EWEA 2013
DAY FOUR
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Portugal: France is blocking our wind exports

BERND RADOWITZ
VIENNA

Portugal's energy secretary, Artur Trindade, yesterday accused France of stopping cheap wind energy from the Iberian peninsula reaching European markets by delaying construction of cross-border grid connections.

Portugal could offer both excess electricity and hydro storage capacity for renewable power from countries such as Germany, Trindade told *Recharge* at EWEA 2013.

But a faster expansion of wind power and other renewables in Portugal is being held back by the grid bottleneck at the border between Spain and France, which he suspects is protecting the latter's nuclear industry.

"That goes against the spirit of the internal [European] market," Trindade says.

"The French government is not complying with the goals that we have for renewable energy, because it's not letting the market be integrated. If we [in Portugal] can have renewable

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ANGRY: Portuguese energy secretary Artur Trindade at EWEA 2013

Photograph | Alexandra Buxbaum/EWEA

INVESTMENT PAYING OFF: The opening of Alstom's Camaçari factory in 2011

Alstom's mega-deal for 1.2GW of Brazil turbines

ANDREW LEE
LONDON

Alstom has signed a deal worth more than €1bn ($1.35bn) to supply at least 1.2GW of wind turbines to Brazilian developer Renova Energia.

The French manufacturer, which describes the deal as its "most important" in onshore wind, will supply, operate and maintain about 440 turbines under a memorandum of understanding signed yesterday.

The 2.7-3MW machines, to equip Renova's wind farms in the eastern state of Bahia, will be delivered from 2015 onwards, over three to four years.

The turbines will be made at Alstom's plant in the Bahia city of Camaçari. Alstom has long seen Brazil as a key target for its wind turbines, and this year will open its second factory there.

It says the deal confirms its plans to introduce a double shift at Camaçari, increasing capacity to 600MW annually.

The French giant passed last year's audit of local-content by the Brazilian national development bank, which left several other overseas companies scrambling to regain eligibility for the cheapest finance deals.

Alstom says it "will work towards the establishment of a wind cluster in Bahia in partnership with other companies" to produce the main components of the turbines".

The two companies will work together in an initial two-year phase to select "the most appropriate technology" in Alstom's portfolio for each Renova wind farm.

"Due to the importance of the project, a governance committee will be created, composed of members of the top management of both companies, who will follow up on the execution of the agreement," says Alstom.

As of last August, Renova Energia had a portfolio of 8.6GW of wind projects in varying stages of development.

Renova Energia says that Alstom came up with the best combination of price and technical performance for its turbines.

Portuguese accuse France of blocking access

From front page

energy at €65 [$88] or €70 per MWh, why not build more at that price and share it with other countries?"

He said the French government has blamed the lack of permits for transmission lines on environmental issues.

Trindade added that German companies have contacted him about building renewables plants in Portugal without subsidies, and then using the output to give emissions credits to Germany.

"But they need some kind of assurance that there will be no congestion at the border. Investors say: 'If the French system doesn't let me pass, it's possible that someone will shut me down'."

Portugal had 10.86GW of renewables capacity at the end of last year: 39% wind and 53% hydro. The government believes that a competitive market price of less than €65/MWh can be achieved at future wind tenders. But "in practice, the level of grid interconnection will be the limit of renewables expansion in Portugal", Trindade says.

Engineers in desperately short supply, says Garrad

CHRISTOPHER HOPSON
VIENNA

The European wind industry faces a shortage of about 5,500 skilled workers every year. And this shortfall could climb to 18,000 by 2030.

The warning comes in a report, *European Wind Energy Training Needs, Opportunities and Recommendations*, by the EU's Wind Energy Technology Platform (TPWind), based on research by GL Garrad Hassan.

"Well over half of the shortfall in new workers in 2030 could be in operations and maintenance [O&M]," says Andrew Garrad, *below*, chairman of GL Garrad Hassan. "Engineers are in desperately short supply.

"We have inadequate

communication between the academic and industrial side of our business. We need to upskill and bring in people from other industries."

The report recommends: an emphasis on science, technology, engineering and mathematics skills in vocational training; increased industry input into academic courses; more graduates of wind generalist courses; the harmonisation of vocational education and training across the EU; and a greater emphasis on training in O&M.

Photography | Manu Dias/SECOM | GL Garrad Hassan

Vestas cuts guidance as it posts €1bn loss

TOUGH TIMES: Vestas chief executive Ditlev Engel

ANDREW LEE
LONDON
KARIN JENSEN
AARHUS

Wind turbine market leader Vestas has cut its shipment guidance for 2013 due to a weaker-than-expected order intake, as it posted a net loss for 2012 of almost €1bn ($1.3bn).

