

Energy Solutions for Buildings

Making energy safe, reliable,
efficient, productive and green



Make the most of your energySM

Schneider
Electric

Solutions to enable and sustain energy savings

Technology is crucial to make smart decisions for achieving energy reduction goals. This includes having actionable information and expertise to apply technologies in practical and economically feasible ways. As a leading expert in energy management and power system reliability, Schneider Electric delivers digital technology products and energy solutions that take advantage of smart grid signals and opportunities for energy efficiency. Strategically reacting to these building inputs can drive energy performance from the plant to the plug delivering sustainability and savings to meet your goals.

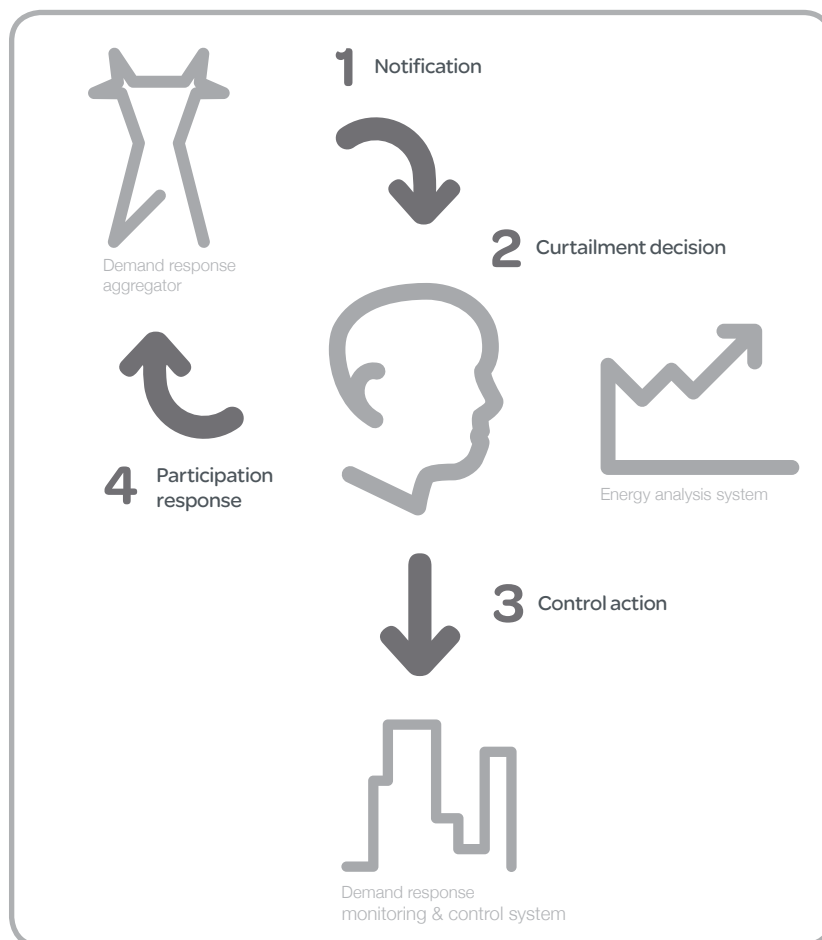
We are committed to quality, sustaining our environment and providing the best-in-class energy solutions. Our proven smart energy solutions can reduce energy consumption up to 30%, decrease greenhouse gases and significantly increase power system uptime.



30% energy savings in a building can reduce overall operating cost by 10%.

How can demand response work for smart buildings?

We will help you to effectively interact with your utilities in real time, which is not only good for the grid, but great for your bottom line. When a demand response request is received, you can quickly evaluate timely, detailed information visualized in a rich user interface, assess the opportunity and respond with the most effective strategy. Instead of manually accessing multiple systems for information, control and messaging, a central portal can be tailored to provide all the information needed at a glance. Within minutes of receiving notification, forecasted conditions can help you decide on the best option, accept the demand response participation request, have a curtailment plan in place and anticipate savings reimbursement checks in the mail.



- 1** Notification is sent by the demand response provider.
- 2** View energy and demand profiling to determine when and if you can curtail your energy usage.
- 3** Load control scheduling is performed with predefined curtailment scripts.
- 4** Accept/reject curtailment response creating the cost saving for your business.



Customer success story

Background

Facilities managers at this New York building have a personal financial incentive to participate in New York ISO's demand response and energy efficiency programs. To effectively participate in demand response and control, this building turned to Schneider Electric to consult, meter and fully integrate their demand management system.

