Hybrid Wind Solar Power System off Gird Technical Specification

Guide List

1.5KW Hybrid Wind Solar Power off Grid System
(1KW VAWT + 500W Solar Panel)

component	specification	details (performance/material/component/function)
blades	blades quantity: 3 pieces blades length: 2.6 meter blades material: fibreglass	>cut-in speed: 1.5.0m/s >rated speed: 12m/s safe speed: 50m/s >work speed range: 1.5-25m/s
permanent magnet generator	rated voltage: DC48V rated rotation speed: 150rpm start torque: <1.2NM	>magnet material: 38SH >silicon steel: 50W470 >shaft, base, covers: Q345D >bearing: low temprature resistant till -45℃, self-lubricated, life ≧20years >copper wire: self adhesive double glass silk wraped polyimide enamelled sintered flat copper wire
controller	charging wind speed: 3m/s dumpload rated power: 3KW no load loss: < 0.5% of rated charging current vibration resistance as GB/T2423.10 free drop as GB/T2423.8 remote communication managed with battery management system	>shell has firm plating, evenly painted, no flaking,no corrosion and crack. >with HVD and recover function; LVD and receover function >compensate battery temprature and control charging temprature ; charging and discharging loop voltage drop >MPPT tracking, current limiting, load short circuit protection, over power protection >protections for reverse discharging, reverse polarity connection , lightning, and wind turbine brake >surge voltage and current resistant
inverter	rated output power: 2KW efficiency: >90% THD: <3% voltage adjustment rate: <±3% load adjustment rate: <±6%	>soft start function; communication function, load management system >protections for DC over voltage/over current, AC over voltage/low voltage/over current, short circuit >protections for over and low frequency, instantaneous system power, inside over heat, electromagnet compatibility, and lightning
battery	12V200AH, 4 pieces	>valve control free maintenance gel lead storage battery/lead carbon battery
tower	4,5,6 meter	>low temperature resistant material Q345E
PV panel	250W, 2 pieces	>chip: polycrystalline silicon cell >sealing method: glass lamination >material: 3.2mm thick super white steel glass, TPT, alloy frame >adhesive: UV resistant EVA flim

1.5KW Hybrid Wind Solar Power off Grid System
(500W VAWT + 1KW Solar Panel)

component	specification	details (performance/material/component/function)
blades	blades quantity: 3 pieces blades length: 1.2 meter blades material: fibreglass	>start speed: 1.5m/s cut-in speed: 2.0m/s >rated speed: <10.5m/s safe speed: 50m/s >work speed range: 1.5-25m/s
permanent magnet generator	rated voltage: 48VDC rated rotation speed: 150rpm start torque: <1.2NM	>magnet material: 38SH >silicon steel: 50W470 >shaft, base, covers: Q345D >bearing: low temprature resistant till -45℃, self-lubricated, life ≧20years >copper wire: self adhesive double glass silk wraped polyimide enamelled sintered flat copper wire
controller	charging wind speed: 3m/s dumpload rated power: 3KW no load loss: < 0.5% of rated charging current vibration resistance as GB/T2423.10 free drop as GB/T2423.8 remote communication managed with battery management system	>shell has firm plating, evenly painted, no flaking,no corrosion and crack. >with HVD and recover function; LVD and receover function >compensate battery temprature and control charging temprature ; charging and discharging loop voltage drop >MPPT tracking, current limiting, load short circuit protection, over power protection >protections for reverse discharging, reverse polarity connection , lightning, and wind turbine brake >surge voltage and current resistant
inverter	rated output power: 2KW efficiency: >90% THD: <3% voltage adjustment rate: <±3% load adjustment rate: <±6%	>soft start function; communication function, load management system >protections for DC over voltage/over current, AC over voltage/low voltage/over current, short circuit >protections for over and low frequency, instantaneous system power, inside over heat, electromagnet compatibility, and lightning
battery	12V200AH, 4 pieces	>valve control free maintenance gel lead storage battery/lead carbon battery
tower	4,5,6 meter	>low temperature resistant material Q345E
PV panel	250W, 4 pieces	>chip: polycrystalline silicon cell >sealing method: glass lamination >material: 3.2mm thick super white steel glass, TPT, alloy frame >adhesive: UV resistant EVA flim

