

The wind-induced response and vibration modes of the flexible photovoltaic (PV) modules support structures with different parameters were investigated by using wind tunnel based on elastic test model. The results show that 180° is the most unfavourable wind direction for the flexible PV support structure. For double-cable flexible PV supports,

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In order to study the wind-induced vibration response characteristics and mechanism of the double-cable support photovoltaic module systems, and further discuss the stiffness control criterion. The wind-induced vibration response of a new type of cable-truss support photovoltaic module system with a span of 35m is studied through the aeroelastic wind tunnel test.

The (4), (5) are quantitatively applicable for the double-layer cable structures with similar lateral connectors and geometry, because the shielding effects on the wind load keep the same only when the PV module arrays have the same geometry. However, they are qualitatively applicable for the double-layer cable structures with different lateral connectors ...

The traditional new Austrian tunneling method (NATM) is inadequate for handling the excavation and support of deep soft-rock tunnels with significant deformation. Therefore, new steel structures and materials are needed to effectively manage such complex conditions. This study utilizes the coupling technology of negative Poisson's ratio (NPR) ...

Tension and Deformation Analysis of Suspension Cable of Flexible Photovoltaic Support under Concentrated Load with Small Rise-span Ratio, Fangxin Jiang, Renjie Shang, Yue Sun. ... The suspension cable structure with a small rise-span ratio (less than 1/30) is adopted in the flexible photovoltaic support, and it has strong geometric nonlinearity

Cable-supported photovoltaic systems (CSPSs) are a new technology for supporting structures that have broad application prospects owing to their cost-effectiveness, light weight, large span, high ...

There are, however, few studies concerned with the aeroelastic vibration of PV structures under the tension cable support system. Tamura et al. [14] studied the aerodynamic instability of a cable-supported solar system using wind tunnel experiments and found that vertical vibration is closely dependent on sag, wind speed, and

azimuth, and cable sudden collapse ...

the chemical modification of the polymeric structure: a double-cable material is obtained by linking the EA group to the end of the side chains linked to the polyconjugated back- bone [

The initial morphology of the double-layer cable truss flexible photovoltaic support is optimized, and the optimization results of different deflection deformation limits and whether the lower ...

The umbrella ribs only provide open support for the cable net, so designing the geometric shape and the internal tension of the umbrella cable-net structure is complex. This paper suggests several double-layer cable-net structures for a deployable umbrella reflector. First, a typical composition of the umbrella reflector was introduced and the ...

Baumgartner et al. (2008, 2009, 2010, 2013a, 2013b) first introduced the cable supported PV structure system to solve the above problems. Compared with the traditional fixed PV support, this type of structure has more advantages, including larger span, higher terrain adaptability and lower cost. Some researchers have focused on the static ...

Semantic Scholar extracted view of &quot;Prestress design and geometric correction method of cable-truss structures based on equivalent equilibrium force model&quot; by Xuanzhi Li et al. ... Analytical Formulation and Optimization of the Initial Morphology of Double-Layer Cable Truss Flexible Photovoltaic Supports ... 2024; With the rapid development ...

Accurate photovoltaic (PV) power prediction is critical for PV power plant safety and stability. The main restrictions influencing the accuracy of the PV power forecast are the variability and intermittency of solar energy. Therefore, this study proposes a hybrid deep learning model for PV power forecast that is successfully developed using the combination of the ...

The dynamic characteristics of the cable-truss flexible photovoltaic support system and the double-layer cable-supported flexible photovoltaic support system are compared. The component cable of the cable-support flexible photovoltaic support system is horizontal state, and the stability cable deflection-span ratio is 1/15 (figure. 3).

Traditional rigid photovoltaic (PV) support structures exhibit several limitations during operational deployment. Therefore, flexible PV mounting systems have been developed. These flexible PV supports, characterized by ...

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