

Life Is On

Schneider
Electric

Get the most out of your energy resources

Microgrid control solution for commercial buildings and campuses

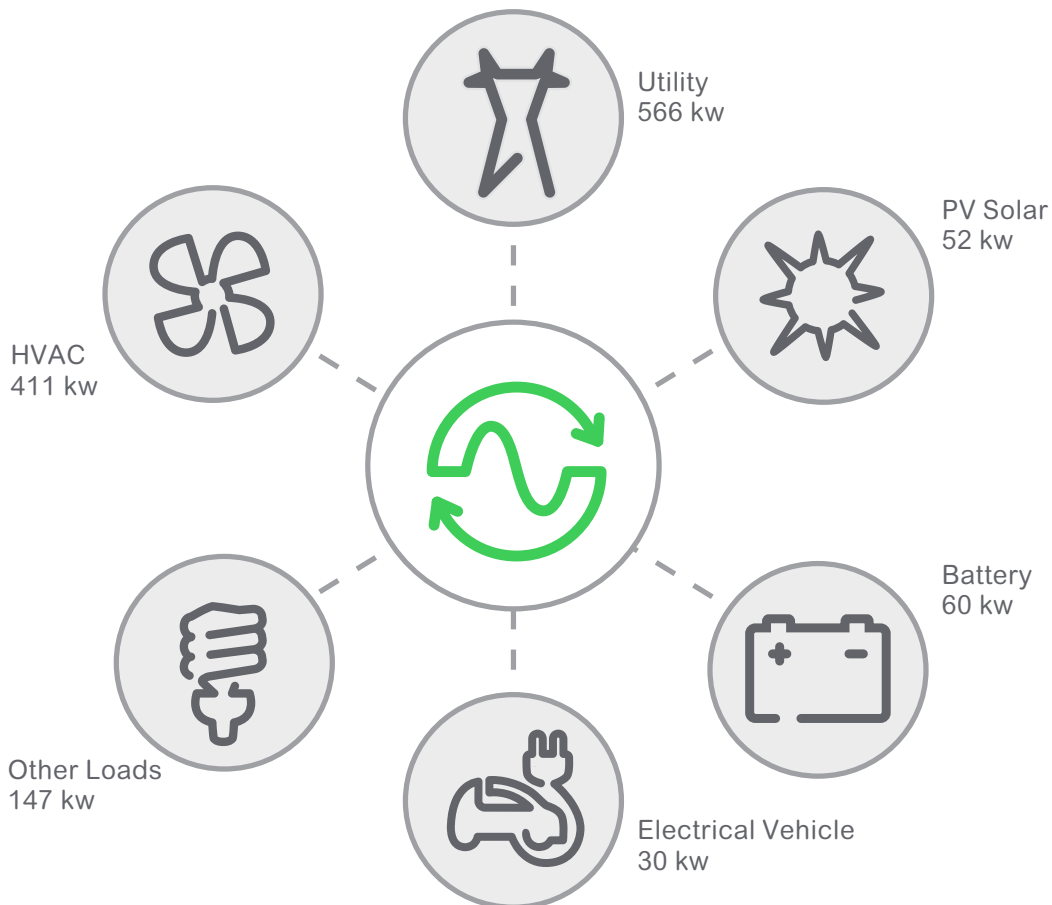
schneider-electric.com/microgrids

➤ Are you getting the most out of your energy assets?

➤ Did you know that you can control energy costs and CO₂ emissions while reaping the benefits of more reliable power?

A powerful part of your energy strategy

Create a fully-optimized microgrid to lower your energy costs (cut your energy bills and increase curtailment incentives), reduce your carbon footprint, and ensure power reliability from your onsite generation assets.



The energy distribution market is undergoing some profound changes. And these changes will have a direct impact on energy quality, availability, and costs.

A number of emerging trends are shaping this new landscape:

For grid operators and energy distributors

- Aging energy distribution infrastructure
- An increase in worldwide energy consumption that current infrastructures will not be able to meet
- A growing proportion of intermittently-produced renewable energy that can fluctuate due to sunlight, wind speeds, and other factors, requiring more flexibility from consumers and the grid to align supply and demand

For consumers

- More cost-competitive self-generated electricity (photovoltaic equipment, etc.) gradually aligning with the cost of energy purchased from the grid.

As a building owner or operator, these trends will influence your ability to ensure maximum uptime for your occupants. Schneider Electric Microgrid solutions can help you be prepared for the changes ahead. And you can start reaping the benefits right now, with lower energy bills and enhanced energy management to keep your buildings running as intended.

Boost savings and uptime as a prosumer

➤ Optimize your energy profile

The EcoStruxure™ Microgrid Advisor (or EMA) platform gives you better control and forecasting of your energy profile.

