Prestressed photovoltaic support tube

What is cable-supported photovoltaic (PV)?
Cable-supported photovoltaic (PV) modules have been proposed to replace traditional beam-supported PV modules. The new system uses suspension cables to bear the loads of the PV modules and therefore has the characteristics of a long span,light weight,strong load capacity,and adaptability to complex terrains.

What is a new cable supported PV structure?
New cable supported PV structures: (a) front view of one span of new PV modules; (b) cross-section of three cables anchored to the beam; (c) cross-section of two different sizes of triangle brackets. The system fully utilizes the strong tension ability of cables and improves the safety of the structure.

What is a PV support structure?
Support structures are the foundation of PV modulesand directly affect the operational safety and construction investment of PV power plants. A good PV support structure can significantly reduce construction and maintenance costs. In addition,PV modules are susceptible to turbulence and wind gusts,so wind load is the control load of PV modules.

How many cables does a PV system use?
However,most of the traditional cable-supported PV systems use only two cablesto support the PV modules. The settlement of the support cables due to self-weight of PV modules always reduces their power generation efficiency. Therefore,it is necessary to make a reasonable design to flatten the structures.

How are PV modules installed?
The PV modules are directly installed on the upper load-bearing cables(Cables 1 and 2). The pretensioned cable is referred to as Cable 3. The load-bearing cables transmit the self-weight of the PV modules and the cables to the lateral beam. The beam transmits the loads to the columns.

How is a PV module fixed?
The PV module is fixed on Cables 1 and 2 by using back-fasteners. The maximum stress is calculated as 6.60 × 10 7 N/m 2 at the four nodes connecting the load-bearing cables and the PV module. Similar results are observed in Case 180°,as shown in Fig. 13 (b).

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 ...

The prototype structure of the flexible PV support adopted in this study is shown in Fig.1. The height of the columns is 6 m. The span of the flexible PV support is 33 m, which is consisted of ...

In this study, a novel type of loading strut device is presented, which is introduced in portal frame external

prestressing reinforcement and used to constitute a cable-supported ...

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(PV) module is a packaged, and connected photovoltaic solar cells assembled in an array of various sizes. Photovoltaic modules constitute the photovoltaic array of a photovoltaic system ...

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Flexible support has a very wide range of application scenarios, similar to sewage treatment plants, agricultural light complementary, fishing light complementary, mountain photovoltaic, ...

Prestressed concrete-filled steel tube (CFT) truss girders usually consist of CFT chords, hollow steel tube braces, and high-strength prestressing strands. This paper ...

The invention discloses an arch-supported flexible photovoltaic support structure, and a flexible photovoltaic support system comprises: the foundation structure is used as a supporting ...

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