

## European Solar and Energy Storage Solutions

# Réunion grid solar



## Overview

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What is green energy revolution Reunion Island?

Until recently, Reunion Island had implemented the GERRI project , Green Energy Revolution Reunion Island. This economic and social development program centered on the sustainable development of Reunion Island and resulted from the “Grenelle Environment” French environment roundtables.

Can Reunion Island achieve energy autonomy by 2030?

Reunion Island, a French overseas region located in the Indian Ocean, is facing a three-fold challenge combining demographics, the environment and energy. To limit its heavy dependence on imported fossil fuels, Reunion Island aims to achieve energy autonomy by 2030 based on greater energy efficiency and renewable energy alternatives.

Can Reunion Island make its electricity 100% renewable?

Reunion Island's plan for making its electricity system 100% renewable involved a multi-fold process. This ambition was established in the law "Grenelle 1" No. 2009-967, whereby the French Ministry of Ecology mandated in April 2009 that all new constructions in overseas departments must install solar water heating.

Can geothermal energy be developed on Reunion Island?

Geothermal energy also presents significant potential for development, with an installed capacity of 30 MW; however, the main problem for this resource on Reunion Island is its location in a protected natural area.

How did Reunion Island get its electricity?

Concluding discussion During the 1980s, Reunion Island's entire electricity supply came from renewable hydropower. As the population grew and quality of life improved, coal and oil were introduced to help meet increasing demand.

How does albioma produce electricity in Réunion Island?

As the leading electricity supplier in Réunion Island, Albioma produces 46 % of the energy available in the grid by operating two thermal biomass power plants, a bioethanol combustion turbine and a large photovoltaic fleet.

## Réunion grid solar

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### PV System Failures Diagnosis Based on Multiscale Dispersion

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The La Réunion grid has the particularity to be non-interconnected with electrical production that is mainly imported fossil fuel-based. The growing proportion of intermittent energy such as PV sources increases the risk of a strong variation in energy production. They are composed of 72 solar cells connected in series with groups of 18

### Saft signs multi-million euro energy storage contract for La Réunion

This turnkey contract is realized in partnership with Ingeteam (Spain) - world leading manufacturer of power electronics and energy management systems- and Corex Solar (based in La Réunion) to build the Bardzour solar photovoltaic (PV) production and Li-ion (lithium-ion) energy storage system on the French island of La Réunion in the Indian



### Solar eclipse challenged the electricity grid in Reunion ...

Thanks to their solar panel and their battery, they are fully energy-autonomous. Moreover, the measurements are uploaded live on the cloud. GHI and temperature measurements by the S3G, on September 1st in ...

## Solar energy policies in La Reunion

forecasting and optimized integration of renewable energy sources in off-grid systems ; tools and solutions to manage off-grid energy systems and increase their flexibility, notably through the development of energy communities and decentralized grids



## AKUO , Pierrefonds Solar farm in Réunion Island

The Pierrefonds photovoltaic farm was Akuo's first solar plant to be commissioned on the French Indian Ocean island of Réunion. It is seamlessly integrated into the territory, enabling electricity to be supplied to part of the island where the grid faces difficulties.

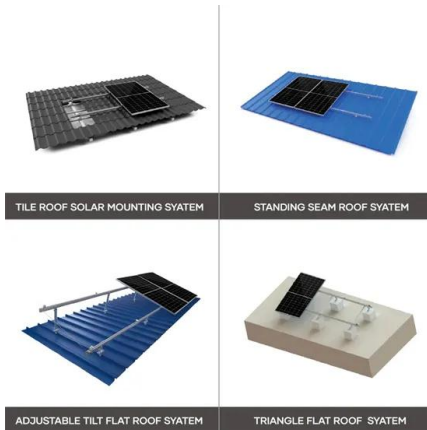
## A set of study cases for the massive integration of solar ...

The massive integration of solar renewable energies is challenging in non-interconnected areas such as remote islands or isolated regions. Indeed, their power grid, which cannot rely on the support of larger electricity networks, is more vulnerable to the inherent variability of the solar resource and grid failures, such as sudden breakdown of production units or transmission lines.