2KW Hybrid Wind Solar Power off Grid System
(1KW VAWT + 1KW Solar Panel)

component	specification	details (performance/material/component/function)
blades	blades quantity: 3 pieces blades length: 2.6 meter blades material: fibreglass	>cut-in speed: 1.5.0m/s >rated speed: 12m/s safe speed: 50m/s >work speed range: 1.5-25m/s
permanent magnet generator	rated voltage: DC48V rated rotation speed: 150rpm start torque: <1.2NM	>magnet material: 38SH >silicon steel: 50W470 >shaft, base, covers: Q345D >bearing: low temprature resistant till -45℃, self-lubricated, life ≧20years >copper wire: self adhesive double glass silk wraped polyimide enamelled sintered flat copper wire
controller	charging wind speed: 3m/s dumpload rated power: 3KW no load loss: < 0.5% of rated charging current vibration resistance as GB/T2423.10 free drop as GB/T2423.8 remote communication managed with battery management system	>shell has firm plating, evenly painted, no flaking,no corrosion and crack. >with HVD and recover function; LVD and receover function >compensate battery temprature and control charging temprature ; charging and discharging loop voltage drop >MPPT tracking, current limiting, load short circuit protection, over power protection >protections for reverse discharging, reverse polarity connection , lightning, and wind turbine brake >surge voltage and current resistant
inverter	rated output power: 2KW efficiency: >90% THD: <3% voltage adjustment rate: <±3% load adjustment rate: <±6%	>soft start function; communication function, load management system >protections for DC over voltage/over current, AC over voltage/low voltage/over current, short circuit >protections for over and low frequency, instantaneous system power, inside over heat, electromagnet compatibility, and lightning
battery	12V200AH, 4 pieces	>valve control free maintenance gel lead storage battery/lead carbon battery
tower	4,5,6 meter	>low temperature resistant material Q345E
PV panel	250W, 4 pieces	>chip: polycrystalline silicon cell >sealing method: glass lamination >material: 3.2mm thick super white steel glass, TPT, alloy frame >adhesive: UV resistant EVA flim

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(1.5KW VAWT + 500W Solar Panel)

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blades	blades quantity: 3 pieces blades length: 3 meter blades material: fibreglass	> cut-in speed: 2.0m/s >rated speed: 12m/s safe speed: 50m/s >work speed range: 1.5-25m/s
permanent magnet generator	rated voltage: 48VDC rated rotation speed: 150rpm start torque: <1.2NM	>magnet material: 38SH >silicon steel: 50W470 >shaft, base, covers: Q345D >bearing: low temprature resistant till -45℃, self-lubricated, life ≧20years >copper wire: self adhesive double glass silk wraped polyimide enamelled sintered flat copper wire
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tower	4,5,6 meter	>low temperature resistant material Q345E
PV panel	250W, 2 pieces	>chip: polycrystalline silicon cell >sealing method: glass lamination >material: 3.2mm thick super white steel glass, TPT, alloy frame >adhesive: UV resistant EVA flim

2.5KW Hybrid Wind Solar Power off Grid System
(1.5KW VAWT + 1KW Solar Panel)

component	specification	details (performance/material/component/function)
blades	blades quantity: 3 pieces blades length: 3 meter blades material: fibreglass	> cut-in speed: 2.0m/s >rated speed: 12m/s safe speed: 50m/s >work speed range: 1.5-25m/s
permanent magnet generator	rated voltage: 48VDC rated rotation speed: 150rpm start torque: <1.2NM	>magnet material: 38SH >silicon steel: 50W470 >shaft, base, covers: Q345D >bearing: low temprature resistant till -45℃, self-lubricated, life ≧20years >copper wire: self adhesive double glass silk wraped polyimide enamelled sintered flat copper wire
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battery	12V200AH, 4 pieces	>valve control free maintenance gel lead storage battery/lead carbon battery
tower	4,5,6 meter	>low temperature resistant material Q345E
PV panel	250W, 4 pieces	>chip: polycrystalline silicon cell >sealing method: glass lamination >material: 3.2mm thick super white steel glass, TPT, alloy frame >adhesive: UV resistant EVA flim

