

Off-grid solar system

离网太阳能系统



What is an off-grid photovoltaic power generation system?

什么是离网型光伏发电系统？

Solar panels can convert light energy into electricity, which can effectively deal with the difficult problems caused by power shortages and power outages. Off-grid photovoltaic power generation systems are widely used in remote mountainous areas, power-free areas, islands, communication base stations and street lamps. The photovoltaic array converts solar energy into electric energy under the condition of light, supplies power to the load through the solar charge and discharge controller, and charges the battery pack at the same time; When there is no light, the battery pack supplies power to the DC load through the solar charge and discharge controller. At the same time, the battery also supplies power directly to the independent inverter, and the current is generated through the independent inverter to supply power to the AC load.

太阳能电池板可以将光能转化为电能，可以有效解决因缺电、停电等带来的难题。

离网型光伏发电系统广泛应用于偏僻山区、无电区、海岛、通讯基站和路灯等应用场所。光伏方阵在有光照的情况下将太阳能转换为电能，通过太阳能充放电控制器给负载供电，同时给蓄电池组充电；在无光照时，通过太阳能充放电控制器由蓄电池组给直流负载供电，同时蓄电池还要直接给独立逆变器供电，通过独立逆变器逆变成交流电，给交流负载供电。



The off-grid photovoltaic system is generally composed of a photovoltaic array composed of solar cell modules, solar charge and discharge controller, battery pack, off grid inverter, DC load and AC load.

离网光伏系统一般由太阳能电池组件组成的光伏方阵、太阳能充放电控制器、蓄电池组、离网型逆变器、直流负载和交流负载等构成。



(1) Solar cell module

The solar cell module is the main part and also the most valuable component in the solar power supply system. Its function is to convert the solar radiation energy into DC energy;

(1) 太阳能电池组件

太阳能电池组件是太阳能供电系统中的主要部分，也是太阳能供电系统中价值最高的部件，其作用是将太阳的辐射能量转换为直流电能；



(2) Solar charge and discharge controller (also known as "photovoltaic controller")

It is used to regulate and control the electric energy generated by solar cell modules. In addition, it is used to charge the battery to the greatest extent and protect the battery from overcharge and over-discharge.

(2) 太阳能充放电控制器（也称“光伏控制器”）其作用是对太阳能电池组件所发的电能进行调节和控制，最大限度地对蓄电池进行充电，并对蓄电池起到过充电保护、过放电保护的作用。

(3) Battery pack

It is used to store the electricity generated by solar panels during the day for use when there is no light.

(3) 蓄电池组

储存白天太阳能组件所发电量，以供无光照时使用。



(4) Off-grid inverter

The off-grid inverter is the core component of the off-grid power generation system, which is responsible for converting DC into AC for AC load. Only DC load can not need the inverter.

(4) 离网型逆变器

离网型逆变器是离网发电系统的核心部件，负责把直流电转换为交流电，供交流负荷使用。

仅直流负载可以不需要该逆变器。

Complete quality management system and product certification

完整的质量管理体系与产品认证

ISO 9001:2015: ISO 质量管理体系

ISO 14001: 2015: ISO 环境管理体系

RoHS EBO1909058-V150 (EU)2015/ 863 限值要求

IEC 61215 2nd Edition (2005)

EMC 2004/108/EC BCTC-141212557



Application scenarios

Roofs of villas, residential buildings, schools, hotels, factories, etc; RV, yacht, street lamp and monitoring power generation system, photovoltaic building integration, photovoltaic water pump irrigation system, wind-solar complementary power generation, etc.

