working hard to do this.

ACCESSIBILITY

When turbines are located at sea they become much less accessible, this poses a huge challenge to the service and repair of these giant energy generators. Access for repair and maintenance teams to offshore turbines requires the use of a service vessel for routine access, or helicopter when this is not possible.

If wind farms are located too far from onshore bases service teams are required to live on site in offshore accommodation units. It is these teams that we rely on, in such harsh and hostile environments, to keep the turbines generating our much needed energy. It is therefore vital that their safety and comfort is our highest priority.

TYPICAL WORKING DAY – SAFETY FIRST

A turbine technician's working day begins as they pull alongside the offshore turbine in the transport vessel. They are now responsible for all of the day-to-day maintenance of the wind farm; this may involve replacing parts or making small repairs on site.

EQUIPMENT

Safety is paramount as the smallest mistake or slip could put these technicians in life threatening situations. It is therefore integral to the safety of workers, and in turn to the running of the farms, that all

personnel on board offshore turbines should be equipped with the most innovative and reliable safety equipment. And where better to start than at the feet.

On the move all day, it is imperative that the technician has functional safety footwear which works to counteract the multiple hazards that the technician will encounter throughout their day.

SAFETY FOOTWEAR SPECIFICALLY DESIGNED FOR THE JOB

From the moment the technician steps upon the transfer vessel to one of these huge turbines, their footwear needs to be working extra time to keep them safe. Wind energy safety specialists Safety Technology Ltd have teamed up with footwear manufacturer Steitz and leading manufacturer of GORE-TEX® Fabric, to design and manufacture a new Offshore Safety Boot, the BERGEN GORE S3.

This boot has been designed to incorporate the day to day safety needs of the technician through activities such as...

- Ladder climbing
- Walking grated platforms
- Harsh offshore environments requiring 100% waterproof properties
- Changing in and out of offshore survival suits

All the technician has to worry about now is doing their job.

Safety Technology Ltd
www.safetytechnology.co.uk



MERSEY
MARITIME

MILESTONE REACHED FOR OSBIT POWER'S MAXACCESS ACCESS SYSTEM

OSBIT Power (OP) has announced that the MaXccess-T12 access system for Scira Offshore Energy Limited, the Statoil and Statkraft joint-venture company, has now completed its Lloyds witnessed factory acceptance tests and will go into service shortly at Sheringham Shoal.



Trials were conducted in conjunction with Siemens, Statoil and Fred Olsen Windcarrier in the spring of 2012. Following these trials Siemens bought the first MaXccess system this summer and quickly put it into service at RWE and SSE's Greater Gabbard. Since the start of commercial operations in August, MaXccess has been providing safer and more weather tolerant access for Siemens' technicians accessing the Gabbard turbines.

And now a second MaXccess is to go into service at Sheringham Shoal.

Dr Trapp, comments on the achievements he has seen this year from the OP team: "I think we can uniquely say MaXccess is the only crew transfer vessel access system in commercial use. To go

from a system waiting to be trialled at the start of the year to systems either in use, or in production, is a testament to the commitment of our team and their skill in delivering and rigorously testing an ingenious, but ultimately simple and reliable system."

EXTENSIVE TRIALS

"The tests were completed last week and we are delighted to be able to announce this at RenewableUK 2012," says Dr Tony Trapp, OP's CEO. "It has been a frenetically busy period for us with MaXccess. A programme of extensive

SUSTAINED PRESSURE TO REDUCE COSTS

Dr Trapp continues: "In a time of increasing energy prices, offshore wind is under sustained pressure to reduce costs and ensure projects are delivered and maintained as planned. Higher accessibility plays a significant part in this goal. In offshore wind the seemingly simple process of getting personnel out to work was hazardous, and limited to only moderate weather conditions, with vessels and personnel working in an aggressive and unpredictable environment. OP set out to improve access by providing a clever but practical solution."

WELL TESTED SYSTEM

The first MaXccess system, currently installed on the 18m Icenii Defiant, operated by Lowestoft-based Icenii Marine, has conducted many hundreds of safe transfers, and has significantly increased the transfer capability of the vessel. Icenii Marine Director Richard Thurlow comments on their involvement in bringing MaXccess into commercial use,

"We have been hugely impressed by the performance of the OSBIT MaXccess system. It allows us to offer a level of accessibility and safety that simply isn't possible using a boat fender alone to secure the vessel on the turbine.

"We were fortunate to see the MaXccess system in operation at E.ON's Scroby Sands site during earlier trials, and were keen to be one of the first vessel operators to gain experience of using the system. As a company we recognise the benefits that innovative systems such as MaXccess bring to the market. For this reason we are already planning to make other vessels in our fleet MaXccess-ready."

