EWEA 2014

DAY THREE

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OFFSHORE INSIGHTS: Xabier Viteri, *far right*, on the Industry Leaders' panel at EWEA 2014 yesterday

Offshore has to cut costs by 40% or die, warns Viteri

Iberdrola chief says sector may not have a future beyond 2020 unless it innovates and invests

BERND RADOWITZ
CHRISTOPHER HOPSON

Offshore wind may not have a future after 2020 if it does not cut costs by 40%, warns Iberdrola Renovables chief executive Xabier Viteri.

The industry faces "very tight" business conditions due to weak power demand, the challenge of finding financial partners, regulatory risks and competition from other renewable sources, he told a panel of industry leaders at EWEA 2014 yesterday.

However, as wind farms move into increasingly deeper waters, the cost per MWh of offshore electricity recently has been increasing, rather than going down, he pointed out.

"My perception is that if we are not able to achieve a big cost reduction, the industry isn't going to run beyond 2020," Viteri said. "It is difficult to foresee now a moment when offshore wind is going to be competitive with onshore. In order to see that this industry has some chances of development post-2020, we have to achieve a reduction of 40% — or over 40%."

The offshore wind industry has relied too much on technology from the offshore oil and gas supply chain, which is not driven by cost reduction, but by maximising production, he said.

To bring costs down, he believes the industry needs to invest more in R&D, and innovate in logistics, transport and operation.

Massimo Derchi, chief executive of ERG Renew, added: "Project cost savings will mainly come after the wind installation is made, rather than before or during the installation phase. We

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Photograph | Jason Bickley/EWEA

MAKING A POINT: Steve Sawyer at the UN climate talks session on Monday

Becker: chances rising for global climate deal

CHRISTOPHER HOPSON

Momentum is building for next year's COP21 UN climate change summit in Paris, similar to the excitement prior to the failed 2009 talks in Copenhagen, says EWEA chief executive Thomas Becker.

Becker told the UN climate talks session at EWEA 2014 that he was starting to see a willingness by a lot of governments to produce a good result in Paris in December 2015, "which I have found very encouraging".

Steve Sawyer, secretary general of the Global Wind Energy Council, who chaired the session, said that global emissions "just keep going up, and up and up".

"Climate is right back on the political agenda, ahead of Paris in 2015," he added.

Although Becker admitted to being "totally frustrated" over the slow pace of the global talks, he believes the UN process is "the only show in town", adding: "There is no other way to resolve the climate issue but through the multilateral dialogue of the whole UN process.

"Too many of our national politicians are individually not capable of making these decisions. I see a major problem looming for Paris as being the way our politicians have been functioning. The political horizon is so short-term, which is a big problem."

Becker identifies a big part of the climate problem as "highly subsidised fossil fuels, whereas wind needs no subsidies".

"We in the wind industry can live without subsidies, as long as other energy sources don't get subsidies as well," he said.

"Also nuclear energy has been around for 65 years and yet still can't survive by itself. For instance I have been most concerned to discover that EDF's Hinkley Point C nuclear station in the UK is going to be uninsured — so if it blows up, the UK government will end up paying for it".

Karsten Sach, deputy director-general for international co-operation at Germany's environment ministry, said: "We need to reduce our global emissions by 80-90% by 2050 by developing renewables and energy efficiency to transform our energy systems.

"We should not accept the argument that renewables are not price-competitive, because we are."

Offshore 'must cut costs to survive beyond 2020'

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need to keep the cost of capital as low as possible."

Anne McEntee, vice-president of GE Renewables, told the panel that if the industry wants to continue bringing down costs, it has to create more revenue streams and add more technology to projects.

Viteri's comments carry weight. Iberdrola, the world's biggest onshore wind operator, is building a sizeable offshore pipeline, including the 400MW Wikinger in the Baltic Sea, for which it expects to take a final investment decision in the first half of 2014.

Viteri also said Europe needs to move forward quickly with cross-border integration of grids — a view that received support from João Paula Costeira, EDP Renováveis' chief operating officer in Europe. "There is a lot of things we can do to encourage cross-border grids. For instance, we need to cross the Pyrenees mountains," Costeira said.

More than 150 sign call for EU renewables target

CHRISTOPHER HOPSON

More than 150 wind companies and organisations — from power producers to component manufacturers — have signed a declaration that calls on European leaders to set an ambitious 2030 renewables target in Brussels next week.

