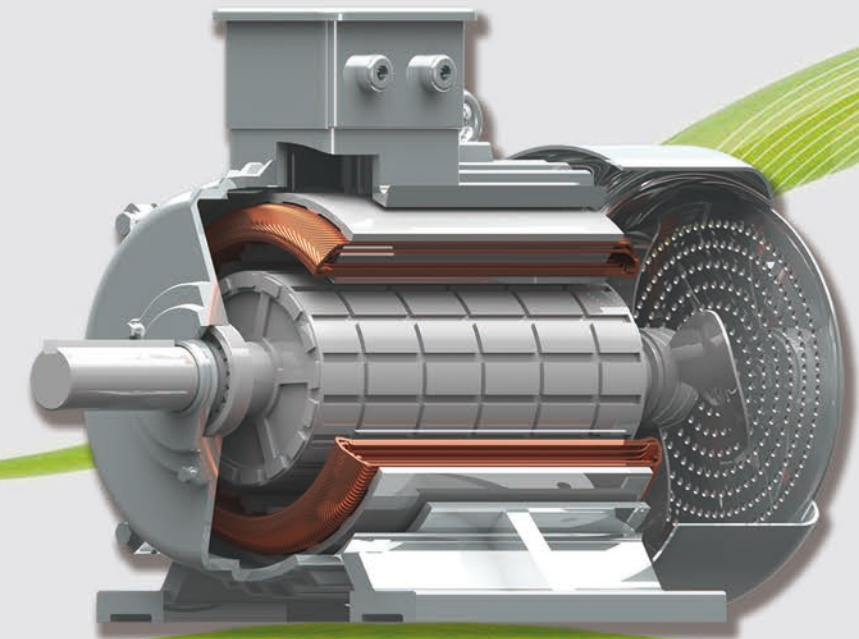




PERMANENT MAGNET GENERATOR



BROCHURE



Contact Us



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青岛格林风新能源设备有限公司
QINGDAO GREEF NEW ENERGY EQUIPMENT CO.,LTD

Company Introduction

Qingdao Greef New Energy Equipment Co., Ltd is global supplier which focus on permanent magnet generator and wind turbine system. We provide customized 500W - 5MW Permanent Magnet Generators, suitable for Wind Turbine, Hydro turbine and other renewable energy system. Our vertical wind turbines are installed all over the world which have low start wind speed, low noise and high efficiency.

50 % staff in our engineer team have 11 years' experience in the field.

With strong flexibility and competitive capabilities, we can help clients to customize overall new energy system solution.

The services that can be delivered include but are not limited to: overall design plan, principle drawing, 3D renderings, sample physical, bulk product delivery, quality control, and after-sales service. With a fast service system, we can assist our customers to save cost and time.

Our products have been export to all over the world, like Europe, South America, North America and other countries. All products have CE approvals with 3 to 5 years warranty, the quality and on-time delivery are guaranteed by Alibaba.

Since the start of the company, we have been passionate believers in our mission to provide cheaper, reliable electricity through the power of renewable energy. Your support and belief in what Greef lives for, starting with our motto "Be Green, Be Great, Have Fun", has allowed us to rapidly innovate and become a responsible supplier in distributed renewable energy.

Why Choose Us

- ★ Bureau, SGS, TUV Verified Supplier
- ★ Top 3 suppliers of generators products with all 5-star on Alibaba.com
- ★ Products quality and on time delivery are guaranteed by Alibaba.com
- ★ 11 years'experience engineer&QC team
- ★ 7days*24hours on time service
- ★ Focus on after-sales service
- ★ One-stop customized system solution
- ★ Trade experience with more than 60 countries
- ★ CE, RoHS certificated
- ★ OEM,ODM are accepted



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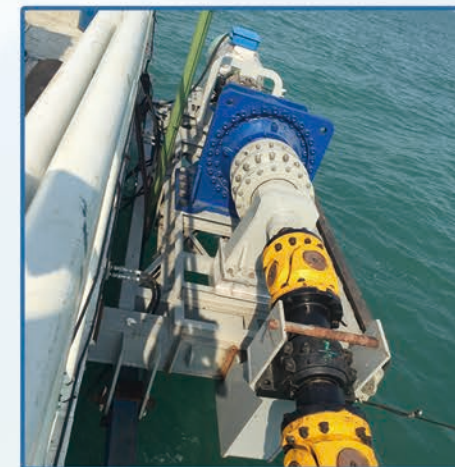


System Solutions 16-19

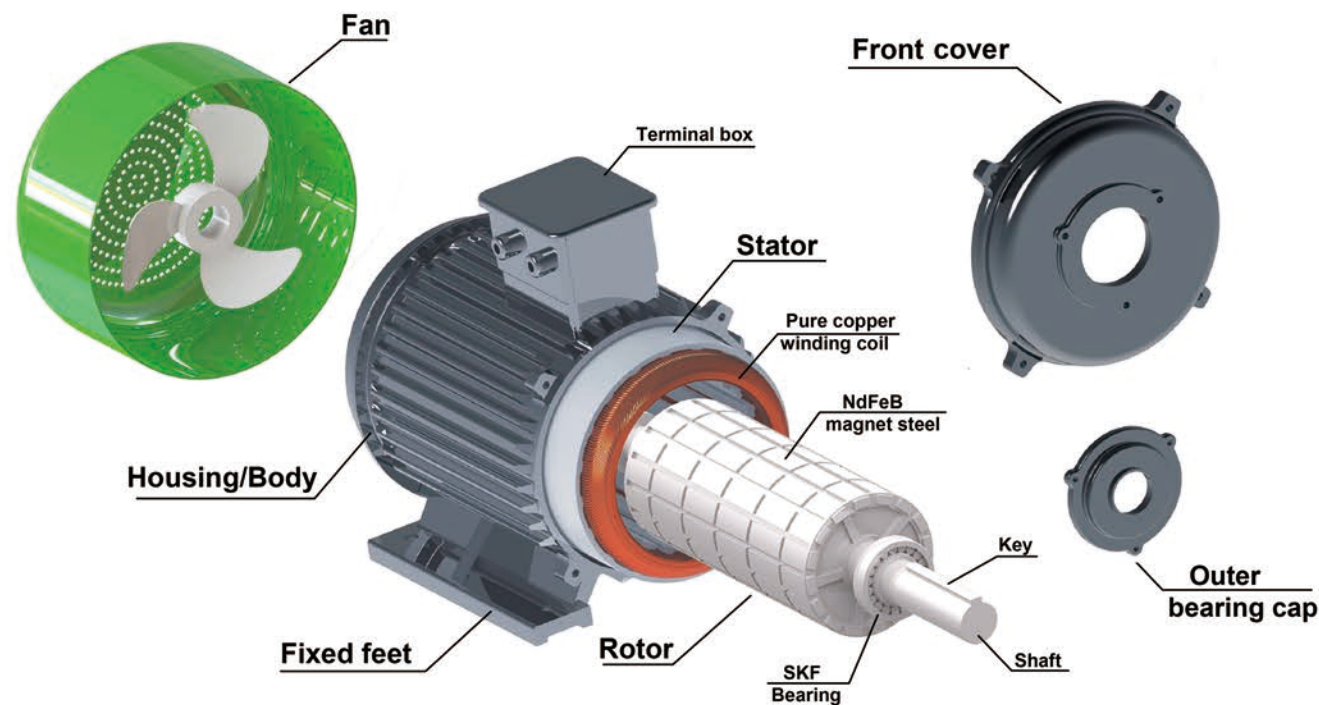


After-Sales Service 20-21

Permanent Magnet Generator



Permanent Magnet Generator



Permanent Magnet Generator--Structure Diagram

Permanent Magnet Generator is an electrical machine making the conversion from mechanical energy to electrical energy.

