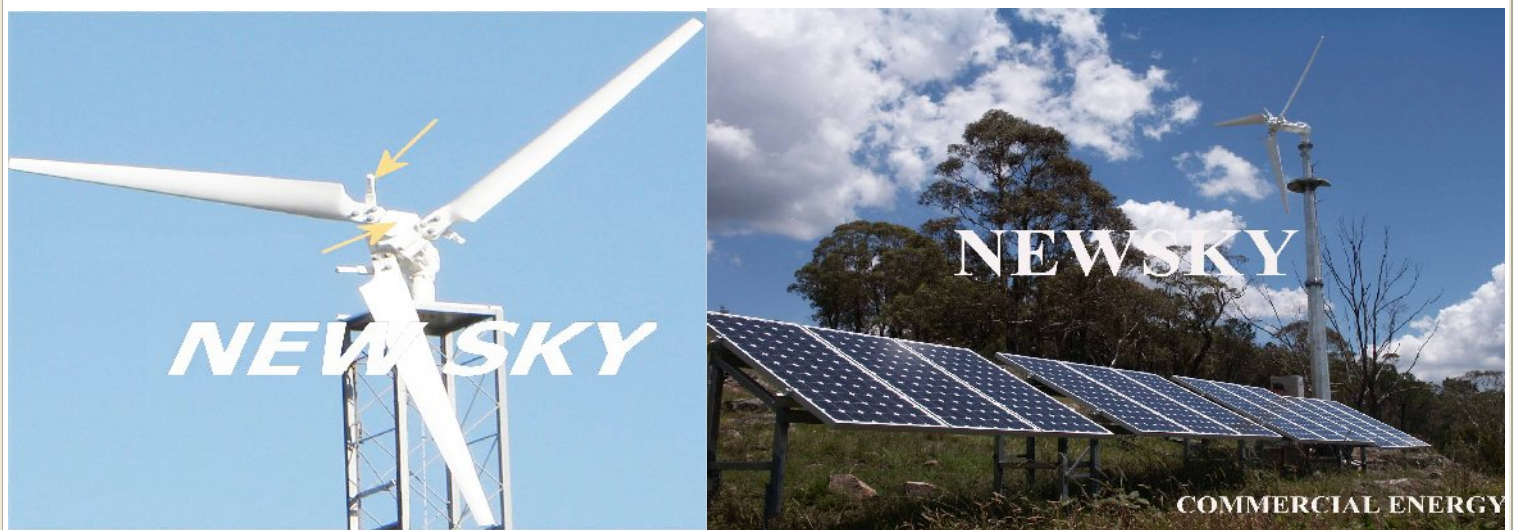


## HAWT-2kW (Pitch, Downwind)

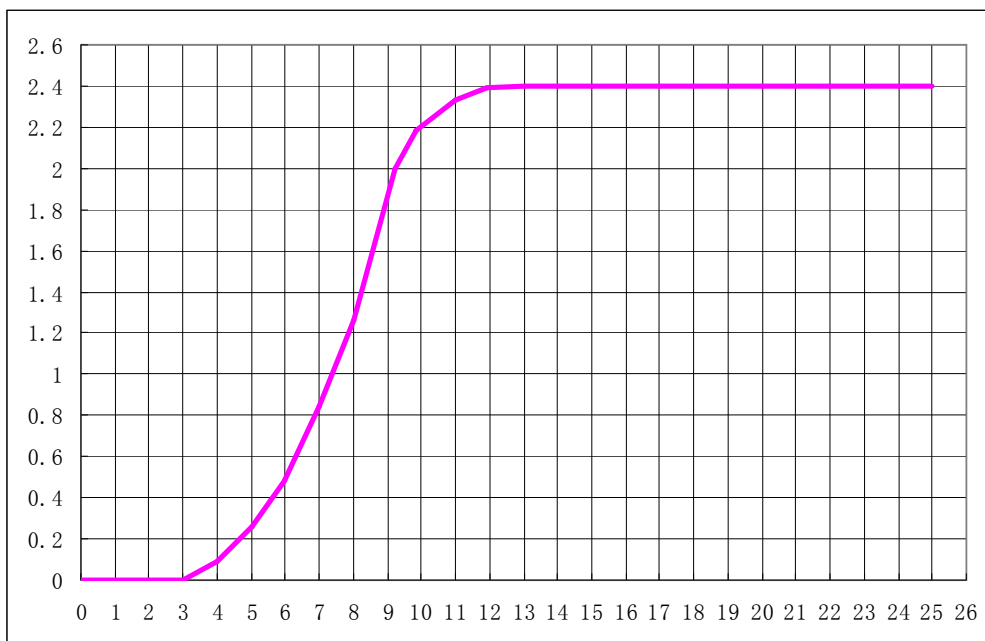
### 1. Parameter



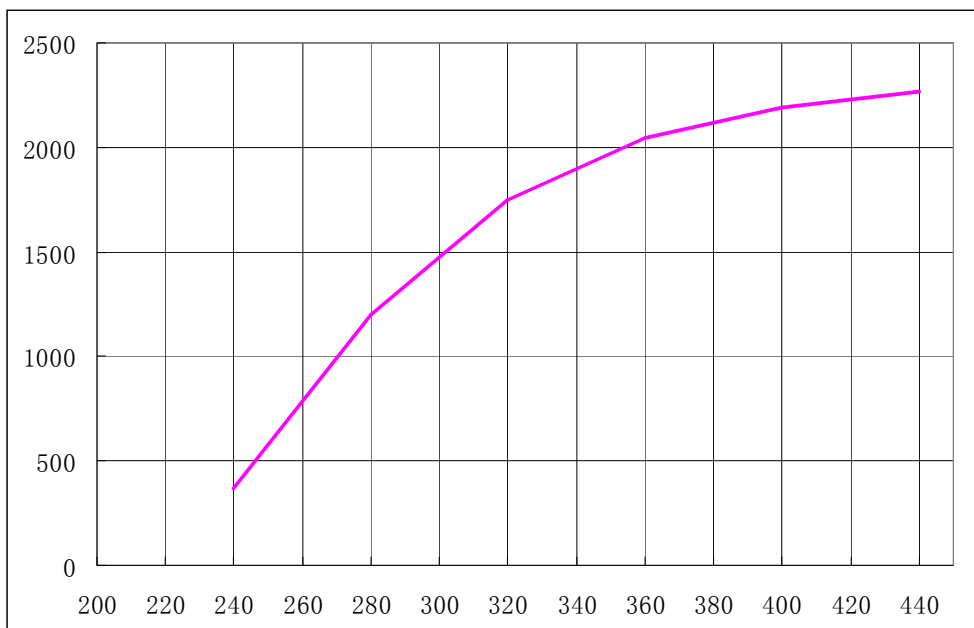
Rated power (kW)	2	Maximum power(kW)	2.4
Rated wind speed (m/s)	9	Speed regulation method	Adjustable-Pitch
Startup wind speed (m/s)	2.5	Generator style	3-phase AC PM
Working wind speed (m/s)	2.5-25	Tower height (m)	6
Survived wind speed (m/s)	50	Stop method	Backswept pitch
Rated rotate speed(r/min)	360	Main machine weight (kg)	130
Rotor diameter(m)	4	Guyed tower weight(kg)	100
Working voltage (v)	DC48V /240/AC220V	Free standing tower weight(kg)	230
Blades material*quantity	Fiberglass-Reinforced plastics*3	Annual generation Min/Max(kWh)	2000/6000

### 3. HAWT-2kW Wind Turbine Output Power Curve:

<b>Wind speed (m/s)</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
