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## FLAGSHIP PROJECTS

# Oiapoque Hybrid Plant in Brazil

#Solar #Hydro #Diesel #Off-grid #RuralElectrification #SouthAmerica #SkyImager #SkyCamVision #InstaCast

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## **Oiapoque Hybrid Power Plant: For a sustainable city**

As part of its commitment to renewable energy, power plant operator Voltalia SA commissioned in 2017 a 4MWp solar plant in Oiapoque, Brazil, in order to reduce infrastructure and operating costs of the existing power plant by reducing the diesel consumption during power generation. Due to is remote location in the Amazon rainforest, the 24,000-inhabitant city of Oiapoque is not connected to the national electricity grid.

	Total Capacity	23.5 MWp
A Contraction	Location	Oiapoque, State of Amapá, Brazil
	Туре	Hybrid Microgrid
	Energy mix	Thermal Unit 12 MW
		PV 4 MWp
		Hydro (by 2021) 7.5 MW
	This project uses Reuniwatt's SkyCam Vision™ + InstaCast™	
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### Cutting-edge solutions for the weather-wise piloting of the installation

Voltalia has supplied supply electricity for the remote municipality of Oiapoque in the state of Amapá, Brazil, providing a thermal mixed project and thus cleaner upgrade of the diesel generators used by the city so far. This project in the remote coastal municipality covers the electricity supply for an area of more than 22,000 km<sup>2</sup> and a population of approximately 24,000 people. Transmission lines are also owned by Voltalia.

The Oiapoque project, operating since 2017, is the first hybrid system in the world to include three sources of energy as well as an all-sky imager for nowcasting (forecasting in the next minutes).





The Sky Cam Vision™ sky imager installed at Oiapoque

Sky Cam Vision<sup>™</sup> is an industrial-class sky imager developed by Reuniwatt for high-resolution sky observation and tracking of the cloud cover. In combination with InstaCast<sup>™</sup> service, it offers a very accurate forecast of the irradiance for the next minutes. The method is based on image processing techniques for cloud retrieval and motion tracking, and machine learning techniques in order to adapt to the site's specific conditions.

Since the site has no access to the internet, the forecasts are computed locally and sent to Deif's controller via Modbus, for integration into the plant's control scheme.

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### Leading to outstanding benefits

Solar fluctuations are anticipated thanks to the sky imager's insight into current and upcoming local weather conditions. The steep reduction of solar production caused by the movement of the clouds can be detected in time in order to optimize plant operations. This enables to run diesel generators only when needed, thus achieving solar fractions of up to 80% during sunshine hours and covering more than 17% of the city's annual consumption, without endangering the microgrid's stability. The hydropower plant will permit a 90% consumption coverage by renewables from 2021 without battery energy storage system (BESS).

Such striking figures have been made possible by the close collaboration and competence sharing of complementary partners. The project opens interesting perspectives of renewable sources coupling.



## Impact of the project



**36%** reduction of solar energy curtailment thanks to forecasts



646.000

liters/year of diesel saved by the

solar plant

**15,700** tons/year of CO2 emissions avoided from 2021

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## **Customer feedback**



#### Nicolas Dupaquier, LATAM Construction Director at Voltalia

"SkyCam Vision™ is a robust solution that helps us adapt to the complex environmental and harsh climatic conditions in Oiapoque. At this remote location, cooperating with Reuniwatt and the hybrid control provider ensures the ideal operation of our hybrid plant through the full project life cycle."

### **About Reuniwatt**

Reuniwatt is a major player of the solar radiation and cloud cover assessment and forecasting. Based on solid Research and Development works, the company offers reliable products and services intended for professionals of various fields, making the best out of two key facets of meteorology: atmospheric physics and data sciences. A particular focus has been placed on solar energy forecasting, while developing cutting edge solutions to improve short-term prediction of the solar resource. The company has won many grants, including H2020's SME Phase 1 programme, which makes Reuniwatt a European Champion with regards to innovation.



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