

Do flexible PV support structures deflection more sensitive to fluctuating wind loads?

This suggests that the deflection of the flexible PV support structure is more sensitive to fluctuating wind loads compared to the axial force. Considering the safety of flexible PV support structures, it is reasonable to use the displacement wind-vibration coefficient rather than the load wind-vibration coefficient.

What is a flexible PV mounting structure?

Flexible PV Mounting Structure Geometric Model The constructed flexible PV support model consists of six spans, each with a span of 2 m. The spans are connected by struts, with the support cables having a height of 4.75 m, directly supporting the PV panels. The wind-resistant cables are 4 m high and are connected to the lower ends of the struts.

How safe are flexible PV brackets under extreme operating conditions?

Safety Analysis under Extreme Operating Conditions For flexible PV brackets, the allowable deflection value adopted in current engineering practice is 1/100 of the span length. To ensure the safety of PV modules under extreme static conditions, a detailed analysis of a series of extreme scenarios will be conducted.

Which wind-vibration coefficient should be used for flexible PV support structures?

Considering the safety of flexible PV support structures, it is reasonable to use the displacement wind-vibration coefficient rather than the load wind-vibration coefficient. For the flexible PV arrays with wind-resistant cables discussed in this study, a recommended range for the wind-vibration coefficient is 1.5 to 2.52.

Why are flexible PV mounting systems important?

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 their heightened sensitivity to wind loading, necessitate a thorough analysis of their static and dynamic responses.

Does a flexible PV support structure exhibit a consistent response trend?

However, for mid-span acceleration, the wind suction condition results in greater values than the wind-pressure condition. Overall, it can be concluded that the flexible PV support structure exhibits a consistent response trend under both wind-suction and wind-pressure conditions. Figure 10.

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