



INTRODUCTION OF RUWIND (WIND TURBINES)

Hongkong RUWIND Group Co.Limited is an investment-based enterprise with advanced wind power technology focusing on developing medium-sized wind turbine generator systems. What we advocate will be the environment protection, pollution abatement, together with energetic exploration and utilization in new energy. Currently, six-model wind turbine generator systems, namely RUWIND 10K-G, RUWIND 10K-G3, RUWIND 20K-G, RUWIND 20K-G3, RUWIND 30K-G3 and RUWIND 50K-G3, have been developed and put into manufacture and market.

The products we developed have filled in the vacancy between small-sized and large-sized wind turbine generator systems. They are eligible for small-sized wind farms, enterprises and family on-grid configuration. Through adopting Mitsubishi PLC (Programmable Logic Controller), sensor, hydraulic motor, hydraulic brake and unique controlling conception, the wind turbine generator system has achieved the flexible controller and reliable protection to tackle a variety of complicated surroundings.

At the same time in achieving the high reliability, we are endeavoring to enhance the maintenance-friendly for the wind turbine generator systems. All the components of the generator are relatively independent and easy to disassemble and install. Hydraulic tower will keep the end users being free from hiring the crane to proceed with tower raise and fall, which will minimize the installation and maintenance expenditure.

Long-distance monitoring function has been equipped innovatively on the small-medium size wind turbine generator systems. The running performance of the turbines will be promptly transmitted to the server via wireless or wire mode. In view of the data, we can provide you with the running and maintenance propositions and actualize the long-distance control.

Wind keeps changing, while we are with unswerving belief. Together with you, we will protect the green and the world hand in hand with the wind turbine technology and products.

HONG KONG RUWIND GROUP CO., LIMITED



PRODUCT SPECIFICATIONS (G SERIES)

Items\Models	RUWIND 5K-G	RUWIND 5K-G3	RUWIND 10K-G	RUWIND 10K-G3	RUWIND 20K-G	RUWIND 20K-G3
Rated voltage(VAC)	230 ± 10%	380 ± 10%	230 ± 10%	380 ± 10%	230 ± 10%	380 ± 10%
Phases	1	3	1	3	1	3
Rated ampere(AAC)	22	13	44	24	87	48
Annual energy production(kWh)	12000	12000	24000	24000	48000	48000
Rotor diameter(m)	6.4	6.4	8.0	8.0	10.0	10.0
Blade material	GFRP	GFRP	GFRP	GFRP	GFRP	GFRP
Start-up wind speed(m/s)	2.5	2.5	2.5	2.5	2.5	2.5
Direction (Looking downwind)	Clockwise	Clockwise	Clockwise	Clockwise	Counterclockwise	Counterclockwise
Rated Wind speed(m/s)	10.5	10.5	12.5	12.5	12.5	12.5
Cut-out wind speed (m/s)	20	20	20	20	20	20
Survival wind speed(m/s)	40	40	40	40	40	40
Location relative to tower	Upwind	Upwind	Upwind	Upwind	Upwind	Upwind
Tilt angle	6°	6°	6°	6°	6°	6°
Rated RPM	181/188	181/188	181/188	181/188	69/65	69/65
Blade No.	3	3	3	3	3	3
Free stand tower height (m)	12	12	12	12	18	18
Cable length(m)	20	20	20	20	20	20
Grid-connected rated power(KW)	5	5	10	10	20	20
Orientation drive mechanism	Hydraulic yaw	Hydraulic yaw	Hydraulic yaw	Hydraulic yaw	Hydraulic yaw	Hydraulic yaw
Orientation drive type	Automatic/Manual	Automatic/Manual	Automatic/Manual	Automatic/Manual	Automatic/Manual	Automatic/Manual
Efficiency	0.8	0.8	0.8	0.8	0.8	0.8
Nacelle weight (Tons)	0.5	0.5	0.6	0.6	1.5	1.5
Frequency(Hz)	50/60	50/60	50/60	50/60	50/60	50/60
Safety devices	- Yawing - Hydraulic brake	- Yawing - Hydraulic brake	- Yawing - Hydraulic brake	- Yawing - Hydraulic brake	- Yawing - Hydraulic brake	- Yawing - Hydraulic brake

