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EU could pull grid priority for renewables

BERND RADOWITZ

B russels may be planning to outlaw the priority of wind and solar on the grid in its forthcoming Renewable Energy Directive due at the end of this year, despite the devastating impact this could have on the energy transition.

When asked at a WindEnergy Hamburg press conference yesterday if such a move was being planned by the European Commission, Maroš Šefčovič, the EU's vice-president in charge of energy union, declined to answer the question directly, instead saying there should be "no discrimination between new and old [energy] technologies".

"In some countries you have priority dispatch for renewables, but in some countries you have priority dispatch for coal, and other sources of energy," he said. "We have to look

for ways how we can introduce more competition into the energy supply."

In major renewables markets such as Germany, renewable energy enters the power grid with priority over fossil sources, which has been a decisive factor in the rapid build-up of green power, which now meets a third of the country's electricity needs. Removing this rule could mean that cheap and dirty coal-fired power enters the grid ahead of wind and solar.

German energy minister Sigmar Gabriel, also at the press conference, was not amused by Šefčovič's comments, pointing out that the EC approved Germany's priority dispatch rules as part of its recently reformed Renewable Energies Act only a few months ago.

"If then in December a proposal were to come that repeals just that [rule], then that would be a degree of contradiction I would consider



Maroš Šefčovič speaking at the WindEurope Summit yesterday

harmful to the EU," Gabriel told the press conference. "If it were to come to that, we [Germany] would of course oppose that."

Nordex chief executive Lars Bondo Krogsgaard added that the priority dispatch rule creates certainty for owners of renewables installations that their power would be taken. "If you were to abolish that principle,

you would need to think about changing the design of the market, you would need to create a level playing field," he said, adding that would also need the same access to balancing and capacity markets. ☐

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Solar cost curve 'scary' for wind

KARL-ERIK STROMSTA

Solar is becoming a “scary” competitor for the wind industry, particularly in many of the emerging markets that turbine suppliers are counting on for growth, said Nordex chief executive Lars Bondo Krogsgaard yesterday.

“One of the biggest challenges wind energy will have in the future is not coal or gas – increasingly we have to drive down our costs to match solar PV,” Krogsgaard said at the opening session of WindEurope Summit.

Speaking later to reporters, Krogsgaard added: “For the world it’s a fantastic thing to have renewables technologies competing like this. But when you look at the way the cost curve is coming down [for PV], it’s quite a scary pace from our perspective.”

Onshore wind remains cheaper than utility-scale solar in most markets, including Europe,

but the gap between the two has been shrinking. And with the global PV panel market once again tipping into a state of oversupply, the cost of solar energy is expected to continue its rapid descent in the coming quarters.

To remain competitive in Europe, Nordex will “absolutely” need to be delivering turbines to projects at €50/MWh by 2020, down from €60 or so now, Krogsgaard says.

The emerging threat from PV has helped fuel recent M&A activity in the wind business, Francesco Venturini, chief executive of Enel Green Power, told the summit. “There’s been this big push because they know other technologies are coming up.”

Many of the biggest acquisitions seen recently in the wind industry were driven

by European turbine suppliers looking for more exposure to power-hungry emerging markets. But such markets, from India to Latin America, are also the places where solar is proving most competitive.

Record-low solar bids have been reported in a number of emerging markets in recent

When you look at the way the cost curve is coming down [for PV], it’s quite a scary pace

weeks, from Chile to Abu Dhabi.

Solar is “particularly a competitor in places where the solar resource is good – that is, in many of the emerging markets where we’re seeing a lot of growth” in wind energy, Krogsgaard notes. “That’s of course a concern, and giving us reason to think.”



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German offshore to go under €100/MWh in 2017

BERND RADOWITZ

The winning prices at next year's 1.55GW offshore wind tender in Germany will fall below €100/MWh, according to Innogy renewables chief operating officer Hans Bunting.

"The €100/MWh will be undercut, that's my expectation," Bunting said during a press briefing in Bremerhaven on Monday.

Germany plans to hold a 1.55GW interim tender for pre-approved offshore arrays in 2017 and 2018 each, but the site conditions of the areas in question and the auction criteria are not directly comparable to recent Dutch offshore and Danish near-shore tenders that have produced winning bids of €72.70/MWh and €64/MWh respectively.

The main difference is that the offshore substation that bundles the



Innogy renewables chief operating officer Hans Bunting

electricity coming from each turbine in Germany will be included in the auction price, unlike

in the Dutch and Danish tenders, adding about €15/MWh to the bid price, Bunting tells *Recharge*.

Also, the German projects are much further off the coast, which is increasing installation and servicing costs, while support also is being paid for a longer period in Germany.

During the opening of WindEnergy Hamburg yesterday, Martin Neubert, chief strategy officer at offshore wind major Dong Energy, said the recent tender results show that the industry has delivered a cost reduction of 50%, and undershot its own €100/MWh target three and a half years ahead of its 2020 target.

The downward trend will continue, but depend on the right policies being put into place that ensure long-term visibility for investments.

"The more build-out and scale we have, the more cost reduction we will see," Neubert said. "We will definitely see a cost reduction below €80/MWh." □

Photograph | RWE

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Senvion plans 10MW-plus offshore model

BERND RADOWITZ

Engineers at Senvion have completed an internal study about the viability for a much larger offshore wind turbine than the company's current 6.2MW model.

"Sooner or later, we need to upgrade to a larger machine," chief executive Jürgen Geissinger tells *Recharge*, adding that he has been in talks with clients about the company's ideas.

Geissinger did not reveal when the company could present such a model, but he said it could be in the 10MW-plus category, a size Siemens is also exploring in studies.

However, Geissinger explained that developing a new turbine takes at least three years, so the massive machine would not be launched before 2020. ☐

Photograph | Senvion

Developers prefer 8MW machines

BERND RADOWITZ

GE and Senvion are facing an uphill struggle in offshore wind tenders planned in Germany next year because they do not offer an 8MW offshore wind turbine, *Recharge* has learned.

Canadian utility Northland Power and its German peer Innogy plan to take part in a 1.55GW tender in 2017 for pre-approved offshore projects, to get the green light for their 900MW Nordsee 2 & 3. The projects lie close to the 332MW Nordsee One array the two utilities are currently building in the German North Sea using Senvion's 6.2M126 turbine, but neither utility committed to use Senvion again.

At a Senvion factory visit in Bremerhaven on Monday, Northland's offshore wind director Florian Würtz told



Senvion's 6.2MW turbine may be out of favour at upcoming German offshore tenders due to its size

Recharge that his company is in discussions with all of the "usual suspects", but hasn't taken a

decision on the turbine type yet.

"It really depends on the price and economy, but I personally think that it will be in the range of 8MW as a basis for our calculations," he said, echoing the view of high-ranking executives of other utilities.

Hans Bünting, chief operating officer for renewables at Innogy, explained that larger offshore turbines bring considerable cost savings as fewer subsea cables are needed, while installation per MW and O&M is cheaper.

Both Senvion and GE lost out in a recent race to buy the Gamesa-Areva joint venture Adwen that also is developing an 8MW turbine. Gamesa, which is in the process of being bought by Siemens, eventually got the nod to buy Adwen.

