

# Hybrid power system for mobile phone signal station

## 1, overview

With the rapid development of mobile communication networks and 4G services, distribution of mobile communication signal tower more widely, many communication signal tower stations, energy consumption has become a large proportion of operating expenses, and there are a large number of signal tower stations located less electricity or no electricity actual problem area, this is the problem of building the network in these area have to faced, and often the wind and solar source in these areas are very good., therefore to promote wind and solar and other green energy as well as wind and solar power system to achieve energy savings, reduce operating costs to



improve network quality has good economic and practical significance; the same time, promote corporate social responsibility strategy, implementation of the "promote energy conservation, environmental protection, development of new energy," the social responsibility project also has good social benefits. To this end the use of existing resources enabling comprehensive development of green energy, green building low consumption communications signal tower stations, reduce energy consumption to reduce costs expenses is imperative.

### 1.1 Xirex series new wind turbine brief introduction

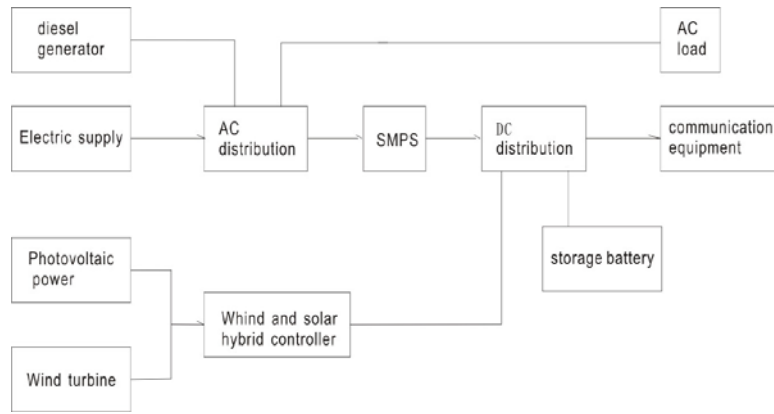
Xirex series wind power system is a patented technology wind turbine system which can working well on whole wind speed. Xirex wind power generation system is different from the existing technology of wind power generation system, it can automatically gather in the wind field, adjustment of air leakage are pouring type power characteristics for the wind speed of wind power generation system, can work in very low wind speed and stable working environment, and in the high wind speed are the output power fluctuation is small, significantly improve the utilization rate of pouring. can be used for all are area of wind power development, its structure is simple, stable output, especially applicable to the cell phone Towers, in highway tunnels, subway advertising light box installation, with wind power, it is also applicable to buildings, residential, farm, ship, outdoor lighting, Billboard and so on in the field of wind power of small distributed power plant construction, so it is more than the existing technology of wind power equipment widely application fields and market prospect. To have the place set wind device after the natural wind through the collection device can reach twice the wind speed, the output may improve eight times.

So by means of integrating wind device can realize higher efficiency in use of wind power generators.

**2,xirex series** Wind power system in the practical application of communication signal tower station

**2.1 mode of communication signal tower station power supply system and composition**

general power supply mode of the Communication signal tower station power supply system, this mode is hybrid power supply system which refers to the grid as the main power supply, oil machine as spare power.



The composition of the power supply system mainly includes the following: the city power, emergency diesel generator or diesel generator with emergency electrical source on the AC power distribution equipment (generator) after the entrance to the AC power distribution equipment, switching power supply converter, DC power distribution equipment and parallel in BUS cables of battery power supply, communications equipment, BTS is shown in figure above.

**2.2 The composition of green mobile phone signal tower power supply system**

Green communication signal tower station power supply system is the wind, solar green renewable energy as the main power supply mode, while the grid is a backup power supply, diesel generator as a kind of power supply security of emergency power supply scheme, the composition of the power supply system mainly includes the following: wind power, photovoltaic power, city electric power, emergency oil machine or oil with emergency electrical source on the AC power distribution equipment (generator) after the entrance to the AC power distribution equipment, switching power supply converter, DC power distribution equipment and parallel in the BUS cables of battery power supply, communications equipment, BTS, such as green power station supply configuration diagram.