You can take advantage of process flexibility (like for HVAC and similar loads) to shift energy consumption from peak to off-peak hours, or shave your power demand to optimize your power subscription based on your real needs. You can also avoid penalties for peak power consumption.

➤ Participate in DR programs

To improve grid stability and avoid running higher polluting peak power plants, DR programs will pay for your capacity to consume more or less energy on request (aggregator or utility).

➤ Ride through blackouts*

Few businesses can afford downtime. Your onsite production system (PV, battery, CHP) can help ensure power quality and reliability by islanding power facility from the grid in the event of grid fluctuations or complete outages.

*With EcoStruxure™ Microgrid Operation

➤ Maximize energy self-consumption

The ability to leverage the flexibility of certain loads facilitates self-consumption. Your self-consumption capacity can be increased further by adding energy storage solutions. And stable, self-produced energy can help you decrease your dependency on the grid, promote the production and consumption of renewable energy, and keep your energy costs under control.

\$15,000

Typical cost of one to three hours of power outage for an industrial or commercial business.

Source: leonardo-energy.com, 2008. "Poor power quality costs European businesses more than 50 billion a year"

The language of smart grids

The changing energy production, distribution, and consumption landscape has introduced a dynamic new paradigm for all stakeholders and a host of new programs and smart technologies.

Prosumer

A commercial or industrial business, or residential homeowner, that proactively produces and consumes energy.

Building management system

Controls energy-consuming loads throughout the building, including lighting, heating, cooling, IT, and security.

DER

Distributed energy resources—such as generation assets or curtailable loads—that can be leveraged and monetized on the smart grid.

DR

Demand response. A remunerative program that pays the energy user for adjusting allocation of energy resources during a requested period.

Microgrid

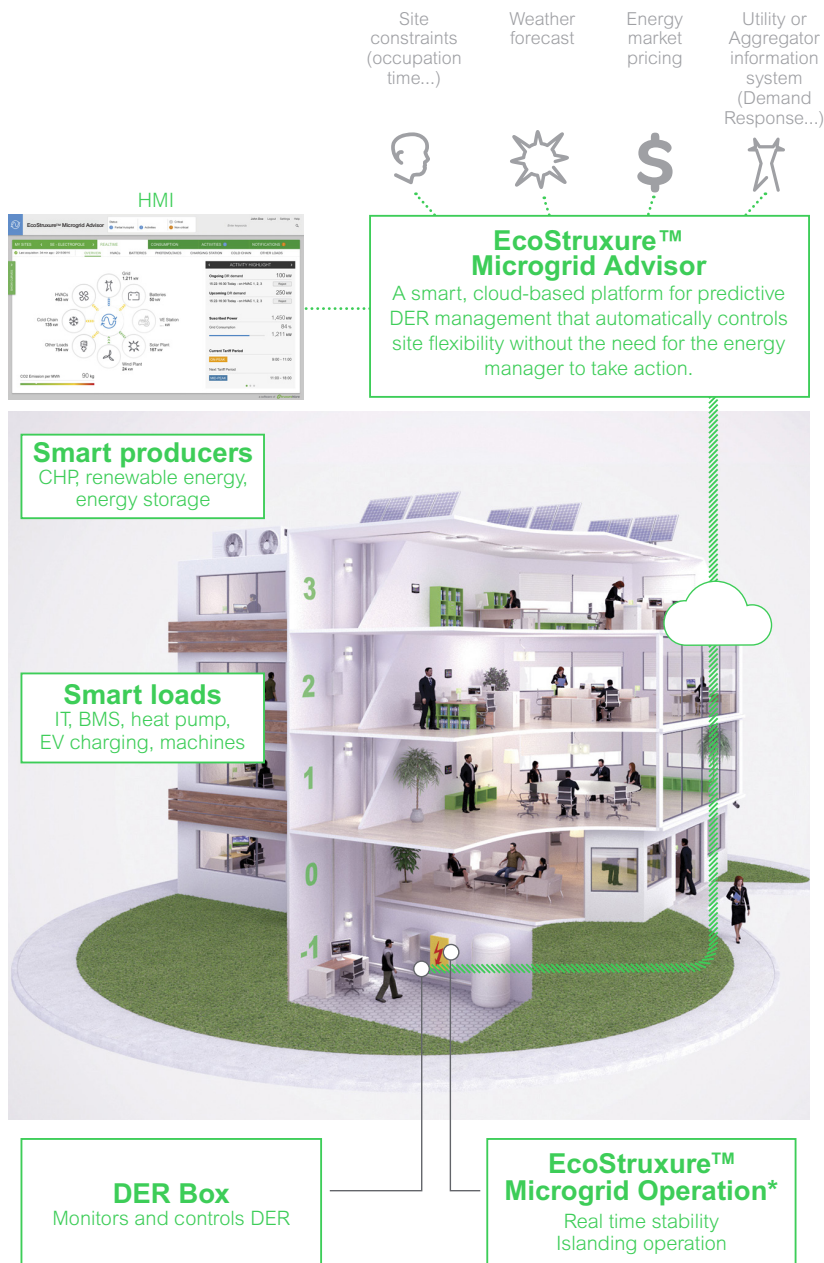
An integrated energy system with interconnected loads and generation assets, operating in parallel with the grid or in an islanded mode.

