



Indoor solar photovoltaic panels

Can solar panels be used indoors?

Solar panels are made for outdoor use, but they can work if set up near a window. They can also work under indoor lights, but that's not efficient at all - or useful. However, some sources of indoor lighting have a similar spectrum to that of the sun, making it possible to power solar panels inside.

What is indoor photovoltaics (IPV)?

Indoor photovoltaics (IPV) - sometimes known as indoor solar panels- may seem like a contradictory statement, but this technology shows great potential across many industries. IPV consists of conventional photovoltaic technology but instead of using sunlight to promote conductivity, they use energy from artificial light sources.

Are outdoor photovoltaics suitable for indoor applications?

Photovoltaics used outdoors are chosen to fit the solar spectrum. However, indoors the incident photons are from an artificial light source, with a different spectrum. Therefore, outdoor photovoltaics are not appropriate for indoor applications.

Are indoor solar panels a viable alternative to solar irradiation?

Indoor PV is often controllable and more predictable than solar irradiation, and so the energy usage and capacity can be reliably anticipated. Therefore, this abundant and reliable light source means the opportunities for indoor devices to be powered by photovoltaics are vast.

Will PV panels work indoors?

Most PV is optimized to collect direct sunlight and may not work indoors. Minor material defects and spectral differences can prevent a traditional panel from performing. The chart below shows the indoor performance of Amorphous Silicon (a-Si), Crystalline Silicon (c-Si), and Gallium Arsenide (GaAs).

Are indoor solar panels a sustainable alternative?

Indoor solar panels are particularly appealing for use in small devices. For some applications, powering devices from artificial light sources removes the need for batteries, making IPV-powered devices a more sustainable alternative.

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