

EWEA OFFSHORE FRANKFURT 2013

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SCALING DOWN:
EWEA's Jacopo Moccia says that achieving current European offshore targets is 'extremely unlikely'

40GW goal could be blown out of the water

Photograph | Jason Bickley/EWEA

Europe may have to accept a smaller offshore target, writes **Christopher Hopson**

Unprecedented political uncertainties could force the European offshore wind industry to slash its 2020 target from 40GW to about 27GW.

An EWEA survey, using research from Ernst & Young, illustrates how difficult it will be for the industry to raise capital at a time of high regulatory risk.

One senior source tells *Recharge* that EWEA members are actively debating whether to formally abandon the 40GW target in favour of something much lower but more achievable.

EWEA chief executive Thomas Becker tells *Recharge*: "We can't pretend this shortfall is not a problem. We are having a big discussion about it. Hopefully this situation will be resolved, but I can't predict what the results of those discussions will be."

The EWEA survey, *Where's the Money Coming from? Financing Offshore Wind Farms*, suggests the industry would need to raise up to €123bn (\$165bn) by the end of the decade if it is to meet its 40GW target for installed capacity.

However, it points out that should regulatory instability prevent the industry reaching 40GW, even a conservative assumption of 25GW would require up to €69bn over the next seven years. The survey says investment is being blocked by the uncertainty caused by

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BERND RADOWITZ

Germany risks gradually losing its offshore wind industry to other countries if the incoming government doesn't show it is firmly committed to expansion, warns Norbert Giese.

The vice-president for offshore at turbine manufacturer REpower told a press conference at EWEA Offshore yesterday: "It would be stupid to deliberately destroy an industry that took us ten years to build up.

"It would be as if Saudi Arabia decided not to produce oil any longer," he added, comparing the potential of the North Sea to harness offshore wind energy with that of the Middle East kingdom pumping oil.

In the coming five to 15 years, Germany will probably represent a quarter of the global offshore wind market, second after the UK, which will account for 40-50%, Giese said.

But the industry will only stay in Germany if it provides a big enough domestic market for it, he added.

Without the right policies, the offshore industry operating out of the North Sea ports of Emden and Bremerhaven, and the Baltic harbours of Rostock and Sassnitz — together with 18,000 jobs — could gradually move to countries providing better



WAKE-UP CALL:
Norbert Giese in Frankfurt

conditions, Giese warned. The UK and France are pursuing active policies to lure offshore wind investments and production facilities, he said,

and the Netherlands, Belgium and Denmark are also very attractive to the industry.

While regions outside Europe are lagging behind in offshore

wind development, other parts of the world, particularly East Asia, are waking up to the potential of the technology, he cautioned. ☐

European industry may have to lower its sights



Photography | Erik Luntang/EWEA

From page 1

changing regulatory frameworks, mainly in the two largest offshore markets, the UK and Germany.

"By undermining investment stability, governments are putting green growth, jobs and a world-leading European industry at risk," says Becker. "Stable national frameworks and a binding EU renewable energy target for 2030 will be a green light to investors and ensure the industry continues to flourish."

Jacopo Moccia, head of political affairs for EWEA, tells *Recharge* that "we can't seriously talk about achieving 40GW of

grid connected wind by 2020" until more questions around future activity are resolved.

"By the end of this year we should have done around 7GW of offshore wind in Europe, but this still leaves us with 33GW to do in the next seven years, which is looking extremely unlikely," Moccia concedes.

"So we still have to persuade the financial sector to commit this money. However, until we have resolved these industry problems, no financier is going to put up to €123bn into an industry with so much regulatory risk.

"Even if we said that we are now, as an industry, going to do

25-30GW by 2020, instead of 40GW, we would still have to find up to €69bn by the end of the decade.

"So we are going to have to think very hard about this 40GW objective. Considering what is happening in Europe, we may have to revise our objectives for wind energy for 2020."

