



WindEnergy Hamburg

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Shock as Ontario suspends 1GW tender

KARL-ERIK STROMSTA

In a severe blow to Canada's largest renewables market, Ontario unexpectedly suspended its plan to sign contracts with developers for nearly 1GW of new capacity, citing a desire to hold electricity prices down amid a power glut in the province.

Robert Hornung, president of the Canadian Wind Energy Association (CanWEA), said he was "shocked and extremely disappointed" by Ontario's decision, which will affect many European developers and turbine suppliers that have done well in the province — including Siemens.

Following the massively oversubscribed first round of Ontario's Large Renewables Procurement process (LRP I) earlier this year — which saw EDP Renewables, EDF-RE, and others win 455MW of contracts — Ontario had

been in the process of readying an even-larger LRP II tender round.

With 600MW of wind, 250MW of utility-scale solar and smaller amounts of other renewables up for grabs, LRP II was expected to draw bids from heavyweight developers such as NextEra and Recurrent Energy, as well as from traditional Canadian energy giants like Suncor.

But on Tuesday, Ontario energy minister Glenn Thibeault stunned the renewables sector by announcing that LRP II had been suspended indefinitely, leaving many well-developed projects in limbo.

Thibeault said Ontario does not need the additional generating capacity, and scrapping LRP II will save the province's electricity consumers C\$3.8bn (€2.6bn) without leading to any additional carbon emissions.

"Our decision to suspend these



The 60MW McLeans Mountain wind farm in Ontario

procurements is not one we take lightly," Thibeault said.

CanWEA said the province is underestimating its future need for clean power, with the economy becoming increasingly electrified and the possibility of nuclear plant

shutdowns on the horizon.

The province intends to begin

Continued on Page 2

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'Brutal offshore cost pressures may hurt sector'

KARL-ERIK STROMSTA

The "brutal" cost pressure being imposed on European offshore wind projects by the continent's increasingly prevalent tendering model is putting the sector at risk of a major setback, financiers and developers warned yesterday at the WindEurope Summit.

Europe's maturing offshore industry has largely moved beyond the days when ill-starred projects like the UK's Greater Gabbard and Germany's Bard Offshore 1 exploded into public legal spats and even worker deaths.

But some in the industry are concerned that developers may need to quietly cut corners in order to win projects in the tender rounds now being held by countries such as Germany and the Netherlands, which have hammered prices down to record lows.

While effective in lowering costs, the reality is that "these



Northland Power chief financial officer Paul Bradley

tender systems demand short-term thinking," said Achim Berge Olsen, managing director at German developer WPD Offshore.

Facing intense pressure to lower their costs, developers may make decisions that allow them to prevail in the tenders but which are "not good from a larger perspective", he said.

A high-profile setback at an offshore project could have a serious knock-on effect on

the industry's ability to secure competitive finance and continue attracting new investors — both of which are critical to the market's long-term health.

Ranjan Moulik, head of power & renewables at Natixis, said the French bank stopped discussing offshore wind investments for two years after delays and other challenges hit the Global Tech 1 project in the German North Sea, for which Natixis provided senior

debt. "Two years of silence — that's what one bad project can do to you," Moulik says.

While competition among developers has become "brutal", future crises in European offshore wind are likely to be financial in nature, rather than linked to technical or safety problems, said Paul Bradley, chief financial officer at Northland Power. "I don't see contractors cutting corners; most of them are now very professional outfits," says Bradley, whose Canada-based company has become a major European offshore wind investor.

Instead, Bradley sees a danger in investors becoming "overly confident" about the contingencies that inevitably arise at such huge, complicated projects.

"The wipe-outs won't be because foundations have an error or the turbines don't work. They'll be because [investors] get slaughtered on steel, or interest rates, or other macro-economic factors." □

Ontario's 1GW tender suspension will accelerate westward shift

From Front Page consultations on a new long-term energy plan this autumn, with the strategy to be finalised sometime next year.

LRP II was seen as the last opportunity for at least a few years to win contracts for large-scale renewables in Ontario, given the province's well-known electricity excess.

Ontario emerged as a major

market for wind and solar following the establishment of its feed-in tariff as part of 2009's Green Energy Act, with turbine OEMs such as Siemens and GE winning a series of big orders there in recent years.

Ontario's feed-in tariff was later replaced by the LRP tendering process, amid concerns about electricity prices.

The province has 18GW of

renewables installed, accounting for 40% of Canada's wind and nearly all of its utility-scale solar. Ontario is also home to many of the country's renewables manufacturing facilities — including a Siemens blade plant in Tillsonburg.

The decision to scrap LRP II will accelerate the westward shift already under way in Canada's renewables market, with Alberta

and Saskatchewan having recently emerged as some of the most promising provinces for development, thanks to their new renewables targets.

Much of the future opportunity for renewables development in eastern Canada may be tied to the US importing large amounts of green electricity, particularly if the Clean Power Plan is upheld by US courts. □

Photograph | WindEurope

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CIP deal may kick-start Canadian offshore

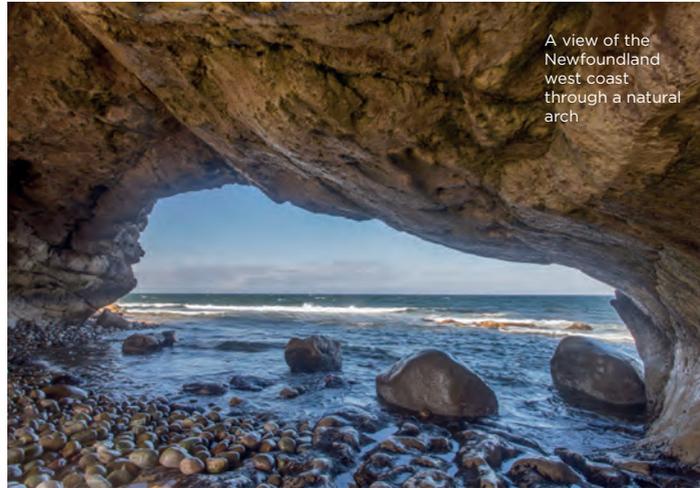
KARL-ERIK STROMSTA

In a big vote of confidence in the future of Canadian offshore wind, Danish fund manager Copenhagen Infrastructure Partners (CIP) has entered a partnership with developer Beothuk Energy, starting with the joint development of the 180MW St George's Bay project off the coast of Newfoundland.

Beothuk will continue to lead development until a power-purchase agreement has been obtained, at which time CIP will take the lead in bringing the project to financial close and then through the construction phase.

According to Beothuk, CIP has committed to invest all the capital required to construct the C\$400 (€269m) project, which would be built off the west coast of Newfoundland in water depths of 25 metres.

Beyond St George's Bay, CIP



A view of the Newfoundland west coast through a natural arch

will work with Beothuk on its portfolio of early-stage offshore wind projects across Canada's east coast. The developer is advancing projects totaling more than 1GW off the provinces of Nova Scotia, Newfoundland and Labrador, New Brunswick and Prince Edward Island.

The announcement represents a major step forward for both Beothuk and Canada's nascent offshore wind sector.

CIP is a significant investor in offshore wind in Europe through projects such as Scotland's Beatrice, and last month it dived into the US sector through its

acquisition of OffshoreMW, a developer with the rights to a 1GW offshore wind zone off the coast of Massachusetts.

CIP's managing partner, Jakob Baruël Poulsen, was formerly deputy chief executive for renewables at Dong Energy, the world's leading offshore wind developer.

"We see significant potential for offshore wind in Atlantic Canada due to strong winds, shallow water and an existing industry with experience working in an offshore environment," says Christina Grumstrup Sørensen, senior partner at CIP.

St George's Bay would take advantage of Emera's Maritime Link, a high-voltage subsea transmission project under construction that will link Newfoundland to the broader North American grid for the first time — allowing for significant exports of renewable power. ☐

Photograph | iStock

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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

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Senvion wins 203MW offshore order

BERND RADOWITZ

German OEM Senvion has won a conditional contract for 32 of its 6.2M152 offshore turbines for the 203MW Trianel Windpark Borkum 2 in the German North Sea from the Trianel network of municipal utilities.

