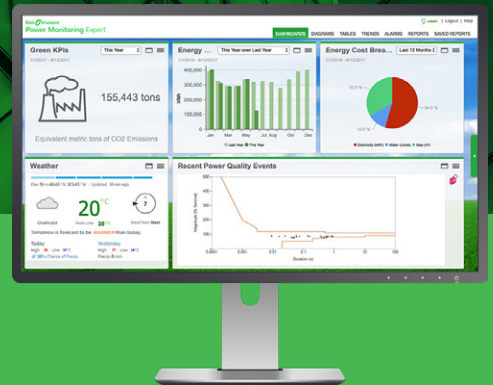


Power and Energy Management



se.com/us/powerandenergy

Life Is On

Schneider
Electric

Welcome to a smarter facility

With connected products and edge control software, you can increase the intelligence of your facility. See power and energy data, access intelligent analytics, and make informed decisions to improve your operations, and your bottom line.

**Access
intelligent
data**



**Save money on
energy costs**

**Improve
facility and
equipment
reliability**

Power and Energy Management



Reliable power is crucial for ensuring your operations and profitability. Unplanned outages can cost thousands to even millions of dollars.

Improve business performance with EcoStruxure Power.

You need a connected, intelligent system and a streamlined facility. With EcoStruxure Power your facility is IoT-enabled, giving you access to big data and big benefits. Maximize your business performance with IoT connected products and power monitoring.

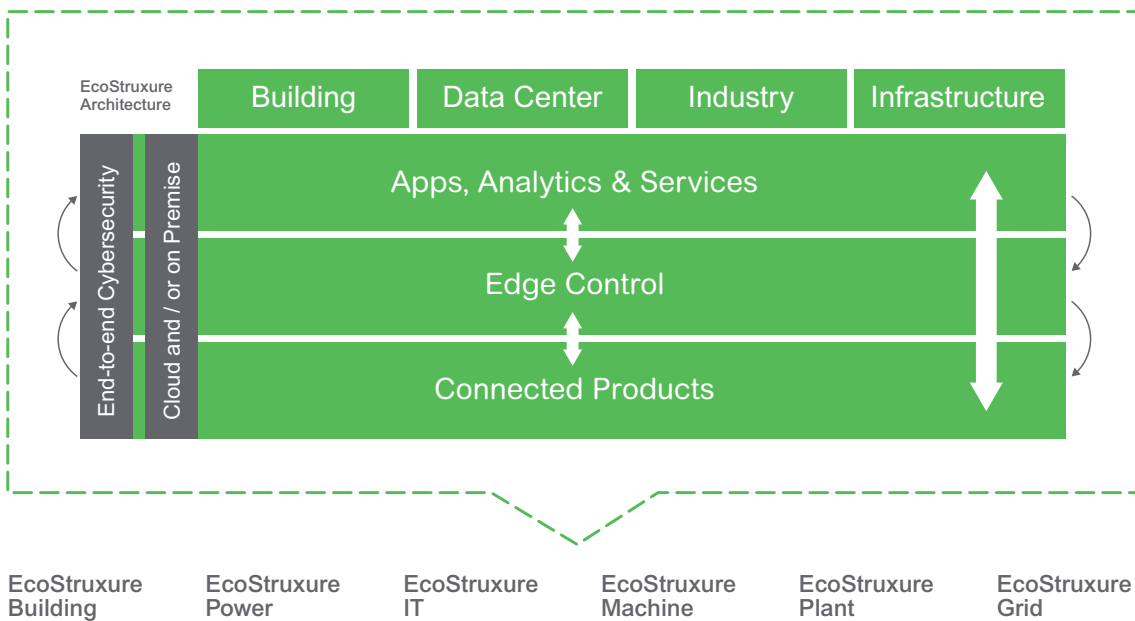


Learn how EcoStruxure Power can give you more control and improve your bottom line. <https://youtu.be/CRMOQybH4V4>

EcoStruxure Power

IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure™ is Schneider Electric's open, interoperable, IoT-enabled system architecture and platform. It delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers. EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level including Connected Products, Edge Control, and Apps, Analytics & Services.



Integrated Software for Intelligence at Your Fingertips



EcoStruxure Power Monitoring Expert

Gain valuable insight into your electrical system with power management software. Award-winning EcoStruxure™ Power Monitoring Expert (PME) simplifies management of complex power systems. It brings unique new capabilities that protect people and assets, keep operations running, and save time and money.

