

PHOTOVOLTAIC

# SOLAR POWER SYSTEM

Baicheng International



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# *COMPANY INTRODUCTION*

**PART . 01**



Baicheng International is a multinational company focusing on solar systems manufacturing, equipment packaging as well as new and renewable energy development. Based on our deep understanding and research to Pakistan, Bangladesh, UAE, South Africa as well as other Middle East and African countries, we are dedicated to serve the project partners by seamlessly linking the strength and power of China and the international market resources.

The joint factory is based in China, total production capacity over 10GWp. We have been equipped with advanced facilities and strong technical force, together with professional R & D team and advanced technical personnel in the PV field to ensure the excellent product quality. We are committed to providing the most comprehensive and professional services for the partners worldwide.



**100GW+**

Shipments

**5GW+**

Grid-Connected

**60+**

Regions/Countries

**680+**

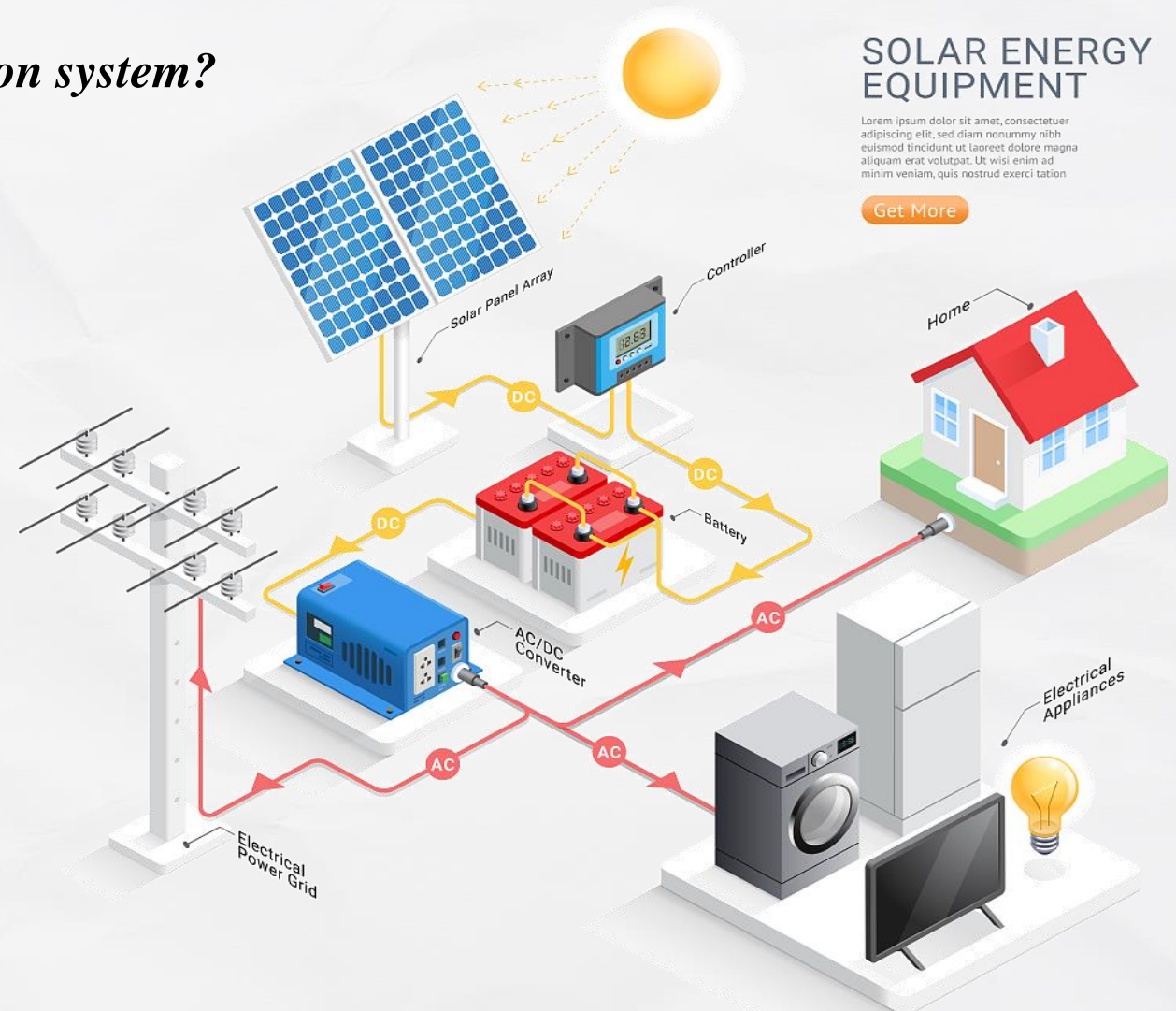
Active Users

# *SOLAR POWER SYSTEM*

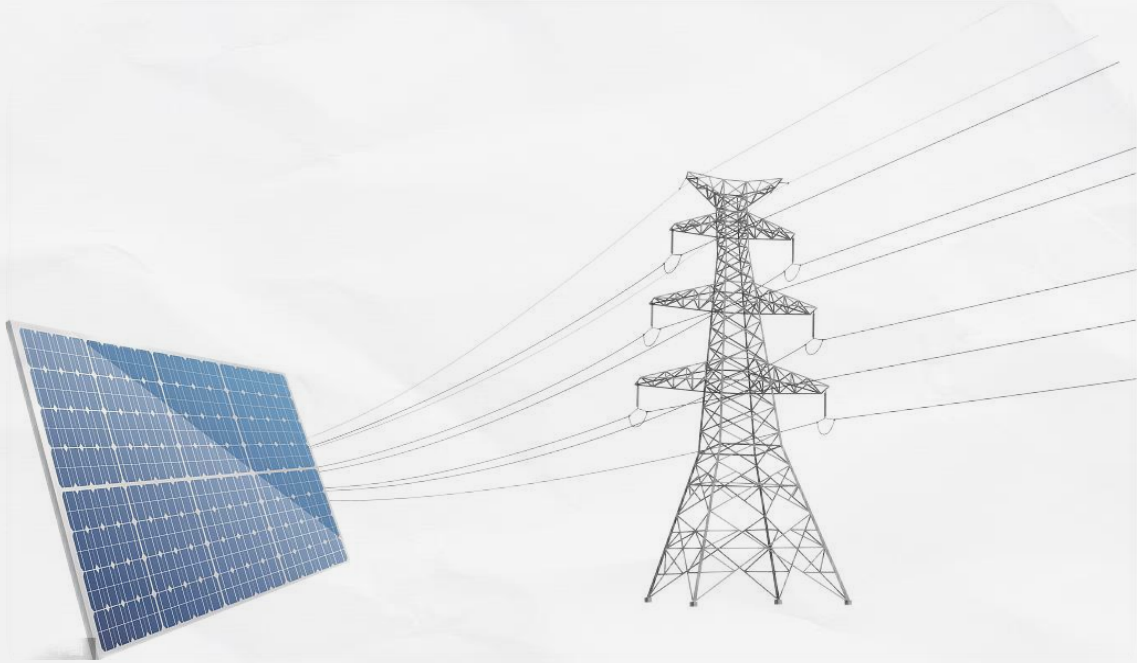
**PART . 02**

**Q:** What is the solar photovoltaic power generation system?

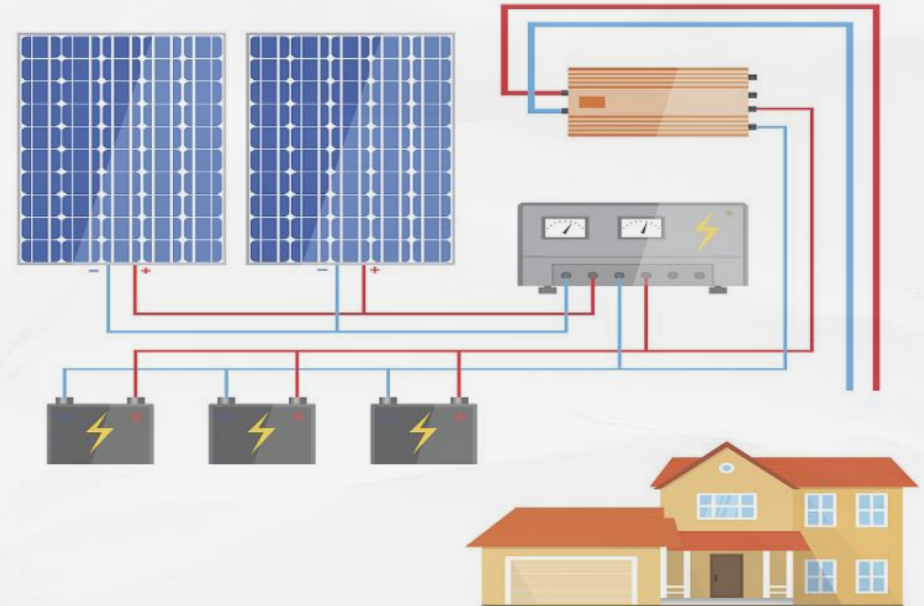
**A:** Photovoltaic is the abbreviation of solar photovoltaic power generation system (Solar power system), which is a photovoltaic effect using solar cell semiconductor materials. A new type of power generation system that directly converts solar radiant energy into electrical energy with two modes: off-grid and grid-connected



