Active solar home vs passive

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Solar power is the world’s fastest-growing renewable source of electricity generation and a crucial component of the transition toward a decarbonized future.

But how does it actually work?

And what"s the difference between passive and active solar energy?

Both active and passive solar power are produced by harnessing the sun"s rays and using them to generate either heat or electricity.

Active solar energy can also refer to systems that use the sun"s heat. But the definition also includes the form of solar power you"re most familiar with. Using solar panels to convert the sun"s energy into household electricity.

Let"s focus on electricity generation first, then move on to passive and active solar heating.

(Source: Energy Education)

Solar energy consists of light and heat generated by nuclear fusion reactions inside the sun. The most frequent modern use of solar energy relies on the photovoltaic effect. Solar power systems capture photons the sun irradiates and convert them into DC electricity.

Photovoltaic (PV) modules -- most commonly solar panels --utilize numerous solar cells under a transparent protective surface like tempered glass to capture the sun"s energy. Solar cells are typically monocrystalline or polycrystalline silicon and conductive metal contacts.

Each solar cell contains two semiconductors -- p-type and n-type. Together, they form a p-n junction to create an electric field and convert solar energy into DC electricity.

The solar cells inside a PV panel capture solar energy. But a portable power station or other balance of system is required to convert the Direct Current produced by solar panels into usable Alternating Current (AC) or "household" electricity.

The above process is what most people think of when they think of "solar power."

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