They generate electric power at every rotational speed, with the electric power, voltage and frequency depending on rpm.

Direct drive gearless technology delivers real energy solutions directly to your distributed utility, or specific application through our advanced technology wind turbine, hydro turbine and others.



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Comparison

Items	Permanent Magnet Generator	Excitation Generator
Working Principle	Under the action of external force, the mechanical energy is converted into electrical energy by the magnetic energy of the permanent magnet. During the energy conversion process, the magnetic energy of the permanent magnet itself is not reduced.	Under the action of external force, the machine uses the electromagnetic induction principle of the wire to cut the magnetic field to induce the potential, and the mechanical energy of the prime mover is changed into the electric energy output.
Working Speed	Any variable speed between 20-3000 rpm	Only at stable speed 1200rpm, 1500rpm or 1800rpm
Carbon brush	NO NEED	NEED
Collecting slip ring	NO NEED	NEED
Volume	Smaller	Bigger
Weight	Lighter	Heavier
Excitation control	NO NEED	NEED
Structure	Simple	Complex
Failure rate	Lower	Higher
Efficiency	90-99%	80-85%
Power Factor (PF)	≈1	0.8
Single Max Capacity	5MW	600MW
Life time	15-20years	5years
Temperature rise	Lower 2-10 °C	Higher 2-10 °C
Noise level	Lower 2-11 °C	Higher 2-11 °C

Specification Data

Product Model	GDF-90	GDF-100	GDF-112	GDF-132	GDF-160	GDF-180	GDF-200	GDF-225	GDF-250	GDF-280
Rated power	50W-1.2KW	60W-2.2KW	80W-3.2KW	110W-6kW	200W-12KW	300W-25KW	700W-40KW	1.1KW-50KW	1.8KW-75KW	3kW-120KW
Rated rotate speed	20-900rpm									
Rated voltage	12-400VAC			48-1140VAC			220-1140VAC			
Start torque	0.19N.M-0.35N.M	0.35N.M-0.42N.M	0.50N.M-0.57N.M	0.93N.M-0.96N.M	1.43N.M-1.91N.M	2.14N.M-3.98N.M	5.01N.M-6.37N.M	7.88N.M-7.96N.M	11.2N.M-12.89N.M	19.1N.M-21.5N.M
Rated torque	13N.M-24N.M	24N.M-29N.M	34N.M-39N.M	63N.M-65N.M	97N.M-129N.M	145N.M-269N.M	339N.M-431N.M	533N.M-639N.M	754N.M-872N.M	1292N.M-1454N.M
Weight(Kg)	30kg	36kg	42-48kg	58-73kg	128-136kg	162-186kg	230-260kg	290-332kg	410-440kg	680-750kg
Efficiency	>93%									
Generator type	permanent magnet AC									
Number of Poles	16	20	20	22/16	22/16	24	24/18	28/22	32/24	32/24
Phase Type	3phase AC									
Magnet type	NdFeB									
Winding Method	Y									
Magnet temperature level	Max.120℃									
Winding temperature level	Max.180℃									
Insulate Grade	H									
Insulating resistance	100Mohm Min(500Vdc)									
Classification of degrees	IP54									
Generator shell material	Cast Iron									
Winding material	100% Copper									
Shaft material	Steel									
Iron Core	Cold rolled silicon steel sheet									
Bearing brand	SKF									
Cooling Method	Self-cooled/Fan cooling									

Remarks prompt:

1. Installation method: The product can be designed in horizontal direction, underwater and special installation mode.

Product Model	GDF-315	GDF-355	GDF-400	GDF-450	GDF-500	GDF-560	GDF-630	GDF-710	GDF-850	GDF-1000
Rated power	4.5KW-200KW	7.2KW-400KW	40KW-800KW	50KW-1200KW	60KW-1500KW	120KW-2600KW	180KW-4800KW	260KW-5600KW	400KW-4000KW	500KW-5000KW
Rated rotate speed	20-900rpm									
Rated voltage	220-1140VAC									
Start torque	31.83N.M-32.23N.M	51.57N.M-63.67N.M	127.3N.M-286.5N.M	191N.M-358.1N.M	238.8N.M-429.8N.M	413.8N.M-859.5N.M	764N.M-1289.3N.M	819.3N.M-1862.3N.M	836.7N.M-2865N.M	795.8N.M-3581.3N.M
Rated torque	2154N.M-2181N.M	3490N.M-4308N.M	8616N.M-19387N.M	12924N.M-24233N.M	16155N.M-29079N.M	28002N.M-58159N.M	51697N.M-87239N.M	60313N.M-126012N.M	43081N.M-193865N.M	53851N.M-242331N.M
Weight(Kg/Ton)	1200-1360kg	1680-1920kg	1920kg	4100kg	5200-5800	7T	9.6T	12.9T	15T	20T
Efficiency	>93%									
Generator type	permanent magnet AC									
Number of Poles	48/30	48	48/16	48	42	36	60	60	60	60
Phase Type	3phase AC									
Magnet type	NdFeB									
Winding Method	Y									
Magnet temperature level	Max.120℃									
Winding temperature level	Max.180℃									
Insulate Grade	H									
Insulating resistance	100Mohm Min(500Vdc)									
Classification of degrees	IP54									
Generator shell material	Cast Iron									
Winding material	100% Copper									
Shaft material	Steel									
Iron Core	Cold rolled silicon steel sheet									
Bearing brand	SKF									
Cooling Method	Self-cooled/Fan cooling					Self-cooled/Fan cooling/Water cooling				

2. The product can be designed and customized separately according to the diversified needs of customers; please contact the company's sales department for the needs of customized products.