Northland Power owns 85% in both Nordsee One, as well as in Nordsee 2&3, while Innogy holds the remaining 15%. ☐

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Shell makes U-turn to go big on offshore wind

DARIUS SNIECKUS

Oil giant Shell is gearing up to “actively compete” in the global offshore wind market, following a U-turn in its strategic direction, its chief energy adviser said last month.

Wim Thomas, speaking at the ONS conference in Stavanger, Norway, said the company’s far-horizon scenario planning had long pointed to the accelerating growth of renewables, with “mega” ocean-energy projects as a key driver.

“Our scenarios showed for probably a decade that the renewables space is growing very fast — and ocean [energy] is the fastest-growing of these. The message finally came through to our boardrooms that this is a fact,” he said. “In the past, wind



Shell chief executive Ben van Beurden

was perhaps seen as something you do for public-relations reasons or because a government asked [you] to participate — but the penny has now dropped that this is the new business space [to be committed to].”

Thomas added that while Shell believed there would be “some

growth” in the next ten years in oil and gas, the long-term bet would be on renewables. “And do you want to miss that?” he asked the crowd of oil & gas executives.

Shell boss Ben van Beurden said in June he had “regrets” that the company had pulled out of early positions in Dutch offshore and US onshore wind.

The Hague-headquartered company missed out on making a high-profile re-entry into offshore wind when it failed in its consortium bid for acreage in the Netherlands’ recent 750MW tender.

“We were not successful [with this bid] but we are very serious about being more successful next time,” said Thomas. □

Photograph | Shell

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Siemens cuts turbine noise by copying owls

BERND RADOWITZ

Siemens has unveiled a new version of its SWT-3.3-130 onshore turbine that uses a novel noise-reducing component that reduces the volume of rotations by nearly two decibels.

The SWT-3.3-130LN operates at a reduced rotor speed and in addition to vortex generators on the blade surface uses trailing edges that are equipped with serrations and combs that the company calls the “Siemens DinoTail Next Generation”.

“The new model closes a gap in our portfolio: wherever an IEC IIA class turbine is needed, but noise-protection requirements set limits, this wind turbine is the definite first choice,” says Siemens onshore wind chief executive Thomas Richterich.

With the new technology, Siemens says it reaches a noise level of 104.9 decibels. The new

machine will be available in early 2017, in parallel with two other onshore models Siemens is launching at WindEnergy 2016.

The fast air stream passing the tips of the rotor is primarily responsible for the characteristic noise of a wind turbine. Siemens explains that each combed teeth element of its DinoTail creates fine vortices at the point where the fast air stream above the blade profile meets the slower air stream below. As a result, the aerodynamic noise from the trailing edge of the blade is reduced significantly. The industrial giant says that the noise mitigation technology doesn't reduce the annual energy yield of the 3.3MW direct-drive machine.

The fringe of an owl's wing provided the inspiration. Owls approach their prey silently, with the small combs at the edge of their wings believed to mitigate the noise of the air flow by generating fine vortices. □



A close-up of the edge of an owl's wing, and the serrations and comb teeth of Siemens' 'DinoTail' blade leading edge.

Photography | Siemens

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DNV GL - MEET THE EXPERT PRESENTATIONS

Drone-based inspections: 28th September 2016, 12:30 at the DNV GL stand

Leading thermal imaging company COMPOSCAN and technical advisor for the renewables industry DNV GL are jointly presenting the change in strategy for future rotor blade inspections.

Expert talk on floating LiDAR: 28th September 2016, 15:00 at the DNV GL stand

Leading floating LiDAR manufacturers from Fraunhofer IWES, Fugro OCEANOR, AXYS Technologies and technical advisor for the renewables industry DNV GL are jointly presenting the current technology status of floating LiDAR systems and aspects of long-term deployments for offshore wind resource assessments.

Expert talk on new German tendering process: 29th September 2016, 12:00 at the DNV GL stand

As the revised German renewable energy act has been introduced, we provide a comprehensive overview of the new tendering process for German onshore wind projects, presenting new services to support you in the bidding process.

Lifetime extension from a technical advisory viewpoint:

29th September 2016, 13:00-14:00 in room St. Petersburg/Messe Hamburg

Lifetime extension from a certification viewpoint:

29th September 2016, 14:00-15:00 in room St. Petersburg/Messe Hamburg

MHI Vestas in line for 252MW Deutsche Bucht

ANDREW LEE

MHI Vestas has won a tender to supply the 252MW Deutsche Bucht project in the German North Sea, the offshore wind OEM says.

The deal — currently on a preferred supplier basis — will see MHI Vestas deliver its V164-8.0MW machine to Deutsche Bucht, owned by project company British Wind Energy. The preferred supplier award includes a 15-year full scope service package, MHI Vestas adds.

The Deutsche Bucht tender win lines up MHI Vestas for its second supply deal off Germany — the home waters of its major rival Siemens — following its selection by Dong Energy for the 450MW Borkum Riffgrund 2.

“We have seen interest by the wider industry in the Deutsche Bucht project owing to it being one of the few



The first V164 nacelle for commercial deployment being delivered to the Burbo Bank Extension project

remaining projects in Europe with a grid connection, permit and a feed-in tariff without the need to participate in an auction,” says Deutsche Bucht chief

executive Albert Jochems.

Deutsche Bucht received a major boost in June when marine contractor Van Oord said it would take an equity stake in the project

and help steer it towards financial close.

Lord Laidlaw of Rothiemay, owner of anchor investor Highland Group, told *Recharge* last year that he would like to use 8MW machines at the wind farm, if he could secure extra capacity from the German authorities via a tender.

Highland was successful in that respect in November 2015, when Deutsche Bucht won an extra 42MW to add to its existing 210MW.

“Being nominated for our second project in Germany underlines the strength of the V164-8.0 MW as a competitive turbine for the market, where distance from the coast and deeper waters demands a larger and more powerful machine,” says MHI Vestas chief executive Jens Tommerup.

Deutsche Bucht is due on line in 2019. ☐

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DARIUS SНИЕCKUS

Developer Dong Energy has switched on an advanced radar system capturing three-dimensional data on the wind flow in the Westermost Rough development off England's east coast.

The Beacon (Beamed Radar for Energy Assessment and Site Conditions) station, said to be the first of its kind in the world, can sweep tens of thousands of square kilometres of offshore skies using Dual Doppler radar to generate complex, "complete resolution" dynamic images of wind moving across a development site.

The technology was hatched by US outfit SmartWind Technologies and is being shepherded by the UK Carbon Trust as part of its Offshore Wind Accelerator programme.