Items\Models	RUWIND 30K-G3	RUWIND 50K-G3
Rated voltage(VAC)	380 ± 10%	380 ± 10%
Phases	3	3
Rated ampere(AAC)	72	120
Annual energy production(kWh)	70000	120000
Rotor diameter(m)	12.0	13.8
Blade material	GFRP	GFRP
Start-up wind speed(m/s)	2.5	2.5
Direction (Looking downwind)	Counterclockwise	Counterclockwise
Rated Wind speed(m/s)	12.5	13.5
Cut-out wind speed (m/s)	20	20
Survival wind speed(m/s)	40	40
Location relative to tower	Upwind	Upwind
Tilt angle	6°	6°
Rated RPM	69/65	59/55
Blade No.	3	3
Free stand tower height (m)	18	18
Cable length(m)	20	20
Grid-connected rated power(KW)	30	50
Orientation drive mechanism	Hydraulic yaw	Hydraulic yaw
Orientation drive type	Automatic/Manual	Automatic/Manual
Efficiency	0.8	0.8
Nacelle weight (Tons)	1.6	
Frequency(Hz)	50/60	50/60
Safety devices	- Yawing - Hydraulic brake	- Yawing - Hydraulic brake

PRODUCT SPECIFICATIONS (D SERIES)

HONG KONG RUWIND GROUP CO., LIMITED

Items\Models	RUWIND 5K-D	RUWIND 10K-D	RUWIND 20K-D	RUWIND 30K-D
Rated voltage(VDC)	240	240	240	240
Rated ampere(ADC)	21	42	83	125
Annual energy production(kWh)	12000	24000	48000	70000
Rotor diameter(m)	6.4	8.0	10.0	12.0
Blade material	GFRP	GFRP	GFRP	GFRP
Start-up wind speed(m/s)		2.5	2.5	2.5
Direction (Looking downwind)	Clockwise	Clockwise	Counterclockwise	Counterclockwise
Rated Wind speed(m/s)	10.0	10.0	12.5	13.5
Cut-out wind speed (m/s)	20	20	20	20
Survival wind speed(m/s)	40	40	40	40
Location relative to tower	Upwind	Upwind	Upwind	Upwind
Tilt angle	6°	6°	6°	6°
Rated RPM	240	180	90	70
Blade No.	3	3	3	3
Free stand tower height (m)	12	12	18	18
Cable length(m)	20	20	20	20
Orientation drive mechanism	Hydraulic yaw	Hydraulic yaw	Hydraulic yaw	Hydraulic yaw
Orientation drive type	Automatic/Manual	Automatic/Manual	Automatic/Manual	Automatic/Manual
Efficiency	0.8	0.8	0.8	0.8
Nacelle weight (Tons)	0.5	0.6	1.5	1.5
Frequency(Hz)	50/60	50/60	50/60	50/60
Safety devices	- Yawing	- Yawing	- Yawing	- Yawing
	- Hydraulic brake	- Hydraulic brake	- Hydraulic brake	- Hydraulic brake
	- Dumpload	- Dumpload	- Dumpload	- Dumpload

