



## Service – Sales and market development

---

“With improved market opportunities and service order intake, we have raised the ambition for the mid-term and now aim at organic growth of the service business by 40 percent.”

**Christian Venderby**  
Group Senior Vice President of Global Service

---



### Market trends and outlook for the service business

The latest market reports indicate the service market is expected to grow by 10 percent over the next five years, with the installed base expected to reach 700 GW in 2020,<sup>1)</sup> and the competition in the market continues to intensify. In 2015, news about new service offerings and digitalisation proves that the wind turbine service market is taking further steps. Eventually, to succeed in the service market, understanding the commercial needs and the strategies of the asset owners is crucial.

# 700 GW

Global installed capacity of wind power is expected to reach 700 GW in 2020, and hence provide a large potential future base for the service business.

The trend toward long-term service agreements continues. Hence, driven by customer demand, the ability of wind turbine manufacturers to offer attractive long-term service contracts along with wind turbine supply agreements is becoming more and more of an important differentiator.

Another general trend that can be observed within wind turbine operations and maintenance is the phasing out of the traditional time-based guarantees which are gradually being replaced by the output-oriented guarantees as the competitive environment forces service providers to offer differentiated solutions.

### Capturing the full potential of the service business

The service market is growing faster than the market for wind turbines, and is becoming more and more important to Vestas as customers shift their focus from capital expenditure to total cost of ownership.

More customers choose to build in-house service capabilities, and at the same time, more independent service providers arriving at the scene increase competition. Thus, to maintain its leading position in the service market, Vestas continues to invest in its service business, as described below.

# 57 GW

By year end 2015, Vestas provided service on 57 GW (more than 30,000 wind turbines) in 56 countries and the service revenue for the year amounted to EUR 1,138m.

Vestas' service business is expanding with an installed base of more than 30,000 wind turbines under service by the end of 2015, and with a revenue increase of 174m from EUR 964m in 2014 to EUR 1,138m in 2015. Combined with the global footprint of the service organisation and the unmatched ability to analyse big data and predict wind and weather conditions, the installed base of wind turbines gives Vestas a distinctive advantage which provides ideal conditions for stable growth going forward.

During the year, the service business grew by 20 percent – excluding impact from currency rate developments, the growth would have been 15 percent.<sup>2)</sup>

Vestas will continue to expand the catalogue of service offerings and improve existing solutions to increase the customers' output and lower the cost of energy. Based on improved market opportunities and order intake, Vestas has now raised the ambition for the mid-term and aims at organically growing the service business by 40 percent against the previous 30 percent.

Vestas' extensive data processing and asset management capabilities enable anticipating and planning service requirements. This means that Vestas has been able to keep a Lost Production Factor consistently under 2 percent. Vestas' technology and service know-how are mutually reinforcing elements in maximising wind power plant output and lowering the cost of energy.

During 2015, Vestas has further built its capabilities in servicing non-Vestas turbines based on a larger fleet covering more platforms and markets.

In December, Vestas acquired the independent US service provider UpWind Solutions, Inc., followed by the announcement in early 2016 of the agreement to acquire the Germany-based company Availon Holding GmbH. These acquisitions will strengthen Vestas' offerings within servicing of both Vestas and non-Vestas turbines in the USA and Europe especially and are expected to further accelerate the Profitable Growth strategy within the service area, and contribute to the ambition of being the preferred fleetwide lifetime service partner globally.

In 2015, Vestas' service order backlog increased by EUR 1.9bn to EUR 8.9bn, and the expectation is that the service business will continue to grow with stable margins in 2016.

### Three service business areas

Vestas' service offerings are divided into three business areas:

- maintenance partnering,
- parts & repair, and
- fleet optimisation

– each of which contributes to lowering the customers' levelised cost of energy. Service packages are tailored to specific customer needs and site-specific wind power plant requirements. In response to the industry changing and customers' evolving demands, Vestas offers a new generation of flexible fleet optimisation capabilities such as advanced plant and data management, diagnostics, and forecasting.