There are mainly two types of solar power systems: off-grid and grid-connected.



*Grid Connected Solar System*



*Off-Grid Solar System*



## Solar Panel

It is composed of photovoltaic cell modules connected in series and parallel according to system requirements, and converts solar energy into electrical energy output under sunlight. It is the core component of the solar Power system.



## Solar Controller

The solar controller is an automatic control device that can automatically prevent battery overcharge and overdischarge.

## Solar Inverter

The inverter is a device that converts the DC power generated by solar power generation into AC power. Inverters play an important role in maintaining balance in PV systems and can be used in conjunction with general AC power supply equipment.



## Solar Battery

The battery is responsible for storing electrical energy in the solar power system. Generally, there are four major categories which is lead-acid maintenance-free batteries, ordinary lead-acid batteries, gel batteries and alkaline nickel-cadmium batteries.



01

### Solar Power Supply

*Family roof grid connected  
power generation system*



02

### Solar Pump

*Solve the problem of drinking  
water and irrigation in deep Wells  
in areas without electricity.*



03

### Transportation Field

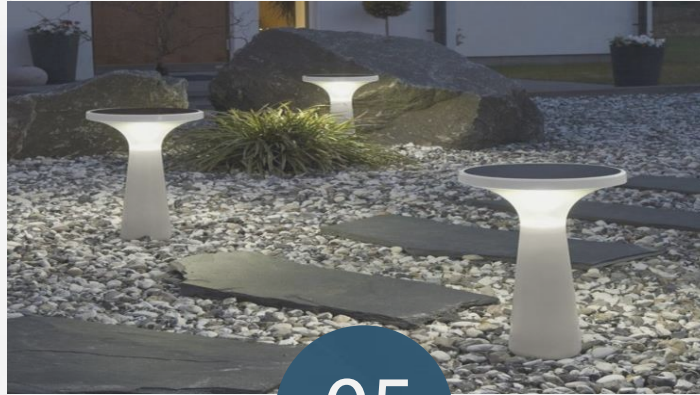
*Traffic lights, railway wireless  
telephone booths, beacon lights  
and other power supply.*



04

### **Oil, Marine Meteorological Field**

*Oil pipeline supply power system, ocean testing equipment, meteorological and hydrological observation equipment.*



05

### **Home Lighting**

*Garden lights, hand lanterns , energy-saving lamps and fishing lights etc.*



06

### **PV Power Station**

*Independent photovoltaic power stations, large parking lot charging stations.*

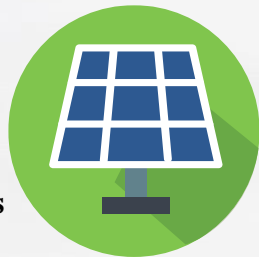


# *PRODUCT INTRODUCTION*

**PART . 03**

## 01 Solar Panel

- 1) Monocrystalline Silicon Solar Panels
- 2) Polycrystalline Silicon Solar Panels
- 3) Thin-film (amorphous silicon) Solar Panels



## 02 Controller

- 1) Solar Charge Controller



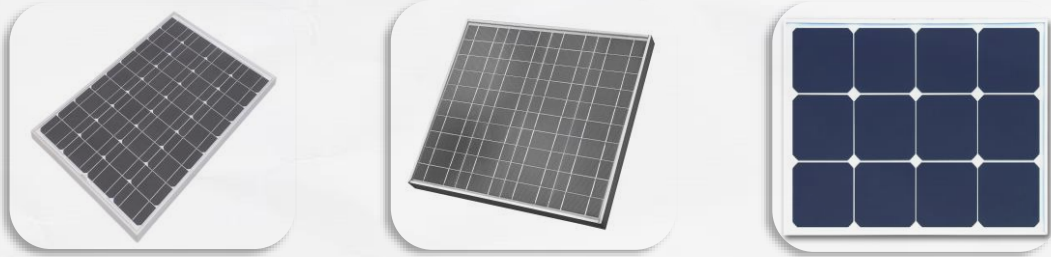
## 04 Battery

- 1) Lead-Acid Battery
- 2) Lead-acid Maintenance-Free Battery
- 3) Colloidal Battery
- 4) Nickel-Cadmium Battery



