



ComSpin C Series

Powering remote telecommunications sites

Maximum savings and unlimited communications

8,000 Watt Wind Generator

ComSpin C 8000

Wind Power System for telecommunications

The TechnoSpin wind turbine provides a renewable energy source to a wide range of applications for telecommunications 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

- Remote telecommunications sites
- Cellular sites
- Microwave
- Telephone Exchanges
- Wireless Internet sites
- Remote TV and radio stations
- Satellite
- Monitoring stations
- Mobile radios
- Radar installations

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
- Up to 5 year warranty (optional extension up to 20 years)

Easy fit for any telecom site

Cost effective - shorter ROI period compared to alternatives

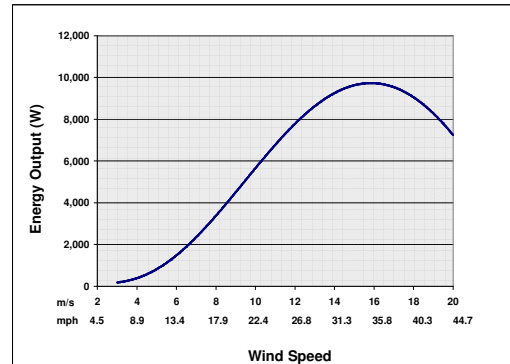
System configurations

- Can be added to new or existing telecom sites
- Installation on telecom tower or on separate tower
- Hybrid solution with diesel generator and/or PV cells or wind turbine as stand alone energy source

Technical Specifications

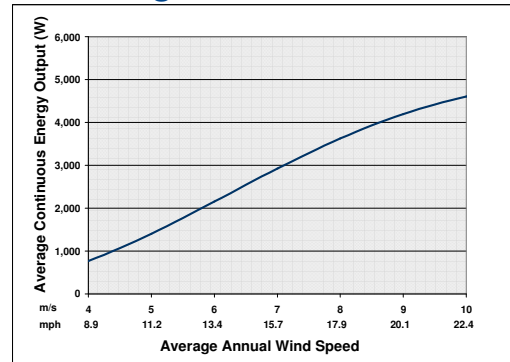
Rotor Diameter	6 m (19.7 ft)
Rated Power	8 kW
Rotor Efficiency	up to 45%
Swept Area	28.3 m ² (304 ft ²)
Type	Upwind, Yaw Control
Yearly Energy Output	18,900 kWh at average wind speed of 6 m/s (13.4 mph)
Average Continuous Power	2,050 W at average yearly wind speed of 6 m/s (13.4 mph)
Rated Wind Speed	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	Mechanical and Electrical System
Temperature Range	-40 to + 70 C (-40 to 158 F)
Maximum Axial Load	400 Kg force (880 lb)
Installation	Telecom or separate tower
Telecom Tower Mast Height	Minimum 3.5 m (11.5 ft)
Separate Tower Height	Minimum 12 m (40 ft)
Product Design Life	30 years
Warranty	5 years (optional extension up to 20 years)

Power Curve



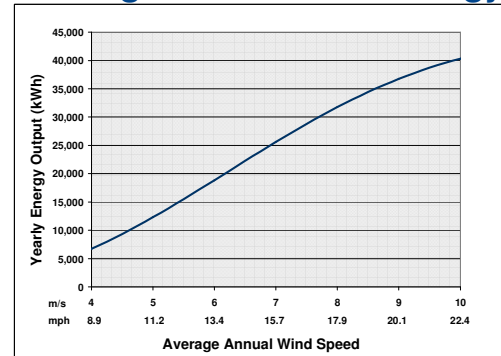
* Power curve data measured with appropriate load

Average Continuous Power



* Average continuous power based on average annual energy output divided by 365 days and 24 hours.

Average Total Annual Energy



* 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
- Wind 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

Mechanical Data

Aerodynamic tail

The aerodynamic tail allows utilization of wind resources irrespective of wind direction, and serves as part of mechanical protection set-up.

Furling

Pitch Control

Generator

The PMG generator is optimized for maximum efficiency. Due to the direct drive, there are no transmission losses. Bearings are lubricated for life, the generator is closed and maintenance free.

The tower

The turbines are light and vibration-free; therefore they can be installed on top of telecom tower, thus ensuring access to substantially higher wind resources. Alternatively, they can be installed on separate galvanized towers, both guyed and free-standing monopole towers. The turbines can be easily installed by a small professional team, using basic equipment.

Electronics Data

The charge controller is used for rectifying unstable wind energy power output, voltage control and battery charging. This device makes a DC voltage out of the 3-phase AC voltage of the turbine, acts as a safety device, making sure that the voltage will never exceed the 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) - excessive energy is diverted to dump load and converted into heat.