2.5KW Hybrid Wind Solar Power off Grid System

(1KW VAWT + 1.5KW Solar Panel)

component	specification	details (performance/material/component/function)
blades	blades quantity: 3 pieces blades length: 2.6 meter blades material: fibreglass	>cut-in speed: 1.5m/s >rated speed: 12m/s safe speed: 50m/s >work speed range: 1.5-25m/s
permanent magnet generator	rated voltage: DC48V rated rotation speed: 150rpm start torque: <1.2NM	>magnet material: 38SH >silicon steel: 50W470 >shaft, base, covers: Q345D >bearing: low temprature resistant till -45℃, self-lubricated, life ≧20years >copper wire: self adhesive double glass silk wraped polyimide enamelled sintered flat copper wire
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inverter	rated output power: 3KW efficiency: >90% THD: <3% voltage adjustment rate: <±3% load adjustment rate: <±6%	>soft start function; communication function, load management system >protections for DC over voltage/over current, AC over voltage/low voltage/over current, short circuit >protections for over and low frequency, instantaneous system power, inside over heat, electromagnet compatibility, and lightning
battery	12V200AH, 4 pieces	>valve control free maintenance gel lead storage battery/lead carbon battery
tower	4,5,6 meter	>low temperature resistant material Q345E
PV panel	250W, 6 pieces	>chip: polycrystalline silicon cell >sealing method: glass lamination >material: 3.2mm thick super white steel glass, TPT, alloy frame >adhesive: UV resistant EVA flim

3KW Hybrid Wind Solar Power off Grid System

(1.5KW VAWT + 1.5KW Solar Panel)

component	specification	details (performance/material/component/function)
blades	blades quantity: 3 pieces blades length: 3 meter blades material: fibreglass	> cut-in speed: 2.0m/s >rated speed: 12m/s safe speed: 50m/s >work speed range: 1.5-25m/s
permanent magnet generator	rated voltage: 48VDC rated rotation speed: 150rpm start torque: <1.2NM	>magnet material: 38SH >silicon steel: 50W470 >shaft, base, covers: Q345D >bearing: low temprature resistant till -45℃, self-lubricated, life ≧20years >copper wire: self adhesive double glass silk wraped polyimide enamelled sintered flat copper wire
controller	charging wind speed: 3m/s dumpload rated power: 3KW no load loss: < 0.5% of rated charging current vibration resistance as GB/T2423.10 free drop as GB/T2423.8 remote communication managed with battery management system	>shell has firm plating, evenly painted, no flaking,no corrosion and crack. >with HVD and recover function; LVD and receover function >compensate battery temprature and control charging temprature ; charging and discharging loop voltage drop >MPPT tracking, current limiting, load short circuit protection, over power protection >protections for reverse discharging, reverse polarity connection , lightning, and wind turbine brake >surge voltage and current resistant
inverter	rated output power: 3KW efficiency: >90% THD: <3% voltage adjustment rate: <±3% load adjustment rate: <±6%	>soft start function; communication function, load management system >protections for DC over voltage/over current, AC over voltage/low voltage/over current, short circuit >protections for over and low frequency, instantaneous system power, inside over heat, electromagnet compatibility, and lightning
battery	12V200AH, 4 pieces	>valve control free maintenance gel lead storage battery/lead carbon battery
tower	4,5,6 meter	>low temperature resistant material Q345E
PV panel	250W, 6 pieces	>chip: polycrystalline silicon cell >sealing method: glass lamination >material: 3.2mm thick super white steel glass, TPT, alloy frame >adhesive: UV resistant EVA flim

