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OFFICIAL SHOW DAILY

Global Wind Summit 2018

Produced by

RECHARGE | rechargenews.com

26 September 2018

**DAY
TWO**

MHI Vestas unveils first 10MW turbine

DARIUS SNieckus

MHI Vestas has launched a 10MW version of its V164 offshore wind turbine, upscaled with a beefier gearbox, minor mechanical upgrades, and a design tune-up that enhances air flow to increase cooling in the converter.

The machine, which began life as a 7MW concept in 2011 and has been consistently stepped up in power rating since, is being made available for sale immediately, with first deliveries expected in 2021.

"Crossing the [10MW] threshold is important both in production terms and psychologically too for the industry — if I had been told when

I came into the industry that there would one day be a 10MW machine, I'm not sure I would have believed it," chief executive Philippe Kavafyan told *Recharge* on the sidelines of its Thought Leaders Summit in Hamburg on Monday. "It is a new frontier.

"But what is really encouraging is that it has been a natural growth [in nameplate capacity]. I don't see this as 'disruptive' — not least in the supply chain. And I don't think anyone is thinking we will stop here. We are moving forward with our practice of incremental innovation through all parts of the value chain.

"What was unreachable before has become the new benchmark."

Each V164-10.0MW, designed to



Rendering of the beefed-up 10MW model

run at full power in wind speeds of 10 metres per second, and last for 25 years, will be able to power the equivalent of almost 6,000 European homes.

"The V164-10.0MW turbine is the best proof point yet that we do not accept the limitations of conventional thinking and that we think beyond

ourselves," said MHI Vestas chief technology officer Torben Hvid Larsen. "We have embraced the challenge of transforming what is

CONTINUED on Page 3

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at Stand 229 (Hall B1)

VISIT US AT OUR BOOTH
#346 IN HALL B6



> N149/4.0-4.5 INSTALLED AUGUST 2018, NORTHERN GERMANY

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KARL-ERIK STROMSTA

The International Energy Agency (IEA) sees offshore wind as a “rising global force on the energy landscape”, executive director Fatih Birol told the opening session of the WindEurope conference yesterday.

Separately, he warned that having crunched the numbers from January to August, it would be a “major surprise” if global carbon emissions did not rise again in 2018 for the second year running — having plateaued during the 2014-16 period.

With around 20GW of offshore wind installed globally today, compared to more than 500GW of onshore wind, the offshore sector has not figured prominently in the Paris-based IEA's previous analyses and forecasts of the global energy market.

But the IEA expects the world's offshore wind capacity to more than triple by 2025, and edge close to 200GW by 2040 — with the potential to go substantially further if ambitious government policies are put in place.

Recent auction results and the introduction of larger turbines herald a period of ever more competitive offshore wind power, said Birol, who expects “strong growth, first in Europe and then around the world”.

“The developments in Europe can spark a wave of offshore wind appetite outside of Europe — there's some fertile grounds for that,” he said. “First of all Asia, with China followed by



Fatih Birol at the WindEurope conference yesterday

IEA: offshore wind could reach 200GW or more by 2040

India. But also North America and Latin America — there's big room [for growth] there.”

The substantially higher capacity factor of offshore wind farms compared to onshore wind or solar make it a “very important opportunity” as the world's penetration of renewables grows.

Birol also tipped his hat to the growing promise of floating

wind, which could unlock big electricity markets in places like California for the offshore wind sector.

The IEA is “working very closely” with industry leaders to better understand the “opportunities floating turbines can provide for offshore wind developers across the world”, he said. ☐

10MW turbine also suitable for floating wind

FROM Front Page possible in our field.”

The V164 upscaling process has been driven in large part by performance-enhancing ‘Max’ features added to the machine in recent years, with MHI Vestas adding new line of digitally driven ‘Smart’ software in April to further optimise the machine.

The OEM has delivered more than 100 of its sub-10MW V164s already and has secured 2.2GW of firm and unconditional orders for projects to be built in 2018-20

in Europe, as well as being named preferred supplier for a further 2.7GW of capacity — including a breakthrough 900MW in Taiwan.

Recent orders for the 9.5MW V164 in Europe include the Shell-led Borssele 3 & 4 680MW project off the Netherlands and Parkwind's Northwester 2 off Belgium, while Vattenfall's 406MW Horns Rev 3 project is under construction using 8.3MW versions of the turbine.

The V164 has been designed as “foundation-agnostic”, with

first units having been erected on monopiles, concrete gravity bases and suction-bucket jacket. And Kavafyan noted that the 10MW version will also be well-suited for floating wind farms in the future — building on the experience it expects to gain on the EDP Renewables-led consortium WindPlus' 25.2MW WindFloat Atlantic project off Portugal, where the OEM is delivering three of its V164-8.4MW turbines. “We are certainly going to continue following this path,” he said. ☐

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‘Flexibility is wind power’s next big challenge’

BERND RADOWITZ

Flexibility to deal with wind power’s variability and integration with other technologies is the sector’s next key challenge following its successful cost-reduction drive, politicians and industry experts told the opening session of the WindEurope conference yesterday.

“Costs are down. But the challenge in front of us is that still wind is delivering energy only when the wind is blowing,” Thorsten Herdan, director general for energy policy at Germany’s economics and energy ministry told delegates.

“We now have to enter [a] phase in which we combine this with flexibility — whatever that is. It may be [integrating with] storage, grids, demand-side management.”