The 40GW target put in place by the European wind industry in 2009 followed a process whereby each EU member state submitted a National Renewable Action Plan outlining how they intend to meet targets and what role each renewable technology will play. ☐

Clarify wind rules, Dong urges Merkel

BERND RADOWITZ

Dong Energy has urged Angela Merkel to clarify the future of Germany's support system for offshore wind.

The utility has written to the chancellor and her environment minister, Peter Altmaier, asking them to provide certainty about what happens when the current "compression model" expires in late 2017.

The compression model offers higher feed-in tariffs (FITs) for offshore projects in the first eight years of operation, to help companies meet upfront investment costs. After that, FITs fall to a lower-than-usual level. To qualify, projects must be grid-connected by 31 December 2017.

"There needs to be some kind of certainty over what happens post-compression model," Lars Thaaning Pedersen, Dong's head of European wind development,



SUPPORTING LETTER: Dong has written to Angela Merkel and Peter Altmaier

tells *Recharge*. "We have written a letter to the chancellor in which we're trying to address this and highlight these issues. I think in general they are aware."

Because of the regulatory uncertainty, Dong is holding back on an investment decision on its 300MW Borkum

Riffgrund 2 project in Germany's North Sea.

The Danish utility has received an unconditional pledge by transmission system operator TenneT to connect the project to the grid by 23 December 2017 — but Dong says that is too late.

Pedersen says his company will

"will not put more than €1bn [\$1.35bn] at risk" with only an eight-day margin. "That, even for Dong, is too ambitious."

He adds that if there is no visibility in Germany, the company will spend its money in the UK, Denmark or elsewhere. □

Photograph | DPA/PA



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KARL-ERIK STROMSTA

The UK's draft Contract for Difference (CfD) strike prices are more than sufficient for E.ON's 700MW Rampion project, claims an executive, whose support for the renewables support system flies against criticism of the British government by other developers.

"We think [the draft strike price] is good enough at £155 [\$250] per MWh — certainly for our Round 3 Rampion project," said Michael Lewis, managing director for E.ON Climate & Renewables, speaking yesterday at the *Recharge* Thought Leaders Brunch at EWEA Offshore 2013.

Several other big developers operating in the UK — including RWE and Centrica — have reacted coldly to the draft strike price, suggesting they may not build projects unless support is increased.

Despite the bruising energy debate under way in both the UK and Germany, Britain has emerged as a much more comforting destination for investment than Germany, claims Lewis, who says the German

CfD strike price is 'good enough'



energy industry is in "crisis". "Much to my surprise, [the UK's Offshore Transmission Ownership regime] has been a really good innovation," Lewis said. "It's working very well, in contrast to the German offshore grid-connection system, which has been a big, big problem."

E.ON is currently building the 288MW Amrumbank West project in the German North Sea and the 219MW Humber Gateway in UK waters, and submitted a planning application for Rampion this year.

Lewis supports moving the CfD system towards a competitive

tendering process for offshore wind, which is the UK government's ultimate intention. "[Doing so] reveals the price of each project rather than a one-size-fits-all, because we all know there's a big difference between [Forewind's 9GW] Dogger Bank and Rampion".

Insight at Thought Leaders VIP brunch

Valuable insights about the state of the offshore wind market were heard at the *Recharge* Thought Leaders VIP brunch at EWEA Offshore yesterday morning.

Here are a few highlights of what the four main speakers said:

Henrik Stiesdal, Siemens
We've benefited from society wanting us to be here, even at a very significant premium. But society's patience is getting very stretched right now. And many of us, if we were not in this industry, might feel the same way if we're honest with ourselves.

Michael Lewis, E.ON Climate & Renewables
It's not that utilities — and certainly not E.ON — are against renewables. What we're saying is, yes we support renewables, but we support them in the context of a market that functions properly and keeps the lights on. And that bit of the message is not getting through.



