

# *Solar Energy*

Renewable energy distribution

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# origin

Solar energy refers to the heat radiation energy of the sun (see one of the three ways of heat energy transmission), and the main manifestation is the sun's rays. In modern times, it is generally used to generate electricity or provide energy for water heaters. Since the birth of life on earth, it has mainly survived by the thermal radiation energy provided by the sun, and since ancient times, humans have also understood that objects such as salt and salted fish can be dried by the sun.



# origin

With the declining fossil fuels, solar energy has become an important part of the energy used by mankind and has been continuously developed. **There are two ways to use solar energy: light-to-heat conversion and photoelectric conversion.** Solar power generation is an emerging renewable energy source.



# Source

Solar energy is the energy produced by the fusion of internal hydrogen atoms to release huge nuclear energy, the radiant energy from the sun. Most of the energy needed by humans in solar power generation systems comes directly or indirectly from the sun. Plants release oxygen and absorb carbon dioxide through photosynthesis, and then convert solar energy into chemical energy for storage in plants.



# nuclear energy

Fossil fuels such as coal, oil, and natural gas are also formed by the evolution of ancient plants and animals buried in the ground after a long geological age. In addition, water and wind energy are also converted from solar energy. The energy contained in the earth itself usually refers to the energy related to the thermal energy inside the earth and the energy related to the nuclear reaction.



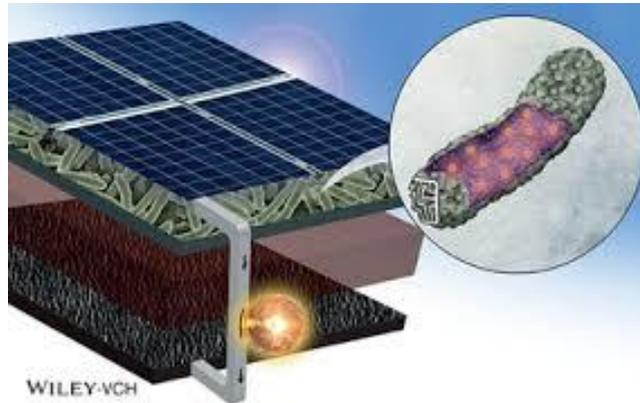
# use solar energy

Light utilization: Light utilization is photovoltaic power generation. Photovoltaic cells are used. Semiconductor materials that absorb photons and release electrons can convert sunlight into electrical energy.

Heat utilization: Using solar thermal energy turbines, it can convert the sun's heat into steam, and then drive the turbines to rotate and generate electricity.



# Solar panel structure diagram



# Solar-advantage

1) Universal: The sun is shining all over the earth, and there is no geographical restriction, whether it is on land or sea, whether it is mountains or islands, it can be directly developed and used without mining and transportation.

2) Harmless: The development and utilization of solar energy will not pollute the environment, it is one of the cleanest energy sources. **Today, when the source of environmental pollution is getting worse, this is extremely valuable.**

# Solar-advantage

3) Huge: The solar radiant energy reaching the surface of the earth every year is equivalent to about 130 trillion tons of coal, and its total amount is the largest energy source that can be developed in the world.

4) Long-term: It is estimated that the current rate of nuclear energy produced by the sun is estimated, and the hydrogen storage is sufficient to last for tens of billions of years, far longer than the life of the earth. In this sense, it can be said that the energy of the sun is inexhaustible.

# Solar-Disadvantage

1) Dispersibility: Although the total amount of solar radiation reaching the surface of the earth is large, the energy flux density is very low. On average, when the weather near the Tropic of Cancer is relatively clear in summer, the solar irradiance is the largest at noon, and the average solar energy received by a 1 square meter area perpendicular to the direction of sunlight is about 1000W. If the average value of day and night is used, it is only about 200W. In winter, the energy flux density is only half that of cloudy days, which is very low. Therefore, in the use of solar energy, in order to obtain a certain conversion power, a large amount of collection and conversion equipment is often required, and the cost is relatively high.

# Solar-Disadvantage

2) Instability: Due to the restriction of natural conditions such as day and night, seasons and altitude, as well as the influence of random factors such as sunny, overcast, cloud, and rain, the solar irradiance reaching a certain ground is both intermittent and extremely inconsistent. Stable, which adds difficulty to the large-scale application of solar energy. In order to make solar energy a continuous and stable energy source, the solar radiant energy during the sunny day is stored as much as possible for use at night or in rainy days. However, energy storage is also one of the weaker links in solar energy utilization.

# Solar-Disadvantage

3) Low efficiency and high cost: The current level of development of solar energy utilization is theoretically feasible in some aspects, and the technology is also mature. However, some solar energy utilization devices have low efficiency and high cost. In general, the economy cannot compete with conventional energy sources. For a considerable period of time in the future, the further development of solar energy utilization will be mainly restricted by economy.

# Canada solar energy

Canadian solar technology is mainly used for space heating, water heating, and non-electric active solar system applications for crop and wood drying. In 2001, there were more than 12,000 residential solar water heating systems and 300 commercial/industrial solar water heating systems in use. By 2025, they may account for 5% of Canada's energy demand.



A landscape featuring a green field, solar panels, and wind turbines under a blue sky with clouds. The text "Thank You" is overlaid in the center.

**Thank You**

<https://baike.so.com/doc/5385351-5621798.html>

<https://www.reuters.com/article/us-solar-env-idUSN2647860720070426>

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