Vestas now expects to ship 4-5GW this year. It previously gave a guidance of 5GW, having shipped 6.2GW in 2012.

The Danish group is forecasting revenues of "at least" €5bn this year, including service revenue, which is expected to grow to about €1bn.

Chief executive Ditlev Engel tells *Recharge* that the fall in orders has much to do with regulatory jitters in key European markets such as Germany, the UK and Romania.

"We know that as soon as someone from the political world talks about regulations, then investors withdraw.

"If this continues, then we cannot rule out that we won't reach our target, and that's why we now say 4-5GW," he says.

Vestas reported 2012 revenue of €7.2bn, with an expected Ebit (earnings before interest and taxes) margin in 2013 of at least 1% and a positive free cash flow.

In 2012, the company posted an Ebit margin of 0.1% before special items, and a negative free cash flow of €359.

Vestas recorded a total of €701m as special items, mainly due to write-downs.

It ended 2012 with a net loss of €963m, wider than the €166m deficit it posted for 2011.

Vestas says its fourth-quarter revenue showed more robust growth of 23% to €2.51bn, thanks to deliveries that were 10% higher, increased selling prices and better service revenues.

The company says the final quarter showed the first glimmers from the massive restructuring under way at the company throughout 2012.

In its end-of-year report, Vestas laid bare the extent of last year's upheavals.

It ended 2012 with 5,000 fewer employees than it began the year — a cut of 22%, having sold one factory, shut another and put some other plants up for sale. That all contributed to cost savings of about €250m.

Fears remain over French offshore grid, says developer

KARL-ERIK STROMSTA
VIENNA

Fears raised about a mismatch in the timing of grid connections for the first wave of French offshore wind farms have not been laid to rest, one of the developers has confirmed.

France's first offshore tender, concluded last spring, mandated that the first four projects (totalling 1.93GW) must be generating at least 20% of their total capacity by 2018, with the full amount on line by 2020.

However, late last year, grid operator RTE admitted that it would be unlikely to have export cables in place for those projects until 2019 at the earliest.

Renaud Chevallaz Perrier, technical director of EOLE-RES, concedes that "we still have a problem there".

EOLE-RES, part of the UK-based RES Group, was awarded the 500MW Saint-Brieuc project in the first tender alongside partner Iberdrola. The issue has also been raised by a consortium led by EDF and Alstom, which won the other three first-round zones.

Despite the problem, industry sources remain upbeat. As Areva Wind boss Jean Huby points out: "Offshore wind has bipartisan support in France today."

RISING EMISSIONS: A coal-fired power plant in Gelsenkirchen, Germany

Electricity industry: ETS is still the best option

CHRISTOPHER HOPSON
VIENNA

The European electricity industry has mounted a strong defence of the EU's beleaguered Emissions Trading Scheme (ETS) as still being the best means to cut carbon emissions, despite record low market prices.

Industry body Eurelectric, responding to a European Commission (EC) consultation on the carbon market, says the European electricity industry remains strongly committed to the ETS as the best means to achieve decarbonisation by 2050.

The EC went out to consultation with six different options on structural changes to the ETS in November.

Eurelectric sees a serious risk that any non-ETS approach to decarbonisation will distort and fragment the internal energy market.

"We consider the ETS to be the best instrument to drive investments in carbon reduction because it is technology-neutral, because carbon markets are the cost-effective way to drive investment choice in CO_2 reduction and because the ETS is fully compatible with the internal energy market," it says.

EWEA chief executive Christian Kjær says the problem is that the ETS, which is intended to spur clean-energy investment, "doesn't work right now".

A European Parliament committee recently rejected plans to bolster the carbon price, sending prices of allowances spiralling to a record low of €2.81 ($3.80) a tonne.

The Industry, Research and Energy Committee voted against an EC proposal to withhold permits from the market before reintroducing them at a later date.

This process, known as backloading, is seen as a potential means of removing part of the glut of allowances in the ETS, which covers around 11,000 installations across the 27 member states.

The Parliament's environment committee, which is thought to be more likely to support the plan, is expected vote on 19 February, with a further vote by representatives of member states due after that.

However, analysts fear that while there is strong support for backloading and tougher carbon reduction targets from the UK and some other nations, coal-rich Poland is staunchly opposed and Germany has yet to decide whether to endorse the plan.

