

What factors affect the bearing capacity of new cable-supported photovoltaic modules?

The pretension and diameter of the cables are the most important factors of the ultimate bearing capacity of the new cable-supported PV system, while the tilt angle and row spacing have little effect on the mechanical characteristics of the new type of cable-supported photovoltaic modules.

What is the structural load of solar panels?

The structural load of solar panels refers to the weight and forces a solar system exerts on a building or structure. This can include the weight of the panels, mounting system, and other related equipment, as well as additional loads from wind, snow, or seismic activity.

How does torsion stiffness affect load bearing capacity of PV system?

The increase of torsion stiffness when the torsion displacement rises benefits the stability of the new PV system. The load bearing capacity of the PV system is discussed under self-weight, static wind load, snow load, and their combination.

What are the characteristics of a cable-supported photovoltaic system?

Long span, light weight, strong load capacity, and adaptability to complex terrains. The nonlinear stiffness of the new cable-supported photovoltaic system is revealed. The failure mode of the new structure is discussed in detail. Dynamic characteristics and bearing capacity of the new structure are investigated.

What is a supporting cable structure for PV modules?

Czaloun (2018) proposed a supporting cable structure for PV modules, which reduces the foundation to only four columns and four fundamentals. These systems have the advantages of light weight, strong bearing capacity, large span, low cost, less steel consumption and applicability to complex terrain.

How many PV modules are in a cable-supported PV system?

The new cable-supported PV system is 30 m in span and 3.5 m in height and consists of 15 spans and 11 rows. The center-to-center distance between two adjacent rows is 2.9 m. There are 25 PV modules in each span, which are divided into 5 groups. Each group has 5 PV modules, and the gap between two groups is set at 10 cm.

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