TOP TABLE:
From left: Michael Lewis, Andrew Garrad, Johan Sandberg and Henrik Stiesdal

Andrew Garrad, EWEA
If you'd asked me five years ago whether anybody outside Northern Europe would be interested in offshore wind, I would have said no. We're now seeing export markets emerging in Taiwan, in China,

in Korea, even in America. So for offshore wind globally I feel positive.
Johan Sandberg, DNV GL
The offshore wind value chain has been sub-optimal in many ways. Vessel owners might optimise their vessels, but then

on the other side of the value chain you have foundations, which perhaps don't fit that well with the installation vessels. So we want to better integrate the value chain so we don't have this sub-optimisation.

Offshore 'essential' to Energiewende

MEASURING UP:
A Fraunhofer
IWES Lidar buoy
in the German
North Sea

BERND RADOWITZ

Offshore wind energy is “absolutely essential” for the success of the *Energiewende* — Germany’s transition from nuclear power to renewables — and will push down overall costs by billions each year, according to a study presented at EWEA Offshore yesterday.

In the report’s “optimised growth scenario” — in which the country’s offshore wind capacity would be boosted to 54GW by 2050 — so-called “flexibility costs” will be far cheaper than in

scenarios with higher shares of onshore wind or PV, says the Fraunhofer Institute for Wind Energy and Energy System Technology (IWES). Flexibility costs arise from backing up renewable power and the curtailment of projects’ electricity output.

From 2050 onwards, flexibility costs would be €2.9bn (\$3.9bn) higher in a scenario with limited offshore output and a higher onshore capacity. They would be €5.6bn higher if there was a massive build-up of PV instead of offshore wind.

“Further potential for significant cost reductions would come from a joint European North Sea offshore grid,” the study says.

“A renewable-energy mix with a large share of offshore wind energy is more cost-effective in the long term than a generation mix without this technology.”

Offshore will also ensure the security of Germany’s power supply and has high system quality thanks to its excellent power plant characteristics, the researchers point out.

Contrary to onshore wind or

PV, wind turbines at sea can provide electricity almost every single hour of the year with about as many operating hours as fossil-fuel power plants, the study stresses.

“They produce power about 340 days per year, and that power production can be forecast fairly accurately.

“The turbines are also much better equipped to provide operating reserve than other fluctuating renewable-energy sources, and therefore play a key role in stabilising the power system.”

Photograph | Fraunhofer IWES

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VIEW FROM THE TOP: Nick Clegg is deputy prime minister in a UK government that is deeply divided over offshore wind

UK and Germany losing their offshore advantage

KARL-ERIK STROMSTA

The UK and Germany are losing ground as the world's most attractive countries for offshore wind investment because of their squabbling politicians, says Ernst & Young (EY).

With respect to offshore wind, the UK and Germany still hold commanding leads atop the consultancy's quarterly rankings of the attractiveness of global renewables markets.

But the gap separating them from the next two countries on the list — China and the US — has shrunk significantly in recent months, with politicians apparently at “stalemate” over how heavily to emphasise offshore wind in the years ahead,

at a time when momentum is critical.

The British offshore industry is in a state of “heightened uncertainty” ahead of the 2015 general election, with disharmony on energy policy seeping throughout the political system, EY says.

Germany is “faring a little better”, although there too the government has backed away from the more ambitious attitudes it held until recently.

Offshore wind is crucial to the overall attractiveness of renewables investment in the two countries, although both are

also important markets for onshore wind and PV.

Europe's broader renewables sector has seen its lustre dim. While several EU countries — including France, Denmark and the Netherlands — saw their position on the 40-nation index improve, they were more than offset by the declining prospects of others.

The sharpest adjustment was handed to erstwhile renewables heavyweight Spain, which tumbled to 19th place from 13th three months ago, to rank behind Brazil, Chile and Portugal. In onshore wind, Spain is no longer considered a top-20 market by EY.

