



USER'S MANUAL

FOR HY SERIES SMALL WIND
TURBINE

HY—2000 SERIES

GUANGZHOU HYENERGY CO., LTD

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THANK YOU FOR THE PURCHASE OF HY SERIES SMALL WIND TURBINE, BEFORE ASSEMBLING, PLEASE CAREFULLY READ THE USER'S MANUAL FOR SAFETY USE AND OUTSTANDING PERFORMANCE. ALSO PLEASE ENJOY THE CONVENIENCE HY SERIES WIND TURBINE BRINGS TO YOU! PLEASE NOTE THAT ALL WIND TURBINE DESCRIBED BELOW ARE REFERRING TO HY SERIES SMALL WIND TURBINE.

PLEASE ENSURE ALL EQUIPMENTS IN CARTON ARE FULLY MATCHED THE PACKING LIST (REFER TO APPENDIX: WIND TURBINE STRUCTURE), IF IN LACK OF ANY PARTS PLEASE CONTACT US IMMEDIATELY.

1. SITTING

The location of installation is very important for power generation. The following sitting information can be as your reference:

There are two basic requirements for a good site: high average wind speed and low wind turbulence.

1. The higher average wind speed, the more power will HY series wind turbine generates.

The wind power is proportional to the cube of wind speed. For instance, the energy contains in the wind speed of 5m/s is as approximately as 2 times higher than wind speed of 4m/s.

2. It will against the long term operation of the wind turbine if the sitting location in an unstable wind-flow region or in a serious turbulent-flow region. Moreover, this serious turbulent flow not only causes destructive force to the wind turbine, but also dramatically reduces power generation of the wind turbine.

Install the wind turbine as high as possible. Since the higher location, the greater wind speed it will be; the more stable wind blow, the more stable power can be generated.

In flat area, the recommended installation height for the HY series is not less than 8 m above ground level.

Bushes and buildings can be assumed as barriers to the wind flow, before and behind these barriers, it could form a sluggish and disorder turbulent flow area in which the wind turbine couldn't generated stable power output. It should be avoided to install the wind turbine in the turbulent flow area. The height of tower should be 2m higher than the highest buildings within 100m radius.

Furthermore, please obey related local legalization and regulation.

2. INTRODUCTION OF MATERIAL

BLADES: HY SERIES rotor blades apply the latest advanced thermoplastic engineering and are manufactured by precision injection molding. The blades are of exceptional consistency and aerodynamic outline with a mass distribution that ensures the rotors operate with nearly no noise and minimal vibration. The HY SERIES has very low start-up/cut-in wind speed and a high coefficient of productivity and is specially designed to prevent the blades from feathering post stall.

GENERATOR: made from high-quality rare earth permanent magnets material. The wind turbine is of small size, light weight and high-efficiency power generation characteristics. Mechanical and electrical professors' unique electromagnetic design technique has endowed the excellent start up capability, which effectively ensures the HY series wind turbines can be started up in a gentle breeze.

BODY: The wind turbine body's material is adopted from high-quality aluminum alloy and precision stainless steel accessories, very light weight. The model can be widely applicable to an ambient temperature from -30°C to 60°C , high humidity, wind sand and salt spray environment as well.

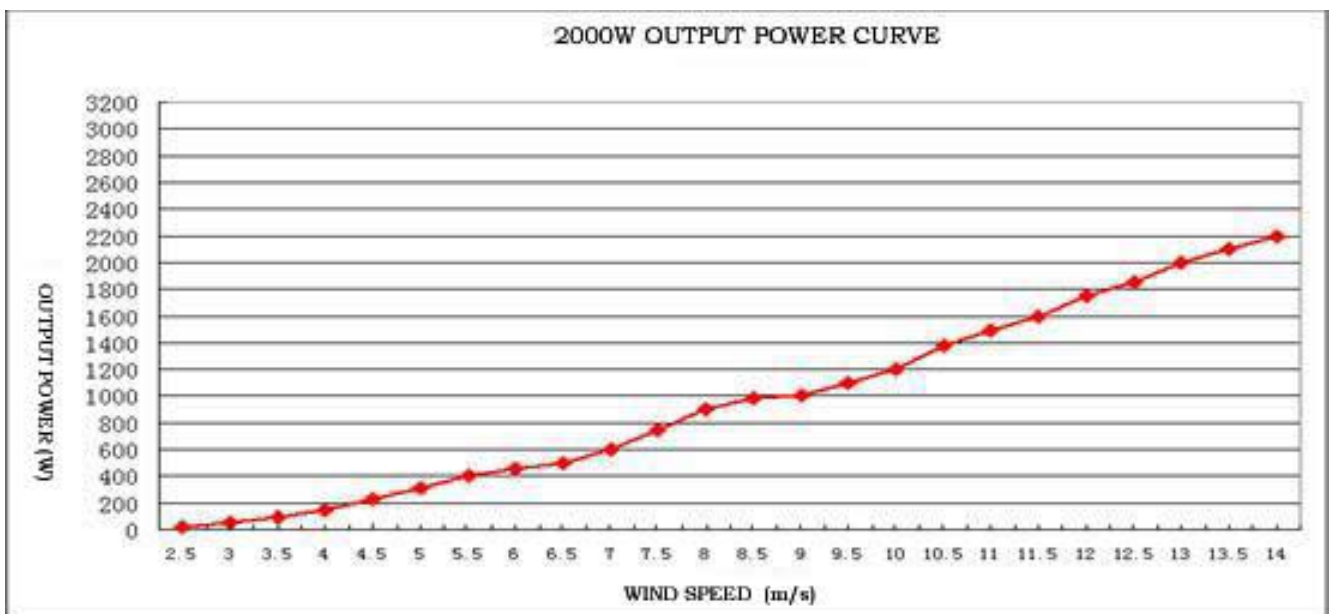
The elegant design and its easy installation of HY series small wind turbine can make you enjoy green energy in all-weather circumstances as well as bring you a joyful landscape.

