

USE OF SOLAR POWER PLANTS FOR PRIVATE HOUSES IN UKRAINE AND TURKEY

Boiko M.I., Goktash K.

National Technical University "KhPI", Kharkiv

Given that modern solar panels provide a power density of approximately 150 W/m², solar power plants for an individual residential building cannot yet be considered as the main source of energy for an individual house. However, solar power plants are well suited as a backup source of energy. At any time of the year, they can provide lighting in the house, the operation of computers, various gadgets and other low-power energy consumers. Home heating systems, as one of the most energy-intensive, (especially during the winter months) cannot be provided with energy from solar power plants, since this is currently unprofitable and difficult to implement.

If we compare Ukraine and Turkey in terms of the amount of solar energy that can be used in solar power plants, then Turkey is in a clear advantageous position. It is closer to the equator, the southern Black Sea coast is the border of the northern regions of Turkey, and the northern Black Sea coast is border of the southern regions of Ukraine. Ukraine has about 1.3 times less territory and about half the population than Turkey. In addition, Ukraine has an average of 260 sunny days a year, while Turkey has 300 sunny days a year. In addition, the efficiency of sunny days in Turkey is higher than in Ukraine. Solar power plants in Turkey can operate for a significant time in a mode close to the nominal: i.e. 100% according to the declared capacity of solar panels. In Ukraine, solar panels can provide 90% of the declared power for only a few days a year. In Ukraine, negative (Celsius) temperatures in the winter months are a regularity. In Turkey, there are practically no negative temperatures. Nevertheless, the use of solar power plants in Ukraine as a backup energy source, even in the winter months, is cost-effective.

Turkey is a real Mecca of beach tourism: a pleasant climate, several seas and an abundance of sunshine (up to 300 days a year the hot sun shines here) allows you to relax in this country most of the year.

Turkey is one of the luckiest countries in terms of solar radiation potential in the middle belt. Turkey's monthly average solar energy potential and the distribution of annual total potential by regions put Turkey in first place among European countries along with Spain.

Studies on solar energy have increased in Turkey in recent years. Especially in recent years, there has been a significant increase in using this resource, thanks to the regulations, new incentives, and tax exemptions. However, Turkey yet is not at the desired level in terms of both individual use and production. Countries aware of the importance of this issue have built giant power plants to reduce foreign dependency on energy, despite the large investment cost, and have supported producers for both individual and central use.