As a key element in an EcoStruxure Power solution, PME takes full advantage of IoT connectivity and distributed intelligence to help maximize your operational efficiency.



Improve facility intelligence and connectivity

- Receive smart alarms and messages for events
- Analyze data from connected equipment in user-friendly dashboards and reports
- View graphical timelines to easily analyze event and alarm sequence, location and potential impact
- Access advanced energy visualization - analysis tools calculate, model, forecast, and track energy performance indicators (EnPIs)
- Stay compliant with IEC62443 cybersecurity standards, protect the network and information of your hospital

Optimize reliability and continuity of patient care

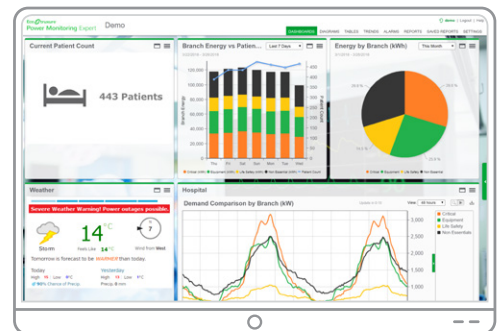
- Locate disruptive power issues that could cause shutdowns or equipment mishaps
- Use advanced power forensics to understand cause/effect of events in your electrical system
- Identify power event patterns to avoid future occurrences
- Monitor protection settings, fault isolation to avoid power outages
- Analyze breaker aging to avoid failures and enable proactive maintenance
- Track system capacity to avoid overloads, ensure backup power systems are optimized in case of outage

Maximize operational and energy efficiency and reduce costs

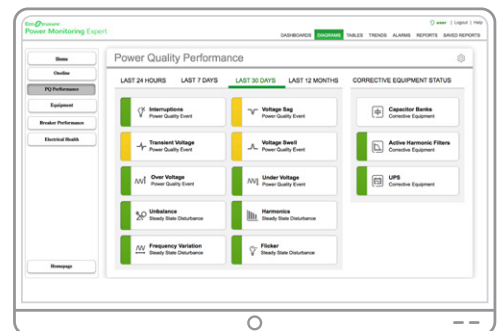
- Locate areas of energy waste and high use and take action to improve efficiency
- Automate emergency power test reporting to reduce the burden on your facility's staff and improve the quality and accuracy of your compliance documentation
- Avoid power factor and peak demand penalties; shadow bill to identify issues in utility bills
- Participate in demand response programs by tracking consumption patterns and managing loads
- Create accountability by allocating costs to departments or processes
- Analyze equipment performance to support proactive maintenance and extend lifespan



View energy use by room, wing or process



Access building information in a user-friendly dashboard



Identify power quality issues and events that could cause equipment failure

Power and Energy Meters for Intelligent Data



PowerLogic Power Meters

You can't change what you can't see.

Maintaining a detailed view of the ins and outs of power for your facility is crucial for continuous, safe operation and for your bottom line. Whether it is a power quality issue causing equipment malfunctions and shutdowns, or unnecessary energy use, you could be losing money if you don't have data visibility.

Stand-alone or embedded meters measure, collect, and deliver essential data from key distribution points across your entire electrical network. From basic to advanced, our meters allow you to gather accurate power and energy data, giving you the visibility and control you need.



The benefits of PowerLogic meters:

- Identify power quality issues and locate the source of them
- Comprehensive monitoring of electric, gas, water, and steam
- 100% web-enabled meters delivering real-time data
- Advanced reporting, analysis, alarms, and integration capabilities
- Flexible, modular, and interoperable system architecture
- Powerful communications, more memory, and faster processing speeds



To find the right meter for your application, visit www.se.com/us/powermonitoring for our full range of meters.

PowerLogic ION9000 Series Meter

The PowerLogic ION9000 Series meter is the world's most accurate and advanced meter! At 0.1S it exceeds even the most stringent accuracy standards, unlocking significant new energy savings for an innovative competitive edge. Onboard web pages provide meaningful, actionable EN50160 and IEEE519 power quality compliance data. Smart power event analysis (with EcoStruxure Power Monitoring Expert) correlates facility-wide, system-level events for decisive power quality information and root cause analysis.