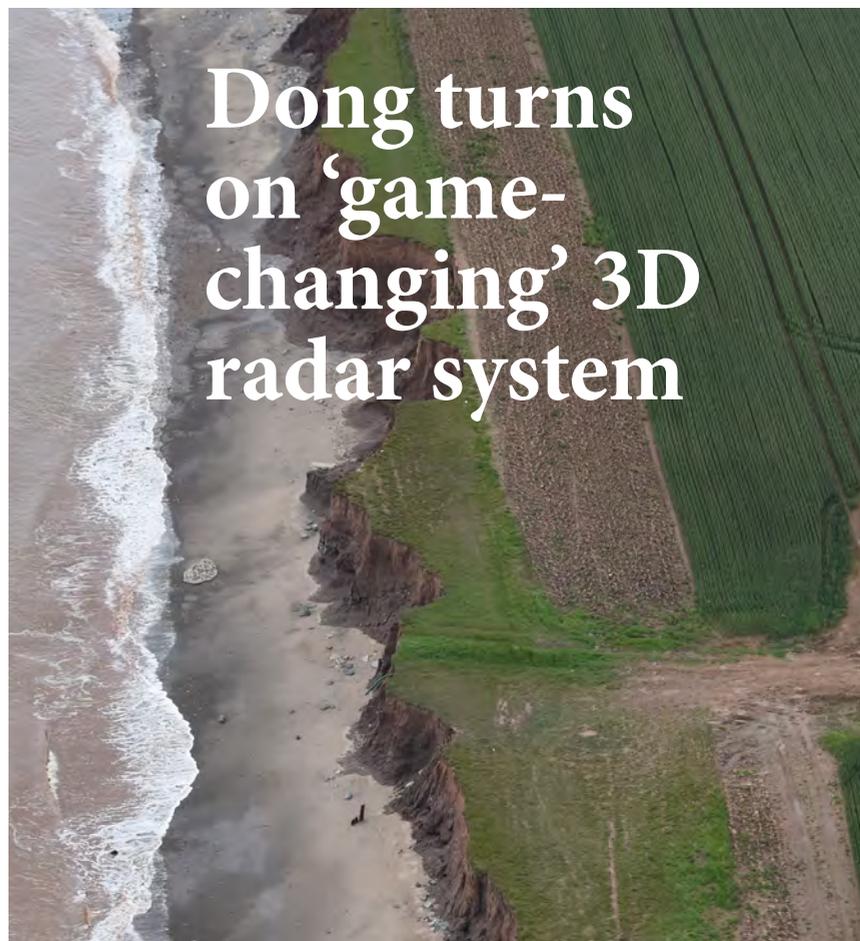
"We're getting minute-by-minute 3D images of the wind flow through the wind power plant," says Nicolai Gayle Nygaard, Beacon technical manager at Dong Energy. "This is a game changer for the industry. We're no longer limited to measuring the wind at just one point, now we can document the wind field across the entire wind power plant and coastal domain.

"Conventional measurement technologies are like using a torch in a dark room — you have a limited view. With the new radars, the entire room is flooded with light.

"We get new insights that provide valuable information for the design and operation of future wind power plants."

John Schroder, co-founder of Texas-based SmartWind Technologies, which developed and deployed the system, adds: "[This] advanced hardware and software solution measures the complex flows at the Westermost Rough wind power plant and reduces the generated complex data fields into a user-friendly format.

"The acquired data will facilitate long-term studies and aid real-time decision-making. Application of this new capability will undoubtedly drive down the cost of wind energy."



Dong turns on 'game-changing' 3D radar system

"Initial data from the Westermost Rough campaign is providing a wealth of detail on how the wind farms' turbine arrays interact with the evolving wind field," says Dong project manager Jesper Skov.

"Every week, the radars collect so much data that the information volume exceeds Wikipedia in size."

For the 18-month trial, a pair of the prototype radar systems have been installed

the Beacon system creates a detailed wind map that can be updated minute by minute. "The Dual Doppler radar system has already documented how the wind turbines shadow each other and how these wakes develop behind the wind power plant," says Nygaard. "This is giving us new insights into the complexities of the wind flow through and around an offshore wind farm. By knowing how the wind varies through the plant, we can better predict the power output of the wind turbines."

The data gathered could change the wider industry's approach to offshore wind development from

the macro, such as power-boosting layouts, to the micro — including improvements to blade technology and foundation designs.

Westermost Rough is the first commercial development to use Siemens' pioneering 6MW SWT-154-6.0 turbines. ■

■ We're getting minute-by-minute 3D images of the wind flow through the wind power plant

several kilometres apart on the shoreline, near Hull, northeast England, using a narrow beam of radio waves to scan back and forth through the 210MW wind farm, located 30km offshore.

From readings taken of the "Doppler shift" in bounce-back from particles in the air,

Dong plans major offshore O&M hub at Grimsby

ANDREW LEE

Dong Energy will build a major offshore wind O&M hub in Grimsby, eastern England, to support developments including the 1.2GW Hornsea 1 project.

The Danish group will make a “multi-million pound” investment in Grimsby’s Royal Dock, creating a facility it claims will “transform the way wind farms are supported”.

The new hub will initially service Race Bank, the 580MW wind farm Dong is currently building off the coast of eastern England for operation in 2018.

Hornsea 1 is due on line by 2020, becoming the world’s largest offshore wind farm, and Dong has already secured development consent for the 1.8GW Hornsea 2 project.

Dong’s plans include the deployment from Grimsby of service operational vessels (SOVs) that can carry 60 people and spend 28 days on-site at the



Aerial view of Grimsby docks

company’s wind farms, servicing up to eight turbines a day.

Technicians from Dong and turbine supplier Siemens will no longer have to scale vertical ladders to access the turbines, and instead will walk directly off the SOV’s deck using a motion-compensated gangway.

Grimsby will also host a “comprehensive marine co-ordination centre capable of providing 24/7 service to offshore operations across the UK and beyond”.

Dong already supports its operating 210MW Westermost Rough project from Grimsby. Subject to planning approval, the new facility will be built next to the existing support hub on land leased from Associated British Ports, with the first new SOV arriving late next year.

Dong UK chairman Brent Cheshire claims the Grimsby investment is a “massive vote of confidence” in the Humber region, where it plans to invest £6bn (\$6.93bn) by 2019. □



One of the two Beacon radar stations near Hull, northeast England

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Photograph | M

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Today: German Renewables Award 2016

The Renewable Energy Hamburg cluster appreciates extraordinary innovation and personal commitment for renewable energies with the "German Renewables Award 2016".

The ceremony takes place today 6.30 pm. at the InterCityHotel at Entrance East.

The independent jury consisting of representatives of economy and science award the awards in the following categories: product innovation of the year, student thesis of the year in the field of wind energy and the life time achievement in the field of wind energy.

Place: InterCityHotel Hamburg Dammtor-Messe, St. Petersburger Str. 1, 20355 Hamburg

Bar Tour - "Best places to be" after expo hours

We would like to invite you to our Bar Tour for WindEnergy Hamburg 2016 to offer you the opportunity to continue networking with the Wind-Community after expo hours.

Our Bar Tour takes you to selected partner bars within easy walking distance of the fairground

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SPEAKERS' CORNER

GROUND FLOOR BETWEEN HALLS B1 AND B2



10.00 – 10.10

Siemens Offshore Direct Drive: Leveraging reliability

Anders Mouritsen, Sales Strategy Manager, Siemens Wind Power and Renewables

10.15 – 10.25

Owl Technology - DinoTail® Next Generation

Dominic Voß, Technical Sales Manager, Siemens Wind Power and Renewables

10.30 – 10.40

Presentation of the IEC 61400-25 standard

Bertram Lange, Chairman, USE61400-25

10.45 – 10.55

Power Quality und Verrechnungsmessungen gem. der IEC 61400-21 mit Breitbandwandlern – Hier wird richtig abgerechnet!

Roland Bürger, Produktmanager Elektronik/Senorik, Ritz-International

11.00 – 11.10

3D Verification of Operations - The devil is in the details.

