

# **Solar Cell and Light System Design**





## Overview

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The paper outlines the concepts and design of an upcoming stand-alone solar photovoltaic system to supply the energy needs of a new proposed business complex.

Why is solar cell design characterization important?

Our solar cells design characterization enables us to perform a cost-benefit analysis of solar cells usage in real-world applications. Sustainable energy demand of twenty-first century comes from green energy production methods like harvesting energy from nature: solar, water, and wind.

How to design and optimize a solar cell structure?

When designing and optimizing a solar cell structure, we use two light-trapping methods: light-trapping BR layer and nano-texturing. Metals like silver (Ag) maybe used as a BR layer, while alkaline solutions like KOH or NaOH are used for nano-texturing of layer's interfaces.

What is the structure of a solar cell?

The solar cell structure in Fig. 1 is a layer-wise composition. The layers are designed by varying the mentioned four categories of variations (cf. Table 2). Each design, therefore, requires approximation of its layer interface roughness  $\sigma$  that maximizes its quantum efficiency and minimizes its fabrication cost.

Can a stand-alone solar photovoltaic system supply a new business complex?

Provided by the Springer Nature SharedIt content-sharing initiative The paper outlines the concepts and design of an upcoming stand-alone solar photovoltaic system to supply the energy needs of a new proposed business complex. The purpose of this study is to develop a prediction method for the use of solar energy for commercial purposes.



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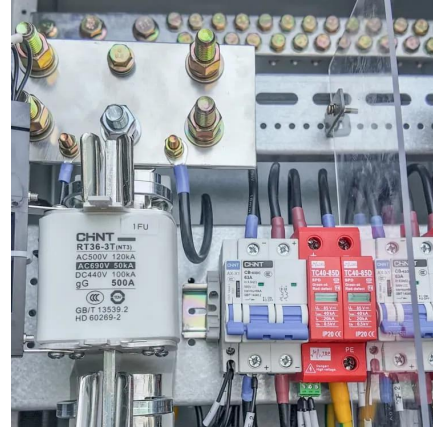


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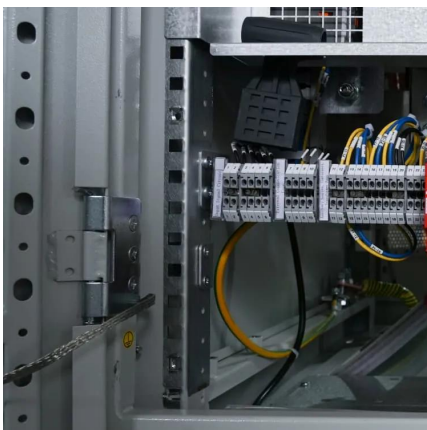


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The system consists of solar cell components (including brackets), LED lights, control box (including controller and battery) and lighting poles to ...



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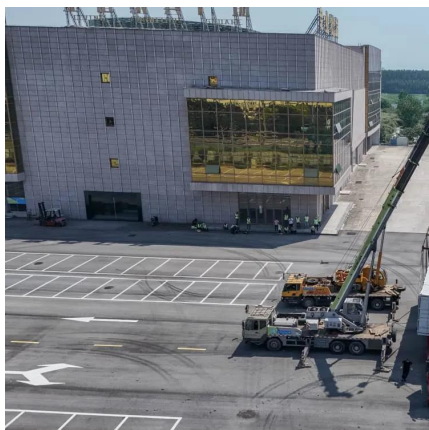
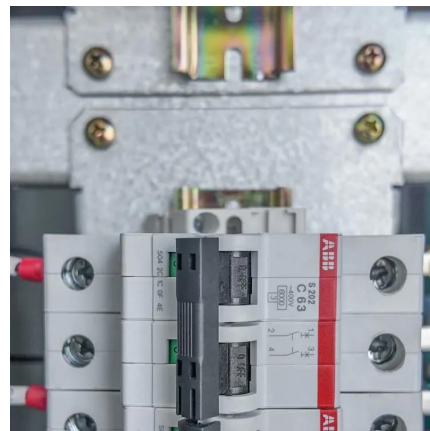


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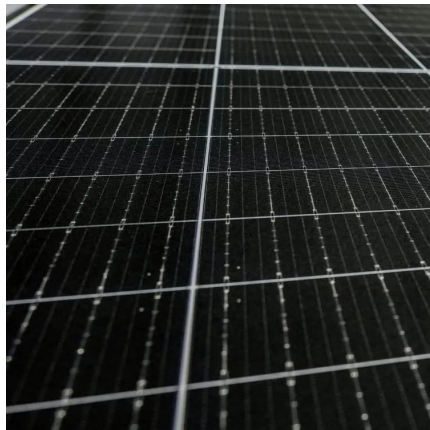
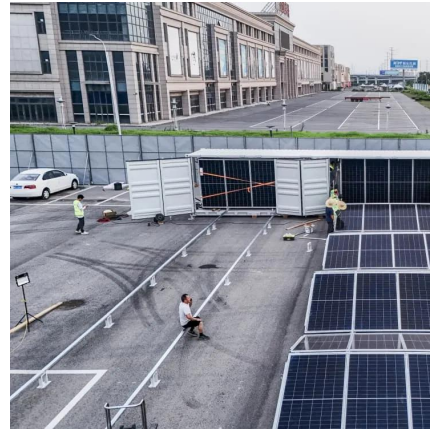
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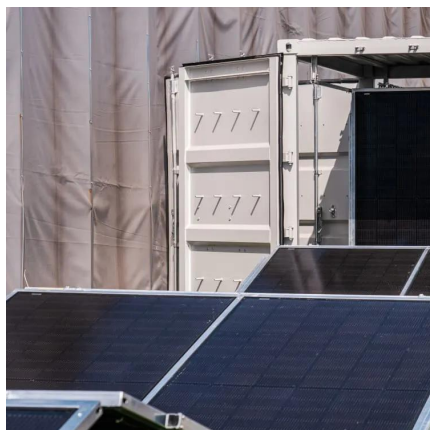


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