

Excel Solar 7SD Solar Farm Technical Article



By Terry Davis, Director – Excel Solar, mob 0438 007 764

What was the project?



The 7SD Solar Farm project involved the planning, design, implementation, commission and delivery of a ground based fixed commercial array, being a 60kW fully monitored Solar Plant.

The project utilises the safest string based inverter system, with individual module monitoring and the system can be remotely monitored 24 hours a day.

What do we hope to achieve from this project?

Excel Solar wanted to achieve a commercial ground based photovoltaic (PV) solar project that is

- Central to Toowoomba QLD for educational purposes.
- Economically viable.
- The most advanced at the time of commission
- Fully monitored, and enable per panel monitoring.
- The data displayed, in a sensible way that the client and public can understand and appreciate
- Low maintenance.

The 7SD Solar Farm project is located in Toowoomba; it has created awareness about renewable energy production for businesses and the community. The project is positively geared and has been set out to require low to no maintenance. As such we believe Excel Solar have achieved the project goals.

What does it mean for the solar/electrical industry?

This project will create awareness about the electrical and solar industry to the public and children. Our educational policy is to be actively involved in providing on site, close up, safe educational opportunities.

Perhaps it will inspire the next generation of electricians on the Darling Downs.

It helps show case that small or medium sized electrical firms can achieve unique outcomes that can be applied to large or mega scale projects. A well designed solar PV plant can be started and replicated by small to medium sized Australian electrical companies.

That renewable will be a way of the future. One day in the eyes of the government and the public "solar power will be just power".

When working on any size project, including mega scale solar plants, if the design is done with safety in mind, electricians can work safe with the power from the sun at ELV.

What sets this project apart from others?

Some key identified areas that set this design and installation from the others within Australia are:

- Quality & Longevity
- Safety
- Knowledge
- Innovation

Quality

Excel Solar deigned this project to have a life span of 25 years plus. This project was completed at world best standards. The Chief Technical Officer at CNPV stated rated the 7SD 60kW solar PV project as world class standards, up to and equal to the German standards.

Safety

Safety is always a consideration with Excel Solar. The Solar inverter system chosen provides a unique and safe way for installation via its extremely low voltage on installation and commission. The system holds every module at one volt, prior to final commission or in maintenance mode. This reduces the risk of electrocution.

The Solar Edge system can not only detected a DC arc when it is operating it can eliminate such, without human intervention.

Fire fighters and maintenance personnel can be assured in the knowledge the system cuts the DC power and voltage in the case of a DC fire.

Knowledge

Being fully monitored, the system can provided data sets for future energy predictions. The system is linked via Next G connectivity for monitoring of local weather conditions and the ability to provide the dataset or live monitoring 24 hrs a day.

This data set can inform and display PV modules that are not performing for investigation or modules that over time could have a warranty issue.

Innovation

Innovated design in footing selection, cost reduction and speed of application.

The mounting structure for ground based solar plants is traditionally via a concrete foundation or platforms. We at Excel Solar sourced and deployed a ground based screw in pier design. We designed and manufactured an attachment locally for machinery to be able to effectively fix this screw footing in place.

This reduced the clients cost for foundation by approximately by 60 percent.

Facts and figures:

The 60kW solar plant is capable of producing over 400kWh of energy a day. This solar system produces enough energy a day to power approximately twenty houses in QLD.

The system has 6 x 10kW three phase inverters, wired in two strings to each inverter.

Each string consists of 17 x 300 W mono crystalline CNPV modules. A total of 204 modules.

Each inverter is wired as a slave to a master unit.

The projected total energy yield, yearly, for this project is to be 115.9MWh. The project is currently tracking within the projection and coming into summer we at Excel Solar believe it will exceed the client expectations.