

## Photovoltaics vs solar panels

Solar panels convert sunlight into electricity, while photovoltaic (PV) systems include the entire setup<sup>123</sup>.

Solar panels are a key component of PV systems, which offer a comprehensive solution for harnessing solar energy. Understanding their differences can help in making informed decisions about renewable energy investments<sup>123</sup>.

Even though photovoltaic systems and solar thermal collectors have been in widespread use in Poland for quite some time, many prospective investors continue to confuse these two systems that are based on different operating principles. For many people, the popular solar panels and photovoltaics are the same thing - we will explain why this assumption is wrong.

In this article, we will focus on the similarities and - above all - the differences between photovoltaic technology and solar thermal collectors. Find out how the two systems work, learn the secrets of their design and operation, and discover which system is better: solar panels or photovoltaics?

First, we will look at the similarities between photovoltaic panels and solar thermal collectors. Many people confuse them because both solutions are installed on building roofs and at ground level, using structures designed for this specific purpose. Another similarity between the two solutions is that they use solar energy.

This is, however, where the similarities end because solar thermal energy is absorbed by the two systems for completely different purposes. Photovoltaic panels are installed for the conversion of thermal energy into electricity, while solar panels convert solar radiation into heat. This is why these solutions do not compete with each other. Instead, they may complement each other.

You already know what the difference between photovoltaics and solar panels is. Now, it is time to look at the design of the two systems. Solar thermal collectors absorb the solar radiation that reaches the absorber, which transfers energy to the medium, usually a water and glycol solution. The medium supplies the exchanger with heat in the form of hot water. Like photovoltaic systems, the popular solar panels operate most efficiently when the system is directed to the south. However, unlike PV panels, solar thermal collectors feature significant restrictions as they only operate when it is sunny, and this leads to significant heat losses on cold and cloudy days.

At present, there are two basic solar thermal collector types: flat and vacuum. Due to the climate conditions in Poland, both types operate most efficiently from April to the end of October, when the level of insolation is the most intensive.

Flat photovoltaic collectors are somewhat similar to PV panels from the outside because the solar energy

absorber is shaped like a flat metal plate. From the bottom, it is connected with a pipe system, in which the medium that heats the hot water stored in the tank circulates. The foundation of efficient operation of the entire system is adequate thermal insulation, made of mineral wool.

In turn, in vacuum collectors, the absorber is not an integrated whole, but it is divided into components placed in separate vacuum pipes. Each pipe is connected to a bus, in which the heating medium circulates that transfers the heat from the sun to the water stored in the exchanger.

What is stagnation in collectors?

When solar panels have not returned heat to water for a long time, intensive insolation may cause stagnation or leakage. This type of defect does not occur in photovoltaic panels because these are completely different systems.

Contact us for free full report

Web: <https://kary.com.pl/contact-us/>

Email: [energystorage2000@gmail.com](mailto:energystorage2000@gmail.com)

WhatsApp: 8613816583346

