WiSH
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Whisper 200

The Whisper 200 is one of the most widely recognized Micro Wind Turbines in the world and has its roots in the Whisper turbine design from SWPP (Southwest Wind Power). It has been type tested & certified as per IEC 61400 for power performance & for safety & functional test by NIWE (National Institute for Wind Energy) which was formerly known as CWET (Center for Wind Energy Technology, India).

This turbine is among the most efficient wind turbines in its class, capable of generating power even at low wind speeds, with a wide range of functionality and applications. Since its initial launch, over ten thousand Whisper 200 units have been installed globally, leaving its mark as a reliable, efficient Micro Wind Turbine.

KEY FEATURES

- Low cut in wind speeds.
- Lightweight, rugged design.
- Suitable for remote locations installations.
- International recognition - IEC & CE certifications.
- Suitable for standalone or multiple parallel module application to suit different power rating.
- Modular construction for easy installation and dismantling.
- PWM based state of art architecture providing overcharge protection / load diversion (in auto mode).
- Status monitoring of battery low & battery high - LCD display on front panel.
- Automatic diversion of power to dump load at battery overcharge / very high turbine speed.
- Ambient operating temperature up to 52°C.

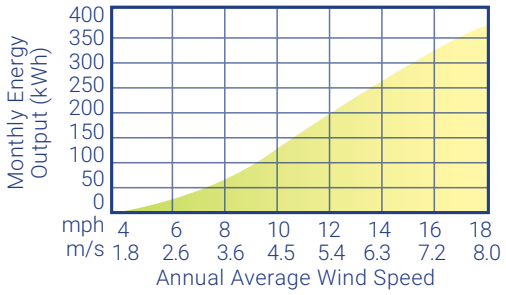
APPLICATIONS

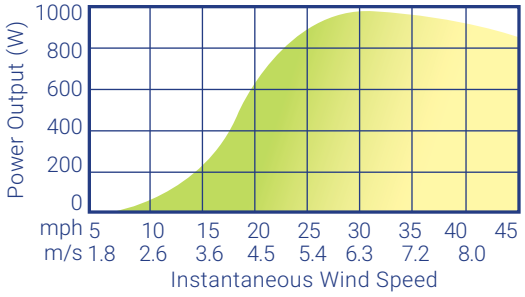
- Rural electrification
- Water pumping
- Offshore oil platforms
- Telecom towers
- Rooftop installations
- Pipeline cathodic protection
- 230 V AC mains grid tie (with interface controller & grid tie inverter)

TURBINE SPECIFICATIONS

GENERAL CONFIGURATION	
Model	Whisper 200
Rotation axis	Horizontal
orientation	Up wind
Rotation direction	Clockwise looking upwind
Number of blades	3
Material of blades	Polypropylene/Carbon reinforced
Material of blade extenders & rotor shaft material	SS 304
Rotor diameter	2.72 M
Body/Housing	Cast aluminum & MS duly marinecoated as per ASTM B -117
Mount	2.5 inches
Weight	30 kg
Certification	ISO 9001-2008,CE, IEC 61400

PERFORMANCE	
Average power	570W at 11m/s (as per IEC 61400 standards)
Rated/Voltage	LV model 12 volts / 24volts / 36 volts / 48volts DC HV model / 120volts / 240volts DC
Rated wind speed	11.6 m/s to 13 m/s
Start-up/Cut in wind speed	3.1 m/s
Cut out wind speed	16 m/s to 18 m/s
Survival wind speed	55 m/s
ROTOR	
Swept area	5.8 meter square
Rotational speed	1200 rpm @ rated wind speed
Blade pitch	Fixed
Direction of rotation	Clockwise
Over speed control	Side furling & dump load
YAW SYSTEM	
Wind direction sensor	By tail fin & tail boom
Yaw control	Free/Passive yaw





WIND CHARGE CONTROLLER

The Whisper 200 charge controller is an intelligent wind charge controller which provides safe,secure and productive wind generator operation. The PWM (Pulse Width Modulation) controller is capable of monitoring various parameters such as battery voltage, battery charging, load diversion and cumulative energy generation. The controller contains a 3 phase full wave bridge rectifier for converting AC power generated from the wind turbine, to DC power. PWM technique is used for diverting excess power to a dump load as required.

CONTROLLER SPECIFICATIONS

- Whisper 200 wind charge controller comes in 12V, 24V, 48V, 96V, 120V and 240V configurations.
- Clear alpha-numeric digital LCD screen with user selectable display options.
- Equipped with advanced microcontroller based technology to provide easy access for monitoring and operation for the user.
- Field adjustable battery voltage set points
- Energy saving backlight operation..
- Controller diverts extra energy to dump load, when batteries are fully charged.
- Battery over voltage protection.
- Front panel LCD display with the following features

> Displays battery voltage > battery charging current > kW and kWh reading > battery UV > OV status	> Instantaneous / monthly / average wind speed (in m/s) can also be displayed if anemometer is configured in the controller. > Supervisory password provision

50kW HYBRID SYSTEM FOR REMOTE LOCATION IN LEH

CUSTOMER: THE INDIAN ARMY

BACKGROUND

Border defense is one of the most critical areas of focus for the government and the armed forces in particular. India is bordered by terrains of vast variety – from the deserts of Thar in Rajasthan to the snow-capped mountains in the north and the dense jungles in the north east – and each of these brings with it its own infrastructure limitations. The military installations in these locations, therefore, face an enormous challenge in the delivery of essential services such as power and water

The remote locations of these defense installations often result in a lack of access to conventional electricity grids, as it is very difficult to add power infrastructure at these places. As a result, diesel generators become the alternative for generating electricity. Not only is diesel expensive and difficult to transport to these locations, it also poses a serious vulnerability when stored on-site.

THE NEED FOR MORE

With diesel not providing a solution that is secure or feasible in the long run, there was a need for a reliable, sustainable source of energy for defense installations situated in these remote locations, which would require minimal maintenance and was not a security risk.

HOW WE DELIVERED MORE

Working along with the Indian army, we undertook a study of one of their military base camps in Leh (one of the most elevated locations in the world at 18,000 feet above mean sea level) to understand the topography and weather conditions, as well as the area available for installation. Based on this study, a 50 kW WiSH hybrid system was designed, which consisted of a wind farm of 10 Whisper 200 turbines combined with a 40 kW solar PV array. Considering the extreme climatic conditions under which the turbines would be operating, we used alternative materials for some of the critical components to ensure that the system would continue delivering performance through its lifetime. Additionally, we trained the army engineers to maintain the system to minimize the costs and time required for an external service team to travel to this location.

MORE POWER

The 50 kW hybrid solution was installed and commissioned in late 2007, generating over a 100,000 units a year, resulting in savings of approximately 37,800 litres of diesel and Rs. 25 lakhs annually. More importantly, it has provided the army camp in Leh with a reliable and consistent source of power, even in extreme climatic conditions, without a single instance of breakdown. Since then, we have installed a further 60 kW of capacity and a standalone 3 kW wind farm for the Indian army in Leh and Ladakh.

OTHER APPLICATIONS

Urban Residential Properties

Offshore Platforms

Petrol Stations

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