- Powerful analysis engine provides meaningful, system-level power quality information, not just data
- Additional communication options with large display: optical and USB
- Intelligently correlates facility-wide events
- Discovers root causes of any PQ event
- Connect via web browser for full PQ analysis, easy-to-read analysis according to EN50160 and IEEE519 standards
- Patented disturbance direction detection, extended waveform capture (1s pre-event data / 3s event data @1024 s/c) and high speed RMS data capture for in-depth analysis of any PQ disturbance in your electrical system
- Hardened cybersecurity for protection of your facility and assets



PowerLogic PM8000 Series Meter

The PM8000 is a compact meter that helps ensure reliability and efficiency by making the management of power quality, availability, and reliability easy. Measure, understand, and act on insightful power and energy data gathered from your entire system.

- Reveal and understand complex power quality conditions
- Gather and act on facility-wide energy and consumption data
- Integrates easily with energy management systems
- Monitor harmonics to avoid equipment mishaps and overheating
- Use trending and alarming to detect fluctuations in current pull of critical equipment to prevent failure
- Utilize millisecond time stamping to analyze sequence of events
- Identify root cause by analyzing electrical faults with patented disturbance direction detection
- Identify power quality issues per EN 50160, including frequency inconsistency, voltage fluctuations and unbalance, and harmonic contribution
- Allocate costs for water, air, gas, electricity, and steam (WAGES) across departments, phases of industrial process, or cost centers
- Utilize time-of-use calendar to capture electrical consumption for specific times, including on/off peak and holidays



Power quality improvement for reliability and efficiency



Power is just the start of what we help protect.

Whether a hospital, data center, or commercial office building, reliable power for your facility is critical. Power fluctuations can wreak havoc, damaging equipment and causing costly shutdowns. Protect your critical equipment and facility operations with power quality improvement solutions.



The costly effects of hidden power quality issues:

- Fluctuations in operation of sensitive medical equipment
- Power shutdowns and equipment failures
- Increased energy bills and utility penalties for poor power quality
- Higher operational costs and poor energy efficiency

Three critical power quality issues that can be detrimental in a facility:

Power factor

A poor power factor number can cost you money with power losses, operational expenses and utility bill penalties. VarSet Low Voltage Capacitor Banks are an easy way to quickly maintain power factor at an ideal level for maximum power system efficiency and cost reduction.

VarSet benefits

- Reduce capital expenses by **up to 30%.***
 - Optimize electrical system capacity, avoid oversizing, and limit redundant capacity.
- Reduce reactive energy billing penalties and lower operating expenses by **up to 10%.***
 - Boost power factor to lower utility bills and reduce losses in transformers and conductors.
- Reduce energy losses by **up to 30%.***
 - Optimize power consumption, reduce total process energy consumption, and reduce CO₂ emissions.
- Improve power system and equipment reliability by **up to 18%.***
 - Increase power quality to improve performance and reduce unplanned outages, as well as enhance the reliability and service life of equipment. Minimize harmonics stress and potential damage.



Harmonics

Harmonics can stress your electrical network and cause equipment damage and malfunctions. Harmonics can be created by Variable Frequency Drives. A solution like AccuSine PCS+ Active Filters can mitigate harmonics as well as provide power factor correction and load balancing. They are needed with HVAC loads, pumps and fans.

LED lighting and sensitive medical equipment can introduce non-linearity to the electrical network. AccuSine PFV+ corrects for load imbalances, flicker, voltage instability and poor power factor. An ideal solution for office loads, LED/CFL lights, medical equipment, lifts and escalators, AccuSine PFV+ improves equipment operating life and power system capacity. With AccuSine+ Active Filter solutions, you can reduce operating expenses and improve hospital reliability.



Voltage fluctuation

Fluctuations in voltage can affect medical equipment function, causing disrupted patient care. Dips, sags and swells are some of the damaging fluctuations in voltage that can occur. Safely bridge all voltage anomalies and ensure maximum uptime and motor life for equipment with SureVolt Automatic Voltage Regulator. SureVolt provides tightly controlled voltage through both transient and longer-term low or high voltage events, while balancing three-phase power. Achieve consistent voltage regulation and fast correction without regular maintenance or moving parts.



**Performance reflects actual customer experience; your results may vary depending on your environment.*

EcoStruxure Power Advisor for Time-saving Power Management



Digital Service Plans

Increase facility reliability, extend equipment life and improve energy performance without spending any time doing it! EcoStruxure™ Power Advisor Digital Service Plans are designed to provide maintenance, support and improvement services for your power management system. Now you can easily manage your electrical system and keep your operations running smoothly without needing extra time or man-power to do it.