"An ambitious target, binding on member states, is the most cost-efficient way to realise our goal of 100% renewables in the longer term. Not to mention boosting a sector that provides 250,000 people with work in Europe," says Enercon managing director Hans-Dieter Kettwig.

"This is a critical moment for the industry," points out EWEA chief executive Thomas Becker. "Will EU decision makers think long-term and choose a framework that allows this sector to provide economic growth and energy security, or will they give in to the short-term interest of the fossil-fuel industry?"

Photograph | Jason Bickley/EWEA

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Nordex predicts 3-4GW German market in 2014

BERND RADOWITZ

Germany will install 3-4GW of onshore wind this year as companies rush to get projects built before a planned cap on new capacity kicks in, according to Lars Bondo Krogsgaard, chief customer officer at Nordex.

"We will most likely see a record number of installations in Germany this year," Krogsgaard tells *Recharge* at EWEA 2014.

> We will most likely see a record number of installations this year

In a draft amendment to the country's Renewable Energies Act, energy minister Sigmar Gabriel has proposed a cap of 2.5GW a year for wind installations from 2015. The government also says it wants to cut onshore wind feed-in tariffs, and give preferential treatment to strong wind sites.

"Customers don't like uncertainty, they want to do deals with a regime they understand," says Krogsgaard.

A similar dynamic could happen in the UK before the Renewables Obligation scheme ends in late 2016, he says.

Krogsgaard estimates Nordex can win 100-200MW in orders in the UK this year and next, out of a market of 700MW-1GW.

The company is also seeing good potential for orders in France, Ireland and Turkey. Outside Europe, it plans to expand on business it established in Pakistan, Uruguay and South Africa, and expects to do its first deals in Chile this year.

After closing production facilities in the US and China, Nordex has concentrated manufacturing in Rostock, northern Germany.

Krogsgaard tells *Recharge* the savings from consolidating production are higher than the costs arising from moving turbines to other parts of the world. "We are working with higher margins than in the past," he explains.

CAP PROPOSAL: Lars Bondo Krogsgaard at the Nordex stand yesterday

ABB unveils new generator for medium-size turbines

BEEFED UP: Alfredo Parres

Photography | EWEA/Jesús Quesada | ABB

DARIUS SNIECKUS

Power technology giant ABB has unveiled a new double-fed induction generator (DFIG) for 3MW-plus onshore turbines.

The concept features a beefed-up slip-ring construction to boost reliability and cut maintenance costs.

"We believe DFIGs are long-runners as they are a proven technology — even as onshore turbines continue to get bigger," ABB head of wind power Alfredo Parres tells *Recharge*.

"We felt the industry needed a new design that fits with this size of turbine — which we see as the main play for onshore markets."

Testing of the new DFIG, which uses a fine-tuned composite internal rotor design, has demonstrated efficiencies of 97%.

Parres points out that ABB continues to be "technology agnostic" for offshore turbines, having supplied DFIGs and permanent-magnet generators to 50% of the current global fleet.

"Medium-speed [drivetrain] technology we like very much," he says. "We don't believe in pushing one [generator] technology over another and we will definitely be investing across the range."

ABB has also launched a new low-voltage full power converter for turbines up to 8MW.

"These new generation components will reach levels of availability, reliability and energy efficiency never seen before in wind turbines," states Parres.

EMERGING FROM THE SHADOWS: Acciona Energía boss Rafael Mateo at the Industry Leaders' debate at EWEA 2014 yesterday morning. *Below:* the AW3000 turbine

'Multiple offers' for stakes in Acciona wind portfolio

BEN BACKWELL

Spanish wind giant Acciona Energía has received "multiple offers" from potential partners interested in buying a stake of up to 49% in a portfolio of its international wind assets, says chief executive Rafael Mateo.

The portfolio is made up of 2.273MW of assets in 15 countries. *Recharge* understands that offers for the stake are now closed and that Acciona expects to complete the transaction in the second half of this year.

"We are talking about a portfolio of very high-quality assets, that are geographically diversified and operated by a company that manages a portfolio of 9GW," says Mateo.

Acciona says that selling the minority stake will allow it to continue developing projects and supplying turbines in promising emerging markets, including Brazil, South Africa and Mexico.

