

CASE STUDY

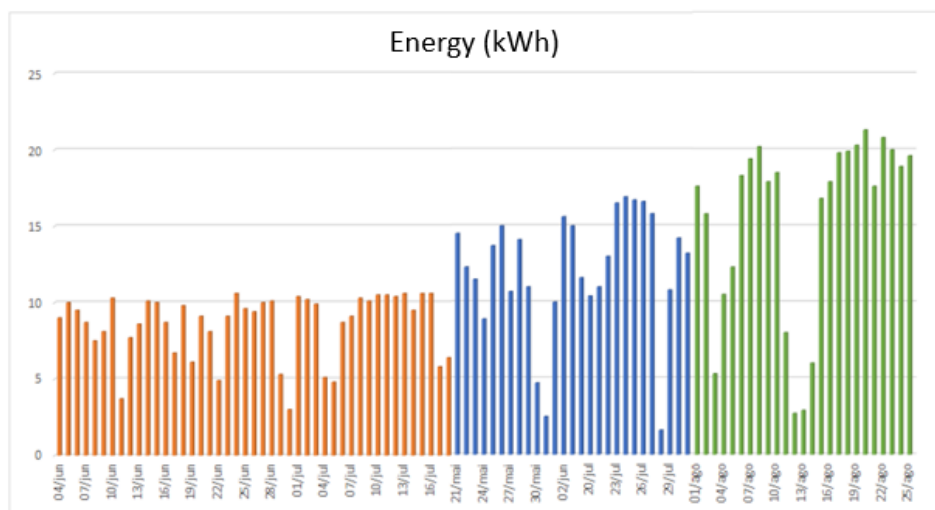
Tigo Selective Deployment helps residential customer to generate her own energy

Background

Something that differentiates a solar energy company in the market is its ability to solve problems. It is very common for companies to find challenging roofs for the application of photovoltaic (PV) power generation systems. The company that knows how to deliver the solution for the best generation in roofs with shading or different orientations, will be able to deliver the project with the best cost-benefit ratio.

The system installed in the customer's residence presents 10 Trina Solar 410 Wp bifacial modules connected in series. The installation company Energisus, always seeking maximum energy generation, installed 8 modules in the orientation that had the highest generation (North orientation), and another 2 string modules were installed in the South orientation. The 4.1 kWp system was connected to a 3kW inverter from Growatt, the MIC 3000 with an oversizing of 36%.

The system was designed using 2 Tigo TS4-A-O optimizers in the South facing modules. Tigo Energy's exclusive technology allows the designer to use Selective Deployment to connect optimizers only to the modules they need. With Selective Deployment it was possible to connect modules in the South orientation in series with modules in the North orientation, without have more than one MPPT.



INSTALLATION COMPANY



CUSTOMER TYPE

Residential

LOCALIZATION

Rio de Janeiro, Brazil



FEATURES

Optimization
Selective Deployment



TIGO EQUIPMENT

Tigo TS4-A-O

Tigo Contacts

<https://www.tigoenergy.com/contacts>

Copyright Tigo Energy, Inc. 2021

Tigo®

Configuration	Daily average generation (kWh)	Generation of the three best days (kWh)		
A	8.6	10.6	10.6	10.6
B	12.14	16.9	16.7	16.6
C	15.53	21.3	20.8	20.3

Table with the daily average generation in the three configurations. Also, the generation of the three best days of sunlight.

Different orientations in series

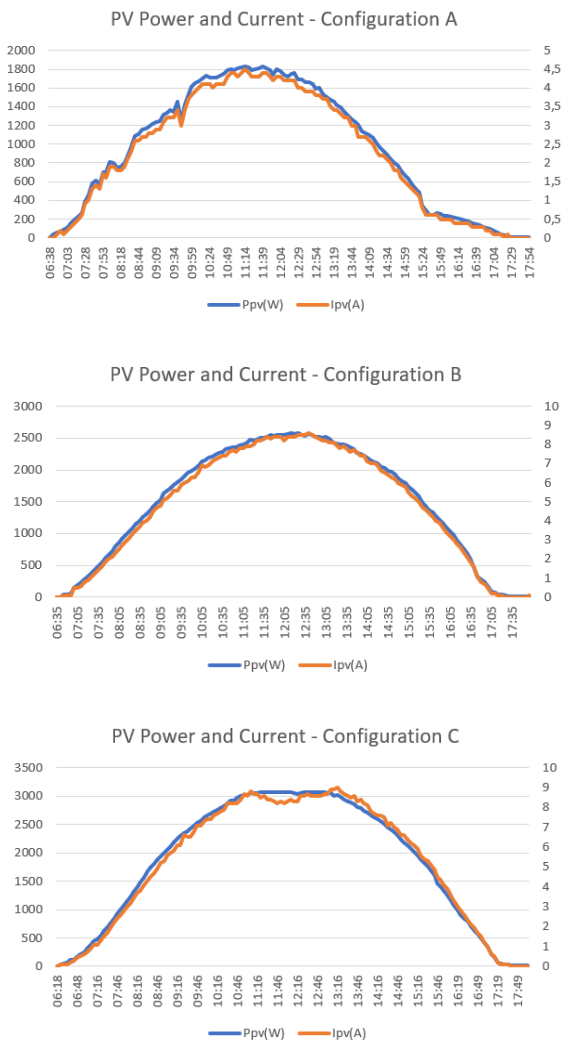
The system then went through three different configurations: configuration A, 8 modules for the North and 2 for the South; configuration B, 8 north-facing modules; and configuration C, 8 modules for the North and 2 for the South with TS4-A-O optimization. Thus, it is possible to analyze the power generation during the three configurations. Until the production of this case study, the photovoltaic system generated energy 45, 27 and 25 days in configurations A, B and C, respectively.

Despite the drop in generation on cloudy days, it is noted that the days with the highest generation occurred during configuration C, with two modules with Tigo TS4-A-O optimizers. The table shows the daily average of generation in each configuration, including cloudy days. In addition, the table also shows the generation of the best three daily generations for each configuration.

It is worth to note that configuration A with 10 PV modules had a lower performance than configuration B with only 8 PV modules. This is explained by the fact that they were connected from different orientations (North and South) in series. In this case, the South-oriented modules limit the generation of the North-oriented modules throughout the day. As all modules are connected in series, they must all operate with the same current, so the current from the southern modules limits the current from the northern modules.

In configuration C, the Tigo TS4-A-O optimizers allow the serial connection of the southern modules with the northern modules, ensuring that each module will generate its maximum without limiting any module in the string. Because of that, it is the configuration that generates the most energy and delivers the greatest customer satisfaction.

In the generation curves it is possible to see the PV power and current during the days of greatest generation in each configuration. In configuration A, the maximum power reached was 1,800 W with a current of 4.5 A. In configuration B, 2,500 W was the maximum that the system could generate with a current of 8 A. And in configuration C with Tigo optimizers, the system reached the maximum power allowed by the inverter, 3,000 W, and the clipping effect occurred when the PV array is generating more power than the maximum power of the inverter.



Clear-sky generation curves in all three configurations. Configuration C with only two TS4-A-O optimizers had the highest power generation and made the inverter achieve its clipping.

Summary

- Installation Capacity: 4.1 kW
- Modules: 410 W Bifacial Solar Trina
- Inverters: Growatt MIC 3000
- 2x Tigo TS4-A-O Optimizers

Image courtesy: [Energisus – Energia e Sustentabilidade](#)

Tigo Contacts

<https://www.tigoenergy.com/contacts>

Copyright Tigo Energy, Inc. 2021

Tigo®