Ireland dropped two places to 27th as the prospect of clinching a wind-export deal with Britain this year fades. ☒

Fugro to do Sheringham Shoal surveys

CHRISTOPHER HOPSON

Scira Offshore Energy has commissioned Fugro EMU to perform hydrographic and geophysical surveys at Sheringham Shoal wind farm and along the export cable and transit routes.

The 317MW site, which hosts 88 Siemens 3.6MW turbines and two offshore substations, is about 20km off eastern England.

The latest surveys, a requirement of Marine Management Organisation licence conditions, will provide detailed scour surveys around each monopile foundation, as well as bathymetry along the areas of export and intra-array cables.

Fugro EMU will obtain high-resolution data using its latest multi-beam echo sounders.

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Photograph | Getty

DARIUS SNIECKUS

Alstom has finally installed the world's largest offshore turbine — its 6MW direct-drive Haliade with a 150-metre-diameter rotor — off the Belgian coast.

The French manufacturer had originally hoped to erect the turbine at the Belwind wind farm by the end of last year, but the project slipped to April and then July due to bad weather, before this week's latest attempt.

"This project with Belwind asserts our technological leadership and our innovative abilities," says Alstom Wind senior vice-president Alfonso Faubel.

Built at Alstom's Saint-Nazaire fabrication yard on the Loire Estuary in Brittany, northwest France, the 1,500-tonne Haliade is being trialled atop a 25-metre-tall four-legged steel jacket, after installation by Fred Olsen Windcarrier vessel *Bold Tern*.

Its rotor carves out a swept area of 17,860 square metres, and Alstom calculates that the

turbine has a 15% better yield than rival 6MW models.

A consortium led by EDF Energies Nouvelles and Dong Energy, with Alstom as its

industrial partner, has €2bn (\$2.7bn) plans for the three French offshore zones totalling 1.43GW that it won last year.

Alstom is also signed up to

supply a Haliade for the UK Energy Technology Institute's floating tension-leg platform demonstrator, to be installed off southwest England. ☐

Alstom installs largest offshore turbine

RISING POWER:
The 6MW
Haliade 150 in
place at Belwind

Photograph | Alstom



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Happening today

Sharing is Caring: Wind Energy & Other Sea Users

09:00 - 10:30 (Panorama 1)

With offshore wind growing apace on a global level, the installation and operation of wind farms poses a challenge to other uses of the marine space, especially in Europe. Such challenges can lead to conflicts or to benefits, depending on how they are addressed. Here we discuss the potential for cooperation between the offshore wind industry and other sea users (fisheries and other renewable technologies).

Risk business? Managing the Environmental Impact of Offshore Wind

11:00 - 12:30 (Panorama 1)

During this session, delegates will learn about different approaches to assessing the marine environmental effects of constructing and operating offshore renewable energy developments. The session explores the issues from a range of viewpoints, covering regulatory/policy; industry and wider stakeholder perspectives.

Grid-Integration Issues for Offshore Wind Power

11:00 - 12:30 (Panorama 3)

Broader technical grid-integration issues are addressed, including grid connection requirements specifically for offshore wind power plants, DC technology and related items. Also under discussion, is the ENTSO-E HVDC network code that is currently under development.



Careers Day

Come to our Careers Day if you're:

- concerned with recruitment issues and would like to contribute to the debate
- working in human resources and looking for recruitment solutions
- looking for a job in the offshore wind sector
- want to know more about market trends and training opportunities in the offshore wind sector
- working at a university and able to offer study programmes for students interested in the offshore wind sector

The Careers Day at EWEA Offshore 2013 will centre around the following events and activities:

Employment and skills seminar 09:00 - 10:30 (Room Kontrast, Hall 3 via east)

The session will look at new challenges and opportunities in the area of employment and skills, how to secure retention of trained personnel and facilitate transferability of skills from similar sectors

Matchmaking and HR advisory services 10:00 - 15:00 (Restaurant Trilogie, Hall 3.1)

Greenfish organises free-of-charge HR advisory services in order to answer companies' HR-related questions and advise candidates/employees on their career path.

