

**OUYAO®**

**Wind Turbine Manufacturer**

**Slogan :**

Enjoy Green Power,  
Enjoy Low Carbon,  
Enjoy OUYAD

**Mainly Products :**

Generator,  
Blade,  
Controller,  
Inverter,  
Tower,  
etc.

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**OUYAO®**

Because of **WIND**,  
we know each other.....

FOSHAN OUYAD ELECTRONIC CO., LTD  
-----Manufacturer  
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## COMPANY PROFILE

Foshan Ouyad Electronic Co., Ltd was founded in 1998 covering an area of more than 20,000 square meters. It is a high-technology enterprises, which gather research and development, produce, marketing wind turbine as a whole. Our company is located in Nanhai district Foshan city Guangdong province with convenient transportation.

In the production of our goods, we have our own independent wind turbine assembly plants and R&D department of wind turbine generator system. In early days, our company was famous for producing a variety of inverters at home and abroad. In 2005, we began to set about the R&D and production of new energy products base at the import of good technology and human resource. Ouyad is untiring improve, innovate and complete our products day by day. Ouyad has developed to be a professional manufacturer at the core of wind turbine generator system as well as integrative services system with design, manufacture, installation, commissioning, marketing, after-sales service.

In the research and development, our company has our own patent, magnetic saturation, patent number no: ZL 2007 2001 02617. With this technique, the stability and security are greatly enhanced. Meanwhile, it brings an effect of energy saving and stable generator output power. With low torque start-up technique that makes start-up wind speed at 1.5-2m/s, wind availability is improved. The generator is matched accurate digital control system which includes yawing system, wind measuring system, brake system, untwist system, electronic control system etc.

In the quality system, OUYAD has been passed CE certificate and ISO9001: 2000 international quality management system.

In the management and marketing, take honesty as principal, take our customer's satisfaction as guide, our products have been exported to more than 30 countries including USA, Russia, Chile, Australia, Philippines, India, Finland, England, German, Poland, Italy, Nigeria, South Africa, Ukraine, Turkey, Denmark, Aruba, Madagascar, New Zealand, Pakistan, Vietnam etc. Our monthly production below 50KW is over 500pcs. We can help design according to demand off grid and grid tie wind power system and wind & solar hybrid power system.

**Our products:** wind turbines range from 200W to 200KW and matched products include controller, inverter, battery, UPS, solar panel, LED street light, etc.

**OUYAD service idea:** Customer is the life of company, creating more value for customer continuously.

**Our target:** To stride into the team of world class wind turbine manufacturers in three years and become a customer-loyalty and influential wind turbine public listed company in five years.



## PATENTS

PATENTS	PATENT NO.
1. Magnetic saturation	Patent no.: ZL2007200102617
2. Untwisting system	Patent no.: 200910213785.X
3. Signal transmission system	Patent no.: 200920265086.5
4. Carbon brush	Patent no.:200920265086.7
5. Yawing control system	Patent no.:200910213792.X
6. brake system	Patent no.:200910213784.5
7. on grid inverter	Patent no.:200910213781.1
8. PWM charge control system	Patent no.:200910213782.6
9. Stepless dump load system	Patent no.:200910213783.0
10. New generator structure of new generator	Patent no.:201020296639.6
11. PMG brushless motor for elevator	Patent no.: 201020296641.3
12. Best match makeup of rotor and stator for 10KW and 20KW generator	Patent no.: 201020259726.4
13. Best match makeup of rotor and stator for 2KW, 3KW and 5KW generator	Patent no.: 201020259727.9
14. Best match makeup of rotor and stator for 500W and 1KW generator	Patent no.: 201020259728.3
15. Best match makeup of rotor and stator for 200W, 300W and 400W generator	Patent no.: 201020259729.8
16. Best match makeup of rotor and stator for 30KW generator	Patent no.: 201020259730.0

## CERTIFICATION



200W-50KW Wind turbine CE certificate





ISO9001 certificate / off grid inverter / on grid inverter CE certificate / 2010 World-expo certificate



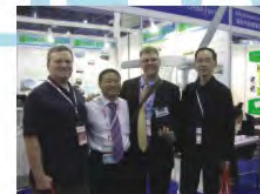
Off grid inverter / Battery SONCAP certificate / OUYAD registered trademark certificate

## INTERCOMMUNION



Negotiate with the government representatives of Russia

### Pictures of fairs



Hong Kong China Sourcing Fair



2010 Electrical and Electronic Exhibition in Mosco, Russia.



WINDPOWER 2010 Conference and Exhibition in Dallas, United States.

