

Are solar irradiation resources and BIPV potential of residential buildings in China?

Based on the developed mathematical model, this paper assesses the solar irradiation resources and BIPV potential of residential buildings in different climate zones of China. It is found that roofs are the first choice for BIPV installation, followed by south facades, especially in high-latitude cities, and then east and west facades.

Can solar water heating systems be integrated design in high-rise apartments?

This paper discusses the applicability of solar water heating systems integrated design in typical high-rise apartments in China from such aspects as architectural facade, architectural plane and detailed construction in the planning and designing phase, based on the investigation on current situation and demonstration projects.

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What are the types of residential buildings in China?

The dominant type of residential buildings in China is high-rise apartment. By contrast, single family house, townhouse and multi-storied apartment are common in Europe and North America.

Are Hong Kong's high-rise residential buildings symmetrical?

tion from the street level to the rooftops. And yet, the vast majority of Hong Kong's high-rise residential buildings are symmetrical in plan, repetitive in section & elevation, and wholly dependent upon mechanical systems for thermal comfort - thus ignoring the environmental potentials and variat

What is distributed PV development in China?

Wang et al. (2021) identified the distributed PV development at the city level in China, considering the solar irradiation and available land area. They pointed out that residential land occupied one-third of the potential PV land, and has a higher potential/demand ratio due to its lower power demand.

Why do low-rise residential buildings emit more solar radiation?

This disparity can be explained by the minimal shading impact between buildings in low-rise residential blocks, leading to increased solar radiation above the threshold on building surfaces and thus an overall boost in the solar radiation potential.

With the development of urbanization in China, more and more high-rise residential buildings are constructed, mostly with 10-15 stories. Solar water heating system has been widely used in low ...

Building-integrated solar water heating (SWH) systems are effective ways to use renewable energy in buildings. Impediments, such as security concerns, aesthetics and ...

With the development of energy-saving and emission-reduction, solar energy as a clean energy with excellent

characteristics has bright prospects for development and application in residential environment with high energy consumption. With the intensification of land use, there are more and more high-rise residential areas in the city. If the residential construction ...

The Climate-Responsive High-rise Housing research project explores sustainable environmental design strategies and policy recommendations for high-rise residential buildings in high ...

In this paper, high-rise residential buildings in the cities of Xi'an and Yulin, which have differences in solar radiation, in the western solar enrichment area of China are taken as the research objects. The four objectives of building energy consumption, thermal comfort, life-cycle cost, and life-cycle carbon emissions are weighed using the SPEA-2 algorithm by adjusting ...

"Sustainable design solutions for residential high-rise building" The primary search resulted in a total of 210 studies: 76 on Scopus, 110 on Web of Science and 24 from the researchers "personal archives. The next step was to remove similar studies in a screening process. Only studies on sustainability of residential high - rise buildings relating to at least one of the environmental ...

This paper, focused on high-rise residential buildings located in two areas of Northwestern China with different solar radiation, introduces a multi-objective optimization method, which was implemented through the Grasshopper simulation and optimization platform coupled with a TOPSIS method to find the optimal design solution that minimized the ...

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Integrated Photovoltaics (FIPV) is a promising strategy to deploy solar energy in the built environment and to achieve the carbon-neutral goals of society.

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Table 1 displays the architectural layout of the typical existing high-rise residence communities using solar water heating systems in China. Note that, the distance between the buildings...

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In this paper, the current application situation of solar water heating system in urban residential buildings of China is investigated. Additionally, demonstration projects of high-rise ...

China Solar Residential High-Rise Design

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Building-integrated solar water heating (SWH) systems are effective ways to use renewable energy in buildings. Impediments, such as security concerns, aesthetics and functionality, make it...

Improving building energy systems is a major research hotspot due to the rising demand for indoor comfort and buildings" increasing energy consumption. The research object in this work is a high-rise residential building in Nanjing. The photovoltaic system and ground source heat pump system are introduced into the traditional cooling and ...

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