Exhibition visiting time 14:00 - 15:30

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**SURFACE TENSION:**

The cable-laying process can add nearly \$100m to the cost of a 500MW offshore wind farm

Cable firms fishing for a solution

Fishermen are adding a huge burden to the UK offshore wind industry in excess cabling costs, reports **Karl-Erik Stromsta**

Unreasonable demands by the fishing industry are adding hugely to the cost of the UK's offshore wind programme, claims a subsea cabling expert.

The main reason infield cables are buried at offshore wind farms is to protect them from fishing vessels that drag equipment along the seabed — an environmentally damaging form of fishing.

Antony Zymelka, director of the Zytech Subsea Cables consultancy, says prohibiting such types of fishing within offshore wind zones would give developers the option of not burying infield cables, or perhaps burying them in shallower trenches, which would be cheaper to dig.

"On a typical 100-turbine [offshore wind project] you'd immediately save tens of millions of pounds on installation," Zymelka told a conference in London.

Array cable installation and burial at offshore wind farms is a major growth avenue for

companies such as the Netherlands' Visser & Smit Marine Contracting (VSMC), Norway's Reef Subsea and — since its acquisition of Global Marine Systems (GMS) last year — Italy's Prysmian.

VSMC laid 202km of in-field cabling at the 341-turbine London Array, nearly 90% of which was buried.

The UK Crown Estate estimates that the array cable-laying process adds £60m (\$96m) to the cost of a 500MW offshore wind farm, at a time when bringing down costs is crucial.

Making this expenditure even more wasteful is the reality that trawlers typically avoid offshore wind zones anyway, not because of the subsea cables (which are buried and therefore not a threat), but because of the dangers posed by the turbines, Zymelka says.

"It's a consents and permitting issue for the offshore wind industry, in that fishermen and trawlers don't want to be prohibited from doing their business within offshore wind farms," he adds.

"It seems always to be the case that wherever we happen to be laying cables turns out to be their favourite fishing grounds. But at the moment they don't do their business in there anyway."

The Crown Estate, which owns the UK's seabed, does not own

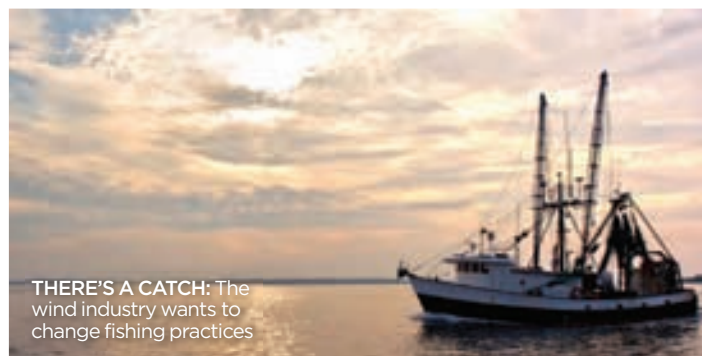
the country's fishing rights, complicating any possible move to shake up the system of allocations.

Zymelka acknowledges that as turbines grow larger, so does the space between them, offering a broader scope for fishing within wind zones.

But he points out that with many European fisheries already severely depleted, fishing within wind zones could be limited to more environmentally sustainable methods, such as line fishing. "Local fishermen, in their relatively small boats, would be welcome. They're not going to damage any cables that happen to be on the [seabed] surface."

GMS veteran John Davies, now business development manager at Canyon Offshore, agrees that in some cases burial work has been excessive, but says a blanket move towards no burial whatsoever would be swinging too far in the other direction.

Each project should be evaluated in its own right, Davies believes. For example, the biggest threat to cables at Eneco and EDF's future Navitus Bay project, near the Isle of Wight off southern England, would probably not come from fishermen, but from anchors thrown over the side of yachts. ☐



THERE'S A CATCH: The wind industry wants to change fishing practices

BERND RADOWITZ

A groundbreaking five-year study on the ecological impact of the Alpha Ventus offshore project has concluded that there were “no negative impacts on the marine environment” — yet many positive ones.

