



# Schneider Electric brings electricity to 60 remote villages in Indonesia—powered 100% from solar and storage

## Introduction

The Indonesian government created the Rural Electrification Project to provide electricity by means of solar energy to villages throughout Indonesia.

The objective of the Rural Electrification Project is to promote the economy of rural communities and improve the quality of life. By bringing access to power, it encourages local productivity, facilitates and accelerates access to electronics and other media, and improves security on the islands.

## Project Overview

With 13,466 islands, providing access to electricity to all parts of Indonesia remains a big challenge to policy makers. Diesel generators have high operating costs, which are compounded by the costs of shipping and storage of fuel. As a result, the primary goal of this government-funded project was to provide access to electricity through 100% renewables without a dependency on diesel.

This was achieved by implementing off-grid solar and battery storage systems on sixty sites that have become autonomous power plants. These systems harness solar power that is then stored in batteries, which communities can access throughout the night. Under the Rural Electrification Project, each household was provided with LED bulbs, power sockets and a community TV.

## SUMMARY

### Customer Profile

The Indonesia EBTKE Rural Electrification Project was tendered by the Ministry of Energy and Mineral Resources (ESDM) of The Republic of Indonesia under the Directorate General of the New Renewable Energy and Energy Conservation (EBTKE).

### Challenge

Bringing access to electricity in a sustainable way and eliminating the dependency on diesel. Thus, removing high OPEX costs of fuel and the maintenance of generators.

### Solution

A solar and storage system that includes:

- Conext XW+ 8548 E battery-based inverter/chargers
- Conext MPPT 60 150 solar charge controllers
- Conext System Control Panel
- Conext ComBox
- Conext Battery Monitor



Direktorat Jenderal Energi Baru Terbarukan dan Konservasi Energi (EBTKE)





This image shows locations of the 60 systems that are being installed as part of the Indonesia EBTKE Rural Electrification Project. These systems range in size from 15kW to 75kW and are powered 100% from solar and battery storage.

## Solution

The sixty off-grid DC-coupled solar systems range in capacity from 15kW to 75kW, each of them electrifying 80 to 520 households per village. As most of the load demand is at night for lighting purposes, the application of the Conext XW+ DC-coupled system was recommended over an AC-coupled solar system. The PV system fully charges the battery during the daytime and ensures a sufficient battery state of charge to support the power requirement at night.

The Conext XW+ battery-based inverter/charger system provides an integrated solution for this application with the following key features:

- 1) A DC-coupled solar architecture—this architecture allows for:
  - a) Efficient battery charging directly from solar power using a single power conversion stage (DC to DC), as compared to AC-coupled solar systems which loses energy during it's double power conversion stage (DC to AC, and AC to DC).
  - b) Independent sizing of the PV array based on the total energy needed, and the battery-based inverter/chargers are sized according to load demand. This is ideal for cases where a majority of loads are required at night.

**“A Schneider Electric solution was chosen for these rural electrification projects because of the high reliability of their products, along with Schneider Electric’s strong technical support and service from the local team.”**

— Pak Sri Harsono,  
System Integrator, PT INTI

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2) A modular stackable system, which can be scaled up to multiple units, to build a wide power range of systems. This provides system integrators with the following benefits:

- a) Improves O&M over the life span of the system by stocking, learning, and maintaining spares for repair with only a single product model.
- b) Compact size for easy logistic handling by land and sea. Due to its compact size, two people without any special equipment can easily install the system. This is essential for remote locations.
- c) Improved uptime due to added redundancy—failure from a single unit does not lead to a complete black-out, but only affects a small fraction of the system's capacity.
- d) The system can be networked through a plug and play scheme, thus simplifying the overall installation and commissioning process.
- e) Being modular, it allows for an easy upgrade to a higher power range as the demand on the islands increase over time.

3) Simple to install, operate and service—a technician with basic electrical training can attend to issues and easily service the system.

4) A Conext ComBox monitoring solution that provides detailed history of system performances and events with rich visualizations on PV yield, load profile, and battery status. The data collected by Conext ComBox can be further utilized in better optimizing and planning similar systems.



Under the EBTKE rural electrification project, every village is provided with a community television and each household is given lighting and electrical sockets



### About Schneider Electric

As a global specialist in energy management with operations in more than 100 countries, Schneider Electric offers integrated solutions across multiple market segments, including leadership positions in energy and infrastructure, industrial processes, building automation, and data centers/networks, as well as a broad presence in residential applications. Focused on making energy safe, reliable, and efficient, the company's 150,000 plus employees achieved sales of 24 billion euros in 2013, through an active commitment to help individuals and organizations "Make the most of their energy".

Contact us at <http://solar.schneider-electric.com/purchase-products> to discuss your solar energy needs.