But Herdan also warned that without appropriate grid



expansion, wind energy is “useless”.

“We have a lot of problems with that in Germany,” he said.

Fatih Birol, executive director of the International Energy Agency (IEA), added: “When we talk about system integration, the

magic word is ‘flexibility’ in our systems to address the challenge which is coming from solar and wind integration.”

European Commissioner for energy, Miguel Arias Cañete, and Birol both stressed that the energy transition needs to go beyond the

power sector into heating, cooling and transport.

“Decarbonisation efforts are disproportionately focused on the power sector, which accounts for just 20% of energy use — and not enough on heat and transport,” Birol said. ☐

Photograph | Jason Bickley/WindEurope

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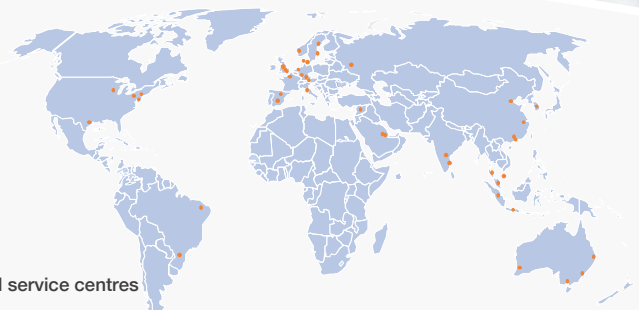
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KARL-ERIK STROMSTA

GE Renewable Energy has all but replaced the 2GW in turbine orders it recently lost due to the collapse of the gigantic Wind Catcher project in Oklahoma thanks to ripping demand in the US wind market, onshore wind chief executive Pete McCabe tells *Recharge*.

“For all practical purposes, it’s replaced,” McCabe said on the sidelines of the WindEnergy Hamburg conference yesterday. “In 2019, it’s all filled, plus or minus 100MW or so, and 2020 is also full.”

US wind developers are racing to finish projects by 2020 in time for the full production tax credit (PTC). “There’s so much demand,” McCabe says. “We were quite supply-constrained and actually having to push orders from 2019 and 2020. Now we can pull those kind of orders back.”

In July, utility American Electric Power pulled the plug on the 2GW Wind Catcher after Texas regulators rejected the \$4.5bn project being developed by Invenegy. With plans to sell power into four states, Wind Catcher had secured regulatory approval in Louisiana and Arkansas but still faced opposition in Oklahoma.

The US wind market shouldn’t read too much into Wind Catcher’s collapse, McCabe says.

“We would have loved that project,” he says. “But I think it was a one-off.”

“Think about getting regulators in four states to agree on something [on a short timetable]. It’s tough. I think you reduce a couple of variables in the equation, and you could have



GE finds 2GW of US orders to recover from WindCatcher loss

got it to work.”

McCabe believes the US could build as much as 14GW of wind in 2020, which would be a new record. And he believes the market will remain “healthy relative to historic standards” even without subsidies in the 2020s, claiming GE sees a path to reducing the levelised cost of energy from its onshore wind turbines by 30-40% within three or four years.

GE is already working on a product aimed at the US market in the 2020s, he reveals. “It’s a little early to talk about that, but we’re investing. We will have a



product that will be very, very competitive in that post-PTC period.”

GE this week unveiled a new onshore turbine platform called

Cypress largely aimed at Europe, which McCabe says will help the company distinguish itself in a still-crowded field of turbine suppliers.

“Seven, eight, nine big global OEMs, then lots and lots of regional ones — it’s just a sign there’s not enough differentiation. Right now the industry is a little too bunched [on its technology],” he says.

“This Cypress platform is a meaningful step forward, but it’s only the first step. There will be two or three more. And as we take those steps [rival OEMs] will start dropping off the back.”

Photography | GE

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Norway is now open to more offshore wind, minister says

KARL-ERIK STROMSTA

Kjell-Børge Freiberg, Norway's new minister of petroleum and energy, signalled yesterday that the country's famous coasts could see more commercial offshore wind development than previously indicated.

Terje Søviknes, Freiberg's predecessor as head of Norway's powerful energy ministry, last month announced plans to open two new areas for offshore wind off Norway this autumn.

"I don't expect to see a lot of offshore windmills in Norway," Søviknes said at the time, adding that the new offshore wind zones would likely be used for a "demonstration and pilot facility".

However, Freiberg struck a more ambitious tone at the WindEurope conference yesterday. "These [new] areas might be relevant for large commercial projects in future."

He pointed to Equinor's 30MW Hywind Scotland, completed last year as the world's first floating offshore wind farm, as an example of Norway's offshore expertise being put to use in renewables.

"I'm convinced that Norwegian firms will have a lot to offer in the offshore wind sector," he said.

The Norwegian government "sees a great potential in floating offshore wind and we continue to follow developments closely". ☐



Germany must ease rules for repowering or lose 10GW of wind

BERND RADOWITZ

More than 10GW of onshore wind power capacity will be lost in Germany in the next three to five years when 20-year subsidies granted to projects installed in the early 2000s start to expire — unless the government eases the rules for repowering, said Enercon managing director Hans-Dieter Kettwig.

"It would be very helpful if Berlin could take a decision about the new repowering situation in Germany," Kettwig told

the WindEurope conference yesterday.

If repowering were to be carried out quicker, the industry could double the amount of power produced at ageing wind farms, he added.

