How rising demand for EV charging means buildings are taking on the role of prosumer

socomec
Innovative Power Solutions

At Socomec's headquarters in Benfeld, the Innovation Center brings Socomec teams together in one location to form a living lab where new energy solutions are created and tested at full scale. Socomec has equipped its Innovation Center with EV charging stations for employees, visitors and fleet vehicles, with the goal of supporting new mobility applications while meeting evolving regulations on charging infrastructure in non-residential car parks.

This growing EV charging demand sits on a limited grid connection – and quickly raised a core question for Socomec's Facility Manager. **How can more power be provided for vehicles, without reinforcing the electrical architecture – and without increasing energy costs, particularly given the current context of tariff instability?**

Socomec has taken up this challenge and, in doing so, has created an opportunity.
By combining renewable energy, a Battery Energy Storage System (BESS) and advanced metering, the Innovation Center now demonstrates how an office building can:

- integrate EV charging without reinforcing its electrical infrastructure,
- maximise self-production and self-consumption of solar energy,
- reduce dependency on the grid and energy cost volatility.

Furthermore, this flagship project directly supports Socomec's ambition to cut CO_2 emissions by 58% by 2030.

The challenges

Enable EV charging without upgrading the electrical architecture

The EV infrastructure significantly increased the site's power demand, with a high concentration of charging sessions in a short window of time. Simply asking for more power from the grid would have meant reinforcing the electrical architecture and raising contracted power - with a direct impact on both CAPEX and OPEX.

This challenge is amplified by the intermittency of renewables: solar production rarely matches actual consumption and EV charging patterns. Facility Managers cannot rely on PV alone to cover EV loads at the right time, so they need a way to buffer this mismatch while staying within existing grid limits.

Reduce energy costs and exposure to price peaks

The extra EV load threatened to significantly increase electricity bills, at a time when energy prices are not stable.

In this context of energy transition pressure, buildings are increasingly choosing to move towards self-production. Solar production rarely aligns with EV charging peaks, which means that buildings need to find a smart way to shift energy in order to avoid buying at the worst moments and to ensure that operating budgets are kept under control.

Comply with evolving regulations and prepare for flexibility

European directives - such as the EED, the AFIR and the EPBD, and national regulations like the French LOM law - push office buildings to deploy digital tools and automation to monitor, control and optimise energy use. This presented a new challenge for Socomec's Facility Manager who had to make sure that the site complies with all these regulations when creating the prosumer solution.

I needed to install charging stations without increasing the electrical power of my site. So I needed a smart, optimised solution. My ambition was clear: to prioritise the use of energy that I produce locally in order to reduce my costs and improve the site's carbon footprint.

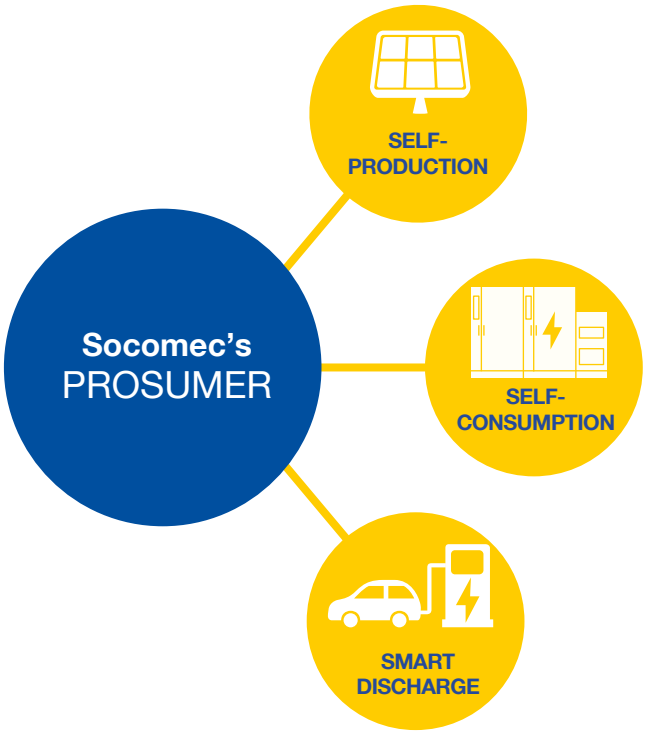
Aurélien Lauwerier, Facility Manager, Socomec