## 03 Inverter

- 1) Centralized Inverter
- 2) String Inverter
- 3) Microinverters



### *Monocrystalline Silicon Solar Panels*

Monocrystalline silicon solar panels are PV modules composed of monocrystalline silicon cells with high conversion efficiency in a certain way. The photoelectric conversion efficiency will be around 15%-24%, and The power varies from 25W-695W . It is widely used in the field of transportation, solar buildings and solar power supply etc.

### *Polycrystalline Silicon Solar Panels*

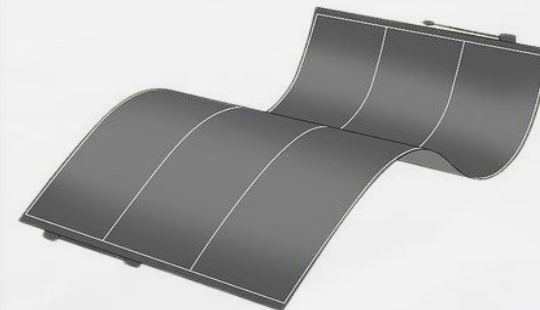
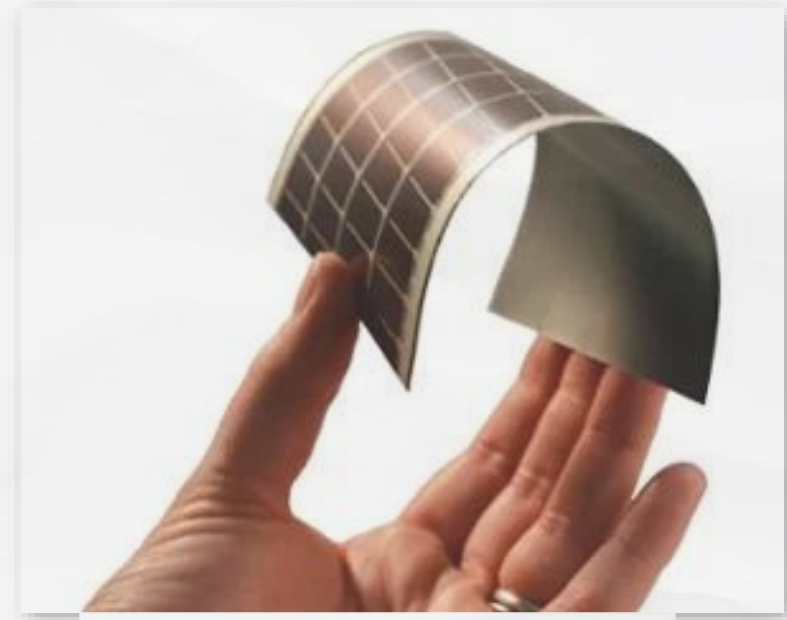
Polycrystalline silicon solar panels are PV modules mainly composed of polycrystalline silicon solar cells in order to meet the demands of different electrical appliances. The power varies with the different arrangement of the solar cells. The power coverage is available from 0.1W to 300W. Generally used in solar power supply, communication field and PV power station etc.



## *Thin-Film (Amorphous Silicon) Solar Panels*

Amorphous silicon thin-film solar panels, also known as microcrystalline silicon solar panels, it's mainly made of a-Si, CIGS, CdTe and other materials. The PV conversion efficiency of thin film solar panels is relatively low, However, due to the simple production process, the manufacturing cost of thin film solar panels is usually lower, hence the price is much cheaper.

The amorphous silicon thin-film solar panels can be laid on any substrate which including the Cheap glass substrate and it also can easily achieve large-scale processing. Therefore, it is generally used in wearable solar devices, buildings and exterior walls and near-earth aircraft etc.





## *Solar Charge Controller*



According to the Circuit mode can be classified into parallel type, series type, pulse width modulation type, multiple control type, two-stage dual voltage control type and maximum power tracking type.

According to the input power and load power can be divided into three types: small power, medium power and large power.



