Case Study

Transformer Factory in Japan Installs a SolarEdge Rooftop System for Self-Consumption

In an effort to become more sustainable and energy independent, Tsuruta Electric, a Japanese manufacturer and supplier of transformers for PV systems, decided to install PV on their factory rooftop.

In order to best optimize their factory's solar consumption, Tsuruta Electric selected the SolarEdge DC-optimized PV solution. The installation consists of SolarEdge commercial inverters and power optmizers, with module-level visibility via the 25-year free monitoring platform, and an energy meter including the essential export limitation capability.

"Global warming is highlighting the need to urgently reduce our CO2 emissions. With FIT ending, and electricity prices continually increasing, installing rooftop PV to increase energy self-consumption is becoming more popular in Japan. We decided to install a SolarEdge system due to their advanced technology that maximizes our self-consumption and limits electricity grid export to zero. We are now able to save our electricity costs by about JPY150000 per month, which equals JPY1800000 a year. This means we will be able to pay back our investment within 6 years!"

Mr. Tsuruta, President of Tsuruta Electric

- Location: Tsuruta-Electric Factory, Ibaraki Prefecture, Japan
- Capacity: 52.8kW
- Installation date: March 2019
- Inverters: 2 x SE25K-JP
- Additional devices: SolarEdge commercial gateway, Janitza Meter

TSURUTA ELECTRIC

Export Limitation – A Critical Factor in Choosing SolarEdge

One of the reasons the Tsaruta Electric selected SolarEdge was for the export limitation option. During the week, when the factory is operating at full capacity, there are many load fluctuations. A common example, which is standard in many factories, is during lunchtime when many machines stop operating and the load rapidly drops. A similar scenario occurs over the weekend, when there is no ongoing operation. Due to these constant changes in energy consumption, when installing a PV system, the utility company regulations dictate that there should be no PV power export to the grid, in order to maintain grid stability.

As is common in most zero-export PV systems, a Reverse Power Relay (RPR) is installed to ensure zero export. The relay will trip once it senses export to the grid, which will cause the inverter to shut down, and the system to stop generating energy. These conditions make it almost impossible to maximize self-consumption.

The SolarEdge solution combined with the meter has a quick response time, enabling the factory to maintain its grid export to zero during times of large consumption fluctuations, avoiding activation of the RPR to maximize its self-consumption. SolarEdge's export limitation meter dynamically adjusts PV power production export to the grid when needed. It provides highly accurate readings for production and consumption monitoring, and supplies meter readings to the inverter.

Excellent Safety

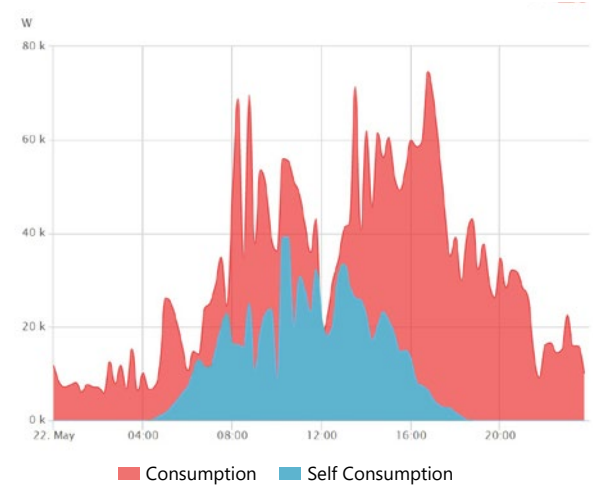
Safety was an important consideration for Tsuruta Electric when choosing an inverter solution for their rooftop system. Under normal circumstances, PV systems are generally safe and pose no danger to people and property, as long as the sun is up. However, PV wires remain energized with high DC voltages. PV modules typically have an output voltage of 30-60V. When connected in a string, voltages can reach 600-1500V. Shutting down the inverter or disconnecting the DC cables terminates current flow but increases the DC voltage level creating even higher electrocution risks. To minimize electrocution risks, SolarEdge offers enhanced safety with its built-in SafeDC™ module-level safety feature. SafeDC™ ensures system's DC voltage is reduced to a safe level when the system is shut down, or during installation, maintenance or emergencies.

Less Onsite Maintenance, More Time for New Installations

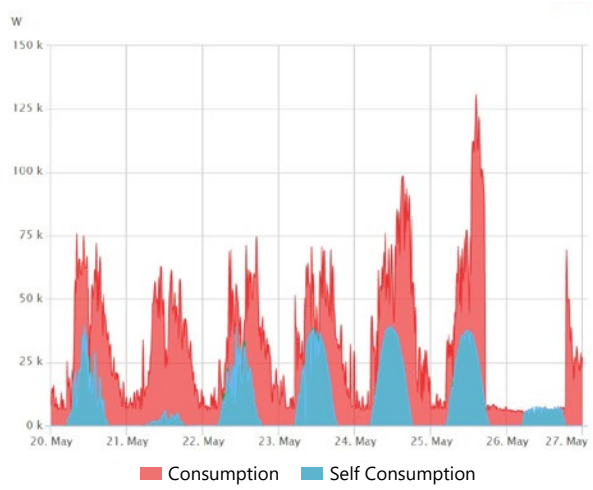
SolarEdge's module-level remote monitoring platform allows the installer and O&M providers to verify remotely proper installation and identify module defects and underperformance, such as bypass diode failures, potential induced degradation (PID), and micro cracks. O&M providers can prepare the right course of action in advance and arrive onsite with the right tools to solve the problem.

Reduced Balance of System Costs for Installers

DC cables run from the rooftop of the factory to the ground level where inverters and transformers are installed. SolarEdge's design flexibility enabled by module-level power optimizers allows for longer strings, which reduces the expenses on wiring, combiner boxes, fuses and other balance of system (BOS) components.



Screenshot from the SolarEdge monitoring platform. You can see the daily consumption drops during lunchtime (at around 12pm, when the machines stop working)



Screenshot from the SolarEdge monitoring platform – demonstrates the zero export function during the weekend