Austria shows that low FIT rates can choke renewables investment

BERND RADOWITZ
VIENNA

Austria is a prime example of how feed-in tariffs (FITs) can choke off the development of renewables if set too low, says non-profit wind-research body, Energiewerkstatt.

Only when FITs were increased in 2010 did the wind sector in the Alpine country really start to take off, Energiewerkstatt's managing director, Johann Winkelmeier, *pictured*, explained at EWEA 2013 yesterday.

"For that, the political will is fundamental," he told *Recharge*.

As part of its Green Electricity Law, Austria established an FIT of €0.078 ($0.105) per kWh in 2002, which was reduced to a low of €0.075 by 2010. As a result, wind installations fell from 276MW in 2003 to virtually nothing in 2010.

It was only when Vienna upped the remuneration to €0.097/kWh in 2011 that the situation changed. Last year, 296MW of capacity were added, and for 2013, Energiewerkstatt expects 420MW.

Together with the new FIT rate, Austria adopted more ambitious targets for green power, beyond its abundant hydro potential. In 2015, the government hopes that 15% of electricity will be generated from wind, PV, biomass and small hydro, up from 8% in 2010. For 2020, Austria has a target of 3GW of wind capacity that could meet 10% of its electricity consumption — up from 1.38GW in 2012.

Almost all the wind capacity is in the eastern lowlands. To also exploit the country's promising potential in the Alpine regions, there should be a higher "mountain rate" FIT, similar to higher rates for offshore, Winkelmeier argues. That would take into account that installation costs in the Alps are up to 10% higher due to the colder, mountainous terrain, which requires longer grid connections. Operation costs are also higher as, among other things, roads have to be cleared of snow.

Photography | AP/PA | Alexandra Buxbaum/EWEA

WORDING: AWEA's Lori Rough

Photograph | Jason Bickley/EWEA

AWEA proud of new PTC construction deadlines

CHRISTOPHER HOPSON
VIENNA

Wind developers in the US will be able to qualify for the newly extended production tax credit (PTC) if they start construction by the end of this year and connect projects to the grid within two-and-a-half years, says the American Wind Energy Association (AWEA).

"So in 2013, with the new PTC extension, we purposely made sure that in the wording was that instead of having to be connected to the grid, they have to begin construction by the end of 2013. So they have up to 2.5 years to finish the construction and still be able to take up the PTC," Lori Rugh, senior director of AWEA tells *Recharge*.

"The PTC has been signed into law and we are hearing that everything else about it has been constructed in the same manner as before. It is only the wording that it is the beginning of construction versus the end of the process which is different," she says.

The US wind industry won a last-minute reprieve as Congress extended its main tax credit on more favourable terms through 2013. The incentive pays $22 per MWh, inflation-adjusted, for the first decade a project is on line.

Rugh says AWEA expects 15-30GW of new wind projects to be installed before 2015. "We are already hearing about a lot of new ramp-ups of production and other stalled projects being brought back following the PTC decision," she says.

"We don't yet have all the full details of what 'beginning construction' actually means and all the terms and deadlines. We are expecting that to come from the government probably by the end of March."

There has been no response from lawmakers to a proposal tabled by AWEA for a six-year phase down through 2018.

"We are hoping to see a firm new energy policy that will include tax reform. It is unfair that oil and gas receives ten times the tax credits that we do in the wind industry, so we need a level playing field," she adds.

Rare-earths no longer a worry, says Mäkinen

KARL-ERIK STROMSTA
BERLIN

The wind industry no longer need fret about the global supply of rare-earth metals, insists Jukka-Pekka Mäkinen, chief executive of The Switch.

Rare-earths are critical to the production of many high-tech products, including wind turbine permanent-magnet generators (PMGs), of which the Finnish company is a leading supplier.

The price of the minerals surged in early 2011 on fears that China had begun clamping down on exports, to protect its high-tech industries. The spike prodded new non-Chinese producers into the sector, and led some in the wind business to question the future of PMG direct-drive turbines.

But those questions have been laid to rest, says Mäkinen. Prices are still above where they were before the rare-earths panic, but "they're now maybe only 20% over that — we're practically on a stable level and pricing is slowly going down. So we're home free on that".

Mäkinen ascribes the price rises partly to Beijing's policies, "but even more than that was the hot money pouring into buying stockpiles of permanent-magnet material."

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Ireland set to boom, but will bust follow?

Resolution of FIT problems will kick-start sector, but scheme due to expire in 2015

EMERALD ISLE: The Curraghgraigue wind farm in southern Ireland. *Below:* Kenneth Matthews

KARL-ERIK STROMSTA

Ireland's onshore wind market is set to erupt in a flurry of construction after several years of relative stagnation — although the country may yet fall back into the boom-and-bust trap.