<b>Output power (W)</b>	0	0	0	10	96	263	540.4	845	1260	2000	2183	2350	2386
<b>Wind speed (m/s)</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
<b>Output power (W)</b>	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400

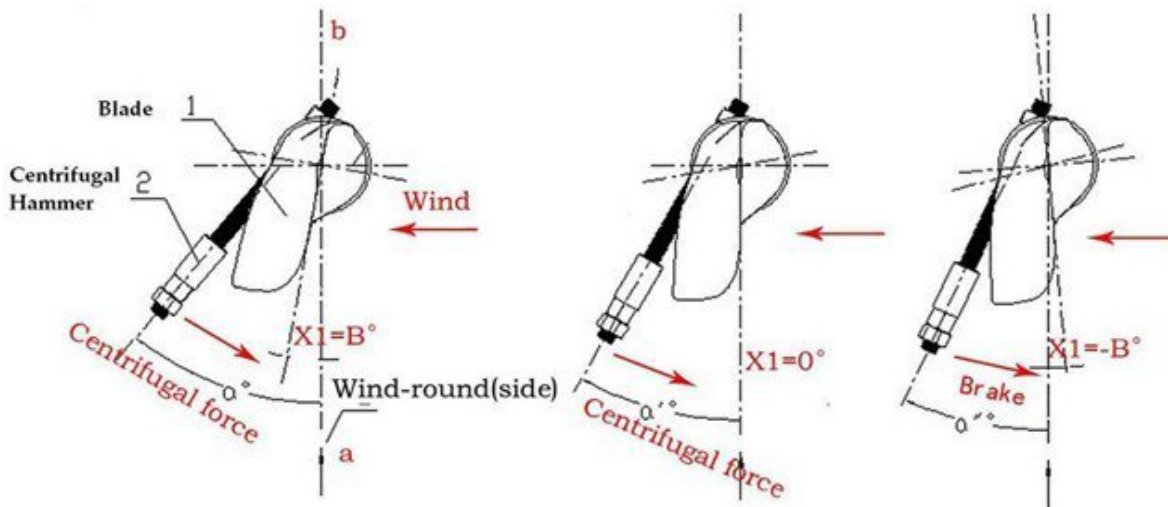


**HAWT-2kW Wind speed vs. output power curve**



**HAWT-2kW Rotation speed vs. output power curve**

### 4. Pitch Technology:



HAWT 2KW Variable Pitch Wind Turbine

### HAWT-2kW 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 9m/s ~25m/s, the blade will keep adjusting its 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 its 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 380 RPM.

(A、B、C: 3 Pcs Blades、a、b、c: 3 PCS centrifugal hammers)



## 5. Photos