应用场景

别墅、居民住宅楼、学校、酒店、厂房等屋顶；房车游艇、路灯及监控发电系统、光伏建筑一体化、光伏水泵灌溉系统、风光互补发电等。



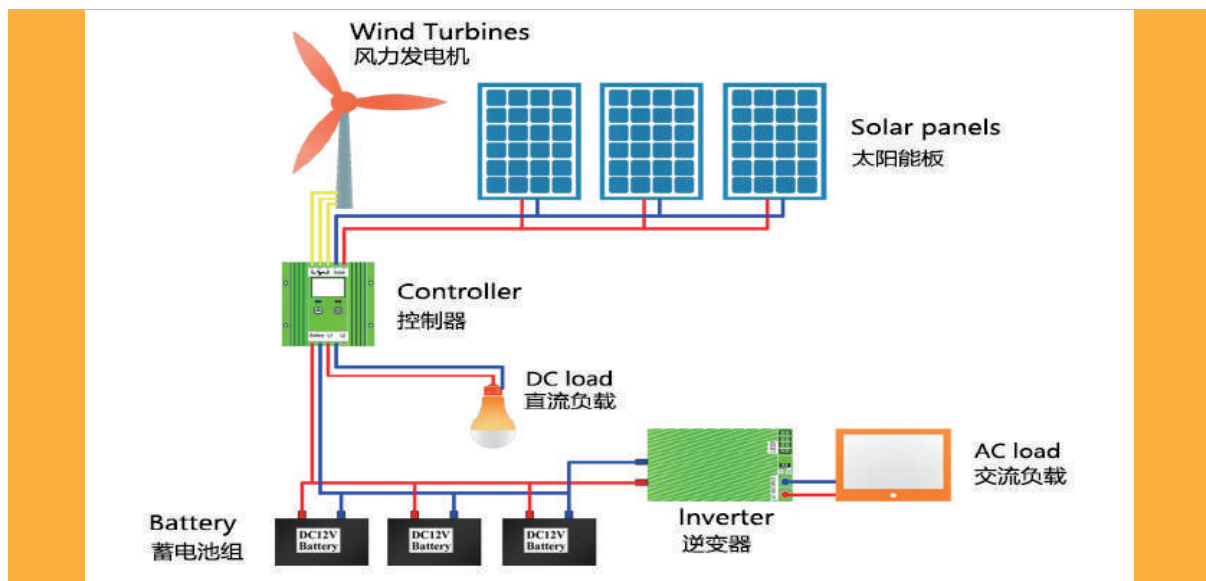
Solar and wind Hybrid Generation Systems

风光互补供电系统



Solar and wind Hybrid Generation Systems use wind energy and solar energy as the main power supply source of the load and cooperates with high-efficiency, maintenance-free lead-acid or colloidal battery energy storage system to supply new energy to the load.

风光互补供电系统是采用风能、太阳能作为负载的主要供电来源，配合高效、免维护铅酸或胶体蓄电池储能系统，对负载进行新能源供电。



Main composition: it is mainly composed of a wind turbine, solar photovoltaic cell modules, controller, storage battery, inverter, AC and DC load, etc. The system is a composite renewable energy power generation system integrating wind energy, solar energy, battery, and other energy power generation technologies and system intelligent control technology.

主要组成：主要由风力发电机组、太阳能光伏电池组件、控制器、蓄电池、逆变器、交流直流负载等部分组成。该系统是集风能、太阳能及蓄电池等多种能源发电技术及系统智能控制技术为一体的复合可再生能源发电系统。

Solar and wind hybrid power generation has the following advantages over wind power generation or photovoltaic power generation alone:

风光互补发电比单独风力发电或光伏发电有以下优点:

- Using the complementarity of wind energy and solar energy, relatively stable output can be obtained, and the system has high stability and reliability;
- 利用风能、太阳能的互补性, 可以获得比较稳定的输出, 系统有较高的稳定性和可靠性;
- Under the condition of ensuring the same power supply, the capacity of the energy storage battery can be greatly reduced;
- 在保证同样供电的情况下, 可大大减少储能蓄电池的容量;
- Through reasonable design and matching, the power can be basically supplied by the solar and wind hybrid generation systems, and there is little or no need to start the standby power supply, such as a diesel generator set, which can obtain better social and economic benefits.
- 通过合理地设计与匹配, 可以基本上由风光互补发电系统供电, 很少或基本不用启动备用电源如柴油机发电机组等, 可获得较好的社会效益和经济效益。



Application prospect 应用前景

Power shortage life, outdoor application, road lighting, navigation mark application, monitoring power supply, communication application and power station application.