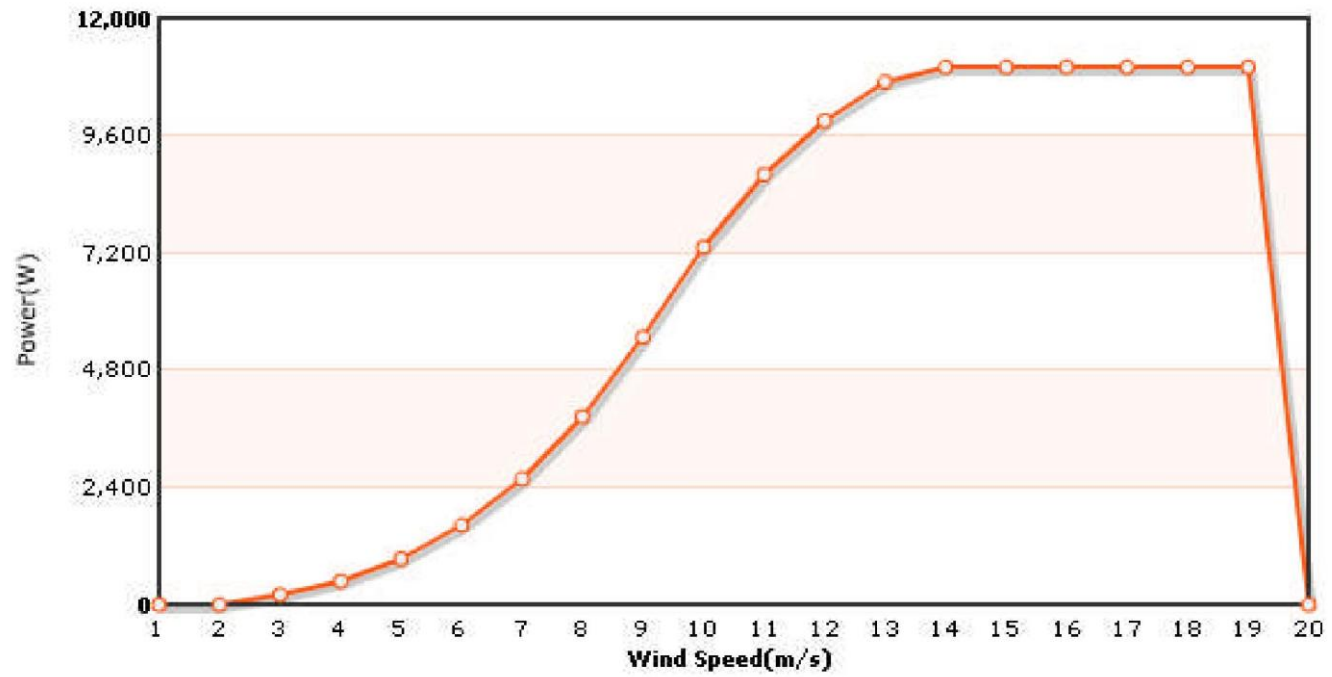
COMPARISONS

Currently, the most popular wind turbine generator system in world below 100KW is permanent magnet generator, which can be applied to on-grid or off-grid connection. It usually involves battery for off-grid mode and on-grid inverter for on-grid mode. In our product line, D series is in this form. However, our products of G series can work under on-grid circumstance without an extra inverter which is different from regular wind turbine generator system. Refer to the following table to learn the merits and demerits in between.

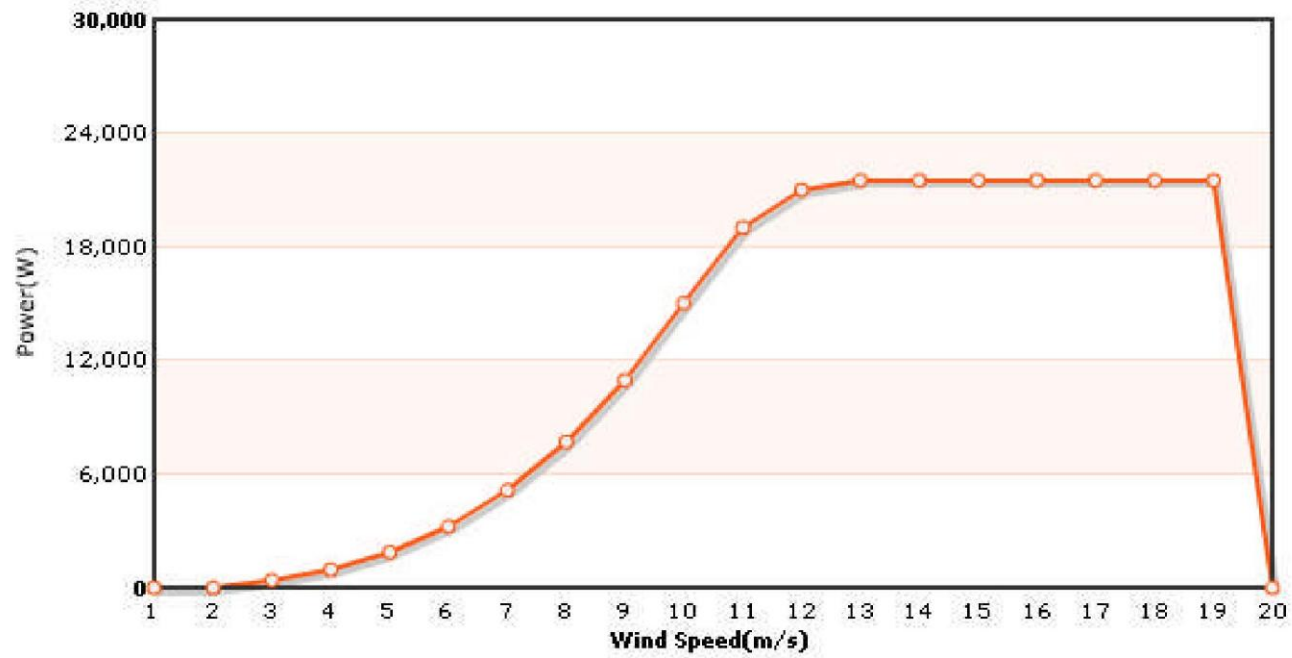
Items\Models	D series	G series(3 phases)	G series(1 phase)
Grid	- Can be switched between on-grid and off-grid mode	- Only for on-grid	-Only for on-grid
Merits	<ul style="list-style-type: none"> - Flexible between on-grid and off-grid - Can be connected with single phase or 3 phases grid by using different on-grid inverters - DC output 	<ul style="list-style-type: none"> - Easy and direct connection to grid - High efficiency - No need of expensive on-grid inverter 	<ul style="list-style-type: none"> - Easy and direct connection to grid - High efficiency - No need of expensive on-grid inverter - Target for normal family with 1 phase grid
Demerits	<ul style="list-style-type: none"> - Low efficiency in on-grid connection - On-grid inverter is expensive - The wires connection for on-grid is complicated 	<ul style="list-style-type: none"> - Only for on-grid connection - Only for 3 phases grid 	<ul style="list-style-type: none"> - Only for on-grid connection - Only for 1 phase grid
Customer types	<ul style="list-style-type: none"> - People who lack power connection - People who need to switch turbine between on-grid and off-grid mode 	- People who owns 3 phases grid	- The one who has 1 phase grid

