

Photovoltaic support vibration

Does wind-induced vibration affect flexible PV supports?

Discussion The wind load is a vital load affecting PV supports, and the harm caused by wind-induced vibration due to wind loads is enormous. Aiming at the wind-induced vibration of flexible PV supports, a PV building integration technology [86, 87] was proposed to reduce the harm caused by wind vibration.

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.

Can a PV building integration technology reduce wind-induced vibration?

Aiming at the wind-induced vibration of flexible PV supports, a PV building integration technology [86, 87] was proposed to reduce the harm caused by wind vibration. PV building integration (Figure 18) is a technology that integrates solar power generation products into buildings.

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.

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.

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.

Research related to wind-induced vibration in flexible PV support systems is still relatively limited. He et al. [2] conducted wind tunnel tests to simulate wind-induced vibration in ...

photovoltaic module were investigated using finite element simulation techniques. The wind vibration coefficients of the photovoltaic modules with a tilt angle of 10°; were estimated from. ...

Semantic Scholar extracted view of "Analysis of wind-induced vibration effect parameters in flexible

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cable-supported photovoltaic systems: A case study on ground anchor ...

The tracking photovoltaic support system is a distinctive structure that adjusts its inclination to maximize energy yield and exhibits significant aeroelastic behavior, akin to long-span bridges ...

(3) Conclusions: According to the particularity of the PV support structure, the impact of different factors on the PV support's wind load should be comprehensively considered, and a more ...

As for flexible PV support, only Estephan et al. [20] carried out a preliminary analysis for the possibility of extreme wind pressure and support damage of single-span single ...

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 ...

Xie and Fan focused on the natural vibration characteristics of the cable of the pre-stressed flexible PV support system, as well as wind-induced vibration. It shows that, when adding the pre-stressing force, the natural ...

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