Page 1 of 2
EcoStruxure™
Power Advisor

Electrical Health Report

Executive Summary

Report Summary
Report Run Date: 21-November-2018

Demo
200 Tech Park Dr
Lafayette, TN 37043

100% System Affected
This number indicates the total percentage of your system that is affected by one or more voltage issues.

Electrical Health Check

Date Range: 1 May 2018 - 1 Jun 2018

! Based on Power Advisor's advanced analytics technology, we have detected voltage issues within your electrical system that could cause equipment and/or operational problems. Based on the severity of one or more of these voltage issues, we recommend timely investigation into the causes and potential resolutions of the voltage issues identified below. Your Schneider Electric Support Engineer can provide further details to make sure you are properly monitoring the power quality of your electrical system.

| | | |
|---|--|--|
| ✓ | Device Not in Inventory (01-0020) | Devices not in inventory. Unable to perform some diagnostics on these devices or if placed in inventory. |
| ✓ | Over Voltage Condition (03-1920) | Based on quality monitored conditions, voltage measurements above allowed threshold detected. |
| ! | Under Voltage Condition (03-1920) | Based on quality monitored conditions, voltage measurements below allowed threshold detected. |
| ! | Voltage Imbalance Condition (03-1920) | Based on quality monitored conditions, one or more phases reporting voltage imbalance outside allowed tolerance. |
| ✓ | Transformer Overcapacity (03-911) | Transformers loaded above rated capacity. |
| ! | Excessive Voltage Harmonic Distortion (03-9120) | Voltage harmonic distortion levels exceeded at or near faulted circuit. May indicate a faulted device or component or a faulted power source. If the fault is not resolved, voltage harmonic distortion may cause equipment damage or failure. |
| ! | 3-Phase Voltage Monitoring Recommended (03-9120) | Voltage issues have been detected at a location that requires 3-phase voltage monitoring. The PC Advisor module is recommended to monitor 3-phase voltage monitoring. |
| ! | Phase Quality Monitoring Recommended (03-9120) | Voltage issues have been detected at a location where phase quality monitoring is recommended. |
| ✓ | No Interference Interference Present (03-9120) | No interference conditions detected within any device in the system. If the PC Advisor module is used, please ensure that the hardware is getting the appropriate information from Power Advisor. |

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Page 1 of 2
EcoStruxure™
Power Advisor

Electrical Health Report

Executive Summary

Report Summary
Report Run Date: 22-November-2018

Demo
200 Tech Park Dr
Lafayette, TN 37043

50% System Affected
This number indicates the total percentage of your system that is affected by one or more voltage issues.

Electrical Health Check

Date Range: 1 May 2018 - 1 Jun 2018

! Based on Power Advisor's advanced analytics technology, we have detected voltage issues within your electrical system that could cause equipment and/or operational problems. Based on the severity of one or more of these voltage issues, we recommend timely investigation into the causes and potential resolutions of the voltage issues identified below. Your Schneider Electric Support Engineer can provide further details to make sure you are properly monitoring the power quality of your electrical system.

| | | |
|---|--|---|
| ✓ | Device Not in Inventory (01-0020) | Devices not in inventory. Unable to perform some diagnostics on these devices or if placed in inventory. |
| ! | Over Voltage Condition (03-1920) | Based on quality monitored conditions, voltage measurements above allowed threshold detected. |
| ! | Under Voltage Condition (03-1920) | Based on quality monitored conditions, voltage measurements below allowed threshold detected. |
| ! | Voltage Imbalance Condition (03-1920) | Based on quality monitored conditions, one or more phases reporting voltage imbalance outside allowed tolerance. |
| ✓ | Transformer Overcapacity (03-911) | Transformers loaded above rated capacity. |
| ! | Excessive Voltage Harmonic Distortion (03-9120) | Voltage harmonic distortion levels exceeded at a level that could cause equipment damage or failure. |
| ! | 3-Phase Voltage Monitoring Recommended (03-9120) | Voltage issues have been detected at a location that requires 3-phase voltage monitoring. The PC Advisor module is recommended to monitor 3-phase voltage monitoring. |
| ! | Phase Quality Monitoring Recommended (03-9120) | Voltage issues have been detected at a location where phase quality monitoring is recommended. |
| ✓ | No Interference Interference Present (03-9120) | No interference conditions detected within any device in the system. If the PC Advisor module is used, please ensure that the hardware is getting the appropriate information from Power Advisor. |