CURVERS

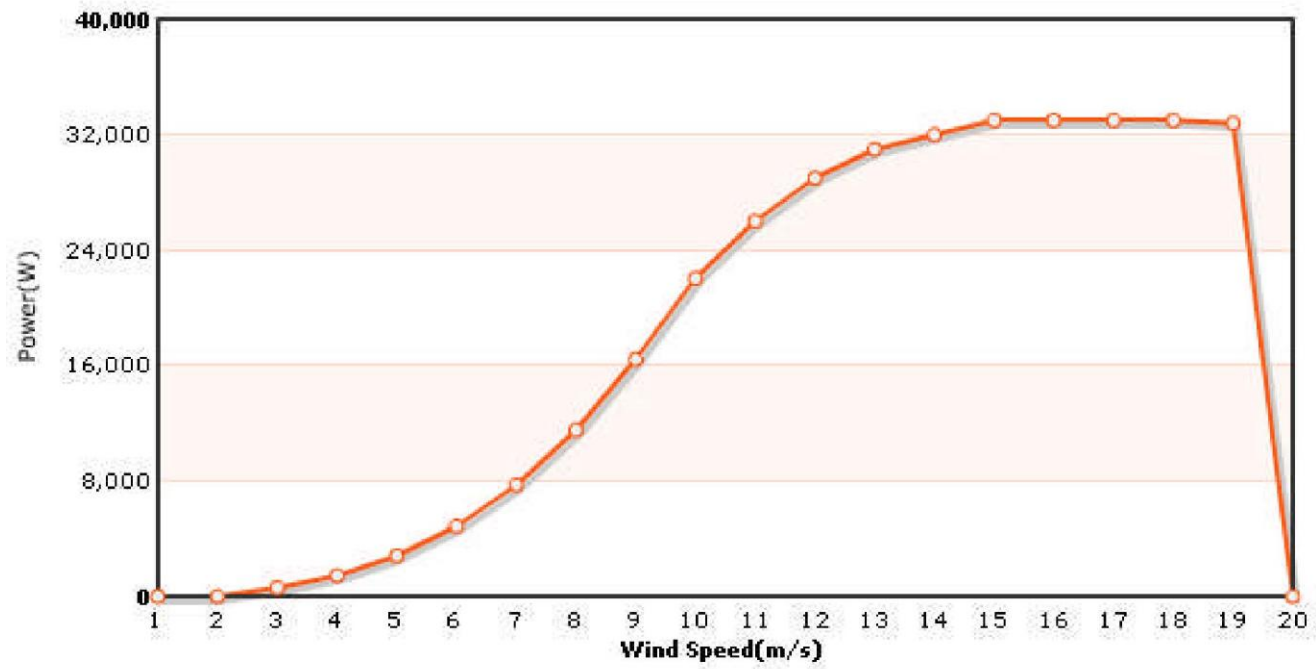
SKYWING 10K-G/SKYWING 10K-G3 CURVE



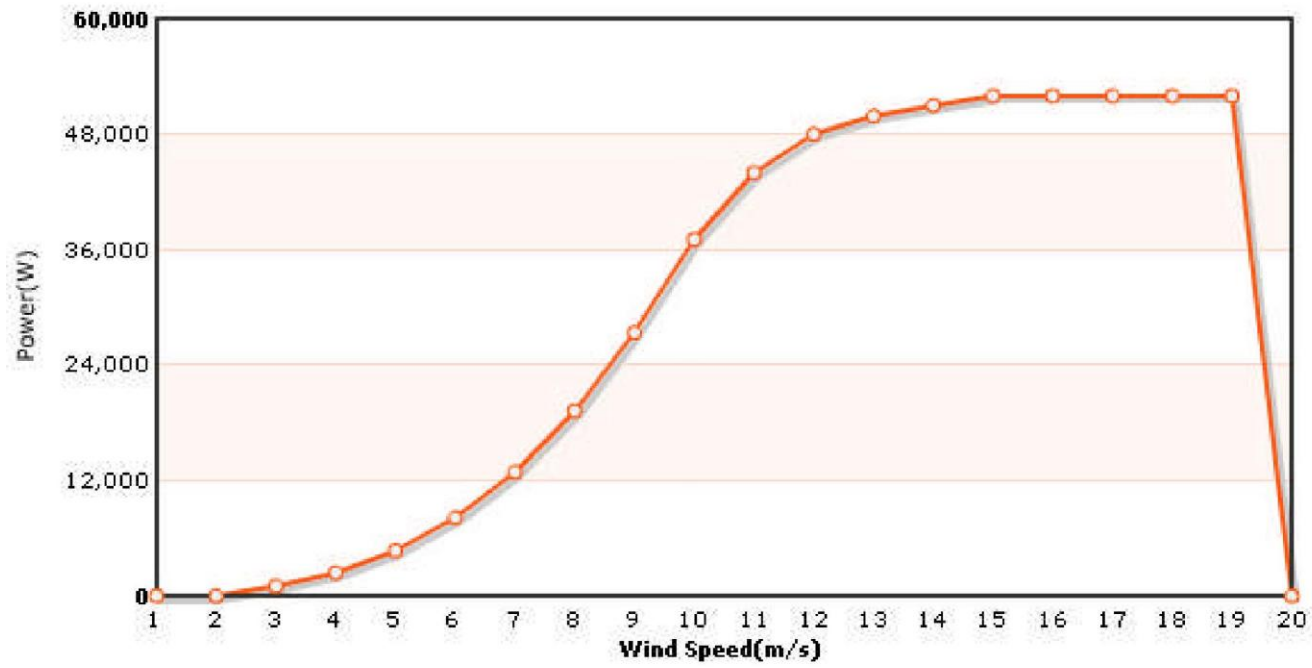
