



## PowerSpin Series

Powering residential & commercial sites  
at arid-connected and off-arid locations

# 13,000 Watt Wind Generator

## PowerSpin TSW 13000

### Wind Power System for residential and commercial use

The TechnoSpin PowerSpin TSW 13000 wind turbine provides a renewable energy source to a wide range of residential and commercial applications in remote and urban locations.

Based on a revolutionary blade design, the TechnoSpin wind turbine generates substantial energy in areas with low and medium winds.

#### Applications

- Power for household appliances including heating applications
- Industrial/small business machinery
- Advertising boards
- Grid back-up systems
- Battery charging (use in remote areas, green car battery charging stations, etc.)

#### Product advantages

##### Performance

- Start-up and high energy output in low winds
- Superior efficiency (up to 30% higher than competition)
- Vibration free
- Silent operation in all wind regimes

##### Reliability

- Robust design
- Simple to install
- No maintenance required
- 5 year warranty (optional extension up to 20 years)

**Cost effective - shorter ROI period  
compared to alternatives**



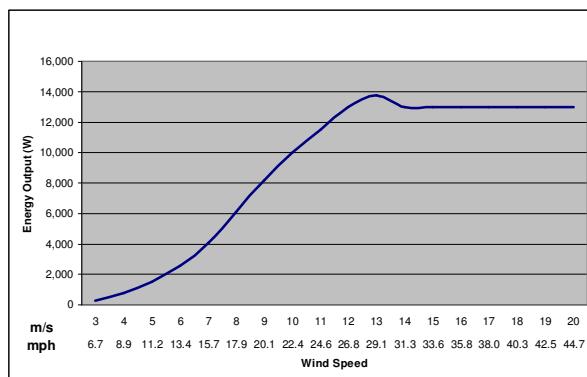
## System configurations

- On-Grid Systems
  - Off-grid systems
    - Stand-alone systems
    - Local-grid systems: serving a whole village/community instead of separate households
  - Turbine could be installed on separate tower
  - Wind only or Hybrid system with Solar/Diesel generator
- \* On-Grid system does not require battery

## Technical Specifications – Estimated

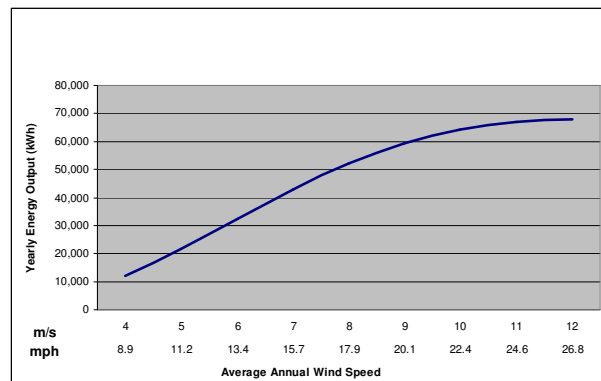
<b>Rotor Diameter</b>	8 m (26.3 ft)
<b>Rated Power</b>	13 kW
<b>Rotor Efficiency</b>	up to 45%
<b>Yearly Energy Output - at average yearly wind speed of 5 m/s (11.2 mph)</b>	21,600 kWh
<b>Rated Wind Speed</b>	12 m/s (26.8 mph)
<b>Start-Up Wind</b>	2.5 m/s (5.6 mph)
<b>Survival Wind</b>	55 m/s (123 mph)
<b>Generator</b>	Permanent Magnet Generator
<b>Voltage for Battery Charging</b>	12-48 V DC
<b>Voltage for Grid Connection</b>	Adjusted to requirements of inverter
<b>Overspeed Protection</b>	Pitch Control
<b>Maximum Axis Load</b>	700 Kg force (1,540 lb)
<b>Temperature Range</b>	-40 C to +70 C (-40 to 158 F)
<b>Installation</b>	Separate tower
<b>Separate Tower Height - Minimum</b>	12 m (40 ft)
<b>Product Design Life</b>	30 years
<b>Warranty</b>	5 years (optional extension up to 20 years)

## Power Curve - Estimated



\* Estimated Power curve data with appropriate load

## Average Annual Power - Estimated



\*This distribution is based on the Power Curve data and the average annual wind speed (weibull distribution)



### The standard kit includes:

- Blades
- Hub
- PMG Generator
- Turbine head
- Tail
- Stub
- Charge controller (for battery charging)

### Noise

The turbine is extremely silent; its noise level is lower than 40 dB. Noise measurements are conducted based on the international standard 61400-11 and chapter 3 of the BWEA standard.

### Regulation

The turbine is manufactured according to relevant international standards:

- IEC 61400-2 (International Electrotechnical Commission)
- BWEA British Wind Energy Association Small Wind Turbine Performance and Safety Standard

### Electronics Data

The turbine standard kit includes a controller, which is used for rectifying unstable wind energy power output, voltage control and battery charging. This device converts the generator's 3-phase AC voltage to DC voltage, acts as a safety device, making sure that the voltage will never exceed the allowed maximum.