The solution

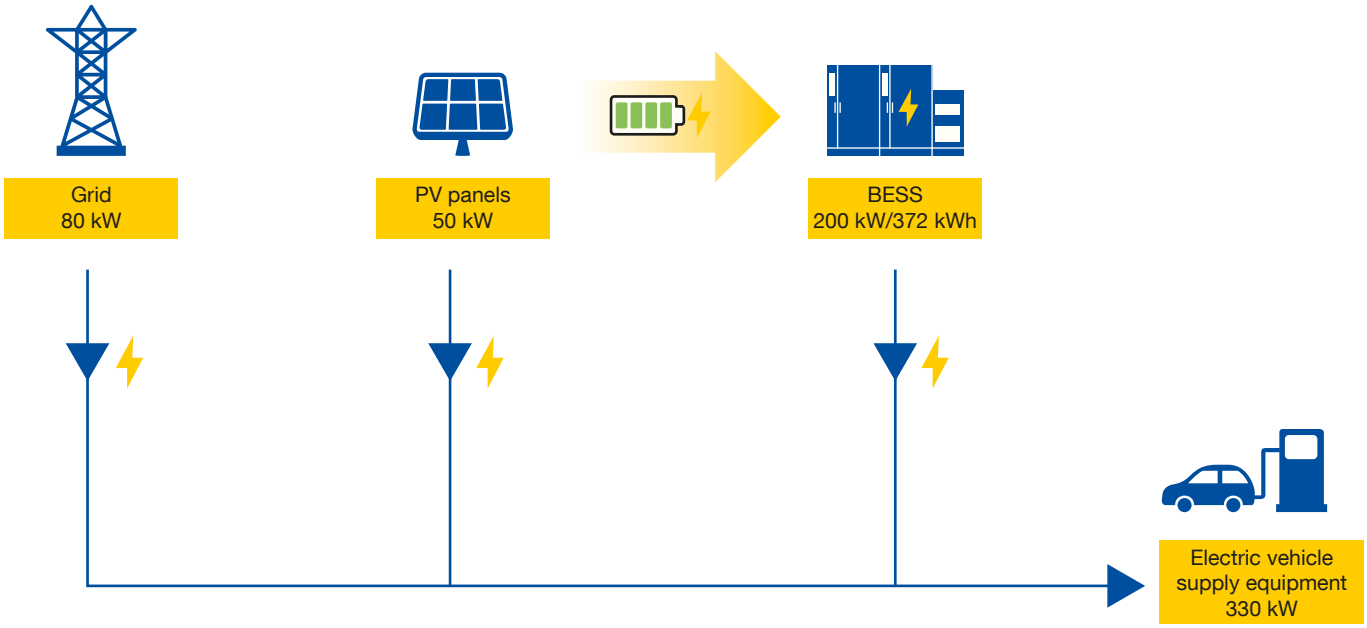
Self-production, self-consumption and smart energy distribution with solar and BESS

An independent energy hub that balances production, storage and consumption.

- **Self-production:** rooftop PV panels generate renewable energy dedicated primarily to EV charging.
- **Self-consumption:** when the energy produced by PV exceeds the operational needs of the building, the energy surplus is stored in the BESS or injected in the building instead of being wasted or immediately injected into the grid.
- **Smart discharge:** the BESS releases stored energy when demand exceeds the 100 kW grid availability and when the grid electricity is more expensive during peak hours, reducing electricity bills and maintaining charging performance.



The Innovation Center operates as a prosumer that uses energy storage to decouple EV charging needs from grid constraints.



The advantages

Reducing energy costs and grid dependency

For Facility Managers facing rising electricity prices, the prosumer model provides a concrete way to reduce energy costs. By maximising self-production and self-consumption of solar energy, the building can cover a significant share of its EV charging - without drawing additional power from the grid. In a context of high and unpredictable electricity prices, turning the building into a prosumer becomes a lever not only to secure power availability, but also to protect operating budgets over the long term.

Smart seasonal programming: 100% self-consumption in summer, optimised grid use in winter

