INSTRUCTION MANUAL

WIND TURBINE 600W – 1KW, 2KW, 3KW -10KW

wind turbine system

For New Design

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1. SUMMARIZE ON THE FEATURE OF THE NEW DESIGN

Technique background

Small horizontal axis wind turbine (tail-protected), the need to rely on the tail folding or yaw when the wind speed too high. It would help to reduce the rotate speed of the wind turbine or brake . The shortcoming of the tail-folding is that : first, its tail-folding or tail–unfolding would be slowly, which would lead to the efficiency of the wind turbine lose in this process. Second the tail-folding structure would affect the steady of the wind turbine, causing some damage to the wind turbine service life.
The traditional tail-folding wind turbine is with the risk of the tail protection failing to work after long term wearing and tearing without maintains.

We have got the patent for the new design of the wind turbine in China.
Its main improvement on the base of the old structure is the adjust direction way and brake way is different, which is more safe, more durable, more efficiency.
The tail board would swing to find the best wind direction in the range of work wind speed.
If the wind speed is higher than the work speed of the wind turbine, the tail would swing to an angle to the vertical direction. And the brake happens when the tail have

90 degree angle to the vertical direction, the wind turbine does not work.

Feature

1. wind wheel simple, easy assembly, low maintains requirements.
2. Metric system components, easy to get.