Jürgen Mackeprang, Senior Project Manager, DOC DeutscheOffshore Consult

11.15 – 11.25

Regionale Bürgerbeteiligung als Crowdfunding mit EnergieCrowd - innovative Projektfinanzierung und Akzeptanzsteigerung

Michael Klein, Geschäftsführer, CEPP Invest GmbH

11.30 – 11.40

Wind tunnel validation experiments of 2D and 3D models under pitching motion at the institute of Aeroelasticity DLR Göttingen

Dr. Ir. Nils Van Hinsberg, DLR - Institut für Aeroelastik

11.45 – 11.55

RE-MCC – This Multi Connection Cabinet is a state-of-the-art technology installed in the transition piece of a wind energy converter

Malte Greve and Iwegen Shalaginov, REETEC GmbH

12.00 – 12.10

Ultracapacitors for reliable pitch control systems and efficient retrofit solutions

Wolfgang Beez, Senior Business Wind Portfolio Manager, Maxwell Technologies

12.15 – 12.25

Floating offshore wind turbines developments

Frédéric Chino, Ocean Energy Sales Department Manager, DCNS

12.30 – 12.40

MYDEA - Crowd-Based Innovation Management

Till Schomborg, Product Manager "MYDEA", Lufthansa Industry Solutions

12.45 – 12.55

NEUER Deutscher Marktwert Atlas - Richtungsgeber für Direktvermarkter und Entwickler

Johannes Sander, Diplom Ingenieur, ProfEC Ventus GmbH

13.00 – 13.10

Herausforderungen in der EEG Direktvermarktung

Hanno Mieth, Key Account Manager Renewables, Vattenfall Energy Trading GmbH

13.15 – 13.25

Integrated Monopile Installer

Henk van Vessem, Technical Account Manager, IHC IQIP

13.30 – 13.40

Geislinger Compowind® - a potential solution for drivetrains free of non-torque loads

Alexander Kari, Sales Manager, Geislinger GmbH

13.45 - 13.55

Managing Information for total asset management

Neil Douglas, Director LCoE, Natural Power

14.00 – 14.10

Fundament- und Turminstandsetzungen. "Was ist notwendig und was kostet es?"

Dipl.Ing. Klaus Deininger, General Manager, KTW-Umweltschutztechnik GmbH

14.15 – 14.40

BEPS – International Tax Developments

Christian Fischer, BDO AG Wirtschaftsprüfungsgesellschaft

14.45 – 14.55

So geht's weiter – Update EEG 2017

Jan Königshoven und Armin Kroniger, Partner Energie, RSM Deutschland GmbH

15.00 – 15.10

Single Main Bearings including three races of cylindrical rollers - a proven alternative to tapered roller design

Dr. Henrik Albertsen, Head of Application Engineering, IMO GmbH & Co. KG

15.15 – 15.25

Chancen mit Kooperationsmodellen im neuen EEG

Anna Jasper-Martens, Head of Onshore Development Germany, Vattenfall Europe Windkraft GmbH

15.30 – 15.40

How digital operation makes a difference for more efficiency

Remco Boersma, Director for Wind Generation Support, Vattenfall Europe Windkraft GmbH

15.45 – 15.55

Partner auf Augenhöhe – funktioniert eine kooperative Projektentwicklung in der Praxis?

Annett Rötschke, WSB Gruppe

16.00 – 16.10

Live Monitoring of the gear box-generator alignment

Gerardo Urrich von Meyenn, Key account manager – Windenergy, PRÜFTECHNIK Dieter Busch AG

16.15 – 16.25

Case Study: Wind Turbine Life Extension, a Key Factor in the Current Situation

Alberto Barcia González, Platform Manager, R&D, Wind Business Unit, Ingeteam

16.30 – 16.40

E.ON Energy Solutions – Service with an Owner's Eye

Renske Yisma, Head of Business Development & Renewables EU - Energy Solutions, E.ON SE

16.45 – 16.55

Ausschreibung oder Abschreibung? Die Ermittlung von Windpotenzialen als Dienstleistung mit Zukunft

Sven Offermanns, WSB Projekt GmbH

17.00 – 17.10

Elekrische Sicherheit in Windturbinen

Jens Bickel, Vertriebsingenieur, Bender GmbH & Co. KG, TB Nord



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HIGHLIGHTS OF THE DAY

Wednesday 28 September



Henrik Stiesdal
Wind Energy Pioneer

Henrik Stiesdal is a leading figure within wind power. He designed the first wind turbines representing the 'Danish Concept' which dominated the global wind industry through the 1980s.

Join the session
'Storage solutions'

14:30 – 16:00, Room: Hall G1



Marc Oman
EU Energy Lead, Global Infrastructure,
Google

Marc Oman is in charge of managing power supply to Google's data centers in Europe. In this capacity he negotiates power purchase agreements and conventional energy supply agreements for Google's data centres in Finland, Belgium, the Netherlands and Ireland.

Join the session 'Corporate PPAs: the new business model?' session

09:00 – 10:30, Room: Hall F



Kristian Jensen
Minister of Foreign Affairs, Denmark

"Transitioning the energy sector is not easy for any country and we must ensure that developing countries get on the right track toward low-carbon economies."

Hear his introductory keynote in the session
'Doing business in... North Africa'

11:30 – 13:00, Room: Hall G1

Win an iPad Mini 4



Visit the WindEurope stand in the east entrance of the expo hall to go in the draw to win one of two iPad Minis!

The two lucky winners will be announced during the **WindEurope Stand Party tonight, from 18:00 – 20:00.**

WindEurope stand party



Wednesday 28 September
18:00 – 20:00

WindEurope Stand, East entrance, HMC

After the closing of the second day at WindEurope Summit, we would like to invite all participants to gather at the WindEurope stand. Attendees will get the chance to network with other wind industry professionals while enjoying some refreshments.

Vestas: more orders from O&M than turbines

BERND RADOWITZ

Danish wind OEM Vestas has made a concerted effort to build its O&M operation into a significant hedge against the ups and downs of its turbine business — and now boasts a bigger backlog in the former than the latter.

“We know that the turbine business can be rather volatile,” the company’s Central Europe president Nils de Baar tells *Recharge*, pointing to the impact that subsidy regime changes have had on the market. “It is our strategy to have a second business leg. Service brings stability, a stable revenue stream.”

Vestas expects its O&M business to grow by 40% over the next three years.

The order backlog in service is already €9.9bn, surpassing that of turbine orders which stands at €8.2bn, de Baar says.



Availon technicians at work

In late 2015, Vestas snapped up US independent service provider (ISP) UpWind, and earlier this year also bought Germany’s leading ISP, Availon. The integration of both is going “according to plan”, de Baar adds.

He admits that there will be pressure in the European turbine market due to subsidy regime changes in countries such as Poland, which just has introduced a distance rule that is likely to impede most new wind

developments. He also sees challenges in Germany, which has established a firm 2.8GW annual cap for new onshore wind developments (that after 2020 will rise to 2.9GW per year). Germany last year added 3.54GW of onshore, and 2.38GW offshore.

Still, while the onshore cap is lower than last year’s installations, it is still higher than the average annual volume over recent years, de Baar points out.

“We are confident that we will be successful in the upcoming auction system in Germany because of our technology leadership,” he reckons.

Nevertheless, De Baar acknowledges that emerging markets will become increasingly important for the turbine maker.

“The shift will go from mature to emerging markets. But Germany and the US will still be very important key markets for Vestas.”