"We are convinced that the field for expansion in new markets is enormous," says Mateo.

Meanwhile, Acciona Windpower chief executive José Luis Blanco says that his company has seen a surge of orders for its AW3000 3MW turbine, after launching a campaign to increase sales to third-party customers.

Blanco says Acciona signed agreements in 2013 and the first quarter of 2014 for a total of 1.56MW, of which 88% were from external customers rather than its own projects.

Some 43% of those orders came from the Brazilian market, with 25% from the US and Canada, and 16% from Mexico.

Blanco said that Brazil has become the company's most significant market and that Acciona's new Brazilian nacelle plant will be "practically completed" by the middle of the year.

The company is well advanced with complying with all the local-content requirements of the National Development Bank (BNDES), Blanco says.

He adds that the company currently has a total of 666MW of orders in the country, and is preparing to take part in the next energy auctions there.

Photography | Jason Bickley/EWEA | Acciona

GE has high hopes for space-frame tower

A lattice design that could pave the way for taller turbines and slash the capital cost of wind power is launched at EWEA 2014. **Darius Snieckus** reports


CONVERT: Keith Longtin

High in the Tehachapi Mountains north of Los Angeles, GE has unveiled its space-frame turbine tower, a steel and architectural fabric concept seen as a breakthrough in the campaign to cut the capital cost of wind power.

The design, launched in Barcelona yesterday in a 139-metre version topped with a 2.75-120 GE turbine, is build around an "Eiffel-tower-like" lattice structure clad with high-tensile polyester panels.

The technology could carve "a large slice" out of the price of a conventional tubular tower by streamlining fabrication and transportation, while opening up the possibility of ultra-tall 150-metre turbines.

"When we started doing this project, I and a lot of other people had reservations about how it would look. Seeing it up, everyone is converted," Keith Longtin, GE's wind product-line general manager, tells *Recharge*.

"It is a leap forward for the industry. It... shows clearly there is great potential for cost-effective scale-up of wind turbines with much taller towers.

"The industry is moving toward taller towers, that's no secret. And when you get up into the 130-150-metre-plus technologies, the material cost savings go from being 20-30% lower [for a 100-120-metre tower] to closer to 40%."

GE expects the tower to be a "perfect fit" for the emerging

markets of lower-wind and heavily forested sites in Scandinavia and the rest of Northern Europe. "The next round of permits going out in these regions, they are looking for 140 metres," notes Longtin. "And our design can be extended in 12-metre sections, so we can go still higher, as required. The physics aren't limiting."

The 97-metre-tall prototype was assembled with a 1.7MW 1.7-100 turbine at Tehachapi, where a three-month testing programme begins this week.

The prototype took a month to install, but GE expects to whittle that down to "around four days, like a conventional tower".

"Overall time of construction will be the same, material usage much less," Longtin adds. "Once the panel material was decided on, that drove us toward the five-legged design and overall architecture. The beauty of it is that you are not constrained by diameter."

Conventional steel tower sections must be less than 4.3 metres wide to be manoeuvrable under bridges and along most roads. The space-frame tower, designed with a maintenance-free bolting system, can been packed up in a dozen freight containers and trucked "pretty much anywhere in the world you want it", says Longtin.

"Shipping a 150-tonne steel tower section to some of the more remote locations where there is little or no road infrastructure is a real challenge. With the new tower, everything changes," he says.