3. TECHNICAL PARAMETER AND OUTPUT POWER CURVE

(1) HY—2000

PRODUCT NAME	WIND TURBINE HY—2000
START UP (m/s)	2.5
RATED SPEED (m/s)	12
CUT IN (m/s)	3
RATED VOLTAGE (DC)	$48V_{\text{DC}}$
RATED OUTPUT	2000

(W)		
PEAK POWER (W)	2500	
ROTOR DIA. (m)	3.4	
No. OF BLADES	3	5
OVER-SPEED PROTECTION	BLADE AERODYNAMIC ELASTIC AND ELECTROMAGNETIC	
OVER-LOAD PROTECTION	ELECTROMAGNETIC OR ADD DUMP-LOAD	



4. THE WIND TURBINE ASSEMBLY

HY SERIES WIND TURBINE ASSEMBLE DIAGRAM (ROTOR ASSEMBLY)



1、 OPEN CANTON TO INSPECT ALL PARTS COMPLETE



2、 TAKE OUT THE BLADE FROM CANTON

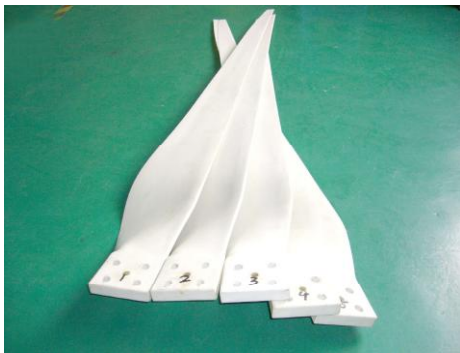


3、 TAKE OUT THE HUB FROM CANTON



4、 ASSEMBLE THE BLADES WITH BLADE NUTS

HY-L SERIES WIND TURBINE ASSEMBLE DIAGRAM (ROTOR ASSEMBLY)



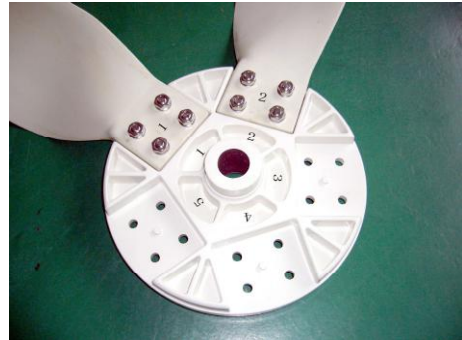
1、 TAKE OUT THE FIVE BLADES FROM CARTON



2、 TAKE OUT THE HUB FROM CARTON



3、 MATCH THE NO. ON BLADE AND THE NO. ON HUB
—— FASTERN THE BLADE AND HUB WITH NUTS



4、 SAME AS STEP THREE, MATCH THE BLADE
NO. 2.



5、 FINISH ASSEMBLE FINAL PRODUCT DIAGRAME

HY SERIES WIND TURBINE ASSEMBLE DIAGRAME (FLANGE CONNECTION)



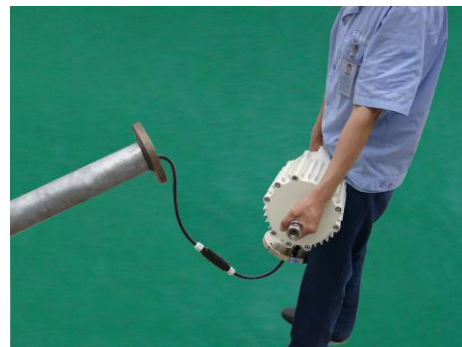
1、 TAKE OUT THE WIND TURBINE FROM CARTON.



