

Model: H16.5-50kW

Hummer 50kW wind turbine can be applied in both on-grid and off-grid systems. The output is three-phase AC and it can drive loads below 50kW.

Features:



1. SCF Supercritical generator

Hummer wind generators adopt SCF supercritical technology which won a gold award in the 37th Salon Eureka in Brussels. This technology greatly reduces generator weight and size by 20% to 30%. Meanwhile the generator efficiency is >0.92 and its wind energy utilizing ratio is increased from 0.22-0.28 to 0.42. This ensures that the generator functions perfectly in less wind condition.



2. NSK bearings

With double NSK bearings design and stabilization for the size of inner and outside rings of bearing, better performance, thus able to run at high temperature 150-350°C and low temperature of -20 to -50°C. The optimum internal geometric structure and surface roughness enable it with higher rated load capacity and lower noise but longer lifespan.



3. PLC integrated with Siemens module

HUMMER wind turbine controlling system adopts the smart touch-screen PLC (Programmable Logic Controller) which is integrated with Siemens controlling unit. The PLC will alarm and adjust the abnormal running status of the wind turbine automatically both timely and efficiently. Siemens module offers high reliability to our PLC and its customers worldwide can testify for that.



4. Low noise

The design of the rotor blade of HUMMER wind turbine absorbs the highlights of the small aircraft's airfoil, which is compliance with the aerodynamic standards. It provides a more aesthetic look and a higher efficiency and reduces the noise production as much as possible.



5. Multiple braking protections

With electric pitching, yawing, electromagnetism braking and hydraulic braking multiple protection methods, the speed of blades are limited within a safe range of rotation, thus to protect generator effectively; Equipped with auto and manual shut down methods to ensure the overall system's operation in safety.

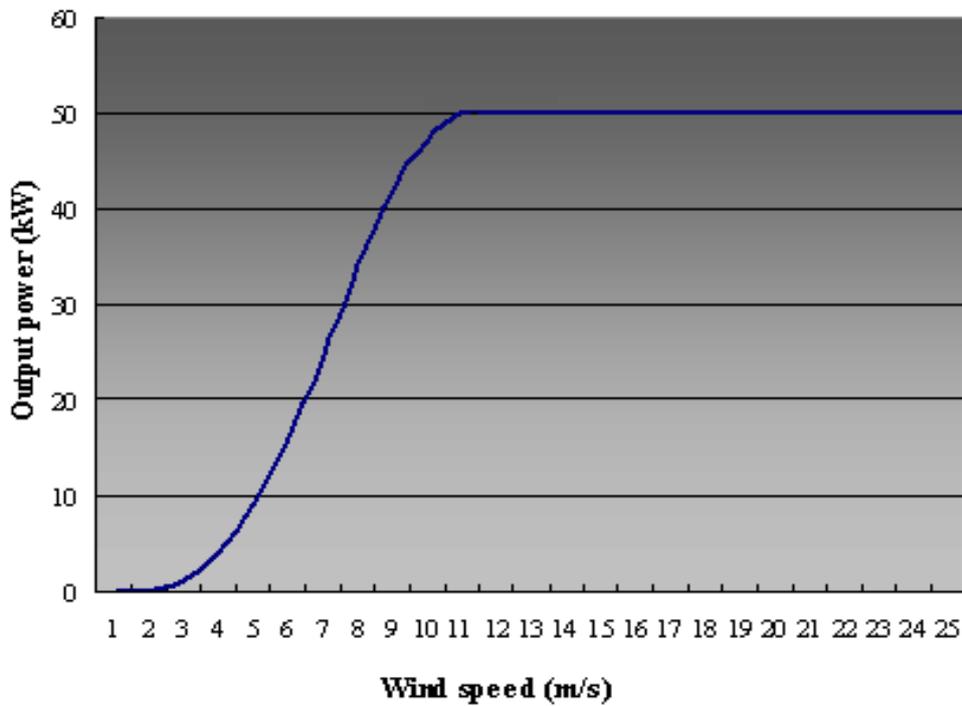


Specifications:

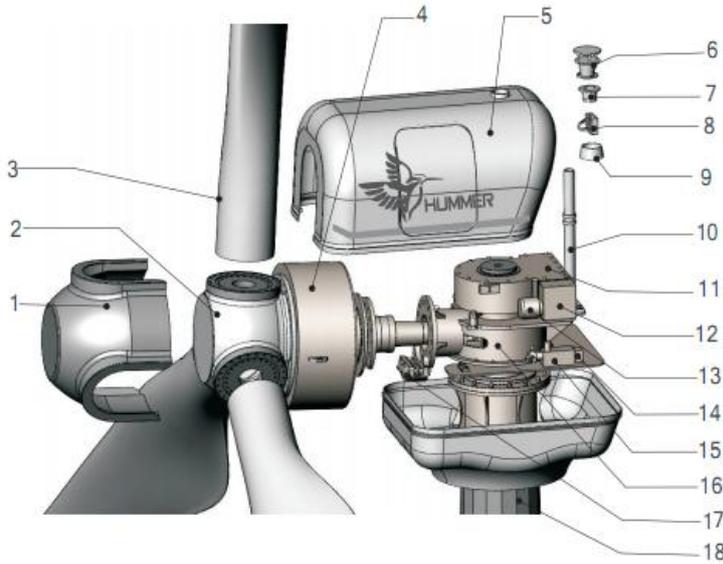
Rated power (W)	50000
Maximum output power (W)	50000
Battery bank voltage (VDC)	400
Cut-in wind speed (m/s)	3
Rated wind speed (m/s)	11
Working wind speed (m/s)	3-25
Survival wind speed (m/s)	50
Generator efficiency	>0.90
Wind energy utilizing ratio (Cp)	0.42
Generator type	Permanent Magnet Alternator
Blade material/quantity	GRP/3
Blade diameter (m)	Φ16.5
Overspeed control	Pitch control+ Electromagnetic brake +Hydraulic brake
Shutting down method	Manual + Automatic+Pitch control