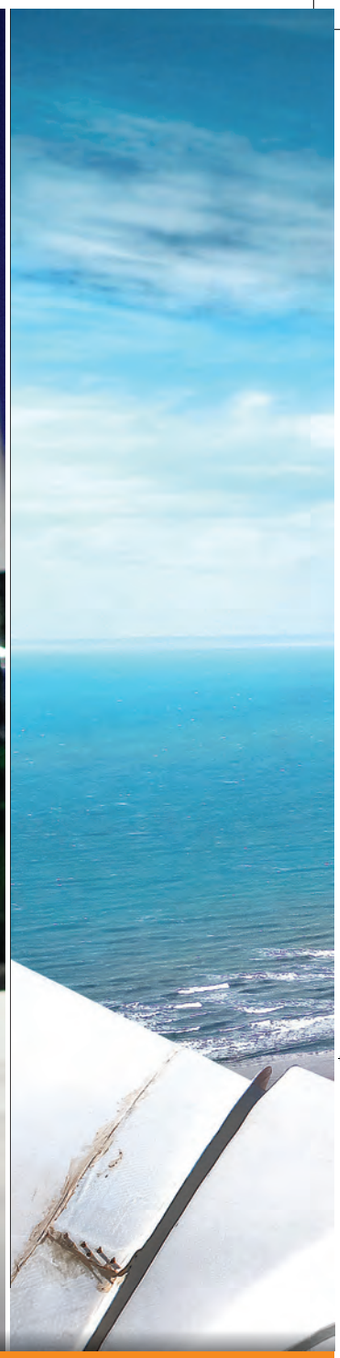
Project leader Kathy Verna adds: "When you are transporting huge tubular tower sections, you are talking fleet permits, weather delays, restrictions on travelling through certain areas at certain times. With the space-frame tower, all the parts [supplied by a 'Midwest manufacturer'] were onsite in California two days after our phone call."

One of the hidden benefits of the five-legged design, notes Longtin, is its stability in seismically active zones. "In earthquake-prone areas you are going to have a big advantage over tubular towers — our tower will be much more stable."

The modular design also means the component parts can be built on assembly lines, speeding up fabrication and honing quality control.

"This project has required an entirely different business model — from how engineering interacts with project development and sourcing and supply chains," concludes Verna.

EYEFUL OF TOWER: GE's distinctive lattice design, *above*, viewed from the inside; and the prototype tower and turbine installed at Tehachapi, *left*



Wednesday 12 March

HAPPENING TODAY

Outside the box — finding new growth opportunities
09:00-10.30 (Room Ponent)
Clear and ambitious targets are key to our industry's growth and competitiveness. But while politicians deliberate, what can we do, here and now, to help our day-to-day business? Can we think outside the box? This session will look beyond Europe to see how the American wind power has dealt with the boom and bust of recent years and what companies with operations outside the USA can learn from this.

Saving water with wind energy — launch of the 'Avoided Water' report
10:30 (EWEA stand, Hall 6, D40)
Thermal and nuclear power stations use the same amount of water as the population of Germany every year. How can boosting wind energy help save water?

Breaking the boundaries: taking your business outside of Europe
14:15-15:45 (Room: Ponent)
Wind energy in Europe is still living through turbulent times. But if you're looking to expand outside the European box, the "Doing business in" session could be your key to three markets currently showing massive wind energy prospects: Brazil, South Africa and Mexico.
Side events and socials

Poster award ceremony
13:30-14:00 (poster area — corridor linking the entrance/conference hall 8 to exhibition halls 6 & 7)
Get the latest on wind-energy research and technology developments.

Launch of the EWEA health and safety video
16:00 EWEA stand (Hall 6, D40)
See the premiere of EWEA's new video on health and safety best practices.

Conference dinner
20:00-23:00 (Maritime Museum, Avinguda de les Drassanes s/n, 08001 Barcelona)
Shuttle buses to the conference dinner venue will leave

from 19:30 onwards in front of the North Entrance of the Fira Gran Via.

SIDE EVENTS AND SOCIALS
Health and safety workshop
09:00–18:00 (Hall 8.0, Room Güell)

Spanish wind sector workshop
09:30–14:00 (Hall 8.0, Room Ciutadella)

Bureau Veritas wine and cheese apero
12:00-13:00 (Hall 6, Stand 6C13)

DNV GL drinks and networking reception
16:30-18:00 (Hall 7, Stand 7B20)

Acciona Windpower stand party
18:00-19:30 (Hall 6, Stand 6C30)

DON'T MISS TOMORROW

Take a wander through the exhibition
If you haven't had the chance to browse the stands at the EWEA 2014 exhibition, then today is your last chance. Be prepared to make many connections with other businesses, check out the latest technology ideas on display and see the scope of your industry under one roof — the EWEA Annual Event really is the place for the wind industry and more to come together and grow.

How healthy is your wind farm?
11:15– 12.45 (Room: Llevant)
Keeping a wind farm performing as it should is a top priority for the wind business. What are the best strategies for maintaining turbines offshore? How can I make the turbines in my wind farm operate more efficiently? What are the latest technological trends in detecting faults? If these are some of the questions you tackle in your line of work, then the "advanced operation and maintenance" session is for you. Interested in attending only this session? Visit the New Visitor Registration Desk to top-up your pass.