A number of factors have converged to prime the sector for a surge of growth over the next three years, says Kenneth Matthews, chief executive of the Irish Wind Energy Association (IWEA).

Last March, after years of delays, Ireland launched the second round of its feed-in tariff (REFIT 2). Rather than creating an immediate rebound, however, the government's decision to "grandfather" beneficial curtailment rights to existing wind farms led to another bruising industry debate, which effectively stalled the surge by another year.

The issue of curtailment is hugely important in Ireland, which has 2GW of grid-connected wind, yet a national peak load of only 5GW.

Developers of new projects argued that if all future curtailment had to fall on their shoulders — rather than being spread evenly across the country's entire wind base — many future developments would no longer make financial sense.

After reopening the issue, the Irish government has backed the idea of *pro rata* curtailment, with a final decision expected this month. "The logic there is that you have to trade a little bit of the past to ensure you have a future," Matthews tells *Recharge*.

Another tailwind for the sector is the memorandum of understanding signed in late

January between the Irish and UK governments, which could see Ireland exporting vast amounts of wind energy to Britain's grid by 2020 via subsea interconnectors.

Ireland added 197MW of wind capacity in 2012 — well off the 300MW it had been adding annually — leaving it behind schedule on the 4.6GW the country needs to meet its EU renewables target. Ireland will put on 250MW this year as REFIT 2 fuels a rebound, and more than twice that in 2014, IWEA predicts.

That level is sustainable if the trading deal with Britain continues to progress, Matthews says. But he warns that the expiration of REFIT 2 at the end of 2015 presents another potential pitfall for the sector.

There is "good reason" to believe that the transition to a new subsidy regime will be significantly smoother this time, if only because "the government recognises that we can't afford another gap if we're going to meet our targets".

But without the details of the next subsidy regime in place well before 2015, that year may prove another dud as lenders demand assurances that projects are commissioned ahead of the REFIT 2 deadline.

Simply meeting Ireland's 2020 renewables target alone will not create a large enough market to woo a turbine maker, Matthews acknowledges. But if the export deal with Britain comes through, IWEA believes the country may add as much as 6GW by the end of the decade — half onshore and half in the Irish Sea — and the case for a turbine factory begins to look compelling. R

Photography | DPA/PA | IWEA

EWEA's Future Events

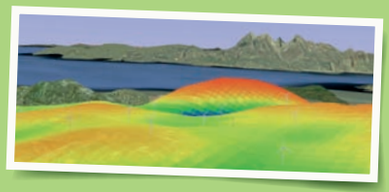
Technology Workshops in 2013

EWEA technology workshops offer the highest-quality programmes and networking opportunities at very competitive rates. In addition, there are significant reductions for EWEA members, academics, students and NGO representatives.

Organised for the industry by the industry, EWEA technology workshops are excellent value for money and are typically half the price of those offered by commercial organisers. As the industry's European non-profit association, EWEA can hold these workshops thanks to the continued support of its members.

Resource Assessment 2013 25-26 June 2013

Trinity College, Dublin, Ireland — *www.ewea.org/techworkshops*



EWEA's series of workshops on technology issues critical to members continues in 2013 with a second resource-assessment workshop, as requested by participants at the highly acclaimed 2011 edition.

The workshop is organised in association with the Irish Wind Energy Association and consists of five sessions over one-and-a-half days:

- Application of mesoscale models for resource assessment. Includes call for abstracts
- Wind conditions modelling. Includes call for abstracts
- Real-world power curves
- Current challenges of wake prediction
- Comparison of resource and energy-yield assessment procedures exercise — part 2

How close are your resource estimations to reality?

A highlight of the workshop is the "comparative resource and energy-yield assessment procedures" exercise. Parties are invited to carry out a wind-speed and energy yield prediction for a wind project with the aim of comparing results of different industry standard models and approaches. Participants' results will be independently compared and contrasted with one another, as well as against real wind farm performance data, with the results presented in the final session of the workshop. Deadline for submitting the results of your assessment: 10 May 2013.

For more information about how you can get involved, visit *www.ewea.org/techworkshops*

Call for abstracts open

Submit your abstract by 10 May to have the opportunity to present your work at one of the most well-respected resource-assessment workshops.

Calling all students: Financial support will be given if the selected abstract is from someone in full-time education.

Register at early rates before 15 April 2013

For full information on the programme, comparison exercise, call for abstracts and registration, visit: *www.ewea.org/workshops*

Wind Power Forecasting

Fourth quarter 2013

Date and venue will be confirmed on the website soon: *www.ewea.org/techworkshops*

How can wind forecasting drive down costs and increase certainty?

