

V82-1.65 MW

Creating more from less



Vestas



Optimised for low and medium winds

With its large rotor and powerful generator, the V82 outperforms any turbine in its megawatt class for sites with low and medium wind conditions. Our hydraulic Active-Stall® technology ensures that the rotor gathers the maximum power from the prevailing wind, while minimising loads and controlling output. Active-Stall® provides failsafe protection in all conditions and, at and above its rated wind speed, maintains a steady output of 1.65 MW. With the V82, we have designed a wind turbine that offers unparalleled performance at a cost-effective price.

Low sound level

Vestas has made a concerted effort to reduce the sound level of the V82 dramatically – with audible results. The operating sound levels are among the lowest on the market,

regardless of wind speed. The V82 also comes with a two-speed generator, which makes it possible to cut sound even further to meet specific requirements, e.g. for night time or low-wind operations.

Excellent grid compatibility

As wind turbines capture more of the electricity market each year, they have an increasingly significant role to play in grid management. Fortunately, the V82 meets even the most stringent grid demands, and with the installation of our advanced grid compliance system, the V82 will actually help stabilise a weak grid. Vestas grid support features full load and dynamic phase compensation to enhance reactive power regulation and thus keep the power factor in range. It has an uninterrupted backup power supply, too, so that auxiliary systems run at full capacity during grid disturbances. Moreover, our grid support provides continuous active and reactive power regulation to maintain voltage balance in the grid, as well as fault ride-through in the event of disturbances.

High reliability

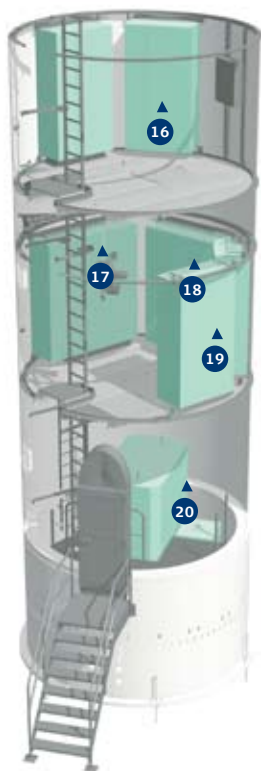
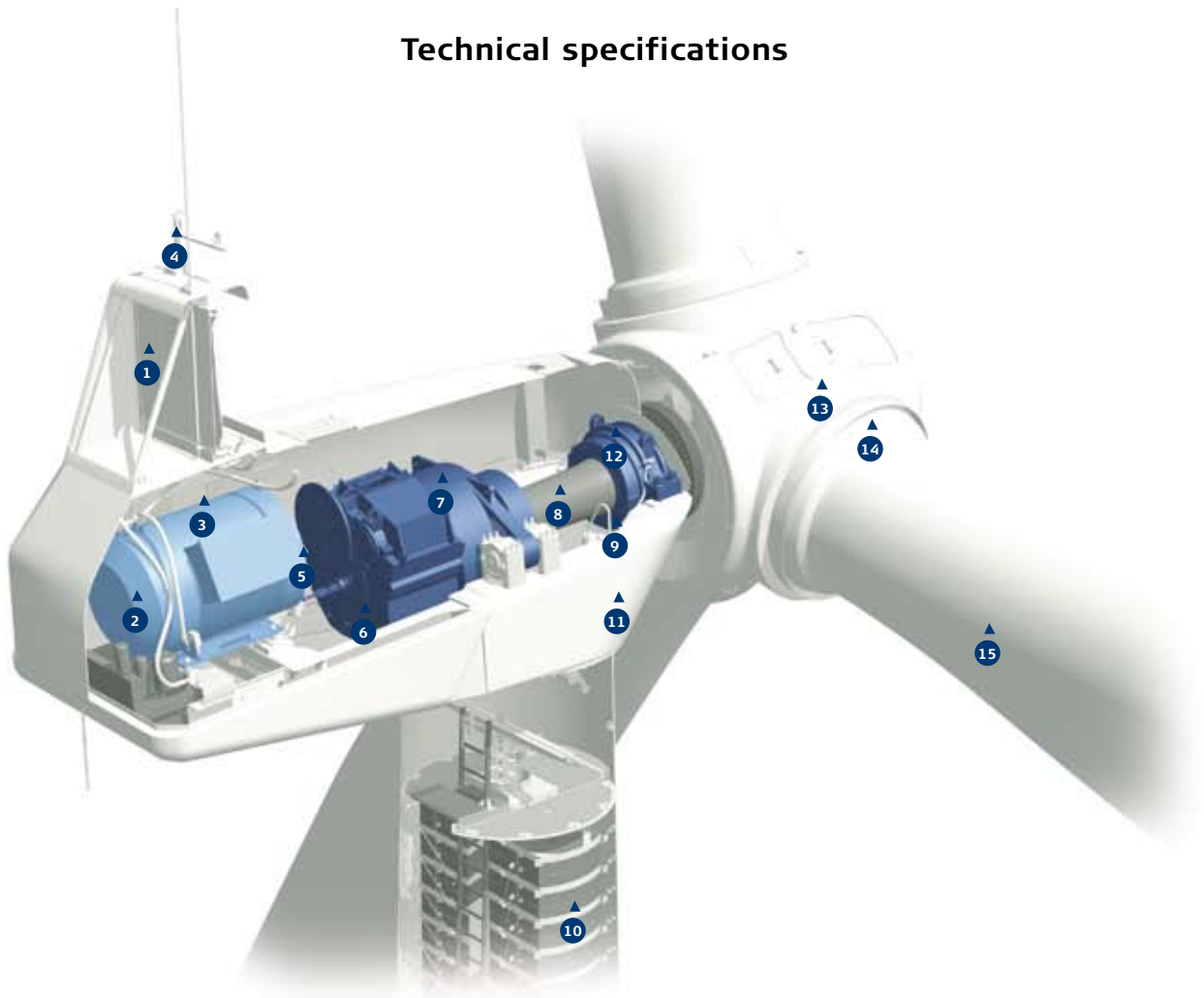
Det Norske Veritas (DNV) has certified the V82 as meeting the strictest standards in the wind industry. It has the capacity to tune up its own generator, which helps to give it a particularly high degree of operational availability. In addition, the nacelle is based on the thoroughly tested design of previous models. To date, more than 700 wind turbines featuring this platform design have been installed on sites with conditions ranging from arctic to tropical.