### Pictures of some visited customers

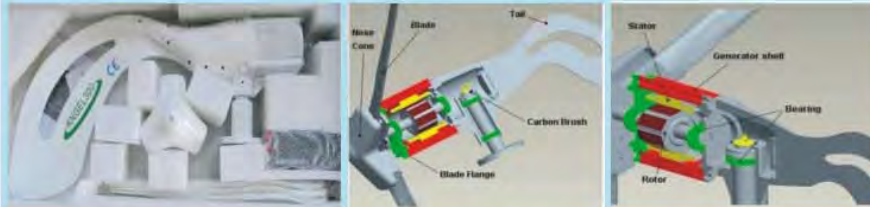


## Angel Series Wind Turbines (200W-400W)



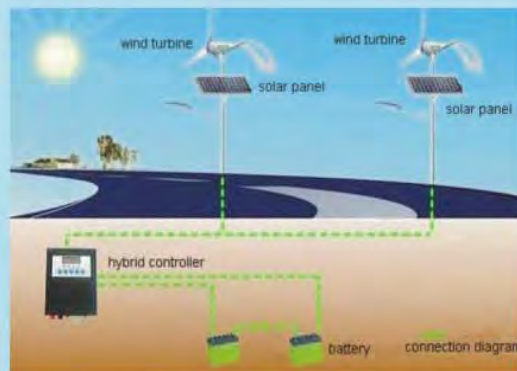
### Features

1. 1.5 ~ 2m/s start up wind speed with low torque starting technique applied.  
The Reason: Generator make up of 27 skewed slots stator and 12 poles rotor which reduced the cogging torque. (Patent No.:201020259729.8)
2. The design of blades: The blade casted into molding at one time with balance up to 99%.
3. Light generators (only 7.5kg for 200W/300W, 8.5kg for 400W) make the installation easier and cheaper.
4. The turbine tail and yawing part (nylon and fiberglass materials with high strength) processed with reinforced ribs, enhance the reliability and can withstand the typhoon.
5. Carbon brush casted into molding at one time, it can reduce the contact resistance effectively and the lifetime is up to 100000 times. ( Patent No.:200920265082.7)



Packing

The Structure of wind turbine



Street Lamp System

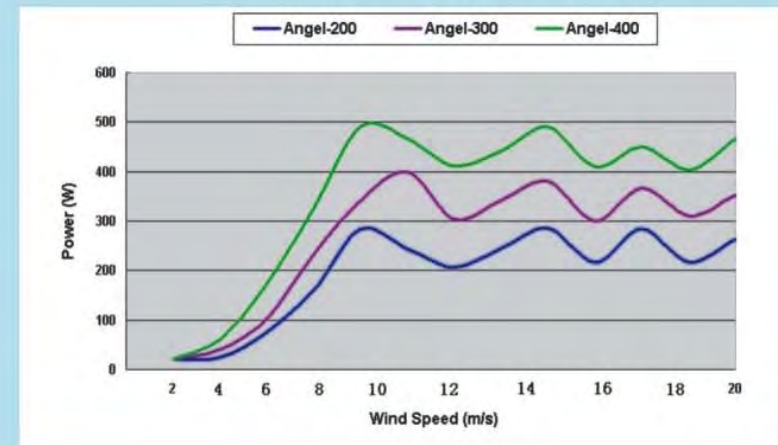
## Angel Series Wind Turbines (200W-400W)



### Technical Specifications

Model Number	Angel-200	Angel-300	Angel-400
Rated Power (w)	200	300	400
Rated Voltage (v)	24V/12	24V/12	24V/12
Rotor Diameter (m)	1.44	1.44	1.44
Start-up Wind Speed (m/s)	2	2	2
Rated Wind Speed (m/s)	8	9	10
Security Wind Speed (m/s)	35	35	35
Rated Rotating Rate (rpm)	450	450	420
Blade Material	Engineering plastic	Engineering plastic	Engineering plastic
Blade Quantity	3 (5pcs)	3 (5pcs)	3 (5pcs)

