

V100-1.8 MW

High energy production for low wind sites

vestas.com

Vestas[®]



No. 1 in Modern Energy

The world needs ever-greater supplies of clean, sustainable energy. Modern energy that promotes sustainable development and greater prosperity for all our planet's inhabitants. Vestas wind turbines are already generating more than 60 million MWh of electricity every year – enough to power all of Spain, for example – and we are ready to go even further. After more than 30 years in business, Vestas continues to pioneer the wind energy business, achieving breakthroughs that transform our entire industry.



WE DELIVER
ON THE PROMISE
OF WIND POWER



Vestas



A WORKHORSE OF UNRIVALED AVAILABILITY

Truly best of class

The V100-1.8 MW brings together the very best of the 2.0 MW class in a single turbine designed for low wind onshore sites. It features a greater rotor diameter, enabling it to deliver higher output at low wind speeds.

Because of this, the V100-1.8 MW delivers excellent return on investment, even at sites where wind power plants have not previously been profitable. These sites can now be used to produce clean, stable, sustainable and competitive energy.



NEW STANDARDS FOR EFFICIENCY AND RELIABILITY

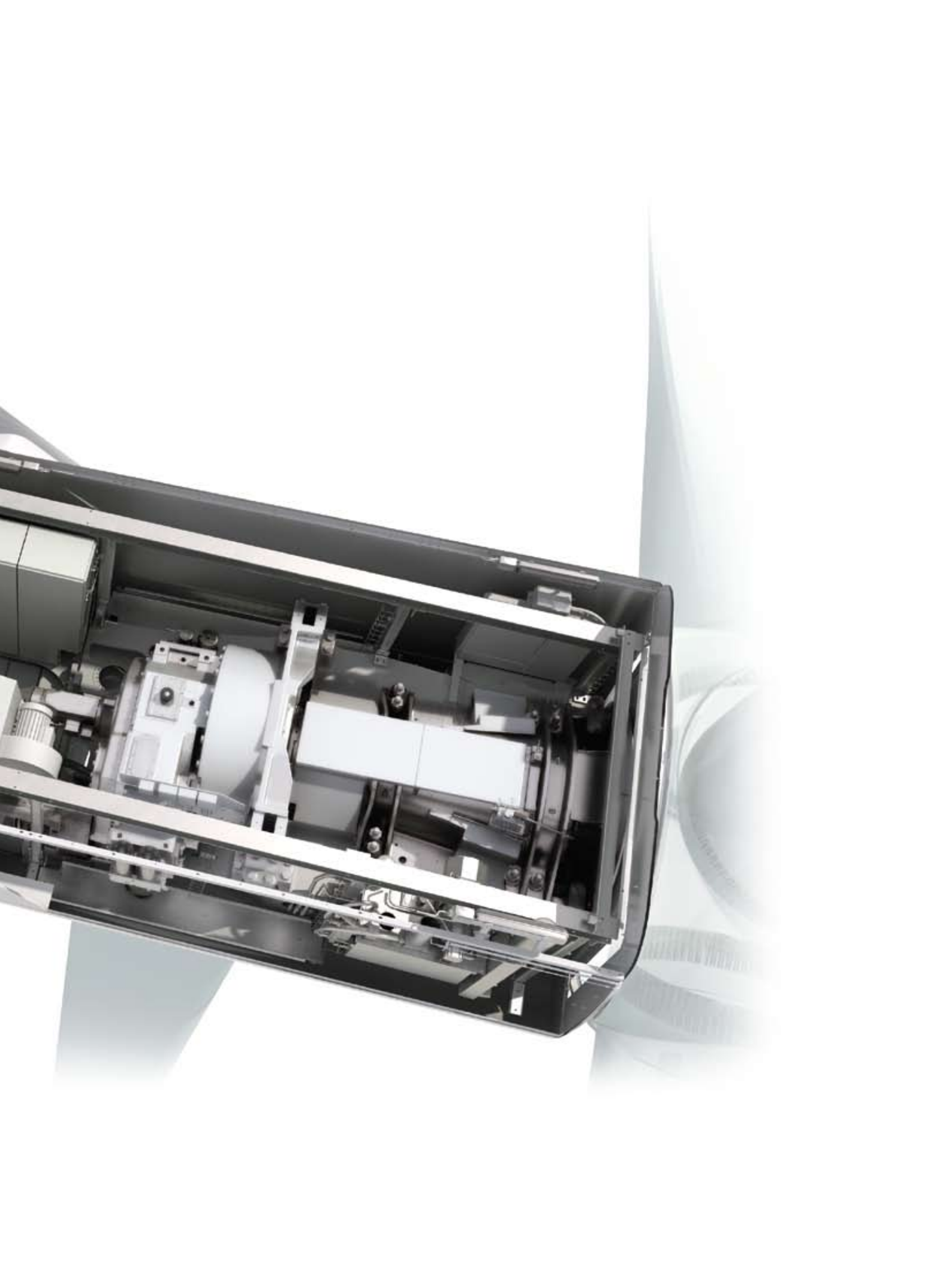
Unrivalled availability under any conditions