3. Three-phase transmission slip ring of conductive, non-twisted cable phenomenon.

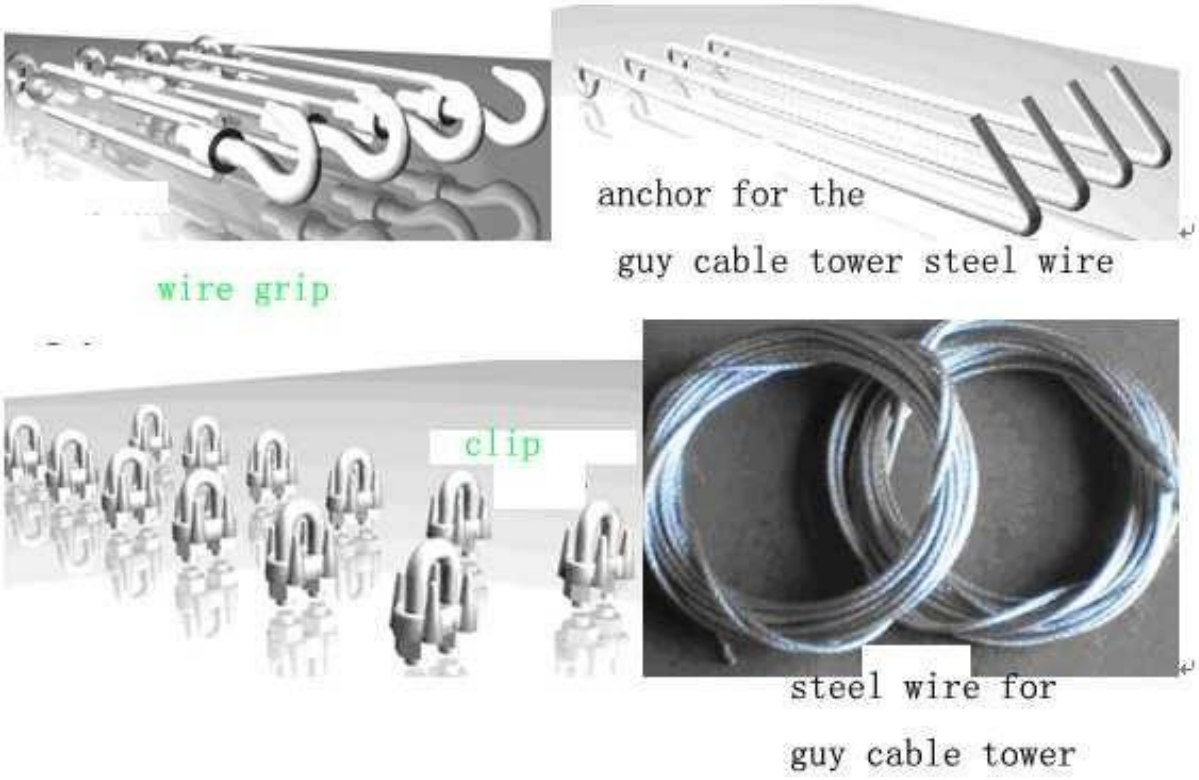
2. TECHNICAL PARAMETER

POWER	300W	400W	500W	600W	1KW	2KW	3KW	5KW
blade diameter	2m	2.3m	2.5m		2.8m	3.8m	4.5m	5.5
material of the blades	Fiberglass-Reinforced Plastic							
rated rotor speed	400 r/min				360 r/min	320 r/min	240 r/min	220 r/min
rated wind speed	8m/s						9 m/s	
rated Power	300W	400w	500w	600w	1200w	2000w	3000w	5000w
max Power)	400W	500w	720w		1200w	2500w	3600w	6500w
Standard output voltage of PMG	24V				24v/48v	48v/72v/96v	120v	196v
start up wind speed	2.5(m/s)						3(m/s)	
work speed	3-25(m/s)							
security wind speed	50(m/s)							

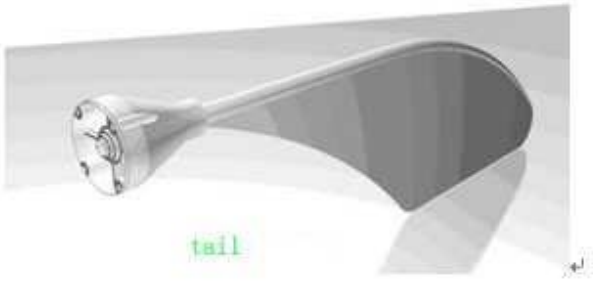
height of guy cable tower	6m					9m	
generator style	3-phase AC PMG						
top quality except tower	28kg	35kg	44kg	52kg	90	140	180
Suggest batteries for off grid system	2pcs 12v150ah			4pcs 12v150ah	6pcs 12v200ah	10pcs 12v200ah	16pcs 12v200ah
Service life	>15 years						
output controller system	Wind solar hybrid controller，Off--grid inverter						
Mated solar panel	24v 100w	24v100w --150w	24v100w--200w	48v200w--400w	72v600w--800w	120v600w--1300w	192v1000w-2400w
Class of insulation	B						
Material of enclosure	Cast steel						
Material magnet steel	N38SH neodymium-iron-boron 38sh						
Material of stator	QZY-2/180/470						
Corrosion prevention	Zinc coated、 painting						
Blades shape	3 FRP blades						
Over speed protection	Yaw automatically, electromagnetism protection						

3. STRUCTURE COMPONENTS

General the wind turbine includes: generator, blades, tail, tower, and accessories. Controller and inverter is electronic part.


wire grip
anchor for the
guy cable tower steel wire
clip
steel wire for
guy cable tower


generator


tail


tower


blade


dome


base


anchor
plugs of the base

4. PACKING LIST

For complete unit, it should include the following components (guy cable tower).

COMPONENTS NAME		Quantity
Generator		1
Wheel Hub		1
Base		1
Blades		3
Tail		1
dome		1
Steel wire		15m(according to tower height)
Anchors of Base		4 / 2
Anchor for the steel wire		
Charger controller and inverter		1
Guy cable tower		1 set
Small spare parts	Bolts and nuts	mating
		mating
		1
	Wire grip	4
	clip	10
Instruction manual		1

5. CHOSE INSTALLATION SITE

The following statement is as reference.