Output Power Curve

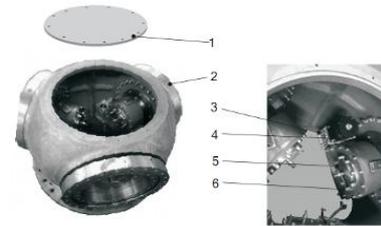
HUMMER HL6.5-50kW PMG Output Power Curve



Structure and component parts:



NO.	Name	NO.	Name
1	Nose cone	10	Anemometer/Anemometer support
2	Hub (see the below picture)	11	Gearbox
3	Blades	12	Reducer
4	Generator body	13	Direction-regulating servo motor
5	Protection cover	14	Brake servo motor
6	Dogvane/Anemometer	15	Brake assembly
7	Dogvane install flange	16	Yaw mechanism
8	Lifting lug	17	Brake caliper, brake pad
9	Seal cover	18	Tower



NO	Name	NO	Name
1	Nose cone cover	4	Direction-regulating servo motor
2	Blades pitch bearing	5	Gearbox
3	Reducer	6	Blades pitch angle sensor

1. Generator Part

It is constituted by generator body and nose cone. Hummer generator is one of most highly-advanced generators in the world; it has four core patent technologies and made by high-efficiency magnetic materials, special copper alloy, high-strength stainless steel and aeronautic aluminum alloys, which makes it extremely light in weight and small in size, but with higher power producing efficiency than traditional generators.



2. Blades

The blades are made by glass reinforced plastic, which efficiently turn the wind energy into the mechanical energy. Three blades are assembled as a complete one set and are done with both static balance test and dynamic balance test strictly before product delivery from factory, and can not be mixed for use.



3. Nacelle and hub

Nacelle contains yaw gearbox, yaw servo motor, reducer, ultrasonic anemometer, hydraulic brake system, etc. Hub contains pitch gearbox, pitch servo motor, reducer, blades, etc.



4. Ultrasonic dogvane & anemometer

Dogvane: it receives wind signal, indicates wind direction, and reads the average value of the angle measured by dogvane every 120s. If the angle read by dogvane is larger than 10° , wind generator controller will drive DC direction-regulating motor with yaw shaft to deviate to fulfill the function of facing wind automatically.

Anemometer: it measures the real-time wind speed. If the wind blows non-stop over 3m/s during 20 seconds, the automatic wind tracking program will start to make the rotor blades surface face the wind correctly; if the wind speed drops below 3m/s, the tracking program will turn to stand-by.



5. Water proof Power Box & PLC Controller (Siemens module)

HUMMER PLC (Programmable Logic Controller) adopts the Siemens controlling module and is equipped with humanization touch screen. It can alarm and adjust the abnormal running status of the wind turbine automatically. Users can remotely monitor and set the running status of the system on the touch screen.



6. Rectifier/Dump Load Controller & Dump Load Box

The controller controls the process of which the AC produced by wind turbine being rectified into DC and eventually charges the battery bank with DC. It also controls the switching on and off of the dump load to protect the system against the risk of being overloaded with too much power.

Metal box design of the dump load radiates the heat of the resistance inside quickly via the air convection. So there is no need for an extra fan.



Rectifier/Dumping Controller



Dumping Load

7. Off grid Inverter & On grid Inverter

Hummer off grid inverter adopts SPWM (Sinusoidal Pulse Width Modulation) technology and high frequency circuit breaker amorphous transformer; It has high converting efficiency, and output stable frequency, voltage and pure sine wave; It's used for off-grid system to supply power for electrical loads.

Hummer on grid inverter adopts MPPT (Maximum Power Point Tracking) technology and IGBT (Insulated Gate Bipolar Transistor); It has high converting efficiency and wider DC voltage range, and without connecting with storage device when tied with grid.



off-grid inverter



on-grid inverter

8. Free Standing (Self-supporting) Tower

The tower structure is multiple edged and conical shaped; made by fine stainless steel which helps to resist from strong heavy winds. The surface of the tower is processed with the hot galvanization and spray paint, thus able to avoid corrosion and rust. The outline is simple but good-looking. It occupies less land.



9. Hydraulic Tower System

Except for the benefits of freestanding tower, more over, the hydraulic tower is added with hydraulic pump station system which helps the installation of the whole set wind turbine. The erection and lay down of tower body is more convenient and easy. The same hydraulic pump station system among several wind turbine towers can be shared. There are both manual and electric hydraulic pump station systems. The hydraulic tower is applicable for remote area like mountain village, islands etc where the crane can not access.

