

## SolarInnovate Energy Solutions

# Photovoltaic panels power generation efficiency in the south



## Overview

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How to evaluate the power generation and generation efficiency of solar photovoltaic system?

A new method for evaluating the power generation and generation efficiency of solar photovoltaic system is proposed in this paper. Through the combination of indoor and outdoor solar radiation and photovoltaic power generation system test, the method is applied and validated. The following conclusions are drawn from this research.

Should solar panels be oriented west?

Within the solar industry, it's common knowledge that the optimal orientation of solar photovoltaic (PV) panels in the Northern Hemisphere is typically south, to maximize electricity production over the life of the system. Recently, however, there has been much discussion, and even incentives being offered, for orienting PV systems west.

Why is solar PV generation higher in the summer?

Solar PV generation is higher in the summer than the winter due to longer days and the sun being higher in the sky. Figure 4 shows the typical monthly values of solar PV generation for a 2.35kW solar PV system in London which faced 60 degrees from south. From year to year there is variation in the generation for any particular month.

What affects the performance of a solar PV system?

The performance of a solar PV system is affected by shading of the solar panels. This could be from trees or bushes, dirt or leaves on the solar panels, or shadows from chimneys or other buildings.

Do solar panels generate more electricity in the morning?

A south facing solar PV system will tend to generate more around noon. The sun rises in the east and so east-facing PV panels will have maximum

generation part-way through the morning. A west-facing array will tend to generate most electricity part-way through the afternoon as shown to the right.

When does a solar PV system generate more watts?

Figure 1 shows PV generation in watts for a solar PV system on 11 July 2020, when it was sunny throughout the day and on 13 July when there was a mixture of sun and cloud. A south facing solar PV system will tend to generate more around noon.

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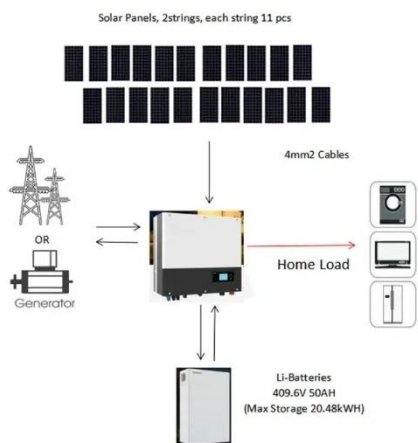


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## An experimental study on determination of optimal tilt and ...

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