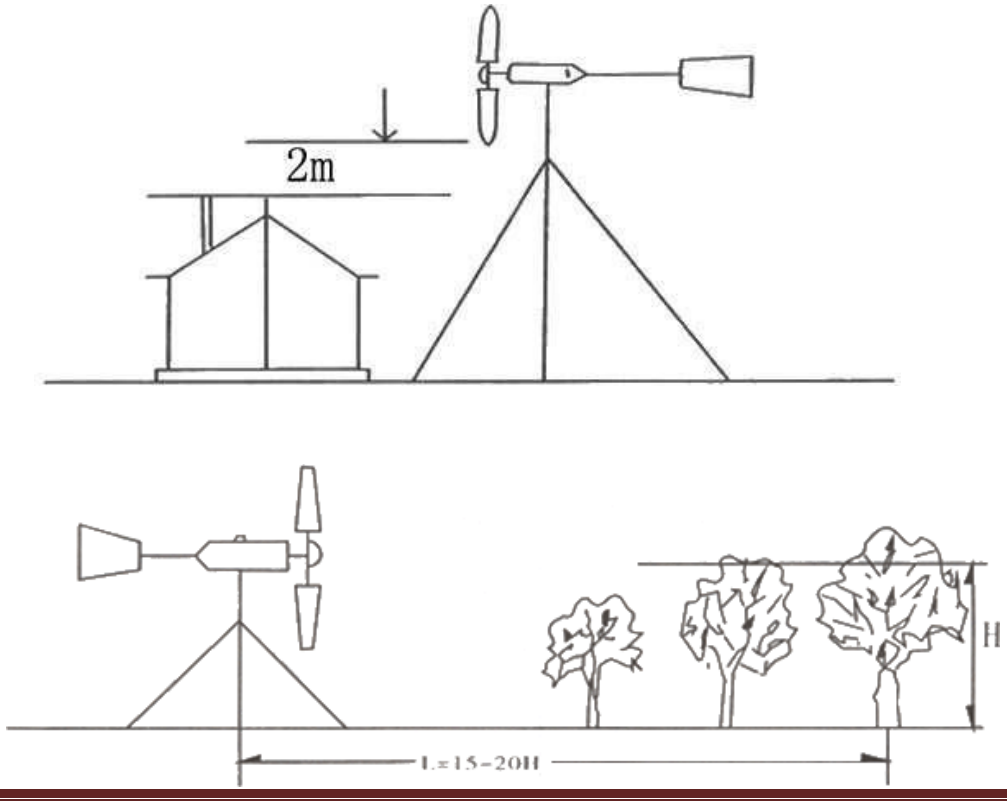
1. the higher of average wind speed the more power that the wind system will generate.（the power of wind is in proportion to the cube of wind speed. eg. the wind power on 5m/s wind speed is twice as the power on 4m/s wind speed）

2. unstable wind is not good for the safe operation of wind generator, and will reduce power that generated by the system. heavy turbulence site is inadvisable to install the system.

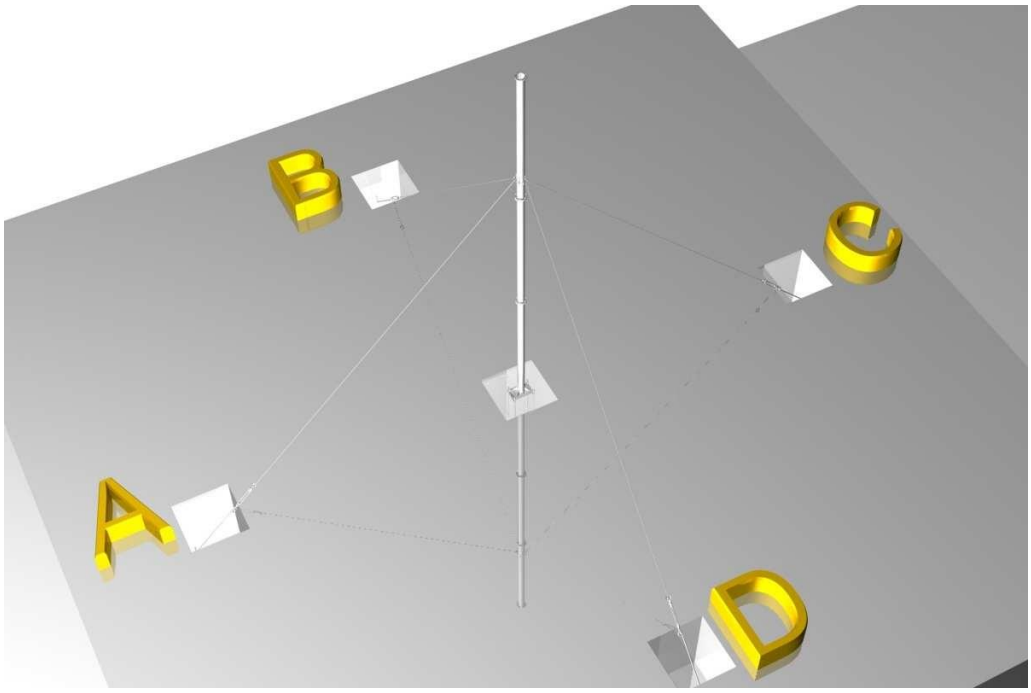
The higher the wind generator is placed, the stronger winds it will experience. in flat area the suggest height of tower do not lower than 6m.

