

What is a large-span flexible PV support structure?

Proposed equivalent static wind loads of large-span flexible PV support structure. Flexible photovoltaic (PV) support structure offers benefits such as low construction costs, large span length, high clearance, and high adaptability to complex terrains.

How much vertical displacement should a flexible PV support have?

This is close to $1/100$ of the span of the flexible PV support structure. Until now, there are no particular regulations on the deformation of the flexible PV supports. In the design of these structures, the extreme vertical displacement less than $1/100$ of the span was often used.

Do stability cables improve wind-induced and critical wind speed of flexible PV support structure?

Liu et al. investigated on the wind-induced and critical wind speed of a 33-m-span flexible PV support structure by means of wind tunnel test on the elastic model. The effectiveness of three different types of stability cables on enhancing the critical wind speed of the flexible PV support structure was assessed.

What is the structure of flexible PV support?

The structure of the flexible PV support adopted in this study is shown in Fig. 1. The height of the columns is 6 m, and the center-to-center spacing between two adjacent rows of PV modules is 3.5 m. The span of the flexible PV support is 33 m, which is consisted of 28 PV modules.

What is the wind load of a PV support?

The wind load is the most significant load when designing a PV support; thus, its value and calculation should be investigated. Different countries have their own specifications and, consequently, equations for the wind loads of PV supports.

What is the inclination angle of the flexible PV support?

The span of the flexible PV support is 33 m, which is consisted of 28 PV modules. The inclination angle between the PV modules and the horizontal plane is 15° , and the PV modules are mounted on two steel cables C1 and C2. Furthermore, steel cable C3 is set to reduce the vertical deformation under the actions of wind and snow loadings.

Due to the limitation of the traditional rigid ground photovoltaic support, a long-span flexible photovoltaic support structure composed of the prestressed cable system is being used more ...

Flexible photovoltaic support arrangement (single span) Figure 2. Flexible photovoltaic power station on sewage tanks (5-span continuous) Figure 3. Single cable and load. Figure 4. ...

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In this paper, we mainly consider the parametric analysis of the disturbance of the flexible photovoltaic (PV) support structure under two kinds of wind loads, namely, mean ...

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. Based on ...

Flexible photovoltaic (PV) modules support structures are extremely prone to wind-induced vibrations due to its low frequency and small mass. Wind-induced response and critical wind ...

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(1) Background: As environmental issues gain more attention, switching from conventional energy has become a recurring theme. This has led to the widespread development of photovoltaic (PV) power generation ...

The displacement time-history curves of the large-span flexible PV support array at different wind speeds under 0°; and 180°; wind direction angles are shown in Fig. 10 and Fig. ...