SKYWING 20K-G/SKYWING 20K-G3 CURVE

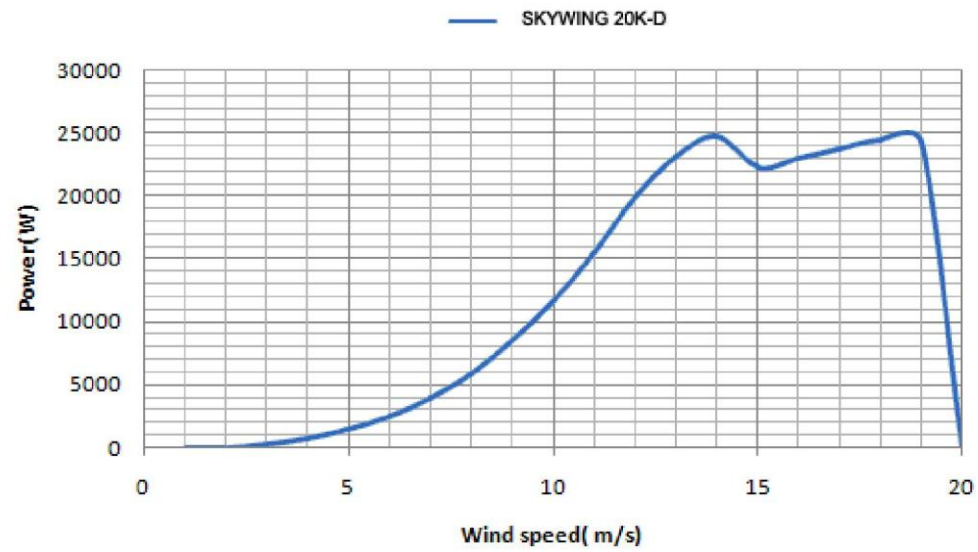
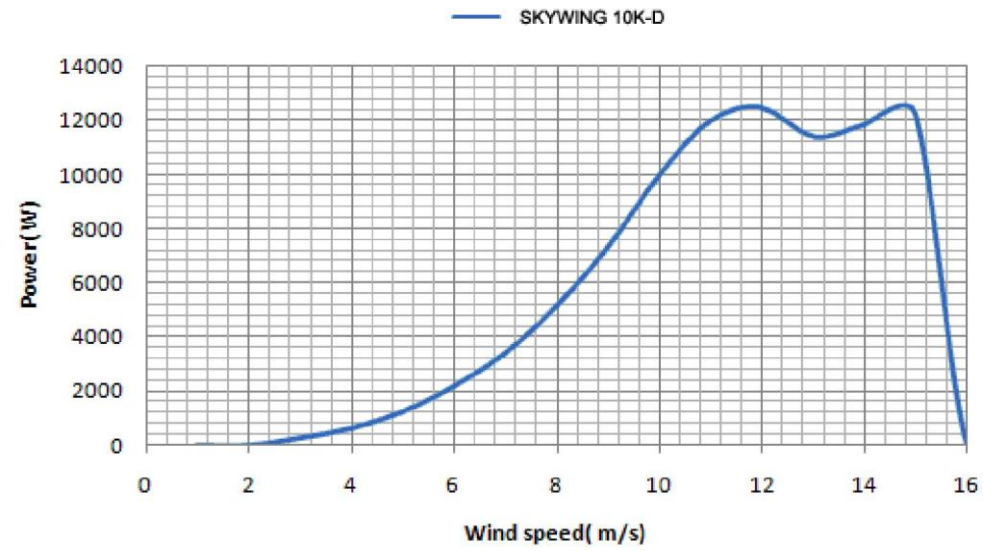