The airflow around threes and building will form turbulence area, Avoid trees and buildings that will shadow the wind generator.

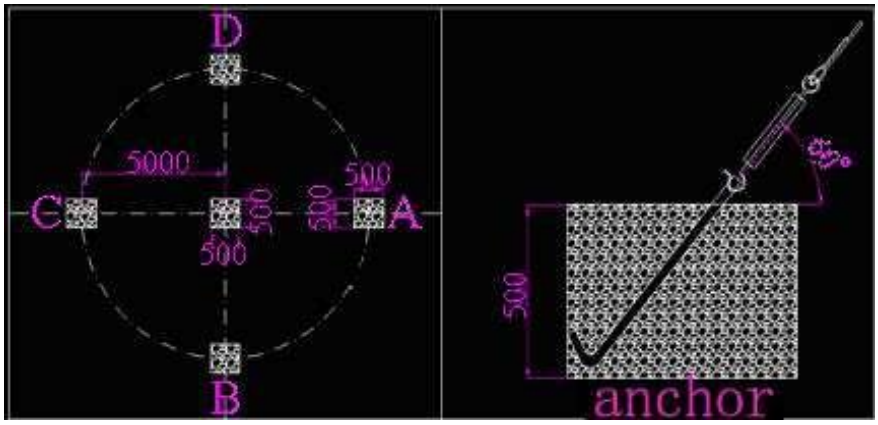
If the wind power generator has to be placed besides the obstacle, chose the site as far away as possible in order to make full use of wind .(see figure)



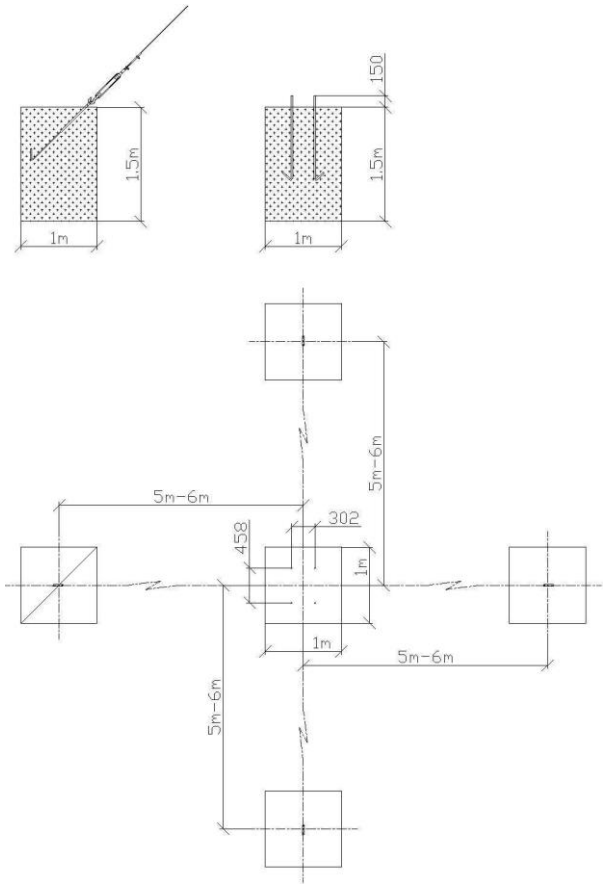
6. FUNDATION INSTRUCTION FOR GUY CABLE TOWER



XG-300W TO XG-2KW FOUNDATIONS



XG-2KW to XG-5KW FOUNDATIONS AS FOLLOWING



1. Dig a squarish pit on center of ground. 500mm x 500mm x 500mm (300w-1kw)

   800mm x 800mm x 800mm (2kw)
   1000mm x 1000mm x 1000mm (3kw-5kw)

2. Take the squarish pit as the centre; equally dig 4 pits (A B C D) at radius of 5.0m. (Design the distance between anchor of wire and the center according to the height of tower. For 9m height tower, the distance is 7m)

3. Put the four anchors into the holes of base and tight with screw. (keep the top of screw 20mm above the base). Make the axis of base be directed by pits B D (or A C) and lay flat 40-50mm above the ground. Pour concrete (the proportion of cement, sand, gravel is 1:2:3). Adjust the base flat at last.

4. Put the anchor of wire slant into the pits, throw stone to the bottom to cover the anchor, then pour concrete, stone and concrete interlace till the pits full. Keep the circular ring lean to the center of ground, form 60° angle with horizontal.

5. The curing time of concrete is normally 100 hours, do not install wind turbine during this time.

7. INSTALLATION OF UNITS

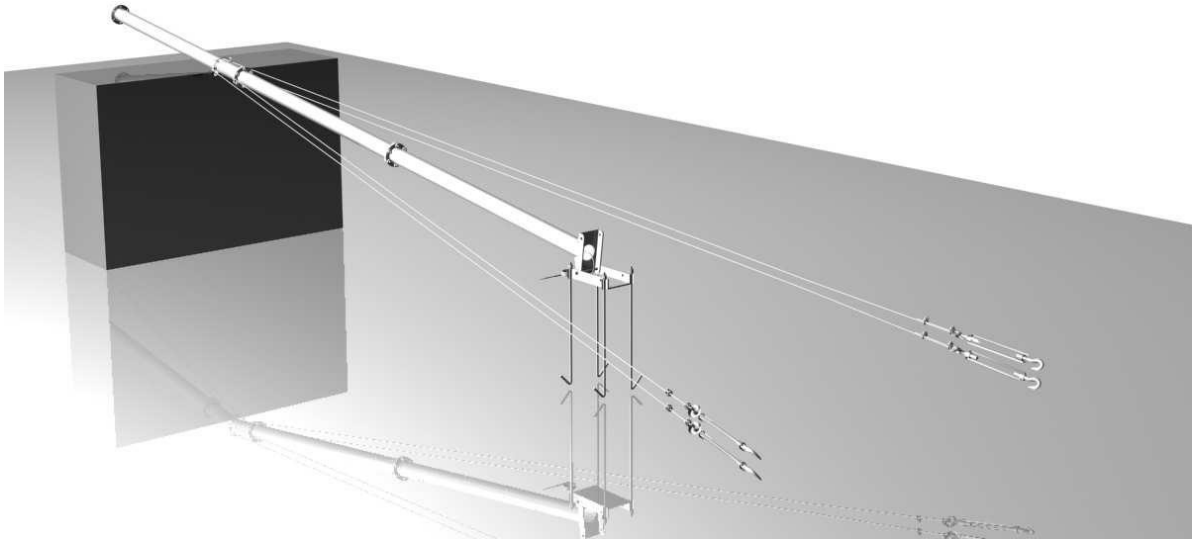
PLEASE Choose the day on which there is no wind or less than 2m/s to install the wind turbine.

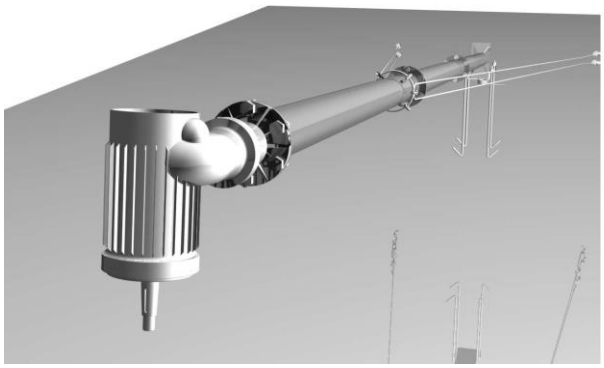
Attention: the wire from the generator must be twisted together (short circuit), before contact with the load.