Trianel plans to make a financial investment decision for Borkum 2 in the first half of 2017, which would mean construction could start in early 2018, with completion set for autumn 2019.

The contract provides a lifeline for Senvion's offshore turbine business at a time when the manufacturer has been facing difficulties to compete in tenders, with rivals offering larger, 7MW or 8MW offshore machines.

Engineers at Senvion have completed an internal study about the viability to develop a much larger offshore wind turbine that



Senvion turbines at Belgium's Thorntonbank project

could even be in the 10MW-plus category, Senvion chief executive Jürgen Geissinger told *Recharge* on Monday.

"We appreciate the confidence that the project consortium Trianel shows in our turbines,"

says Geissinger. "This contract confirms that we are setting standards in the cost-effective generation of offshore wind energy and we will further consolidate our strong position in the offshore wind-energy market

New GE models with added cybersecurity

CHRISTOPHER HOPSON

GE unveiled two new updated wind turbines to its recently announced platform of 3MW machines yesterday at WindEnergy Hamburg.

The new 3.6-137 and 3.8-130 models form what GE describes as its most powerful family of onshore wind turbines to date.

"The addition of the 3.6MW and 3.8MW machines to our 3MW platform offers our customers in Europe even more flexible and customisable solutions," said Anne McEntee, president and chief executive of GE's onshore wind business.

The machines feature a new suite of software for GE's "digital wind farm" concept, which includes specialised cybersecurity protection. 

Photograph | Senvion

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GE and Mainstream sign Vietnam wind alliance

DARIUS SNIIECKUS

Vietnam's status as a major emerging wind power market was reinforced as GE Energy Financial Services (GEFS) linked with global developer Mainstream Renewable Power (MRP) to finance, build and operate large-scale plants in the country.

"The projects are expected to comprise both greenfield and partially developed sites, are intended to include co-operation with local and international developers, and will receive financing through a Mainstream and GEFS joint development agreement," say GE and MRP.

The US giant said its term-sheet agreement with the Ireland-based developer would help deliver on the 1GW wind power initiative GE signed with the Vietnamese



Staff at GE's Vietnam turbine factory

government in May this year.

The partners say Vietnam's latest Power Master Plan expects power production to increase by up to 75% between 2015 and 2020.

GE already has long-established links with Vietnam's wind sector, with 100MW of turbines

operating in the country at the Bac Lieu wind farm in the shallow waters of the Mekong Delta.

Its factory in the city of Haiphong, set up in 2009, produces turbines and components from its wind equipment range.

MRP has established a reputation as a pioneer in many of

the world's emerging renewable energy hotspots — an approach that most recently bore fruit when its projects won almost 1GW of power deals in Chile's latest tender — and forging an alliance with a partner of GE's global status and financing clout is another major boost to its ambitions. ☐

Photograph | AFP/Getty

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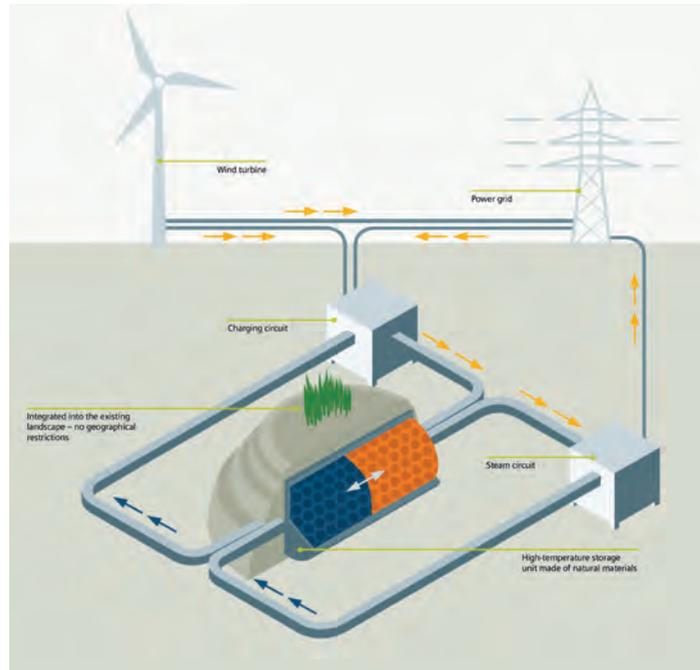
Siemens plans wind/thermal-storage system

BERND RADOWITZ

Siemens and utility Hamburg Energie are researching a low-cost thermal storage system for wind power.

In a current test set-up dubbed “future energy solution” (FES), scientists from the Technical University of Hamburg Harburg (TUHH) Institute for Thermofluid Dynamics are converting excess wind energy into heat they store in a rock-fill that is protected with an insulated cover. When there is a need for additional electricity, a steam turbine converts the heat energy back to power.

“The technology of our FES store deliberately uses mainly tried and trusted technology,” says Till Barmerier, Siemens’ project manager. “Because we are working here with tested thermal components and a series-ready



steam turbine, we will be able to offer a practical solution within a few years. Our complete

experimental system will be operational in around 15 months.”
The thermal store for wind

energy is being tested at temperatures over 600°C. Just like a hot-air gun, a fan uses an electrically heated air flow to heat the stones to the desired temperature, Siemens explains.

When discharging, the hot stones in turn heat the air current, which then heats a steam boiler; its pressure drives a generator via a steam turbine.

After the current test set-up, researchers plan to build a complete thermal store on the Trimet aluminium smelter site in Hamburg-Altenderwerder to the south of the River Elbe in the spring of 2017.

The full-size FES will be able to store around 36MWh of energy in a container with around 2,000 cubic meters of rock. So much steam could be generated that a Siemens compact steam turbine could generate output of up to 1.5MW of electricity for up to 24 hours a day. ☐

Image | Siemens

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Take a wander through the world's leading expo and browse around. Be prepared to make many connections with other businesses and top class events. Examples include:

Today: Canadian Wind Energy Business Opportunities and Markets

Widen your markets - in close cooperation with the Canadian German Chamber of Industry and Commerce Inc. in Montréal, the Embassy of Canada to Germany in Berlin, the Ontario International Munich Office and the Schleswig-Holstein cluster EE.SH the Renewable Energy Hamburg cluster will carry out a workshop on the Canadian wind energy business opportunities and market at the WindEnergy Hamburg 2016 expo.

Speaker: Jan Rispens, EEHH GmbH

Time: 10.40 - 13.15

Place: Hall A4, Room A4.3

Tomorrow: Recruiting Day for career opportunities

WindEnergy Hamburg is a unique international recruitment exchange for the wind industry, which offers more exciting job and career opportunities than practically any other industry. At the Recruiting Day Forum between Halls B1 and B2 human resources managers, universities, other training facilities and experts will be available to provide tips on career planning and how to apply for jobs.

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GROUND FLOOR BETWEEN HALLS B1 AND B2



10.00 – 10.10

Geophysics for your Wind Energy Project

Matt Grove, Strategic Account Executive, Company: Geosoft

10.15 – 10.25

66 kV Inter-Array Cables - the next level

Martin Spletstößer, Senior Engineer, nkt cables group GmbH

10.30 – 10.40

Comprehensive and competitive Onshore product portfolio

Daniel Lücht, Head of Product Lifecycle Management & Engineering, Siemens Windpower and Renewables

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

6 DOF MBS Study Geislinger Compowind[®]: Quantifying the Enhancement of the Dynamic Behavior of a Wind Drivetrain

Alexander Kari, Sales Manager, Geislinger GmbH

11.15 – 11.25

AdWiMo-CE : Comprehensive certification simulations capabilities based on Multi-Body-Dynamics

Speaker: Dr.-Ing. Christof Rachor, Technical Consultant / Manager PreSale DACH, MSC.Software GmbH

11.30 – 11.55

Möglichkeiten und Grenzen regionaler Bürgerbeteiligungsmodelle bei Windenergieprojekten

