Energie Ressource Développement inc

Wind is free !

Énergie ressource et développement (E.R.D.)
brings you the WindPorts™ wind turbine

14250 A, boul Labelle, Mirabel (Québec) Canada J7J 1B1 tel.: (450) 437-1515 fax: (450) 437-0723 **www.windports.com**, a division of Cie de Gestion Optilog inc

WindPorts™ wind turbine

WindPorts ™

The next generation of wind turbines

is now on the market. This unique innovation boasts unparalleled efficiency, allowing energy recovery in the worst weather conditions.

Unique characteristics

- The **Windports™** is the best option for wind turbine farms. Its original concept allows for the installation of multiple wind turbines on a single tower, enabling increased energy production by grouping the wind turbine units at different levels on a compact footprint.
- **Windports™** is quiet, robust, light and safe.
- **Windports™** generates energy in very light wind of 7 km/h or 4.4 mph as well as in winds above 85 km/h or 53 mph.
- **Windports™** will continue to perform in extreme weather conditions.
- **Windports™** can be installed on the roof of a commercial or industrial building, even in an urban setting. (subject to the verification of the building's structural integrity by an engineer).
- **Windports™** is constructed with the highest standards of quality (ISO standards) using non-corrosive materials (molded aluminum and fiberglass).
- **Windports™** requires very little maintenance.

Undeniable advantages

- Reduction of your energy costs.
- Energy overproduction can be resold to the power grid supplier.
- You are protected from outages on the power grid.
- Best performance in low and high winds.

Multiples uses

- Domestic requirements.
- Supplying a cluster of homes.
- Isolated sectors not connected to the public power grid.
- Can be adapted to pump water (irrigation and drinking water).
- Lighting for roads and telecommunications right-of-ways.
- Developping countries.

Windports™ can supply energy to a small cluster of remote homes, country homes, hunting/fishing camps, isolated cabins, lighting for roads and right-of-ways, or as a backup system in the event of a power outage on the power grid.

Whatever your energy requirements may be, WindPorts™ can help you.

WindPorts™ – Wind generator

How it works

Principles of functionning

WindPorts™ is a vertical axis turbine comprising an L-shaped horizontal air intake and a parabolic air evacuation. **WindPorts™** was developed using complex mathematical models. Among these, an ingenious air flow system was designed to attain unparalleled energy production performance.

WindPorts™ recovers energy as efficiently in winds as low as 7 km/h or 4.4 mph and as high as 85 km/h or 53 mph.

WindPorts™ does not shut down, even in winds over 85 km/h or 53 mph.

(october 2001)

The **WindPorts™** prototype performed in winds over 94 km/h or 58.5 mph in National Research Council Canada wind tunnel testing without encurring any vibrations or problems.

WindPorts™ uses a multi-function integrated electronic system :

1) **Programmable memory** : Flash type to control the performance of the **WindPorts™** ;
2) **positioning** in space (Hall effect);
3) **verification and direction** relative to the wind, which calculates displacement required, at regular intervals;
4) the system **aims the unit** in the most advantageous direction;
5) **diminishes the volume** of air intake in the event of violent winds.

WindPorts™ is quiet, due to its innovative concept and emits practically no audible sound.

WindPorts™ allows for the installation of the alternator directly under the unit, or at ground level. This function greatly facilitates maintenance.

A direct pump system can be installed on **WindPorts™**.

The WindPorts™ self-supporting tower will resist winds of up 200 km/h or 124 mph.

WindPorts™ – DIMENSIONS

Power Output	Diameter	Height	Weight
5 kW	4.4 m (14.44')	4.13 m (13.55')	1 000 Kg
10 kW	4.4 m (14.44')	6.8 m (22.31')	1 910 Kg
20 kW	4.4 m (14.44')	13.6 m (44.62')	3 700 Kg

