

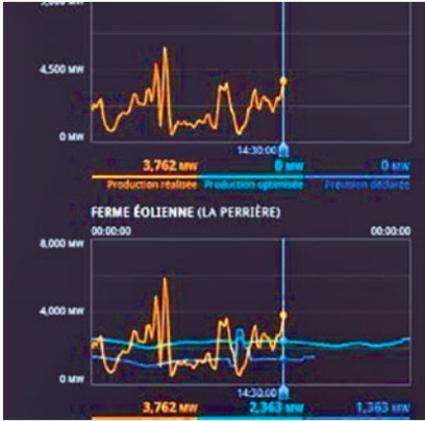
# Forecast renewable production in the islands

Island electricity networks present some specific characteristics: they are disconnected from mainland networks and therefore isolated; and being small, they are more fragile than large interconnected mainland systems. Intermittent renewables have been developed rapidly for island systems in recent years. Given the weight of these renewables in the energy mix, these networks have to deal with the unavoidable nature of production and its potential intermittency, which raises the issue of electricity storage. French overseas departments, notably Reunion Island, are in this situation. Several times a year, peak intermittent renewable energy production accounts for 30% of total consumption.



EDF is the manager of Reunion Island's electricity system. Together with several partners, including Météo France, École Polytechnique, Quadran and Albioma, it has developed an innovative process for smoothing the balance between production and consumption while maximising the storage capacity for photovoltaic and wind power. Implemented on Reunion Island, this process has three components: a highly precise forecasting system for the wind and photovoltaic generation fleet based on weather forecasts and satellite images; data transmission and real-time management of the renewable energy facilities and the storage system; and a connected large capacity storage battery. With its use optimised against the system data, the battery can store energy in fine sunny or windy weather and then release it into the grid when the sky clouds over or the wind dies down. Using this storage capacity to smooth power generation from these intermittent renewable sources, the system provides a partial answer to the challenges facing island electricity systems.

EXAMPLE OF REUNION ISLAND



Supervise production of intermittent renewable energy.

**AIMS**

1. Better **integrate** renewable energy from all producers into the island's energy mix.
2. **Improve** the electricity system's stability.



A full system for smoothing renewable energy production.

**DESCRIPTION**

A ground observation **station** to forecast photovoltaic production.  
 A 1 MW sodium-sulphur **battery**.  
**Two photovoltaic power plants:** 2 MW and 10 MW.  
 A 10 MW **wind farm**.

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