Flexible photovoltaic panel pressure measurement

What is a good wind pressure coefficient for PV panels?
In the leeward direction from the 210°-330° wind direction, the uneven wind pressure coefficient falls below 1, varying between 0.475 and 0.961. This indicates a higher wind pressure coefficient for the upper row of PV panels than for the lower row.

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.

Does wind pressure affect a PV panel?
The results showed that streamwise distribution of mean surface wind pressure on a PV panel, were overall consistent with that of wind tunnel test. In addition, the connection between wind uplift and aspect ratios, the effect of inclined angle and clearance of a PV panel were likewise diagnosed.

What are the aerodynamic coefficients of PV panels?
The aerodynamic coefficients are maximum at the first row of the PV panel arrays, and decreases towards the downstream. The drag and lift force of PV panels are enhanced with the increase of the turbulent kinetic energy, particularly for the first row of panels.

Which row of PV panels has a higher wind pressure coefficient?
This indicates a higher wind pressure coefficient for the upper rowof PV panels than for the lower row. The minimum values of the uneven wind pressure coefficients for zones A/B,C/D,and E/F occur at 300°,300°,and 240° wind directions,with values of 0.475,0.492,and 0.475,respectively.

What are the characteristics of flexible PV support?
However,the characteristics of flexible PV support such as large span,large flexibility,and light weightalso determine that wind load is the controlling factor in the structural design. The structure is highly susceptible to vibration and even instability failure under severe wind.

This study involves the development of a MATLAB code to simulate the fluctuating wind load time series and the subsequent structural modeling in SAP2000 to evaluate the ...

This paper presents an experimental investigation of unsteady aerodynamic lift and overturning moment on cable-supported photovoltaic (PV) panel arrays. Unlike prior studies ...

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In this study, large-scale models of PV systems installed on residential structures were tested in the Wall of Wind Research Facility. The findings revealed that the critical wind ...

The pressure field on the surfaces of PV panels was studied through wind tunnel tests by Abiola-Ogedengbe et al. (2015). They observed that the inter-panel gap affects the ...

To estimate the wind load distribution on a supporting cable for photovoltaic panel (PV), a series wind tunnel tests was carried out to obtain the wind pressure coefficients on PV module via...

The proposed advanced PTS approach is demonstrated using full- and small-scale wind tunnel testing of a PV panel mounted at different locations on the roof of a low-rise ...

In light of this, this study aims to systematically investigate the prediction of wind pressure distribution on PV arrays, using the wind pressure field of the windward first row of flexible PV ...

In this study, the orientation of a single panel was adjusted to different tilt angles (=10 80) and wind incidence angles (= 0 180) that encompass the installation for offshore PV ...

The pre-stressed flexible cable-supported photovoltaic (PV) systems (FCSPSs) are gradually becoming the preferred PV structure for large-span and mountain photovoltaic power ...

The pressure field on the upper and lower surfaces of a photovoltaic (PV) module comprised of 24 individual PV panels was studied experimentally in a wind tunnel for four ...

A 40-meter-span flexible photovoltaic array demonstration project by the State Power is analyzed using large eddy simulation to study the distribution of average and ...

The rigid body pressure measurement wind tunnel test was designed and carried out, and the wind pressure distribution characteristics of the PV panel surface were analyzed.

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