

The prospects of development solar and wind energy in Ukraine

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Анотація

В даній роботі досліджено перспективи розвитку відновних джерел енергії в Україні. Ця робота описує поточний стан ресурсів сонячної і вітрової енергетики і фактори, які впливають на їх подальший розвиток.

Ключові слова: відновлювальна енергія, електроенергія, сонячна енергія, вітрова енергія, електростанція.

Abstract

This work studies the development prospects of renewable energy in Ukraine. This work describes the current state of solar and wind energy sources and factors that affect their further development.

Keywords: renewable energy, electricity, wind energy, solar energy, power plant.

As you know, in recent decades, much attention of the world community is given to alternative and renewable energy. Among alternative sources of energy the most attractive is Sun. People must to take control and maximize the use of flow of solar energy. The full amount of solar energy that comes to the Earth's surface for a week, is more than all the world's energy reserves of oil, gas, coal and uranium. Therefore, the development of solar energy for a long term, is one of the priorities. The most widely solar energy is used in heating systems. This systems work for hot water, heating and other purposes [1].

So, how solar works for you?

1. Solar panels are mounted on your roof and convert sunlight into DC electricity that flows to an inverter
 2. Inverters convert the direct current (DC) power into alternating (AC) power that your home can use.
- How works the solar panel?
1. Photons are absorbed.
 2. Knocking off electrons.
 3. Producing an electrical current.

A world solar energy develops in two ways - photovoltaic solar power plants and thermal solar power plants. Currently there are only plants of the first type in Ukraine. First of all is due to landscape and climate, because, as generally, thermal solar power plant is built on large desert areas in tropical zones. The best conditions for building solar thermal power plants were in the Crimea, but after the annexation of the peninsula by Russia this type of power soon will not appear in Ukraine.

The main elements of photovoltaic stations are solar panels. They consist of a thin films of silicon or other semiconductor material and can convert solar energy into direct electric current.

After the Crimea the most perspective area for solar energy development is south of Ukraine. There amount of solar radiation can be compared to northern Italy, which is the leader by quantity of solar power plants in the world. In addition, the average annual potential of solar energy in Ukraine is higher than in Germany. Germany is a country where solar panels have become very popular even among ordinary people and increasingly have been installing on rooftops. And despite these figures, solar power in Ukraine is not popular. Currently, the most powerful power plant built in the Kherson region (near New Kakhovka planned capacity of 120 MW) Odessa region and Mykolaiv region.

Solar power in Ukraine will develop. Thanks to a special " Feed-in tariff", which operates since 2011, solar energy has become a profitable business that attracted foreign investors. According to statistics, the volume of new solar power stations in 2013 almost doubled compared with 2012. But due to economic and political crisis in Ukraine, the pace of solar energy development may be reduced. And on the other hand solar power could become a source of replacement rather expensive Russian gas [2].

Wind energy has considerable potential . Ukraine has enough territory with constant strong winds.

Even with the higher cost of wind energy (compared to traditionally fossil resources) is economically viable in the steppe (including coastal) and mountainous areas of the country (Odessa, Mykolaiv, Kharkiv, Luhansk and Donetsk region, and mountain regions of the Carpathians and annexed Crimea).

Botievo wind power plant is Ukraine's largest wind power plant, located near the village of Primorsky Posad of Zaporizhia region. Installed capacity of wind power plant is 200 MW. The construction was carried out in two stages: 30 units was launched in 2012 and 35 units was launched in 2014 . The annual average production of electricity is expected to reach 686 million kW • h of electricity per year. Putting the station in operation ensures the necessary electricity south of Zaporizhia region. Botievo WPP is the fifth largest wind power plant in Central and Eastern Europe in 2014 [3].

It is estimated that wind energy could provide Ukraine 15% of total electricity needs.

A wind power is also has a " Feed-in tariff". Due to this only in 2013 the share of wind power is doubled, despite the fact that wind energy is more expensive than solar energy. Despite this rapid development of wind power, its share in the amount of solar energy barely crossed the mark of 1% of the total electricity generation in Ukraine. This number is very small, but it undoubtedly will grow.

To sum up I want to say that Ukraine is a very promising renewable energy market.

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