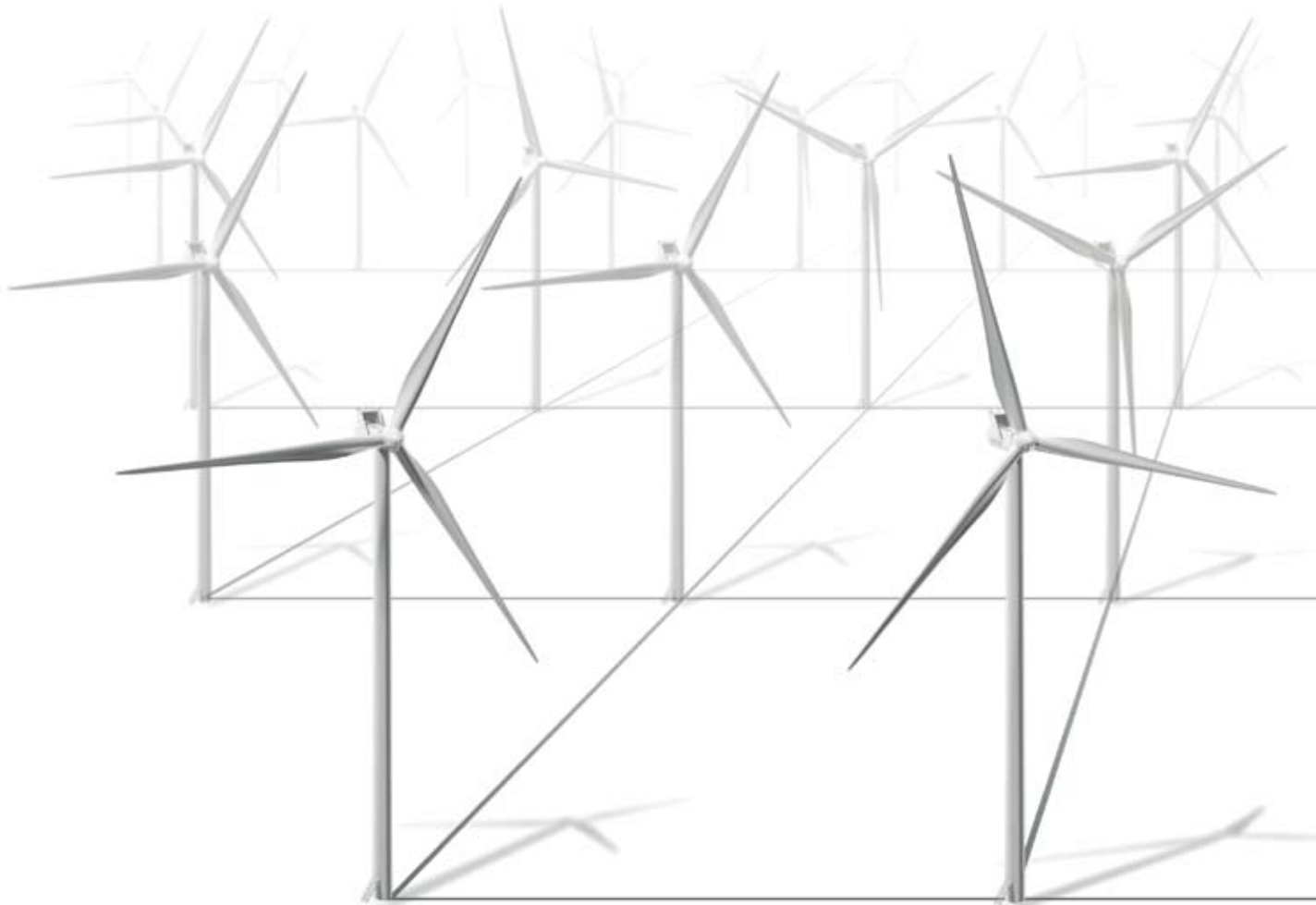
We've made extensive use of our experience with the 2.0 MW class in designing the V100-1.8 MW, producing a turbine that delivers market-leading availability.