Alex Robertson, vice-president for sales in Germany, Austria and Switzerland at Vestas, also said Germany needs to make sure it doesn't start sending its *Energiewende* — the transition from nuclear and fossil to renewable power — in the wrong direction when gigawatts of wind power stop receiving subsidies,

making them financially unviable.

"For me that is about making sure it is possible then to replace all the turbines with new technology," he told *Recharge* in an interview at the Global Wind Summit yesterday.

Robertson added that because many of the older turbines will no longer be in planning zones with a preference for wind power, German states need to find new areas for wind development.

"Otherwise, we will start seeing a reduction in the overall capacity of wind in Germany, or we will see a slowing of growth." ☐

Photograph | Jason Bickley/WindEurope

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Saft boss Ghislain Lescuyer Saft, (fourth from left) on the stage at WindEnergy Hamburg yesterday

EU needs battery ‘champions’ to match Asia

CHRISTOPHER HOPSON

Europe must build strong “champions” in battery storage technology or risk losing the market to fast-emerging Asian players, warned Ghislain Lescuyer, chief executive of battery manufacturer Saft.

“In the battery world, let’s try and not have the same story we had in the solar panel business in Europe,” Lescuyer told the WindEurope conference yesterday.

The market for lithium-ion batteries is being driven by electric vehicles, with growth coming mainly in Asia — and especially in China, the Saft boss

told a session on wind’s role in the wider electrification of the economy.

“If we want to be competitive in battery energy storage systems, we have to have access to the economies of scale of the electric vehicle business. We must be careful to build strong European champions in the field.”

He welcomed the fact that the European Commission has recognised the issue and has launched a competition to spark innovation that can keep the bloc in the race, but warned: “Lots of jobs in Europe are at stake.”

Lescuyer said Saft — which was bought last year by French oil giant Total — has started

a five-year R&D project to develop batteries based on solid-state, rather than lithium-ion technology.

Such a system would need less material and reduce costs, he claimed.

“The challenge is to get the funding because it costs a lot of money,” he added.

Thorsten Herdan, director general for energy policy at the German energy ministry, told the conference that electrification has to be closely aligned with the deployment of renewables.

Germany is currently in the midst of an intense national debate over the pace of its coal phase-out.

“Electrification as such is good for nothing, as it helps nothing if we produce all this electricity with coal-fired power stations,” Herdan said.

However, Michael Liebreich, founder of industry research group Bloomberg New Energy Finance, warned the wind industry against believing that battery storage could solve all its issues regarding variable production.

“The question with batteries is what do you do when you get long periods of one to three weeks when there is isn’t wind. The idea that batteries are going to help with seasonality, it’s not going to happen.” □

Photograph | Tim Buelens/WindEurope

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Energy ministers call on Berlin to keep promises on wind

BERND RADOWITZ

Energy ministers from the five northern German states, as well as trade unions and wind sector representatives, have demanded a faster wind-power expansion in the country to save thousands of industry jobs and boost the fight against climate change.

In their "wind energy appeal", the ministers demand that the federal government follows through with pledges made during coalition talks earlier this year to auction off an additional 4GW in onshore wind, and an as-yet-undefined contribution from offshore wind.

They also said that to reach

Berlin's increased target of 65% renewables in the power mix by 2030, at least 4GW of wind capacity must be added annually — instead of the 2.8-2.9GW per year currently targeted via auctions.

All projects participating in onshore tenders should also have a permit, the appeal adds. That was not the case for bids submitted by community power groups at auctions in 2017, which were also granted two additional years to reach completion. As most bids last year were won by those groups, German onshore additions are seen collapsing to as little as 1GW in 2019, adding pressure on a wind industry that is already struggling with ever



lower power prices.

Some 5,000 jobs have already been lost or are acutely threatened in Germany's wind sector, the appeal states.

The document was signed by the energy ministers of Hamburg, Bremen, Schleswig-Holstein, Lower Saxony and Mecklenburg-Vorpommern, as well as representatives of Germany's wind energy federation BWE, the Hamburg Renewable Energy Cluster, the coastal metal workers

union (IG Metall Küste), the German Offshore Wind Energy Foundation, and the WindEnergy Network.

The appeal also repeats an earlier demand by the industry to raise Germany's offshore wind target to at least 20GW by 2030 (up from 15GW), and create a 30GW target for 2035.

It also demands that any wind or solar capacity that had been allocated, but not built, should be immediately re-tendered. ☐

Photograph | Getty

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Today: Start-up Speed Dating

Maximum networking at WindEnergy Hamburg 2018: Start-ups will meet established companies and investors in 8-minute talks at the Start-up Speed Dating to discuss new products and business models. By digitally queried interests and requests in advance, you will meet exactly the right partners and thus waste no time.

26-27 Sept
Hall B7, Booth 490

Start-up Area (Unternehmen)

For the first time, WindEnergy Hamburg is providing a separate area for young, innovative enterprises, the Start-up Area. Part of it is a joint stand for the German Federal Office for Economic Affairs and Export Control.

The purpose of the programme is to support the participation of German start-ups at leading international fairs in Germany to offer the best possible marketing support of innovative products.

