CASE STUDY

Tigo optimizers maximize energy production on a home solar array with five orientations

Background

A homeowner in Schagen, the Netherlands wanted to maximize solar production to counter the rising costs of electricity, despite having limited roof space. The home had one section of flat roof, and four additional sections of sharply angled roof with multiple pop-outs. Despite the unique roof layout, the homeowner wanted to fit as many modules on it as reasonably possible.

Ultimately, the homeowner worked with HdG Energieadvies, a Renewable Energy Consultancy to design a 12kW system using 36x Trina Solar modules, 36x Tigo optimizers and a Goodwe inverter. The system was installed by Aton Energy, based in Limmen, Netherlands.

Challenges

The roof layout posed multiple challenges when designing the solar installation. Not only were there five different orientations, but there was shade and window pop-outs that broke the plane of each roof.

With so many orientations and shade, the biggest risk of the project was for the lower performing modules to substantially bring down the performance of all the modules on the string. It was not reasonable to utilize an inverter or inverters with five or more MPPT's (multiple power point trackers).

In addition, the homeowner and installer wanted visibility into the performance of each module to ensure that it was performing adequately and not adversely impacting the rest of the string.

The layout of the installation is visible via the Tigo Energy Intelligence (EI) monitoring platform.

DESIGNER & INSTALLER

HdG Energieadvies

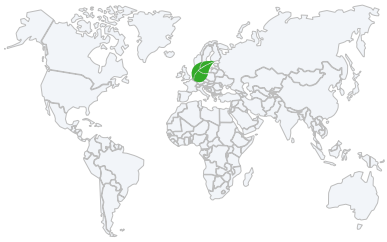
Aton energy

INSTALLATION TYPE

Residential

LOCATION

Netherlands



FEATURES

Optimization
Monitoring
Safety (rapid shutdown)

TIGO EQUIPMENT

Tigo TS4-A-O

Cloud Connect Advanced

Tigo Access Point

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https://www.tigoenergy.com/contacts

Tigo®

The northwest side of the roof has five modules with one pop-out and one skylight to design around.

The northeast side of the roof has six modules below a pop-out and multiple roof obstructions

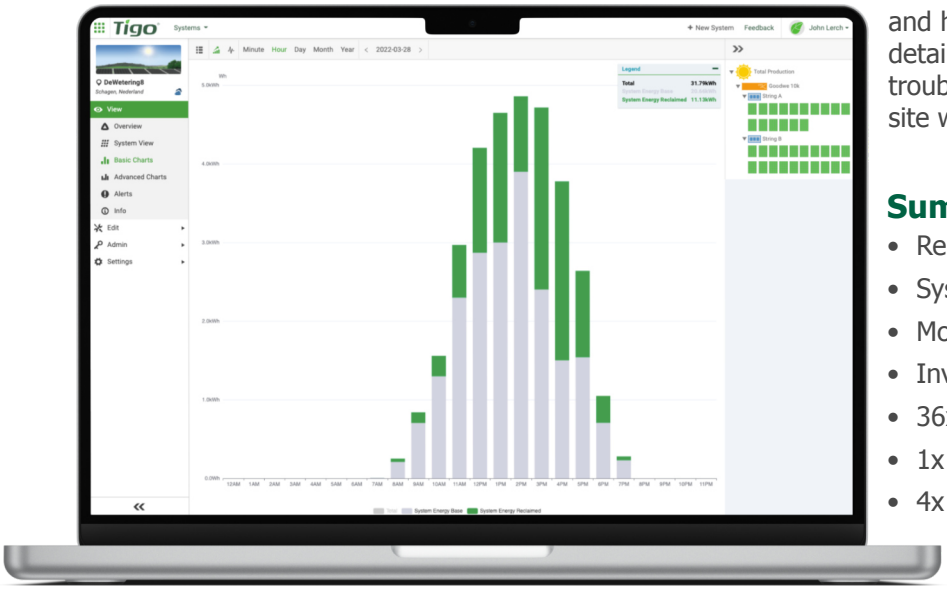
The southeast side of the house includes eight modules around a skylight.

Results

HdG Egergieadvies designed the solar installation with Tigo TS4-A-O optimizers on all 36 modules in order to minimize the effects of shade and mixed orientations. They were also able to use a Goodwe inverter with two MPPT and according to the designer, "without Tigo, I would need at least five MPP trackers."

The performance of the optimizers is clearly visible in the Tigo EI Monitoring Portal. The reclaimed energy (shown in the green bars in the picture on the left) that is enabled by the optimizers represents 30% of the daily energy production of the site. Over the last 2 years, the system has generated 5MWh of clean energy, of which 1.5MWh came from reclaimed energy from the TS4-A-O optimizers.

The Tigo optimizers also enable module-level monitoring so the homeowner can see how each module performs realtime and historically. The installer can view the detailed performance data of the site and troubleshoot issues remotely if needed. The site was commissioned in March, 2021.



The Tigo EI monitoring portal, showing hourly energy (kWh) production, including the reclaimed energy portion in green. Reclaimed energy is unique to Tigo and represents the incremental electricity enabled by Tigo optimizers.

Summary

- Residential installation
- System capacity: 12 kWdc
- Modules: 36x Trina Solar TSM-335DDM06
- Inverter: Goodwe GW10KT-DT
- 36x Tigo TS4-A-O (Optimization) Flex MLPE
- 1x Tigo Cloud Connect Advanced (CCA)
- 4x Tigo Access Point (TAP)

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