Technology applied

PowerLogic® software with web-based dashboard served to streamline and optimize participation in utility load reduction programs by unifying:

- accurate, portfolio-wide energy analysis
- two-way request/accept curtailment messaging
- coordinated building management system control

The TAC® building management system integrated Consolidated Edison utility meter inputs and controlled mechanical heating, ventilation and lighting systems.

PowerLogic metering was installed to enable measurement and verification, building operations and power management capabilities. Optimized control schemes offer semi-automated system demand response actions while allowing manual interventions to address tenant comfort.

Next steps

Ultimately, the energy managers plan to use their energy information system to model automated building response to real time pricing signals, maximize efficiency to lower carbon emissions and become a LEED® Gold certified building.



Building facts:

Type: 48 story
Location: Manhattan
Peak Load: 50 MW

Goal:

Make 900 kW available for participation in a demand response program.

Criteria:

- Improve monitoring of energy systems
- Implement control strategies
 - Prepare building for real-time pricing participation



Knowledge is power

You can't manage what you can't measure. Rising energy costs and increased environmental awareness have spurred investors, developers, builders, operators and occupants to make their buildings more energy efficient. But to truly optimize building energy consumption, you need detailed, accurate data about how your energy is being used.

Solutions fundamentals

Consume smarter and consume less by deploying a comprehensive energy strategy that includes:

1. Understanding how energy is consumed
2. Establishing goals and benchmarks
3. Delivering actionable information to key stakeholders
4. Sustaining maximum performance levels with responsive controls

A comprehensive strategy

A comprehensive energy strategy is key to improving energy performance. Schneider Electric can help throughout the entire lifecycle of your project. Our expert energy engineers will audit facilities, equipment, or processes; then seek to understand energy usage and build energy management strategies. Proper implementation assures efficiency and specialized maintenance ensures optimal performance. Our energy solutions group can help you save up to 30% of total utility costs and can sustain those savings over the life of the installation.



Comprehensive audits on facilities, equipment or processes are based on proven methods, tools and offers, and managed by experienced specialists. Our professional engineers and certified energy managers address energy procurement, demand management, and optimization of process, plant utilities, and building controls to improve energy efficiency and energy conservation measures.

Performance contracts	Critical power facilities
<p>Through our TAC automation business, we provide energy saving programs for buildings to audit, realize and sustain energy savings. This comprehensive program can save up to 20% of utility costs and improve the life cycle cost of a building.</p>	<p>Square D® Total Energy Control is ideal for energy intensive industrials and critical power facilities such as data centers and hospitals. This program results in a prioritized energy action plan identifying projects with an 18 month to three-year payback.</p>
<p>\$1.2 million in annual savings</p> <p>The challenge was that heavy mechanical updates were needed and federal mandates required a reduction in energy consumption by 5% annually.</p> <p>The solution was \$9 million in improvements, with \$1.2 million in annual savings resulting from HVAC upgrades and lighting retrofits.</p> <p>City of Dallas, TX</p>	<p>25% annual savings</p> <p>Initial need: develop a comprehensive energy action plan for a 10MW Paper Mill. Energy action developed a three-year plan. Implementation of the selected projects generated 25% annual savings on the electrical bill. The customer then decided to implement Schneider Electric's energy efficiency dashboard and expanded the Control program to its other sites.</p> <p>Pulp and Paper Factory in WI</p>

Measurement and verification

Services: the first key to success

As the grid infrastructure becomes increasingly intelligent, it offers opportunities for savings. These opportunities come through better understanding building energy consumption and by equipping facilities for measurement, verification and control. Fully-integrated buildings offer significant operation and maintenance benefits during the entire building lifecycle. Schneider Electric has a wide array of energy services:

- Audits, assessments and energy action plans
- System analysis and recommendation
- Engineering and design
- Installation and commissioning
- Performance contracting and comprehensive project upgrades
- Enterprise energy management and greenhouse gas emission reporting
- Complete after-sale service for maintenance, training and upgrades



Services

Responsive control

Real-time power system dashboard

- Synchronized sequence of events recording
- Supervisory control and data acquisition
- Automatic transfer schemes
- Load preservation and power system control
- Generator paralleling controls
- Comprehensive power quality monitoring and event recording