Joint stand in Hall B7

SPEAKERS' CORNER

UPPER FLOOR BETWEEN HALLS B1 AND B2

10.00 – 10.10

Wind-Pia: Integrationsplattform zur Effizienzsteigerung und Kosteneinsparung bei der Windparkplanung

Karsten Lessing, Geschäftsfeldleiter Erneuerbare Energien, M.O.S.S. Computer Grafik Systeme

10.15 – 10.25

Technische Betriebsführung anders gedacht – Das TBF-Partner-Netzwerk

Axel Lembke-Michaelis, Abteilungsleiter Technische Betriebsführung Wind, Prokurist, BayWa r.e. Operation Services

10.30 – 10.40

Novel 3-row roller pitch bearings

Werner Schröppel, Geschäftsführer, IMO

10.45 – 10.55

Single main bearings – cylindrical or tapered rollers?

Dr Henrik Albertsen, Leiter Anwendungstechnik, IMO

11.00 – 11.10

Wie Vestas es geschafft hat, nicht nur größter Anlagenhersteller, sondern auch globaler Servicepartner für verschiedene WEA Typen zu werden!

Christian Obendorf, Director, Service Sales, Vestas Deutschland

11.15 – 11.25

Elektrische Sicherheit für Windenergieanlagen

Jens Bickel, Vertriebsingenieur, Bender

11.30 – 11.40

Ultracapacitors: Improving Operational Safety and Reliability in Emergency Pitch Systems

Josh Hitt, Senior Product Line Manager, Maxwell Technologies

11.45 – 11.55

What is needed for data-driven O&M from an operator perspective?

Erik Hiensch, Director, O&M Delivery Offshore, Vattenfall Wind

12.00 – 12.10

TCM® - Estimating the Health Indicator using Machine Learning

Axel Juhl, CEO, Gram & Juhl

12.15 – 12.25

Monitoring of Blade Bearings with the Blade Bearing Guard (BBG)

Beate Burkhardt, Technical Sales & Marketing, eolotec

12.30 – 12.40

Windbox: Advanced Test & Validation Centre to improve competitiveness in the wind power supply chain

José Ignacio Hormaeche, General Manager von der Cluster Energía (Basque Energy Cluster), Windbox, Wind Energy Basque Country

12.45 – 12.55

Damit Vereisung kein Thema wird

Dr Thomas Schlegel, Managing Director, eologix sensor technology

13.00 – 13.10

Challenging the Status Quo of Rotor Blade Inspection

Ulrich Moor, Business Development, Sulzer & Schmid Laboratories

13.15 – 13.25

Windpark-Finanzierung ohne EEG: Skandinavischer Strommarkt – ein Modell für Deutschland?

Jan Knievel, Key Account Manager, Neas Energy

13.30 – 13.55

Hybrid Drive Train Technology

Ye Fan, Director of Solution Department, Ming Yang Smart Energy Group

14.00 – 14.10

Blackout im Windpark: In Zukunft Dauerschlagzeile?

Kristin Preßler, COO, Rhebo

14.15 – 14.25

ADEDE - Search & Recovery

Liesbet van der Burght, Geologist/ Project Manager, ADEDE

14.30 – 14.55

Aufbau neuer Geschäftsfelder durch Investitionen in Startups: Handlungsmöglichkeiten und Investitionskriterien für Energieunternehmen

Ivor Kramer, Manager, BDO

15.00 – 15.10

Integrated simulation, optimization and data analytics platform for wind farms

Michael Bjerrum, CCO, Shoreline AS

15.15 – 15.25

Opportunities and challenges of China's offshore wind power

Betriebsführung- und Instandhaltungskonzept GreenWind Offshore, Peter-Heinrich Boysen, Technischer Leiter, GreenWind Offshore



15.30 – 15.40

Lateral LiDAR Technology

Benjamin Pfitzner, Managing Director, Air Profile

15.45 – 15.55

Innovation for Tomorrow's Offshore Wind Sector

Lee Child, Sales Director, CWind

16.00 – 16.10

Stop Sanding – Say Goodbye to Backlogs!

Juerg Schnyder, Application Engineer, Tyrolit - Schleifmittelwerke Swarovski

16.15 – 16.25

We give the Wind Power - Safe use of maritime air for continuous tower ventilation of offshore wind turbines

Marius Klotz, Product Manager Industrial Air, Filtration Group

16.30 – 16.40

What's holding Africa back? Developing renewable energy in a challenging market

Christian Hellmund, Partner, DWF LLP

16.45 – 16.55

Improving the Efficiency of Wind Turbine Inspections

Liam Hanna, RVI Product manager, Olympus Deutschland GmbH

17.00 – 17.10

Innovative energy procurement solutions – Business case corporate PPA for the automotive industry

Thomas Winkler, Head of Corporate Transactions, VSB Holding

17.15 – 17.25

A Breakthrough in Predicting Bearing Failure – SeerWorks™ Reliability

Jeff S. Guerin, CEO & President, 4LinesFusion

17.30 – 17.40

Parker's Service Center Program for the Wind Aftermarket

Andreas Lengnowski, Product Marketing Manager, Accumulator & Cooler Division EMEA, Parker Hannifin

Wednesday 26 September

PROGRAMME HIGHLIGHTS

The WindEurope 2018 Conference is happening right now!

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DAY 2: Digital wind & new technologies

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9:15 – 10:30, Room Brussels

How will the wind industry fully leverage the digital revolution?

This session will explore how the wind industry can embrace digital technologies.

11:00 – 12:15, Room Brussels

The impact of digitalisation on cost reduction and business models

This session will look at how digitalisation impacts costs in different business areas and how this can lead to new business models and new revenues.