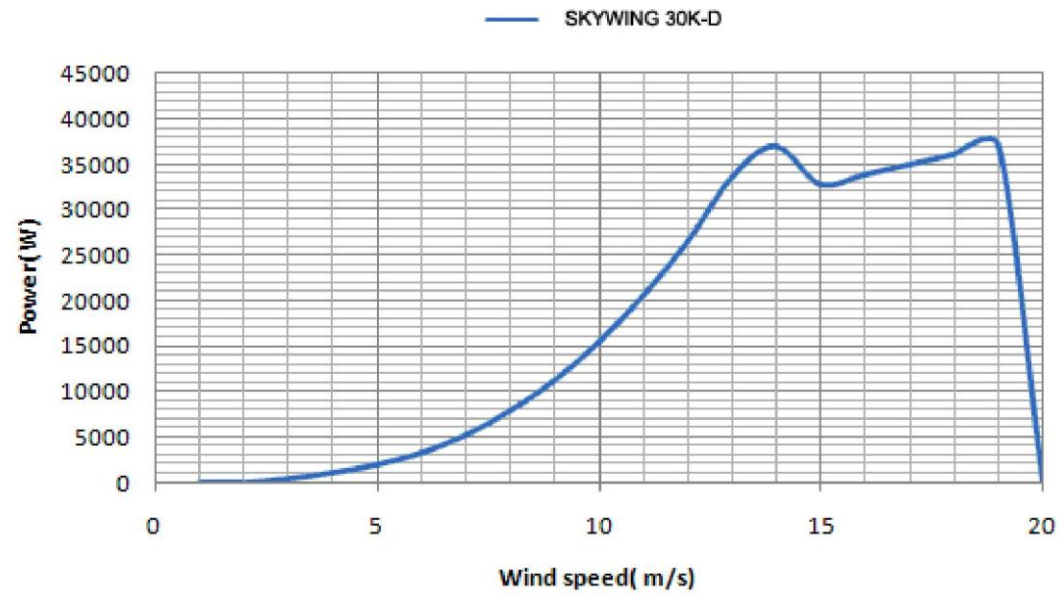
SKYWING 30K-G3 CURVE



SKYWING 50K-G3 CURVE







PRODUCT DETAILS



General overview of whole wind turbine generator. Smooth and steady operation with low noise.



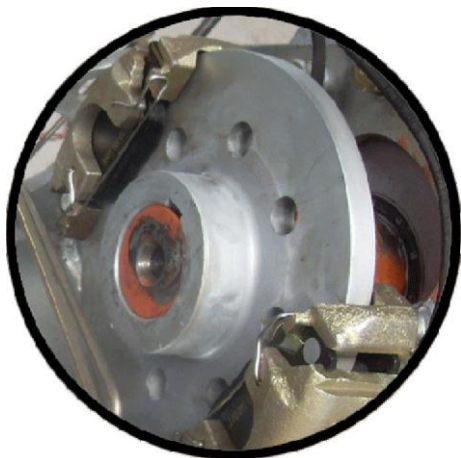
It shows the hydraulic tower detail indicating our special and effective design holding patent. This system can work with all our wind turbine generators.
Height: 17.1m Sections: 3



Hydraulic motor is used to forward wind direction and yaw when the wind is blowing or the turbine needs to be protected due to some reason. It's durable and powerful.



Mitsubishi PLC is the main control unit, which is reliable and efficient. If the program is upgraded in future, we can easily rewrite the memory of PLC.



The hydraulic brake system is used to keep wind turbine safe when the rotate speed is too fast or the grid is off. It also works on the following conditions: over voltage, over temperature, over current, etc.

To be compared with electric brake system, the hydraulic system does not generate heat, and the pressure is linear which means it can stop the turbine smoothly. And one important advantage is that once it works, the pressure can be maintained for few months even without power supply.