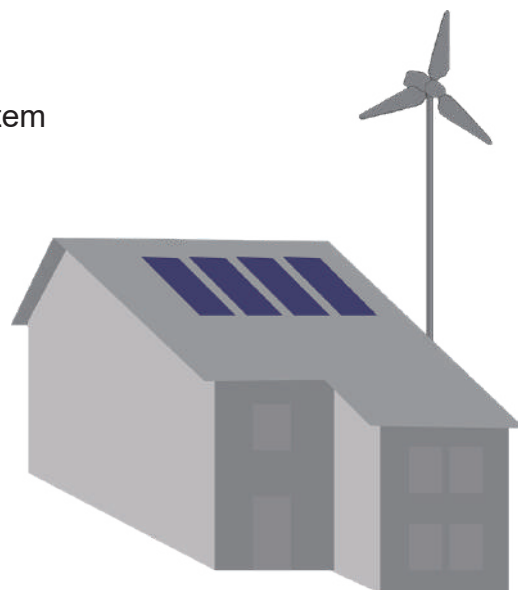
缺电生活、室外应用、道路照明、航标应用、监控电源、通信应用、电站应用。



Steps of self-built Solar and wind Hybrid Generation Systems :

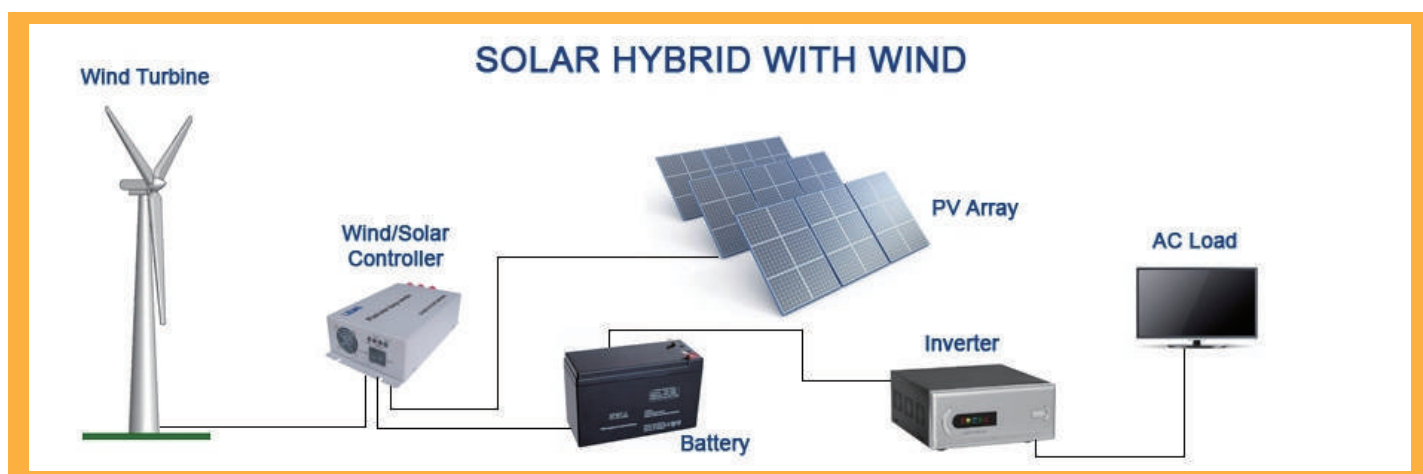
自建风光互补发电系统的步骤:

1. First, confirm the capacity of the power generation system
1、首先确定发电系统的容量
2. Confirm the structure diagram of the power generation system
2、确定发电系统结构图
3. Calculate the required capacity of each component
3、计算各部件所需容量
4. Confirm installation position
4、确定安装位置
5. Installation and Debugging
5、安装调试
6. System maintenance
6、系统维护



