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SERVICES :: WIND MILL ELECTRIC SYSTEMS

Introduction

Can I use wind energy to meet my energy requirements? This question is being asked across the country as more consumers, both industrial and residential, look for affordable and reliable sources of electricity. The answer lies in small and micro wind turbines. Small wind electric systems can make a significant contribution to our nation's energy needs.

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Small Wind Turbines:

Small wind turbines are classified as wind turbines which have a rated capacity of less than 100KW, are small in size and can be installed on roof tops or small sites. We provide Wind Mill Electricity System for:

- \* Wind Mill Electricity System for Homes
- \* Wind Mill Electricity System for Small and medium sized offices
- \* Wind Mill Electricity System for Telecommunications sites
- \* Wind Mill Electricity System for Water Pumps
- \* Wind Mill Electricity System for Telephone Exchanges
- \* Wind Mill Electricity System for Remote TV and radio stations
- \* Wind Mill Electricity System for Monitoring stations
- \* Wind Mill Electricity System for Mobile radios
- \* Wind Mill Electricity System for Radar installations
- \* Wind Mill Electricity System for Rural Areas as primary source of power

Why Should I Choose Wind Mill Electricity System?

Wind energy systems are one of the most cost-effective home-based renewable energy systems.

Small Wind Mill Electricity Systems 1

Various industrial and residential consumers can use wind generated electricity to meet their power requirements where there is no state electricity board connection availability or the power requirement is met by running diesel generator sets. As a source of power Wind Turbines will reduce your monthly expenditures significantly.

Depending on your wind resource, a small wind energy system can lower your electricity bill by 50% to 90%, help you avoid the high costs of having utility power lines extended to remote locations, prevent power interruptions, and it is nonpolluting.

A small wind electric system will work for you if:

- \* There is enough wind where you live
- \* Tall towers are allowed in your neighborhood or rural area
- \* You have enough space
- \* It works for you economically.

How Do Wind Turbines Work?

Wind is created by the unequal heating of the Earth's surface by the sun. Wind turbines convert

WIND MILL ELECTRIC



D. C. GENERATORS



TEL. INFRASTRUCTURE



POWER TRANSMISSION



CIVIL INFRASTRUCTURE



INDUSTRIAL STRUCTURES



OFC O AND M

the kinetic energy in wind into mechanical power that runs a generator to produce clean electricity. Today's turbines are versatile modular sources of electricity. Their blades are aerodynamically designed to capture the maximum energy from the wind. The wind turns the blades, which spin a shaft connected to a generator that makes electricity.

What are the Basic Parts of a Wind Mill Electricity System?

A typical site consists of:

- \* Wind Turbine
- \* Tower
- \* Inverter
- \* Battery Bank

Through the spinning blades, the rotor captures the kinetic energy of the wind and converts it into rotary motion to drive the generator.

Wind Mill Electricity System Turbine

The turbine is a horizontal axis upwind machines that has two or three blades, which are made of a composite material such as fiberglass. The amount of power a turbine will produce is determined primarily by the diameter of its rotor. The diameter of the rotor defines its "swept area," or the quantity of wind intercepted by the turbine. The turbine's frame is the structure onto which the rotor, generator, and tail are attached. The tail keeps the turbine facing into the wind.

Wind Mill Electricity System Tower

Because wind speeds increase with height, the turbine is mounted on a tower. In general, the higher the tower, the more power the wind system can produce. The tower also raises the turbine above the air turbulence that can exist close to the ground because of obstructions such as hills, buildings, and trees. Relatively small investments in increased tower height can yield very high rates of return in power production. For instance, to raise a 10-kW generator from a 60-foot tower height to a 100-foot tower can produce 25% more power.

There are two basic types of towers: self-supporting (free standing) and guyed. Most wind power systems use a guyed tower. Guyed towers, which are the least expensive, can consist of lattice sections, pipe, or tubing depending on the design, and supporting guy wires. They are easier to install than self-supporting towers.

Small Wind Electric Systems 5

Inverter

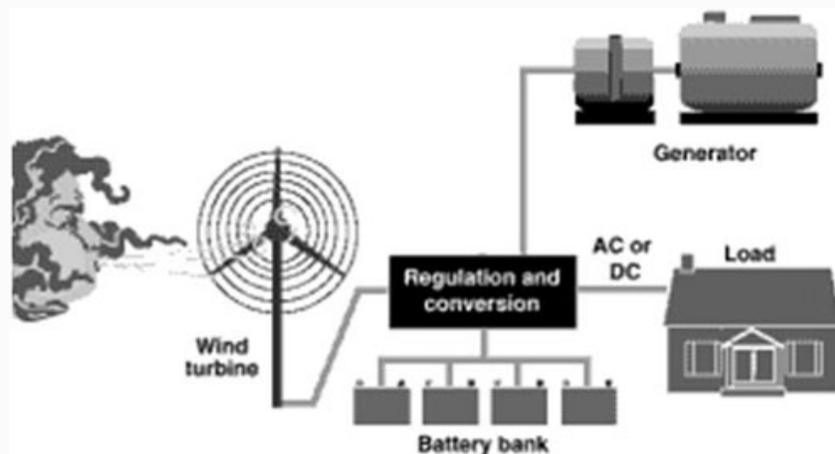
Wind Electric Systems

Small wind turbines generate direct current (DC) electricity. Inverter is used to convert DC electricity from the batteries to AC. Although the inverter slightly lowers the overall efficiency of the system, it allows the application to be wired for AC.

Wind Mill Electricity System Battery

They are used to store electricity generated from wind turbine and then have the same to converted to AC through an inverter and use it to run any electric appliance.

A typical block diagram of an application of wind turbine:

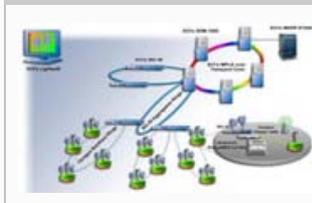


Wind Mill Electricity System for Telecom Industry

Telecom industry is among the largest consumer of electricity and diesel in India. The telecom sites are spread across the country to provide service to customers across India. These sites typically consume anywhere between 2 Kw to 10 Kw of power which is source by from state



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### PMC



electricity board ("grid power") and diesel generators (DG's"). The challenge is to be able to get affordable power to run these BTS sites since grid power is unreliable and costs of power generated from DG's is very high.

Challenges of Telecom Industry:

*\* Grid Power Availability:*

The grid power is supposed to be the primary source of power to run all telecom sites. However the availability of grip power across country is very poor. The grid power is available for few hours every day in some parts of the country and is not available at all. Due to this non availability of grid power 24x7 telecom companies have to resort to power from DG's.

*\* High DG Running Costs:*

Due to non availability of reliable grid power as mentioned above, telecom sites have to be powered by DG's. The inherent problem with this solution is as follows:

- \* DG's run on diesel
- \* The cost of operation is high due to dependence of fossil fuels
- \* Cost of generating a single unit of power is much more expensive than cost of grid power
- \* Pilferage of Diesel
- \* There is currently no fool proof method of controlling the same
- \* High transportation costs of diesel especially in rural areas

It is estimated that the telecom industry is the second largest consumer of diesel in the country. It is also noteworthy that the costs of diesel are linked to the international crude oil prices and hence subject to fluctuations. The costs of running these sites are estimated to be appr INR 30,000 – 50,000 per month per site.

Summary

Let the power of nature work for you. Wind Mill Electricity System will take care of your electricity needs. We can provide solutions to all industrial and residential requirements.

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