

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.

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.

What is a unified wind-induced vibration coefficient?

Currently, the design principle is to use a unified wind-induced vibration coefficient for deformation and load-bearing capacity or strength verification, and the same values are adopted for wind-induced vibration coefficients at different wind direction (positive and negative wind).

What is wind induced vibration coefficient U?

The wind-induced displacement and force responses are assumed to follow a Gaussian process. Based on the Gust Loading Factor (GLF) method theory, the wind-induced vibration coefficient, u , also known as the wind dynamic amplification effect, represents the ratio of the peak response to the mean response.

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.

Do fixed PV supports have a wind-induced response?

While there is substantial research on the wind-induced response of fixed PV supports, encompassing rooftop and ground-mounted systems, Numerical CFD simulations and experimental research have been conducted by several researchers, to investigate the wind field and wind-induced response of PV supports system.

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