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OUT IN THE COLD: The STX concept; *below*: Per Stenius

Breaking the ice

A new Arctic turbine foundation could open up 16GW of offshore wind in the Baltic Sea, writes **Darius Snieckus**

An ice-defying gravity-base solution (GBS) is being cued up for its first outing as a foundation for offshore wind turbines this year in the Baltic Sea.

STX Finland's hybrid steel and concrete concept was trialled with marine contractor Terramare off Gävle, Sweden, as a substructure for shipping lane markers.

The company is now aiming to have a pair of its foundations topped with 3MW turbines in the water this year as a stepping stone to a full-scale offshore wind farm in 2015.

The STX design breaks from the convention of building the full GBS quayside and floating it out for installation, instead opting for a lightweight steel "skeleton" that can be lowered into place by crane vessel, then ballasted with aggregate and injected concrete.

By using a "shape-stiffened" structure, steel content is cut by 30% compared to traditional

designs, streamlining handling, transportation and installation of the foundation. It also trims fabrication lead time, as the thinner steel plates are easier for mechanised welding machines to produce at speed.

"Rather than starting from the engineering premise of designing a really cool foundation, we have approached it with the aim of getting a wind farm using these foundations up and running in the shortest possible time by reducing working capital and simplifying logistics," says the head of STX Finland Windenergy, Per Stenius.

"Typical of most of the other [GBS] projects out there is that they involve building a greenfield factory, but — in the Baltic particularly — the feed-in tariffs won't allow for that, there is no room for new investment. So the cost is too high."

A key feature of the flask-shaped concept, which is fitted with an "ice cone" to prevent the structure being crushed during the Baltic's ice-locked winter, is that it has no bottom plate under the caisson base, meaning it can be tailored to a range of seafloor landscapes in water depths of 30-60 metres.

"If you have a bottom plate, you have to make sure it fits perfectly on the seabed. Without it, you save weight, you save cost and your foundation becomes much more flexible at the point of installation," notes Stenius.

Weighing 300-600 tonnes at load-out, depending on the size of turbine it will shoulder, the foundation, unlike many competing designs, does not need to be towed by tugs to a wind farm. Rather, it can be transported three at a time on flat-bottomed seagoing vessels that can travel in waves as high as three metres at speeds up to 18.5km/h, accelerating the installation process.

This would be a boon to Baltic offshore projects because the summer installation weather window can be as short as three months.

STX is tightening its focus on getting serial production of the GBS down to less than one week per unit. The focus now is on smaller and smaller components — "how can we make assembly even faster, even higher-quality?" Stenius says.

Markets being targeted for the GBS are Estonia, Finland and Sweden — which the company calculates could together ultimately see more than 16GW of offshore wind farms.

First hopes, however, are pinned on a demonstrator competition run by the Finnish government being a springboard for a wind project in 2015.

Photography | STX Finland

Acciona looks to New World for expansion

BERND RADOWITZ

Acciona is reacting to losses in its home market with an increased orientation towards Latin America, traditionally the main expansion avenue for Spanish companies, due to language and cultural links.

Regulatory changes to Spain's support regime in 2013 cost Acciona Energía €257m ($353m) directly, and forced it to make goodwill write-offs and impairment charges on renewable-energy assets totalling €1.68bn. The bloodshed in the energy section turned Acciona's 2012 profit of €189m into a massive €1.97bn loss.

Forced to react to the losses and the new grim reality for Spanish utilities, Acciona says it is talking to possible partners about taking a minority stake in its international renewables business.

Acciona Energía more than halved its spending to €205m last year, and has acted to make sure that no more of its investments are lost.

"We haven't done any investment in Spain in 2013, and none is foreseen for 2014 either," Acciona Energía chief executive Rafael Mateo tells *Recharge*. The company owns close to 6GW of renewables in Spain, where it had to lay off 119 people last year — 7% of its staff.

Acciona directed its reduced investments across the Atlantic Ocean, where it owns an increasing number of wind farms. It is also increasing its EPC activities there and sells its own wind turbines.

"In Mexico, we are today the number one operator of renewables, with 556MW installed," Mateo says.

In Chile, for the first time, Acciona is installing a wind farm that it will also operate, although it has previously built projects there for other companies.