EWEA's second technology workshop in 2013, organised in response to requests from members, focuses on technical challenges related to wind-power forecasting.

The workshop is organised in association with the Anemos Consortium and will cover topics including:

- The end-users' requirements
- Numerical weather prediction models
- Wind-power forecasting models and operational systems
- Integrating forecasts in business processes
- How important will forecasting be at 200GW?

The workshop also aims to examine the challenges and benefits of connecting communities that tend to operate in isolation, including: meteorologists – forecasters – transmission system operators – regulators – turbine manufacturers – utilities and operators – banks – traders.

The programme is currently being developed: to be notified when it is available, email *techworkshops@ewea.org*

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The offshore industry continues to undergo dramatic change — what are we doing to make sure it thrives? EWEA OFFSHORE 2013 will provide a platform for the wind-energy industry, bringing together the leading market information, business concepts, products, services and players in the industry. EWEA's goal is to leverage this knowledge of experts and peers in the wind industry, providing a comprehensive conference programme of over 30 sessions and an extensive exhibition.

To book a stand at EWEA OFFSHORE 2013, visit the EWEA stand (B-B40) or contact the sales team (*sales@ewea.org*).

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This unique international platform provides the ideal location to do business with key industry players from over 60 different countries. For more information about this event, visit www.ewea.org/annual2014

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Looking beyond 2020

A single electricity market could shape the future of renewables after current energy targets expire

THE WAY FORWARD: Adam Bruce

Photograph | Mainstream Renewable Power

PHILIPPA JONES

The year 2020 has been the focal point of EU renewables policy in recent years. However, EWEA and others have consistently called for policymakers to look further ahead and offer the sector some longer-term certainty.

The Integration in Electricity Systems and Markets track at EWEA 2013 is aimed at moving the discussion forward and giving delegates a chance to make their call for clarity beyond 2020 heard.

"There is an opportunity for this track to look ahead to 2030, to see what we want in an EU context for renewables and how this will be shaped by the creation of a single electricity market," says track chair Adam Bruce, global head of corporate affairs at Mainstream Renewable Power.

"We plan to look at the different aspects of this future, from a policy and regulatory point of view, and to examine the technical challenges of delivering large-scale wind energy."

> One of the things delegates will agree on is the need for regional markets, whereby countries can share renewables resources

The sessions will include a discussion of the potential problems associated with financing investments, cost recovery, cost-sharing and cost-allocation schemes. These will be addressed from a national and regional perspective during the track. Moreover, the European Commission's Oliver Koch "will be given the opportunity to set out some more detailed thinking" about the EU executive's policies beyond 2020, says Bruce.

However, before we even get to 2020, the EU is supposed to have gained a single electricity market. Few experts believe the 2014 deadline will be met. One session in this track will therefore review the policy path since 1996 that has been aimed at delivering a single electricity market, and the political, regulatory and social barriers that have impeded its appearance so far, which are likely to delay delivery by several years.

The current deadline "may be a stretch, but the direction of travel is right and we can see that the building blocks are being put into place", comments Bruce. He highlights the presentation by Dong Energy that will show how a "very regional market in Denmark works well and can be held up as a model to the rest of the EU".

"I do not wish to pre-empt the session's conclusions, but I am sure that one of the things delegates will agree on is the need for regional markets, whereby different countries can come together to share renewables resources," adds Bruce. "This will offer greater opportunities for cross-border trade, more competitive energy prices and better energy security for customers."

Other sessions will take a more technological approach to these questions.

Case studies being presented on developments in grid technology and storage will include a look at how a smart grid has been designed and deployed on Shetland, off the coast of Scotland. Attendees will also hear about the ability of large offshore wind farms to contribute to the stability of the grid.

"We want this track to offer realistic solutions to all potential problems," concludes Bruce.

Adam Bruce, global head of corporate affairs for Mainstream Renewable Power, is the track chair for Integration in Electricity Systems and Markets. He is also the chairman of the UK government/industry body, the Offshore Wind Programme Board

Wrestling with deep concepts

A healthy rivalry between two floating prototypes could have big implications as Europe's wind industry moves further offshore, writes **Darius Snieckus**

Europe is planting its flag on the floating wind sector with its largest-ever deep-water turbine demonstrator — a €36m ($48.7m) pilot that aims to have two distinct prototypes riding the swell off Spain by 2015.