15:00 – 16:15, Room: Hamburg

Grid integration: making it smart AND secure

This session will discuss the integration of wind power from a digital perspective, addressing the software aspects of integration.

16:45 – 18:00, Room Brussels

Assessing the value of life extension

This session will discuss the technical and business considerations for remaining life assessment and life extension.

SOCIAL & SIDE EVENTS

09:00 – 18:00, Copenhagen 4

North Seas energy forum stakeholder meetings.

09:15 – 12:00, Copenhagen 1

Workshop on system services from wind power.

09:15 – 18:00, Copenhagen 2

Global Wind Organisation Stakeholder Forum.

13:00 – 17:00, Copenhagen 1

Wind Energy and Aviation.

16:00 – 16:30, WindEurope Stage

Sentient Science Wind Challenge – winners announcement.

17:00 – 19:00, WindEurope Stage

WindEurope Stand party and ports platform drinks.



WindEurope has two stands in Hall B1.

WindEurope Stand B1.OG.311

- Meet the WindEurope team and pick up your copy of our new flagship report on wind energy and electrification in Europe and explore our wide range of industry-leading publications.
- Get a taste of our business intelligence tools.
- Book your stand or sponsorship package for our upcoming events.

WindEurope Stage B1.OG.211

9:30 – 10:00 WindEurope – how do we support your growth in the wind industry?

10:30 – 11:00 Carrying your voice in the political arena.

11:30 – 12:00 WindEurope events: what's coming next? (2018-2019).

12:30 – 13:00 China: Insights into the world's largest wind power market.

14:00 – 14:30 Wind Energy in Europe: Outlook to 2022.

15:00 – 15:30 Wind Energy in France: the New Eldorado in Europe?

Agenda subject to alteration.

SEE FULL AGENDA:

windeurope.org/stage

Global Ambassadors



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For more information, visit the WindEurope stand – we're in Hall B1 on the upper level at B1.OG.311!



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made an election
promise last year
to pursue 100%
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by 2030

Austria moves on law to ensure 100% renewables by 2030

BERND RADOWITZ

The Austrian government is hoping to introduce legislation this year to enable the Alpine country to reach 100% renewable power by 2030.

The renewables expansion law is to be presented by environment minister Elisabeth Köstinger before the end of 2018, with a view to entering into force in early 2020.

Austria currently meets 72% of its electricity needs with renewables, mainly through hydropower. About 40 terawatt hours of additional output is

likely to be needed to become fully renewable, if increased power demand grows as expected through the electrification of sectors such as heat and transport.

"We hope that experience in Europe in the past years will be observed and [the government] will introduce a model of market premiums without tenders," said Stefan Moidl, head of Austrian wind energy association IG Windkraft.

Austria so far has allocated support via feed-in tariffs, while neighbouring Germany switched to tenders for most renewables capacity in 2017.

The country's right-wing government, led by 32-year-old Chancellor Sebastian Kurz, had announced its intention to reach 100% renewable electricity by 2030 when assuming power a little less than a year ago, but hasn't made clear how it wants to reach such an ambitious target.

Köstinger so far has not detailed which part of the additional renewables capacity needed should come from wind power, IG Windkraft said.

The group says Austria's wind power capacity could rise from close to 3GW now to 7.5GW in 2030, enough to supply 22.5TWh of electricity per year. ☐

Capacity mechanisms 'could subsidise fossil-fuel plants'

BERND RADOWITZ

Europe needs to be cautious not to replace subsidies for renewables with support for fossil generation in the guise of capacity mechanisms, Austria's director-general for energy and mining told the WindEurope conference yesterday.

"We expect from renewables to be market-ready and function with a very limited amount of subsidies and auctioning of

market premiums and so on," said Michael Losch. "At the same time, we have a growing sector of fossil production that is also calling for subsidies — state aid — in the form of capacity mechanisms."

Austria wants subsidies for renewables to exceed any capacity payments made to fossil-fuel plants, he added.

This year, as it holds the EU presidency, Austria will seek to broker a compromise within the EU to make sure any capacity

mechanisms deployed will be limited in time, Losch said.

Both onshore and offshore wind is and will continue to be competitive in the market, MHI Vestas chief executive Philippe Kavafyan said at the same panel. But the market is only fair if a just price for carbon is introduced, he added.

"Should the market thrive, we need to be penalising through a carbon price all the fossil fuels," he said. ☐

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Governor Phil Murphy (left) in Atlantic City in January at a ceremony to sign an executive order directing the NJBPU to fully implement the state's Offshore Wind Economic Development Act

New Jersey opens window for first 1.1GW of offshore

KARL-ERIK STROMSTA

New Jersey has fired the starting gun on bids for 1.1GW of offshore wind, in the largest procurement round by a US state — and Governor Phil Murphy is calling for two more huge rounds by 2022.

The New Jersey Board of Public Utilities (NJBPU) voted to open an application window for developers that control zones in nearby federal waters — a list that includes Deepwater Wind, Ørsted and US Wind off New Jersey, and Equinor to the north with its zone off New York. The window closes on 28 December, and the state plans to make a decision by July 2019.

Murphy called on the board to open 1.2GW rounds in 2020 and 2022, on the way to meeting the state's nation-leading 3.5GW offshore wind target for 2030.

