# Portugal microgrid operation

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Off the coast of Portugal, in the northern Azores, heavy dependence on fossil fuel imports, coupled with a growing climate crisis, puts the island of Graciosa in a very unique bind as it relates to energy security. Relying on oil, diesel and natural gas shipments has been a very expensive endeavor and traditionally the only option for isolated communities like Graciosa. Integrating renewable energy has not only become an economically viable alternative, it"s also a sustainable one.

The Graciosa Hybrid Renewable Power Plant enables 1 MW of solar, 4.5 MW of wind power and a 6 MW / 3.2 MWh energy storage system to be supplied to the local grid, reducing the islands" reliance on petroleum imports and significantly reducing greenhouse gas emissions. Graci?lica Lda"s end client, local utility EDA, anticipates this investment will boost renewable energy consumption from 15% to 65%. Not only does this reduce the island"s carbon footprint, but the hybrid island grid will also greatly impact the cost of energy going forward.

Graciosa is one of many islands pursuing a hybrid approach to island grid energy generation. This new hybrid renewable power plant is managed by GEMS, an energy management software system developed and installed by W?rtsil?. The result: an integrated power system combining renewables, engines, and energy storage that will deliver both economic and environmental benefits.

The GEMS platform uses artificial intelligence and data to control and balance multiple energy assets, automatically optimising energy generation based on load patterns and weather forecasts, increasing the use of renewable energy and decreasing the cost of diesel power generation, while improving the reliability of the island"s energy grid.

This project represents the journey towards a 100% renewable energy future for the island that will deliver both economic and environmental benefits.

Heavy dependence on external sources for energy fuel, including high costs of importing fossil fuels to power the island"s energy grid and relative unreliability of supplies

Hybrid storage solution integrated and GEMS optimised energy generation, combining wind, solar, energy storage and thermal generation assets

Reduced island"s reliance on imported fossil fuels and significantly cut down on greenhouse gas emissions by boosting renewable energy consumption from 15% to 65%

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