



# © Central Solar Systems

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## Customer Information

Established in 1978, Central Solar Systems is a highly regarded solar business with more than 40 years of experience in the solar industry. Our director is an electrical engineer, renewable energy engineer and Clean Energy Council accredited designer of solar power systems.

We provide installations of solar power systems, battery storage and pool heating systems on the Gold Coast, in other parts of South East Queensland and in Northern NSW. We are still growing because we stand out by providing our customers with a more personal, no nonsense, informative experience throughout the entire sales, installation and ongoing support processes. This is backed up by our customer reviews.

We have a comprehensive range of solar panel, battery storage and pool heating components from reputable manufacturers with proven local support in Australia. Our solutions are expertly designed using the best quality components to meet each individual customer's needs and budget. Our solutions therefore offer the best quality, real savings, real value and solid warranties.

Discussing your needs face to face with a highly experienced engineer will result in a much better solution that will last longer and save you more money.

## Solar Power

Solar power systems don't have to be "one size fits all" like we see advertised on TV. The best solar power systems are those that meet each individual customer's expectations. Expectations include quality of components, warranty, life expectancy, budget, looks, etc. This requires selecting the best components that make up a solar power system to meet these expectations. The components include:

- Solar power panels
- Solar Inverter/Hybrid inverter
- Mounting system (the frame that connects the panels to your roof)
- Power optimisers (if the system will experience some shading)
- System monitoring options (does the customer want to monitor actual household power usage and/or power exported to the grid)
- Balance of system. This includes cables, conduit, isolators, circuit breakers, etc.

### Solar Power Panels

We continue to assess new solar power panels as they are introduced to the market. We select our range of panels based on factors including the track record of the solar panel manufacturer, the effectiveness of the panel manufacturer's Australian support office, the quality of support provided by the manufacturer to Central Solar Systems and value for money (price, build quality, warranty, etc).

Our current panel options include:

Panel	Model	Panel Power	Manufacturer Country of HQ	Country of Manufacture	Panel Warranty (Years) *	Performance Warranty (Years) **
JA Solar/Trina	Half-Cell Module	390W	China	China	15	25 (84.8%)
Phono	Diamond Dual Glass	390W	China	China	25	30 (84.95%)
Hyundai	Various	390W – 400W	Korea	China	25	25 (84.8%)
SOLARWATT	Vision Dual Glass	320W	Germany	Germany	30	30 (87%)
Q CELLS	Q.BOOST	415W	Korea	Malaysia	20	25 (86%)
Q CELLS	Q.PEAK DUO	415W	Korea	Korea	25	25 (86%)
SunPower	Performance	Various	USA	China	25	25 (87.2%)
SunPower	Maxeon	425W	USA	Malaysia	40	40 (88%)

\* This is the important part of the warranty and is the only part that should be considered

\*\* The percentage in brackets is the warranted power at the end of the performance warranty. However, the performance warranty can be over ridden by the panel warranty. That is, if the panel warranty is 15 years on the panel and 25 years on performance and if the panel stops performing at year 16, it's possible that the manufacturer will say that it's a fault which was only covered by the panel warranty. So, the 25 year performance warranty can be over ridden by the panel warranty.

## Solar Inverter/Hybrid Inverter

The solar power panels connect to a solar inverter. Solar panels produce DC power which is like the power produced by batteries. The Energex power grid, homes, factories, etc, use AC power to power appliances, machinery, etc. The solar inverter takes the power from the solar panels and converts this to AC power which can be used in the home, factory, etc, or to export to the grid.

A hybrid inverter performs the same function as the solar inverter, plus it adds the capability of directly connecting a battery storage system. High quality hybrid inverters allow the solar panels to directly charge the battery storage and can be programmed to provide power to the home/business/factory from the solar panels and/or the battery storage. This is the most efficient way to connect battery storage now or in the future.

Our current solar inverter/hybrid inverter options include:

### Solar Inverters

- Opal Solar/Solax/Solis. Good quality inverters made in China. 10 year parts and 5 year labour warranty. For budget systems and have limitations if panels are on different roof orientations.
- Sungrow. Excellent quality inverter made in China. 10 year parts and 10 year labour warranty
- Fronius Symo three phase inverter. Made in Austria.

## **Solar Inverters that can be upgraded to become HYBRID inverters**

- Fronius Primo GEN24 single phase. The latest Fronius Primo inverter. This inverter can be upgraded in the future to become a HYBRID inverter. Made in Austria.

## **HYBRID Inverters – ready to plug in a compatible battery**

- Fronius GEN24 Plus Hybrid. The latest Fronius hybrid inverter which can provide backup power for single and 3 phase installations. Made in Austria.
- Sungrow Hybrid. The latest Sungrow hybrid inverter which can provide backup power for single and 3 phase installations.

## **Mounting System**

A high quality mounting system is an obvious requirement of any solar power system. The mounting system has to hold the panels in place for decades. We use the highly regarded Clenergy mounting system. Clenergy is the major supplier to the Australian market and has a large Australian support office.

For specialist requirements where Clenergy doesn't have a suitable solution we use S5! from the USA.

## **Power Optimisers**

If one or more panels are partially shaded, the output of the solar power system can be significantly reduced.

The two main components that are used to reduce the effects of shading are micro inverters and power optimisers.

Microinverters have to be installed on every panel. We can provide micro inverters but we recommend against them. This is because in most cases the micro inverters actually restrict the power of each solar panel. This affects the efficiency of the entire solar power system.

There are two main types of power optimisers:

- Open architecture, including power optimisers from Tigo Energy
- Closed architecture, including solutions from Solaredge

Closed architecture solutions require a power optimiser to be installed on every panel and will only work with a special inverter from the same manufacture. This locks the customer into that particular brand and can make future support quite complex. There is also a risk that the manufacturer may stop producing compatible components or go out of business.

Open architecture solutions don't require a micro inverter to be installed on every panel and work with any inverter brand.

We therefore prefer to offer Tigo open architecture power optimisers. These only need to be installed in the panels that are affected by shade and can be installed at any time, now or in the future, for example, if shade develops over time. If customers still wish to view the performance of each individual panel, Tigo power optimisers can also be installed on every panel.

If a customer has a situation where some panels will be shaded at times during the day, we recommend that the pros and cons be discussed with our engineer.

## **System Monitoring**

All inverters come with basic monitoring. Basic stats such as power generated by the inverter can be viewed on a phone or computer. With basic monitoring the inverter has no visibility of what else is happening in the home. All inverter manufacturers have an option to install an energy meter. This attaches to the inverter and provides visibility of the actual power used in the home and the actual power exported.

As mentioned under power optimisers above, customers can also have the ability to view the performance of each individual panel. This isn't common for residential systems because there are other ways to check the performance of the solar power system.

There are smart third party options including the Australian monitoring company, Solar Analytics. As well as providing visibility of home power usage and export, Solar Analytics undertakes further analysis to provide features including: battery sizing calculator, information on when battery storage will be cost effective and checking the power bill to see if there are lower cost plans.

## **Balance of System**

We only use high quality cables, conduits, isolators, circuit breakers, etc.