### Power Curve Graphics





## FD-M series wind turbine (500W-3KW)



### Features

1. Magnetic saturation generator design, 20years designed life. (Patent No.: ZL 2007 2 0010261.7)
2. 2-2.5m/s start-up wind speed under low torque start-up technique. (Patent No.: 201020259728.3)
3. Mechanical automatic yawing.
4. Match controller with constant voltage charging, electronic and manual brake, and numeral panel display. (Patent No.: 200910213782.6)
5. 500W, 600W and 1KW blades are casted into molding at one time with balance up to 99%.
6. Bearings import from Japan (NSK), long service time (5 years maintenance-free).
7. Magnetic saturation design, the generator coil couldn't burn down because of the increasing power, when generator runs at a super wind speed and saturates automatically.
8. Low cut in wind speed (3m/s) to guarantee the maximum generation at low wind speed.



FD-1KW Wind Turbine



Wind Generator



Generator Packing

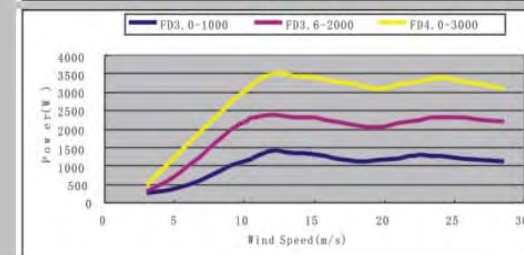
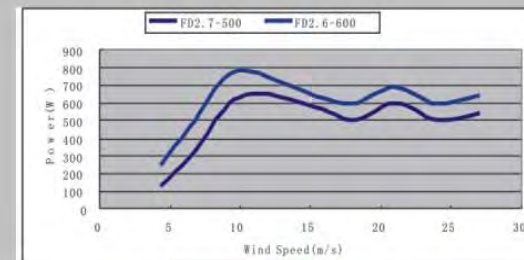
## FD-M series wind turbine (500W-3KW)



### Technical Specifications

Model Number	FD2.7-500	FD2.6-600	FD3.0-1000	FD3.6-2000	FD4.0-3000
Rated Power (W)	500	600	1000	2000	3000
Rated Voltage (V)	24	24	48	120	240
Rotor Diameter (m)	2.6	2.6	2.9	3.8	4.2
Start-up Wind Speed (m/s)	2	2	2	2	2
Cut-in Wind Speed (m/s)	3	3	3	3	3
Rated Wind Speed (m/s)	8	8	8	9	10
Safety Wind Speed (m/s)	35	35	35	35	35
Yawing type	Mechanism				
Rated Rotating Rate (r/m)	380	380	350	300	220
Generator material	Aluminum alloy			Steel	
Blade Material	Fiber glass				
Blade Quantity	3	3	3	3	3
Guy cable tower	Tower height (m)	6	6	9	9
	Tower thickness (mm)	3.5	3.5	3.5	4.5
	Tower diameter (mm)	89	89	89	165

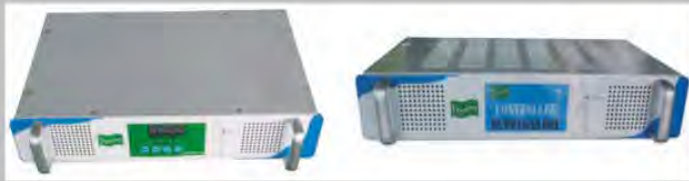
### Power Curve Graphics



## FD-M series wind turbine (500W-3KW)



### Features of the Match Controller



1. Industrial design with CPU controlled, reliable in extreme working conditions, high stability with 8 years' lifetime.
2. PWM constant voltage charging protects the storage batteries from being over charged or discharged, and energy can be fully utilized. So it increase the use ratio of wind power.
3. Dump load, electronic and manual brake can protect the turbine from being damaged in extreme weathers.
4. Controller with numeral display can show the parameters easily.

### Technical Specifications of controller

Model Number	FDC-500	FDC-600	FDC-1K	FDC-2K	FDC-3K
Rated Power	500W	600W	1000W	2000W	3000W
Rated DC Voltage	24V	24V	48V	120V	240V
Over-discharge protection voltage	21V	21V	42V	105V	210V
Over-discharge recovery voltage	23.5V	23.5V	47V	117.5V	235V
Over-charged protection voltage	30V	30V	60V	150V	300V
Over-charged recovery voltage	29V	29V	58V	145V	290V
Regulative voltage	28V	28V	56V	140V	280V
Max. charge current	23A	23A	25A	18A	14A
Unload current	≤100 mA				
Cooling type	Auto cooling & fan				
Protection	Over-charge, over-discharge, unloading, manual braking, etc.				