2、 PULL OUT THE CABLE COVER AND CONECT THE CABLE'S THREE FAHSE WIRE WITH WIND TURBINE THREE PHASE WIRE



3、 ATTACH THE CABLE COVER.



4、 DRILL THE CABLE OUT THROUGH THE TOWER



5、 ATTACHED THE FLANGE AND TOWER WITH LOCKNUTS



6、 FINISH ASSAMBLE, ERECT THE POLE

HY SERIES WIND TURBINE ASSEMBLE DIAGRAM (ROTOR, FRONT COVER ASSEMBLY)



1、 TAKE OUT THE THREE BLADES FRONT COVERAND FRONT COVER BOLT、 BLOCK、



A、 TAKE OUT THE FIVE BLADES FRONT COVER.



2. INSTALL THE ROTOR ON WIND TURBINE ALXE, FASTERN THE HUB BY LOCKNUT SPRING WASHER



B、 INSTALL THE ROTOR ON WIND TURBINE ALXE FASTERN THE HUB BY LOCKNUT SPRING WASHER



3、 TIGHTEN THE FRONT COVER BY FRONT COVER BOLT



C、 TIGHTEN THE FRONT COVER BY FRONT COVER BOLT

5、 DAILY MAINTENANCE

HY series wind turbine is a high reliable design and it is free from regular maintenance. But routine checking and maintenance of wind turbine—tower—cable wiring is still

needed and suggested for regular operation reason.

1. Inspect the tower guy rope; make it tight if it is loose. Check regularly of the guy rope tightness about three months' installation or in case of any big storm after.
2. Inspect all junctions of cable wiring are firmly fixed with each other, no corrosion occurred.
3. Regularly inspect and maintain the batteries according to the battery manual.
4. In extreme bad weather (such as typhoons), it is recommended to lay down the tower to prevent any unpredictability accidents.

6、 TROUBLE-SHOOTING

PLEASE FIND CORRESPONDING SOLUTIONS BELOW IF ANY PROBLEM HAPPEN

Faults	Cause reasons	Trouble-shooting
Wind turbine vibration	<ol style="list-style-type: none"> 1.loose of steel guy rope 2.loose of blade-locknuts 3.wind turbine blade damage because of external force 4.imbalance blade surface because of freezing on blade surface 	<ol style="list-style-type: none"> 1.adjust & tighten guyed rope 2.tighten loose part 3.change new blade and rebalance 4.remove the ice on blade
Abnormal noisy	<ol style="list-style-type: none"> 1.loose of fixed part 2.wind turbine bearing damage 3.Friction on wind turbine with other part. 	<ol style="list-style-type: none"> 1. Lay down wind turbine, inspect each fasten parts are tightened, re-tight it if in case of any parts loose. 2.change bearing 3.exclusive checking
Wind wheel running speed decreased dramatically	<ol style="list-style-type: none"> 1.friction in rotor 2.Controller switch on "stop" position 	<ol style="list-style-type: none"> 4.change wind turbine 5.press controller switch to "start" position
Wind turbine low output voltage	<ol style="list-style-type: none"> (1) wind turbine in low rotating speed (2) controller fault (3) long low-voltage transmission line, small diameter size cable 	<ol style="list-style-type: none"> 1.low wind speed 2.change controller 3.shorten the transmission line or enlarge the cable diameter size

