



PowerSpin Series

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

8,000 Watt Wind Generator

PowerSpin TSW 8000

Wind Power System for residential and commercial use

The TechnoSpin PowerSpin TSW 8000 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

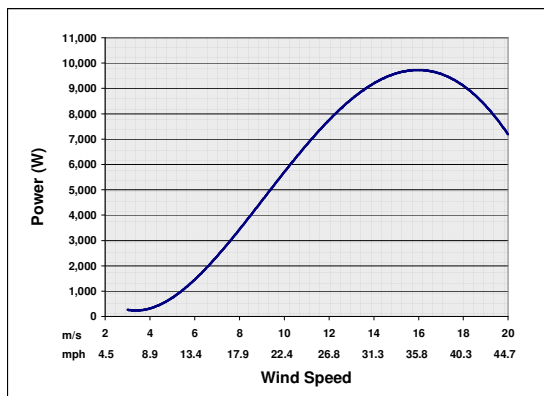
- On-Grid Systems
 - Off-grid systems
 - Stand-alone systems
 - Local-grid systems: serving a whole village/community instead of separate households
 - Turbine could be installed on separate tower
 - Wind only or Hybrid system with Solar/Diesel generator
- * On-Grid system does not require battery

Technical Specifications – Estimated

Rotor Diameter	6 m (19.7 ft)
Rated Power	8 kW
Rotor Efficiency	up to 45%
Yearly Energy Output - at average yearly wind speed of 5 m/s (11.2 mph)	12,300 kWh
Rated Wind Speed	12 m/s (26.8 mph)
Start-Up Wind	2.5 m/s (5.6 mph)
Survival Wind	55 m/s (123 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	400 Kg force (880 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)

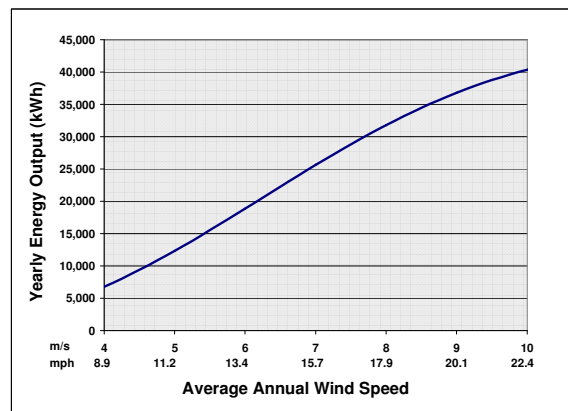


Power Curve - Estimated



* 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) OR Electronic controller for connecting to grid-tie inverter

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. The controller has the following additional functions:

- MPPT (Maximum Power Point Tracking) - synchronizes between the turbine and the batteries and ensures that the turbine is working at the point where it gives maximum output.
- LVD (Low Voltage Disconnection) - used to protect batteries from discharging beyond the minimum level. In hybrid system with diesel generators this system is used to connect and disconnect the generator when power input from the turbine is low.
- OCP (Over Charging Protection) – protection of over charging of the batteries. Excessive energy is diverted to the dump load and converted into heat.

For grid connected applications, the standard kit includes a controller that is designed to connect to the specific grid inverter suitable for the installation