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GENERAL INFORMATION

Non cargo services are handled by the ports agency department – Mann & Son (London) Limited

Which is a sister company and also part of the Mann Group. **We provide:**

- Vessel Agency
- Vessel Chartering
- Lay-by Berths to facilitate;
 - Crew change
 - Stores
 - Fresh water
 - Bunkers
 - Repairs
 - Foul weather shelter
 - Mobilization/Demobilisation of equipment

PORT DATA

Current Core business:

- Stevedoring
- Agency
- Chartering
- Warehousing
- Transport
- Shipping

WIND FARM EXPERIENCE

- Gunfleet Sands
- Greater Gabbard
- Galloper
- London Array
- Thanet

ACCESS & EGRESS FROM LAND

Train: Harwich Town station, 500m

Air: Stansted 95km, Heathrow 182km

Heliport: Southend Airport, 96km

ACCESS & EGRESS FROM SEA

24/7 Working

No lock & gate restrictions

Pilot service: Harwich Haven Authority

Quays

1 x 175m, 1 x 153m, 1 x 85m

Depth

8.5m @ MLWS (chart datum)

Vessel capacity

LOA 175m, beam 50m



Trevor John, General Manager
Harwich Navyard, Harwich Dock Company Ltd

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20 QUESTIONS

SIMON HARRISON

WHO ARE YOU?

Simon Harrison, Development Director for power globally at engineering, management and development consultant Mott MacDonald. I'm also a Vice

President of the Institution of Engineering and Technology, and chair its Energy Policy Panel.

WHAT BROUGHT YOU INTO THE INDUSTRY/YOUR POSITION?

I have an

academic background in engineering and worked as an academic for a time (at Southampton University), then sought more immediate application of engineering with consultancy Ewbank Preece, later acquired by Mott MacDonald. One of the appeals of engineering consultancy was (and is) its variety and the opportunity to make a big difference to the lives of many people all over the world. For example we have been leading the engineering development of a 7000 MW hydroelectric scheme in Pakistan that would provide electricity, with all its associated economic benefits, for perhaps 7 million families. Likewise we've been leading the way helping financiers understand and get comfortable with funding large offshore wind and complex solar energy projects, meaning that these projects go ahead and get built.

FAMILY STATUS?

I am married to Sarah, a classical musician and all round wonderful caring person, and we have a grown-up daughter Lucy who is at university.

WHO IS YOUR HERO AND WHY?

J S Bach, the composer. At one level his achievements are technically almost unbelievable, but even more he knows how to press every possible emotional button.

WHAT ANNOYS YOU THE MOST?

Meetings that spend time going down blind alleys full of detail whilst missing the big picture.

WHO WOULD YOU NOT LIKE TO BE?

David Cameron, or any Prime Minister. It must be so frustrating having to spend so much effort on the "narrative" rather than making the real difference that led you into politics in the first place.

WHAT IS THE BEST ADVICE YOU HAVE EVER BEEN GIVEN?

Not to fight battles you can't win.

WHAT IS YOUR FAVOURITE SMELL?

Freshly mown grass.

WHAT DO YOU DO IN YOUR SPARE TIME?

I'm a keen amateur musician, singing solo and in choirs and playing keyboard instruments. I've also directed community theatre in our village in Sussex UK – everyone gets involved and it's brilliant fun. I enjoy gardening and generally being outside in the countryside. I also read a lot and take an interest in current affairs, history, the arts and architecture.

WHAT SPORT DO YOU PARTICIPATE IN/WATCH THE MOST?

I'm a keen cyclist, getting out both days most weekends when in the UK. It's a great way to clear the mind and keep fit.

WHAT IS THE MOST BIZARRE SITUATION YOU HAVE FOUND YOURSELF IN? AND HOW DID YOU DEAL WITH IT?

I was working in Uzbekistan a couple of years ago, and my Uzbek colleague borrowed a friend and his car to get us around. It was a 20 year old stretch Mercedes with huge windows of the sort generally favoured by ruling elites. The Uzbeks both sat in the front leaving me in the glasshouse at the back. The only way to behave was to relax and enjoy the attention of everyone around as I was ferried to various government ministry buildings for meetings. They must have thought I was a special guest of President Karimov.

WHAT IS YOUR FAVOURITE RECORD/ CD/ARTIST/MUSIC?

I'm a keen classical music listener and will try almost anything. Jazz is good too. There's a great internet radio station called Swiss Jazz.

IF MONEY WAS NOT A FACTOR WHAT WOULD YOU BUY TOMORROW?

I don't really know, apart from presents for Sarah and Lucy. Maybe it would be something philanthropic.

WHICH WORDS WOULD BEST DESCRIBE YOU?

When I asked at home, my wife said "forward-looking, collegiate and kind", her sister who was visiting said "concise, efficient, humorous". I'm sure others could think of less flattering descriptions!

WHAT TALENT WOULD YOU LIKE TO HAVE?

To be able to be more empathetic.

WHAT MAKES YOU ANGRY?

I tend not to get angry, but do get frustrated that as engineers and scientists we struggle so much to engage politicians and the public in general in what matters to us.

WHAT LAW/LEGISLATION WOULD YOU LIKE TO SEE INTRODUCED?

I would like to see that everyone has to be educated to a reasonable level in both science and the arts.

WHAT PROMINENT PERSON WOULD YOU LIKE TO MEET?

Nelson Mandela, but I'm not sure what I would have to say to him.