The V100-1.8 MW features a modular design, with several turbines sharing innovative, high-performance technology. Our turbines in this class boast a rugged design, grid compliance and high, thoroughly documented performance. Vestas has installed more than 5,000 2.0 MW turbines since 2003 at highly diverse wind sites around the globe. They've proved their solid performance both onshore and offshore, and they have a long track record of documented high availability even in the most extreme conditions.

Mature technology, stable revenue

The V100-1.8 MW is based on a mature, reliable design platform. This enables the V100-1.8 MW to deliver high, stable revenue at low wind sites, where it hasn't previously been possible to harvest wind power so efficiently. Furthermore, the turbine has been designed around a large number of standard components that several suppliers can provide, improving overall reliability and high availability of the turbine.





Flexible grid integration and stable output

Vestas products, such as the V100-1.8 MW, are designed so that your wind park will be fully compliant with applicable grid codes at the point of common coupling. How this is achieved may differ from country to country, but generally, the Vestas advanced grid compliance system provides active and reactive power regulation, frequency regulation and fault ride-through capabilities to support grid levels and stability in the event of grid disturbances.

Enhanced safety and maintenance

The V100-1.8 MW is designed for reliability, safety and convenient maintenance. All rotating parts are shielded, and all the components are positioned to minimise service time and manpower, no matter what service task is involved. The V100-1.8 MW offers a number of features that boost reliability and serviceability, including ingenious solutions for lubricating key components such as the blade-bearing system and the yaw system.

**Can be installed almost anywhere**

The V100-1.8 MW complies with all the standard limits for weight, width and height. It can be transported to most sites in the world without being subject to special fees and restrictions that can delay or increase the cost of wind power plant construction.

Next-generation software

The V100-1.8 MW is equipped with the latest turbine control and operation software, a state-of-the-art modular software platform developed to run the next generation of Vestas turbines.

Special options

The V100-1.8 MW is available with a number of special options that ensure compliance with local requirements. These options include:

- Condition monitoring system
- Switchgear
- Aviation markings on the blades
- Aviation lights
- Company logo
- Low temperature operation to -30°C
- Ice detection system



DESIGNED FOR A HIGH-YIELD WIND HARVEST

Market-leading aerodynamics

The tried and tested blades on the V100-1.8 MW sweep an area of 7,850 m² and deliver an outstanding rotor-to-generator ratio. This adds up to higher capacity and yield, compared to other turbines in the 2 MW class.

The 49-metre blades have proven their worth since 2006, and have been subjected to static and dynamic testing, as well as being type-certified by Det Norske Veritas.

CoolerTop™ saves energy

The environmentally friendly CoolerTop™ is yet another example of the V100-1.8 MW's state-of-the-art technology. It cools the water used in the turbine's cooling system by channelling wind into the heat exchanger. This boosts reliability, not least by reducing the number of moving parts and electrical components in the cooling system, and it reduces the turbine's own energy consumption.





VESTAS TAKES CARE OF YOUR INVESTMENT ROUND THE CLOCK

Verified component lifetime

At the Vestas Testing Centre and Technology R&D, engineering experts and technicians use state-of-the-art testing methods to ensure that all components and systems meet our standards for safety, performance and reliability throughout their 20-year service life. These tests push the components beyond their specifications. One method is known as Highly Accelerated Life Testing, where some of the testing is conducted in a HALT chamber. Extreme fluctuations in temperatures combined with heavy vibrations are just some of the stress tests the components are subjected to here. This enables Vestas to identify and address design flaws long before the turbines reach the market.