SaaS

Software-as-a-service. A cloud-based, constantly updated application that delivers high financial or operational value through a web portal, with no need to install local software.

Get maximum value out of your energy assets

The energy management solution with EcoStruxure™ Microgrid Advisor extends the smart grid to within your buildings, enabling access to value-added services and optimize when to consume, to store, or to sell back energy to the grid. As a leader in smart grid technologies, you can trust that Schneider Electric will deliver a complete solution that is tailored to your needs, and ensures that you know exactly when and how to store, self-consume, or sell that energy.



Savings and energy control benefits

Two types of onsite energy control:

- Predictive with EcoStruxure™ Microgrid Advisor
- Adaptive (real-time) with the EcoStruxure™ Microgrid Operation (optional)

Managing DER flexibility

- HVAC loads through the building management system (accumulate, consumption in comfort mode, stop or slowdown)
- Electric vehicles
- Certain industrial processes
- Storage system

Monitoring and forecasting for production assets and batteries

- Energy produced by PV panels (self-consumption, storage, energy sold back to the grid)
- Battery-based storage to provide for your needs, with charging set for the optimal time of day (low utility tariffs, availability of PV energy, etc.) and efficient use of stored energy (to avoid going over your utility contract limits, to avoid peak tariffs, to respond to requests from aggregators or the neighborhood grid to curtail loads, etc.)
- Cogeneration (CHP) to plan ahead for energy production and force production (to meet onsite needs, take advantage of the lowest energy tariffs, etc.)

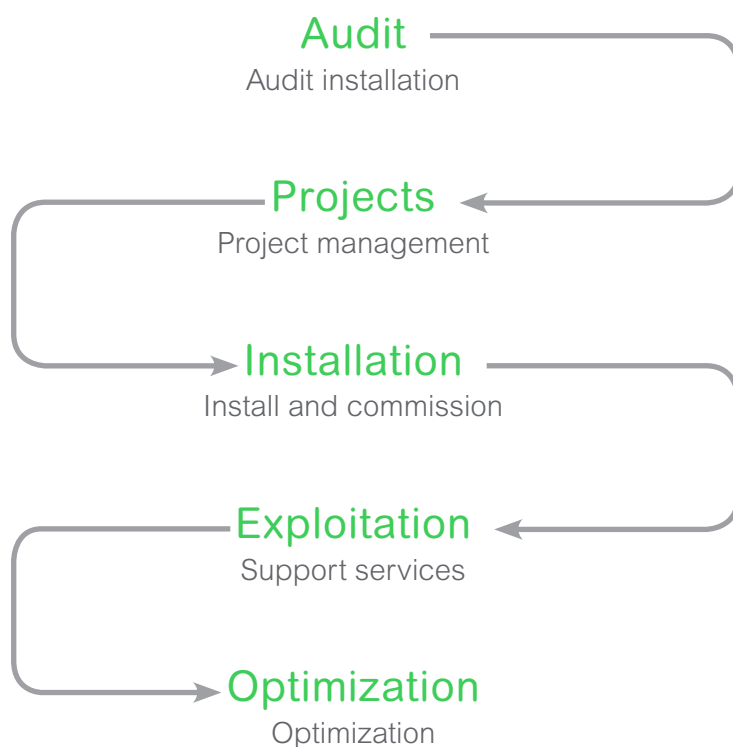
*As an option

Enjoy peace of mind with expert services

Schneider Electric partners with you to support the entire lifecycle

Schneider Electric has many decades of experience on both the energy supply and demand sides. Our expertise and leadership in smart grid technologies, energy management, and electrical installations make us a one-stop-shop for your energy flexibility management system.

Life Cycle



+45.8%

Worldwide ten-year average annual growth rate for photovoltaic energy production, 2001–2011.

Source: Observ'ER, 2012, Electricity generation from renewable sources in the world

① Audit

First, we'll perform a complete technical and financial audit of your facility to help carefully determine the potential for flexibility and any demands or limitations specific to your site.

② Projects

Based on this analysis, we will design a flexibility management system that meets your requirements, and set up a team to provide comprehensive management for the entire project.

③ Installation

Our expert team will provide full installation and commissioning services to ensure that your microgrid control system is flawlessly, safely, and quickly implemented to meet your energy management needs, and with no disruption to your operations.