Integrated building automation

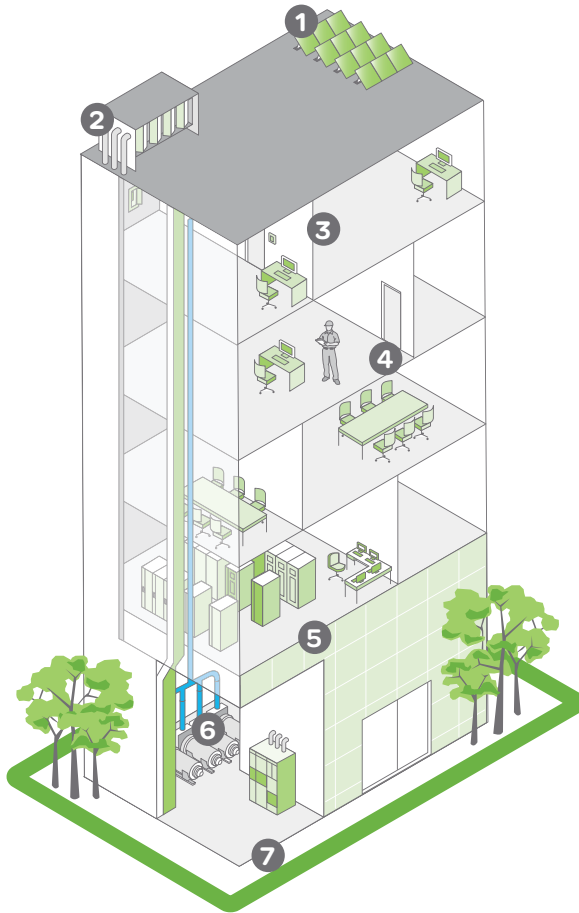
- Regulating indoor environment
- Thermal energy control
- Security
- Lighting control
- Fuel tank monitoring
- CO₂ sensors

Compliance reporting

- American College
- EPCACT2005 measurement and verification
- Greenhouse gas emissions
- JCAHO requirements
- LEED certification

35%

Coordinated behavior across multiple systems can provide up to 35% reduction in overall energy usage.



Single source for energy, power, automation and security solutions

- 1 Renewable energy systems
- 2 Building automation and control
- 3 Efficient lighting and controls
- 4 Energy audit and lifecycle services
- 5 Data center and network efficiency
- 6 Variable frequency drives
- 7 Energy and power management solutions

Solutions and knowledge

Energy management opportunities are everywhere the power is...

Enabling products

- Energy management, power compensation and filtering
- Metering and monitoring
- Lighting control: dimmers, timers, movement and presence detectors, switches
- Renewable energy systems
- Motor and HVAC control: variable speed drives

Management systems

- Building management systems
- Power monitoring and analysis

Added value services

- Site audits and energy efficiency recommendations
- Data collection and analysis
- Financial analysis and ROI validation
- Planning of improvement plan
- Remote monitoring and optimization

From infrastructure, to industry and buildings.

We can combine cost-oriented choices and environmental commitments

Energy and power management systems – Square D PowerLogic technology gives professionals, from finance to engineering, the level of energy intelligence and control needed to support strategic decisions and establish best energy practices. Helping to improve energy efficiency, lower emissions, maximize use of your power distribution network and improve the overall quality of power reliability of your equipment and building infrastructure. PowerLogic systems clarify the complex dynamics that affect how energy is generated, distributed and consumed across a single facility or your entire enterprise.

Building management systems – Schneider Electric building management systems monitor thousands of points of control in the building – lighting, heating, air conditioning, access control and fire alarm monitoring. This enables customers to monitor and manage a wide range of operations – from HVAC equipment, chiller and boiler interfaces, carbon monoxide/carbon dioxide levels and rainwater collection, to window, blind and door controls, artificial lighting, and building/tenant metering.



20% less CO₂ emission in 2020



Industry

- Over 30% of consumed energy
- Motors account for 60% of the electricity usage
- Average facility can reduce its energy consumption by 10-20%



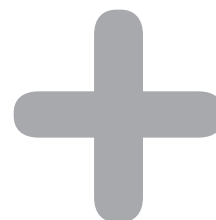
Buildings

- Over 20% of consumed energy and growing
- Three key areas: HVAC, lighting and integrated building solutions
- Technical projects can yield up to 30% of energy savings



Critical power

- Data centers
- Healthcare
- Government




- Green
- Productive
- Efficient
- Reliable
- Safe

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