



Rooftop C&I System Design Considerations

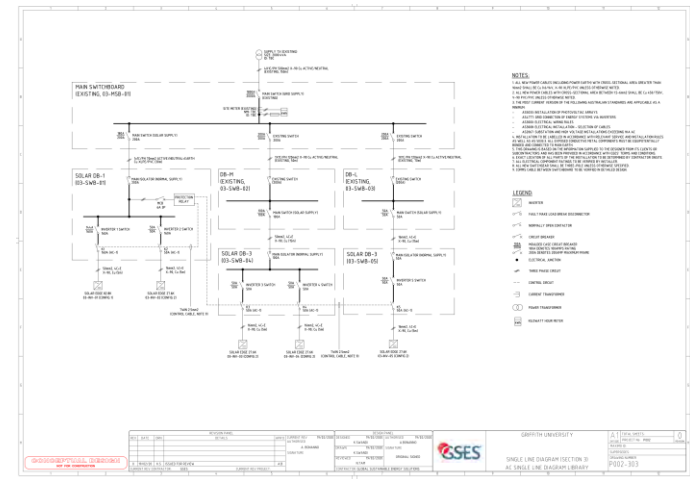
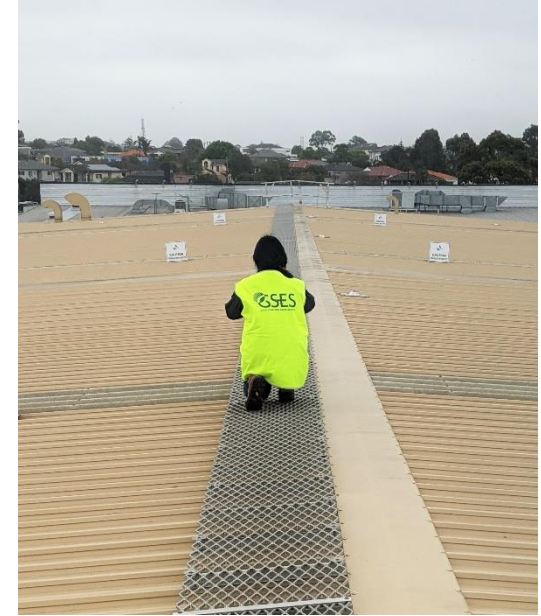


Acknowledgement of Country

- GSES acknowledges the first nations people of this continent, the lands on which we work, live and play, and recognise their continuing connection to land, water and community. We pay respect to Elders past, present and emerging.

About GSES

- Engineering design services in the 30kW to 5MW installation size.
- Owners Engineering consultancy services on an international scale
- Proprietary Renewable Energy Asset Management (GSES AMI)
- Authoring industry reference publications
- Technical training within Australia as a Registered Training Organisation (RTO) and globally in accordance with international reference standards through GSES CLEAN ENERGY EDUCATION





Designing with Jinko N-type

Topics

- 500kW System Performance Comparison
- AS/NZS5033 Considerations
- String Cable Sizing and Installation Considerations





500kW System Comparison

System Production

Produced Energy

820.1 MWh/year

Specific production

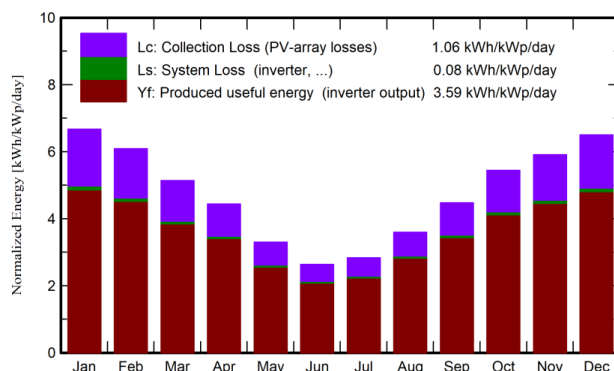
1312 kWh/kWp/year

Performance Ratio PR

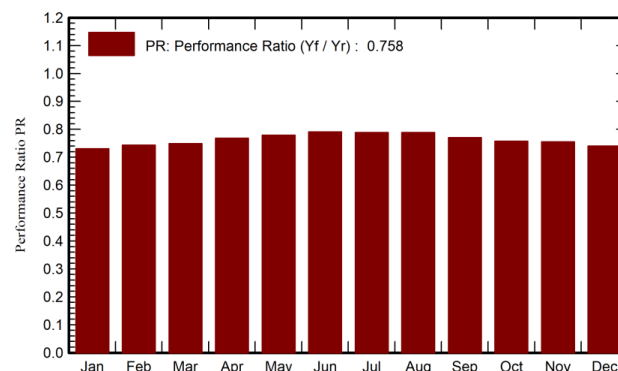
75.80 %

P-Type Module

Normalized productions (per installed kWp)



