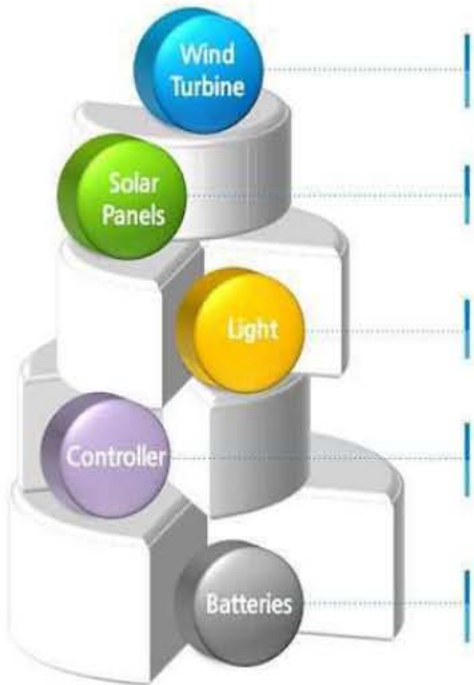


# FREE WIND ENERGY



## VERTICAL AXIS WIND TURBINES

Designed to operate under extreme environment  
and temperatures from -40C up to +70C!



# SPIRAL WIND TURBINES



**Blades: Special engineered and made by CBF material for long lasting operation**

**Generator:  
Maglev generator.  
Electromagnetic/wind round lateralization. 180 rpm .**



**MPPT Controller Unit: High efficiency constant current driver, automatic operation from dusk to dawn or timed ON/OFF operation.**

<b>Model</b>	<b>WSC40</b>	<b>WSC100</b>	<b>WSC200</b>
<b>Rated power</b>	<b>40W</b>	<b>100W</b>	<b>200W</b>
<b>Maximum power</b>	<b>50W</b>	<b>150W</b>	<b>250W</b>
<b>Nominal voltage</b>	<b>12V/24V</b>	<b>12V/24V</b>	<b>12V/24V</b>
<b>Start wind speed</b>	<b>1.5m/s</b>	<b>1.5 m/s</b>	<b>1.5 m/s</b>
<b>Cut in wind speed</b>	<b>2 m/s</b>	<b>2 m/s</b>	<b>2 m/s</b>
<b>Rated wind speed</b>	<b>10 m/s</b>	<b>10m/s</b>	<b>10m/s</b>
<b>Survival wind speed</b>	<b>45 m/s</b>	<b>45m/s</b>	<b>45m/s</b>
<b>Rated revolution</b>	<b>180 r/m</b>	<b>180 r/m</b>	<b>180 r/m</b>
<b>Whole Weight</b>	<b>16 kg</b>	<b>26 kg</b>	<b>32 kg</b>
<b>Diameter</b>	<b>510 mm</b>	<b>520mm</b>	<b>580mm</b>
<b>Blades Height</b>	<b>1 m</b>	<b>1.3m</b>	<b>1.5m</b>
<b>Blades number</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>Blade material</b>	<b>CBF</b>	<b>CBF</b>	<b>CBF</b>
<b>Generator</b>	<b>Maglev</b>	<b>Maglev</b>	<b>Maglev</b>
<b>Controller</b>	<b>MPPT</b>	<b>MPPT</b>	<b>MPPT</b>
<b>Speed way</b>	<b>Automatically</b>	<b>Automatically</b>	<b>Automatically</b>

Chose CBF as its Ideal Material for its Wind Turbines.

### 1) High chemical durability to impacts of water, salts, alkalis and acids

Unlike metal, CBF is not affected by corrosion. Unlike fiber glass, CBF is not affected by acids. CBF possess high corrosion and chemical durability qualities towards corrosive mediums, such as salts & acids solutions and, especially, alkalis.

### 2) High thermal resistance

A range of temperatures for CBF long-time application is 200~600 C.

Short-term impact of temperatures – up to 700 C.

Single impact of temperatures – up to 1000 C.

### 3) Compatibility of CBF with other materials

High compatibility of CBF with other materials (metals, plastic, glues) during producing process. Materials made on CBF basis can be processed with application of different "cold" technologies, such as moulding, winding, pultrusion, sputtering, etc.

See article "About prospects of application of materials from basalt fibers"

### 4) Higher Tensile Strength then Steel.

Basalt is incredibly strong, flexible, yet extremely light which was the ideal material of choice for the WindSmart Wind turbine. Making us the Lightest Vertical Axis Wind Turbine in the world.



Basalt has a 100 to 1000 Year Life Span

CBF is USED BY

**NASA**

Basalt from Volcanic Rock

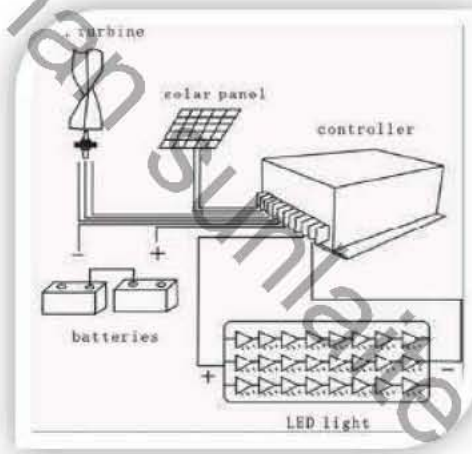


# SPIRAL TURBINE APPLICATIONS



Hybrid street lights offer more effective energy production.

# WIND SOLAR LED Street Lighting Solutions



Utilizing both Wind and Solar for power generation, we can guarantee a continuous three (3) night illumination even if no wind or solar activity within the previous days due to our sophisticated energy management system and battery storage system.



# Compare with others

Classification	Typical Light	Solar Light	Horizontal Hybrid Light	Vertical Hybrid Light
Appearance				
Power Source	Electricity	Sunlight	Wind Power + Sunlight	Wind Power + Sunlight
Sudden Change of Wind Direction	Not Applicable	Not Applicable	Not Good Working of Wind Turbine	Good Working of Wind Turbine
Available Charging Time	Not Applicable	3.5 Hours a Day	All Day Long but not efficient due to Horizontal Wind Turbine	All Day Long
Electric Shock	Yes	No	No	No
Noise	Not Applicable	Not Applicable	Over 70-80dB	Approximately Under 15dB
Environmental Pollution	Yes	No	No	No
Turn On & Off	Depends on Electrical Power Supply	Automatically based on Sunset and Sunrise	Automatically based on Sunset and Sunrise	Automatically based on Sunset and Sunrise and Embedded Time
Working	Working well except Blackout	Not Enough Working	Sometimes Not Working	Very Good Working

# WIND TURBINES & MARKETING



The blades can be colored with a company's logo or a country's flag and become a successful marketing media



## What is the Applications of

Landscape  
lighting, road  
lighting

1

Oil and gas  
pipeline  
monitoring

2

Forest fire  
prevention  
and control

3

Integrated  
lighting and  
monitoring  
system for  
border line

4

Home and  
remote areas  
without  
electricity

5

Communication  
base station  
power supply,  
island power  
supply

6

Wind and  
solar hybrid  
distributed  
power station

7

Scenery  
complementary  
electric pile

8





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