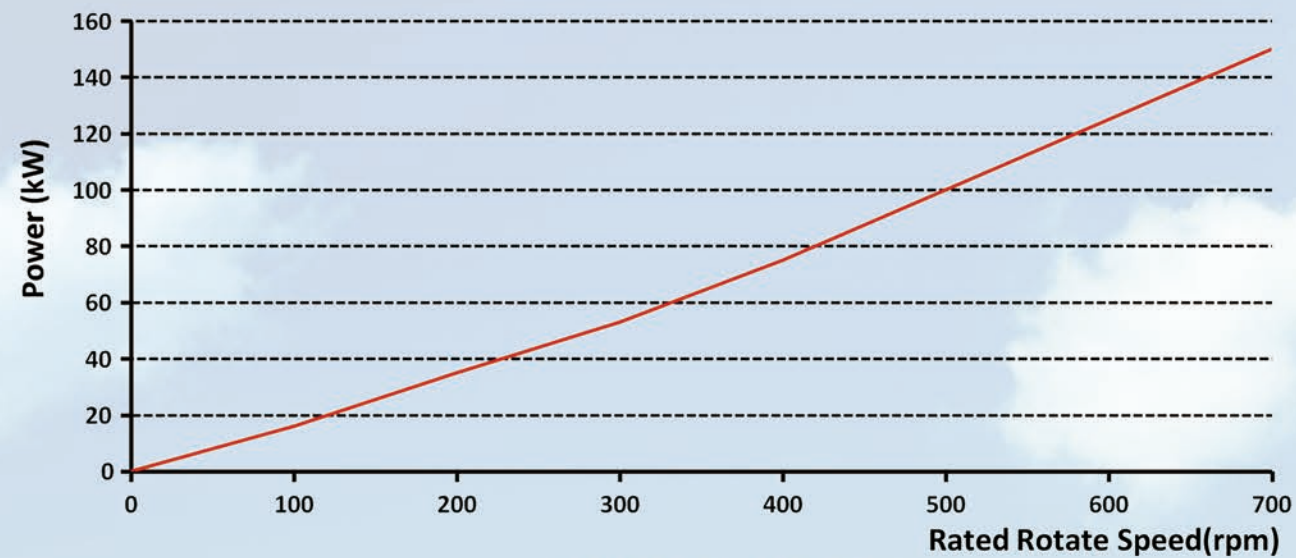


Performance Test Data

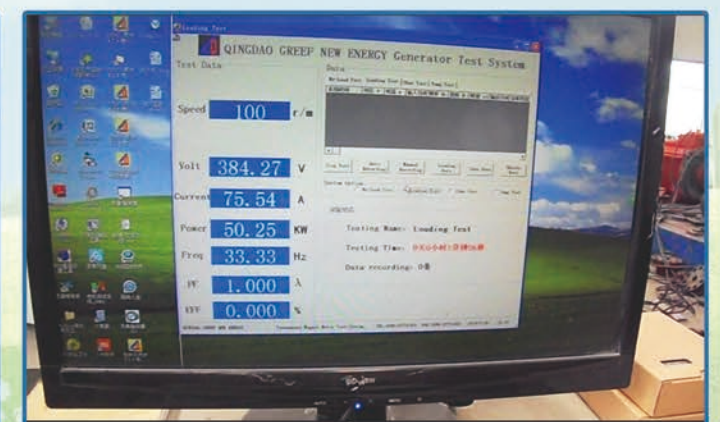
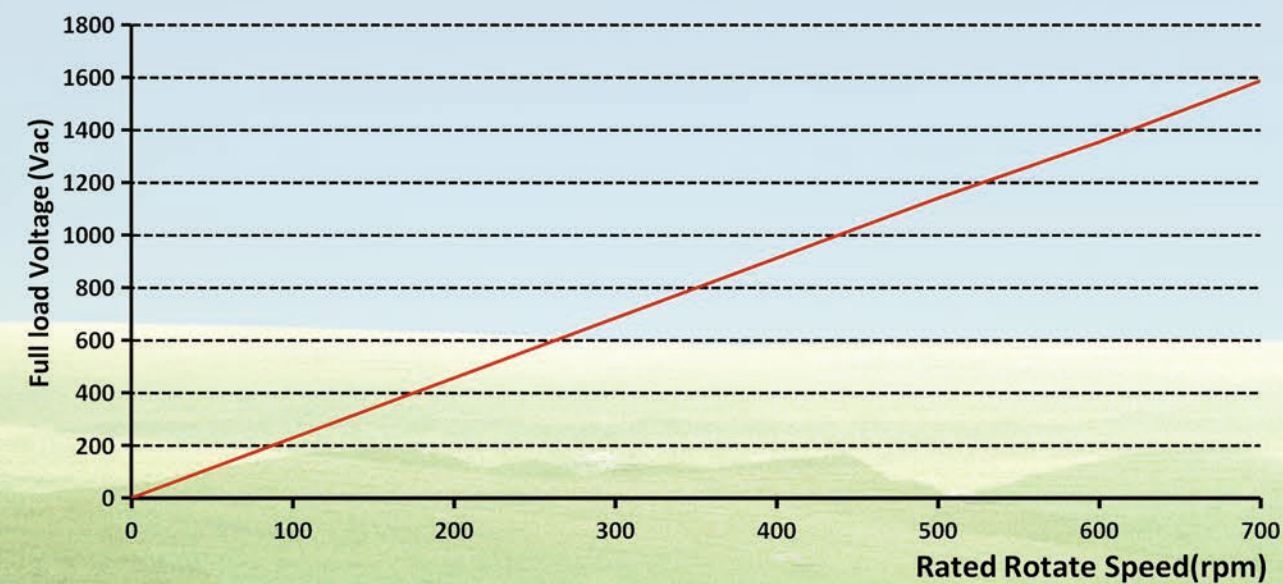
Performance Test

GENERATOR PERFORMANCE DATA SHEET						
NO.	Model	RPM	Power(KW)	Voltage (V)	Efficiency	Torque(N.M)
1	GDF-100KW-500RPM	0	0	0	62.0%	29
2		100	16	228	80.0%	405
3		200	35	456	91.0%	780
4		300	53	684	94.9%	1170
5		400	75	912	98.3%	1545
6		500	100	1140	98.4%	1910
7		600	125	1354	98.5%	2325
8		700	150	1587	98.6%	2757

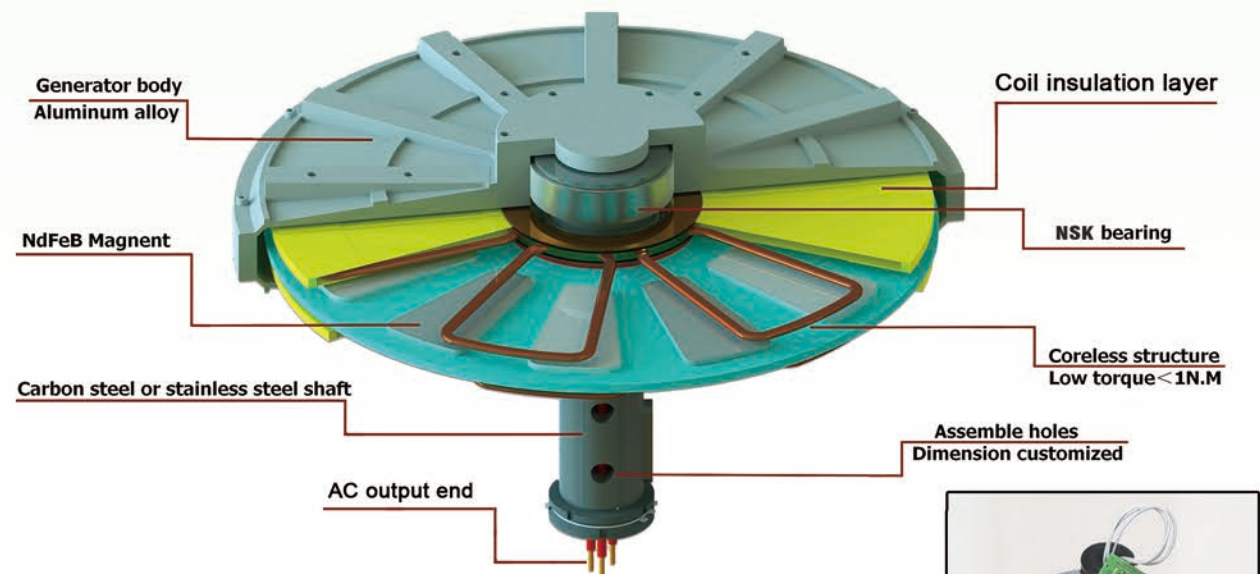
POWER CURVE



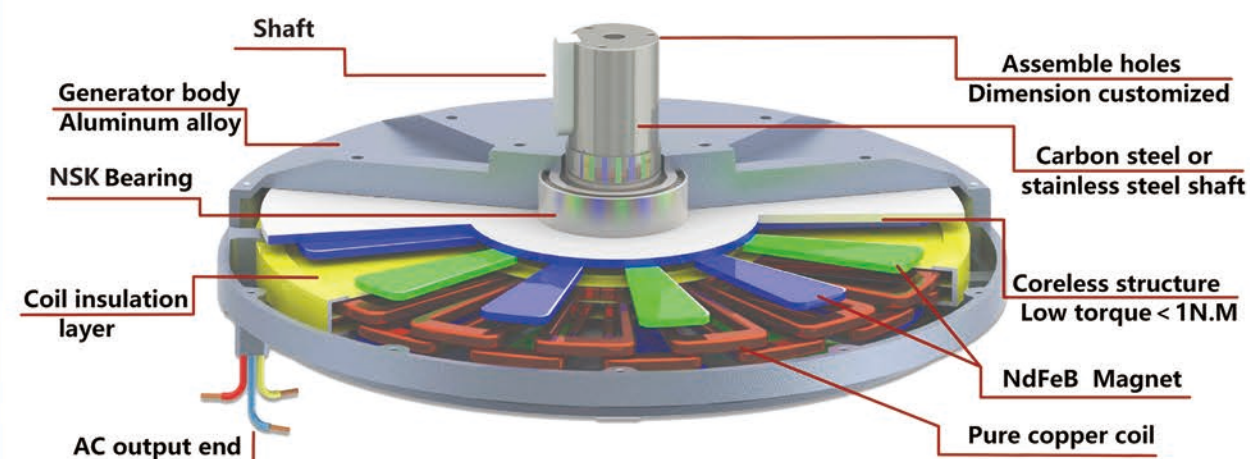
VOLTAGE CURVE



Axial Flux Coreless Generator



Outer-rotor generator



Inner-rotor generator



Advantages:

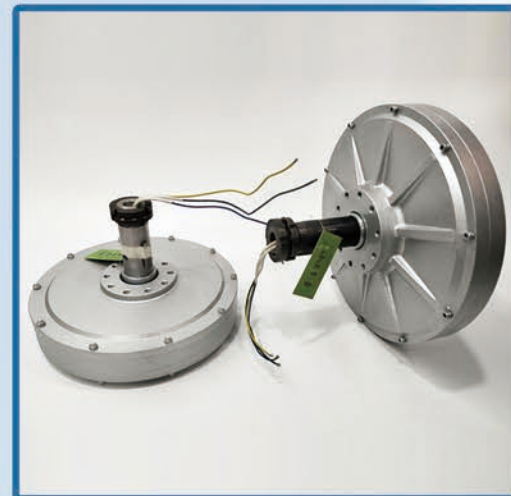
- ★ Low Start Torque Technology: No hysteresis and gear notches effect make the start torque very low <0.1 N.M
- ★ High efficiency: No Core cause very low mechanical resistance energy loss
- ★ "Precise Coil" technology.
- ★ Rare earth permanent magnet, multi-poles, small air gap, high power density, large output power.
- ★ Gearless direct drive, brush-less, maintenance free.
- ★ Higher Reliability: special structure make it bigger ratio of power to volume, power to weight and have long life of 8 times longer than traditional generator.
- ★ Higher Utilization for a wind turbine in low wind speed.
- ★ Excellent heat dissipation due to the Aluminum alloy outer frame and special internal structure.

Scan QR code to view video



Specification Datas

Outer Rotor				
Model	Power	Speed		Voltage Range
GDG-160	50W	300	rpm	12-24V
	100W	500	rpm	12-24V
GDG-200	50W	200	rpm	12-48V
	100W	300	rpm	12-48V
GDG-220	100W	200	rpm	12-48V
	200W	350	rpm	12-48V
GDG-260	200W	200	rpm	12-48V
	500W	400	rpm	24-220V
	300W	200	rpm	12-48V
GDG-320	500W	200	rpm	24-220V
	2KW	500	rpm	24-220V
	1KW	300	rpm	48-220V
GDG-380	1KW	180	rpm	48-400V
GDG-400	1KW	150	rpm	48-400V
GDG-445	2KW	160	rpm	48-400V
GDG-450	2KW	180	rpm	72-400V
GDG-550	2KW	120	rpm	72-400V
	3KW	180	rpm	72-400V
GDG-544	3KW	160	rpm	72-400V
GDG-620	3KW	100	rpm	110-400V
	5KW	150	rpm	110-400V
GDG-700	5KW	100	rpm	220-400V
GDG-770	10KW	150	rpm	220-400V
	10KW	100	rpm	220-400V
GDG-900	12KW	100	rpm	220-400V
	20KW	150	rpm	400V



Inner Rotor				
Model	Power	Speed		Voltage Range
GDG-160	50W	300	rpm	12-24V
	100W	500	rpm	12-24V
GDG-200	50W	200	rpm	12-48V
	100W	300	rpm	12-48V
GDG-220	100W	200	rpm	12-48V
	200W	350	rpm	12-48V
GDG-260	200W	200	rpm	12-48V
	500W	400	rpm	24-220V
	300W	200	rpm	12-48V
GDG-320	500W	200	rpm	24-220V
	2KW	500	rpm	24-220V
	1KW	300	rpm	48-220V
GDG-380	1KW	180	rpm	48-400V
GDG-400	1KW	150	rpm	48-400V
GDG-445	2KW	160	rpm	48-400V
GDG-450	2KW	180	rpm	72-400V
GDG-550	2KW	120	rpm	72-400V
	3KW	180	rpm	72-400V
GDG-544	3KW	160	rpm	72-400V
GDG-700	5KW	100	rpm	220-400V



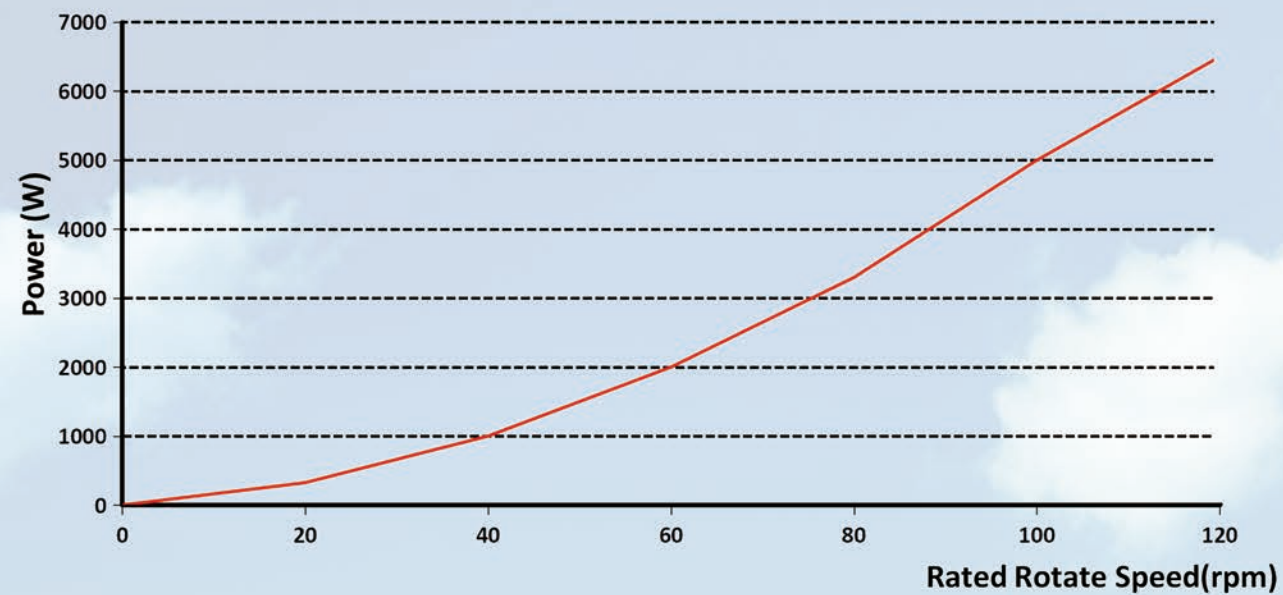
Remark:

1. If you need to customize other Power / Speed / Voltage, please contact us
2. The data in this table are for reference only, please consult our sales and technical staff