Photograph | Availon

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‘Remove obstacles to citizen power’

CHRISTOPHER HOPSON

Over half of EU citizens could be generating their own renewable electricity by 2050, according to new research calling on the European Commission to offer its support to the trend in its revised Renewable Energy Directive due later this year.

The report — *The Potential for Energy Citizens in the European Union*, produced by environmental research institute

CE Delft for the European Renewable Energy Federation, Friends of the Earth, Greenpeace and REScoop.eu — shows that 264 million EU “energy citizens” could potentially generate around 45% of the EU’s total electricity demand by 2050.

However, EU residents face significant legal obstacles to producing their own power.

Throughout the EU there are explicit legal restrictions, disproportionate administrative

and planning procedures and punitive tariffs for distributed power.

“We need to enshrine the right for people to produce their own renewable energy in European and national legislation,” says Molly Walsh, community power campaigner for Friends of the Earth.

The organisations are calling for a framework to protect, support and promote energy citizens to be put at the core of the EC’s directive.”

More than 140GW of new wind ‘to be built by 2025’

ANDREW LEE

Europe will commission more than 140GW of wind in the decade to 2025, including 14.2GW this year, despite “unprecedented” policy uncertainty, according to MAKE Consulting.

MAKE said the looming end of much-loved incentives such as

feed-in tariffs (FITs) in favour of competitive systems is driving a “rush to market” in some states, while others have felt the chilling effect of low power prices. Amid the various upheavals, “Europe is adjusting to a new normal,” said the research group.

MAKE’s report — *Europe Wind Power Outlook 2016* — expects

14.2GW to be commissioned in European markets this year, slightly down on the record 14.4GW it clocked for 2015.

Over 2016-25, MAKE sees Germany leading with more than 36GW of new capacity, with the UK and Turkey notching up 15.7GW and 13.5GW respectively.”

Denmark manager Richard Møller-Nielsen, right, and defender Kim Christophe celebrate winning Euro92



Morten Dyrholm is group senior vice-president of marketing, communications and public affairs at Vestas

A 2-0 lead is the most dangerous

MORTEN DYRHOLM

There's a curious trend at the UEFA European Championships that every 12th year an underdog wins. This year it was Portugal; in 2004 it was Greece; and in 1992, Denmark beat favourites Germany 2-0. The Danish coach, Richard Møller-Nielsen, went from being ridiculed for defensive football and baffling statements such as "2-0 is the most dangerous lead" to a national hero that turned underdogs into champions.

To some degree, wind energy has also gone from underdog to champion. It has grown from an idealistic experiment in western Jutland to accounting for about 25% of new power capacity globally last year — and the largest source of new installations in the US, Brazil, Germany and China.

Wind may not be "up by two goals" per se, but Møller-Nielsen's words seem highly relevant for the wind industry in 2016. Notwithstanding record installations, a continuous drop in the levelised cost of energy, and growing competitiveness across the board,

complacency poses just as much risk to our sector as it did to the Danish football team. And we need look no further than the steep decline in solar energy's costs and the fact that market-based auction systems are increasingly becoming the new normal.

It is not a time to sit back and enjoy our success, but to keep building on our progress and push the cost of wind energy further down.

To this end, we continuously leverage proven technologies from other industries — including aeronautics, automobile, steelmaking, high voltage, meteorology, and computing — to improve quality and make our solutions more efficient. Of course, taller towers and longer blades can lower the cost of energy, but at the same time, however, we see newer technologies and applications like smart data play an increasingly important role in wind's competitiveness.

From product design and testing, to micro-siting, manufacturing, and service and maintenance, smart data is making wind energy more competitive, and as computing power and data samples grow

exponentially, our ability to analyse and utilise this data will only become more important to the sector's competitiveness.

At Vestas, smart data is already an integral part of what we do. In fact, we have collected, analysed and utilised data from our wind turbines since 1991, and have an unrivalled data pool that includes more than 16 years of meteorological data from all over the world as well as information from more than 50 million sensors in the more than 76GW we have installed on six continents. To leverage this data pool, we have continuously made major investments in our supercomputing analytics capabilities and will continue to do so.

To us, smart data has already proven its ability to lower the cost of energy, but it has the potential to go much further.

Smart data also serves as an example of why the industry can't dwell on past and current successes, but needs to stay focused on how we can lower the cost of energy further. We must avoid complacency and not throw away our lead. ☐



Nexans in offshore first for inter-array HV cables

DARIUS SNIECKUS

French cable maker Nexans will supply the first high-voltage (HV) inter-array lines for an offshore wind farm, following an award from installation contractor VBMS for EDF's 99.9MW Blyth project off Britain.

The 66kV underwater cable network will link together the development's 14 MHI Vestas 8MW V164 turbines, which will be mounted on concrete gravity-base foundations from BAM.

The cables being supplied, piloted under a UK Carbon Trust technology demonstration programme, are designed to have greater power capacity with a smaller cross section and lower current than 33kV concepts, as well as improved lifecycle cost-efficiency.

"This project is a great example of Nexans' pioneering alternative offshore wind design, extending the options for renewable energy generation from the traditional 33kV design," says Philippe Gastineau, vice-president of sales and marketing in Nexans' high voltage and underwater cable business.

The Blyth lines will be fabricated and tested at Nexans' factory in Hanover, Germany, with delivery set for next year, with connectors manufactured at its facility in Erembodegem, Belgium. □

NKT buys ABB's cable business

ANDREW LEE

Denmark's NKT has agreed to acquire the high-voltage cable business of ABB in a deal that will create a major new force in the transmission sector serving the wind power market.

NKT will buy ABB HV Cables from Switzerland-based ABB, which has been reviewing its Power Grids operation, under an agreement that values the business to be acquired at €836m (\$934m).

The ABB operation had revenues of €472m last year and includes "best-in class" manufacturing facilities in Karlskrona, Sweden, said NKT.

"The new combined business

will be strongly positioned in both the growing offshore wind industry as well as for the development of the interconnector grid in Europe. In addition, a strong organisational fit rooted in a shared Nordic heritage and culture is believed to support the integration of the business," said NKT.

The Danish group added: "To secure future co-operation, NKT Cables and ABB Group has signed an agreement for long-term strategic partnership to pursue market opportunities within interconnectors and onshore power transmission projects."

The deal includes ABB HV Cables' order for a new €124m

cable-laying vessel due for delivery in the first quarter of next year.

Parent group NKT Holding said it plans to list NKT Cables as a stand-alone company, separate from its other unrelated business, following completion of the ABB acquisition, which is expected early next year subject to regulatory approvals.

The combined cable businesses enjoyed revenues of €1.7bn in 2015, said NKT.

The enlarged company will join the likes of Italy's Prysmian and France's Nexans in competing for business in major transmission projects, not least in the expanding offshore wind sector in Europe and elsewhere. □

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大成 DENTONS



Pioneering WindFloat 1 decommissioned

DARIUS SNIECKUS

The revolutionary WindFloat 1 (WF1) floating turbine has completed a world-first decommissioning in southern Portugal, following a five-year demonstration campaign in the Atlantic Ocean in which it generated nearly 17GWh.

The operation saw the WF1 towed 400km from its project site to Sines port using a small ocean-going tug, before the unit's Vestas V80 2MW turbine was dismantled from the prototype's semisubmersible steel platform.

