

Revamping and Repowering PV Plants with COGEM HCPV to Maximize Financial Returns

Newsletter No. 7

[Solergy](#) is retrofitting Ricciarelli SpA's under-performing 440kW Soitec CPV plant to achieve expected ROI

By now, many PV plants have been operating for over 10 - 15 years and are starting to show signs of age and degradation. Because many early solar power plants were developed quickly and cheaply to profit from expiring Feed-in-Tariffs, these plants have severely underperformed and are not generating the expected returns. In many cases, these plants are still operating under favourable tariff regimes and therefore a small investment to improve the plant's performance can be worthwhile.

Specifically in Italy, one of the leading early markets for PV installations, the GSE has updated the rules governing the renovation of existing PV plants operating under the *Conto Energia* tariff regime. The rules define two activities:

- **Revamping** involves intervention and/or upgrading of already existing facilities in order to improve efficiency and/or restore original performance.
- **Repowering** involves changes to the existing modules and/or inverters, including electric layout, in order to increase the installed capacity and the annual production.

When repowering, one can increase the original capacity by up to 5% for plants up to 20kW, while for plants greater than 20kW, capacity can be increased by up to 1% and still benefit from the original tariff. It is possible to further increase the size of the plant, but any capacity beyond these thresholds can be sold only at standard off-take rates. Given the highly competitive cost of PV today, this regime opens an interesting new market.

Solergy COGEM HCPV and 2-axis PV Trackers Reliably Repower Underperforming PV and CPV Plants

[Solergy](#)'s technology is ideal for repowering solar power plants because of its proven reliability, consistently high performance, and competitive cost. COGEM HCPV is the best option for repowering CPV plants while the 2-axis tracker can also help recover expected returns from failing, tracked PV plants and boost returns from fixed PV plants.

In Italy alone, there are an estimated 20 MW of HCPV plants. Many of these are underperforming due to tracking reliability and precision issues and/or due to defective modules. At the same time most of these plants benefit from exceptional tariff rates greater than €0.20/kWhr. Therefore, with a modest investment in repowering, well below the initial capex, HCPV plant owners can still benefit from this excellent tariff for another 12 – 15 years. PV plants using 2-axis trackers have also suffered from similar issues related to tracking reliability.



Applying Solergy COGEM 2-axis Trackers to repower a poorly performing CPV plant

Ricciarelli SpA selects Solergy COGEM HCPV to repower its 440kW HCPV plant in Puglia, Italy

Ricciarelli SpA, a company specializing in industrial packaging systems for food products, constructed two HCPV plants based on Soitec CPV. One plant in Terlizzi has a nominal capacity of 440 kW, while the other plant in Cerignola has a capacity of 990 kW. Ricciarelli SpA was attracted to CPV by the promise of higher efficiencies and energy yields as well as the high feed-in-tariffs.

Unfortunately, shortly after installation, many of the trackers started failing and having alignment issues. The plant never achieved anywhere near its promised output and the operating and maintenance costs soon exceeded the benefits. As a result, Ricciarelli stopped the plants and they have not been generating electricity for several years now.

Solergy is now retrofitting these plants with COGEM CPV trackers so that they generate a profit for their owner. The Solergy repowering project consists of the following steps:

- 1) *Test and sort the existing Soitec CPV modules.*

To do this, [Solergy](#) deployed a 2-axis test tracker with measurement equipment on board. Measurement of CPV modules requires precise alignment with the sun. The Soitec modules were mounted twelve at a time were measured for current and voltage. They were binned by power output and defective modules were discarded.



- 2) *Replace all Soitec CPV trackers with Solergy's COGEM HCPV trackers.*

The Soitec trackers were not reliable and often times not functioning at all, causing tremendous loss of revenue. The only viable option was to replace all of them with Solergy's reliable trackers. Once the trackers were installed, the Soitec modules that passed the selection process were mounted on the trackers.



- 3) *Commission the re-powered plant.*

So far, 8 Solergy trackers have been commissioned. The remaining 14 trackers are being installed and will be commissioned in early 2020.



- 4) *Replace defective Soitec Modules with Solergy COGEM HCPV modules.* A certain number of complete Solergy HCPV trackers will be installed depending on how many Soitec modules are found to be defective. This will enable restoration of the original capacity of the plant.

Do you have an underperforming CPV or PV power plant? Solergy's repowering solutions can help you increase the yield of your plant and provide better financial returns.

Developing a solar project? Want to learn more? Join HESCO

The **High Efficiency Solar and Solar Cogeneration (HESCO)** Special Interest Group is growing! This group, formed as part of Solergy Italia's COGEM CPV - Horizon 2020 project, aims to promote collaboration among renewable energy industry stakeholders who wish to develop energy efficiency projects based on Solergy HCPV technology. Special emphasis is placed on applications that involve **cogeneration of electricity and heat**. The HESCO group is the place to share information about technological developments, best practices, exchange ideas, seek solutions for energy efficiency projects, and Provide feedback for how Solergy HCPV can best serve market needs.

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