## "J'veux du Soleil" Towards a Decade of Solar Irradiation Data (La

This paper aims at presenting years of solar



irradiation data together with meteorological data acquisition localized in the French region of La Réunion Island (SW Indian Ocean). The publicly available data take the form of multivariate time series data with

## Chapter 22 A Method for Mapping Monthly Solar Irradiation ...

setting up of a high-resolution regular grid (1 km) is needed due to the small size (2,512 km<sup>2</sup>) of the island and its topographical context. In addition, Réunion has Fig. 22.1 a 250 m DEM topographic data for Reunion. b Solar radiation observing station network over Reunion provided by Météo-France 22 Réunion Island's Case Study 297.



## Réunion islandLa RéunionIsla La Réunion

With high reliable prediction and energy management software, the plant will feed in the Reunion Island grid a no-intermittent renewable energy. This solar power plant is a world first and paves the way for a new era of photovoltaic predictable, stable and available.

## Reunion Island

It is interesting to underline the fact that Reunion Island has already exceeded the 30% limit rate (Ministerial Decree of 23 April 2008) of RES penetration into its electricity grid. This achievement is enabled by incorporating

substantial storage systems coupled with PV plants, and intelligent management (Smartgrid) and control (forecast) of



## SOLAR ENERGY RESEARCH AND DEVELOPMENT PROGRAM ...

The solar energy development scientific research program undertaken by the LE2P since 2011 is based on the RCI\_GS project (Intelligent Sensor Network for a better knowledge of the solar resource all over the Reunion Island) dedicated to the solar irradiation measurement and the characterization of its spatial and temporal variability.

## High PV penetration on the insular grid of Reunion Island

Overview of issues and expected solutions 4  
 Intermittent renewables integration limit (32% in 2018)  
 oIncrease of the intermittent renewables integration limit  
 oMitigate the ramping events of PV (smoothing)  
 oIntegrate more PV generation  
 oBalance the supply and the demand with increasing PV penetration  
 Project: PEPS Réunion  
 ØMitigation of ramp events with



## Production of renewable energy in Reunion Island

Created in 2007 on Reunion Island, the Indian Ocean subsidiary today boasts a wide variety of solar farms. Here, it started the Group's first



agrivoltaics plants, as well as the Aquanergie® technology and the first battery storage solutions which have given Akuo sound expertise in Non-Interconnected Zones (NIZ).

## Reunion Island

The solar capacity has increased by 44% between 2011 and 2015 and now represents 8.5% of the electricity mix, with a production of 245 GWh. It is interesting to underline the fact that Reunion Island has already exceeded the 30% limit rate ( Ministerial Decree of 23 April 2008 ) of RES penetration into its electricity grid.



**5 Years warranty**



## Renewables Policy on a tropical island in Indian Ocean: La Reunion

Diverse renewable energies have been installed in Reunion island: solar, hydro, wind, marine and biomass. The use of variable renewable energy forecasting combined with battery storage for industrial-scale installations has been proven to ease the grid integration of these renewable energy sources.

## The renewable energy revolution of reunion island

Reunion Island is endowed with many types of renewable energy sources (RES) such as solar, wind, geothermal, sea energy (ocean thermal energy conversion and wave energy), biomass and hydropower. However, reaching this 100%

renewable electricity mix will involve many structural changes in electricity production in a short time-frame.



## Renewables Policy on a tropical island in Indian Ocean:

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## Reunion Island renewable energy adoption and innovation

Transforming the Electricity Grid in Reunion. Reunion Island has emerged as a pioneer in renewable energy adoption and innovation. With a goal of achieving 100% renewable energy by 2030, the island has made significant strides in harnessing its abundant solar resources and implementing cutting-edge technologies.



## Clustering of Solar Irradiance

The development of grid-connected photovoltaic power systems leads to new challenges. The short or medium term prediction of the solar irradiance is definitively a solution to reduce the storage capacities and, as a result, authorizes to



increase the penetration of the photovoltaic units on the power grid. We present the first results of an interdisciplinary research project which ...

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## Renewables Policy on a tropical island in Indian Ocean: La Reunion

Since the early 2000's, public policies have largely incentivized photovoltaic solar energy in Reunion Island, making it a test lab for renewables - on- and off-grid. Reunion Island transforming into a low-carbon economy. Reunion Island wants to achieve 50% of renewable energy in its electricity mix by 2020 and self-sufficiency in 2030.

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