Energy sales last year still accounted for more than 93% of Acciona Energía's business, but turbine sales and EPC in 2014 and 2015 are expected to widen their share of revenue. Turbines are becoming an important source of revenue, with more than 1.5GW sold or committed for this year and next.

"We have an annual production capacity of around 800MW in the already existing plants [in Spain and the US] and we're building a factory in Brazil that will be operational in the fourth quarter of this year," Mateo says.

Producing its own turbines allows the company to earn twice, he explains, as turnkey EPC contracts include Acciona's 1.5MW and 3MW models. R

ATLANTIC CROSSING: Spain, *above left*, has been the bedrock of Acciona's wind empire, but government reforms have forced it to focus on Latin America, including this project in southern Mexico

Alstom boosts ECO122 capacity from 2.7MW to 3MW

BERND RADOWITZ

Alstom is boosting the capacity of its ECO122 wind turbine, and adding two towers to its portfolio, in an attempt to gain market share in low and medium wind-speed locations in Europe, Laurent Carme, vice-president for onshore wind, tells *Recharge*.

"This was a machine which was rated to 2.7MW, with an 89-metre tower," he says. "What we announce at EWEA 2014 this week are two evolutions of this platform. The first one is to upgrade the 2.7MW to 3MW, which is now commercially available." A 119-metre concrete tower and a 139-metre hybrid concrete-steel tower have also been added to its portfolio.

The French company is in "strong commercial discussion" with potential customers for orders of the 3MW model, Carme says. "We hope to get our first orders very soon," he adds.

Alstom has identified Northern Europe and Germany as markets with a "very strong fit" for the ECO122, he says.

So far, the ECO122 has mostly been sold outside Europe, particularly in Brazil, where 700MW of orders from Odebrecht in 2011-12 were followed up by a 1.2GW framework deal with developer Renova Energia last year. R

Photography | Christiana Sciaudone | Carlos Olite

HANG TIME: An LM Wind employee conducting maintenance on a blade

‘Huge’ savings potential in LM flexible tip project

DARIUS SNIECKUS

Denmark’s LM Wind Power has kicked off a groundbreaking research project to develop a range of blades with cost-trimming flexible tips.

The four-year scheme, launched at EWEA 2014 yesterday, is being run by a consortium including the University of Twente and the Energy Research Centre of the Netherlands. The project is targeting an 8-10% cost of energy (CoE) reduction from large-rotor blade designs featuring composite extensions of varying lengths.

“The cost of wind power, especially offshore wind power, needs to go down to compete with other energy sources, and we are committed to making that happen,” says LM’s vice-president for engineering, Roel Schuring.

COMMITMENT: Roel Schuring

The project aims to help developers and turbine manufacturers “design wind farms better and to get the most from each turbine. This will improve annual energy production and reduce CoE. The potential is huge.”

The project, backed by the Dutch Ministry of Economic Affairs, aims to re-engineer existing lightweight composite blade concepts with single-piece fabricated tip add-ons to form a permanent assembly of two blade parts.

Although it adds little weight, the extended blade is expected to result in a larger rotor that boosts energy production “significantly for a relatively small investment”, Schuring says.

Photography | LM Wind

Siemens upgrades 3MW model to 3.2MW

BEN BACKWELL

German wind turbine manufacturer Siemens has launched an upgrade to its D3 onshore wind turbines, increasing the rated power from 3MW to 3.2MW.

The new machines, which will be available in 101-, 108- and 113-metre rotor-diameter versions, will enter serial production by the end of the year.

Henrik Stiesdal, chief technology officer of Siemens Wind Power, explains that the new products have been made possible by improvements in battery technology, allowing its gearless turbines to operate with increased torque.

“One important goal of our development work is to utilise innovation to further tap the technical potential of our products,” he says.

“Rotors, structures and performance have been tested intensively to simulate more than 20 years of lifetime stress. This resulted in a new product generation that offers the reliability of the predecessor while delivering up to 4% more energy yield.”

Siemens tech pact with Mita-Teknik

Siemens has signed a deal with Danish control-systems specialist Mita-Teknik to develop turbine technology.

The two will combine specific technologies and expertise after Mita-Teknik became a global wind “solution partner” with the German conglomerate.