Proven performance

Wind power plants require substantial investments, and the process can be very complex. To assist in the evaluation and purchasing process, Vestas has identified four factors that are critical to wind turbine quality: energy production, operational availability, power quality and sound level.

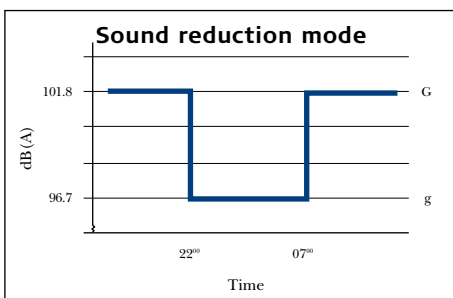
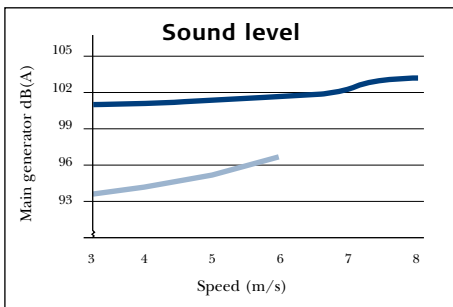
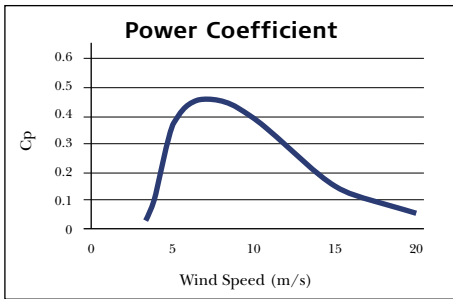
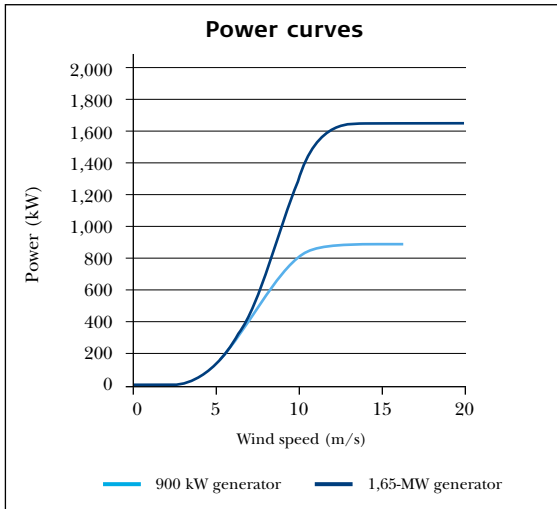
We spend months testing and documenting these performance areas for all Vestas turbines. When we are finally satisfied, we ask an independent testing organisation to verify the results – a practice we call Proven Performance. At Vestas we do not just talk about quality. We prove it.