Fears of a depopulation of the marine fauna or massive deaths of birds proved to be unfounded, says Germany’s federal maritime and hydrographic agency, BSH, which gives out permits for the country’s offshore wind projects.

“That is good news for the further development [of offshore wind],” says BSH president Monika Breuch-Moritz, who led and co-ordinated the research.

To the contrary, artificial reefs have formed at the 12 foundations at Alpha Ventus, where mussels, sea anemones and starfish have settled.

With specialised sonar equipment, the researchers also found out that the abundance of marine life is actually increasing, with fish species moving into the area that hadn’t been there previously, such as mackerel and the longspined bullhead.

The rotation of the blades seems to drive away birds, and developers do not have to worry about fixed migration routes — there are none in the North Sea, the researchers discovered, as the creatures are not bound to rest areas or specific thermal conditions. There was also no impact on marine mammals during operation. During the installation process, however, the endangered harbour porpoise



SMOOTH SAILING: REpower turbines at Alpha Ventus

Alpha Ventus has not hurt marine life, BSH study finds

kept a 15-20km distance from the construction site.

Researchers found out that the mammals will return to the area faster if they were driven away by sonar signals before piling began, and if effective sound protection measures were in place during construction.

Following the findings, the BSH has stipulated that sound levels must not exceed 160 decibels within 750 metres of construction sites. The BSH expects this regulation to be introduced as a guideline across the EU. ☒



BREATHING MORE EASILY: The protected harbour porpoise

ECN gears up for offshore tests of wake control system

DARIUS SNIECKUS

The Energy Research Centre of the Netherlands (ECN) is gearing up for offshore tests of a new active wake control system that has been shown to boost output from land-based wind turbines by as much as 5%.

Trials on a quintet of Nordex 2.5MW machines at ECN

showed the technology, which would help a wind farm developer optimally position turbines to smooth the wake effects of turbulence, could also be expected to trim maintenance costs by 3%.

“This is a solution to substantially increase the production of the whole wind farm, while also reducing the load

and maintenance costs,” says ECN’s Haico van der Heijden.

The production capacity of turbines downwind of the front row on a development can drop by 50%, with wake-generated turbulence increasing loads and driving up maintenance costs.

ECN found that by changing the pitch angle and/or the yaw angle of the front turbine by a

few degrees, the turbulence is deflected, reducing loads and increasing output from downwind turbines.

“The next step is a large wind farm, preferably offshore. That is not a place where you want to experiment, which is why we have waited until the technique had proven itself,” says Van der Heijden.

Photography | DOTI | Florian Graner

Holmenkollen | 2014

Recharge, the global source for information on the renewable-energy industry, is inviting expressions of interest for its annual **Thought Leaders summit**, the first of which will take place on 9 January 2014.

The event, called simply Holmenkollen 2014, will be held at the prestigious **Holmenkollen Park Hotel Rica**, in the hills above Oslo, and is set to become a key event in the diaries of decision makers in the renewable energy industry.

Limited sponsorship packages for Holmenkollen 2014 are now available for leading companies that seek high brand visibility and credibility towards this highly prestigious industry target audience.

Involvement in the event will give sponsors the opportunity to engage with a unique group of high level opinion makers that are shaping debate and the future direction of the industry. Members of the **Thought Leaders Club** include the CEOs of developers, utilities and equipment suppliers, as well as policy makers, industry bodies and investors. The invited participants have been chosen on the basis of their ability to bring creative ideas to the table and engage with the latest trends.

Supporting the event as a sponsor will allow you to form a close association with an event that will play a significant role in setting the agenda for the industry for the year ahead and show that your company is engaged with cutting edge ideas and debate.

