



eoltec

Scirocco E5.6-6

**Best Wind Technology
For
Highest performances**

- ▶ **Optimized 18.4 feet rotor diameter**
- ▶ **Full span pitch control overspeed system**
- ▶ **High efficiency, low noise and low speed**
- ▶ **6.6 kW direct drive PM generator**
- ▶ **Variable speed MPPT operation**
- ▶ **Fully sealed design**
- ▶ **AC grid-tie applications**

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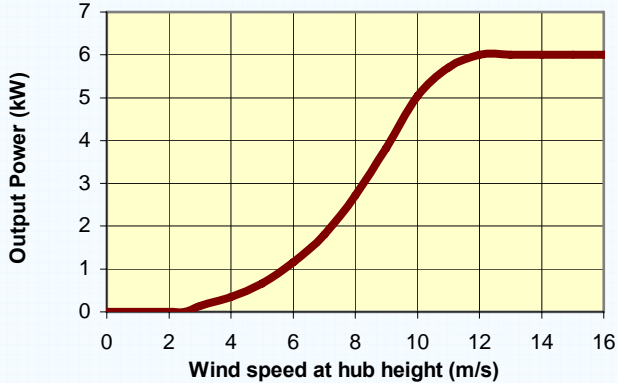
Eoltec's technology integrates all necessary features to achieve the best possible energy yield out of wind, this especially in the prevalent low and medium wind speed conditions. The variable speed concept applies maximal power point tracking controls resulting in an increased production of up to 50% compared to conventional equipment.

The direct drive generator reduces the amount of critical mechanical components, ensuring high reliability and low maintenance. The variable speed and centrifugal pitch overspeed control drastically reduces material stress for increased lifetime and quiet operation.

The wind turbine is connected to the AC grid through a specific AC/DC/AC inverter delivering best quality power in case of grid connection or to an AC/DC converter with micro-controlled PWM technology.

Last but not least, Eoltec's Scirocco WT is designed and realized without compromise, using state of the art components and according to IEC 61400-2 design rules (for class II maximum wind speed)

Scirocco output power versus wind speed



Scirocco wind turbine is characterized by a very high efficiency in the lower to medium wind speed range which is prevailing most of the time (>80%). This is achieved by the conjunction of an optimized 2 blades rotor, efficient direct drive PM generator combined with the maximal power point tracking control following the constantly varying wind speed.

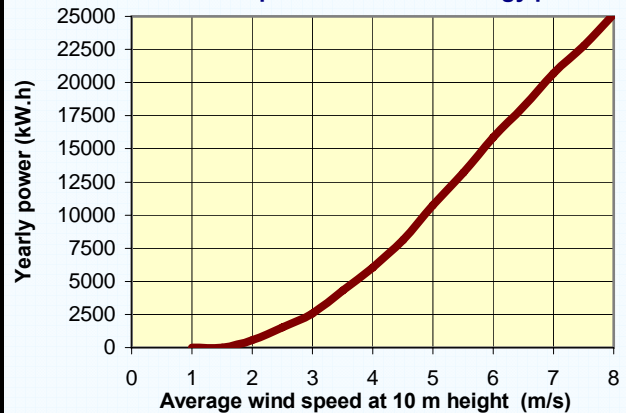
At high wind speeds, the WT continue to operate at its nominal output, the overspeed being controlled by the centrifugal full span pitch control fixture.

These unique features make the Scirocco unit the most powerful WT of its class.

The high availability of Scirocco WT power production makes it a reliable source of cost effective renewable energy throughout the years and weather conditions. Its superior low/medium wind performances opens new possibilities for the application of medium size wind power in distributed power production with minimal environmental impact.

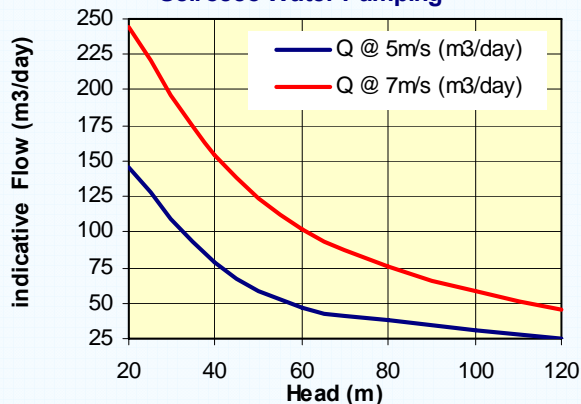
The various available configurations of the Scirocco WT respond to a very wide range of applications as battery charging, stand-alone AC distribution, island AC grid, public grid-tie, water pumping. It figures as a real alternative or complement to photovoltaic or diesel generation.

Scirocco predicted annual energy prod.