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EcoStruxure Power Advisor Digital Service Plans

With an EcoStruxure Power Advisor Digital Service Plan, you can receive help with your power management system. You may have limited visibility into these systems, and scarcity of expertise or man-power to manage them. What you need is a partner who can help you achieve your goals. Schneider Electric, a global leader in electrical distribution, can be this partner. With our advanced analytical tools, and dedicated experts, we can help you to not only detect hidden problems, but to solve them in the most efficient way possible.

Easy-to-use reports identify pertinent issues and provide insights and actionable recommendations from our experts.

Benefit from the expertise of a dedicated, expert engineer

Our engineers partner with you to conduct maintenance, address alarms, and optimize your system.

Gain insight with EcoStruxure Power Advisor

Access the benefits of EcoStruxure Power Advisor, a key component of digital service plans that is the analytical engine that turns your data into information. Using data from your power monitoring software, it combines advanced algorithms with expert analysis, and provides the insight that you need to make the right decisions.

Enjoy full-system analysis and ensure your power management system is providing accurate data you can count on. Whether validating a new expansion or reviewing existing equipment, we can help you understand, correct and optimize your system.

Additionally, EcoStruxure Power Advisor will analyze your electrical network for problematic power quality conditions that may cause equipment or reliability issues. Our specially trained team will help identify areas for improvement and work with you to develop a resolution.

Leverage Our Onsite Maintenance Program

If you're like most facility professionals, managing energy isn't your only priority. Bring our team onsite to provide regular, proactive maintenance, troubleshoot a complex issue and perform system updates.

EcoStruxure Power Advisor Digital Service Plans

| | Standard | Prime | Ultra |
|---|----------|------------------------|----------------------|
| Support | | | |
| Basic product support (phone and email; 8am-8pm EST) | ✓ | ✓ | ✓ |
| Direct access to advanced support & priority case escalation | | ✓ | ✓ |
| Software Assurance* | | ✓ | ✓ |
| Remote access troubleshooting | | ✓ | ✓ |
| On demand online training classes | | ✓ | ✓ |
| 24/7 support | ✓ | ✓ | ✓ |
| Maintenance | | | |
| On-site preventative, condition based maintenance** | Option | Option/ Semi-annual | Option/ Quarterly |
| Software diagnostics (disc usage, server, communication status) | | | ✓ |
| Designated engineer(s) assigned | | | ✓ |
| Real-time monitoring | | | ✓ |
| Reliability/Improvement | | | |
| Power Advisor system & network analysis | | Semi-annual | Quarterly |
| Expert design and customization services (remote) | Option | Discounted | Discounted |
| Power Management University training classes | Option | Discounted | Discounted |

* Upgrade labor not included

** Exceptional travel may result in additional charges

Note: Three Year Digital Service Plans are available at a discounted rate

Customer story

Huashan Hospital North at Fudan University in Shanghai, China underwent a digital transformation with connected EcoStruxure Power solutions.

They were able to increase reliability, and improve energy and operational efficiency with a digital, connected power management system.



Advancing the patient experience

Being a healthcare industry leader means finding better ways to protect lives every day. Huashan Hospital North at Fudan University has the distinction of being a “Grade 3, Class A” facility in China. Establishing itself as a cutting-edge teaching hospital means putting digitization to work to ensure safer, more reliable care and a more comfortable experience for its patients. And the benefits don’t stop there: Digitization has improved Huashan Hospital North’s management efficiency by 20 percent while reducing energy consumption by 18 percent.

Hospital staff did their best working in a facility constructed under technological and budget constraints in 2012, but wanted to operate more sustainably and reduce energy consumption. In fact, other local hospitals had better power visibility and significantly lower energy consumption in relation to the number of beds.

Further, very few of the hospital’s systems were integrated, meaning they lacked a unified interface for ease of management. Lastly, there was no way of detecting potential problems in the power system or identifying hidden dangers in electrical safety that could cause downtime in operations.

Motivated and unwilling to fall behind, the logistics staff sought out the ideal connected technology to create a smart logistics nerve center, better manage their systems, and provide eco-friendly outcomes.