Participants will be able to take part in off-the-record discussions with industry peers and policymakers, as well as take part in winter sports activities. Sponsors will also be given the chance to host private meetings within the context of the event. In the evening, we will host the annual Thought Leaders dinner, with top-level keynote speakers.

The 100-year-old Holmenkollen Park Hotel Rica has been the scene of international peace talks and is located next to Oslo's Holmenkolbakken ski jump and the Norwegian Royal Lodge. Featuring a rich architectural heritage and modern conference facilities, the hotel will be an ideal environment for top renewables professionals and investors to consider the challenges of the year ahead.



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BETTER BY DESIGN: Hitachi turbines at a Japanese wind farm. Hitachi has become the 500th licensee of the Bladed technology package; below: David Witcher

How Bladed can slice through offshore CoE

More accurate modelling of turbines could lower capital spend and prevent over-design, reports **Darius Snieckus**

The offshore wind industry's campaign to drive down capital spending to lower its cost of energy (CoE) could be boosted by honing turbine design and certification, according to consultancy DNV GL-Energy.

More accurate turbine modelling using the latest software tools is being examined, to speed the prototyping of higher-output machines by cutting over-engineering, particularly on offshore models.

"If you look back to the early days of the industry, you would just apply bigger safety factors to static, steady-state calculations, which led to a lot of over-design," says David Witcher, head of the consultancy's turbine



engineering design tools unit, which includes the Bladed software package. The software

was licensed for the 500th time recently through a contract with Japanese turbine maker Hitachi.

"What Bladed allows you to do is to optimise every aspect of a turbine design for the real-world conditions it will operate in, and that is where the money-saving comes in. Bladed is as close to the real world as you can get without building your turbine," Witcher adds.

CoE can be cut using the software — a Windows-interfaced suite rooted in multi-body structural dynamics — to do everything from shaving off "excess" steel in a jacket concept to precisely balancing loads against performance from turbine components.

"Say you're trying to do something clever with your controller using algorithms to actively reduce the loads, increase the damping and so on, then Bladed would help you assess how good your controller is by representing the reality of performance and loading on a wind turbine design," Witcher explains.

The latest version of Bladed, V4.4, expanded the reach of the software to cover floating turbines, with the aim of clearing the way for "less conservative"

designs by modelling wind and wave loads together.

"Historically, modelling [of offshore turbines] has involved calculating your wind loads on the turbine and then taking those figures and adding them to the calculations for the wave loading on the support structure — whether fixed or floating — to come up with your design," says Witcher.

"This coupling together leads to overly conservative designs. Bladed allows us to model it all — wind and wave loads, electrical systems, control

Bladed is as close to the real world as you can get without building your turbine

systems, foundations, soil conditions — all in one go."

The market geography for Bladed licensing is shifting rapidly, with the "half to two thirds" accounted for by China in recent years being replaced by "a healthy spread" encompassing Japan, South Korea and Europe.

Among the new features in Bladed V4.5, to be released next year, is Lidar modelling, to factor in data streams collected in the field during operation. DNV GL-Energy is also scoping out development of the software for "farm-wide" load modelling. □



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Photos of the day

1) A delegate gets a massage at EWEA Offshore yesterday; 2) *Recharge* technology editor Darius Snieckus, *right*, entertains the speakers at the Thought Leaders VIP brunch yesterday morning; (*from left*) E.ON's Mike Lewis, EWEA president Andrew Garrad, DNV GI's Johan Sandberg and Siemens Wind Power chief technology officer Henrik Stiesdal; 3) Taking a turn on EWEA's flight simulator; 4) Stephanie McGregor of ABB chairing the grids session alongside (*from left*) TenneT's Jochen Jung, Jack Wattel of VSMC, Codan RSA's Truels Kjer, and Alastair Dutton of the UK's Crown Estate; 5) Jesper Andersen, chief executive of Mita-Teknik; 6) Erwin Visschedijk of Blix Consultancy with his wind farm aerial surveillance device