

## HAWT-5kW (Pitch, Downwind)

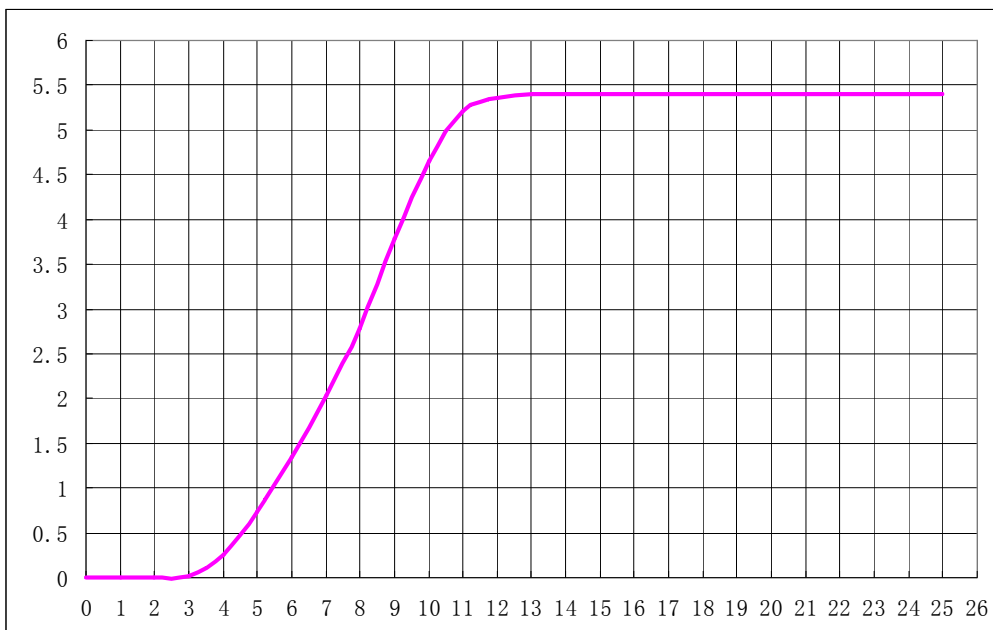
### 1. Parameter:



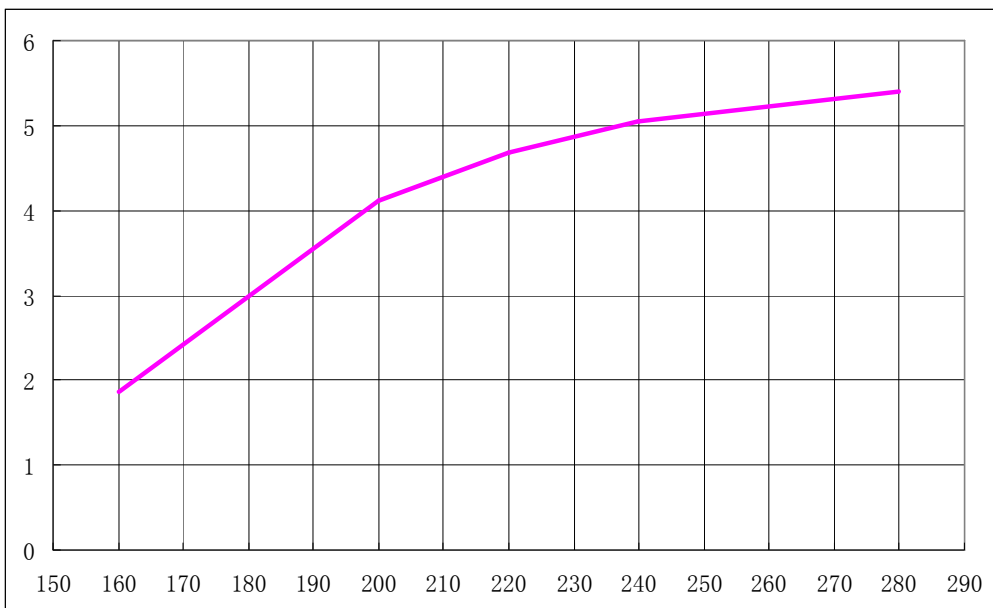
Rated power (kW)	5	Maximum power(kW)	5.4
Rated wind speed (m/s)	11	Speed regulation method	Adjustable-Pitch
Startup wind speed (m/s)	3	Generator style	3-phase AC PM
Working wind speed (m/s)	4-25	Tower height (m)	8
Survived wind speed (m/s)	50	Stop method	Backswept pitch
Rated rotate speed(r/min)	240	Main machine weight (kg)	340
Rotor diameter(m)	5.6	Guyed tower weight(kg)	350
Working voltage (v)	DC240V/AC220V	Free standing tower weight(kg)	650
Blades material*quantity	Fiberglass-Reinforced plastics*3	Annual generation Min/Max(kWh)	7500/22500