Assumptions for predicted energy calculation: Inland site, altitude 300m, Rayleigh distribution (k=2), 18m tower
Shear ratio 0.143 , turbulence factor 10%

Scirocco Water Pumping

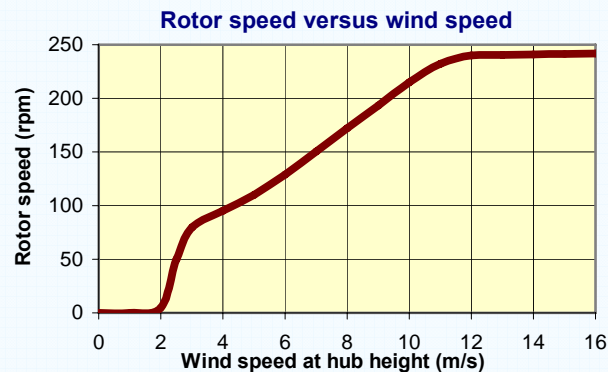


In run-of-the-wind water pumping applications, the Scirocco WT sets new standards by its direct electrical pumping concept coupled to Maximal Power Point Tracking controlled pump motor drive.

Wind electric pumping permits to exploit well heads over 120m depth for drinking or irrigation water purposes.

On typical remote water pumping sites with average wind speed as low as 5m/s (11 mph), the Scirocco WT will saves up to 5'000 l/year of fuel, thus enabling excellent payback.

Unlike most of its competitors, Scirocco's WT rotation speed is always under control of both electronics and overspeed centrifugal fixture (pitch control). Due to that uncompromising design, maximum rotation speed is limited to 245rpm, involving a maximum tip speed of 156.5mph. That's one of the key to get a quiet running on the entire wind range, low noise, low blade wearing, and low mechanical stress. For comparison, current competitor's 23 feet diameter furling WT exhibits about 400rpm nominal speed, involving a huge 324 mph tip speed.



- Scirocco E5.6-6 performances and specifications-

Performances

Rated output power : 6.0kW @ 11.5 m/s (25.7 mph)
 Cut in wind speed : 2.7 m/s (6 mph)
 Cut out wind speed : None
 Survival wind speed : 60 m/s (134 mph) (design according to IEC 61400-2, class II wind site)

Wind speed at hub height (m/s)	3	4	5	6	7	8	9	10	11
Output Power (kW)	0.140	0.343	0.665	1.16	1.81	2.71	3.82	5.05	5.70
Average wind speed (m/s @ 33ft)	3	4	5	6	7	8	9		
Average power (kW)	0.30	0.69	1.23	1.81	2.38	2.87	3.29		
Daily energy production (kWh)	7.1	16.6	29.4	43.5	57.0	69.0	78.9		
Monthly energy production (kWh)	215	504	895	1323	1734	2098	2398		
Yearly energy production (MWh)	2.58	6.05	10.74	15.88	20.81	25.17	28.78		

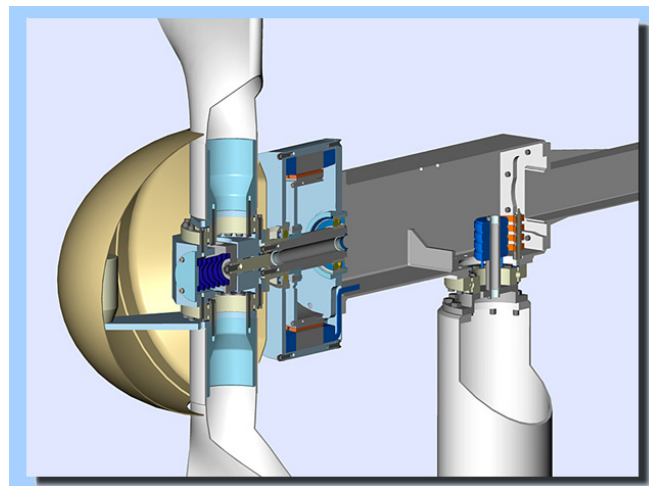
Estimated for inland site, altitude 300m, Rayleigh distribution (k=2), 18m tower, shear ratio 0.143 , turbulence factor 10%

Rotor

Diameter/swept area : 18.4 ft / 265 ft²
 Blades : 2 fiberglass blades, AU4G aluminum root insert
 Blades bearing : 2 sealed slewing rings
 Rotational speed : 80 to 245 rpm, variable speed
 Power regulation : Full span pitch control (sealed centrifugal system)
 Overspeed control : Pitch control (full span, sealed centrifugal system)

Generator

Type : Synchronous multiple poles permanent magnets, direct drive
 Rated output power : 6.5 kW at 240 rpm
 Protection : Totally enclosed, fully sealed
 Cooling : Passive air flow



Miscellaneous

Yawing system : Passive, upwind tail (sealed slewing ring), 4 rings electric rotating collector
 Power regulation : Centrifugal pitch control, electronic optimal power point tracking
 Overspeed control : Full span pitch control (centrifugal system, slewing rings on blade root)
 Brake : Optional remote control at tower base (forced pitching, mechanical patented system), operational on full wind speed range (0 to 134 mph)

Weight

: 450 lbs (complete nacelle with rotor and generator)

Towers

: 63 – 84 –106 ft standard guyed tilt-up towers (galvanized steel)

Battery charger

: 48 battery bank, 6kW nominal output, PWM with μ C management technology floating mode for optimal battery charging and lifetime, optimal power point tracking

Grid inverter

: 6.0kW nominal output grid inverter with optimal power point tracking. (240V-60Hz, comply with VDE126/UL1741 grid feeding regulations)

Maintenance

: Annual inspection

Warranty

: 5-year standard warranty