Solar and wind Hybrid Generation Systems diagram

风光互补发电系统图



Application Scenario 应用场景



Off-grid solar system

离网太阳能系统

List specifications as below, also it can be customized for you.
以下为所列规格，也可私人订制。

Product Type:
产品类型

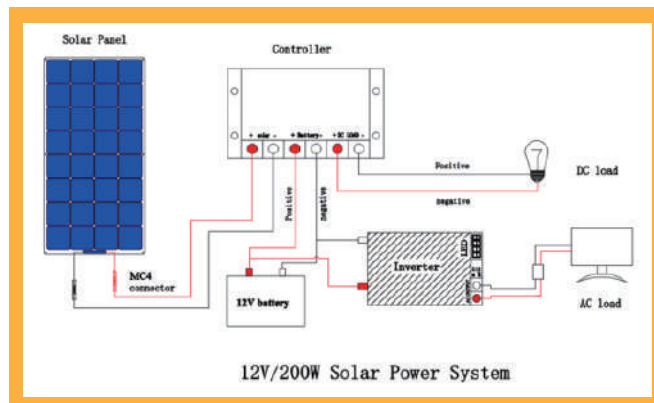
1.200W-12V

2.400W-12V

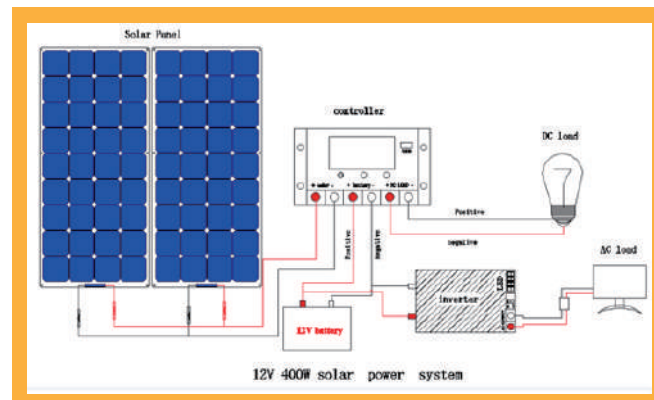
3.400W-24V

1. Electrical connection diagram 电气连接图

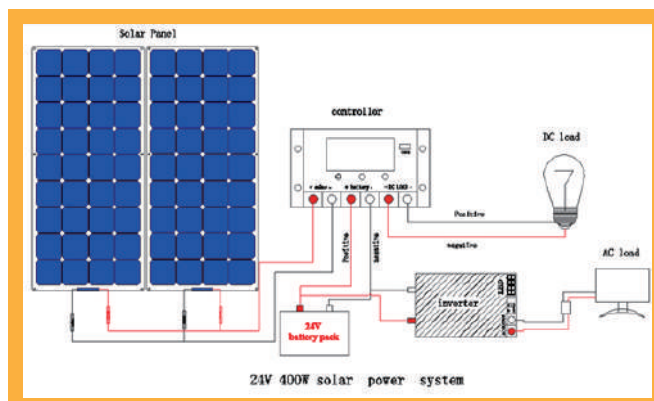
1 200W-12V



2 400W-12V



3 400W-24V



2. Bill of materials 材料单

Type 类型	Specification 规格	Quantity 数量
Solar panel 太阳能电池板	200W/19.8V 1040*1030*25mm	1
Controller 控制器	12/24V-30A	1
Battery 电池	100Ah-12V	1
Inverter 逆变器	1000W/230V	1
Cable 线缆	Red and Black, 2.5mm ² , 5M, with MC4 connector on one end Red and Black, 2.5mm ² , 3M, with metal terminals Or clamp on one end	1
Protection switch 保护开关	10A	1

3. Datasheet 数据表

(1) Solar panel:

Electrical parameter) | STC 电性能参数

Rated Power 额定功率	Pmax(W)	200W
Operating Voltage 工作电压	Vmp(V)	19.8V
Open Circuit Voltage 工作电流	Imp(A)	10.1A
Open Circuit Voltage 开路电压	Voc(V)	23.76V
Short Circuit Current 短路电流	Isc(A)	11.11A
Module Efficiency 组件效率	(%)	18.67%
Performance Tolerance 性能公差	(%)	±5%

* Standard test conditions measured values (irradiance 1000 W/m², cell temperature 25 °C, atmospheric mass AM1.5).