Steps of the installation

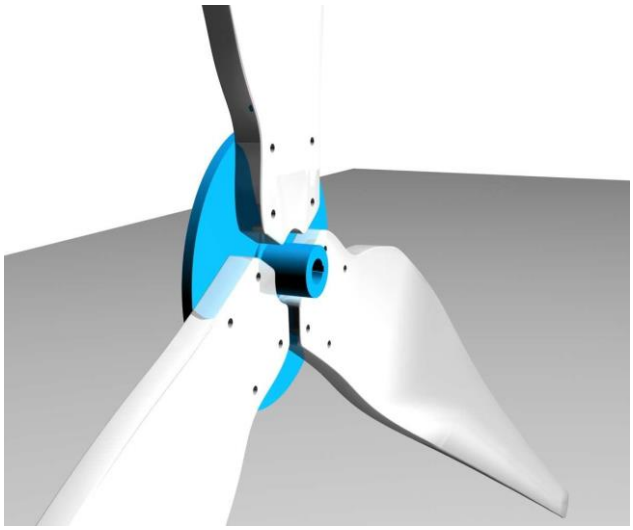
1) **as following drawings show, assembly the base with the foundation. Pulling the wire through the tower, leading the wire from the bottom of the tower.**

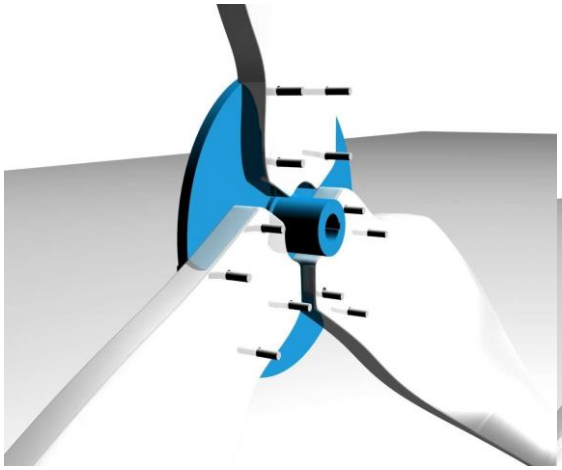
2) Assembly Generator, tail, blades.

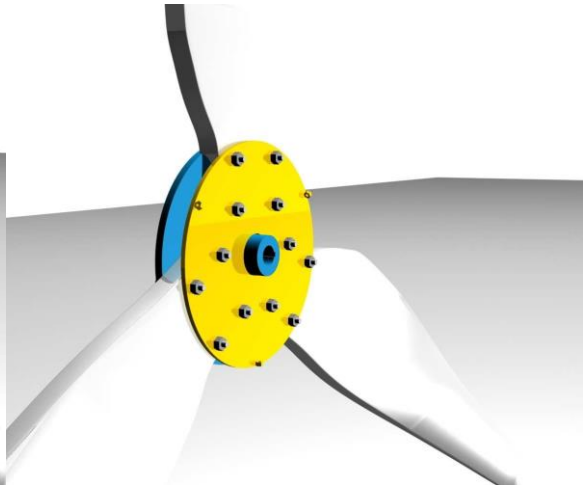


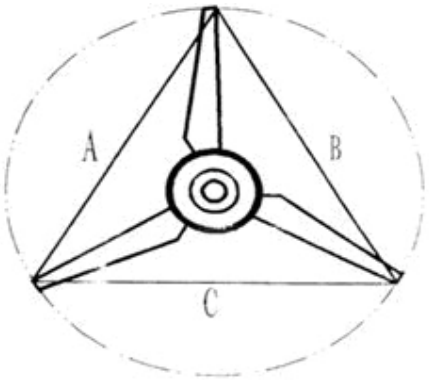


Tail, after the tail contacting with the generator, make sure the tail board could swing freely.