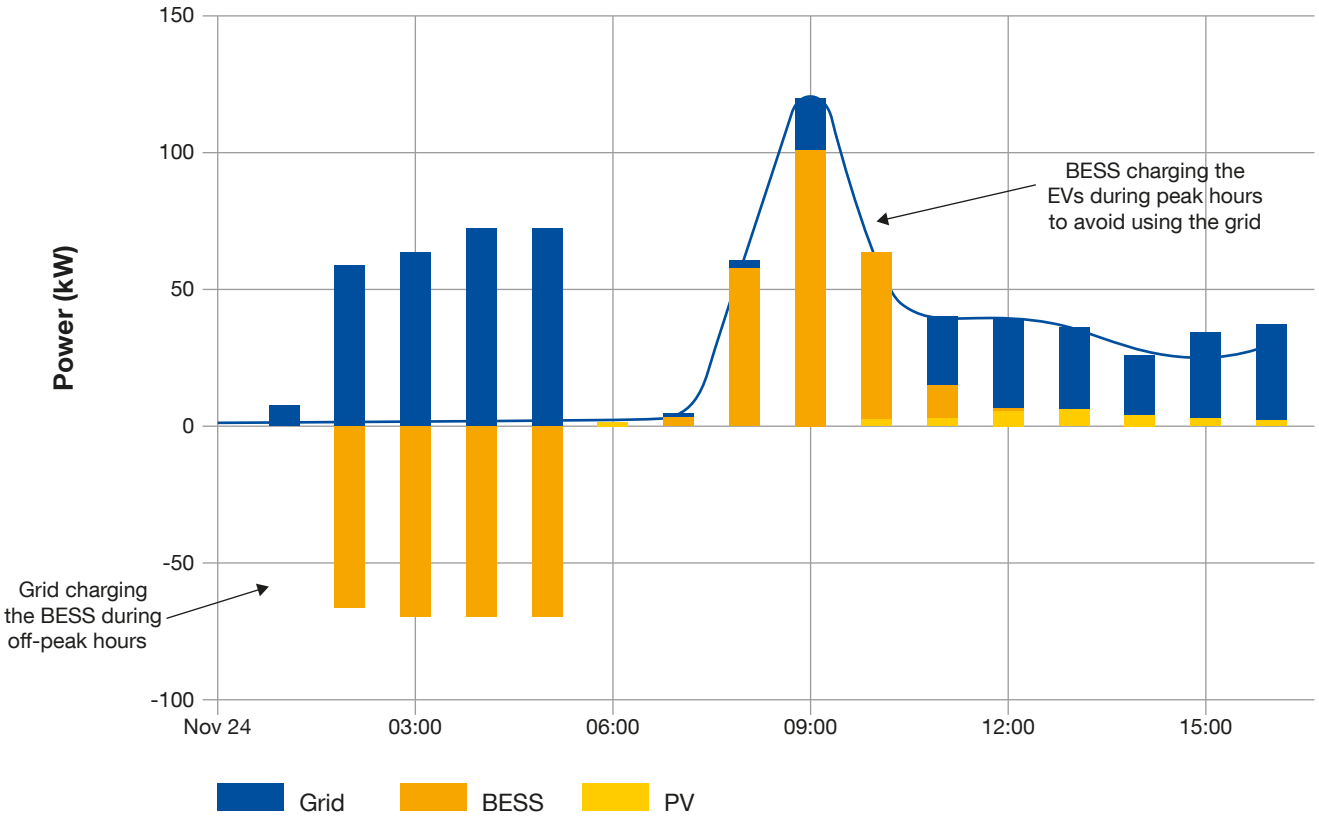
In summer, when solar production is high, the prosumer system is configured to operate in full self-consumption mode: PV generation and the SUNSYS HES L BESS together cover EV charging loads, so the equipment does not rely on electricity from the grid during this period.

In winter, when solar production is low and weather-dependent, the prosumer system switches to an optimised charging strategy based on grid tariffs. The SUNSYS HES L is intelligently programmed to charge from the grid during off-peak hours, when electricity is cheaper, and then discharge during peak hours and peak-shaving periods. For Facility Managers, this means that the building can still reduce its energy bill even when PV panels produce little or no energy.

This seasonal smart programming ensures that the prosumer building remains cost efficient all year round: in summer by maximising self-consumption with solar, and in winter by using BESS to arbitrage between off-peak and peak grid prices.

Learn more about the *SUNSYS HES L* product

Example of optimised charging strategy based on grid tariffs



Smart building monitoring with SoLive PRO

To operate the Innovation Center as a real smart building, Socomec set up a complete electrical and control infrastructure that connects all prosumer assets - PV, BESS, EV chargers and grid connection - to a single cloud-based monitoring platform: SoLive PRO.

SoLive PRO collects real-time data from the SUNSYS HES L system and from the site's metering devices, then processes and visualises this information in the cloud through predefined and customised dashboards. Operators can access a consolidated view of PV production, battery analytics, EV charging power and grid import/export, as well as key alarms and operating conditions. This provides an instant, intuitive picture of possible improvement paths to support corrective decision-making.
Behind the scenes, DIRIS Digiware provides the high-accuracy measurement points across AC and DC circuits (PV, BESS, EV chargers, building loads and grid incomer). This ensures granular, reliable data for SoLive PRO and supports proper cost allocation.

This application, the combination of DIRIS Digiware in the field and SoLive PRO in the cloud turns the Innovation Center into a fully instrumented, smart building: monitored in real time, EED and EBPD compliant, and continuously optimised for energy efficiency, savings and performance.

Example of dashboard

Charging stations 100 kW | Limited network 0 kW | Storage systems 93 kW | PV 7 kW

Today, I have an efficient and completely autonomous system. I don't have to manage anything: thanks to the automatic control system, the energy is distributed smartly according to the number of connected vehicles and availability. Everything happens in the background and I don't have to worry about the power that my site needs.

Aurélien Lauwerier, Facility Manager, Socomec

The results

Energy consumption

x 4
Increase in available power, effectively covering the morning charging peak

x 2
Use of photovoltaic energy for EV charging with the integration of the storage system

From May to August 2024

100 %
Self-consumption

8 MWh
of solar energy used to charge EVs

5.6 tonnes
Reduction of CO_2 emitted

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