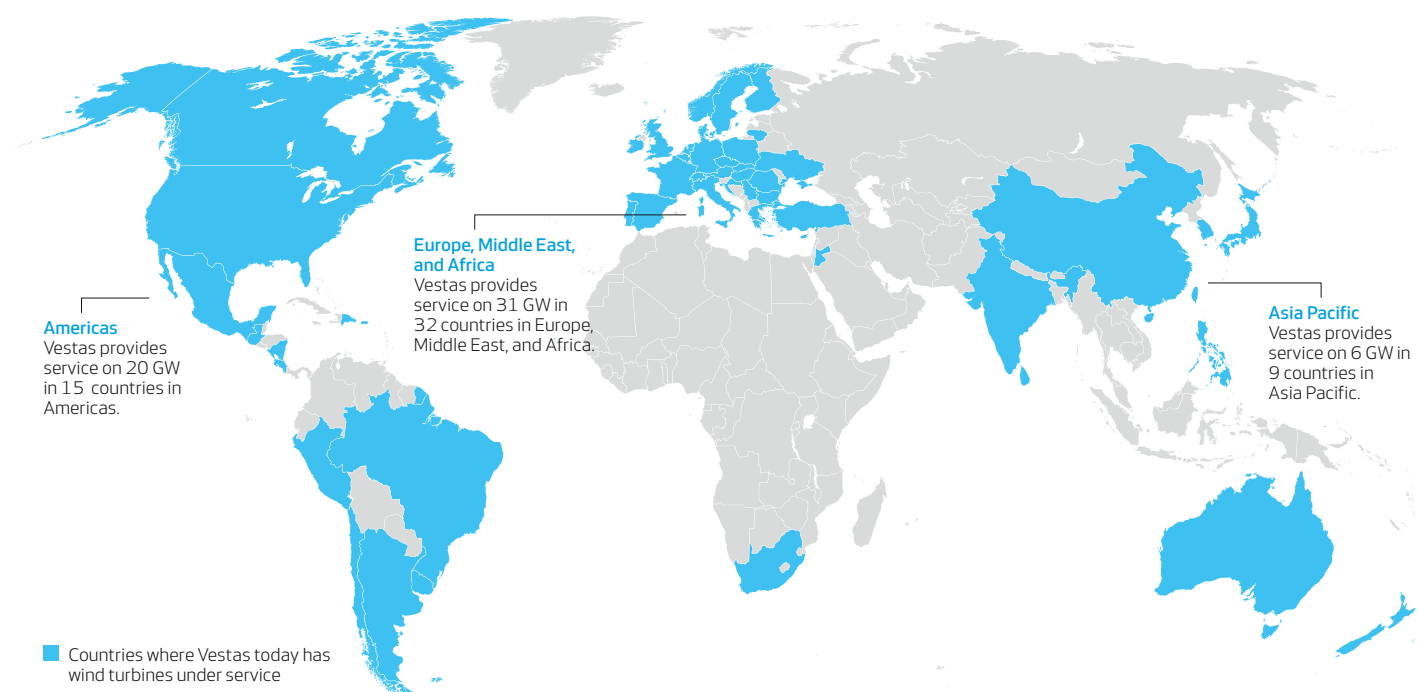
### Maintenance partnering

The core of Vestas' service business is the partnerships the company engages in with customers that need Vestas to monitor the wind energy production, do preventive maintenance, and basically ensure constant maximum performance of the wind power plant throughout its lifetime.

The Active Output Management® (AOM) concept addresses this need. The service programme ensures the highest output at all times, giving customers a predictable return on investment.

1) Source: MAKE Consulting: Service Aftersales Market Update. September 2015.

2) The growth figures do not include offshore revenue incurred prior to divestment of the offshore business to the joint venture 1 April 2014.



## AOM 5000

AOM 5000 is Vestas' most comprehensive service package and includes everything necessary to maximise output from the wind power plants.

The AOM catalogue covers the range AOM 1000-5000 with service models for five types of customers and risk profiles: From services on a pay-as-you-go basis in the AOM 1000, to the full-scope service solution offered with AOM 5000, a concept based on Vestas providing a guaranteed minimum exploitation of the available wind.

### Vestas' Active Output Management\* offerings

AOM 1000	Without charging a basic fee, Vestas offers the customer a range of services on a pay-as-you-go basis.
AOM 2000	The wind turbine is regularly serviced, and the customer has an option to buy additional services.
AOM 3000:	A full service solution which includes spare parts and labour. Wind turbine reliability is maximised through both scheduled and unscheduled service.
AOM 4000	A full service solution aimed at maximising output and uptime, including all required components and a guarantee of traditional time-based availability.
AOM 5000	A full service solution designed to minimise production loss. Under the AOM 5000 service concept, Vestas guarantees a minimum exploitation of the available wind.

The advanced, full-scope AOM 4000 and 5000 service agreements have already for a series of years been best-sellers in connection with new wind turbine contracts. The AOM 5000 service package, where the availability guarantee is based on energy output and incentives and risks are shared between Vestas and the customer, was the most sold

in 2015 in connection with new wind turbine orders, comprising 59 percent of the MW covered by these new service contracts, an increase from 2014.

