Optimization design of photovoltaic bracket

Save construction materials, reduce construction cost, provide a basis for the reasonable design of PV power plant bracket, and also provide a reference for the structural design of fixed ...

???: ????, ???, ?????, ??, ??, ??? Abstract: For the fixed photovoltaic brackets, finite element simulations were carried out by using the experimental material properties and three-dimensional linear open beam elements.The accuracy of finite element simulation was verified by a simple beam based on actual measurement.

Abstract: In order to study the mechanica properties of the fixed photovoltaic bracket and its failure under wind load, the full-scale photovoltaic bracket specimen was designed and the destructive test was carried out by means of static loading. Through simulation and mechanical analysis, the design suggestions for the fixed photovoltaic support are given.

Different design methods of solar photovoltaic brackets can make solar modules make full use of local solar energy resources, so as to achieve the maximum power generation efficiency of solar modules.Moreover, the different materials, assembly methods, bracket installation angles, wind loads and snow loads of solar photovoltaic brackets can greatly ...

The process of optimization involves the selection of an appropriate optimization type, as well as the delineation of design and non-design areas represents the first step in topology optimization, as shown in Fig. 3. The design areas for the entire bracket are selected, with the exception of areas used for assembly and direct loading, such as the hole region and ...

Mechanical analysis and design optimization of 76 m~2 solar photovoltaic system bracket structure. Jilin University; 2016. Google Scholar [23] Tao HX, Wang XD, Wei ZL, Dai HL. Research and application of structural design of new photovoltaic square array bracket. Journal of Baotou Vocational and Technical College. 2020; 21 (4): 6. Google Scholar

SHAN H J, JIANG K S. Fixed photovoltaic bracket design [J]. Heilongjiang Science and Technology Information,2011(19): 25. [3] ... YANG T, FAN J C, LIU R H,et al. Design and optimization of solar photovoltaic bracket based on finite element method [J]. Journal of Jilin Institute of Chemical Technology,2016,33(3): 39-44.

This work improves our previous stress-constrained topology optimization method (Fan et al., in Struct Multidisc Optim 59:647-658, 2019) and provides an application of the improved method to a typical aircraft engine bracket design problem. The original method was built upon the bi-directional evolutionary structural

optimization (BESO) method with an ...

by increasing the thickness of the bracket steel plate and the number of connection points. The simulation results demonstrate that the stiffness of the optimized bracket enhances the design requirements. Consequently, this research provides a theoretical basis for the design and optimization of the bracket structure.

In recent years, the advancement of photovoltaic power generation technology has led to a surge in the construction of photovoltaic power stations in desert gravel areas. However, traditional equal cross-section ...

The project proposes to carry out the design derivation of the PV bracket structure scheme, and after selecting the optimal design scheme, focus on the calibration analysis of the main ...

widely used as a type of photovoltaic bracket system. Keywords: Photovoltaic power generation, ... can the local abundant solar energy resources be effectively utilized, but it also has a positive effect on ... According to the "Design Specification for Photovoltaic Support Structures" NB/T10115-2018, the body shape coefficient is taken as 0.8. ...

Considering the recent drop (up to 86%) in photovoltaic (PV) module prices from 2010 to 2017, many countries have shown interest in investing in PV plants to meet their energy demand. In this study, a detailed ...

[Method] This paper optimized the design of bracket inclination, component arrangement and bracket foundation selection. Through PKPM modeling and calculation, the paper emphasized ...

In this work, the development of an aircraft bracket through the laser powder bed fusion (LPBF) additive manufacturing process is presented. The numerical model developed in this study is employed to predict thermal stresses and displacement of parts throughout the additive manufacturing process. To achieve a reduction in volume and, subsequently, the ...

In order to achieve the effective use of resources and the maximum conversion rate of photovoltaic energy, this project designs a fixed adjustable photovoltaic bracket structure which is easy to adjust and disassemble, and compares the advantages and disadvantages of existing photovoltaic brackets in actual use, proposes an innovative and optimized design, and ...

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