New Jersey is also considering whether to buy power from EDF Renewable Energy's proposed 25MW Nautilus near-shore project off Atlantic City, acquired this year from Fishermen's Energy.

Since Murphy's election in November 2017, New Jersey has moved to reclaim a leadership position in the offshore market, having lost momentum under its previous governor, Chris Christie.

"In the span of just nine months, New Jersey has vaulted to the front of the pack in establishing this cutting-edge industry," Murphy said.

The state says the timeline for its first procurement round will allow developers to qualify projects for the federal investment tax credit (ITC), potentially saving ratepayers 12% on a project's estimated cost. Vineyard Wind, winner of Massachusetts' 800MW

procurement, relied on the ITC for its surprisingly cost-effective bid.

With Massachusetts now the clear leader in the US offshore market, in capacity procured and supply-chain commitments, and New York planning an 800MW procurement round this year, New Jersey needed a big solicitation to seize the industry's attention. As with other states, its decisions will be based in part on the local economic impact that offshore projects promise to have.

NJBPU president Joseph Fiordaliso said: "The opening of the 1.1GW window, coupled with the governor's announcement for the deployment schedule for the full 3.5GW solicitation, provides unparalleled certainty and incentive for developers and manufacturers to anchor a supply chain right here in New Jersey that can serve the entire eastern seaboard." □

'Big Apple' seen blowing past 50% target

KARL-ERIK STROMSTA

Developers predict New York state will blow past its 50% renewables target for 2030.

Two years ago, New York initiated a recurring auction process for onshore wind projects and established one of the country's highest offshore goals at 2.4GW.

But the state could hit its 50% target years early, thanks to falling wind and solar costs and a surge of interest from developers, industry executives say.

Meeting the 50% target would require 2-3GW of onshore renewables upstate and 2-3GW of offshore wind, says John Douglas, chief executive of transmission developer oneGRID.

"I have the view that New York will be able to do even more than that," he told a conference in New York City.

Kevin Sheen, vice-president of development at Terra-Gen, agrees. Despite transmission and permitting challenges, "I wouldn't be surprised in five or six years if we see New York increasing its [Clean Energy Standard]," he told the conference.

"People are saying it's worth putting up with the pain because the market fundamentals are good. It's gone in waves, but I think we're back to a positive wave. New York is a great place to build wind projects, a great place to build at least medium-sized solar projects, and I think the trend is going to be upwards for a while." □

Photograph | Edwin J Torres/Governor's Office

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WIND ENERGY 2018

26 September, room B6.1

- DNV GL's Energy Transition Outlook report 2018 (9.30-11.00)
- Joint Industry Project: Standardized test method for concrete fatigue (11.30-12.30)
- Joint Industry Project: BLARE - Blade Repair (12.45-13.45)
- LCoE based turbine and wind farm design (14.00-15.00)
- MyCertificate - the interactive certification configurator for wind turbines (15.15-16.15)
- Latest trends in offshore wind markets and technology (16.30-17.30)

27 September, stand 330, hall B4

- Certification goes digital (10.30-10.45)
- Certification of Energy Storage Systems (10.45-11.00)
- German Renewable Energy Assets for Asian-Pacific Investors (14.00-14.15)
- Power Price Forecasting
- The benefits of wind farm control in pre- and post construction phases (14.30-14.45)
- Prototype Testing of Floating Offshore Wind Turbines (16.00-16.15)
- Artificial Intelligence in Renewables - what is it and how can we use it? (16.15-16.30)
- Issues for energy storage co-located with wind (16.30-16.45)

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Benjamin Franklin

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The first jacket is installed at the Beatrice offshore wind farm, part-owned by SSE

SSE buys out partner in 2.5GW Seagreen project ahead of CfD bid

ANDREW LEE

UK utility SSE is buying out Fluor's 50% share in Scotland's massive up-to-2.5GW Seagreen offshore wind development ahead of entering up to 1.5GW of its capacity in the UK's next support auction.

SSE will pay the US EPC group £118m (\$155m) for the half share it doesn't already own of Seagreen Wind Energy (SWE), which is developing projects awarded as the UK Round 3 Firth of Forth zone. It also left the door open for a new partner to come on board.

The utility said it will take full control as the first Seagreen projects — Alpha and Bravo —

begin a "critical phase" ahead of entry in the next UK contract for difference (CfD) support round, scheduled for spring 2019.

SWE has lodged an application to increase the total Alpha and Bravo capacity to 1.5GW, up from the 1.05GW originally consented in 2014, "to take advantage of latest turbine technology".

Seagreen was one of the projects delayed by bird charity RSPB Scotland, which in November 2017 finally lost a two-year legal action against 2.3GW of Scottish offshore wind projects. SSE confirmed it plans to develop further phases of the Seagreen zone, which is estimated to have a

total capacity around 2.5GW.

Martin Pibworth, SSE wholesale director, said: "The Seagreen acquisition aligns with SSE's ambition to create value from owning, operating and developing clean energy assets and infrastructure."

However, SSE appeared to flag the potential for a new partnership by adding: "The future ownership structure will be further reviewed in the coming months with the view to maximising value for SSE shareholders."

That would fit the model of SSE's other operating offshore wind activities, where it holds stakes of between 25% and 50%. □

ZF unveils new 4.5-7MW gearbox platform

DARIUS SNIECKUS

ZF Wind Power has unveiled a new gearbox platform for 4.5-7MW turbines with rotor diameters of up to 180 meters.