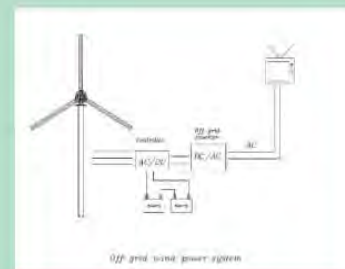
## FD-E series wind turbine (2KW-200KW)



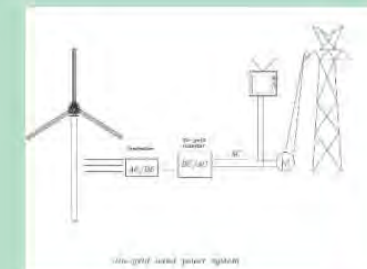
### Features

1. Special design in generator with low starting technique applied, start-up wind speed low to 2-2.5m/s and cut-in wind speed low to 3-3.5m/s. (Patent No.: 201020259726.4).
2. Magnetic saturation generator design, engage for the safety of generator and the 20 years lifespan of generator. (Patent No.: 201020296641.3)
3. Blade flange processed with reinforced rib increasing the intensity. Blades are in good angle to make sure the start-up wind speed in 2-2.5m/s.
4. NSK Bearing from Japan which have a long lifespan.
5. Worm gear is made from copper, which with high tenacity, and worm is made from chromium to make sure the lifespan.
6. Worm and worm gear specially assembled to make the clearance small.
7. First design of MPPT function from wind turbine to make sure the wind turbine have the rated output when the wind turbine over the rated wind speed. (It's been applied for patent)
8. Special signal transmission system, wind vane and wind anemoscope no need to be on the wind turbine any more. (It's been applied for patent).
9. Mechanism brake for your option.
10. Complete isolation design with stable quality to make sure the controller can work in extreme conditions. Life time can reach up to 6 years.
11. Matched controller with PWM charging (Patent No.: 200910213782.6), electronic and manual brake (Patent No.: 200910213784.5), dump load (Patent No.: 200910213783.0), untwisted protection (Patent No.: 200910213785.X).
12. Each parameter showed on the LCD display of the controller. Some parameters are adjustable and can be set by yourself.

### Topological graph



1. Off-grid wind power system




2. On-grid wind power system



# FD-E series wind turbine (2KW-200KW)



## Main components of our FD-E series wind turbine

Main components	
	
Generator	Yawing system
	
Stator	Rotor
	
Nose cone	
	
Blade flange (2KW-10KW)	Blade flange (More than 20KW)
	
Blade(2KW-10KW)	Blade(More than 20KW)
	
Vane	Anemoscope

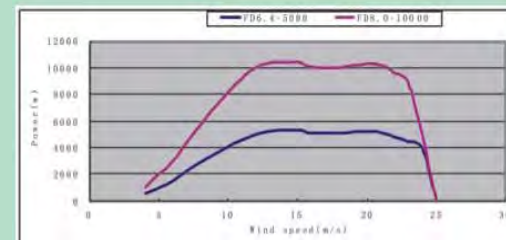
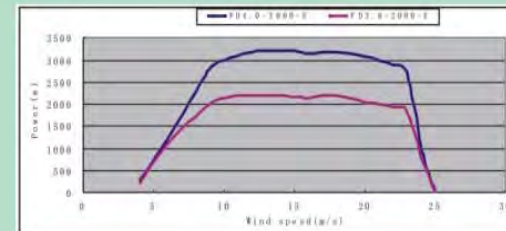
# FD-E series wind turbine (2KW-200KW)



## Technical Specifications (FD-E 2000-10000)

Model Number	FD3.6-2000-E	FD4.0-3000-E	FD6.4-5000	FD8.0-10000
Rated Power (KW)	2	3	5	10
Rated Voltage (V)	120	240	240	240
Rotor Diameter (m)	3.6	4.2	5.4	8.2
Start-up Wind Speed (m/s)	2	2	2	2
Rated Wind Speed (m/s)	9	10	12	12
Security Wind Speed (m/s)	60	60	60	60
Yawing type	Electronic	Electronic	Electronic	Electronic
Rated Rotating Rate (r./m)	300	220	200	185
Generator work way	Magnetic saturation	Magnetic saturation	Magnetic saturation	Magnetic saturation
Generator material	Steel	Steel	Steel	Steel
Blade Material	Fiber glass	Fiber glass	Fiber glass	Fiber glass
Blade Quantity	3	3	3	3
Tower Height (m)	9	9	12	12
Tower Diameter(mm)	140	273	273	325
Suggested battery capacity	12V200AH 10pcs	12V200AH 20pcs	12V150AH 40pcs	12V200AH 40pcs
Matched inverter type	Sine wave	Sine wave	Sine wave	Sine wave