3KW Hybrid Wind Solar Power off Grid System
(2KW VAWT + 1KW Solar Panel)

component	specification	details (performance/material/component/function)
blades	blades quantity: 3 pieces blades length: 3.5 meter blades material: fibreglass	> cut-in speed: 2.0m/s >rated speed: 12m/s safe speed: 50m/s >work speed range: 1.5-25m/s
permanent magnet generator	rated voltage: 48VDC rated rotation speed: 150rpm start torque: <1.2NM	>magnet material: 38SH >silicon steel: 50W470 >shaft, base, covers: Q345D >bearing: low temprature resistant till -45℃, self-lubricated, life ≧20years >copper wire: self adhesive double glass silk wraped polyimide enamelled sintered flat copper wire
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battery	12V200AH, 4 pieces	>valve control free maintenance gel lead storage battery/lead carbon battery
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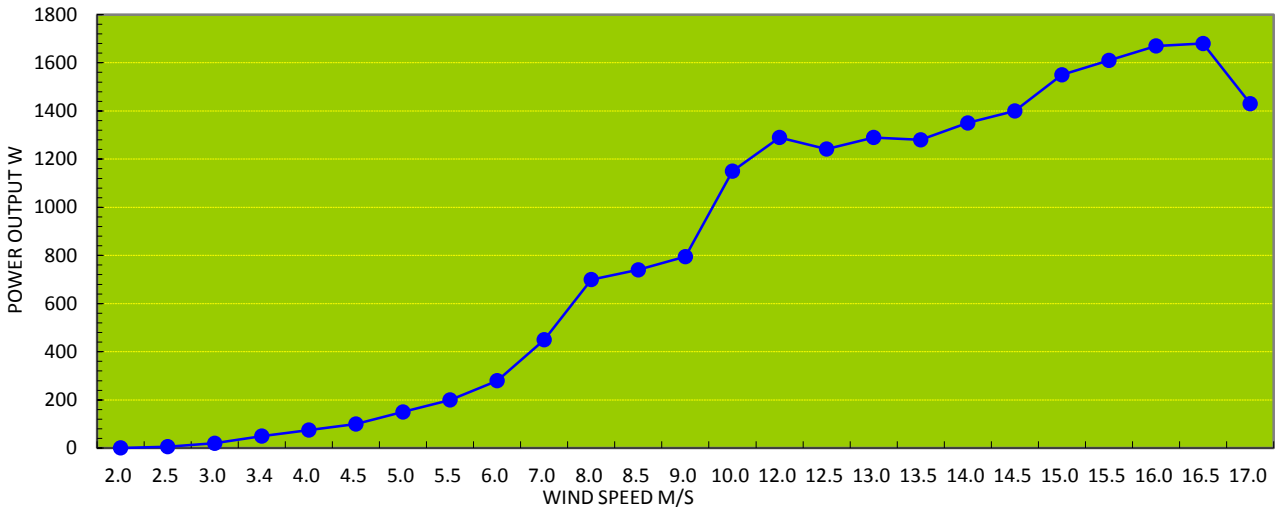
We have installed more than 2000 units of this wind solar power system with our VAWT in Inner Mongolia, China till May 2017.

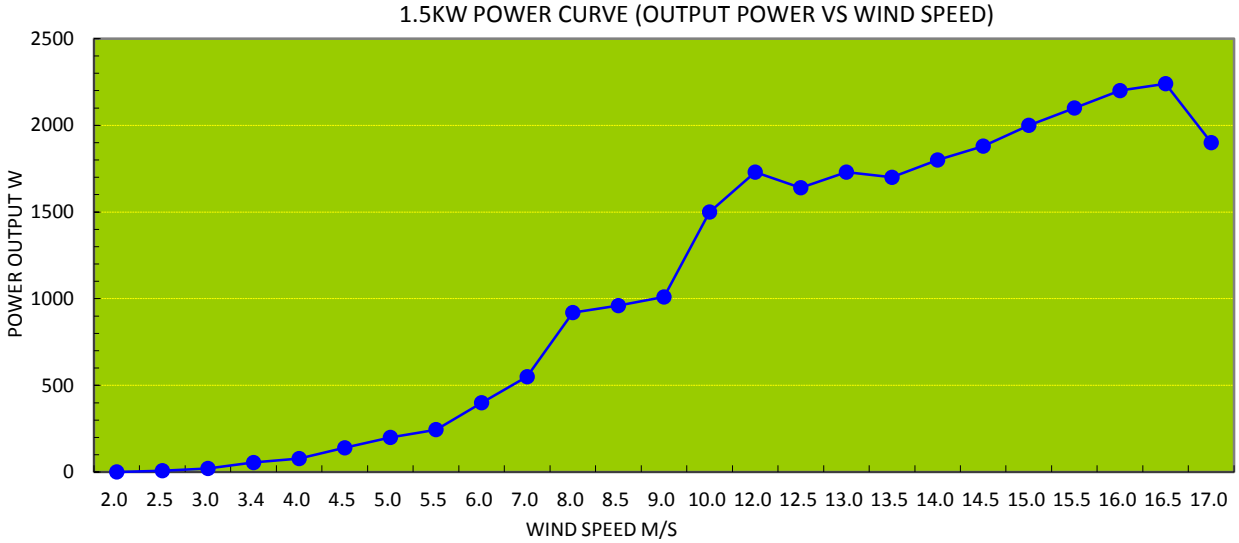
We made field test of our VAWT and got power curve as below with long period running; the longest is three years from being installed.