"The WindFloat's five-year deployment, in the open ocean of the Atlantic, has proven that the technology can meet its promise and is ready for commercialisation," says Principle Power chief executive Joao Metelo.

"The simplified assembly and installation, in addition to the ability to tow the unit to shore in

the event of major maintenance issues, represents a sea-change in the way offshore wind can be done."

The prototype was installed in 49 metres of water off Aguçadoura in October 2011 and has withstood extreme Atlantic Ocean weather, including waves higher than 17 metres and winds in excess of 60 knots.

The unit's Vestas turbine has been earmarked for reuse on a "different project", while the Principle Power team is currently evaluating options for the future of the WF1 platform — which was found to be in "excellent condition".

The WF1 is based around a three-column steel semi-submersible foundation that is engineered for stability using a combination of its sheer size and "water-entrapment plates" at the base of each column, moored with chains to the seabed.



WF1's 2MW Vestas turbine being disassembled at the port of Sines, southern Portugal. The ease of the process highlights the flexibility of floating wind

Photograph | Principle Power

Principle Power, which inked a co-operation agreement in November with oil major Shell to support development of the WindFloat, is now focused on markets such as Portugal, the US, France, the UK and Japan.

Last autumn, the company announced it had sealed a deal with a consortium of European and Japanese industrialists to build a 25MW array off the coast of northern Portugal using next-generation WindFloat platforms. □

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BERND RADOWITZ

The ČEZ Group, the largest utility in Central and Eastern Europe, plans to add up to 700MW of offshore wind in UK, French and German waters by 2020 as part of a 1GW Western Europe renewables strategy, *Recharge* has learned.

“Out of this 1GW, I believe that around 600-700MW might be in the offshore space around Europe,” ČEZ renewables head Martin Pacovský tells *Recharge*. “[There will be] offshore, onshore wind and some PV, but obviously offshore wind will have the biggest share.”

The Prague-based company, which is majority owned by the Czech government and heavily invested in nuclear and fossil-fuels generation, has earmarked €2bn (\$2.2bn) for investment into “new technologies” such as renewable energies and energy efficiency by 2020.

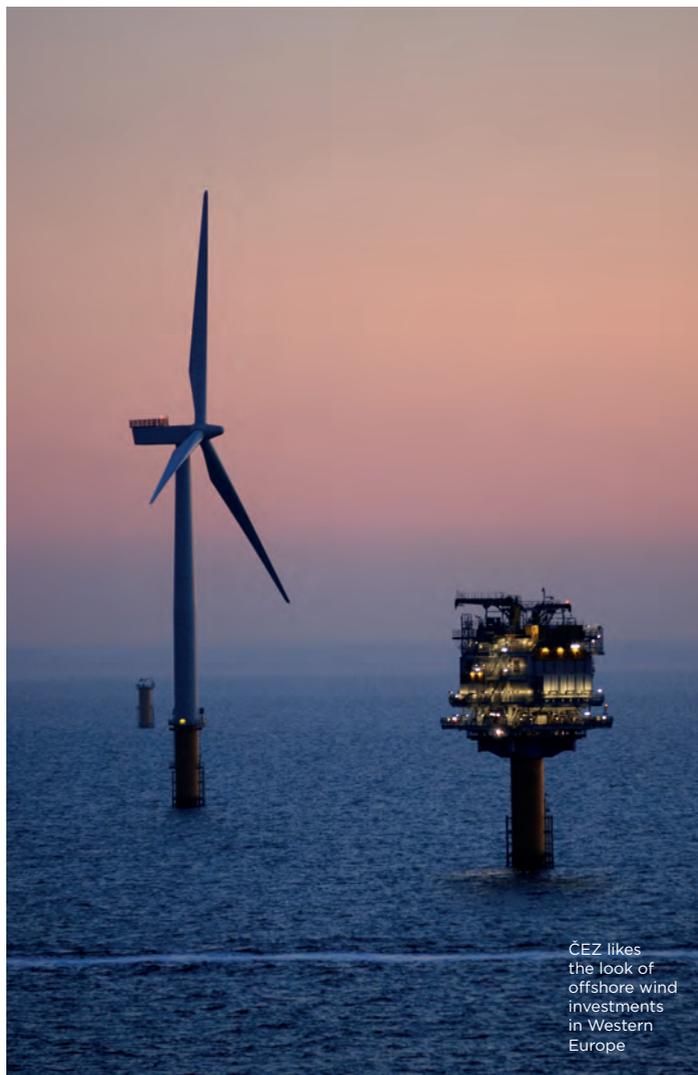
At first, ČEZ would like to enter the offshore sector as a minority shareholder in existing offshore projects, taking a 25-30% stake “as a way to learn how the business works and to grow the team,” Pacovský says. “But of course, gradually, we would like to become a bigger shareholder in offshore projects.”

ČEZ executives are currently travelling around Europe talking to developers, utilities and other offshore investors, Pacovský says, without revealing names.

“Everyone who is around the offshore space knows that there are limited names that are repeated in several projects. So, of course, we talk to them,” he adds.

At a later stage, ČEZ also would like to become part of bidding

ČEZ reveals 700MW offshore wind plan



ČEZ likes the look of offshore wind investments in Western Europe

consortia in offshore wind tenders.

To date, ČEZ’s ventures into renewables have been limited, as the government has sought to defend the fossil-fuel and

nuclear sectors, mainly due to the country’s large coal reserves.

“We see that coal is a transition type of technology, [but] we believe that the importance of renewable energies will grow,”

says Pacovský. “But at the same time, there still needs to be certain capacity in coal to manage the transition to the renewables space.”

Curiously for a head of renewables of a large national utility, Pacovský does not believe that wind and solar have much of a future in his homeland.

“The Czech Republic is not a very ideal location for renewables given its natural conditions. We may do a little project here and there. But comparing to our overall target, this will be a very small type of more opportunistic investment,” he says, adding that the country’s potential in wind and solar is now exhausted.

Asked why in the German state of Bavaria, which is adjacent to the Czech Republic and has similar climatic conditions, PV already accounts for 12% of the electricity mix, while the Czech government and ČEZ say there are no suitable conditions for the technology, Pacovský admits that the history of solar in the country has been “a bit difficult”.

After a short-lived boom in PV installations on the back of an overly-generous feed-in tariff regime, the Czech Republic in 2010 imposed a retroactive tax on solar plants, and in 2013 ended support for new renewables projects.

ČEZ’s new move into renewables in Western Europe also comes after the company had bad experiences with its green investments in Eastern Europe.

ČEZ operates what currently still is the largest onshore wind park in Europe, the 600MW Fântânele-Cogealac wind complex in Romania. The €1.1bn wind development ran into difficulties after the country cut its green certificates subsidies in half. □

Photograph | Stratoil

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CHRISTOPHER HOPSON

The world saw \$288bn of investment in renewable-energy generation last year — over two-and-a-half times more than in fossil-fuel power — according to the International Energy Agency (IEA).

The Paris-based IEA, in its inaugural *World Energy Investment 2016* report, says that technological progress and economies of scale continue to drive down the cost of renewables.

The IEA found that the carbon footprint of global annual additions had been reduced by 20% over the past two years, falling to 420kg of CO₂ per MWh in 2015.

