

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.

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.

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.

How does wind pressure affect a flexible PV support structure?

When the flexible PV support structure is subjected to wind pressure, the maximum of mean vertical displacement occurs in the first rows at high wind speeds. The shielding effect greatly affects the wind-induced response of flexible PV support structure at $\alpha = 20^\circ$.

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 a flexible photovoltaic (PV) system?

Author to whom correspondence should be addressed. Photovoltaic (PV) system is an essential part in renewable energy development, which exhibits huge market demand. In comparison with traditional rigid-supported photovoltaic (PV) system, the flexible photovoltaic (PV) system structure is much more vulnerable to wind load.

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 ...

Response of Flexible Support Photovoltaic System Fubin Chen ^{1,2}, Yuzhe Zhu ², Weijia Wang ², Zhenru Shu ^{3,*} and Yi Li ²
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Double-row flexible photovoltaic support is a new type of structure that has excellent site adaptability and cost-effectiveness. However, methods for calculating wind loads ...

The model of vector form intrinsic finite element was established for the dynamic analysis of novel cable-suspended photovoltaic module support structures (CPMSS), and the characteristics of ...

Flexible photovoltaic (PV) support structures are limited by the structural system, their tilt angle is generally small, and the effect of various factors on the wind load of flexibly ...

This paper analyzes the wind pressure distribution characteristics of large-span flexible PV support arrays using self-designed rigid body pressure measurement wind tunnel ...

Solar photovoltaic bracket is a special bracket designed for placing, installing and fixing solar panels in solar photovoltaic power generation systems. The general materials are aluminum ...

Wind loading is a crucial factor affecting both fixed and flexible PV systems, with a primary focus on the wind-induced response. Previous studies have primarily examined the ...

In this paper, the new flexible photovoltaic support structure is summarized, and the related research articles on the structural design model and wind-induced effect of the flexible ...

Buildings 2024, 14, 1677 3 of 23 2.2. Model Overview In this study, the flexible support PV panel arrays under flat and mountainous con-ditions consist of 8 rows and 12 columns, totaling 96 ...

In this study, a 45 m span flexible PV support structure was designed, which was carried by cables. The rigid model of the flexible PV module support structure was manufactured, and the ...

