

# Prospects of solar power generation in high-rise buildings

Do high-rise buildings use solar energy?

This kind of energy conservation might be meaningfully reached in high-rise building design. In order to evaluate high-rise buildings in terms of solar energy use, the author analyzes the case studies from both passive solar strategies and active solar technologies' aspects.

Why is solar energy important in building design?

Buildings account for a significant proportion of total energy consumption. The integration of renewable energy sources is essential to reducing energy demand and achieve sustainable building design. The use of solar energy has great potential for promoting energy efficiency and reducing the environmental impact of energy consumption in buildings.

How will energy technology affect high-rise buildings?

Photovoltaic power generation systems will be more widely installed on roofs, walls, and even windows of buildings, and wind power plants may become a part of high-rise buildings. Geothermal energy technology will play a greater role in heating and cooling.

Can high-rise buildings gain solar radiation?

Finally, high-rise buildings have great potential to gain solar radiations because of their vast facades. Analyzing case studies illustrate that applying solar passive strategies in high-rise buildings have a meaningful effect on reducing the total annual cooling and heating energy demand.

Do solar building systems contribute to energy and environmental problems?

Due to the significant role that buildings play in overall energy consumption, the application and promotion of solar building systems contribute to the solution of energy and environmental problems. The following conclusions have been drawn.

What are the benefits of integrating solar energy into a building?

Perspectives comprise self-sufficiency, microgrids, carbon neutrality, intelligent buildings, cost reduction, energy storage, policy support, and market recognition. Incorporating wind energy into buildings can fulfill about 15% of a building's energy requirements, while solar energy integration can elevate the renewable contribution to 83%.

This study proposes the idea of extracting electric power from falling water in high-rise buildings. A 15 m high building is considered for the study, having sufficient water head to run a micro ...

One project was conducted in India to investigate the practicality of the potential hydropower generation from wastewater in high rise buildings, while this technology can only ...

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Originality/value The first identified and quantified prospects and restraints for green roof system in Sri Lankan high-rise buildings can be utilized by the government, donors, ...

Photovoltaic power generation systems will be more widely installed on roofs, walls, and even windows of buildings, and wind power plants may become a part of high-rise buildings. ...

(6) Nuclear power cannot be safely implemented in cities with high population densities. Given the above reasons, solar energy is the only renewable energy source with the potential to impact ...

PDF | On Jan 1, 2021, Jibsam F. Andres and others published Energy Equivalent of Rainwater Harvesting for High-Rise Building in the Philippines | Find, read and cite all the research you ...

In Union Budget 2023-24, INR 7,327 Cr was allocated for the solar power sector, including grid, off-grid and PM-KUSUM projects, a 48% increase over the previous year. India's solar power sector is a sunshine ...

impacts that high-rise buildings can have on various aspects of urban development in the country. 1. Increased Housing Capacity: One of the primary prospects of high-rise buildings in Nigeria ...

The production and consumption of energy must be converted to renewable alternatives in order to meet climate targets. During the past few decades, solar photovoltaic systems (PVs) have become increasingly popular ...

This increased efficiency has driven down the cost of solar power, making it more accessible to a broader audience and contributing to the widespread adoption of solar energy worldwide. ... a potentially critical ...

The present review provides an overview of the present status of solar power generation and a high-penetration scenario for the future growth of solar energy. ... India is ...

Solar thermal systems for large high rise buildings in Malaysia Y. H. Yau<sup>1</sup>, W. C. Chan<sup>1</sup> and C. W. F. Yu<sup>2</sup> Malaysia and Southeast Asia in general, is a very suit-able region for implementing ...

The building sector is significantly contributing to climate change, pollution, and energy crises, thus requiring a rapid shift to more sustainable construction practices. Here, we review the ...

The authors propose a system that naturally reacts to climatic conditions and analyse the power generation, natural light availability and heat transfer from the system to the building structure ...

The purpose of the paper is to evaluate the shadow impact factor of buildings on building-integrated photovoltaic (BIPV) system efficiency and to determine optimal building configurations:...

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