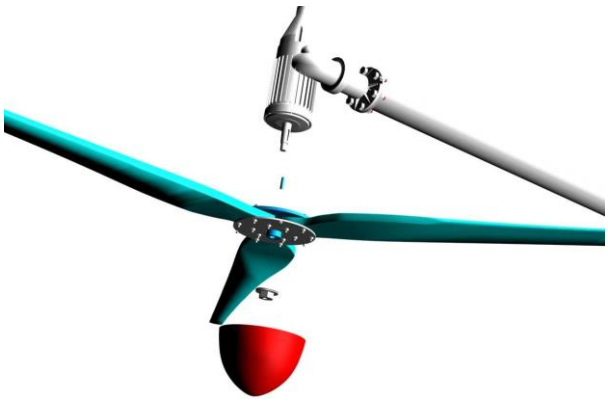








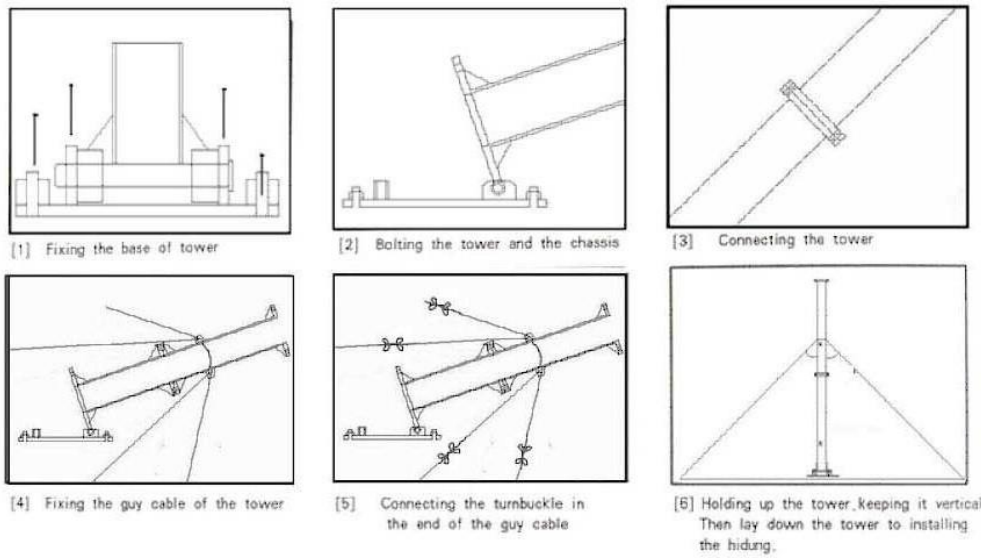
Attention please, that the tip distance between each piece is the same with each other.



Blades assembly: the concave side face the wind, the convex side face the generator.

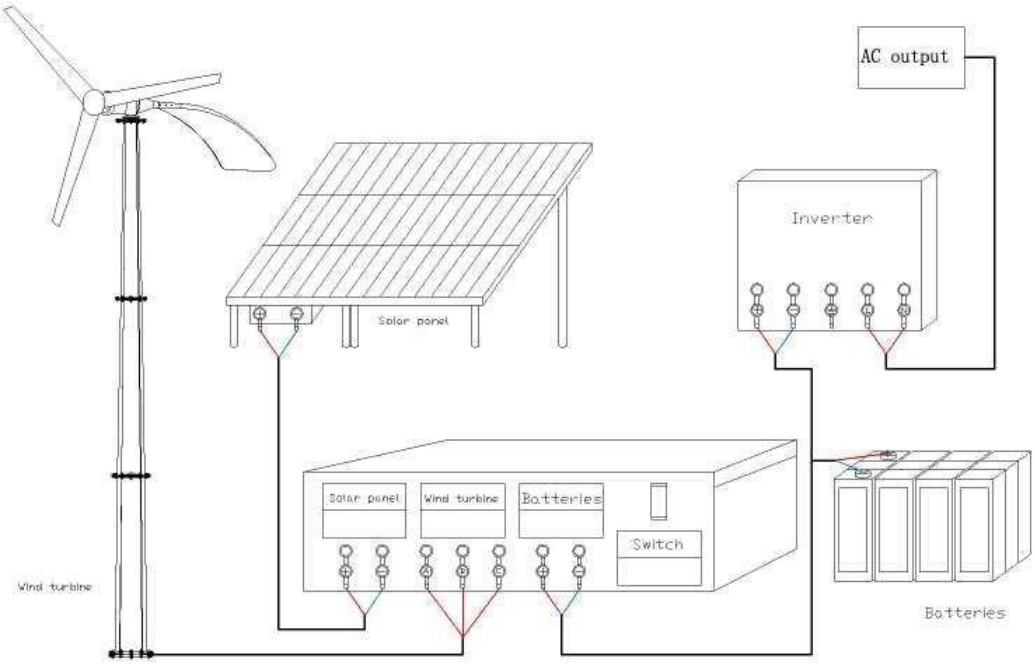
After assembly the blades with the hub, contact with the generator, and check if the wind wheel could rotate freely. Then assembly the dome.