Surveillance 24/7/365

Our surveillance services are manned 24/7 all year round to provide real-time surveillance, remote troubleshooting and other services. These services can also detect potential errors and disruptions before they occur, as data from your turbines is gathered and analysed. This enables us to prepare a plan for preventative maintenance, saving you from unexpected production stops and costly downtime.

Service and maintenance

Vestas has service centres around the globe and we are able to cover your every need, from simple cleaning and planned maintenance to emergency call-outs and on-site inventories customised for your turbines.



Asset management and operation risk mitigation

Your wind turbines have to be maintained with great care to avoid exposing your investment to unnecessary risks. And that is exactly what Active Output Management is designed to ensure – that you get the greatest possible return on your investment in a Vestas wind turbine.

AOM provides a number of advantages, such as detailed plans for service and maintenance, online monitoring, optimisation and troubleshooting, and a competitive insurance scheme. We even offer a full availability guarantee, where Vestas pays compensation if the turbine fails to meet the agreed availability targets.

Project management for effective plants

The better your turbines fit your wind site, the more profitable your plant will be. That's why Vestas offers to take on project management from the initial wind measurements to complete installation of the wind power plant. More than 30 years of international experience and local expertise enable us to complete:

- Wind and site studies
- Designing the wind power project
- Selecting wind turbine types
- Installing the wind farm
- Servicing and maintenance throughout the turbine's service life
- Monitoring and remote troubleshooting.

TECHNICAL DATA FOR V100-1.8 MV

Power regulation pitch regulated
with variable speed

Operating data

Rated power	1,800 kW
Cut-in wind speed	4 m/s
Rated wind speed	12 m/s
Cut-out wind speed	20 m/s
Wind Class - IEC	IEC S (IEC IIIA average wind and IEC IIA extreme wind)
Max. altitude	1,500 m
Operating temperature range	standard range -20°C to 40°C. low temperature option: -30°C to 40°C

Sound power

(at standard air density 1,225 kg/m³)

5 m/s	95 dB(A)
6 m/s	95 dB(A)
7 m/s	97.9 dB(A)
8 m/s	101.2 dB(A)
9 m/s	104.1 dB(A)
10 m/s	106.5 dB(A)
11 m/s	106.5 dB(A)

Rotor

Rotor diameter	100 m
Swept area	7,850 m ²

Electrical

Frequency	50 Hz/60 Hz
Generator type	asynchronous with wound rotor, slip rings

Main dimensions

Blade

Length	49 m
Max. chord	3.9 m

Nacelle

Height for transport	4 m
Height installed	5.4 m
Cover height	3.5 m
Length	10.4 m
Width	3.4 m

Tower

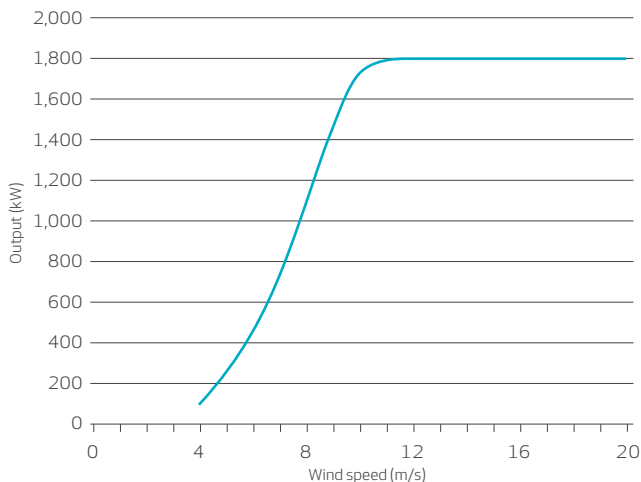
Hub heights	80 and 95 m
Max. section length	24.6 m
Max. diameter	4.2 m

Hub

Max. diameter	3.3 m
Max. width	4 m
Length	4.2 m

Max. weight per unit for transportation	70 metric tonnes
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Power curve V100-1.8 MW



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