### 3. HAWT-5kW Wind Turbine Output Power Curve:

Wind speed (m/s)	0	1	2	3	4	5	6	7	8	9	10	11	12
Output power (kW)	0	0	0	0.01	0.26	0.76	1.32	2.01	2.75	3.87	4.65	5.3	5.36
Wind speed (m/s)	13	14	15	16	17	18	19	20	21	22	23	24	25
Output power (kW)	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4

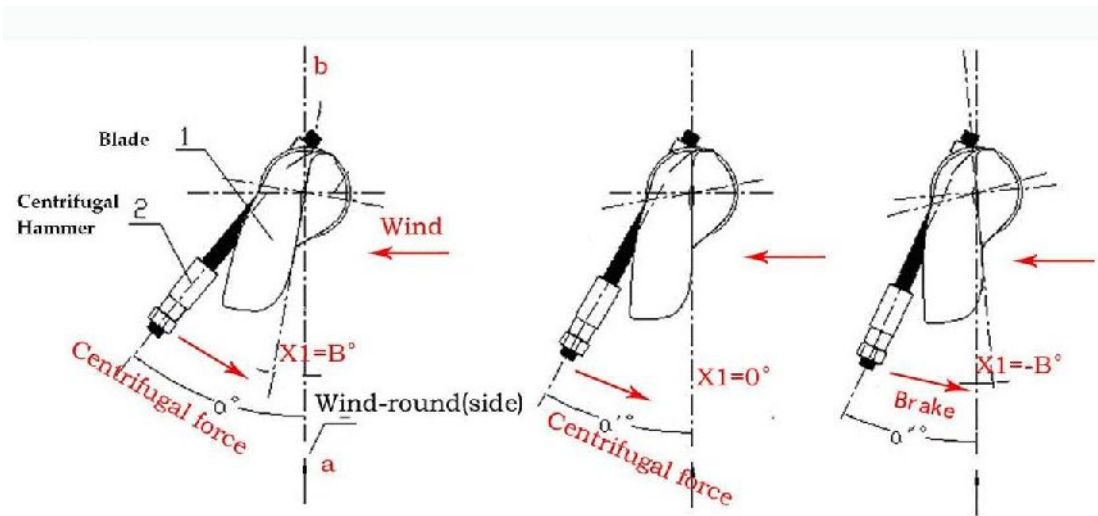


HAWT-5kw Wind speed vs. output power curve



HAWT-5kw Rotation speed vs. output power curve

#### 4. Pitch technology:



5kW wind turbine Adjustable Pitch system

#### HAWT-5kW Variable Pitch Principle

Under the wind speed of 0m/s ~ 3m/s, the turbine blade remain static ,and the angle X1 formed between the blade and turbine plane is  $B^\circ$  ( $X1= B^\circ$ );under this angle ,the blade is most easily to be started up. As long as the wind speed reached 3m/s, the blades will begin to rotate, during the rotation, the outermost edge of the blade will be driven by the centrifugal force generated by the rotation of the blade to tilt toward the turbine plane, the aforementioned angle X1 will decrease until  $0^\circ$  when the blade is in parallel with the turbine plane; at this angle, the turbine has nearly reached it's rated output power. When the wind speed is between 11m/s ~25m/s, the blade will keep adjusting it's position forth and backward slightly to let the angle X1 fluctuate a little bit but maintain at around  $0^\circ$  roughly, so as to stabilize it's rated power. Within the wind speed of 25m/s ~ 50m/s ,when the wind has exceeded it's rated speed , the wind will keep drawing the blade by the centrifugal force, so the angle X1 will continue to decrease and turn into a negative angle  $X1= -B^\circ$  (PS:  $B^\circ$  and  $-B^\circ$  is not the same),under this negative angle, the rotation of blade will produce a resistance on the rotation of turbine blade to slow down the rotation and protect the wind turbine from over speed operation, the maximum RPM of the turbine will be no more than 277 RPM. (A、 B、 C: 3 Pcs Bladesa、 b、 c: 3 PCS centrifugal hammers)



5. Photos:

