

# MANUFACTURING

*Production • Fabrication • Components • Supply Chain • Materials • Tooling • Machinery*

## Vestas Gets Orders for Hundreds of Megawatts at Year's End

Vestas was extremely busy at the end of 2016, acquiring orders from businesses all over the United States and other parts of the world.

Those orders included:

**Australia:** 270 MW for the Sapphire Wind Farm project. It consists of 75 V126-3.45 MW turbines with Power Optimized Mode to 3.6 MW. Installation and commissioning of the turbines should be completed in the second half of 2018.

**Brazil:** 117 MW for the Ventos da Bahia — Phase 2 wind park. The order includes supply and installation of 53 units of V110-2.0 MW turbines manufactured in Brazil. Wind turbine delivery is planned to begin in the first quarter of 2018, with commissioning expected for the third quarter of 2018.

**Brazil:** 42 MW that includes 21 V110-2.0 MW wind turbines for the Cabeço Vermelho I and Cabeço Vermelho II wind park in Rio Grande do Norte. The turbines will be produced in Brazil with delivery planned to begin in the fourth quarter of 2017, with commissioning expected for the second quarter of 2018.

**China:** 50 MW for the V110-2.0 MW turbine with Power Optimized Mode to 2.2 MW. Turbine delivery is expected to begin in the third quarter of 2017.

**China:** Huadian orders seven V117-3.45 MW turbines for a project in China's Fujian Province. Delivery of turbines is expected in the second quarter of 2017, with commissioning scheduled for the second half of the year.

**China:** 40 V110-2.0 MW turbines from Titan Wind Energy for a project in eastern China's Shandong



Vestas December was packed with orders for hundreds of megawatts from all over the world, but particularly in the United States. (Courtesy: Vestas)

Province. Delivery of turbines is expected in the second quarter of 2017, with commissioning scheduled for the second half of the year.

**Germany:** 30 MW for a repowering project consisting of nine V117-3.45 MW turbines from Bürger-Windpark Lübke-Koog Nord GmbH & Co.KG. The project is a repowering project and replaces 13 V80-2.0 MW turbines. Wind turbine delivery and commissioning is planned for the third quarter of 2017.

**Honduras:** 59 MW. The order includes V117-3.45 MW turbines and is Vestas' first in Honduras. Honduras is the second new market for Vestas in 2016. Turbine delivery is planned for the first quarter of 2017, while commissioning is expected for the fourth quarter of 2017.

**Sweden:** Eolus Vind AB placed their largest wind power order to date, comprising 23 V126-3.45 MW turbines for the Jenåsen wind power plant. Delivery of the wind turbines is expected to begin in the first quarter of 2018.

**Ukraine:** 21 MW for Karpatenwind LLC for 6 V126-3.45 MW. The wind turbines will be installed in the Lviv region in western Ukraine. Wind turbine delivery and commissioning is planned for the second quarter of 2017.

**United States:** 101 MW. The order includes V126-3.45 MW and V117-3.45 MW turbines with Power Optimized Mode to 3.6 MW. Turbine delivery is expected in 2017.

**United States:** 101 MW. The order includes V126-3.45 MW and V117-3.45 MW turbines with Power Optimized Mode to 3.6 MW. Turbine delivery is expected in 2017. Customer and project names were not disclosed at the customer's request.

**United States:** 153 MW from the largest utility owner of wind energy

in the U.S., MidAmerican Energy. The order includes 153 MW of V110-2.0 MW turbines as part of the 2,000 MW Wind XI project in Iowa. The turbines will be manufactured at Vestas' Colorado factories with expected delivery in 2017.

**United States:** 42 MW. The order comprises V110-2.0 MW turbine components that enable future project pipeline. Customer name was not disclosed at the customer's request.

**United States:** 200 MW. Customer and project name were not disclosed at the customer's request.

**United States:** 29 MW for a repowering project in the United States. The order includes 29 MW of V110-2.0 MW turbine components that enable future repowering efforts within the customer's operating wind-project portfolio. The turbine components will be manufactured at Vestas' Colorado factories and will be delivered beginning in 2017. Customer name not disclosed at the customer's request.