Klemens Lüke, BDO AG Wirtschaftsprüfungsgesellschaft

12.00 – 12.10

Risk Mitigation for your Wind Farm Project

Dr. Malte Posewang, Project Manager Due Diligence, SGS Germany GmbH

12.15 – 12.25

Retrofit – A cost efficient solution for life-time extension and increased AEP at minimum risk

Frank Svarre, Global Sales Manager, Deif Wind Power Technology

12.30 – 12.40

Mobile Services für die Windenergie

Sascha Jevremovic, Business Development, Lufthansa Industry Solutions

12.45 – 12.55

Novel Wind Vane Calibration requirements as per CDV IEC 61400-12-1 Ed.2

Mathias Hölzer, Geschäftsführer, ProfEC Ventus GmbH

13.00 – 13.10

Integration volatiler erneuerbarer Energie: Batterie u. Power to Gas/Heat

Oliver Weinmann, GF Vattenfall, Europe Innovation GmbH, Vattenfall Europe Windkraft GmbH

13.15 – 13.25

ADSR - Integriertes Diagnosesystem für Schleifringe

Gerhard Schmid, Produkt Manager Schleifringe, Leine Linde Systems GmbH

13.30 – 13.40

Eigenerzeugung erfolgreich gestalten

Christian Kohle, Senior Manager Energie, RSM Deutschland GmbH

13.45 – 13.55

Condition Monitoring & Condition Based Maintenance - Ölwechsel bei Bedarf

Dr. rer. nat. Jörn Peuser, Applikation, Speedwind Offshore GmbH & Co. KG

14.00 – 14.10

How HornsRev3 makes a difference in LEC

Matthew Green, Project Director, Construction Offshore, Vattenfall Europe Windkraft GmbH

14.15 – 14.25

Reduce O&M cost by smarter spare parts sourcing

Martin Amelang, E.on Wind Sweden AB, Danwind Spare Parts

14.30 – 14.40

Don't Miss a Fault

Zabihullah Alefi, Leader, Condition Monitoring Division, Gram & Juhl A/S

14.45 – 14.55

Blade Guided Access Solutions

Jesper Juhl Olesen, Sales Director, PP Techniq

15.00 – 15.10

SWT-8.0-154: Minimal upgrade for maximal effect

Anne-Susann Lücht, Portfolio Performance Analyst, Siemens Wind Power and Renewables

15.15 – 15.25

Utility scale energy storage solution: "Wind-to-Hydrogen" projects review

Rik Vreys, Business Development Manager Industrial, HYDROGENICS

15.30 – 15.40

Vor- und Nachteile von Blei- und Lithiumakkus in der Windindustrie.

Dr. Philipp Braun, Produktmanager Advanced Energy Systems, Orogenic ApS

15.45 – 15.55

Best Practice in France: Successfully Avoiding Litigation

Emmanuel Macqueron, VSB Gruppe

16.00 – 16.10

Practical Experience in Italy: Successful Tendering

Emmanuel Macqueron, VSB Gruppe

16.15 – 16.25

Central Wind Energy Data Management Systems

Timuçin ÇELİK, Project Manager, Robosoft Kontrol ve Bilisim Hizmetleri Ltd. Sti.

16.30 – 16.40

Ablehnungsgrund Arten- und Denkmalschutz: Erfolgreiche Lösungsbeispiele aus der Praxis

Peter Horntrich, WSB Gruppe

16.45 – 16.55

How Drones are Transforming Wind Turbine Inspection

Danny Ellis, CEO, SkySpecs

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HIGHLIGHTS OF THE DAY

Thursday 29 September



Carolina Punset
Member of European Parliament, Spain

What have we learnt over the past three days and what are the necessary next steps?

Join her in the 'Closing session' which will sum up the main lessons from WindEurope Summit 2016 and how to make the energy transition work.

The 'Closing session' will be held
at 16:15 – 17:15, Room: Hall G1



Michael Liebreich
Chairman and Founder of Bloomberg New Energy Finance

"For a brief decade, Europe led the world in renewable energy investment, but not anymore – that would be China. EU nations promoted clean energy at vastly inflated costs through imposed renewable energy targets, tariffs and subsidies... The UK is facing a historic opportunity to loosen the ties."