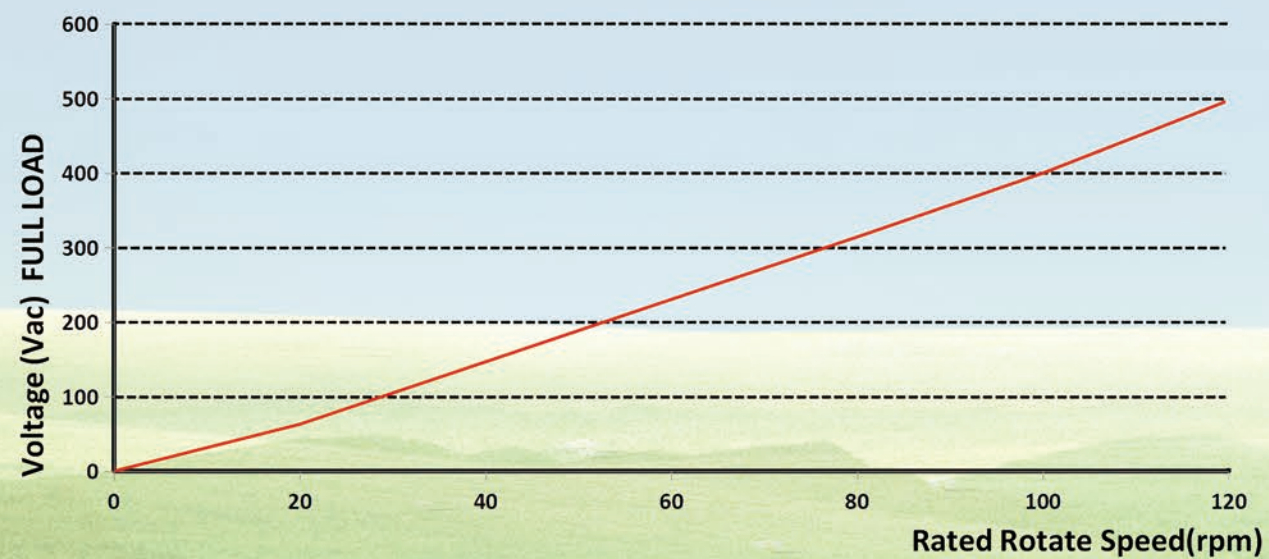
Performance Test Data

GENERATOR PERFORMANCE DATA SHEET					
Model	RPM	Power(W)	Voltage (V)	Torque(N.M)	Efficiency
GDG-5KW-100	0	0	0	0	55%
	20	325	63	94	71%
	40	1000	147	198	81%
	60	2000	230	314	86%
	80	3300	314	425	90%
	100	5000	400	530	92%
	120	6500	498	634	93%

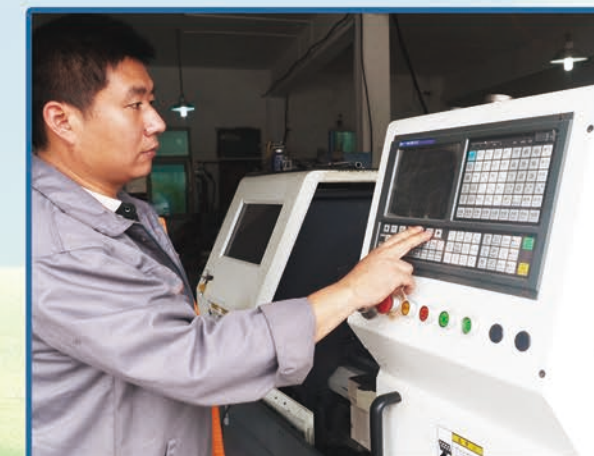
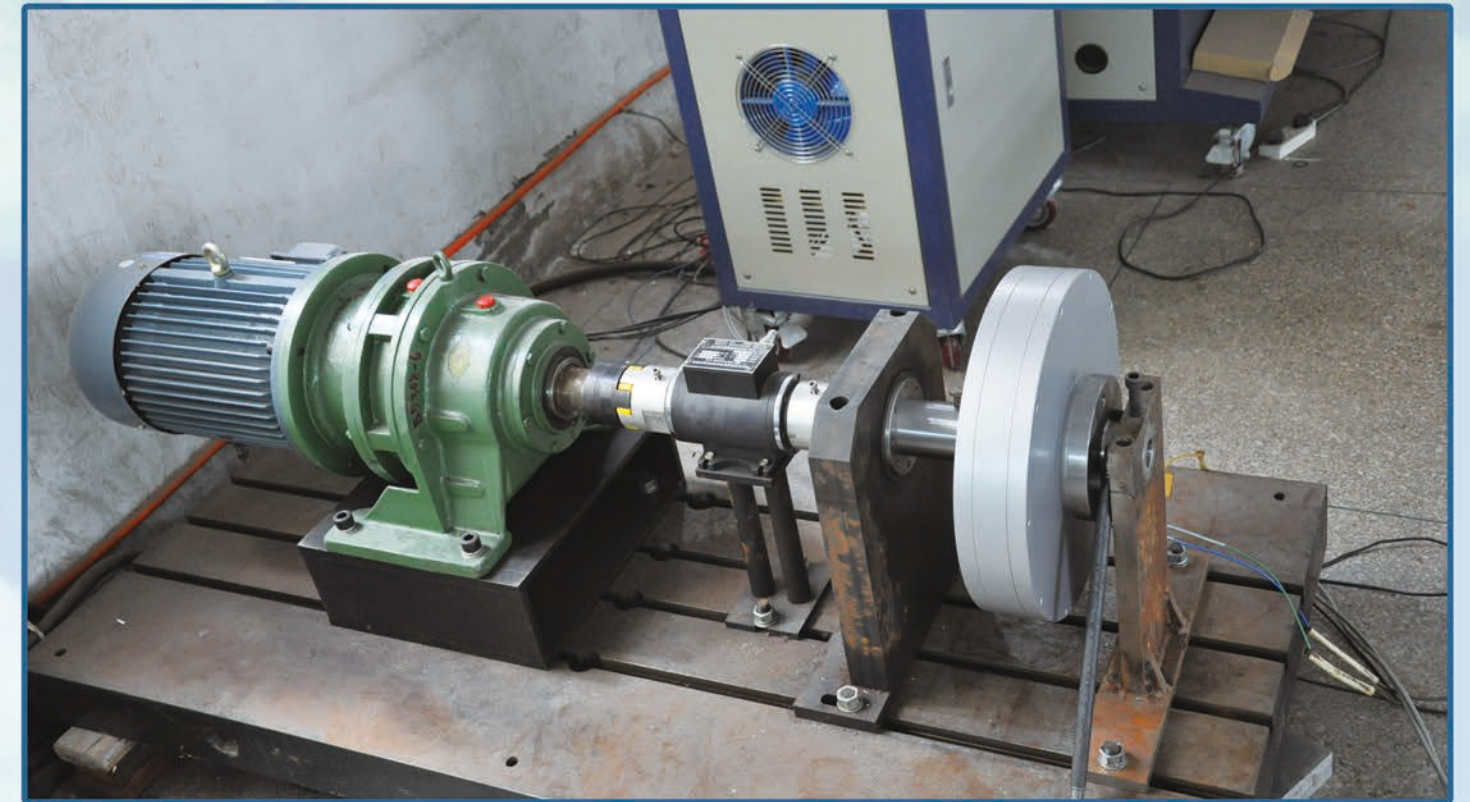
POWER CURVE