**United States:** 154 MW. MidAmerican Energy ordered 77 V110-2.0 MW turbines as part of the 2,000 MW Wind XI project in Iowa. The turbines will be manufactured at Vestas' Colorado factories with expected delivery in 2017. Potential future order intake under the 2,000 MW Wind XI project is expected to occur.

**United States:** 48 MW comprising 3 MW compatible turbine components that enable future project pipeline. Customer name not disclosed at the customer's request.

**United States:** 200 MW of V110-2.0 MW turbine components that enable future project pipeline. Turbine components will be manufactured at Vestas' Colorado factories. Customer name not disclosed at the customer's request.

**United States:** 43 MW of turbine

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components that enable future project pipeline. The order includes components compatible with a variety of turbines across the 2 MW and 3 MW platforms that enable future project pipeline, with multiple components produced at Vestas' Colorado factories.

**United States:** 131 MW comprising V112-3.45 MW turbine components that enable future project pipeline. Customer name not disclosed at the customer's request.

**United States:** 30 MW from Avangrid Renewables for 3.0 MW turbine components, growing the 3 MW platform's presence in the U.S. The order enables future project pipeline and includes supply and commissioning of the wind turbines.

**United States:** 131 MW that includes 100 MW of V110-2.0 MW turbines and 31 MW of 2.0 MW compatible turbine components from EDF Renewable Energy. The order includes 50 V110-2.0 MW turbines for an undisclosed project and an additional 31 MW of 2.0 MW compatible turbine components to enable fu-

ture project pipeline. Nacelles, blades, and towers will be produced at Vestas' Colorado factories.

**United States:** 67 MW for an order of V110-2.0 MW turbine components that both enable future project pipeline and repowering of existing operating assets. The order includes supply and commissioning of the wind turbines. Multiple components will be produced at Vestas' Colorado factories. Customer name not disclosed at the customer's request.

**United States:** 29 MW of V110-2.0 MW turbine components that enable future repowering efforts within the customer's operating wind-project portfolio. The turbine components will be manufactured at Vestas' Colorado factories with delivery expected in the beginning of 2017. Customer name not disclosed at the customer's request. ↵

*Source: Vestas*

For more information, go to [www.vestas.com](http://www.vestas.com)

## Senvion Concludes 33 MW Contract with Innogy Renewables

Senvion, a leading global manufacturer of wind turbines, has signed a contract with Innogy Renewables UK Ltd. to supply 16 wind turbines from its 2 MW series for the Mynydd y Gwair wind farm in South Wales.

Located 15 kilometers north of Swansea, Mynydd y Gwair wind farm will consist of 16 Senvion MM92 turbines. Once operational, the project will have an installed capacity of 32.8 MW and will generate enough renewable electricity to power more than 22,000 average U.K. households annually.

The average annual generation expected at the site could be equivalent to the approximate domestic needs of up to 22,600 average U.K. households. Energy predicted to be generated by the proposal is derived using wind speeds monitored in the local area and correlating to historical reanalysis weather data providing longer-term data. The calculations are based on an installed capacity of 32.8 MW. The energy capture predicted and hence derived homes equivalent figure may change as further data are gathered.

Equivalent homes supplied is based on an annual electricity consumption per home of 4,400 kWh. This figure is supported by recent domestic electricity consumption data available from The Digest of U.K. Energy Statistics and household figures from the U.K. Statistics Authority. Turbine components delivery starts in April 2018, and installation and commissioning is due to be completed in October 2018.

This is the 11th contract to be signed between Senvion and Innogy Renewables UK Ltd. and the conclu-

sion of this contract marks the fifth consecutive turbine supply agreement between both parties. In 2016, Senvion concluded agreements to supply turbines for Innogy Renewable UK's Brechfa Forest West wind farm and Bad á Cheò wind farm. Brechfa Forest West wind farm is in Carmarthenshire in South Wales. The wind farm will consist of 28 MM92 turbines providing an overall capacity of 57.4 MW. Grid consent for the project was confirmed in October 2016.