Performance Ratio PR



System Production

Produced Energy

869.1 MWh/year

Specific production

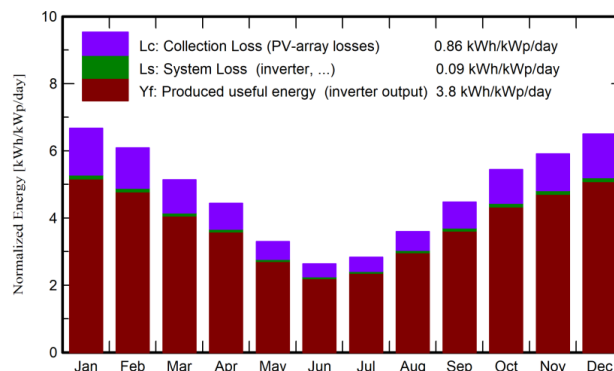
1386 kWh/kWp/year

Performance Ratio PR

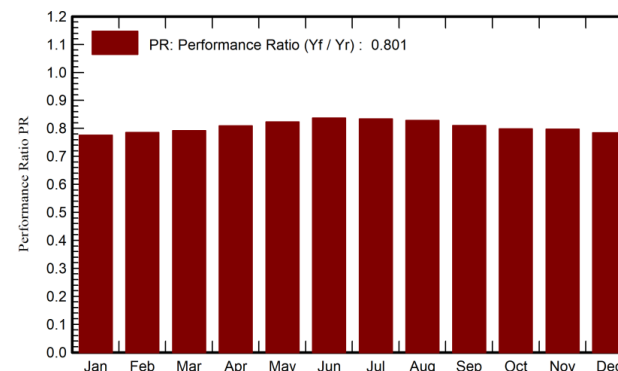
80.07 %

N-Type Jinko Module

Normalized productions (per installed kWp)