“Globally, the capital cost of onshore wind has fallen by 20% and that of utility-scale solar PV by more than 60% since 2010. For the first time, investment in renewables-based capacity generated enough power to cover global electricity demand growth in 2015,” it says.

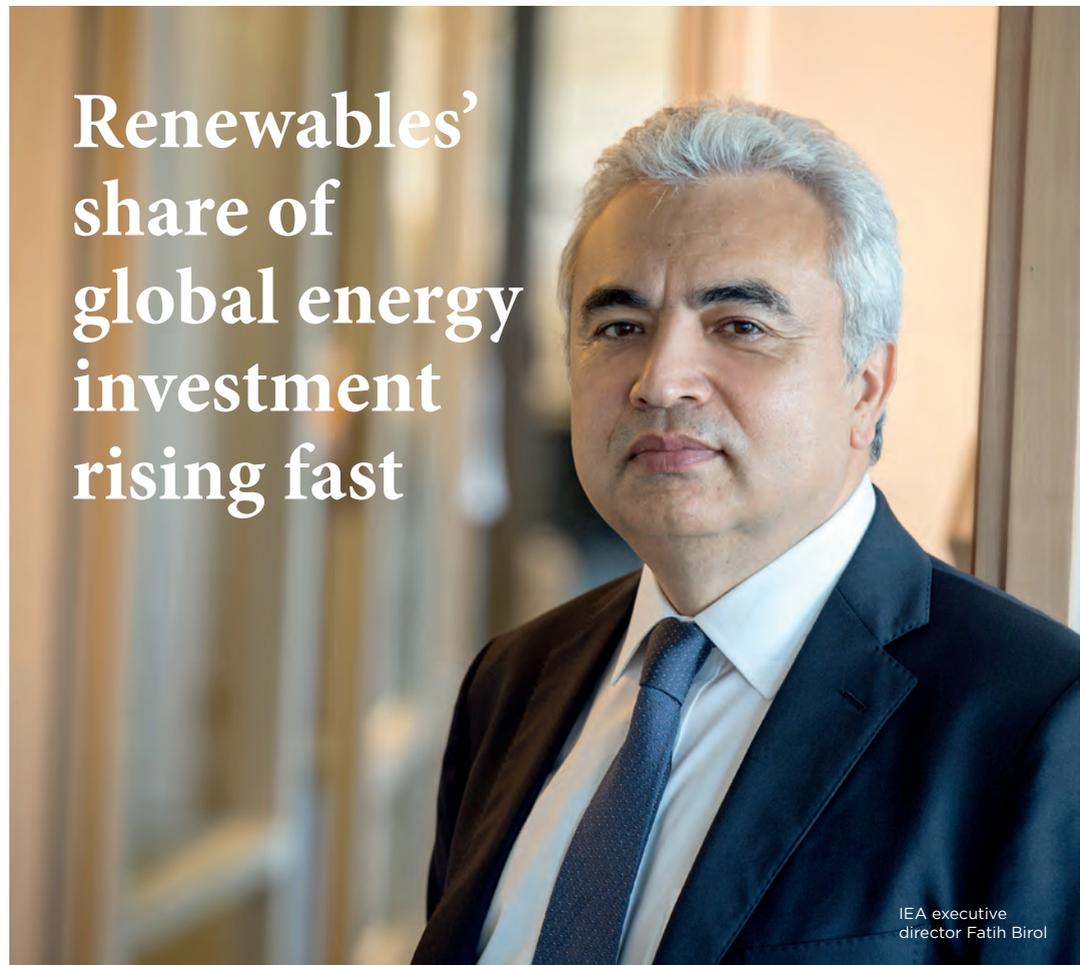
The IEA’s report provides a detailed picture of the current investment landscape across fuels, technologies and countries.

It shows that the energy system is undergoing a broad reorientation towards low-carbon energy and efficiency, but investment in key clean-energy technologies needs to be further ramped up to put the world economy on track to stabilise climate change.

“We see a broad shift of spending towards cleaner energy, often as a result of government policies,” IEA executive director Fatih Birol tells *Recharge*. “Our report clearly shows that such government measures can work, and are key to a successful energy transition.

“But while some progress has been achieved, investors need clarity and certainty from policymakers. Governments must not only maintain but heighten their commitment to achieve energy security and climate goals.”

Laszlo Varro, IEA chief economist tells *Recharge* that over the past year to 18 months the news on offshore wind cost reduction is getting better. “This is down to a combination of factors, the most important of which is



IEA executive director Fatih Birol

the increase in turbine size.

“Also big savings have been achieved installing these big steel structures into the sea. Wind power, both onshore and offshore, is also benefiting from extraordinarily low interest rates on project financing.”

Birol says the IEA “still sees a need for renewables subsidies

Our report clearly shows that government measures are key to a successful energy transition

but less and less so as renewables are becoming cheaper and more economic. In the past five years the cost of solar has reduced by 80% and wind went down by a third, so renewables needs less subsidies”.

Total global energy sector investment fell by 8% last year from 2014 levels to \$1.8trn, mainly due to a 25% fall in spending in upstream oil & gas.

China, with energy supply spending of \$315bn, was the world’s largest energy investor last year, mainly due to robust efforts in building up low-carbon generation and electricity networks, as well as implementing energy-efficiency policies.

Investment in US energy supply declined to about \$280bn in

2015, falling nearly \$75bn compared to the previous year due to low oil prices and cost deflation. This represented half of the total decline in global energy spending.

Investment in global electricity generation capacity, networks and storage, rose by 4% to a record \$682bn in 2015 compared to the previous year. Power generation accounted for over 60% of the total spending, and networks and storage the rest.

Nearly 55% of investments in the electricity sector went to countries in Asia, notably China (31%) and India (7%). North America and Europe took one

third of the investment, driven by renewables policies, and the replacement of coal-fired power plants and ageing network assets.

Technology innovations boosted investment in smart grids and storage last year, which are expected to play a crucial role in integrating large shares of wind and solar, says the IEA.

While grid-scale battery storage investment has expanded tenfold since 2010, its value is predominantly to complement the grid, which continues to absorb much larger investment.

“Batteries are very important, and they are making lots of inroads into the renewables market,” says Birol. “We see investments in batteries in the past five years have increased by a factor of ten and this is important as it will help with the better integration of renewables into the system.

“However, investment in batteries is still only 0.4% of the total network investment in the electricity sector, so the growth is strong and promising but there is still a long way to go.” □

Gamesa completes installation of 2.5MW and 3.3MW prototypes

BERND RADOWITZ

Gamesa has concluded the installation of prototypes for its new G126-2.5MW and G132-3.3MW machines at the Alaiz research and development facility in the Spanish province of Navarre.

The G126-2.5MW is already producing power, while the G132-3.3MW will be switched on in the coming weeks.

After an intense product validation and testing process, Gamesa hopes to get both models type-certified by the first quarter of 2017.

The Spanish OEM says the assembly of the two turbines was carried out “virtually in parallel”, which posed logistical and installation challenges due to the sheer size of the blades (62 and 64.5 metres long) and the complexity of transporting the materials to the Alaiz mountain range.

The G126-2.5MW model is designed for low wind speeds, and will come with towers ranging from 84-129 metres.

The G132-3.3MW turbine is for medium wind sites, with Gamesa primarily targeting the European, Mexican, Canadian, Australian and South African markets.

