

# AN HOI SOLAR PLANT: TOWARDS CON DAO 100% RENEWABLE

PILOT PROJECT PHOTOVOLTAIC PLANT for CON DAO Island (VIETNAM)



**MINISTRY OF INDUSTRY AND TRADE  
OF THE SOCIALIST REPUBLIC OF VIETNAM**



## INTRODUCTION

This Pilot Solar Photovoltaic Plant in Con Dao has been executed for the General Directorate of Energy, as implementing agency. Several actions have been implemented in Vietnam as part of the cooperation agreement *“Impulse to the development of the Renewable Energies Industrial Sector, in particular Solar Energy, based on the Spanish experience”* between the Spanish Agency for International Development Cooperation (AECID) and the Ministry of Industry and Trade of Vietnam (MOIT). Among the actions, two photovoltaic demonstration power plants have been engineered and built in Hanoi and in Con Dao as part of the strategy to develop the renewable energies industrial sector in the country.

The PV plant in Con Dao was commissioned last December 6<sup>th</sup>, 2014.

Con Dao, an archipelago of 16 islands 200 km off the Vietnamese coast, has a population in its main island, Con Son, expected to reach 15,070 in 2015. The electricity supply comes from an island micro grid based on diesel fuel generation to fulfill needs up to 1.6 MW. The diesel fuel has to be imported and transported to the island and, additionally it generates pollution when it is burned. Yet, the island has plenty of solar energy and other Renewable Energy sources and it makes sense to aim at generating as much electricity as possible from solar energy using modern technologies that are at present little known in Vietnam.

The demonstration PV plant has been engineered to be connected in parallel to the island’s micro grid and all the electricity it generates results in direct reduction of fuel consumption. But, compared to the capacity needs of the island, the demonstration PV plant is still small because the objective of the project has been to introduce and validate the technology to the different stakeholders. It will also serve as training and learning facility, which can be upgraded in Con Dao and replicated in other islands to make them more sustainable and environmentally friendly.

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### GENERAL DESCRIPTION

The plant has been engineered and built by Trama TecnoAmbiental (TTA), a Spanish firm based in Barcelona with more than 25 years' experience in Renewable Energy technology.

The Solar Photovoltaic (PV) plant has been built at the An Hoi Diesel Power Plant of Con Dao and has a rated AC capacity of 30 kW and a PV generator of 36 kWp (STC).

It consists of 144 of photovoltaic modules of 250 Wp each from the Spanish manufacturer ATERSA. The modules are mounted on a metal structure made of galvanized steel and aluminium. The photovoltaic modules generate DC and are connected to two inverters of 15 kW each that convert the electricity to AC and synchronize it with the grid at 400 V three phase. The inverters come from the Spanish manufacturer Ingeteam.

Additionally, the PV plant is monitored by sensors and a data logger from the Spanish company Webdom. Through the data logger meteorological and energy production data is collected and used to supervise the performance and also learn more practicalities on this technology.

The PV plant has been designed to generate around 50 MWh (megawatt-hour) each year of renewable, clean and reliable electricity. Characteristics of the PV plant:

Rated AC power	30 kW
PV Capacity at STC	36 000 Wp
Inclination	20°
Type of module	ATERSA A250 Polycrystalline
Type of inverters	INGETEAM 2 x 15 kW 3 phase
Maximum DC voltage	900 V
Output AC voltage	400V
Output AC frequency	50Hz

### MONITORING DURING OPERATION

Preliminary data shows that the plant is operating as expected and further analysis after one year of operation will be used to characterize the design parameters and also to provide first hand solar radiation data of the site that can be used in future activities.

