Gaia-Wind
GENERATING BETTER VALUE

# Gaia-Wind 133-11kW Data Sheet

| Annual Energy Production (AEP)* | |
|---|---|
| **Annual Average Wind Speed (measured at hub height)** | **Annual Energy Production (AEP)** |
| 4 m/s | 16,220 kWh |
| 5 m/s | 27,502 kWh |
| 6 m/s | 37,959 kWh |
| 7 m/s | 46,527 kWh |

**NOTES:**
Figures listed are for 'clean wind sites'. Local topography such as buildings and trees can significantly influence turbine production.

Units shown in domestic electricity bills are in kilowatt-hours (kWh). 1 kWh is roughly equivalent to 1 bar of an electric fire burning for 1 hour.

*Microgeneration Certification Scheme (MCS) data

| Noise Profile* | |
|---|---|
| Sound Power $L_{wd,8m/s}$ | 88.1 dB(A) |
| Noise Slope, SdB (dB/m/s) | 1.015 |
| Noise penalty | none |

| Target noise level (8m/s wind) | Distance required |
|---|---|
| 45 dB(A) | 60m |
| 40 dB(A) | 100m |
| 35 dB(A) | 185m |

**NOTES:**
Since the rotor speed of rotation is slow, does not change with wind speed and the blades do not feather or furl, the noise profile of the turbine is very flat making it an exceptionally quiet machine.

*MCS data

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## Key Component Parameters

| | |
|---|---|
| Twin Blade Rotor | glass fibre, 13m diameter, swept area 133m$^2$, mounted on TEETER hub, fixed rotation speed 56 rpm |
| Gearbox | two stage, gear ratio 18:1, low noise |
| Generator | 11kW, 3 phase, 400V@50Hz (marine grade) |
| Towers | lattice: 15m 18m<br>monopole: 18m, 27m<br>(hot dip galvanised steel) |
| Component Weights | nacelle and rotor 900 kg<br>15m lattice tower 1,556 kg<br>18m lattice tower 1,955 kg<br>18m monopole tower 2,511 kg<br>27m monopole tower 5,275 kg |
| Standard Presentation | towers: dull grey (galvanised), blade and nacelle cover: grey-white(RAL 9002), reflection free |

## Operational Parameters

| |
|---|
| Cut in wind speed (adjustable) |
| standard setting, 3.5 m/s (5.6 mph) |
| Shut down wind speed (adjustable) |
| standard setting, 25 m/s (56 mph) |
| IEC Turbine class |
| Conforms to IEC 61400 Class III (suitable for sites with an annual average wind speed up to 7.5 m/s) |
| Survival Wind Speed |
| 52.5 m/s (117 mph) |
| Temperature Range |
| -20°C +50°C |
| Lifetime and servicing |
| 20 years design life<br>Service once yearly |

## Control and Monitoring System

**Data input and management**
Integrated microprocessor with multiple sensor inputs.
Data: wind speed, power, voltages, currents and phase, rpm, vibration and temperature alerts.
LCD display in control box. Can output to local PC or be monitored remotely via internet.

System protection
Base level: Passive stall of blades limits power output.
Second level: Control system activates mechanical brake if:

- Wind speed exceeds 25 m/s
- Abnormal vibration
- Grid disconnected or generator overheats

Third level: Centrifugally activated aerodynamic brakes built into rotor tips as a final safety measure.
Also Manual override button which activates mechanical brake

## Certification

UK: Microgeneration Certification Scheme. Certification no. TUV 0002
Denmark: Risø DTU 2009-1

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