We design and produce good quality generator, which can generate more power under same wind condition and own high ability of over current.

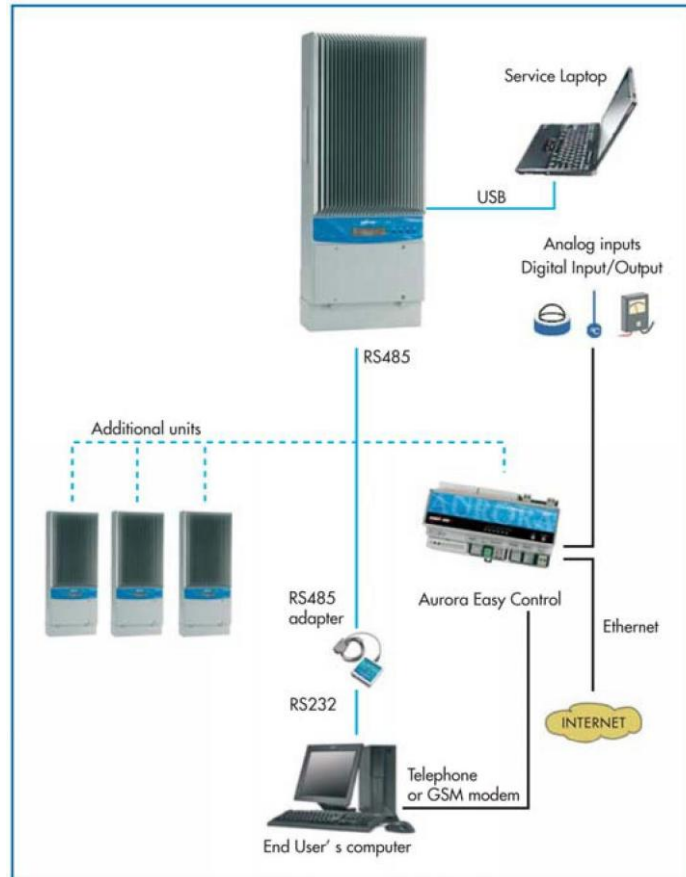


A strong slewing mechanism is used to connect wind turbine generator with tower.

