

WES

WIND ENERGY SOLUTIONS

WES³⁰ mk1

250 kW



COMPANY



CHALLENGE

Wind Energy Solutions is a Dutch manufacturer of small to medium-sized wind turbines with generator capacities ranging from 2.5 kW to 250 kW. Our products are the result of 20 years of evolution in wind turbine technology. WES wind turbines have been installed and are operating in many different locations world-wide. They are characterized as being robust, reliable and easy to install in remote places, which enables our mission; "To Bring Renewable Energy Everywhere".

We believe that wind energy solutions can and should be applied in virtually any situation. As long as there is sufficient wind and a need for a reliable and renewable source of electricity, WES has a wind energy solution that works for you. Our aim is to help you make use of a renewable source of energy so that the environment and our future generations will benefit as well. In other words: TURNING WIND INTO PROFIT.

Some WES applications:

- Urban apartment buildings
- Schools / office buildings
- Resort hotels
- Agricultural businesses
- Poultry/Cattle/Dairy farms
- Remote islands

WES³⁰ mk1

With the WES30 mk1 connected to your farm, business, hotel resort or any other location, you can harvest the wind and generate your own green energy. In other words, "produce it where you use it"! This powerhouse can produce, depending on the wind availability, an average of 600.000 kWh/year of reliable and renewable energy.



EFFICIENT, RELIABLE & ALL-ROUND

The technology and design of the WES30 mk1 is based on the WES18 mk1 with noticeable differences being its size, the tower and efficient aerodynamic shape of the blades. The WES30 mk1 is commonly used as a solitary wind turbine or in wind parks and it has the reputation of being durable and reliable. The typical Dutch two-bladed rotor has a unique hinge system and a passive blade-angle adjustment. This unique mechanism needs very little maintenance. Over 300 units are installed and operating in wind parks, particularly in weak (diesel) electricity grids. Its weight and size allow for easy installation in remote locations and installation on a lattice tower is possible, making the WES30 mk1 an all-round wind turbine.

State of the Art

The WES30 mk1 is equipped with a “State-of-the-Art” control cabinet with IGBT converters and a user and maintenance friendly IPC interface. A user-friendly interface terminal is located on the control cabinet. The control system has effective functions, including dynamic output control. It assures high power quality and low harmonics and enables secure operation, even in weak grids. A Remote Monitoring System is optional.



KEY POINTS

FEATURE	BENEFIT
IGBT control cabinet	weak grid corrective capability
IPC user interface	fully automatic functions and user-friendly
Hinged blades	low stress loads on the drive train
Low weight and height	easy transport and installation
Mechanical design	low maintenance
Unique mechanical rotor	optimum reliability

Quality

Where applicable, the specifications of the co-operating Dutch utility companies and the Dutch national authorities have been a guideline for the design and construction of WES wind turbines. These specifications are accepted and confirmed by many international authorities and belong to the world's most severe and progressive regulations in the field of wind energy.

TECHNICAL SPECIFICATIONS

GENERAL SPECIFICATIONS

Supplier / producer	WES BV
Life expectancy	Minimum 20 years
Service	maintenance twice a year
Nominal Power	250 kW
Cut in wind speed	< 3 m/s
Cut out wind speed	25 m/s
Nominal wind speed	12 m/s
Survival wind speed	60 m/s
Yawing	active yawing / yaw motor
Passive power regulation	Blade angle adjustment
Active power regulation	Fully variable back-to-back system
Hub height	31 – 51 m
Number of blades	2
Rotor diameter	30 m
Noise emission at 8 m/s	45 dB(a) at 300 m.

ELECTRICAL SPECIFICATIONS

Power	250 kW
Voltage	400V/50Hz 3 phase or 400V/60Hz 3 phase
Connection	grid connected
Converter	back-to-back inverter (IGBT)

APPLIED STANDARDS

Degree of Protection	IP55
According	NEN1010 & NEN6096
First safety	Passive blade pitch
Second safety	Yawing out of the wind

GENERATOR

Type	a-synchronous
Number of poles	4
Frequency variable	25 – 80 Hz

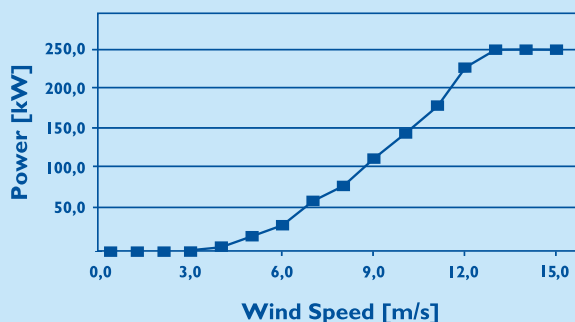
WEIGHTS

Blade	327 kg
Rotor	2.500 kg
Nacelle incl. rotor	7.500 kg
Tower: 30 m.	13.300 kg
Tower: 50 m.	24.400 kg

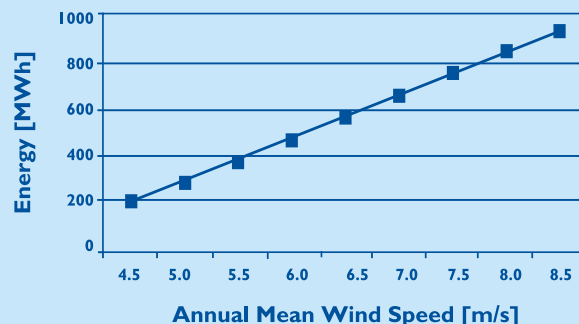
MATERIAL SPECIFICATIONS

Blades	Carbon fibre reinforced epoxy
Blade length	13.4 m
Tower	Steel: tubular or lattice
Foundation	Concrete block with anchor or tube
Corrosion protection	Galvanised steel and other non-corrosive materials.

PV curve



Energy production



WIND ENERGY SOLUTIONS BV.

De Weel 20
1736 KB Zijdwind
T +31 226 425 150
F +31 226 423 433
www.windenergysolutions.nl
info@windenergysolutions.nl

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