The first fruit of their co-operation is the GL2010 turbine safety system on show at EWEA 2014.

IN THE ZONE: Statoil turned on the 317MW Sheringham Shoal last year

Statoil's high spirits on pared-down Dudgeon

Norwegian utility is exploring alternatives to traditional layouts and technologies in 'challenging' zone, writes **Darius Snieckus**

Statoil is on track to make a final investment decision (FID) this summer on its pared-down 400MW Dudgeon wind farm, as it takes the next step in a long-term UK offshore campaign.

At the end of 2013, the UK government gave the green light to a new scheme for Dudgeon, in line with a plan to shrink the project's capacity by 29% from its originally consented 560MW.

Statoil and partner Statkraft had applied for the downsizing to prevent the generation-draining wake effect that could have been caused by crowding too many turbines into the zone in 18-25 metres of water 30km off eastern England.

The fleet of turbines that was originally to have made up Dudgeon would have been installed on a plot the same size as the nearby 317MW Sheringham Shoal that Statoil switched on last year.

"Having almost twice the capacity in an area the same size [both sites are 35sq km], it was very difficult to get the necessary economics," says Dudgeon chairman Halfdan Brustad of the downscaled project, acquired with Statkraft in 2012 from Warwick Energy. "It would have been far too crowded and have [had] a negative impact on the energy capture of the turbines in the middle of the wind farm."

Statoil is exploring alternatives to a traditional grid-style layout, including "staggered" lines of turbines.

In January, Siemens was tapped to deliver 67 of its 6MW SWT-6.0-154s for Dudgeon, under a £516m ($860m) deal that includes O&M. A first batch of the machines will be ready for load-out at the start of 2017, and engineering and design work for the electrical infrastructure and foundations has kicked off.

> "Having almost twice the capacity in an area the same size, it was very difficult to get the necessary economics

"Siemens came up as the best bidder in the tender project, CoE [cost of energy] wise," says Brustad. "But it is very much about the turbine, and this turbine we feel is the next step in offshore wind."

The service contract will cover maintenance of the direct-drive machines for the first two years after installation, followed by three years in which Siemens will provide technicians for the development.

Dudgeon, although blessed with rich winds, poses a few headaches under water because of a seafloor pocketed with mobile sand waves and deep layers of chalk and dense clay.

"We have challenging soil conditions. There are areas where the chalk extends ten metres down in some places and some very hard clay that we will have to pile through," notes Brustad.

The difficult geology led Statoil to debate whether to use new-breed foundation technologies such as suction buckets, or stick with conventional monopiles for Dudgeon. In the end, it opted for a site-specific tack: start with 56 wide-diameter monopiles and pile-in steel jackets for the 11 foundations in the "high risk" installation areas such as heavy clay.

"Safe operation, ultimately, is what is most important," says Brustad. "So we will leave the more experimental technologies to one side for the moment. They will continue to evolve as the wind-power sector gets more industrialised, but we have to be somewhat conservative in our choices for these huge projects and the Round 3 zones ahead."

Last month, ABB was cued up for the £33m order for two 42km, 132kV export cables that will connect Dudgeon's offshore substation to landfall, with delivery pencilled in for 2016.

Dudgeon is one of four offshore projects recently deemed by the UK government as "provisionally affordable" and still in the running for an early Contract for Difference.

Photograph | Alan O'Neill

Access and transport study aims to cut offshore costs

DARIUS SNIECKUS

Lloyd's Register Energy is leading a study that aims to cut the cost of offshore wind farm maintenance with novel personnel transport and access concepts.

The project — part of the EU-backed Leanwind scheme that aims to tackle inefficiencies in logistics for offshore wind developments — will use design, numerical analysis and experimental testing to examine new or modified vessel designs and equipment.

"The challenges of offshore wind remain in reducing the overall cost. The opportunity to identify new vessels and technologies that better control costs and improve operational results is paramount, together with an understanding of the associated risk," says Rebecca Sykes, Lloyd's Register marine-energy leader.

"We see this project as an important step forward for the industry's future development."

The €15m ($20.6m) Leanwind project, set to run for four years, involves a consortium of 31 partners from 11 countries led by Beaufort Research at Ireland's University College Cork.