VOLTAGE CURVE



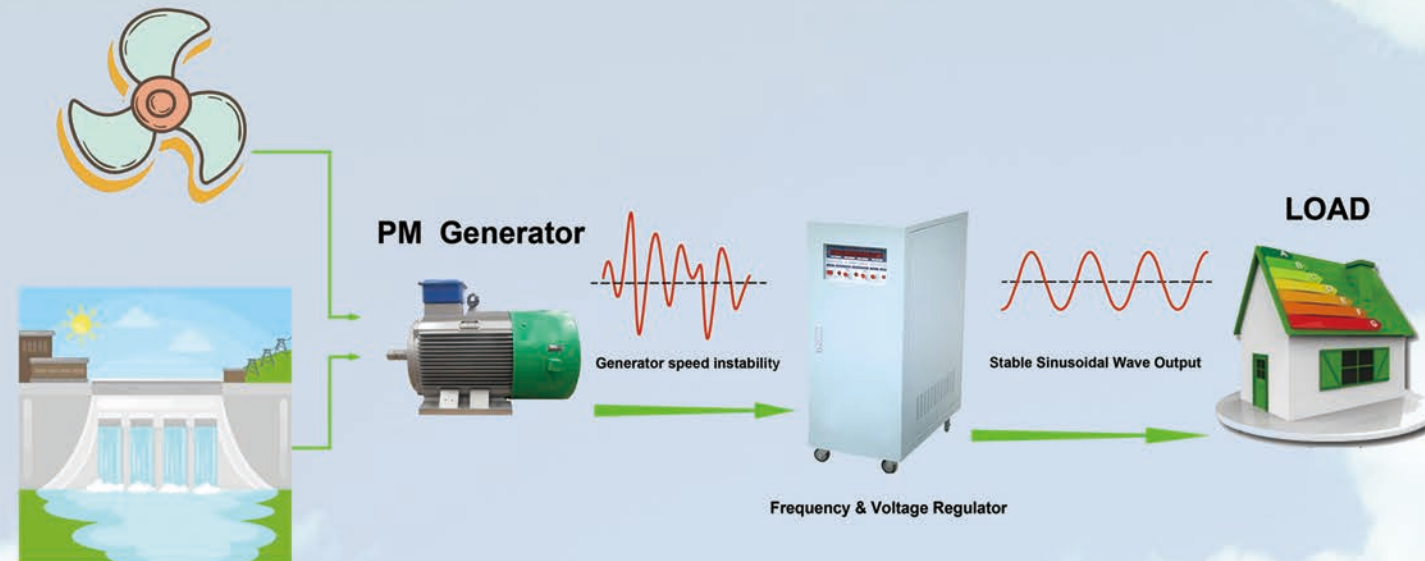
Performance Test



System Solutions



OFF-GRID SYSTEM SOLUTION



hydroenergy Drive

System working conditions:

1. PM generator speed range $< \pm 30\%$ of rated speed & but constantly.
2. PM generator output constantly and uninterrupted.

Frequency & Voltage Regulator

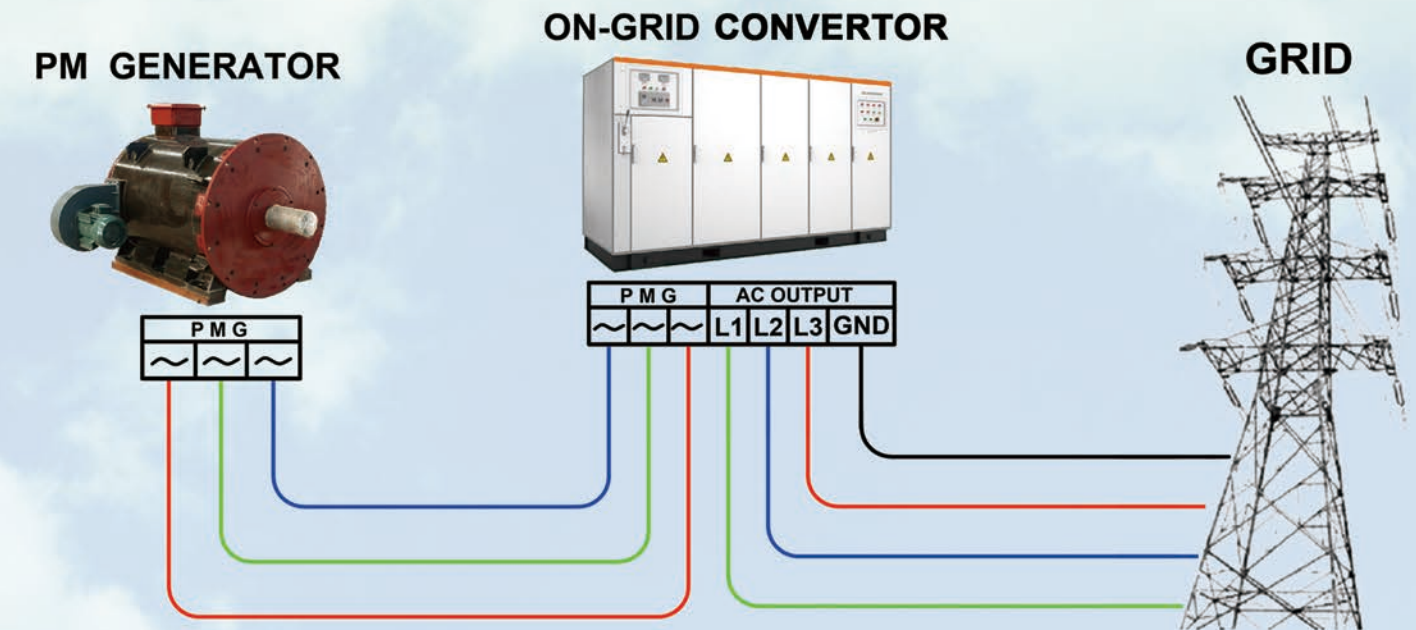
AFVR Series frequency & voltage regulator is a kind of electric power equipment used to guarantee high quality power supply of the sensitive equipment under the condition of voltage & frequency instability, serious voltage distortion, flicker, drop and other comprehensive voltage quality.

The power supply can solve all power problems completely unless power off (such as frequency drift, waveform distortion, surge, sinking, transient over-voltage, voltage drop / sag, noise interference, etc.).

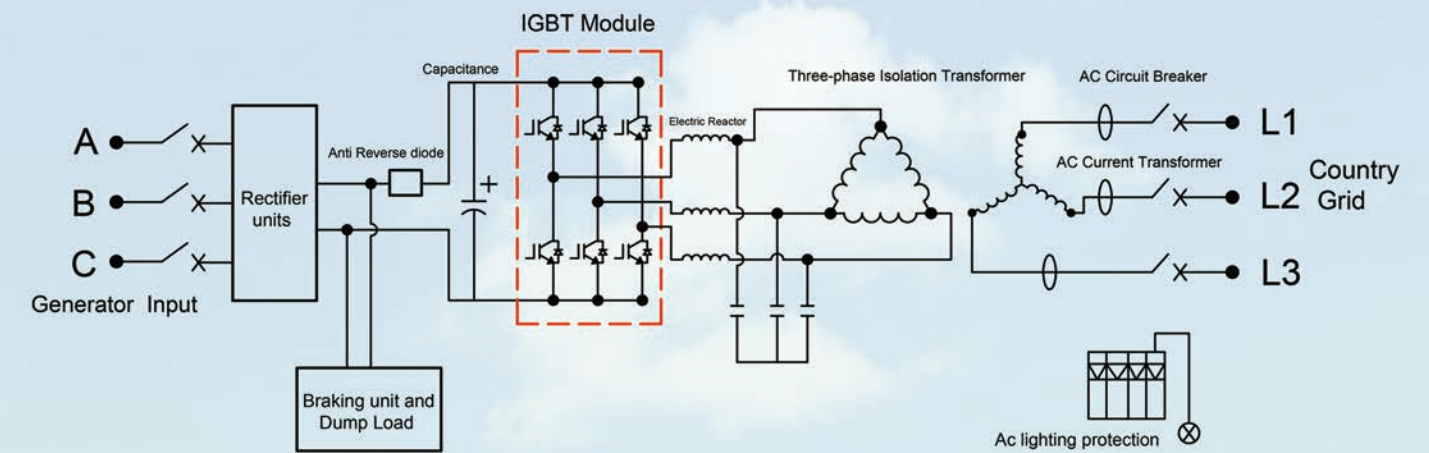
AFVR is output extremely stable, pure sine wave AC power. It can replace the AVR which can't stable the frequency.



ON-GRID SYSTEM SOLUTION



Grid-tied Converter



Grid-tied Converter is technologically the most important component in wind generator systems.