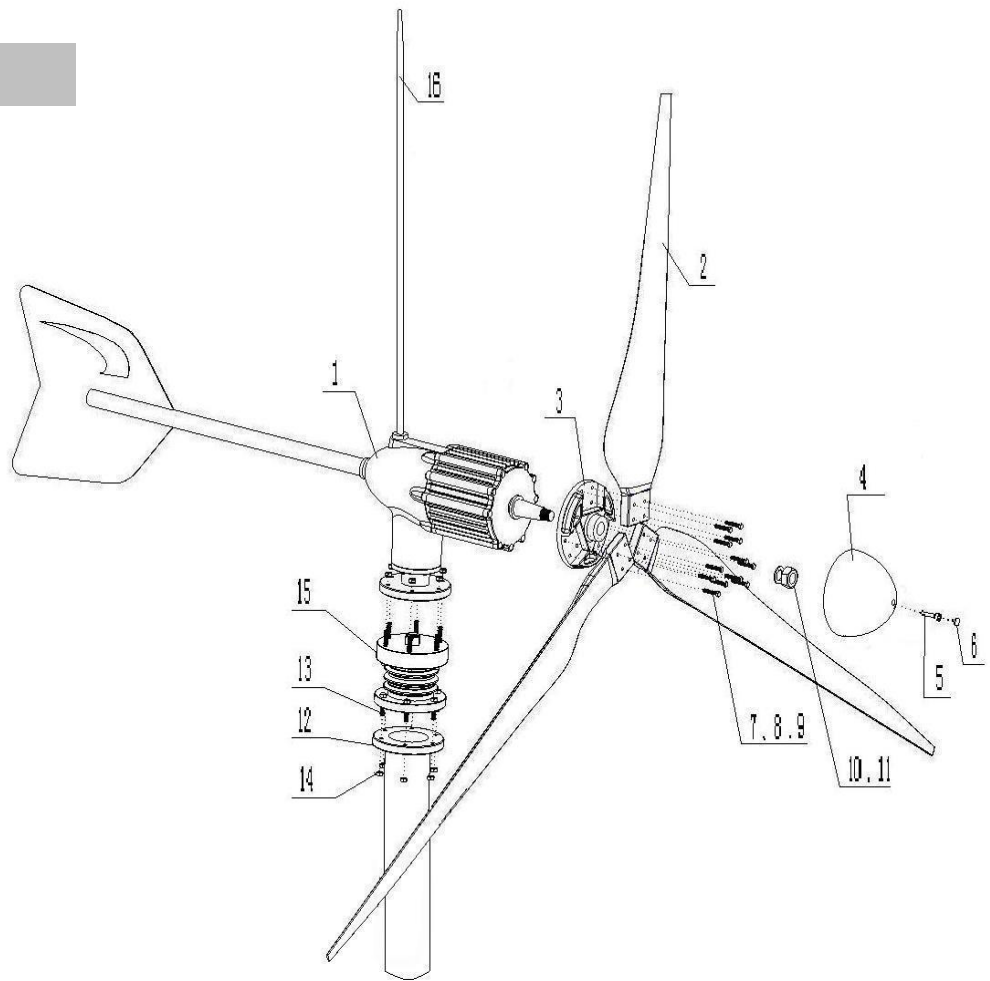
No current output on wind turbine 's AC transmission line	1.wind turbine short-circuit 2.output cable short-circuit	1.Change wind turbine. 2.re-bridge short-circuit
Wind turbine AC output normal, but no DC output	1.AC fuse burn out 2.output cable short-circuit 3.controller damage	1.replace new fuse 2.re-bridge short-circuit 3.replace controller
Battery output capability decrease	6.wind turbine output voltage too low or not working 7.acid correction on battery post 8.battery off working	1.check exclusively according to the above measures 2. Clean up connection surface, make sure the wire and battery post in an excellent touch, paint protection oil. 3. replace battery

WIND TURBINE STRUCTURE DIAGRAMME、 AND ITS PACKING LIST:

BEFORE ASSEMBLING, PLEASE MAKE SURE ALL EQUIPMENTS ARE COMPLETELY MATCHED WITH THE PACKING CONTENT.

(1) STRUCTURE DIAGRAMME:

2000W



PACKING LIST

CODE	COMPONENT	QTY	NOTE
1	WIND TURBINE ASS.	1	MAIN PART
2	BLADE	3	
3	HUB	1	
4	FRONT COVER	1	

5	FRONT COVER BOLT M5×45	1	SPARE PART
6	FRONT COVER BLOCK	1	
7	BOLT M10×45	12	CONNECTING WITH BLADE
8	FLAT WASHER Ø10	12	
9	LOCK NUT M10	12	
10	NUT M24×2	1	SPARE PART
11	SPRING WASHER M24	1	
12	FLANGE	1	CONNECTING WITH FLANGE
13	BOLT M12×45	6	
14	LOCK NUT M12	6	
15	SHOCK ABSORBER	1	OPTION PART
16	LIGHTNING ROD	1	OPTION PART