CHALLENGES: Rebecca Sykes

EU funding for low-mo Flidar

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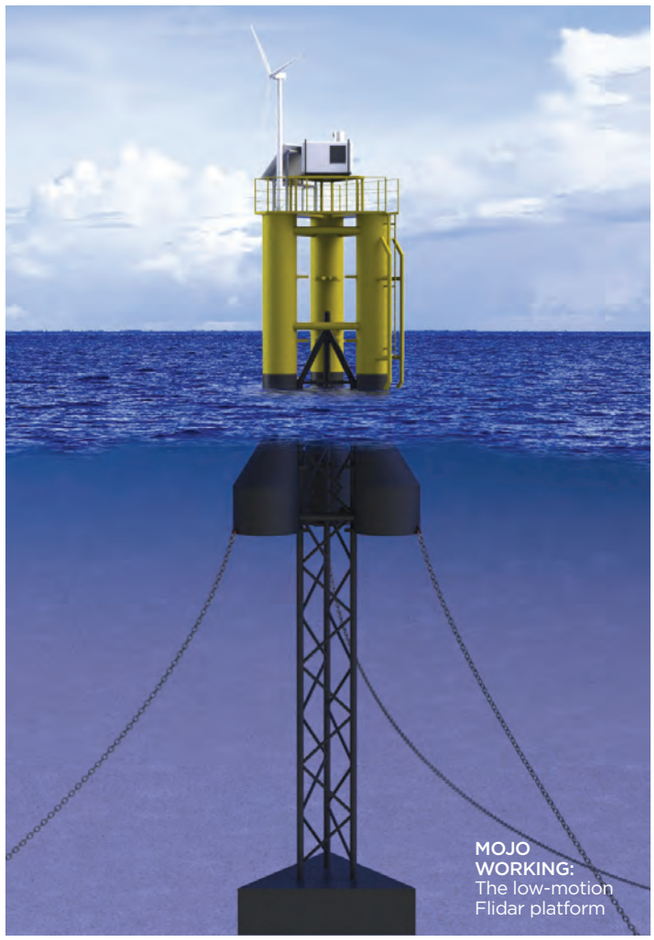
UK marine contractor Mojo Maritime has landed more than £320,000 ($535,000) in funding from the European Regional Development Fund to build and test a low-motion floating platform for offshore Lidar.

Deployment of the platform, designed as a semi-submersible with adjustable draft ballast to simplify installation while keeping low-motion characteristics, is planned for the FabTest test site in Falmouth Bay off southwest England in the autumn.

"This funding allows us to cover a substantial part of the development costs and accelerates the development of this project," says Mojo Maritime managing director Richard Parkinson.

The floating Lidar (Flidar) platform concept, which underwent tank testing last year, could be deployed early next year to carry out operational validation comparing it against a fixed meteorological mast.

Flidar, an advanced laser technology used to capture wind-speed measurement and directional data offshore, has been trialled by RWE via a prototype at the Gwynt y Môr wind farm off northern Wales and is about to start prototype testing at the National Renewable Energy Centre in northeast England.



MOJO WORKING: The low-motion Flidar platform

Photography | Mojo Maritime | Lloyd's Register Energy

Seen as the next step in wind-resource assessment technology after industry-standard cup-anemometer-based met masts, Flidar was recently judged by classification body DNV GL to be able to provide "bankable" finance-grade data.

Mojo Maritime expects to deliver the first full-scale prototype "capable of withstanding the most challenging offshore conditions" for £728,000.

"Floating platforms fitted with Lidar measurement equipment offer significant cost reductions in terms of capital and operational expenditure," notes Parkinson.

"Being secured by moorings rather than seabed fixings, the platform has minimal environmental impact and can be relocated using inexpensive assets."

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Photos of the day

1. CG Power's 'cash twister' box — the person who catches the most pieces of paper wins an iPad Mini; 2. The GE stand; 3. *Recharge* editor-in-chief Ben Backwell and María Teresa Castellote of Iberdrola Engineering and Construction with Spain's World Cup and European Championship trophies at the Iberdrola stand; 4. Iberdrola's new Aracnocoptero EOL6.3 drone, used for wind farm maintenance, demonstrated outside the venue; 5. the drinks reception at the launch of *Recharge Insight*, the new analysis service from *Recharge*; 6. EWEA sales manager Joana Griffin at the EWEA stand

Photography | EWEA/Jason Bickley/Jesús Quesada

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