

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 many pillars does a photovoltaic support system have?

The tracking photovoltaic support system consisted of 10 pillars(including 1 drive pillar),one axis bar,11 shaft rods,52 photovoltaic panels,54 photovoltaic support purlins,driving devices and 9 sliding bearings,and also includes the connection between the frame and its axis bar. Total length was 60.49 m,as shown in Fig. 8.

What is the tilt angle of a photovoltaic support system?

The comparison of the mode shapes of tracking photovoltaic support system measured by the FM and simulated by the FE (tilt angle = 30°). The modal test results indicated that the natural vibration frequencies of the structure remains relatively constant as the tilt angle increases.

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.

Does inclination affect the natural frequency of photovoltaic support systems?

Moreover,the variations in inclination of tracking photovoltaic support systems had minimal impact on their natural frequencies,as the increase in natural frequency magnitude across different inclinations remained below 1.5 %. Additionally,consistently low modal damping ratios were measured,ranging from 1.07 % to 2.99 %.

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.

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CHANGJI, China, Oct. 12, 2024 /PRNewswire/ -- The State Grid Changji Electric Power Supply Company is strongly committed to the development of renewable energy. To date, JiMusar ...

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