FloatGen, an EU-funded consortium, expects to have engineering wrapped up this year on the concepts: a 2MW unit developed around Gamesa's G8X turbine mounted on a "surface floating" concrete platform designed by France's Ideol; and a 3MW prototype based on an Acciona AW-3000, with a semi-submersible to be designed by Spanish shipbuilder Navantia and offshore construction specialist Olav Olsen of Norway.

The four-year project is on the fast track. The world's gustiest offshore region, off the UK, will need 6GWh per year from floaters to reach a targeted capacity of more than 245GW by 2050, harnessing 70% of the country's deep-water wind resource.

Progress of the offshore wind industry has been slowed by the economic crisis, because developers are making much smaller advances, to manage technology risk, says FloatGen co-ordinator Mauro Villanueva-Monzón, technology development director at Spanish turbine maker Gamesa, which is leading the consortium.

"There have been other European Commission projects that look at specific floater designs as machines, as products, but nothing like this, where there will two systems being demonstrated holistically with a benchmark approach to the technologies," he adds.

"I feel this is a wise strategy because it promotes healthy competition between the concepts. Also, it is a kind of 'belt and braces' approach... if one concept should fail, there will still be a second concept going forward."

The Ideol floater, developed with Germany's University of Stuttgart, is based around a square, open-centred concrete platform, moored to the seabed using a catenary-style spread of chain lines, or hybrids of chain and synthetic rope, with "soil-specific" anchors.

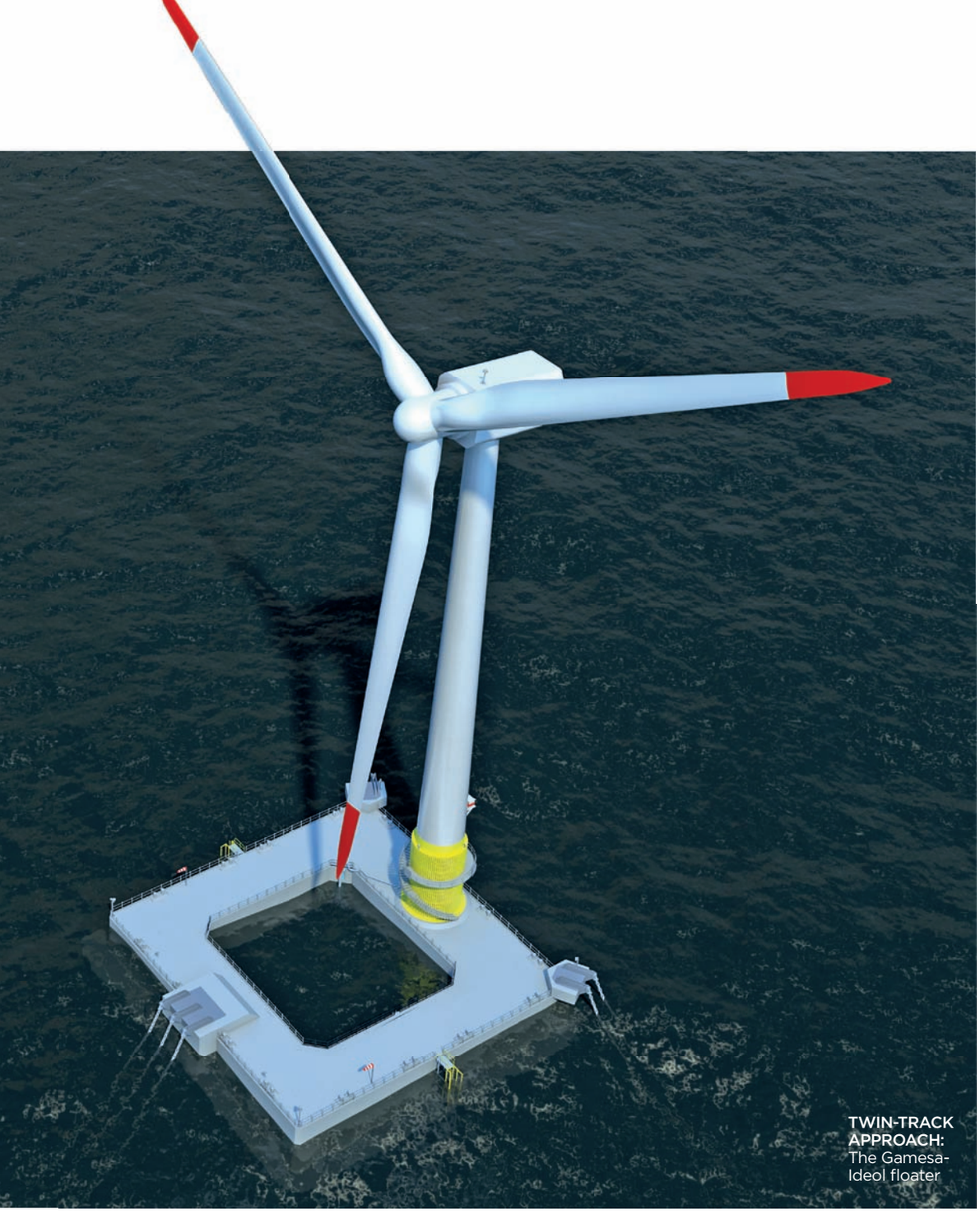
The design, which derives stability and buoyancy in large part from an arrangement of airtight internal chambers around a square "damping pool", is foreseen for mega-class turbines of up to 10MW floating in water depths of 40 metres or more.

