

One year of PV-battery diesel hybrid operations on a Caribbean island: THEnergy confirms the outstanding performance of the SMA microgrid

Island utility Stuco plans to expand plant and switch-off diesel generators in the near future

Munich/Kassel, July 2017 – SMA Sunbelt commissioned a 1.89 MW solar PV and 1 MW / 572 kWh Li-Ion battery energy storage system, in March 2016. The objective of the retrofitted renewable energy plant is to reduce the diesel consumption of existing diesel generators. THEnergy has performed a data analysis for the first year of operations. Large-scale hybrid systems are rather complex and for island utilities it is difficult to fully assess the outcome of hybridizing their diesel power plants with solar power plants on fuel consumption. They typically rely on the calculations of the manufacturers or on rather costly third-party studies.

In the case of Sint Eustatius, the performance of the plants exceeds the forecasts. The share of solar energy on the island energy mix was higher than predicted for the first year of operations. Relative diesel savings were 3.4% higher than forecasted: diesel consumption was reduced by 62 l/MWh instead of 60 l/MWh. These additional savings are particularly remarkable as solar irradiation during the year was 4.9% below average due to local weather conditions. Even the total savings in diesel were in line with those forecasted. This is also reflected in the slightly higher than expected performance ratio of the solar PV plant.



The analysis also shows positive findings for battery performance. While a degradation of 4% was expected, the actual degradation after the first year was 1%. It is realistic to assume that with normal weather conditions, and the extremely low degradation of the battery energy storage system, the future performance of the plant will be even better than during the first year.

The outstanding results of the new system are also the main reason for the island utility deciding to expand the plant in the near future by adding 2.25 MW of solar power, and 4.4 MW / 5.2 MWh of battery energy storage. As Fred Cuvalay, CEO of Stuco explained: “We are fully convinced of SMA Sunbelt, which is particularly important, as in this next step we will switch off our diesel gensets during sunny days and will fully rely on renewables”.

Thomas Hillig, the Managing Director of THEnergy also made the following comments on the exciting results: “Large PV-battery diesel hybrid plants are still relatively new. On islands in particular, the reliability of the supplier is a key success factor. Bad planning and technical issues may lead to huge consequential costs. This project will also be a signal to other islands of what can be achieved by integrating renewable energy.”

For further information and detailed results, please have a look at the THEnergy Analysis:

https://www.th-energy.net/app/download/13556076824/2017JUL-THEnergy-Analysis_StEustatius_Final.pdf

About SMA Sunbelt

SMA Sunbelt Energy GmbH is a 100% affiliated company of SMA Solar Technology AG. It was founded in 2014 and focuses on Off-Grid, PV-Diesel-Hybrid and battery-based solar projects. SMA Sunbelt Energy GmbH concentrates its business on the world’s Sunbelt regions (Africa, Central America and Caribbean, Middle East, South-East Asia and Pacific). Customers profit from more than 30 years of SMA know-how in Off-Grid and PV-Hybrid system solutions. <http://www.sma.de/sunbelt.html>

About Dr. Thomas Hillig Energy Consulting (“THEnergy”)

THEnergy assists companies in dealing with energy-related challenges. Renewable energy companies are offered strategy, marketing and sales consulting services. For industrial companies, THEnergy develops energy concepts and shows how they can become more sustainable – combining experience from conventional and renewable energy with industry knowledge in consulting. In addition to business consulting, THEnergy advises investors regarding renewable energy investments in changing markets. www.th-energy.net

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