Structural performance 结构特性

Solar cell 太阳能电池	166×166 monocrystalline silicon PERC High efficiency solar cells
Connections of cells 电池连接	36 (6x6)
Boundary dimension 外形尺寸	1040×1030×25mm
Weight 重量	10 Kg
Frame 框架	1040*1030*25*20mm

Temperature characteristics 温度特性

NOTC(Standard Test Conditions) (标准试验条件)	45±2°C
Isc(Short Circuit Current Temp.) (短路电流温度)	+0.05%/°C
Voc(Open Circuit Voltage Temp.) (开路电压温度)	-0.30%/°C
Pmax (Max. Power Temp.) (最大功率温度)	-0.39%/°C

Limit parameter 极限参数

Operating Temperature 工作温度	-40~+85°C
Max.System Voltage 最大系统电压	1000V DC
Maximum diode current 最大二极管电流	15A

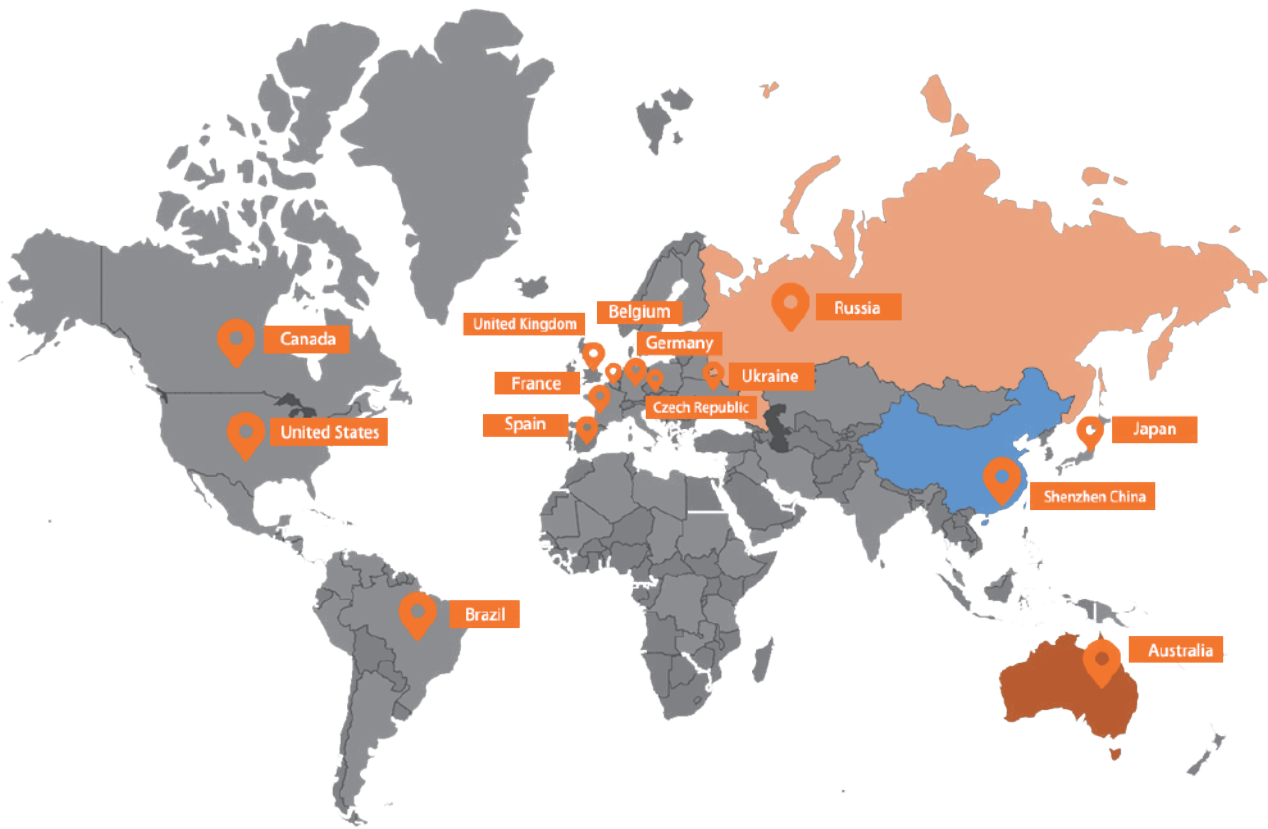
Optional 选配

Connector 连接器	Customizable
Cable length 电缆长度	Customizable
Border thickness 边界厚度	Customizable
Size 大小	Customizable

The contents of this manual are subject to change without prior notice.

* The company reserves the right of final interpretation

Global Markets Distribution



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