Kingdom of Tonga | Vava'u

# HYBRID ENERGY SUPPLY FOR AN ISLAND CHAIN


### System Size

- Installed PV power: 500 kW
- Diesel generators: 2 x 600 kW
  2 x 186 kW
  1 x 300 kW

### System Information

- Vava'u, Kingdom of Tonga
- Coordinates:18° 39′ 01″ S,
  173° 59′ 07″ W
- Operator: Tonga Power Ltd.

- Annual yield: 695 MWh
- Diesel savings: 225,000 liters/ year
- Batteries: 120 x 1000 Ah

### PV System Technology

- 21 SMA Sunny Tripower 20000TL Economic Excellence
- 15 SMA Sunny Backup SBU 5000
- Fuel Save Controller

Minimizing Fuel Costs and $CO_2$ Emissions With

# Photovoltaic Diesel System Technology

The Kingdom of Tonga is an archipelago in the South Pacific. The islanders' electricity is supplied by diesel generators, which are an expensive energy source. With more than 1,500 hours of sunshine annually, Tonga has an additional source of energy: the sun. The Tongan island chain Vava'u is now taking advantage of this.

A photovoltaic diesel hybrid system went into operation in Vava'u in November 2013, as a grant from the government of the United Arab Emirates managed by Masdar and executed by Ingenero, with the goal of saving diesel fuel and thereby minimizing costs and $CO_2$ emissions. The 500 kW hybrid PV farm with 1,680 PV modules and 21 SMA Sunny Tripowers was fully integrated into the existing diesel network and provides almost 70 percent of Vava'u's energy demands at noon. Batteries store part of the energy generated during the day and discharge during the peak in the evening.

The SMA Fuel Save Controller intelligently controls the PV diesel hybrid system. By interacting with SMA inverters, it coordinates the demand-based control of optimized photovoltaics feed-in. The Fuel Save solution provides a secure energy supply with maximum efficiency.

## SMA Fuel Save Solution for Photovoltaic Diesel Hybrid Systems

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