Technical specifications



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|----|----------------------|----|---------------------------------------|
| 1 | Cooler | 11 | Machine foundation |
| 2 | Generator | 12 | Main bearing |
| 3 | Nacelle computer | 13 | Hub computer |
| 4 | Anemometer windvanes | 14 | Pitch system |
| 5 | Coupling | 15 | Blade |
| 6 | Mechanical brake | 16 | Dynamic converter (option) |
| 7 | Gearbox | 17 | Main panel |
| 8 | Main shaft | 18 | Phase compensation (full load option) |
| 9 | Yaw gears | 19 | CPU |
| 10 | Tower damper | 20 | Transformer and switchgear |

Example of tower internal configuration.



Rotor

Diameter:	82 m
Area swept:	5,281 m ²
Nominal revolutions:	14.4 rpm, 14.4/10.8 rpm
Number of blades:	3
Power regulation:	Active-Stall®
Air brake:	Full blade pitch by three separate hydraulic pitch cylinders

Tower

Hub height (approx.): 59 m, 68.5 m, 70 m, 78 m

Operational data

	IEC IIB: 1,650 kW	IEC IIB: 900 kW/1,650 kW
Cut-in wind speed:	3.5 m/s	2.5 m/s
Nominal wind speed:	13 m/s	13 m/s
Cut-out wind speed (10 minutes):	20 m/s	20 m/s
Cut-out wind speed (1 minute):	24 m/s	24 m/s
Cut-out wind speed (1 second):	32 m/s	32 m/s

Generator

Type:	Asynchronous one or two speed generator water cooled
Nominal output:	1,650 kW
Operational data:	50/60 Hz 690 V

Gearbox

Type:	Planetary/helical stages
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Control

Type:	Computer-based control of all turbine functions with the option of remote monitoring. Output regulation and optimisation via Active-Stall®.
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Weight

Nacelle	52 t
Rotor	43 t
Towers:	
Hub height:	IEC IIB
59 m	75 t
68.5 m	105 t
70 m	110 t
78 m	130 t

t = metric tonnes

All specifications subject to change without notice.

Creating more from less



Ideally, it makes sense to generate electricity close to where it will be consumed so as to keep transmission, infrastructure and service costs low. However, since populous areas tend to have low winds and stringent requirements on sound levels, the wind industry often concentrates on coastal areas, deserted interiors and the open sea, where the wind is plentiful and sound restrictions are few.

With the V82 wind turbine, Vestas has made it easier to produce electricity close to where people live. Not only is the V82 extremely efficient in areas with low and medium winds, but it also provides the means to adjust sound levels

to suit local requirements. This means that a large number of previously marginal sites can now be exploited profitably – and quietly.

The V82 is an extremely competitive turbine in its class in areas with low and medium winds. A stall-regulated wind turbine, it has been optimised for sites with an average wind speed of just 6.5 m/s at hub height, while a breeze of as little as 2.5 m/s is all that is needed to start production. The V82 is available with either a one or a two-speed generator.

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