The Shift 6k concept, which follows from the company 2k and 4k Shift designs, claims to be the most powerful gearbox platform "in terms of torque density to

realise significant reduction of LCOE [levelised cost of energy]".

Based on standardised modules, the Shift 6K was conceived around pre-designed and validated upgradability, "to ensure rapid



follow-up on changing market requirements", said Jan

Willem Ruinemens, head of ZF's wind power business unit.

Ruinemens noted that the up-tower serviceable gearbox platform can "significantly" reduce O&M costs. □



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CHRISTOPHER HOPSON

European wind power is on course for “solid” annual average growth of 17GW to 2022 — but urgently needs policy clarity beyond that to avoid being blown off course, according to WindEurope’s latest market outlook.

With 86.9GW of wind expected to be installed between 1 January 2018 and 31 December 2022, including an annual record of 20.5GW next year, Europe is set to reach 258GW of cumulative capacity by 2022, according to *Wind Energy Outlook in Europe*.

Europe is expected to account for 25% of the world’s wind additions over the period.

“Wind energy is on track for solid further expansion in Europe over the next five years. But this growth comes mostly from yesterday’s decisions,” says WindEurope chief executive Giles Dickson (*pictured below*).

“The outlook for new investment decisions over the next five years is less clear. Most governments still haven’t clarified their plans for new wind farms up to 2030. And partly because of this, it’s getting harder to secure permits for new wind farms.

“And there are some specific problems in different countries that need sorting out. Germany messed up its first onshore wind auctions last year, so will be building much less wind in the next year or two, leading to job losses. And France has a short-term problem around who can award permits, so there’ll be a dip in growth there too.”

WindEurope says Germany will remain the European leader, with 73GW of accumulated capacity in 2022, up from 59GW today. Spain will stay second (30GW by 2022, up from 23.2GW) and the UK keeps the third spot (26GW by 2022, up from 19.3GW).

However, Germany’s share of new installations will fall from 40% to 24%. Spain and Sweden will experience strong growth, with record years in 2019. So should the Benelux countries, Norway, Turkey and France.

The report says the UK will continue to lead in offshore wind, with 5.5GW (33%) of all new grid-connected capacity. Five

other countries will see large offshore installations: Germany (3.1GW), the Netherlands (2.7GW), France (2.1GW), Belgium and Denmark (1.4GW each). Spain, Italy and Portugal will install small projects.

Most of the 86.9GW of installations will be onshore — 70.4GW (81%), compared with 16.5GW (19%) of new offshore.

“Overall, the next five years is going to

be especially good for additional growth from onshore wind, although offshore wind will grow as well,” says Ivan Komusanac,

WindEurope’s markets and wind-energy technology analyst.

However, Komusanac points out that Europe has not been leading globally in wind for some time: “Overall, if you take all of our net capacity additions over the next five years, it is going to account for around one quarter of global additions up to 2022.

“We

expect Asia, led by China and India, plus the recent auctions in Taiwan and Thailand, to account for almost half of the net additions in the world to 2022.

“Europe does have more offshore wind developed than in other regions. However, there are many more wind installations now happening in Asia than in Europe.”

The report identifies 52GW of auction capacity and tenders planned by 11 European countries over the five-year period. Of this, it expects 26GW will be wind auctions and tenders, plus a further 26GW in technology-neutral auctions.

New installations will remain concentrated in a small number of countries, with Germany, the UK, France, Spain and the Netherlands accounting for 62% of gross capacity additions. Germany’s share of installations will fall significantly in 2019 due to record

WindEurope: 258GW within reach by 2022, but policy clarity needed





of market intelligence. “However, Germany still remains number one in onshore wind.”

The report says ever-larger turbines will help drive growth, with 4MW-plus onshore and 8MW-plus offshore machines becoming the norm.

Wind permitting continues to be a big barrier, and it is going to be the main development challenge on the continent. “For example,” Fraile says, “France has not been able to move forward with the whole permitting process since the start of this year, which is causing serious questions as to whether the country will be able to meet its expected wind growth targets.”

“There are also difficulties in Ireland, where it’s becoming more complicated to get a construction permit. And developers in Spain don’t seem to be getting all the necessary permits on time to meet the December 2019 deadline for

projects awarded in 2016 and 2017 auctions.”

WindEurope has been advocating that the EU’s new Renewable Energy Directive include changes to wind procedures in Europe by centralising the way permits are delivered to developers.

“We are pushing governments to simplify the whole process by putting in place a ‘one stop shop’ so developers can go to a single authority or entity which can deliver all the necessary permits for a project,” Fraile says.

“We are also in talks with other sectors over the interaction between wind turbines and military radar and aviation. For instance, we have met with the defence ministry in France and other countries to try and reach an understanding as to how we solve these issues. Likewise with offshore wind, we have met with fisheries interests and those

bodies responsible for overseeing commercial shipping.”

Europe is about to experience the first serious decommissioning of its first-generation wind farms. By 2022, 22GW of installed capacity will be more than 20 years old. Some turbines will be repowered, “but as things stand, between 4.3GW and 6.4GW of existing wind farms will be fully decommissioned in the next five years”, WindEurope notes.

Dickson says the National Energy and Climate Plans (NECPs) for 2030 that EU nations have to draw up will be crucial: “They’ll define the volumes of new renewables countries want and how and when they propose to auction the new capacity.”