According to the process control mode of dedicated controllers and the discharge power, it can be divided into conventional over-discharge controller and soc discharge full process controller.



## Centralized Inverter

PV inverters are specially used in the field of solar power system, it is also the essential component in PV system. Its function is to convert the DC to AC that can directly on-grid and into the load through power electronic conversion technology. There are three types of inverters available nowadays: centralized inverter, string inverter, and microinverter.

- The centralized inverters are mostly used with high power, the capacity of single unit normally over 500KW.

- High output power with mature technology;  
High quality and low cost.

- Generally suitable for the Large photovoltaic power plants with even and concentrated lighting



## *String Inverter*

- The string inverter mainly used for residential, small industrial and commercial distributed layouts, ground power stations and with other complex layouts etc.

- The capacity of single unit normally between 1.5KW-250KW

- Since each solar panel could be equipped with an independent inverter, Cloudy or pollution will not impact the overall output.





### *Microinverters*

- Mainly used in household and other small power stations, the capacity of single unit normally within 1KW.
- Independent MPPT control can be performed on each component, which can greatly improve the overall efficiency
- Featured with convenient as well as Long service life. Other solar panels can function properly even one of them are out of order.





## *Lead-Acid Battery*

Lead-acid batteries are one of the most common types of rechargeable batteries and are widely used in various fields, including automobiles, motorcycles, UPS (uninterruptible power supply systems), solar systems, marine and industrial equipment. The lead-acid batteries are based on lead-acid chemical reactions to store and release electrical energy. There are multiple options for voltage grades of lead-acid batteries can be varied, common ones include automotive batteries(12V) and industrial batteries(2V).

## *Lead-Acid Maintenance-free Battery*

Lead-acid maintenance-free battery is a special lead-acid battery, which adopts a closed structure and can be used without liquid replenishment.

The internal structure of the battery usually includes components such as positive plates, negative plates, separators and electrolyte. The voltage grade of lead-acid maintenance-free batteries usually ranges from 2V to 12V.



## Colloidal Battery

Colloidal battery is an improvement of ordinary lead-acid battery with liquid electrolyte, replacing sulfuric acid electrolyte with colloidal electrolyte, which improves the safety, power storage, discharge performance and service life compared with ordinary battery.

The performance of colloidal battery is better than that of valve regulated sealed lead-acid battery. Colloidal battery has stable performance, high reliability, long service life, and strong adaptability to the temperature (high or low ). It has the advantages of long-time discharge, cyclic discharge, deep discharge and high current discharge, overcharging and over-discharge self-protection etc.



## Nickel-Cadmium Battery

The Nickel-cadmium battery is a rechargeable battery consisting of nickel-metal hydride cathode and cadmium hydroxide anode. It has the characteristics of high cycle life, high discharge rate and low internal resistance. The standard voltage for Nickel-cadmium battery is 1.2V.

# *COOPERATION PROPOSAL*

**PART . 04**



## 1、 Sales Agency

### Obligations Of The Agency

- 1、 Introduce and promote the Products & services to the Clients
- 2、 Provide the prevailing market, service and other information which useful for the company.
- 3、 Provide and recommend possible & reasonable information and resources.
- 4、 Liaise with the Clients to ensure good relations between the Company and the Client

### Obligations Of The company

1. Provide all information needed from time to time to enable the Agency to fulfil its obligations.
2. Send the most competitive price and product profile from time to time.



## 2、 Local Industrialization

### Local Responsibility

1. Provide land & workshop
2. Manage all the approvals for setting up & operating of the factory
3. Sales & market promotion
4. Other necessary actions for successful operation


### China Responsibility:

1. Provide all the equipment
2. R&D
3. Provide all the technologies
4. Other necessary actions for successful operation



# REFERENCES

**PART . 05**

 CanadianSolar

JA SOLAR

LONGI 隆基

 SUNTECH risen  
solar technology GCL

TrinaSolar

JinKO<sup>Solar</sup> 国家电投 AKCOME  
爱康集团

BOVIET

 海泰新能  
HT SOLAR SHANSHAN GROUP  
杉杉集团 潞安集团  
LU'AN GROUP SG  
南玻集团

YINGLI SOLAR

 中国节能  
CHINA ENERGY CONSERVATION  
GROUP LIMITED TALESUN SERAPHIM<sup>®</sup>  
赛拉弗光伏 BYD vikramSolar Silfab  
SOLAR

JSPV

 PREMIER  
SOLAR

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