**2.3 Green signal power station solar installation scheme**

Install PV modules for signal green power should be based on load size and power

supply protection requirements, local solar energy and surface meteorology and climatic conditions for design power range of solar panels needed to install the program and development of the environment according to the site, usually in order to save land resources via the communication signal tower station house roof installation . The benefits of this program not only saves land resources at the same time also played a blackout room cooling effect. It may be as (Fig. below) in a communication signal tower stations and other short sideways installed independently of specific conditions and chosen visual scene.

## **2.4 Installation and operation wind power system for green signal power station**

### **2.4.1 Install the green signal power station of wind turbines components**

Installation of wind turbine main components of green signal power station power should be based on the size of the communication and power supply protection requirements, factors of local wind conditions, selecting the source of wind power components needed to install the program and selected power range according to the site environment, because in signal power station antenna tower communications resources, and modular wind power systems in general discontinuity with wind turbines, it can make use of the advantages of resources antenna tower installation or stand-alone installation in signal power stations, etc. as sideways. these programs benefits not only saves land resources while saving the investment and maintenance costs also make full use of the wind source.



### **2.4.2 operation scheme of the green power signal station wind turbine system**

Green power signal station wind power generation system operation scheme is different from general wind turbine system, the general wind turbine wind machine is within the scope of design wind speed in a fixed passive use of wind resources. But our modularization wind turbines in the wind power system scheme is that the wind power system composed of multiple wind blades module and wind blades module connector control mechanism of a wind turbine. This under natural wind conditions of wind blades module which can adjust automatically set, leakage of wind power, and other functions to make the generator steady speed running power, mainly when wind speed is very low the wind blades module connector control mechanism of each wind blades module connected to each other to form a whole blades body make the system of all involved in power generation wind blades module at time the purpose of obtaining maximum wind power generator the wind turbine power generation also works in the breeze; When wind speed is gradually increasing power generation the

wind blades from top to bottom blades module will be released from top to bottom because under natural wind conditions can automatically adjust the wind power in time equivalently make the wind turbine speed stable and ensure the generator in the size of the wind conditions can be normal operation of power generation and stabilize the output of the wind generator. Thus greatly improve the efficiency of wind energy resources and power quality and improve the effective utilization of wind resources again. Such as wind device installed in the tower position set after the natural wind through the collection device can achieve twice the wind speed the output may improve eight times wind power is more efficient.

## **2.5 Power supply and power supply protection program for green signal power station system**

As shown in the green station power supply system power supply scheme, which is a multiple power supply system in parallel, this system can effectively protect electrical devices powered by the secure uninterrupted power supply. In our precise voltage control scheme can have effective control of realization that the order in which the various power supply green power to achieve lower operating costs, achieve energy saving purpose of protecting the environment for the benefit of mankind.



The embedded installation drawing fan controller module

According to county real examples, they use area has annual average wind speed is 5-7m / s, in the available time for the 5000-7000 hours, and our daily wind speed data to the base station side monitoring Poyang Lake, the average wind speed 9.7m / s, according to 8.5 m/s, the value of the available time 6000 hours projection, energy-saving effect of the wind power station experiments are as follows

One year  $1572w \times 6000 \text{ hours} = 9432000 / 1000 = 9432 \text{ KWH/year}$

According to the average electricity price 0.16 USD, the economic value of the new energy generated directly see the benefits of table

benefit	item	Experimental tower case	Rich wind source area case
Direct economic benefits	Generated energy	9432 KWH/year	8251.92KWH/year
Direct economic benefits	Annual save electric charge	1,477.7USD/year	1,292.8USD/year
Direct economic benefits	Save standard coal	3309.4Kg/year	2888.17Kg/year
Reduce emissions pollution	CO2	8224.7Kg/year	7195.67Kg/year
Reduce emissions pollution	SO2	248.06Kg/year	217.03Kg/year
Reduce emissions pollution	NOX	123.56Kg/year	108.1Kg/year
Reduce emissions pollution	carbon dust	2244.82Kg/year	1963.96Kg/year