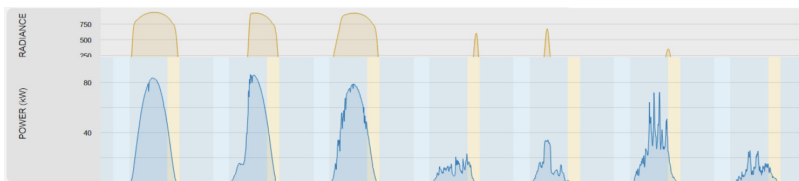
④ Exploitation

We'll be there to ensure that you achieve your goals, supporting you in every way possible so that you can start reaping maximum benefits now: energy savings, cost control, quality and availability of energy, a lower energy footprint, etc.

⑤ Optimization

Finally, we provide expertise in equipment, software, systems, and services aimed at ensuring the development, performance, and reliability of your microgrid solution in the future.

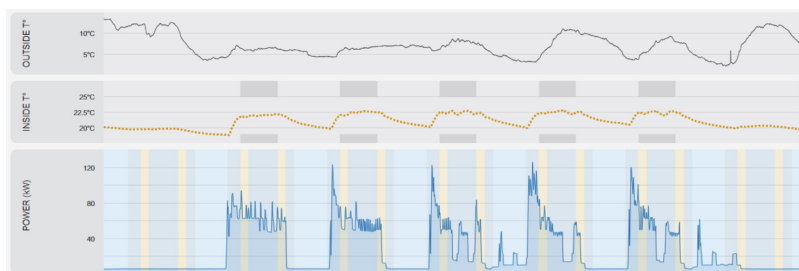
EcoStruxure™ Microgrid Advisor highlights



PV production curve for one week

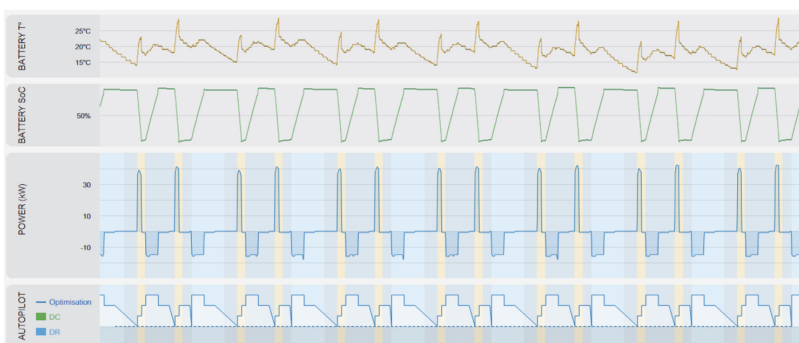
PV energy production forecasting:

- Charge a storage system with excess electricity produced by the PV system to use the energy later in the day
- Make modifications to the electrical installation depending on your needs and priorities
- Get all of the information you need to renegotiate utility contracts



HVAC consumption curve

- Plan ahead for upcoming energy consumption
- Define with the site manager, the acceptable temperature tunnel we need to remain in
- Start and stop HVAC system at the right time, to favor energy consumption during low tariff periods for example, while ensuring the occupant comfort



Battery charge/discharge

Ensure storage energy is available when needed:

- Avoid overshooting utility contract limits and the associated penalties
- Avoid purchasing energy from the grid when tariffs are highest
- Use your stored energy during peak consumption
- Use your stored energy when responding to curtailment requests

A broad range of complementary Schneider Electric services

EcoStruxure™ Resource Advisor

A powerful portal to all of the physical and financial aspects of your energy consumption, production, cost savings, and CO₂ reductions.

Asset management

Equipment monitoring, reporting, maintenance scheduling, and supervision of building energy status.

Demand-response management

We'll help you choose the most remunerative DR programs to participate in, and ensure

that you leverage the most flexibility from your energy storage and loads.

Energy arbitrage consulting

Analyze the market in real-time and optimize your energy purchases and sales to take full advantage of price differentials.

Energy efficiency and reliability improvements

Implement smarter energy management strategies to optimize your energy bills, reduce energy waste, validate the payback of efficiency upgrades, and help ensure a more stable energy supply.

80%

Share of renewable energy production by 2050, targeted by Germany's Energiekonzept energy action plan.

Source: nouvelle-europe.eu

Near an old, remote frontier post in Lancaster, Texas, Schneider Electric and Oncor unveiled one of the most advanced microgrids in North America, bringing the technology one step closer to widespread rollout.

“Since no one can predict exactly what the future of the power sector will look like, Oncor believes the grid needs to be “as flexible and adaptable as possible.”

Don Clevenger, Senior Vice President Strategic Planning, Oncor Electric Delivery

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