Towers for this model will range from 84-134 metres.

Siemens has agreed to buy a majority stake in Gamesa, but the deal is waiting for regulatory approval. ☐



The G132-3.3MW prototype at Alaiz

Photograph | Gamesa

Spanish OEM to supply Asia's tallest turbines to Thailand

CHRISTOPHER HOPSON

Gamesa has secured a contract to supply the tallest wind turbines in Asia.

The Spanish OEM will provide 18 G114-2MW machines and 15 G114-2.1MW units, all with 153-metre-high towers, to Gunkul Engineering's 67.5MW Sarahnlom wind farm development in central Thailand.

Including the 56-metre blades, the turbines will have a total height from ground to blade tip of 210 metres.

“In designing such tall towers, which are almost 30 metres taller than is usual for this model, and at a competitive cost, Gamesa's R&D team has achieved a major technological feat,” said Gamesa marketing director Juan Diego Diaz.

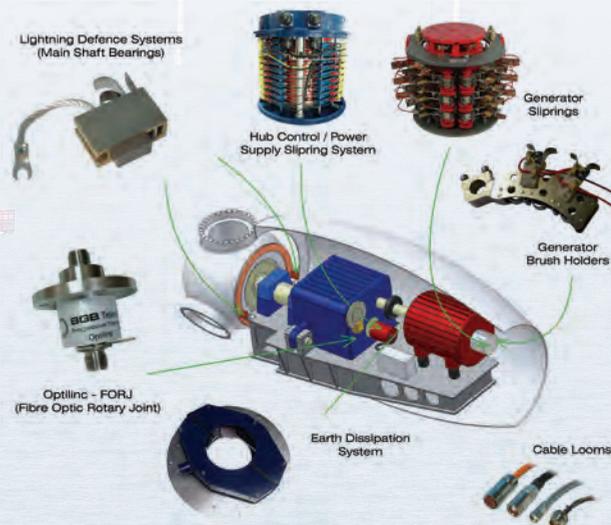
“On the one hand, we reduce the cost of energy of the complex by boosting total energy output, as the turbines will reach heights at which the wind blows harder.

“On the other hand, we are demonstrating once again our ability to respond to what the market needs thanks to the versatility of our turbines.”

The turbines will be supplied during the first quarter of 2017 and commissioned the following quarter. Gamesa will also maintain the turbines for the next ten years. ☐



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Steve Sawyer is the secretary-general of the Global Wind Energy Council

How I learned to love power auctions

STEVE SAWYER

While the US administration of Jimmy Carter can rightly claim the invention of the feed-in tariff, it was Germany's 1990 "feed-in law" that provided the initial impetus to the large-scale development of wind and solar technologies.

Revised in 2000, it became the EEG, which, depending on your point of view, has been the single most successful spark to the global Energy Revolution (my view), or an unnecessary burden on German ratepayers, featuring a big slug of overpriced PV for which ratepayers will be coughing up for most of the next 20 years.

While a complex and overarching piece of legislation, the EEG (and its relatives and spin-offs in other parts of the world), had two things which set it apart: a) a fixed price for power production that you could take to the bank; and b) priority access to the grid. These were the building blocks of the German industry, which has contributed so much to building a global renewables sector.

After a mammoth struggle against

neo-liberal forces from the World Bank and the Anglo-Saxon world, China's landmark Renewable Energy Law of 2006 contained a feed-in tariff instead of a certificate or some other system. The results speak for themselves.

Against all our advice, the Brazilian government enacted a successful auction system in 2009, and shortly thereafter signed contracts for what were then unbelievable prices (~\$50/MWh), which everyone was sure would never get built. But they were.

Brazil's success has been followed by South Africa with a very different system, but the same result: renewables prices well below those for all other technologies.

Between the two they have sparked a spate of other auction systems in Chile, Mexico, Argentina, Morocco, the UAE, Egypt, Peru and elsewhere, where we're seeing prices of €30-40/MWh. European, Indian and Chinese policymakers look on with envy.

To be clear, the Brazilian and South African systems are more or less tested: the others are in very early days. But the principles that make Brazil and South Africa work are: a high bar for entry, including rigorous pre-qualification, to keep

out the speculators that have plagued the (many) unsuccessful systems; a ~20-year PPA at the end of it, severe penalties for not fulfilling the contract; transparency in the rules and their implementation; and clear visibility on time frames and market size. With those basic principles, auction systems can and will deliver the largest number of carbon-free electrons at the lowest possible price, if that's your only goal.

Only the largest firms with deep pockets and long experience will win. There can be no talk of encouraging energy democracy, community ownership, small investors, and the like. If these are your goals, then you need a carve-out or some other system. But that's not why I have come to love auctions.

I love auctions because they clearly demonstrate that on anything like a level playing field, renewables nearly always beat heavily subsidised conventional power, even when it has a free license to pollute the air and the water, kill millions and destroy infrastructure and agriculture.

Imagine the competitive position if conventional sources had to pay their real costs? ☑

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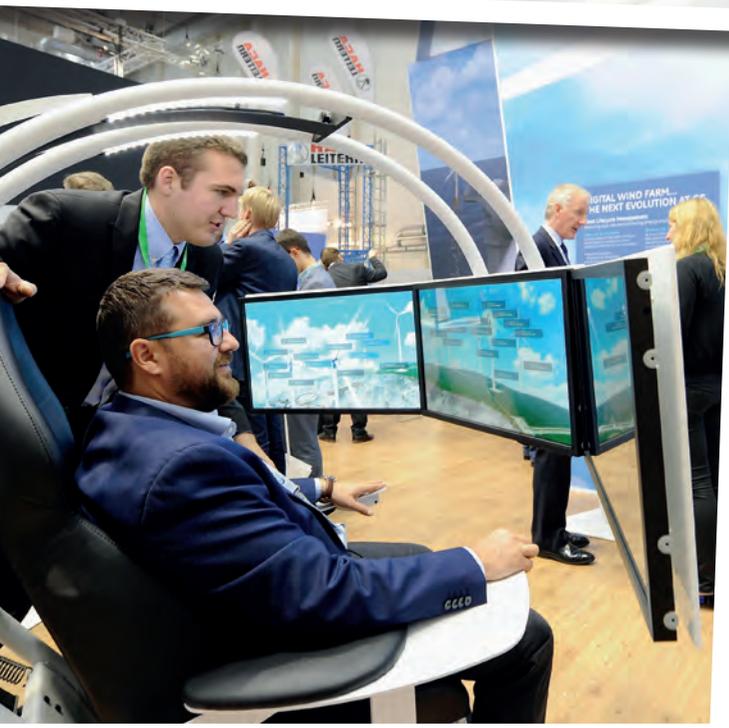
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BRINGS ENERGY TO LIFE



Photos of the day

With more than 1,400 exhibitors from 34 nations and one more fully booked exhibition hall than two years ago, WindEnergy Hamburg 2016 has grown substantially compared with the first expo in 2014, according to organiser Hamburg Messe.

"I am very pleased that we have a wind focus here in Hamburg — it is a real flagship for the German wind industry," German energy minister Sigmar Gabriel said during the opening ceremony, *pictured top right*. "So it is absolutely right for WindEnergy Hamburg and the WindEurope Summit to be held in parallel here in Hamburg."

Photography | WindEnergy Hamburg | Jason Bickley/Wind Europe

