

FOR IMMEDIATE RELEASE

## **Development of 5MW Wind Turbine Generator System Capable of Greater Power in Light-Wind Environments**

*--15% Enlargement of Swept Area to Better Adapt to Regions  
with an Annual Average Wind Speed of below 7.5 m/s --*

**Tokyo, September 7, 2016** --- Hitachi, Ltd. (TSE: 6501/ Hitachi) today announced it has developed a 5MW offshore wind turbine generator system, the HTW5.2-136, with a downwind configuration. The new system features a 15% larger rotor swept area to increase output in light-wind regions that have annual average wind speeds below 7.5 m/s. The system is scheduled to begin a trial run in October onshore at the Fukushima Wind Power Station in Kashima-port of Hitachi Wind Power Ltd. (hereafter, Hitachi Wind Power), which was established by Hitachi Capital Corporation with co-funding by Hitachi on the Kamisu City waterfront in Ibaraki Prefecture. Should the trial run prove successful, Hitachi Wind Power intends to release the new wind turbine generator system in FY2017. In addition, the rated power of the previous model, the HTW5.0-126, has been increased to 5.2MW, and will be released as the HTW5.2-127.

The use of renewable energy is spreading in Japan, due in part to the feed-in tariff scheme that was introduced in July 2012 to encourage the creation of a low-carbon society. As an archipelago of islands, there is also potential for Japan to make greater use of offshore wind turbine generators and take advantage of these vast areas of open sea with extensive wind resources, with minimal constraints on site availability and transportation. A number of these installations are currently being planned. In order to generate power more efficiently, offshore wind turbine generator systems must be both extremely reliable and have a large per-turbine output.

Hitachi's turbine generator systems command the top share in Japan in terms of orders, with a cumulative total of about 250 turbines having been ordered, of which 118 are currently in commercial operation<sup>(1)</sup>. In addition to the first 5MW wind turbine generator system that began operation at Hitachi Wind Power's Fukushima Wind Power Station in Kashima-port in September 2015, the 5MW system has also been selected for the Fukushima Floating Offshore Wind Farm Demonstration Project (Fukushima FORWARD) currently being undertaken by the Fukushima Offshore Wind Consortium. In the past, Hitachi has sought to increase the per-turbine power output by developing a 2MW wind turbine generator system for regions with light winds, and

- more -

by adding a 2.5MW wind turbine generator system to its product range.

Hitachi has increased the rated power of the new HTW5.2-136 5MW-class wind turbine system to 5.2MW by optimizing its setup and its control programs. It has also made it possible to increase output in light-wind regions that have an annual average wind speed below 7.5 m/s by increasing the rotor diameter to 136 m, thereby enlarging the wind swept area by 15% more than the previous model. In the future, Hitachi intends to market the HTW5.2-136 for use in light-wind regions along the coasts of Honshu, the main island of Japan.

Hitachi also plans to market the HTW5.2-127 for use at windier sites, such as the coasts of Hokkaido, northern part of the Tohoku region on Honshu, and southern Kyushu, which require wind turbines with the ability to withstand stronger winds. The rated power of the HTW5.2-127 has also been increased from that of the previous HTW5.0-126 model by optimizing its setup and its control programs<sup>(2)</sup>.

Furthermore, the technologies for offshore turbines that offer excellent cost performance and reliability that are used in the HTW5.2-136 and HTW5.2-127 draw on work undertaken through a project funded by the New Energy and Industrial Technology Development Organization (NEDO).

### **About Hitachi's Wind Turbine Generator Systems Business**

Hitachi has developed a range of wind turbine generator systems that cover the 5MW, 2.5MW, and 2MW classes. It has also established the infrastructure for handling everything from development to design, fabrication, sales, and maintenance. In addition, the wind turbines in the 5MW and 2MW classes have a downwind configuration unique to Hitachi that reduces the wind load by orienting the rotor downwind of the tower where it is not subject to crosswinds, even when generation is halted due to high winds. This configuration is expected to improve safety and reduce the cost of installing foundations or floating platforms<sup>(3)</sup> when used for either fixed or floating offshore wind turbine. Hitachi plans to take advantage of this feature to market the systems overseas in Taiwan and other Southeast Asian locations that face difficult environmental conditions and are prone to typhoons like Japan.

In addition to satisfying the diverse requirements of customers and aggressively developing its business in the market for wind turbine generator systems, which is expected to grow, Hitachi is also committed to helping create a low-carbon society

through the supply of electric power systems that support the infrastructure of society.

### Main specifications of HTW5.2-136 and HTW5.2-127

Model	HTW5.2-136	HTW5.2-127
Rated power	5.2MW (5,200kW)	5.2MW (5,200kW)
Rotor diameter	136m	127m
Hub height	90m (approx.)	90m (approx.)
Number of blades	3	3
Rotor configuration	Downwind	Downwind
Yaw control	Normal operation: Active control Shutdown due to high winds: Free yaw	Normal operation: Active control Shutdown due to high winds: Free yaw
Generator type	Permanent magnet synchronous generator	Permanent magnet synchronous generator
Annual average wind speed	7.5m/s	10m/s
Wind speed class	IEC-Class S (equivalent to IIIA)	IEC-Class S (equivalent to IA)

(1) As of April 2016

(2) The models that can be constructed depends on actual wind conditions at the site.

(3) The construction techniques that can be used depend on the geomorphology and depth of the offshore site.

### About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges. The company's consolidated revenues for fiscal 2015 (ended March 31, 2016) totaled 10,034.3 billion yen (\$88.8 billion). The Hitachi Group is a global leader in the Social Innovation Business, and it has approximately 335,000 employees worldwide. Through collaborative creation, Hitachi is providing solutions to customers in a broad range of sectors, including Power / Energy, Industry / Distribution / Water, Urban Development, and Finance / Government & Public / Healthcare. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

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