Virtual Power Plant solution for energy suppliers

Immediate, reliable access to distributed energy resources
The answer to meet today’s energy market challenges

Our virtual power plant (VPP) lets you leverage existing, available distributed energy resources to boost your grid’s capacity while limiting both your investment in new infrastructure and your environmental impact.

From end users

Leverage demand-side distributed energy resources to balance supply and demand across your grid:

- Building systems (HVAC, lighting)
- Residential systems (HVAC, swimming pool, electric vehicle)
- Machine and industrial processes
- Energy storage systems
- Dispatchable energy sources (CHP, genset)
- Local renewable energy (solar, wind)

By boosting their capacity:

- To generate electricity
- To store energy
- To tailor their energy usage habits to their changing needs
- To make decisions

By boosting their energy generation capacity and acting as prosumers, end users can supply power to a grid as either negawatts (curtailment) or posiwatts (feed into the grid), or use more energy on demand and in a reliable way. And, because prosumers balance power supply and demand and boost the share of renewable energy in our energy mix, they hold the key to smarter operation of our grids.

Today, leveraging prosumers’ distributed energy resources is a major challenge for energy professionals.

Schneider Electric

Schneider Electric, a “flexibility provider,” works side-by-side with the professionals shaping tomorrow’s smart grids.

As a global energy management specialist, Schneider Electric offers an innovative VPP solution that lets you:

- Tap into prosumers’ potential in a fast, reliable way
- Aggregate the capacity of several prosumers
- Package capabilities as an attractive offer to power grid users
- Interface efficiently with prosumers

Prosumer = Proactive energy producer and consumer
DER = Distributed Energy Resources: energy consuming, generating, or storing devices present at end users’ premises
Negawatts = Energy not consumed at a certain time because of load shifting or load shaving
Posiwatts = Locally-generated energy that is fed into a grid
Towards a smarter grid

Smart grids are decentralized and interconnected, enabling the two-way flow of data and energy. They also make it easy to manage power supply and demand locally—and users play a crucial role.

Building a smart grid

Drivers
- Pressure to meet increasingly-stringent environmental standards
- Higher prices for conventional energy
- Targets to increase the share of renewables in the energy mix
- Aging grid infrastructure
- Changes in energy usage habits and the energy mix due to new technology (like electric vehicles)

Objectives
- Involve consumers and make them proactive in their energy choices
- Maintain an energy balance among all consumers
- Incorporate a variety of renewable energy producers
- Boost energy performance by reducing consumption and curbing greenhouse gas emissions

Benefits
- Better energy management
- No additional peak-coverage infrastructure investment needed
- Minimized risk of blackouts
StruxureWare Demand-Side Operation

Designed to deliver reliable service for the long haul, Schneider Electric’s virtual power plant software manages utilities’ transactions with prosumers to balance power supply and demand across an entire grid.

Deploying our Virtual Power Plant

1. We work with you to determine the project objectives, the mechanisms to implement, and the target end users to enroll.
2. We meet with end users to assess the feasibility and potential of their sites.
3. We (or a certified Schneider Electric dealer) install the new system and get it up and running.
4. The end user enters into a services agreement to use the Schneider Electric platform.
5. The platform runs 24/7, optimizing the usage of different loads, the distributed energy resources, and the supply from utilities and other energy traders.

A win-win solution

Schneider Electric’s virtual power plant solution gives:
- Utilities a rapidly-available energy source at attractive rates
- End users the opportunity to enter into a remunerative agreement, since they can use less power from the grid, reduce their energy bills through better fit to contract (time of use, dynamic pricing), and implement a demand-response program
End-to-end Virtual Power Plant management

Our StruxureWare™ Demand-Side operations software uses a standard interface (OpenADR) so that actors on both the demand and supply side can interact easily.

A DER box is installed at end users’ homes so the smart system can communicate with Schneider Electric’s cloud-based platform, which uses data from prosumers’ electrical equipment to give utilities the most appropriate aggregated energy solution.

The DER box is compatible with most communications standards used in building and the industry.