The Navantia/Olav Olsen unit is likely to be a steel semi-sub based on a triangular design inspired by the North Sea oil and gas industry's experience in building deep-water platforms, although a spar-type concept is also on the table.

The triangular pontoon derives much of its steadiness at sea from being moored partly submerged, with further stabilisation provided by damper plates at the base of each of its three columns and a tower brace

CONFIDENCE: Mauro Villanueva-Monzón

Photography | Ideol/FloatGen | Gamesa



TWIN-TRACK APPROACH: The Gamesa-Ideol floater

system supporting the turbine.

"The 2MW and 3MW are turbines that we [Gamesa] and Acciona already have in our portfolios; they are proven machines, well-known by their manufacturers," says Villanueva-Monzón. "We will make the modifications we know are needed for these machines to operate in the deep offshore."

Because of their confidence in the turbines — as well as time and funding pressures — the two companies have leapfrogged scale-model testing to "go direct for full-scale 2MW and 3MW machines", with a view to eventually scaling up both designs for 5MW-plus floating models.

"It is a trade-off between reasonable risk and cost. We feel the turbine and floating foundation in combination will work well and give us the opportunity to explore how the technology will make the next jump in size.

"Knowing the 2MW and 3MW turbines as we do, there will be less uncertainty: during offshore testing we will be able to get to the root cause of any problems more quickly, and the size of these machines will still allow us to extrapolate conclusions for the next generation of wind turbine designs of the 5MW class and larger."

Gamesa and Acciona have already cut their teeth on similar "mid-scale" floating concepts through testing programmes run as part of the Flottek and HiPRWind joint industry projects.

With construction scheduled for next year, installation of the FloatGen prototypes could happen in the first half of 2015, with 2016 dedicated to monitoring and testing the units in the open seas, overseen by German research organisation Fraunhofer IWES and environmental consultancy RSK.

Although siting plans will not be cemented for several months, Villanueva-Monzón says deployment will be at one of several Spanish ocean-energy research stations, such as Zefir, planned in the Mediterranean; Bimep, in the Bay of Biscay; and Plocan, within sight of Gran Canaria, off northwest Africa.

"Choosing a site is central to the business case of each prototype," he explains. "We have to contemplate the seabed soil type for anchor points, the wind resource, the wave environment — the Mediterranean and the Atlantic are very different, for example — and the logistics of the fabrication, transportation and installation."

> In terms of the technology, logistics and manufacturing processes, offshore is like sumo wrestling and onshore is Greco-Roman

Although the two floaters are being progressed "hand in hand", their one-of-a-kind designs mean they may end up being put through their paces at separate locations.

"The technologies ultimately are better suited to some sites than others. And then there is the supply chain and the construction process that feeds into the business case for each, which varies by region," Villanueva-Monzón points out.

"What we are developing is approaching offshore wind in a way that is very different from onshore wind. In terms of the technology, the logistics, the manufacturing processes, it is like offshore is sumo wrestling and onshore is Greco-Roman.

"By the end of 2016, we will know if these floating concepts are viable and what their true costs are in operation and what cost of energy they can produce."

MEASURE FOR MEASURE: Modelling wind resource is the first step to profitability

Academics get an education

Even the most knowledgeable delegates will gain new insights into the latest in wind-resource assessment, reports **Philippa Jones**

Making sure there is enough wind to make the blades go round in a profitable way before the turbines are placed in the ground is the essence of the Resource Assessment track.

"Wind resource mapping is the first step a country needs to take if it wants to invest in wind power and check, for example, whether it can use wind to meet targets such as the 20/20/20 energy goals in the EU," says track chair Lars Landberg, senior vice-president of R&D, forecasting and training at GL Garrad Hassan.