## Power curve graphics



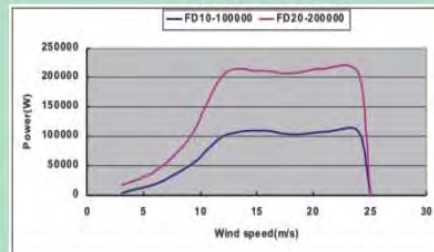
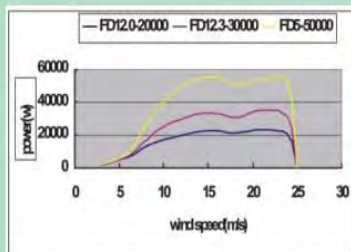
## FD-E series wind turbine (2KW-200KW)



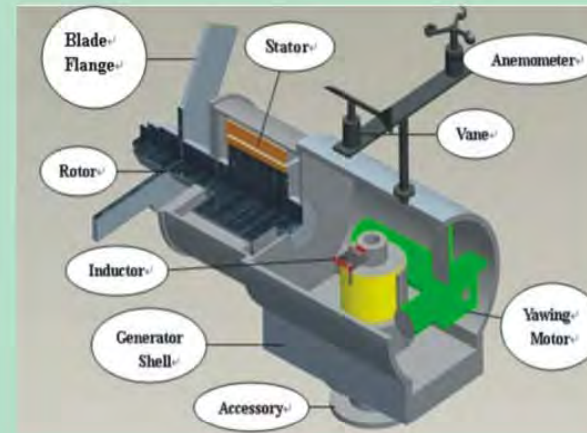
### Technical Specifications (FD20KW-200KW)

Model Number	FD12.0-20000	FD12.3-30000	FD5-50000	FD10-100KW	FD20-200KW
Rated Power (KW)	20	30	50	100	200
Rated Voltage (V)	360	380	690	690	690
Rotor Diameter (m)	10	12	14	20	26
Start-up Wind Speed (m/s)	2	3	3	3	3
Rated Wind Speed (m/s)	12	12	12	13	13
Security Wind Speed (m/s)	60	60	50	50	50
Brake system	Electronic	Electronic	Electronic	Mechanism	Mechanism
Yawing type	Electronic	Electronic	Electronic	Electronic	Electronic
Rated Rotating Rate (r/m)	150	130	85	65	65
Generator work way	Magnetic saturation	Magnetic saturation	Magnetic saturation	Magnetic saturation	Magnetic saturation
Generator material	Steel	Steel	Steel	Steel	Steel
Blade Material	Fiber glass	Fiber glass	Fiber glass	Fiber glass	Fiber glass
Blade Quantity	3	3	3	3	3
Tower Height (m)	18	18	32	32	32
Suggested battery capacity	12V200AH 90pcs	12V200AH 164pcs	12V200AH 164pcs	12V200AH 205pcs	12V200AH 205pcs
Matched inverter type	Sine wave	Sine wave	Sine wave	Sine wave	Sine wave

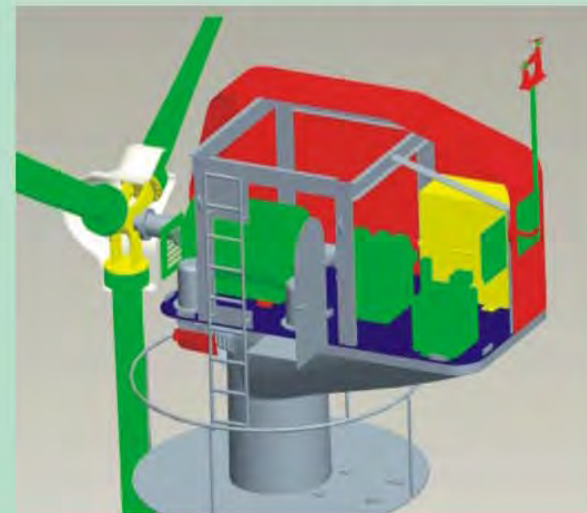
### Power curve graphics



## FD-E series wind turbine (2KW-200KW)



Structure drawing (2KW-50KW)