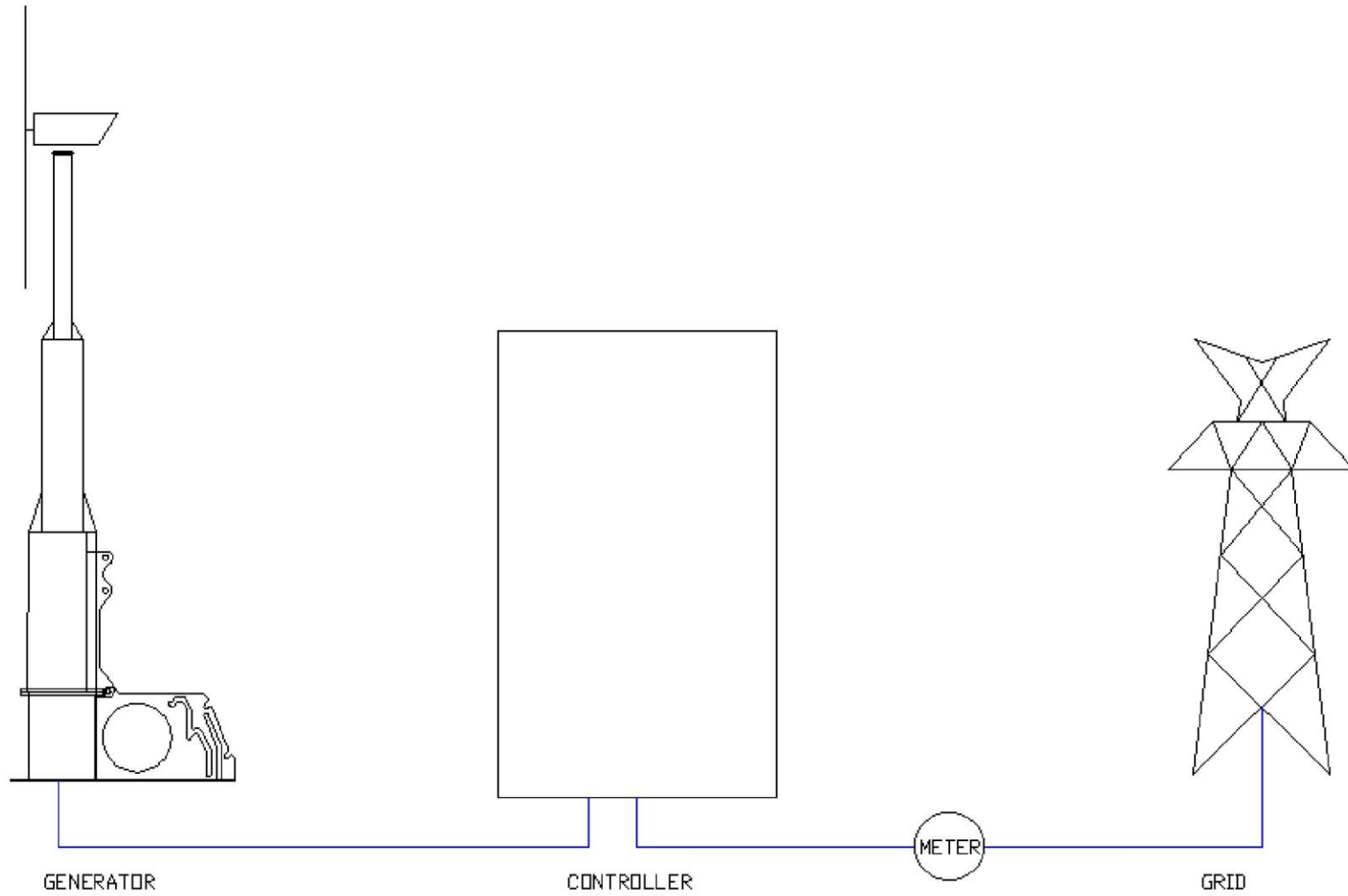


This GPRS module is installed in controller to send and receive operational data of wind turbine. All data are stored on our server and can be accessed at any time. By adopting GPRS, we can collect data for analysis and detect problem timely, even control the wind turbine remotely.

MONITORING SYSTEM



CONNECTION SKETCH MAP G SERIES



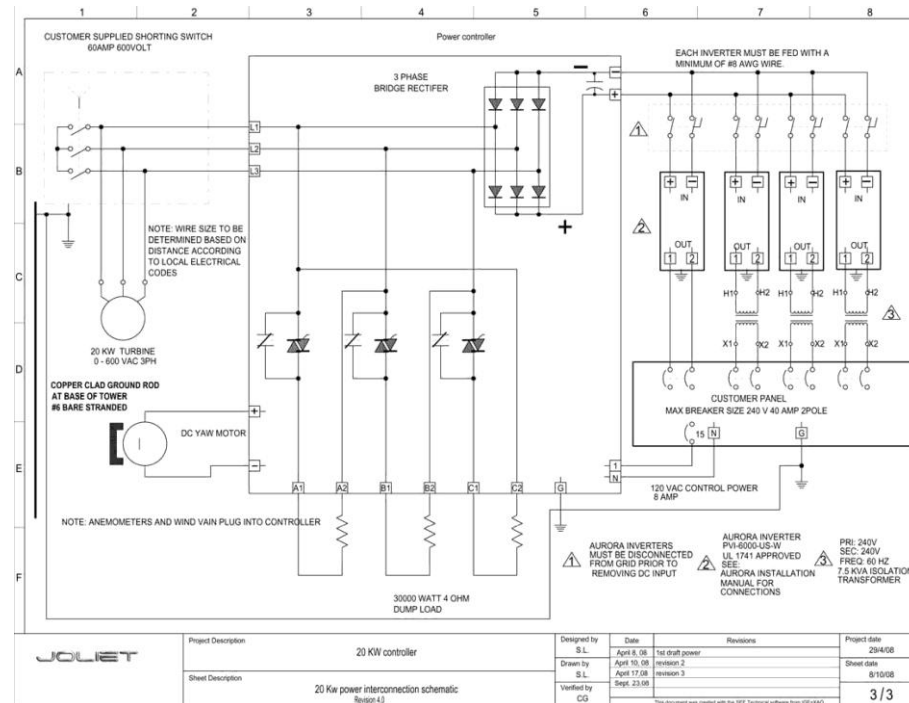
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TECHNICAL SUPPORT

Buying and installing a wind turbine requires careful consideration. Our technical sales staff can provide vital assistance in making the most appropriate choice of wind turbine for your specific requirements. For commercial and small wind farm applications we can help you with power production and return on investment calculations.

Correct location and installation of a wind turbine ensures maximum efficiency and lengthens product life. Our technical staff is available to answer questions regarding installation and we have trained installers in many areas to assist with assembly and erection of Joliet wind turbines.

RUWIND technical staff is available to carry out installation supervision, on site electrical commissioning and local staff training anywhere in the world.



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The pictures and description in this file may be updated without notice.

Annual energy production is calculated on assumption with good wind resource.

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