1KW POWER CURVE (OUTPUT POWER VS WIND SPEED)



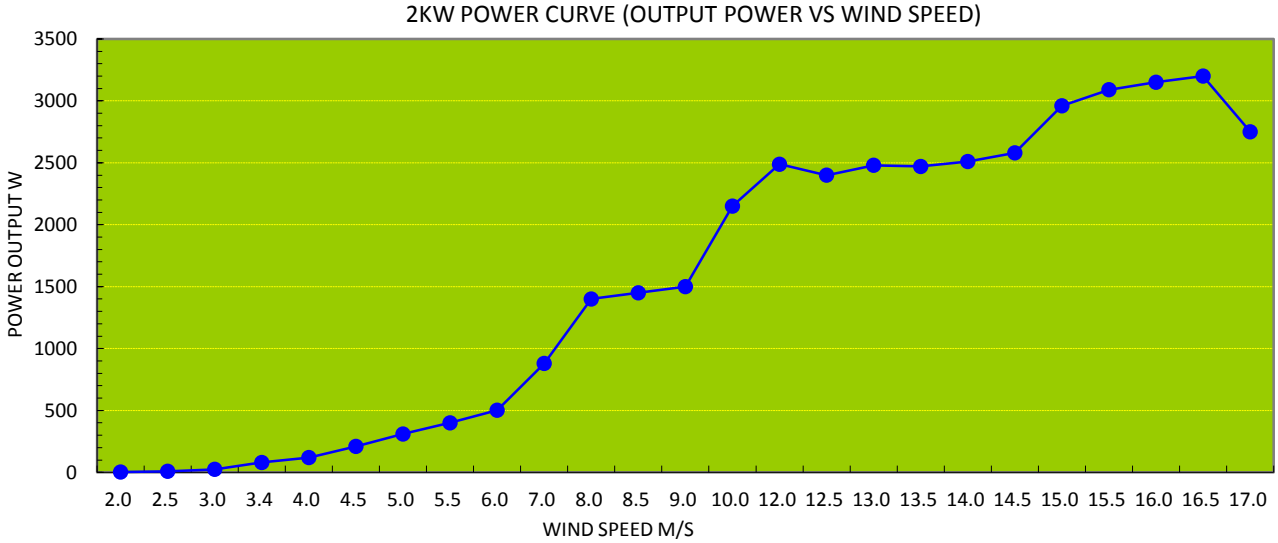
annual average wind speed	5.0m/s	6.0m/s	7.0m/s	8.0m/s
annual energy production	1246KWH	2378KWH	3903KWH	6067KWH

1.5KW POWER CURVE (OUTPUT POWER VS WIND SPEED)



annual average wind speed	5.0m/s	6.0m/s	7.0m/s	8.0m/s
annual energy production	1680KWH	3091KWH	5075KWH	7887KWH

2KW POWER CURVE (OUTPUT POWER VS WIND SPEED)



annual average wind speed	5.0m/s	6.0m/s	7.0m/s	8.0m/s
annual energy production	2492KWH	4728KWH	7820KWH	12100KWH