Analysis of solar energy utilization in green buildings

Decarbonizing the building sector is key to meet the EU climate goals by 2050. Although the recent policies recognized the importance of on-site solar energy production in the energy transition ...

The use of green energy-saving technology in construction projects, utilizing new energy technologies such as solar and wind energy, can reduce the overall energy consumption of buildings, and green energy-saving construction technology for doors and windows has also been applied (Siew et al. 2019).Green building technology has become one ...

Buildings consume about 40% of the global energy. Therefore, the building sector plays a key role in achieving the goals of carbon peak and carbon neutrality. Various energy-saving technologies for buildings, such as building envelops, mechanical systems, and energy resources, have been developed to help to achieve zero- or even net-energy buildings while ...

Worldwide, the building sector accounts for about 27 % of the overall energy consumption and 17 % of the total carbon dioxide (CO 2) emissions [1] developing countries, the residential sector accounts for about 35 % of the total energy demand, while the developed nations, it accounts for about 20 % [2].Buildings are responsible for approximately 40 % of primary energy demand, ...

Experiments show that this method can effectively collect relevant data of green buildings and establish a BIM model of solar energy utilization system; this method can effectively design the solar energy utilization system of green buildings; the solar energy utilization system designed ...

The depletion of global resources has intensified efforts to address energy scarcity. One promising area is the use of solar photovoltaic (PV) roofs for energy savings. This study conducts a comprehensive bibliometric analysis of 333 articles published between 1993 and 2023 in the Web of Science (WOS) core database to provide a global overview of research on ...

In dense, energy-demanding urban areas, the effective utilization of solar energy resources, encompassing building-integrated photovoltaic (BIPV) systems and solar ...

Status and trend analysis of solar energy utilization technology. T Q Sun, D L Cheng, L Xu and B L Qian. Published under licence by IOP Publishing Ltd IOP Conference Series: Earth and Environmental Science, Volume 354, 2019 International Conference on New Energy and Future Energy System 21-24 July 2019, Macao, China Citation T Q Sun et al ...

A total of 30 papers have been accepted for this Special Issue, with authors from 21 countries. The accepted

papers address a great variety of issues that can broadly be classified into five categories: (1) building integrated photovoltaic, (2) solar thermal energy utilization, (3) distributed energy and storage systems (4), solar energy towards zero-energy ...

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The framework proposed in this study mainly consists of three steps (Fig. 2): (1) based on the SHORTWAVE-C model proposed by Huang et al. (2015), we modified the model by adding a grid scheme to speed up the efficiency; (2) extracting rooftops and detecting rooftop types by a new quadrant-based segmentation method; (3) after applying two solar energy ...

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