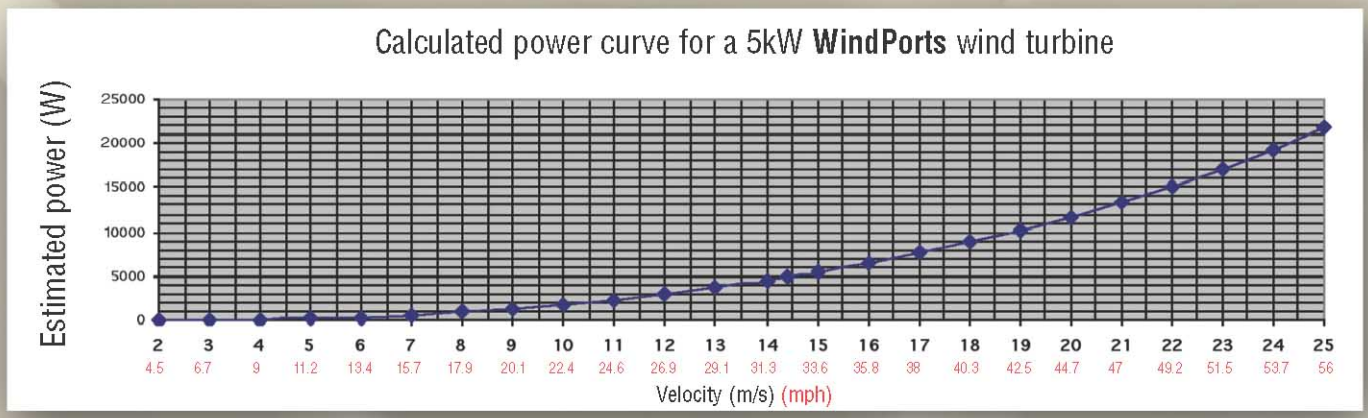
Nominated by the National Research Council Canada for:
2002 Durable Development Prize

For more information, please visit our web site at **www.windports.com**

Performance

The power curve of a 5 kW WindPorts™ wind generator

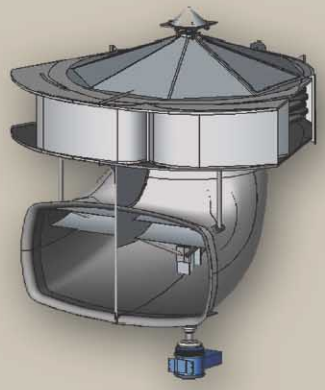
Wind speed is extremely important to the quantity of energy which can be converted to electricity. The energy contained within wind varies greatly, depending on the average cubic speed of the wind : when wind speed doubles, the recoverable energy is increased eight times. It is therefore most advantageous to be able to recover the available energy when wind speed increases, which is exactly what the **WindPorts™** accomplishes.

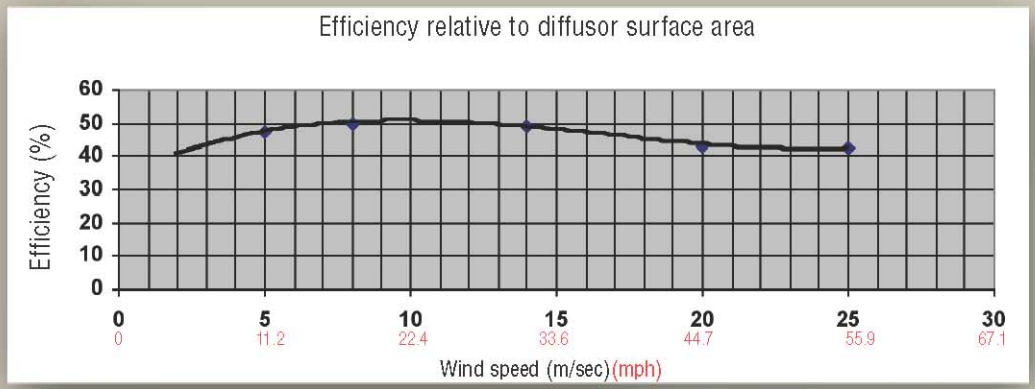


Performance Characteristics

THE HIGHEST PERFORMANCE RATING IN THE INDUSTRY :
The **WindPorts™** wind turbines recover 25% more energy than conventional windmills.

Efficiency relative to air intake: For wind turbines with a diffusor, efficiency is calculated relative to the air diffusion surface area. Greatest efficiency is attained at speeds below maximum wind force, from 17.9 to 22.4 mph or 8 to10 m/s. As this wind speed occurs most frequently, it is important to achieve efficiency at this speed.





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WindPorts™ – Wind turbine

Comparisons

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	WindPorts™	Blade windmills
Cut-in speed (minimum wind speed requirement)	4.0 mph (1.8 m/sec)	6.9 mph (3.1 m/sec)
Begins to generate power (wind speed)	5.6 mph (2.5 m/sec)	7.6 mph (3.4 m/sec)
Turbine stops (maximum wind speed)	Over 72 mph (32 m/sec)	42.5 mph (19 m/sec)

References on the effects of a diffusor on wind turbines :

- Hansen M.O.L., Sorensen N.N, Flay R.G.J., *Wind Energy*, 2000 (3) : 207-213.
- Phillips D., Schaffarczyk A.P., IEA Joint Action Aerodynamics of Wind Turbines, 15th Symposium, Athens, November 2001.

Tests conducted at National Research Council Canada's wind tunnel
Calculations and CFD models : Swiderski Engineering Inc, Ottawa, Canada

For more information, please visit our web site at

www.windports.com