The sessions he is managing will cover a gamut of ideas aimed at improving the way potential wind power is modelled and measured. They include an in-depth discussion on remote sensoring equipment, including Lidar, to see how results from this technology can be used, say, to capture the wind characteristics of complex terrain.

Speakers will show how the industry can harness the latest knowledge to prove the viability of a project and subsequently obtain financing.

"For example, today blades may be 150 metres in the air, but we still need to understand better what the wind is like up there," says Landberg.

If technologies can accurately measure and model the state of the wind at the top of the tallest turbines or in the last row of a massive offshore wind farm, this information will be vital for the future development and innovation of the sector.

Moreover, investors, especially in a difficult economic climate, are more likely to put their money in a project whose potential is backed by hard facts. Many of the Resource Assessment sessions are "academic", requiring a lot of prior knowledge from delegates, admits Landberg. But he insists that the sessions cover subjects relevant for industry: "I want to focus on where the academic meets the real world."

Landberg hopes that the session led by Gregor Giebel from Denmark's DTU Wind Energy, entitled "The future challenges in wind-power forecasting — the experts' vision", will also help bring these two worlds together.

Giebel plans to interview a range of people involved in the industry — including experts from utilities, grid operators and R&D — and ask what they think about wind forecasting.

He is expected to air the results of his findings and may even get some of his interviewees to share their thoughts on the podium.

"Resource assessment has been ongoing for 20 years. We already understand lots about the amount of wind available, but we need to understand this subject even better," says Landberg.

Resource Assessment track chair **Lars Landberg** is a senior vice-president at GL Garrad Hassan. He has worked in wind energy for 23 years, including 18 years at the Risø National Laboratory in Denmark

Photography | Arizona State University | GL Garrad Hassan

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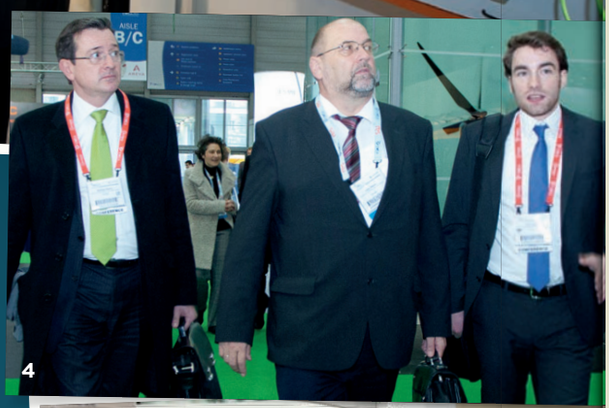

Photos of the day

1. The CEO panel session: ***(left to right)*** **Alstom Wind chief executive Alfonso Faubel; Areva Wind chief executive Jean Huby; Siemens Wind's chief executive for EMEA, Jan Kjaersgaard; moderator and *Recharge* editor-in-chief, Ben Backwell; Nordex chief customer officer, Lars Bondo Krogsgaard; Jukka-Pekka Mäkinen, chief executive of The Switch; and Stephan Ritter, GE Renewables' general manager for Europe; 2. A visitor inspects a piece of equipment; 3. Latest electronic control systems on display; 4.** ***(centre)*** **Harry Glawe, economy minister of the northern German state of Mecklenburg-Vorpommern; 5. EWEA 2013 event stand; 6. Schaeffler delegate lights the virtual fire; 7. Austrian stand drinks reception; 8. Attendee crashes out on the CG Slim ski simulator**

Photography: EWEA/Jason Bickley/Alexandra Buxbaum/ Michael Buxbaum/Jesús Quesada

TWITTER VIEW

@AlfonsoFaubel Great speech this morning at the CEO roundtable! #EWEA2013

Dorothee_Haymarket @ DorotheeEvents

Lots of great discussion on wind's variability and energy storage on the CEO panel at #EWEA2013 - exciting for our 'brilliant' turbine!

GE Renewable Energy @GErenewables

Wind turbine manufacturers CEO panel #EWEA2013 I chaired this morning went well — some really smart thinkers and nice relaxed feel

Ben Backwell @benrecharge

I enjoyed the session I was involved in this morning on network integrating of #windpower. Some discussion of #energystorage #EWEA2013

Simon Gill @simonagill

#EWEA2013 European wind industry faces a severe skills shortage of around 5,500 appropriately qualified staff per year

EWEA @EWEA

#EWEA2013 Austria is a prime example of low feed-in tariffs choking renewables development, new figures show: http://bit.ly/Wxoiz1

Rechargenews @rechargenews