3) Lift the tower with crane or other way



4) wire

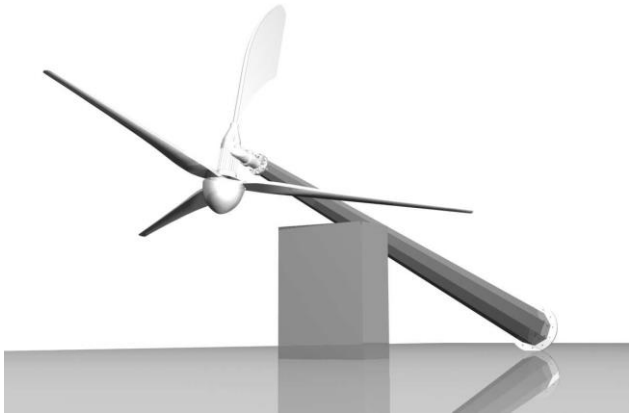
Wiresketch



The electrode and the voltage between all the connections must be right

and match. After all the components connections right, fix the tower. Usually for 2kw and less than 2kw could be pulled up by several guys, but for 3kw and higher, advise use a crane.

5) Following is free stand tower installation



For free stand tower, only the tower foundation need special design according to the tower height and model. Other connection is the same as the guy cable tower.

Attentions:
1. if find the generator does not work, vibrate, or have abnormal noise, brake the wind turbine and check.
2. when the wind turbine work, it is dangerous to stand under it. Keep a distance from it.
3. batteries need to be dry and clean, no metal things on it, in case short circuit.

4. inverter should be far away from the electrical box. Inverter operation according to the direction of the Inverter manual
5. the tower need to stand vertical always, after heavy wind, advise check the steel wire and the wire grip.
6. the wind turbine system need to wire by itself.
Usually the inverter could not connect with the grid power.

7. the generator is not allowed to work without load.

9. MAINTENANCE

XG series small wind turbine system is reliable and do not need frequent maintenance. The user need inspect the generator –pole -output line timely to ensure the system operating safely.

1. Inspect the wire grip, fixed in time if loosen. During the first three month, this inspection is required, also after suffering strong wind.

2. Inspect if the joint of circuit is fixed, if there is Corrosion phenomenon.

3. Inspect batteries timely according to its demand.

4. Before coming of extreme weather (like typhoon), we suggest lay down the pole to avoid unpredictable accident.

10. TROUBLE SHOOTING

XG series small wind turbine system is designed according to principle of free-maintenance. Normally reasonable installation and use will not cause fault.

Fault	Reason	Maintenance Method
Shake from generator	1. wire loosen 2. screw of blades loosen 3. blades damaged in outer force 4. the surface of blades freeze, cause lose balance	1. tense the wire 2. screw the loosen parts 3. replace blades 4. clean up the freeze
Unmoral noise	1. the parts loosen 2. bearing of generator has been damaged 3. there is rub between blades and other parts	1. lay down the system, check loosen parts, take sanforizing measure 2. replace bearing 3. inspect fault of blades
The rotate speed reduced obviously	1. there is rub from stator of generator 2. the winding of generator is short circuit or output line short circuit 3. the button on the controller be placed on off position	1. replace bearing 2. find short circuit parts, and insulate 3. place the button on
The voltage output from generator is low	1. the rotate speed of generator is slow 2. three phase winding of stator short circuit 3. controller short circuit 4. low voltage transmission line is too long, or the diameter of line is thin	1. inspect generator 2.find short circuit parts, and insulate 3. replace controller 4.short the line or widen diameter of the line
Energy output from battery is insufficient	1. output voltage from generator is too low 2. terminal of battery is corroded, cause poor contact 3. the battery lose efficacy	1. inspect the generator 2. clear the terminal, keep contact well and coat oil 3. replace battery