

# Calculation method for photovoltaic welding bracket

What is a fixed adjustable photovoltaic support structure?

In order to respond to the national goal of "carbon neutralization" and make more rational and effective use of photovoltaic resources, combined with the actual photovoltaic substation project, a fixed adjustable photovoltaic support structure design is designed.

How do you determine the proper size of a weld?

If not determine the proper size: Length on x axis: 1) Determining the area of the weld (total and along the x and Y axes) and the location of the center of gravity along the x axis. (Along Y axis it is the midpoint due to symmetry) Note: The units of "I" are inches<sup>4</sup> but this method applies inches<sup>3</sup>.

What rack configurations are used in photovoltaic plants?

The most used rack configurations in photovoltaic plants are the 2 V  $\times$  12 configuration (2 vertically modules in each row and 12 modules per row) and the 3 V  $\times$  8 configuration (3 vertically consecutive modules in each row and 8 modules per row). Codes and standards have been used for the structural analysis of these rack configurations.

Does a 3 v 8 photovoltaic plant have a tilt angle?

The results show that the 3 V  $\times$  8 configuration with a tilt angle of 14( $^{\circ}$ ) increases the amount of energy captured by up to 32.45% in relation to the current configuration of Sigena I photovoltaic plant with a levelized cost of the produced electricity efficiency of 1.10.

How to optimize a photovoltaic plant?

The optimization process is considered to maximize the amount of energy absorbed by the photovoltaic plant using a packing algorithm (in Mathematica(TM) software). This packing algorithm calculates the shading between photovoltaic modules. This methodology can be applied to any photovoltaic plant.

How to estimate Universal Transverse Mercator coordinates of a photovoltaic plant?

It uses Geographic Information System, available in the public domain, to estimate Universal Transverse Mercator coordinates of the area which has been selected for the installation of the photovoltaic plant. An open-source geographic information system software, QGIS, has been used.

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