Join the session 'Brexit: what implications for the wind industry?'
14:30 – 16:00, Room: Hall D

Poster award ceremony

Thursday 29 September, 10:30 – 11:30
Poster area, Level 2, CCH

At this event, you will be able to mingle with the poster authors and other conference delegates in a relaxed setting. During this gathering, prizes will be awarded to the presenters of exceptional posters.

WISE Power reception

Thursday 29 September, 17:15 – 18:30
In front of Hall G1

The reception will offer a networking event for all conference delegates. Celebrate with the winner of the Best Community Project Award for outstanding commitment to local people in a European wind energy project, which will be announced in the 'Yes in My backyard session'.



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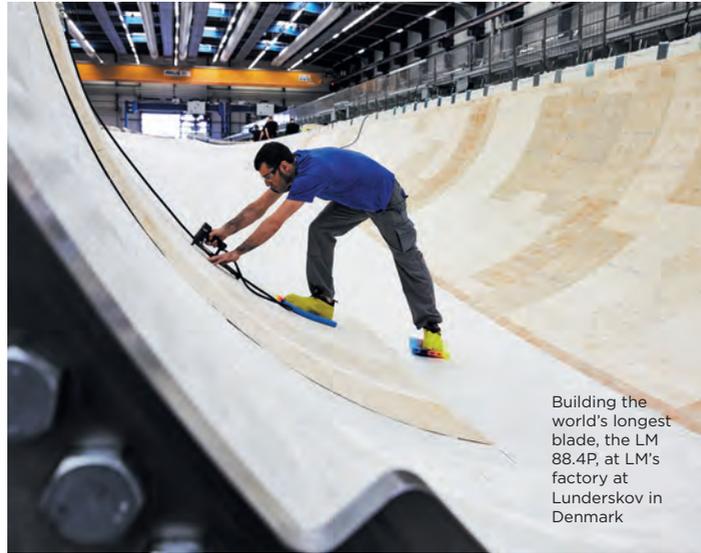
Siemens plans new blade factory with LM

BERND RADOWITZ

Siemens plans to build new blade manufacturing plants with Danish blade specialist LM Wind Power to provide blades for its new low wind SWT-3.15-142 turbine (see panel) if demand is sufficient, Siemens onshore wind chief executive Thomas Richterich said at WindEnergy Hamburg yesterday.

The German industrial giant has previously manufactured all its blades in-house, but for the new machine, an innovative 69-metre hybrid-carbon blade was developed in co-operation with LM.

Production of the blades initially will come from LM factories in Europe, probably in Poland, Richterich said. But the two companies are looking at options for additional facilities in other countries, preferably those that have strict local-content rules



Building the world's longest blade, the LM 88.4P, at LM's factory at Lunderskov in Denmark

that otherwise render the sale of turbines more difficult. One option could be the Turkish market, Richterich revealed.

"First of all, we are seeing that the market demand [in Turkey] has increased significantly over

the last years," Richterich said. "There are very ambitious plans by the government, but it [the market] comes with local requirements."

Richterich said the reason to further expand the cooperation

New models

Siemens unveiled its first low-wind turbine, the 3.15MW SWT-3.15-142, at WindEnergy Hamburg yesterday, as well as an upgraded 3.6MW machine for medium wind speeds, the SWT-3.6-130.

"Our SWT-3.15-142 wind turbine [is] a powerful low-wind machine that sets the standard for its class," said Siemens' onshore wind boss Thomas Richterich.

with LM is that Siemens is "already running on edge" with the extension of its production facilities.

The company is building up new blade production capacity for offshore in the UK and for onshore in Morocco, and soon also in Egypt.

"Maybe you can grow faster if you're not doing everything by yourself," he added. □

Photograph | LM Wind Power

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Adwen AD8-180 tower sections arriving at Bremerhaven

Adwen 8MW prototype starts to take shape

DARIUS SНИЕCKUS

Tower sections for the Adwen AD8-180 turbine prototype being erected in Bremerhaven, Germany, have arrived at the construction site.

