

Research on wind vibration of flexible photovoltaic bracket

How wind induced vibration response of flexible PV support structure?

Aeroelastic model wind tunnel tests The wind-induced vibration response of flexible PV support structure under different cases was studied by using aeroelastic model for wind tunnel test, including different tilt angles of PV modules, different initial force of cables, and different wind speeds.

Does wind-induced vibration affect a cable-supported PV module?

Therefore, both aeroelastic and rigid model wind tunnel tests were conducted to investigate the wind-induced vibration (WIV) characteristics of a typical cable-supported PV module. The effects of module tilt angle, cable pre-tension, and wind speed on the vertical displacement response and the aerodynamic damping were evaluated.

Are flexible PV support structures prone to vibrations under cross winds?

For aeroelastic model tests, it can be observed that the flexible PV support structure is prone to large vibrations under cross winds. The mean vertical displacement of the flexible PV support structure increases with the wind speed and tilt angle of the PV modules.

What is the wind vibration coefficient of flexible PV support structure?

The wind vibration coefficients in different zones under the wind pressure or wind suction are mostly between 2.0 and 2.15. Compared with the experimental results, the current Chinese national standards are relatively conservative in the equivalent static wind loads of flexible PV support structure.

What is wind-induced vibration in flexible PV support systems?

Wind-induced vibration (WIV) in cable-supported systems plays a critical role in determining structural safety. Research related to wind-induced vibration in flexible PV support systems is still relatively limited.

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.

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