“I needed a solution to improve the efficiency of equipment and services staff, and to optimize power safety,” said Dong An, director of the Logistics Management Office. “We considered several factors, including digital tools to monitor energy-consuming equipment, and compared other companies... Schneider Electric’s proposal was just the right fit for our hospital.”

Improving safety and savings

Upon partnering with Schneider Electric, Huashan Hospital North made their digital transformation happen with the help of custom EcoStruxure Building and EcoStruxure Power solutions.

“Schneider Electric customized an integrated solution for our hospital, including EcoStruxure Power Advisor, EcoStruxure Power Monitoring Expert, and EcoStruxure Building Operation,” An said.

In the fast-paced, critical facility setting there is no time for setbacks. Digitization allows the Huashan Hospital North staff to take a proactive approach to patient and staff safety, identifying issues before they arise, and providing a more seamless experience from check-in to discharge.

“Relying on digital professional services, we’re able to discover hidden potential dangers in a timely manner and carry out proactive defense to ensure power safety,” An said. “Every system can be automatically controlled. Troubleshooting and issue resolution time has been reduced.”

Reliable support

"Hospitals are important places for embracing new lives and safeguarding health," An explained. "We need to ensure all of our hospital equipment and systems are running efficiently and stably 24 hours a day."

To make sure this happens, there are a number of Schneider Electric solutions at work for Huashan Hospital North, allowing staff members greater control and more visibility than ever before. They include:

- PowerLogic™ power and energy meters
- C-Bus series Lighting Control
- SmartX IP Controllers, actuators, sensors, and valves
- ATS automatic transfer switch
- EcoStruxure Power Monitoring Expert
- EcoStruxure Power Advisor
- EcoStruxure Building Operation

With EcoStruxure in place, Huashan Hospital North has:



Increased management efficiency by 20% and reduced energy consumption by 18%



Better supervised electrical equipment to identify potential hazards



Monitored the power quality of medical devices to improve operational efficiency



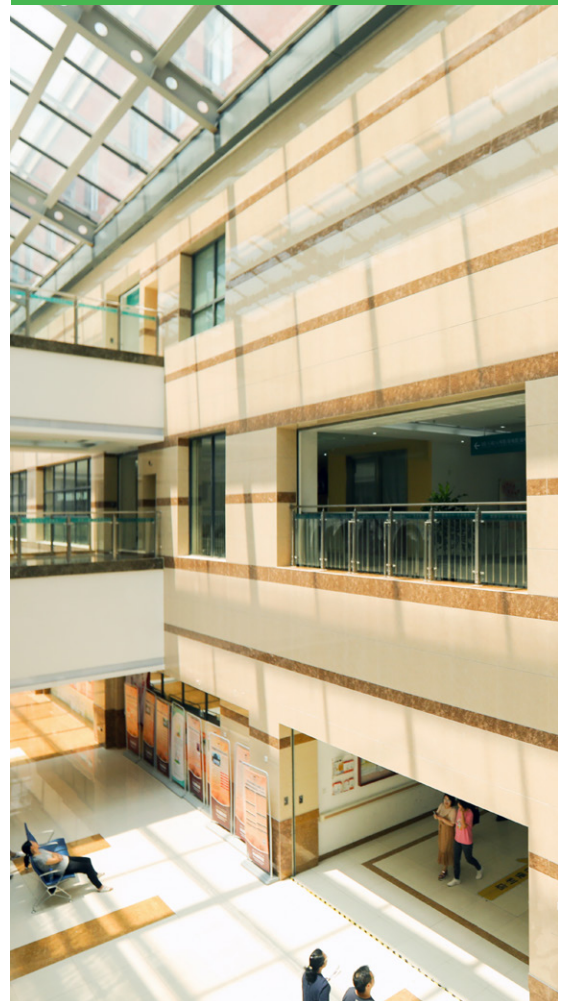
Centralized management of air conditioning and lighting systems, saving labor and energy costs

"Schneider Electric helped our hospital optimize the quality and efficiency of management services by creating a smart logistics center," An said.

"Schneider can provide us with new products to further improve efficiency and reduce energy consumption."

"We need to ensure all of our hospital equipment and systems are running efficiently and stably 24 hours a day."

— Dong An, Director, Logistics Management Office, Huashan Hospital North at Fudan University



Life Is On



Improve power and equipment reliability, reduce operational costs and maximize business performance with power and energy management solutions!

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