CASE STUDY

PV Systems on Gas Stations
Automatic DC Voltage Shutdown

OVERVIEW

Installer: Yarok Natural Energy

Installation Date: 09/22/2011

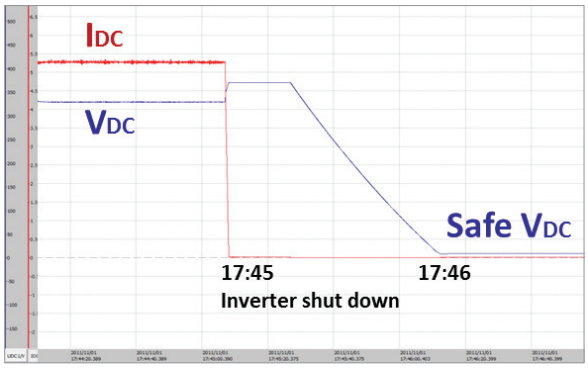
Location:
DOR-ALON Gas Station
in Carmiel, Israel

Installed capacity: 55kW

Modules: 220 x Ulica 250W

Inverters:
4 x 12.5kW with power optimizers

SafeDC



This graph represents an automatic string shutdown. As demonstrated, the current is shut down immediately once AC power or Inverter is turned off. The string voltage is reduced to safe voltage in 180 seconds.

Dor Alon, a gas station chain, wanted to improve their energy costs and installer Yarok Energy, realized that the roof surfaces of Dor Alon's gas stations were the perfect location for PV systems.

Utilizing gas stations for solar energy production requires the utmost quality control and adherence to safety. The importance of safety is one of the main reasons why the installers from Yarok Energy chose to install the SolarEdge system on the roof of Dor Alon's gas station in Carmiel. SolarEdge offers a PV power harvesting system that consists of power optimizers connected to each module, a PV inverter and module-level monitoring.

SolarEdge systems have a built-in safety feature that eliminates safety risks. When power optimizers are connected, modules continue in "operation mode" only as long as a signal from the inverter is constantly renewed. If there is no signal from the inverter or if the inverter is not operating, SolarEdge's SafeDC™ feature within the power optimizers automatically shut down the DC current as well as voltage in module and string wires. In safety mode, the output voltage of each module equals 1V. This safety feature ensures complete safety for maintenance workers and firefighters, eliminating the risk of electrocution and electric arcs, and which is certified in Europe as a DC disconnect. In addition, SolarEdge power optimizers act as multiple module-level arc detection sensors in an array, which significantly increases detection accuracy. Power optimizers can detect serial arcs and can automatically terminate them by eliminating any current in the wires by completely shutting off all modules in the array. Module-level shutdown can further terminate parallel arcs.

The SolarEdge monitoring portal reports on each individual module and gives immediate alerts on any irregularities that may occur, which then minimizes downtime of the system. Yarok Energy utilizes the real-time data available on the monitoring portal in order to perform remote maintenance tasks which can occur due to module mismatch challenges such as shading, soiling and dust. Module soiling by dirt or bird droppings contributes to mismatch between modules and strings, beyond power loss due to sunlight blockage.

"**We also installed the SolarEdge system in order to generate a higher energy yield**", says Ran Mizrachi Joint CEO, Yarok Natural Energy. "**The performance of the SolarEdge system was installed next to a similar 50kW system with traditional string inverters and in comparing the two systems, we see that SolarEdge is constantly producing more energy and will accelerate the return on investment.**"