“The NECPs also require governments to articulate their plans for existing renewables that come to the end of their life between now and 2030. This is getting urgent.”

installations in Spain and Sweden. After this, France and non-EU countries will also increase their share.

“The good news is that we are seeing market diversification, with Europe’s wind growth being less dependent on a few larger markets such as Germany,” says Daniel Fraile, WindEurope head

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Maurits Ornstein is a director at Navigant Consulting, leading the energy systems practice in Europe and the Middle East

MAURITS ORNSTEIN

If the world is serious about meeting the goals of the Paris Agreement, achieving carbon-neutrality of electricity generation as early as 2045 should be the highest priority. The increased and efficient deployment of renewables will be key, as will a smart and robust roll-out of interconnection between countries and development of sufficient flexibility options.

In a study analysing the implication of the Paris Agreement released late last year, Ecofys, a Navigant company, estimated a 230GW offshore wind capacity target for 2045 for the North Seas countries (France, Belgium, Netherlands, Ireland, Germany, Denmark, Sweden, and Norway). Of this target, 180GW will be deployed in the North Sea and another 50GW in the Baltic Sea, Irish Sea and Atlantic Ocean. These estimates assume 50% reduction in total energy demand by 2045 (relative to 2010), full decarbonisation of electricity generation, and 45% of all final energy consumption coming from electricity.

Such massive amounts of offshore wind require a rapid ramp-up of the installation rate from approximately 3GW annually today to 10GW by 2030 from the North Seas countries. Meeting this goal will be difficult in one of the busiest sea areas of the world and one with many restrictions due to environmentally protected areas, shipping routes, telecoms lines and military areas. However, rather than presenting an environmental burden, offshore energy development can create new protected areas for marine life in wind farm clusters and around potential offshore hubs. A North Seas energy system needs to be based on an integrated and coordinated maritime spatial planning approach.

With this goal in mind, the solution should focus on how to realise this energy transition in the most cost-effective way. This requires efficiently using the costly infrastructure and — most likely — hybrid connections that combine offshore wind with interconnection capacity. According to the North Sea Wind Power Hub consortium, significant cost savings can be realised for society when an internationally coordinated roll-out is pursued in which individual projects are tied together in offshore hubs, rather than the current radial



Siemens' SylWin 1 converter platform in the North Sea, which will connect three offshore wind farms to the onshore grid


Why a smarter grid is needed to decarbonise North Seas countries

connection strategy, whereby each wind farm is directly connected to the nearest onshore grid connection point.

With the transition to a sustainable energy supply, the electricity generation mix changes from one that consists primarily of dispatchable resources (coal and gas) to one that is largely non-dispatchable (solar and wind). Today, dispatchable generation accounts for 64% of the energy mix in the North Seas countries, but this will fall to 18% in 2045, according to Ecofys.

A crucial enabler for such a flexible power system is a well-developed network, with interconnection levels much higher than today. In the case of the North Sea, where offshore wind will be dominant, this entails a system with high levels of interconnectivity, integrated with the wind farm connections. The installation rate for new interconnectors needs to increase significantly to reach a level of 50-80GW of subsea interconnector

capacity in 2045.

Supporting such an energy system will require significantly expanding flexibility options in supply, demand and storage — on all time scales, including seasonal — in parallel with the rollout of the grid. The feasibility and role of hydrogen for long-term storage of clean energy is being widely investigated. In addition to various functions in the energy system (large-scale and long distance energy transport, seasonal storage, peak shaving, dispatch power, etc.), hydrogen is also considered an important contributor to decarbonise the industrial sector. It is expected to replace oil & gas, both as a feedstock and for high-temperature heat applications. Additional applications may be found in buildings and transport. A significant increase in hydrogen use in these demand sectors will further affect the changing energy mix and the need to look for cost-effective North Sea grid solutions. 



The *Bluefort* has been designed with the next generation of CTVs in mind

Largest offshore wind floatel goes to work

ANAMARIA DEDULEASA

The offshore wind industry's largest floatel, the newly refurbished *MV Bluefort*, has been contracted with Iberdrola in the Baltic Sea.

Owned by Bridgemans Services Group (BSG), the 142-metre *Bluefort* has bow and stern thrusters that increase its capabilities in tough conditions, enabling it to remain steady at anchor in six-metre waves.

Photograph | BSG

Workers staying onboard can board crew transfer vessels (CTVs) and get out to turbines in record time thanks to a specially designed landing that caters to at least six different types of CTVs.

After a €6m (\$7m) upgrade, the unit is capable of transferring up to 150 turbine technicians into the field each day.

In addition, a transfer rate of 15 seconds per person removes the bottleneck that is familiar on service operations vessels.

Offering accommodation for 200 offshore workers, the vessel can send crews out to install, commission or service up to 25 turbines per day.

"We wanted to make sure that *Bluefort* was the most efficient option for today's wind farm developments but was also future-proofed for the coming projects that are further from shore and in deeper waters," BSG president Brian Grange said.

"We have ensured it can adapt

to the next generation of larger CTVs that will be able to operate in seas of 2.5 metres and above.

"The improvement works that we carried out have ensured that *Bluefort* has the safest and most flexible and versatile CTV boat landing capability on the market."

The *Bluefort* is providing a home for workers commissioning the turbines at Iberdrola's 350MW Wikingen project, 30km northeast of the German island of Rugen. ☐

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