Aggregates capacity from a wide range of energy resources (like producers, loads, and storage systems)

- Provides comprehensive management of available prosumer capacity
- Offers a choice between fossil-fuel and renewable energy

Focus on what really matters: balancing your grid

Schneider Electric’s demand-side operations platform handles everything, so you can focus on what really matters!

Schneider Electric has a large installed base of power distribution and load control equipment—from HVAC and lighting to process control.

This places immense possibilities at your fingertips, enabling you to offer powerful solutions and negotiated rates in a hassle-free way without affecting end users’ comfort and systems.

- A broad installed base (commercial and industrial buildings, etc.)
- Fast demand response capabilities in the event of demand spikes, thereby avoiding blackouts
- Forecasting of demand peaks and troughs in order to balance supply and demand
- Management of intermittent renewable energy supply
- Reduced investments, since fewer conventional power plants are needed
- Lower operating costs since peak load is met without needing to rely on carbon-based power plants

The StruxureWare for Grid suite

The StruxureWare for Grid suite is Schneider Electric’s integrated open-source software platform for utilities. This software can help utilities improve grid reliability, enhance the efficiency of grid support and market services, and optimize operations through better integration of automation and control systems.

The StruxureWare for Grid suite includes demand-side operations management

The StruxureWare for Grid suite is designed to simplify and speed integration, thanks to a consistent user interface and a scalable platform that covers all utility operations.
Building the eco-city of the future

The smart grid is changing today's energy landscape, providing cities with opportunities to leverage innovative solutions like StruxureWare to help make their cities more attractive and bolster their image.

Schneider Electric, a major player in smart grids

A leader in energy management for industrial, commercial, and residential buildings—with a strong track record in grid management, process control, and renewable energies—Schneider electric is helping to shape tomorrow's smart grid.

Flagship projects

Commercial: the IssyGrid® project

Schneider Electric has teamed up with eight major companies (Bouygues Immobilier, Alstom, Bouygues Telecom, ERDF, ETDE, Microsoft, Steria, and Total) to create IssyGrid®—France's first district-wide smart grid.

In this project we are providing our Virtual Power Plant solution, including the implementation of on-site systems for buildings (scripts in BMS and local aggregation infrastructure), electric vehicle infrastructure (like charging stations and SWs), a remote management system (StruxureWare demand-side operations SaaS), and connections to supply-side systems.

IssyGrid will demonstrate how modern power grid technology can be used to create energy-efficient eco-districts with tangible benefits.

IssyGrid will be installed in the Issy-les-Moulineaux business district (near Paris).

• Office buildings: 160,000 m² with some 10,000 employees
• Homes: Up to 5,000

Residential: the Millener project

Under this two-year pilot project, 500 residents of Réunion, Corsica, and Guadeloupe will test an electricity generation system that couples PV solar panels with lithium-ion batteries. The consumers involved in the project will become prosumers, interacting with the grid and making proactive energy choices.

Schneider Electric is providing the local energy management and conversion system and the remote management system (StruxureWare Demand-Side Operation). The project will give Schneider Electric crucial insight into the factors that motivate (and hinder) consumers' transition to prosumer status, and will let us identify the most profitable business models for the future.

The project is being financed jointly by ADEME (the French national energy agency), the EU FEDER program, and the Réunion, Corsica, and Guadeloupe regional governments. It is being carried out in association with EDF SEI, Tenesol, Saft, SunZile, BPL Global, Delta Dore, and Edelia.

Industrial: The EnR-Pool project

The EnR-Pool project assesses to what extent energy-hungry businesses can reschedule some of their operations so that they use renewable energy at times when it is most available from the grid.

Schneider Electric has teamed up with Energy Pool and the French Atomic and Alternative Energies Commission to come up with an innovative system.

The three-year project will focus on the development of three models:

• A forecast-based model incorporating weather forecasts, grid conditions, and consumer profiles.
• A technical model based on improving operations and calculating the cost of implementing the system on a large scale.
• An financial model based on the compensation that businesses involved in the project would receive (through attractive rates for renewable energy, for instance).