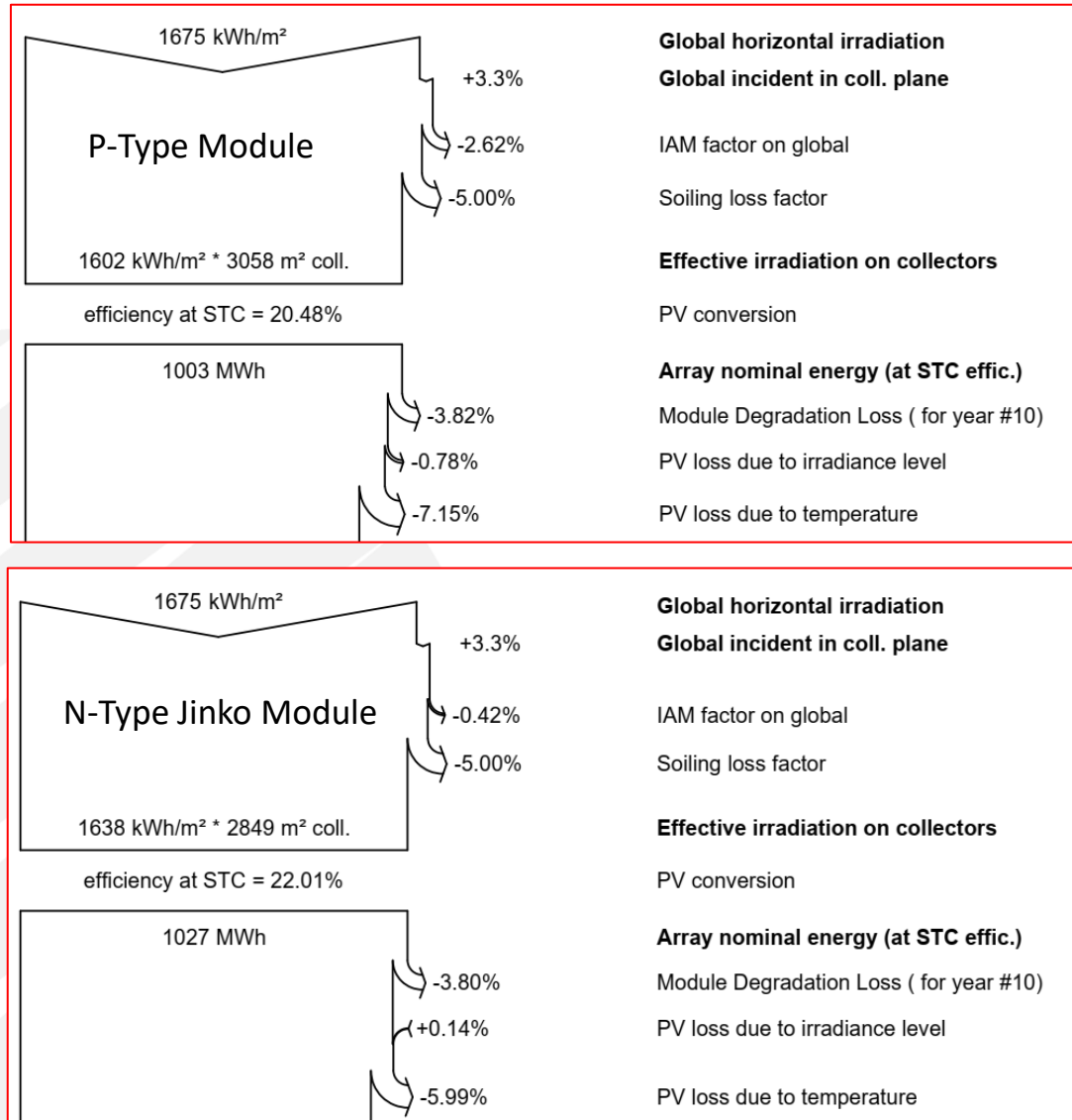


Performance Ratio PR



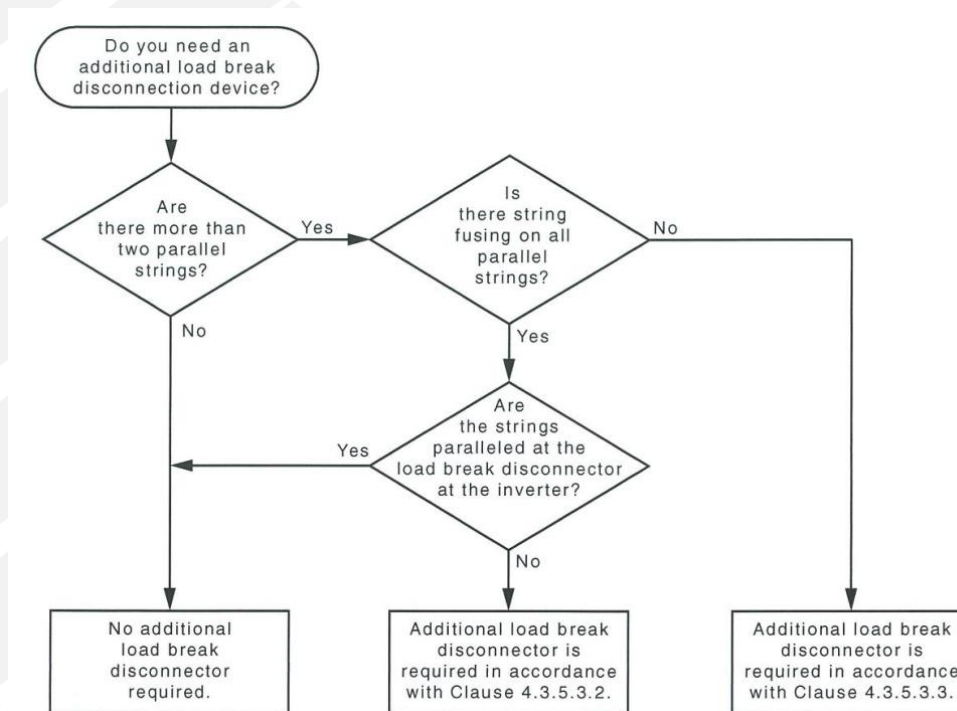


500kW System Comparison



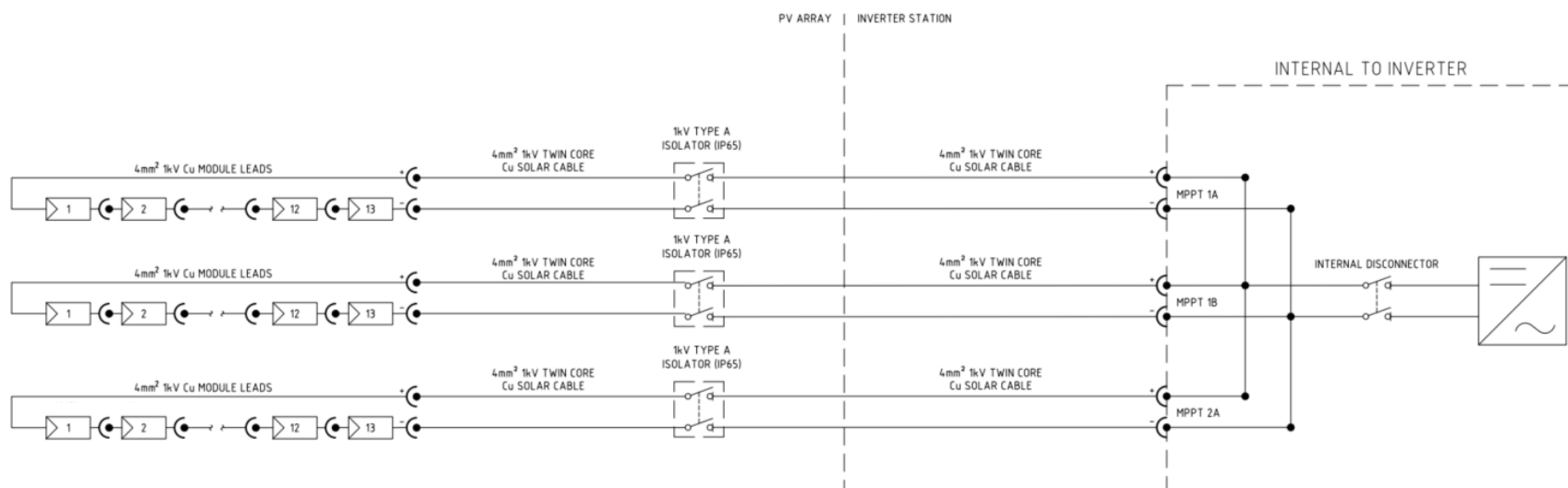
AS/NZS 5033:2021 Considerations

- Clause 1.1 – Standard is now compulsory above 240kW
- Clause 3.1 – 1000V d.c. for residential systems 1500V d.c. for commercial/industrial systems.
- Clause 3.3.4.1 – Required to use the d.c. adjustment factor K_1 for bifacial modules.
- Clause 3.4.3 – Updates to d.c. isolator requirements





String Cable Sizing and Installation Considerations



	CABLE SIZE (mm²)	PARALLEL STRINGS IN CIRCUIT	INSTALLATION METHOD	TOTAL # ADJACENT CIRCUITS	CABLE ARRANGEMENT	LENGTH (m)	COMBINED ISC (A)	STRING OCPR (A)	DESIGN CURRENT (A)	RATED CCC/CONDUCTOR (A)	COMBINED DERATING	DERATED CCC/CONDUCTOR (A)	VOLTAGE DROP (%)
Option 1	4	1	WIRING ENCLOSURE IN AIR	11	Touching	100	14.23	N/A	17.79	45.0	0.38	17.21	1.86%
Option 2	6	2	WIRING ENCLOSURE IN AIR	4	Touching	100	28.46	N/A	35.58	56.0	0.60	33.85	2.48%
Option 3	10	2	WIRING ENCLOSURE IN AIR	4	Touching	100	28.46	N/A	35.58	64.0	0.57	36.61	1.40%
Option 4	4	1	WIRING ENCLOSURE IN AIR	4	Touching	100	14.23	25	25.00	45.0	0.55	24.86	1.86%





Thank You!