



PowerSpin Series

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

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

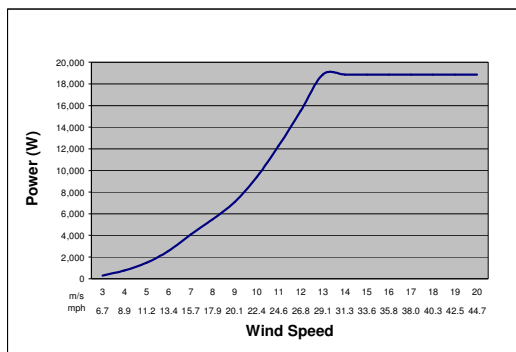
- On-Grid Systems
- Off-grid systems
 - Stand-alone systems
 - Local-grid systems: serving a whole village/community instead of separate households
- Turbine could be installed on separate tower
- Wind only or Hybrid system with Solar/Diesel generator

* On-Grid system does not require battery

Technical Specifications

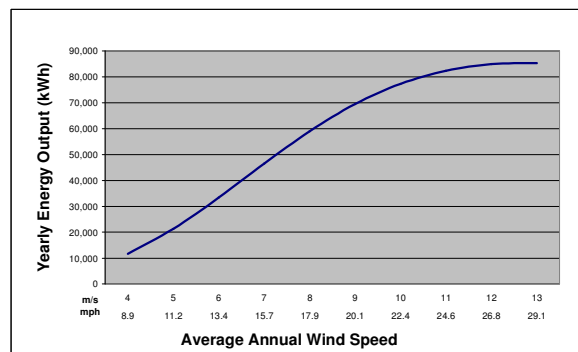
Rotor Diameter	8 m (26.3 ft)
Rated Power	13 kW
Rotor Efficiency	up to 45%
Yearly Energy Output - at average yearly wind speed of 5 m/s (11.2 mph)	21,600 kWh
Rated Wind Speed	12 m/s (26.8 mph)
Start-Up Wind	2.5 m/s (5.6 mph)
Survival Wind	60 m/s (134 mph)
Generator	Permanent Magnet Generator
Voltage for Battery Charging	12-48 V DC
Voltage for Grid Connection	Adjusted to requirements of inverter
Overspeed Protection	Pitch Control
Maximum Axis Load	700 Kg force (1,540 lb)
Temperature Range	-40 C to +70 C (-40 to 158 F)
Installation	Separate tower
Separate Tower Height - Minimum	12 m (40 ft)
Product Design Life	30 years
Warranty	5 years (optional extension up to 20 years)

Power Curve



* Estimated Power curve data with appropriate load

Average Annual Power



*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.

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