The 115-metre-tall steel structure, made up of three sections, will be assembled by crane to support the flagship 8MW unit, which is on track to

be the most powerful offshore model yet devised by the industry.

“It was extremely important for us to keep this project [here], close to our manufacturing facilities, our team of engineers and the unique Fraunhofer IWES test bench [where the drivetrain is being tested],” said Adwen general manager Luis Alvarez, at the recent groundbreaking.

The AD8-180 will fly record-setting 88.4-metre LM blades that turn an 87-tonne medium-speed, two-stage planetary gearbox and a water-cooled permanent magnet generator (PMG), with production entering the grid at either 33kV or 66kV.

Successful trials of the prototype — along with two more test units at undisclosed sites — will flip the switch for a start to fabrication

at Adwen’s factory complex in Normandy, France, for projects including the 500MW Baie de Saint-Brieuc, Dieppe Le Tréport and Yeu Noirmoutier wind farms, in the French Atlantic.

Manufacturing will be backed up by its facility in Bremerhaven, which is delivering 5MW machines for Iberdrola’s 350MW Wikingier development in the German Baltic. ☐

Photography | Adwen

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大成 DENTONS



UK/EU energy co-operation at risk after Brexit

CHRISTOPHER HOPSON

Future energy cooperation between the EU and the UK government on building an integrated North Sea offshore power grid is at risk following the UK's Brexit vote, warns a leading European parliamentarian.

Claude Turmes, a Green MEP and architect of the North Seas Offshore Grid (NSOG) initiative, tells *Recharge* that "if the new UK government persists in its tough negotiating strategy by making the EU's energy transition difficult then Brussels will have to rethink its grids co-operation with the UK".

The UK's Brexit vote in June's referendum has raised industry questions over the impact on the UK's clean energy and climate policies, which for decades have been closely bound together with the wider objectives of Brussels.

Turmes, who is an influential member of the European



Influential Member of the European Parliament, Claude Turmes

Parliament and president of the European Forum for Renewable Energy Sources, warns the NSOG could be "pushed down the list of such schemes with priority given to other similar integrated grid projects elsewhere in Europe".

Through WindEurope, the MEP is looking to rapidly organise a meeting in Brussels with big

North Sea developers to better understand how the industry wants to move forward with the NSOG initiative following the Brexit vote.

However, WindEurope chief executive Giles Dickson says any British government is going to recognise the UK has a strong economic interest in remaining

part of the single European electricity market. "The UK is a major net importer of electricity, importing 6% of all the power it consumes."

Today, the UK is connected with France and Ireland and is developing new interconnectors to Belgium, Denmark and Norway. "Leaving the single European electricity market would complicate that," he adds.

Dickson says he believes the outlook for offshore wind investments in the UK remains very strong. "Unlike most other countries in Europe the UK needs to build new power generation capacity."

Maroš Šefčovič, the European Commission's vice-president in charge of energy union, tells *Recharge* the EU is "very much waiting for discussions with the British government" after it formally triggers Article 50 on leaving the bloc. □

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Skywind eyes two-headed turbine

DARIUS SNIIECKUS

Two-bladed wind turbine pioneer SkyWind is advancing discussions with developers and oil companies to build a first offshore prototype of its innovative design off western Norway, the company tells *Recharge*.

The German-Norwegian engineering outfit, which for the past 18 months has been running a 3.4MW onshore model north of Husum, Germany, is exploring “two main options”: a jacket-mounted model built with a Y-shaped tower topped with a pair of turbines, or a twin-headed floating concept.

“The onshore prototype has performed very well so now we need to get one up [in the water] because there are so many aspects of the design we want to test and get more experience on,” says Skywind Norway managing director Per Bull Haugsøen.

“We would consider a bottom-fixed prototype with the Y-shaped tower [which would have one upwind and one downwind turbine], and of course there are many floating foundations concepts out there.

“Floating wind is developing so fast now — we have a range of possibilities for a first [floating]



Skywind's 3.4MW onshore prototype north of Husum, Germany

unit with a foundation partner.”

One test site being “closely looked at” is off Karmøy, near Statoil’s Hywind 1 spar floater, which already has an export line connected to the Norwegian grid.

