

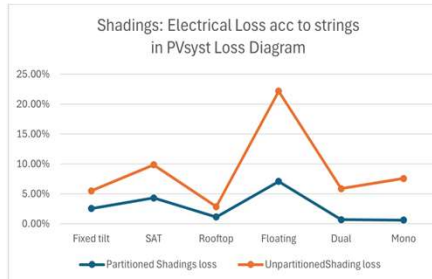
Optimal Partitioning Practices For Twin Half-Cut Cell Modules In PVsyst Near Shadings For Different Use Cases

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PVsyst Near Shadings Partitions model is an approximation that accounts for mismatch in current between shaded and non-shaded submodels/partitions.

Underpartitioning leads to exaggerated losses

Overpartitioning results in unrealistically low losses, wasting computational resources



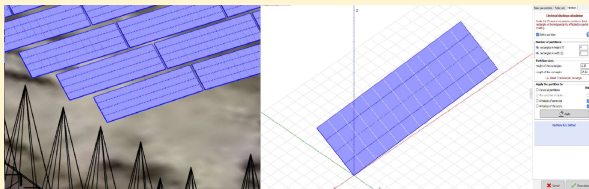
For any significantly shaded partition, PVsyst equates current produced by Direct Normal Irradiance (DNI) to zero, despite non-zero contribution of Diffused Horizontal Irradiance (DHI) to total current produced by module.

For modules deployed in the field, the 3 by-pass diodes may shunt the shaded sections of modules that may still have current generated by DHI.

Hence, 2 vertical partitions for a 1-landscape panel was closer to accurate results as per 'ANALYSIS OF ELECTRICAL SHADING EFFECTS IN PV SYSTEMS' by Olisi et al.

Fixed Tilt Ground Mount

2-portrait configuration, 2x13 frame size
26 modules/string
U-shaped electrical connection



4 horizontal sections along frame

Single Axis Tracker

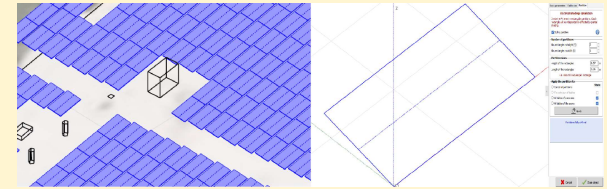
1-portrait configuration, 1x26 frame size
26 modules/string
Series connection along frame



2 vertical sections along tracker

Roof Mount – 2:1 modules:optimizer

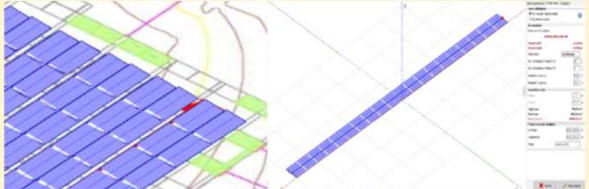
1-landscape configuration, 1x1 frame size
30 modules/string
Series connection along array row



2 horizontal sections along frame

Floating Solar

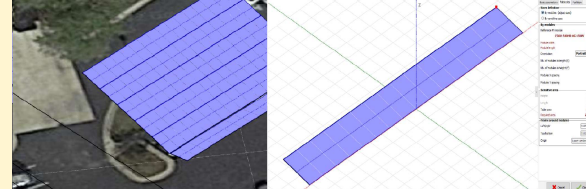
1-landscape configuration, 1x20 frame size
40 modules/string
U-shaped electrical connection across 2 frames



2 horizontal sections along frame

Dual Slope Carport

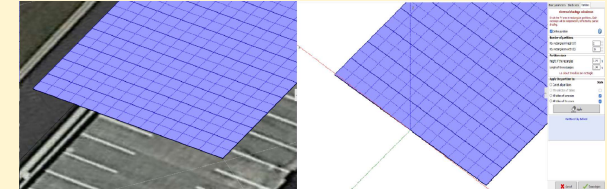
1-portrait configuration, 1x16 frame size
16 modules/string
Series connection along frame



2 horizontal sections along frame

Mono Slope Carport

8-portrait configuration, 2x8 frame size
16 modules/string
U-shaped connection between 2 columns



16 horizontal sections along canopy

Assumptions:

- 100% electrical effect was chosen for the PVsyst Near Shadings
- Fixed Ground Coverage Ratio designs (uniform pitches)

Reference:

Analysis of Electrical Shading Effects in PV Systems by M Olisi, B Wittmer, A Mermoud
EU PVSEC 2021, 1299-1307