

# WINDFLOW 45-500



## Great Returns

- Up to 2,023 MWh/year
- Highest production under 55 m tip
- Optimised for low to medium wind sites
- Variable speed increases production

## Easy Planning

- Low tip heights and visual impact accelerate the planning process
- Standard trucks and single small crane ease site access

## Robust and Durable

- Load-avoiding design copes with strong, turbulent and high shear winds
- Designed to requirements of IEC 61400-1 (edition 3) class 2A assures integrity

## Cost Competitive

- Compact 2-bladed design reduces transport and construction costs
- Grid-friendly generator simplifies connection, especially into weak grids

## Long Term Maintainability

- Standard components from established suppliers assure spares availability
- Based on the 33-500 platform with proven performance on high wind sites
- Comprehensive SCADA system for remote monitoring, control and optimisation

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## WINDFLOW 45-500

### Technical Specifications

#### Rotor

Number of blades	2
Rotor diameter	45 m
Rotor speed	28-35 rpm
Swept area	1,590 m <sup>2</sup>
Orientation	Upwind
Regulation	Full-span pitch
Hub	Teetering (pitch coupled)
Blade material	Laminated composites

#### Hydraulic System

Yawing	Geared motor
Pitching	Fail-safe linear actuator
Braking	Fail-safe caliper
Torque limiting	Radial piston pump
Low variable speed (LVS)	Radial piston motor

#### Gearbox

Type	Planetary/parallel with patented torque limiting and LVS system
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#### Generator

Type	Synchronous, directly on-line
Nominal power	500 kW
Voltage	415 V/480 V (others as required)
Frequency	50 Hz/60 Hz

#### Tower

Type	Hub Ht	Tip Ht	Tubular Tower	Mass	Class
	31.5 m	54 m	30.7 m	19 tonnes	2A
	38 m	60.5 m	37.2 m	25 tonnes	2A
	47 m	69.5 m	46.2 m	tbc	2A

#### Controller

Cut in system	Auto synch
Logic system	PLC

#### Nacelle

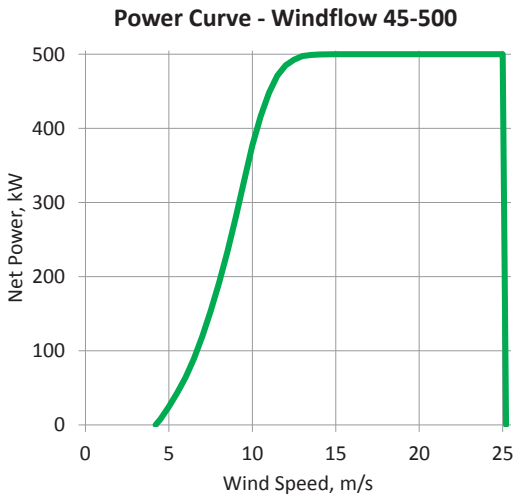
Mass, including rotor	20,400 kg
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#### Performance

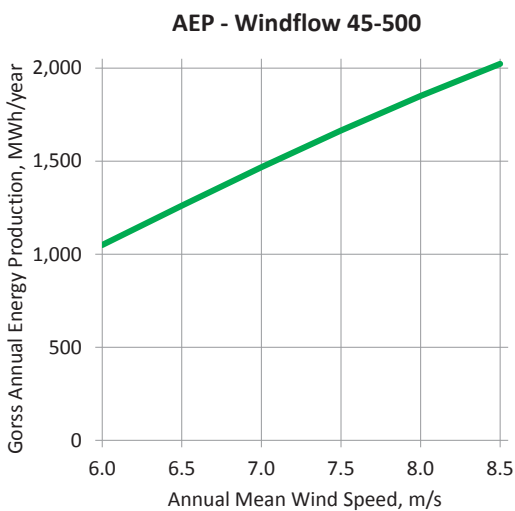
Maximum power	500 kW
Low wind cut in	4.5 m/s (steady wind)
Rated power at	11.5 m/s (steady wind)
High Wind cut out	25 m/s

#### Certification

Type approved	In process
Turbine design	IEC 61400-1 (edition 3) Class 2A
Quality accreditation	ISO 9001:2008



Average power as per IEC 61400-12 normalised to air density = 1.225 kg/m<sup>3</sup> and turbulence = 12%  
Source: S5300.1 Power performance (rev 0)



Gross AEP is stated before losses, and will also depend on site conditions

10 Min Mean Wind Speed (m/s)	Net Power (kW)
4.0	-
4.5	8
5.0	25
5.5	43
6.0	64
6.5	89
7.0	119
7.5	153
8.0	191
8.5	233
9.0	279
9.5	328
10.0	377
10.5	417
11.0	448
11.5	471
12.0	485
12.5	493
13.0	498
13.5	499
14.0	500
14.5	500
15.0	500
15.5	500
20.0	500
25.0	500
25.5	-

AMWS (m/s)	AEP (MWh)
6.0	1,049
6.5	1,261
7.0	1,467
7.5	1,665
8.0	1,851
8.5	2,023