Island microgrids greece

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Kythnos Island is located in the Aegean Sea, close to Athens. The Kythnos Island Project was funded by the European FP 5 Microgrids program, the objective of which was to test centralized and decentralized control strategies for islanding.

It is a small village scale autonomous microgrid, composed of a 3-phase low-voltage network, solar PV generation, battery storage, and a backup generator. The grid is composed of overhead power lines and a communication cable running in parallel to serve monitoring and control requirements.

There are 10 kW of PV at two locations, a nominal 53 kWh battery bank, and a 5 kW diesel genset. A second PV array of about 2 kW connected to an SMA inverter on the roof of the control system buildings provides power for monitoring and communication, backed up by a nearby 32 kWh battery bank.

The island of Tilos in Greece"s Aegean Sea is going to host the country"s first renewable energy plus battery storage system. The microgrid will be able to support the island’s population, replacing diesel generators. Ilias Tsagas of pv magazine explores why this is so significant for Greece.

Tilos is a Greek island located in the south-eastern Aegean Sea, with a population of about 500. The island has often generated big news, and about a decade ago its mayor carried out Greece"s first same-sex weddings between two men and two women respectively, despite Greece then not allowing same-sex partnerships.

This time, Tilos is preparing to embrace another first, although on a totally different front. The island is soon to host Greece"s first ever battery storage system and smart microgrid based on renewable energy.

Tilos" project comprises 13 enterprises and institutes from 7 European states and its "main goal is to demonstrate the potential of local and small-scale battery storage to serve a multipurpose role within an island microgrid that also interacts with a main electricity network. Among others, the project aims to achieve large-scale renewable energy systems penetration and asset value maximization," says the project coordinator.

Dr Dimitris Zafirakis, of the Piraeus University of Applied Sciences, which is the coordinator of the project, told pv magazine that Tilos" system installation will commence in June and conclude by the end of the summer. Testing will start immediately after.

Greek energy regulator RAE has licensed the Tilos project, which will include a photovoltaic park of 160 kW capacity, a sole 800 kW wind turbine and two battery containers of 1.44 MWh/400 kW each. According to RAE"s license, Tilos" hybrid system will guarantee a power output of 400 kW for 5 hours per day.

Greece"s Eunice Energy Group, a renewable energy developer, will provide financing for the purchase and

installation of the renewable energy facilities, while the rest of the project is fully funded from the European Union.

Piraeus University of Applied Sciences provided an initial study for the project and now coordinates it, while Berlin-headquartered Younicos, a leading intelligent battery solutions provider, is responsible for the design and implementation of the system"s real-time operations management.

The project"s DSM is covered by Germany"s leading EPC and energy management company Eurosol Energy Solutions, which has developed a prototype smart meter and DSM device, already rolled out in several island households.

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