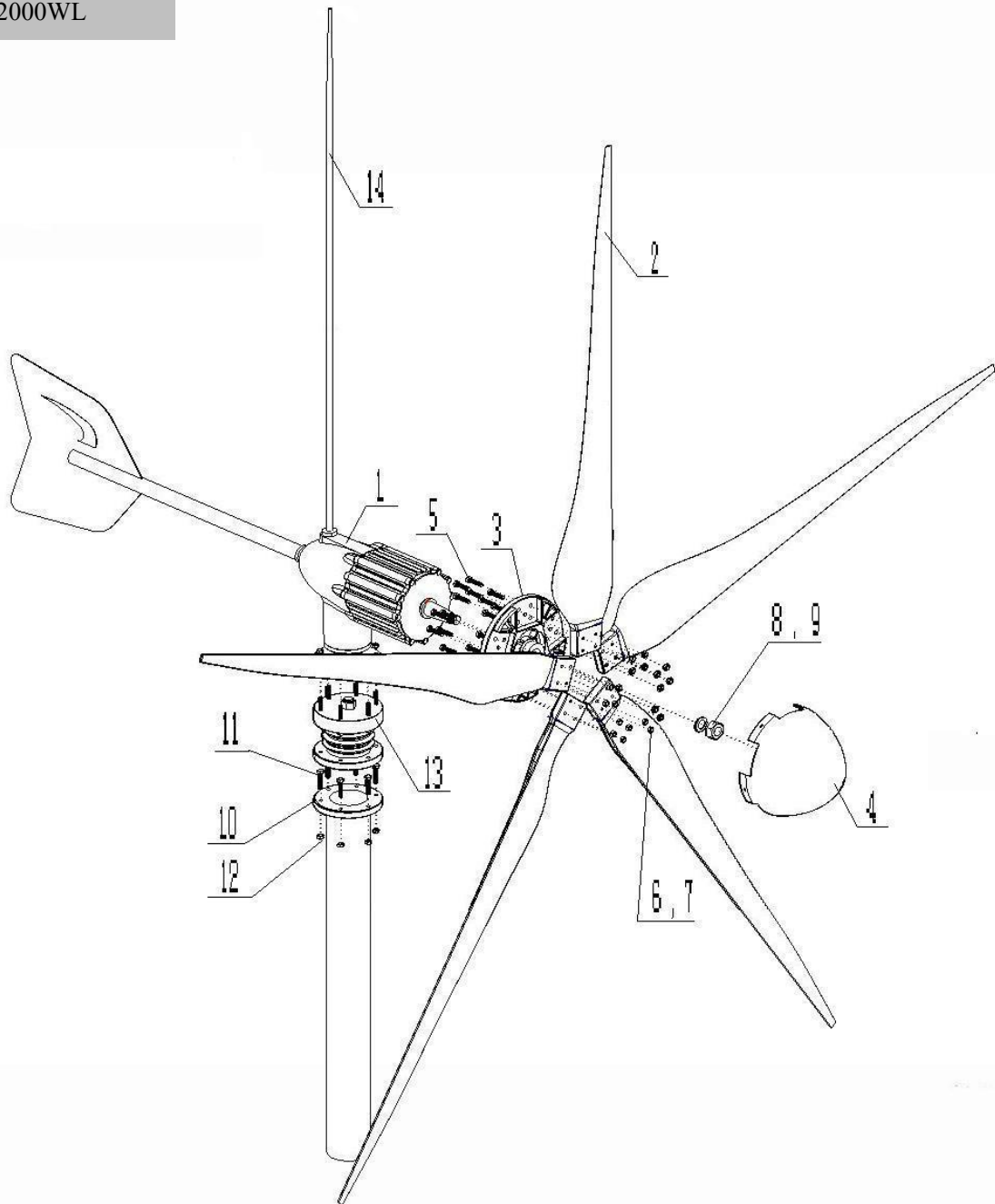
WIND TURBINE STRUCTURE DIAGRAMME、AND ITS PACKING LIST:

BEFORE ASSEMBLING, PLEASE MAKE SURE ALL EQUIPMENTS ARE COMPLETELY MATCHED WITH THE PACKING CONTENT.



WHEN ASSEMBLING THE FIVE BLADES WIND TURBINE, PLEASE ENSURE THE NUMBER ON BLADE EXATLY MATCHING THE NUMBER ON HUB, OTHERWISE INCORRECT ASSABMLING WILL CAUSE VIBRATION TO THE WIND TURBINE.

2000WL



PACKING LIST

CODE	COMPONENT	QTY	NOTE
1	WIND TURBINE ASS.	1	MAIN PART
2	BLADE	5	

3	HUB	1	
4	FRONT COVER	1	SPARE PART
5	BOLT M10×45	20	CONNECTING WITH BLADE
6	FLAT WASHER Ø10	20	
7	LOCKNUT M10	20	
8	NUT M24×2	1	SPARE PART
9	SPRING WASHER M24	1	
10	FLANGE	1	CONNECTING WITH FLANGE
11	BOLT M12×45	6	
12	LOCKNUT M12	6	
13	SHOCK ABSORBER	1	OPTION PART
14	LIGHTNING ROD	1	OPTION PART