

How to evaluate the dynamic response of tracking photovoltaic support system?

To effectively evaluate the dynamic response of tracking photovoltaic support system, it is essential to perform a tracking photovoltaic support systematic modal analysis that enables a comprehensive understanding of the inherent dynamic characteristics of the structures.

What are the dynamic characteristics of photovoltaic support systems?

Key findings are as follows. Dynamic characteristics of tracking photovoltaic support systems obtained through field modal testing at various inclinations, revealing three torsional modes within the 2.9-5.0 Hz frequency range, accompanied by relatively small modal damping ratios ranging from 1.07 % to 2.99 %.

How stiff is a tracking photovoltaic support system?

Because the support structure of the tracking photovoltaic support system has a long extension length and the components are D-shaped hollow steel pipes, the overall stiffness of the structure was found to be low, and the first three natural frequencies were between 2.934 and 4.921.

What are the dynamic characteristics of the tracking photovoltaic support system?

Through processing and analyzing the measured modal data of the tracking photovoltaic support system with Donghua software, the dynamic characteristic parameters of the tracking photovoltaic support system could be obtained, including frequencies, vibration modes and damping ratio.

Why is a photovoltaic support system prone to torsional vibrations?

Due to the lower natural frequencies and torsional stiffness, the system is susceptible to significant torsional vibrations induced by wind. Currently, most existing literature on tracking photovoltaic support systems mainly focuses on wind tunnel experiments and numerical simulations regarding wind pressure and pulsation characteristics.

Does vertical elevation affect the vibration frequency of a photovoltaic support system?

However, from the results of the field modal analysis, the natural vibration frequency of each step would slightly increase with the increase in the vertical elevation, and the corresponding vibration mode diagram of each step of the tracking photovoltaic support system under different tilt angles was generally similar.

Solar photovoltaic structures are affected by many kinds of loads such as static loads and wind loads. Static loads take place when physical loads like weight or force are put into ...

the uplift forces are decreasing with distance from the edge of the roof. The sheltering effect is indicated by larger forces for single PV array compared with multiple PV array. Mean and peak ...

Photovoltaic support column bottom reaction force

and 5 columns fixed photovoltaic support, the typical permanent load of the PV support is 4679.4 N, the wind load being 1.05 kN/m², the snow load being 0.89 kN/m² and the seismic load is ...

A series of experimental studies on various PV support structures was conducted. Zhu et al. [1], [2] used two-way FSI computational fluid dynamics (CFD) simulation to test the influence of ...

assumed that all the piles exert tensile forces on the bottom plate; (b) the pile forces as they really act on the bottom plate. is a force of 60 ± 2 kN, of which the direction and line of action are ...

Contact us for free full report

Web: <https://www.inmab.eu/contact-us/>

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