WHAT BOOK ARE YOU READING AT PRESENT?

Autumn in the Heavenly Kingdom by Stephen Platt, a fascinating account of the Taiping Civil War in China in the nineteenth century.

WHAT CAR DO YOU DRIVE?

Audi A4, though I do more miles by plane and train these days.

WHERE WOULD YOU LIKE TO BE 10 YEARS FROM NOW?

I would be approaching 60. I would hope to be contributing to making the world a better place through good engineering, and helping to create a legacy of young engineering talent well equipped to solve the pressing problems of the 21st century. And also playing a positive role at home and in the community.



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The Charity of the Renewable Energy Industry

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Gethin Jones



Worldwide, Renewable World helps deliver wind, solar, hydro and biogas energy services to vulnerable off-grid communities. Renewable energy pumps water for all year round irrigation, provides lighting and powers micro enterprises. This helps people like Sumina in Nepal (above) to afford a better education for her children and improve her livelihood because of greater profits from agricultural activities.

You can support Renewable World by letting your staff and clients know about the appeal. Email events@renewable-world.org or call 01273 234801 for your corporate supporter's BBC Lifeline Appeal for Renewable World pack.

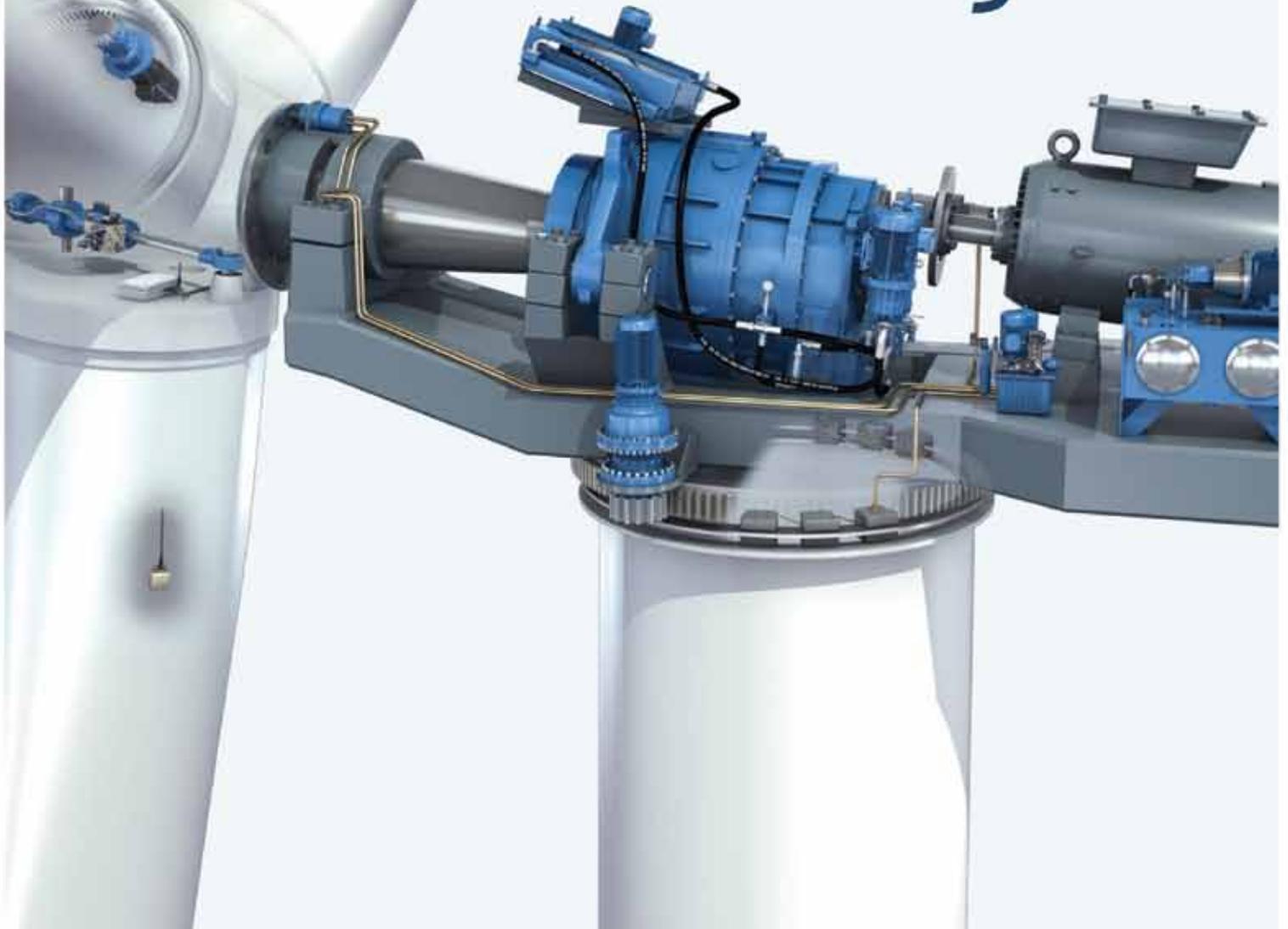
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