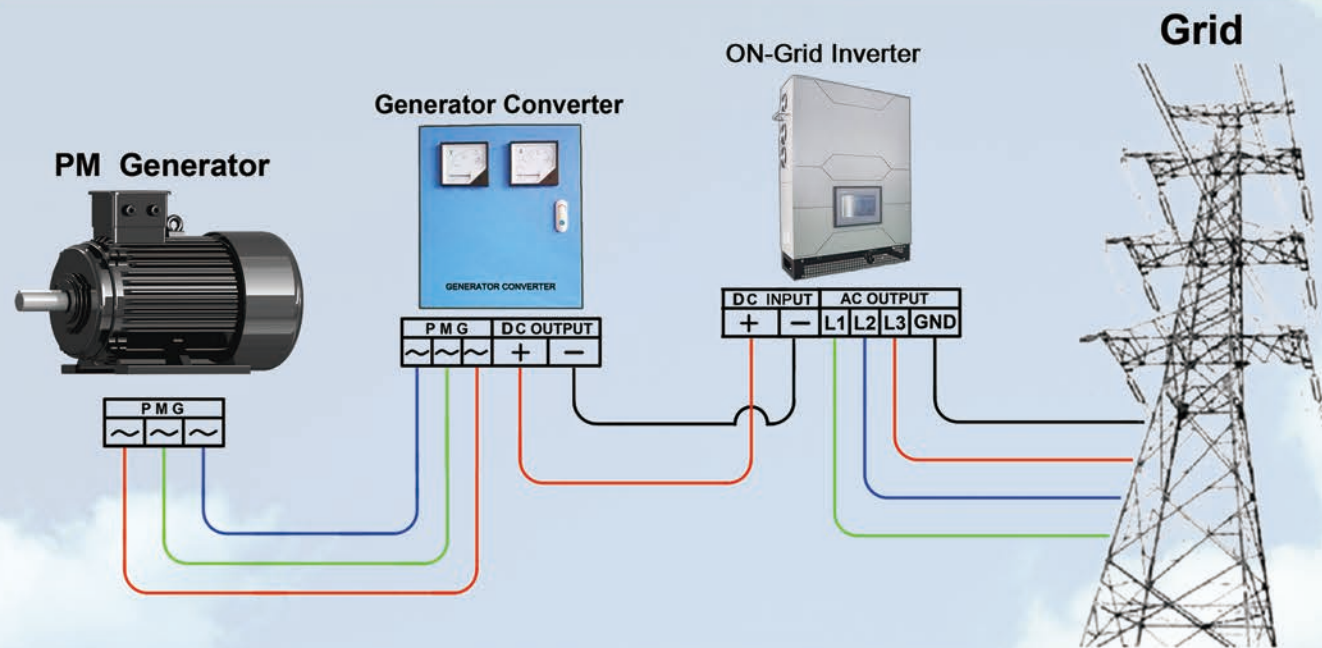
It is suitable for both permanent magnet synchronize generator and asynchronize generator. It convert unstable AC current from wind turbine into DC, then convert to stable AC, in order to achieve stable control of frequency and voltage of wind turbine at different speeds. No impact on grid, superior fault ride-through capability and excellent grid adaptability.

System Solutions

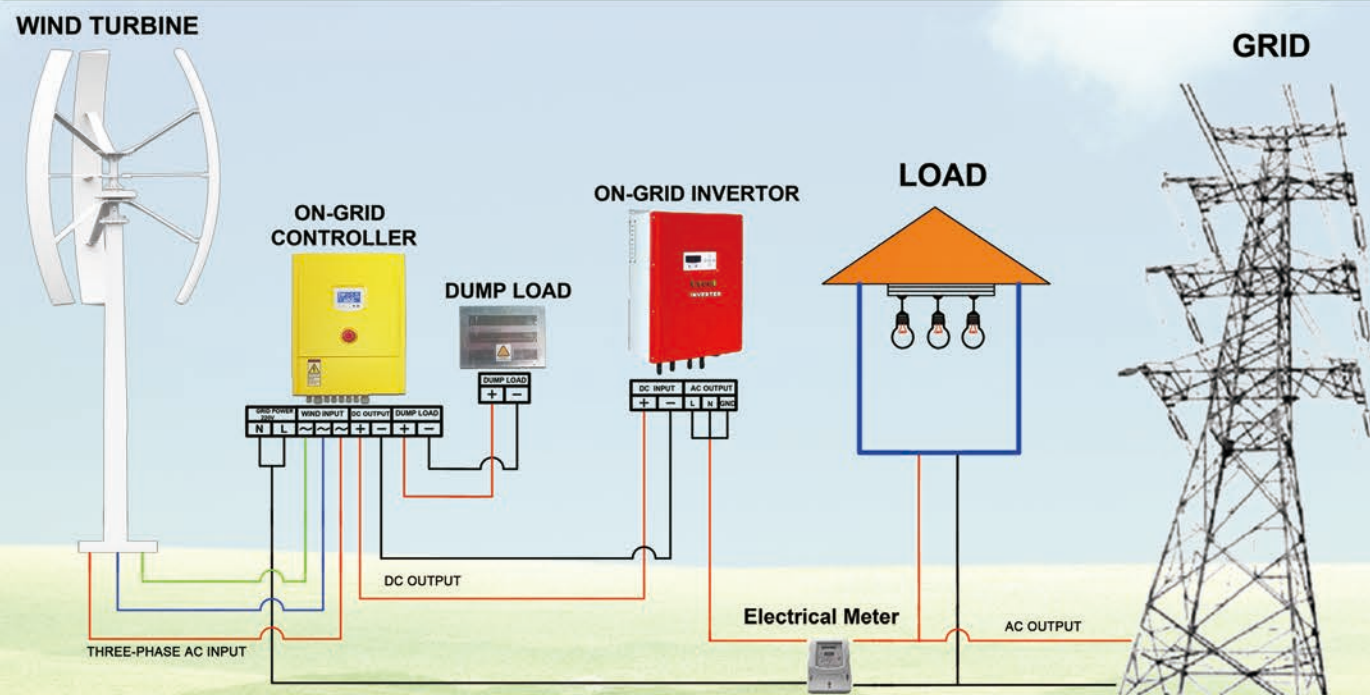
The permanent magnet generator for a wind generator system, GREEF engineer team can provide system design service and following system:



ON-GRID WIND SYSTEM



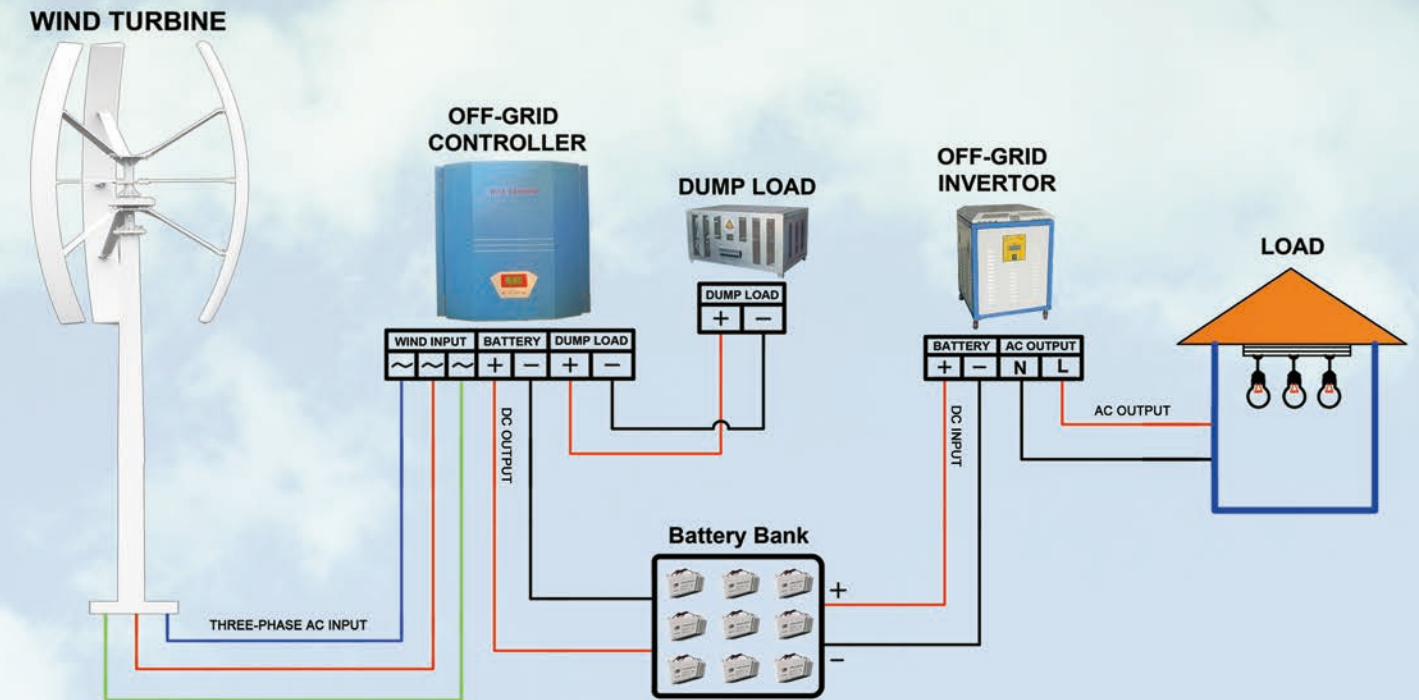
ON-GRID WIND SYSTEM



On-grid system: The most cost-effective systems do not have batteries and they can not supply power during utility power outages, suitable for the user which already has stable utility service.



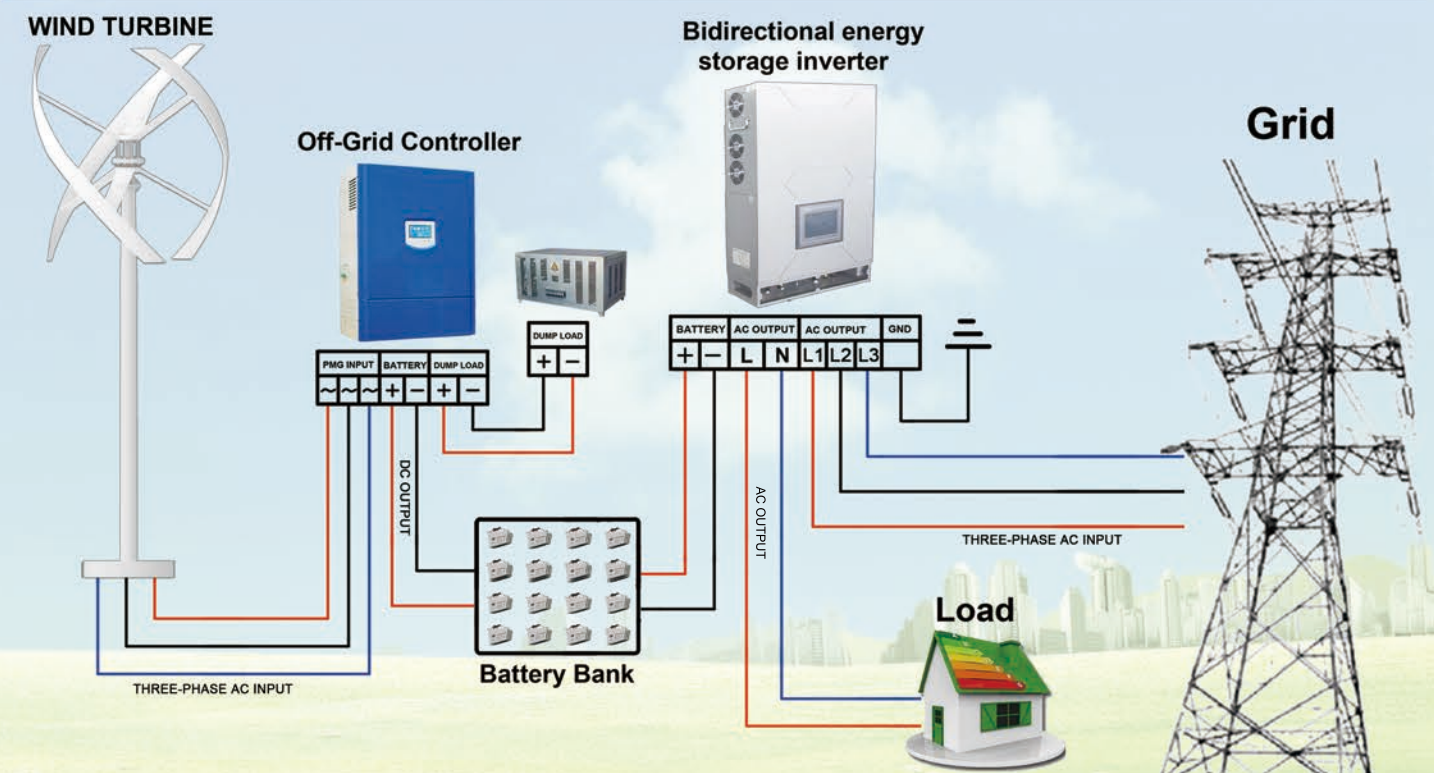
OFF-GRID WIND SYSTEM



Off-grid system: With battery storage suitable for the area no utility power supply or always have power cut.



ENERGY STORAGE ON/OFF GRID



Energy Storage on/off grid system: With energy storage inverter realize smart power supply, suitable for for the area which have different utility fee at different time.

After-Sales Service

Thank you for choosing "GREEF" new energy products. We always provide a comprehensive range of services before, during and after sales. "GREEF NEW ENERGY guarantee as follows:

I. Warranty period:

Permanent Magnet Generator is Three years warranty.

OFF-GRID controller & inverter & converter is One years warranty.

ON-GRID Wind inverter is Three years warranty.

(1) The warranty period is start from the date of on the guarantee card.

(2) During the warranty period, the cost of maintenance services caused by our product's quality problems, be borne by our company, do not charge a fee from customers; if any maintenance outside the warranty period, our company will charge a fee from customers.

(3) During the warranty period, the freight of maintenance service caused by our product's quality problems, be borne by our company, do not charge a fee from customers; if not under warranty or not quality problem, all the freight charges by the customer.

II. Warranty:

We will provide the approved products for all customers to provide maintenance services. But in order to enable the two sides can enjoy fair Treatment, for the following reasons for failure or damage, we will not provide free warranty.

- (1) When beyond the warranty period;
- (2) Disasters, leaving damage to the product caused by accident;
- (3) The user-transport, carrying, falling, collision and damage caused by the failure;
- (4) The product as user-modification, and other failures caused by improper use and damage;
- (5) The users' un-normally operation, like test with other equipment, and caused by the failure;
- (6) Customer open and repair device without our guide and cause damage.

III. Maintenance services implementation:

- (1) If your machine meet any problems, please take photos and videos send to our service department and explain the details of the problems. or send to the sales which you contact before.
- (2) Our engineers will check the problem, and give you suggestion to solve the problem. Most of the small problem can be solved after engineer guide.
- (3) If we find that any parts need to be replacement, we will send the parts to customers. Quality problem we afford all the charge within warranty period.
- (4) If a major problem in our products, we will send engineers to provide appropriate support.

IV. Fees:

During the After-sale process, if we need charge fee form customers, the fees = replacement parts + technical service fees + freight + labor costs, we will provide timely material Price (cost).

GLOBAL PARTNER

