

CASE STUDY

Tigo optimizers maximize home solar production across seven roof orientations

Background

This 12kW residential solar installation is located in Offenburg (Baden-Württemberg, Germany), a few kilometers from Strasbourg and from the French border. It is characterized by a unique layout with different orientations spread across a double-pitch roof on the main home and a detached carport.

Challenges

To face rising energy costs and with a keen spirit of environmental responsibility, the homeowner wanted a solar installation that maximized production. They wanted to make the most of their challenging roof-space to serve their electrical needs with ample additional capacity to feed an energy storage system. The energy storage system would be used to a high degree for self consumption at the house.

Despite a large roof area, the usable surface was fragmented into several different portions, with distinct angles and orientations. Each orientation represents a potential form of mismatch across each string of modules, so the customer and installer knew they wanted to use optimizers to production losses.

Without optimizers, the performance of each string can be reduced to the worst performing modules or orientations, but optimizers minimize the performance impacts in these scenarios by regulating the output of each module to the optimal level across the whole string.

For this reason, it was necessary to couple each installed half-cut PV modules with Tigo TS4 platform of Flex MLPE, to overcome installation constraints and enable smart functionalities such as optimization, monitoring and rapid shutdown on a per-module basis.

The flexibility of Tigo TS4 also helped to streamline system design. Modules have been partitioned into two separate strings, one per each MPPT, for the benefit of a production curve, with losses from mismatch minimized by Tigo optimizers.

INSTALLER

Huber Holzbau & Solartechnik



INSTALLATION TYPE

Residential

LOCATION

Germany



FEATURES

Optimization, Monitoring, Safety (rapid shutdown)



TIGO EQUIPMENT

Tigo TS4-A-O

Cloud Connect Advanced (CCA)

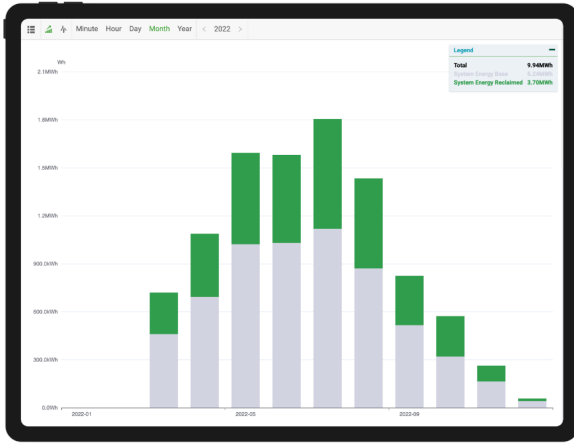
Tigo Access Point (TAP)

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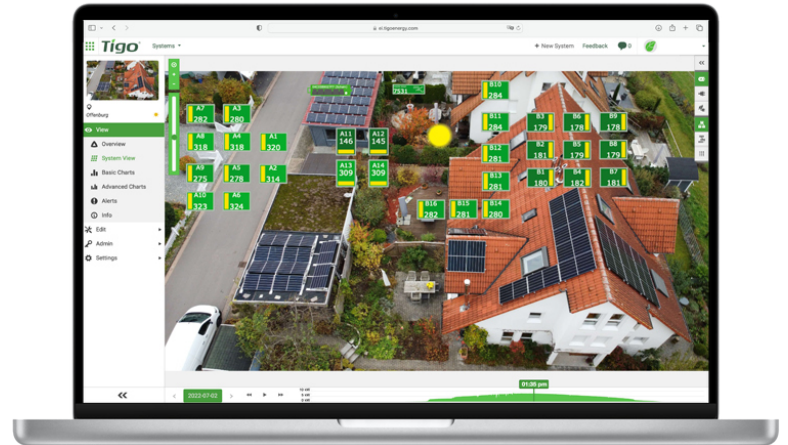
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Tigo Energy Intelligence monitoring shows output by minute, hour, day and month (shown above). The green bars show reclaimed energy - the additional energy production enabled by Tigo optimizers.



A digital twin layout of the site shows key data on each module to validate performance and remotely diagnose issues to minimize operations and maintenance costs.



Results

Despite different roof orientations, the 12kW solar installation delivers strong energy production, with the contribution of Tigo TS4 platform. As shown by data visible through the Tigo Energy Intelligence monitoring portal, the homeowner benefits from an average 37% Reclaimed Energy. In October 2022, due to weather conditions and shading, Reclaimed Energy reached as high as 44%. Reclaimed Energy is the additional energy production enabled by Tigo optimizers. The additional energy that's generated helps offset higher electrical loads as the weather cools down and increases the overall return on the project by maximizing savings.

"Without Tigo TS4 optimizers on each module, together with CCA kit, this PV system would not have run effectively" said Mr Huber of installation company Huber Holzbau & Solartechnik "The whole project was mainly about the effectiveness of the system, and for this reason Tigo was the only dependable solution."

Equipment summary

- Residential Installation
- System Capacity: 11,7kw
- Modules: 30x Q-Cells Q.Peak Duo ML.G9 390Wp
- Inverter: Sungrow Hybrid SH10RT with BYD Batteries
- 30x Tigo TS4-A-O (Optimization) Flex MLPE
- 1 Tigo Cloud Connect Advanced (CCA)
- 1 Tigo Access Point (TAP)

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