Once fully operational, the wind farm will generate enough renewable electricity to meet the calculative needs of approximately 38,800 average U.K. households annually. Bad á Cheò wind farm is near Caithness in Scotland and will feature 13 MM92 turbines. Construction will start in early 2017 and once constructed, the wind farm will provide an installed capacity of up to 26.7 MW.

Senvion also concluded five-year maintenance contracts with Innogy Renewables UK Ltd. for all three projects, with options to extend these up to 10 and then 15 years.

"We are delighted to be working with Innogy Renewables UK once more," said Guy Madgwick, managing director of Senvion Northern Europe. "Since we signed our first contract together for the Ffynnon Oer wind farm in 2005, we have partnered on a number of successful projects, and these additional contracts demonstrate the strength of the established and reliable relationship we have maintained for more than a decade."

“It was great to have all contracts signed before the financial year end,” said Tanya Davies, head of On-shore Development at Innogy Renewables UK Ltd. “We are delighted to see Mynydd y Gwair Wind Farm join Brechfa Forest West and Bad á Cheò and enter into construction. This is great news for the industry and the investment opportunities in South Wales.”

“We look forward to the construction of Mynydd y

Gwair Wind Farm and the Senvion turbines being erected and generating clean renewable energy in the near future,” said Gwenllian Elias, Mynydd y Gwair development manager at Innogy Renewables UK Ltd. ✎

*Source: Senvion*

For more information,  
go to [www.senvion.com](http://www.senvion.com)

## LM Wind Power Pledges To Become Carbon Neutral by 2018

LM Wind Power, the world’s largest, independent manufacturer of wind-turbine blades recently announced it plans to be carbon neutral by 2018, making it one of the first in the wind industry to take such a step. It will begin by sourcing 100 percent of its electricity from renewable energy sources during 2017.

With the ambition to eliminate and offset the CO2 emissions from its own operations by 2018, LM Wind Power joins an exclusive group of corporate leaders committed to demonstrating the leadership and action required to keep global warming below 2 degrees C, and setting new standards to accelerate the de-carbonization of the wind industry’s own supply chain.

LM Wind Power has produced more than 185,000 blades since the company began blade operations in 1978. This corresponds to approximately 77 GW of installed wind-power capacity, which each year effectively replaces about 147 million metric tons of CO2. This corresponds to the annual CO2 emissions from electricity used in 20 million (U.S.) homes.

“When we signed the UN Global Compact in 2010, we argued that LM Wind Power might be the greenest company in the world with more than 20 percent of all turbines worldwide flying LM blades,” said LM Wind Power CEO Marc de Jong. “But we also asked some tough questions — are we really green enough? It’s a paradox that the industry has not addressed this more coherently before. Could we not reduce our own carbon footprint further and do even more to nurture the growth of wind energy globally? Our carbon neutrality ambition by 2018 is the clear response to that challenge. Our customers, our host governments, the communities where we operate, and above all, our employees, are all behind us in this ambitious plan. In so doing, we will truly live our company vision that ‘Together, we capture the wind to power a cleaner world.’”

The three main components of LM Wind Power’s carbon neutral program, which will be named “CleanLM” are:



LM Wind Power has produced more than 185,000 blades since beginning blade operations in 1978. (Courtesy: LM Wind Power)

- Reductions in the company’s carbon emissions through operational efficiencies, for example, an internal drive to reduce energy consumption and waste.
- Using 100 percent renewable electricity, particularly from wind, in conjunction with partners and customers and effective from 2017.
- Offsetting our remaining emissions through carbon credits and building low carbon sustainable development through the delivery of clean and renewable energy for communities in developing countries.

The company has implemented several sustainability initiatives in recent years with the aim of driving innovation and ensuring the long-term viability of the business. The bold ambition to become carbon neutral in 2018 is a core component of a wider program that includes implementing life-cycle thinking in the design of future generations of wind-turbine blades, an active focus on chemical substitution in manufacturing and end of life disposal. ✎

*Source: LM Wind Power*

For more information,  
go to [www.lmwindpower.com](http://www.lmwindpower.com)