### Service agreements signed with new wind turbine orders\*

Percent (of MW service order intake)

Type of contract	2015	2014
AOM 2000	0.4	0.2
AOM 3000	0.0	1.3
AOM 4000	40.6	40.9
AOM 5000	59.0	57.6

\* AOM 1000 not included as it conceptually registers as pay-as-you-go services on demand.

Vestas can leverage its scale and give customers the benefit of a global supply chain that is reliable, efficient, and cost-effective, which gives the company a great advantage in the competitive market. Vestas' service organisation operates on a global basis, with warehouses and service centres distributed across more than 50 countries, plus three 24-hour surveillance centres located in Portland, USA, Madrid, Spain and Chennai, India.

### Parts & repair offerings

In 2015, Vestas strengthened its parts & repair offerings by establishing a separate business area devoted to supply of spare parts and corrective maintenance service. This was done to put more focus on capturing the part of the service business which is not covered by service contracts, e.g. the transactional part of the market, including independent service providers with specialised ad hoc tasks.

In recent years, there has been heightened focus on pushing existing gearbox and generator repair solutions, i.e. offering the same reliable and proven repair solutions that are used on wind turbines under Vestas maintenance contracts, and strengthening the spare parts sale.

## +250 warehouses

More than 200,000 deliveries a year leave Vestas' more than 250 warehouses to reach about 700 different destinations in 55 countries.

During the year, development of up-tower gearbox repair solutions for the V82 turbine and the 2 MW platform has been initiated in order to carry out repairs that previously would have had to be carried out down-tower or in a workshop repair facility – a solution that can save the customer up to 80 percent of repair costs, depending on component specific conditions.

While the parts & repair business is more volatile, it remains an interesting area to further develop as it supplements the offerings provided under the maintenance partnering concepts.

### Fleet optimisation solutions

Vestas continues to broaden its catalogue of aftermarket upgrade solutions to match the needs of its varied customer base, and at the same time to further refine existing solutions for optimising the output of wind power plants.

Vestas PowerPlus™, a suite of upgrades introduced in 2014, is Vestas' key offering targeted existing wind power plants. With three advanced technology solutions, PowerPlus™ optimises the performance of the wind power plant by up to 5 percent. During 2015, Vestas expanded the PowerPlus™ offering by adding more aerodynamic upgrades, and by expanding the wind turbines covered to include the V112.

In addition, a wind turbine life extension programme was developed, called Vestas LifePlus™ that allows the owners to continue operating the wind turbines beyond their initially estimated design lifetime.

### Customer relations

Vestas measures the customer satisfaction on both the wind turbine manufacturing and the service leg of the business through an annual customer satisfaction survey.

On the service part, the 2015 survey results show that overall, the customers' perception of Vestas Service improved from 2014 to 2015, with overall satisfaction having increased from index 73 to 75.

As it is of great importance to Vestas to build long-lasting partnerships with its customers, it is also worth noting that according to the survey results and based on the respondents, 83 percent of the customers count Vestas as one of their two preferred service suppliers.



### Honoured for using big data to optimise wind turbine performance

In June 2015, Vestas received Deloitte's Big Data Award for using smart data to optimise the maintenance of wind power plants all over the world, receiving data from more than 29,000 wind turbines on a regular basis. Data has become part of the Vestas DNA and data driven business development is an integrated part of the company culture.

By using big data Vestas is able to foresee when wind turbine components are malfunctioning and need maintenance – before they actually do. According to Deloitte, this type of sophisticated data is one of the key competitive parameters in the business world right now.

### UpWind Solutions, Inc.

In 2015, Vestas acquired UpWind Solutions, Inc. (UpWind Solutions) and its subsidiaries (UpWind Solutions), a leading independent service provider in North America, with headquarters in San Diego, California. The acquisition price for UpWind Solutions was USD 60m (approx EUR 55m) on a debt and cash free basis.

With about 310 employees, UpWind Solutions currently services wind power plants in nine US states with a total capacity of more than 3 GW. The wind power plants under service represent a diverse customer base and include wind turbines from a number of manufacturers. UpWind Solutions also supplies parts for most major wind turbine technologies, performs blade inspections, and offers various performance upgrades.

Together, Vestas and UpWind Solutions will service approx 17 GW of Vestas and non-Vestas wind turbines in the USA and Canada with ambitions for further growth.