“There is space there for more units, so we are speaking with Met-Centre [a 40MW offshore wind laboratory owned by Statoil and the local authorities] about that,” says Haugsøen.

Modularity is central to the

SkyWind design’s potential offshore. The Husum prototype was erected Lego-style from ten-metre ready-made concrete plates, rather than supersize steel components; and the nacelle and 107-metre-diameter rotor was installed in blustery 11-metres-per-second winds using an in-house-designed internal winch.

Offshore, this would remove the need for expensive construction vessels. ☑

ZF launches cost-saving ‘intelligent’ drivetrain

DARIUS SNIIECKUS

Drivetrain specialist ZF has hatched a new “intelligent” gearbox by building in integrated sensor technology and next-generation data analytics software.

The design will be able to read the “real loads and health status” of a turbine gearbox during operation, to hone performance and streamline maintenance regimes, says Jan Willem Ruinemans, head of ZF’s Wind Power Technology business unit.

“Based on many years of experience we are now taking the next step to use the data streams of devices and sensors integrated in the gearbox to optimise



performance and maintenance,” he states. “This allows new methods for wind turbine gearbox servicing to be developed.”

Ruinemans says the new concept has “significant cost improvement potential” for wind power developers. ☑

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Japanese floating wind gets ready for market

BRIAN PUBLICOVER

Progress on Japan's flagship floating wind project, as well as new state-backed plans to experiment with a range of floating offshore structures is underscoring how the nascent industry is rapidly moving closer to commercialisation, according to a panel of leading sector experts.

"We're now moving into the next phase to industrialise this," says Akihiro Suzuki, president of the Wind Energy Institute of Tokyo (WEIT), which conducts wind resource assessments and load analysis for floating turbines.

This summer, a consortium backed by the Ministry of Economy, Trade and Industry switched on a Hitachi 5MW downwind turbine mounted on an advanced spar floater as part of the 14MW Fukushima Forward demonstrator.

However, the Japanese government still needs to make firmer commitments to give the sector the final push needed to start building commercial projects at scale, said a number of industry experts this week at the ClassNK/Recharge Floating Offshore Wind Round Table event in Hamburg.

Nonetheless, a number of recent developments suggest that central and regional governments in Japan are ramping up support for both floating and fixed-bottom technologies.

In January, the New Energy and Industrial Technology Development Organisation (Nedo) — a central government



Hitachi's 5MW downwind turbine being towed to the Fukushima Forward installation site in July

R&D body — unveiled plans to back the development of 270MW of offshore wind up to April 2018.

In February, the authorities in Nagasaki prefecture — in cooperation with WEIT and the UK Carbon Trust — announced plans to set up a tidal and floating wind energy test facility by 2018.

In May, the Ministry of Land, Infrastructure, Transport and Tourism (MILT) introduced legislative amendments that have opened up the nation's ports for near-shore wind development.

And in July, France's Ideol and Hitachi Zosen announced plans to build a 7.4MW, two-unit

pilot project off the coast of the southwestern island of Kyushu, using a two-bladed 3MW turbine and a three-bladed 4.4MW machine, paired with a number of mooring technologies and foundations.

This focus on different technologies is central to Nedo's plans to continue to experiment with a range of floating structures, including spars and semi-submersible and tension-leg platforms.

"We also want to consider shallower depths, to prove that floating can compete with fixed-bottom structures," says Takeshi Ishihara, a senior member of the Fukushima Forward team and one of Japan's leading proponents of floating offshore wind.

"Japan is now the most advanced country for floating wind turbines," says Sadao Akahoshi, deputy general manager of renewable energy at Japanese certification outfit ClassNK. "We'd like to use our experience to encourage R&D in foreign countries."

Speaking at the ClassNK/Recharge event, which was held in co-operation with Recharge, WindFloat 1 designer Principle Power chief executive Joao Metelo argued that floating wind technologies have already been shown to be cost-competitive with existing fixed-bottom solutions.

"We're starting to have to convince people that this is not just a technical playground and prototype play, but that we can actually deploy commercially at large scale," he said. ☐

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