Structure drawing (100KW/200KW)



## FD-E series wind turbine (2KW-200KW)



### Controller

The control system is one of the most important parts of the electromotion yawing wind turbine system. Most wind turbine enterprises rely entirely on outsourcing the control system because they don't have the ability to develop their own wind turbine control system. And the controller manufacturers do not understand well of the generator characteristic, without the ability to test the system, so they can not provide the perfect solutions of the wind turbine control system.

Foshan OUYAD Electronic Co., Ltd was engaged in the inverter and controller's research and development since the company established, and has more than 10 years professional experiences of controller-inverter system of the wind turbine. Together with over 5 years R&D experiences of the generator, OUYAD developed their own wind turbine control system, and obtain totally 9 patents.

#### Here are the OUYAD control system advantages as below:

- 1) Industrial design standard, complete isolation design, it can endure all kinds of scurviness environment, failure rate of stable quality lower than 1%, the minimum service life can reach 5 years, 10 years designed life. (Patent No:200910213792X)
- 2) Untwisting functions, can guarantee the output line of the generator not twisting. (if the turbine yaw three rounds to one direction, then it will automatically yaw three rounds to the reverse direction to untwist the cables.) (Patent No: 200910213785X)
- 3) PWM constant-voltage charge, can protect the battery effectively. (Patent No: 200910213782.6)
- 4) Stageless unloading, can protect the system and guarantee the full use of the energy. (Patent No: 200910213783.0)
- 5) Electronic and manual brake can offer the multi-protection for the wind turbine system. (Patent No:200910213784.5)
- 6) Can set up the cut-out wind speed.
- 7) Original MPPT wind turbine system new function, even when the wind speed exceed the rated wind speed, the output of generator remains at the rated power. (Patent had been applied)
- 8) Unique data transmission system ensure the long distance transmission without interference. (Patent No: 200920265086.5)
- 9) Two ways of power supply for the controller ensure the controller can always working properly.



## Wind Turbines Project Cases



### Angel Series Wind Turbine Project Cases

#### \* Angel series wind and solar LED streetlight system

Foshan Ouyad Electronic Co., Ltd. had installed many small wind turbines Angel-200W/300W/400W in China and also abroad many countries LED streetlight wind and solar hybrid systems and some sight spots. E.g. Changsha, Hunan Province.



### FD-M Series Wind Turbine Project Cases

Botosani, Romania---1.5KW wind solar hybrid system

Russia---1KW Wind Turbin System

\* Botosani, Romania---1.5KW wind solar hybrid system support power to home use. Till now, there are so many household use this kind of wind turbines there, it works so well there!



\* This power system supply power for home use and it's fit for the local wind speed, this is customer testing site, it work well in those areas.



Rio Grand, Brazil--1.5KW Wind Solar Hybrid System for Home Use





FD-E Series Wind Turbine Project Cases

Maputo, Mozambique

Maputo government uses our 20kw/360v wind turbine systems to supply power for local hospitals.

Please see the pictures as follow:



This system includes wind turbine 20kw/360v, controller, 60pcs 12v/200ah batteries, off grid inverter and hydraulic tower (18m). Until now, this system work very well and can power to hospitals continuously.

Lisbon, Portugal

Lisbon government uses our 6pcs of 5KW and 2pcs of 10kw wind turbine system to power to home use.



The system includes wind turbine, controller, grid-tied inverter and hydraulic tower (12m). Until now, this system work very well and can power to house use.



Tibet, China

Tibet government uses our several pcs 10kw wind turbine systems to supply power for a small village.

Please see the pictures as follow:



This system includes 10kw wind turbine, controller, off grid inverter, 80pcs 12V40Ah batteries and 12m hydraulic tower. In Tibet, there is no electricity in the daytime, so they need our wind turbine to supply power to them in the daytime. Until now, this system work very well.

5KW wind turbine system project-Pingtan, Fujian province

Please see the pictures as follow:



This project use our electronic yawing type 4pcs of 5kw wind turbine systems, this kind of wind turbine without tail but with wind vane, anemoscope ... Until now, it works well and be popular among local residents.