

# EcoStruxure Power: thrive in a digital world.

Explore >

Life Is On

Schneider  
Electric

[se.com/us/ecostruxure-power](https://se.com/us/ecostruxure-power)

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# A new world of energy is emerging

Our world is increasingly more digital and more electric — with power becoming more distributed, more complex to manage, and more integrated into our everyday lives.

8x

more connected devices than people by 2025

(IDC 2019; GSMA, U.N. population stat)

30<sub>B</sub>

connected things by 2020

(IHS, March 2016)

2x

worldwide power capacity by 2040

(BNEF, 2017)

30%

of total vehicle stock electric by 2040

(BNEF)

50%

renewable generation by 2040

(BNEF)



# Embrace the digital-electric future

This evolution is challenging how we manage our businesses:

- Keeping facility staff and occupants safe is a priority that cannot be compromised.
- Business continuity is equally important. Outages reduce profitability and can threaten an enterprise's very existence.
- An environmentally conscious public expects — or even demands — energy efficiency and sustainability initiatives from its commercial neighbors.
- Safeguarding intellectual property and data from cyber risks demands ongoing vigilance.

Addressing these challenges requires a transformation of the infrastructure that powers facilities.



Fire is the second\* leading cause of corporate insurance claims, after natural disasters. Electrical fire contributes to greater than **\$200M\*\*** (**€180.1M**) in property damage costs.

\*Allianz, \*\*NFPA



Power outages cost the U.S. economy about **\$110B** and the EU economy **€150B** each year.

Berkeley National Labs, Consequences of Poor Power Quality — An Overview — 2011



Between **60 – 80%** of buildings, industry, and infrastructure efficiency remains untapped.

World Energy Outlook 2012, OECD / IEA, Internal analysis



**31%** of organizations have experienced cyberattacks on operational technology infrastructure.

Cisco



# Thrive in a digital-electric world

At Schneider Electric™, we embrace the digital revolution and its potential for positive change.

We envision a world where building staff and occupants are safer, with zero electrical safety incidents; where power is 100% available, with zero unplanned downtime; where energy and operations are more efficient, with zero energy waste; and where operational systems are resilient, with zero cyber intrusions.

We strive to make this vision a reality with EcoStruxure™ Power, our IoT-enabled architecture and platform. Delivered through our connected energy management ecosystem of partners and industry experts who are openly collaborating with us to push innovation, enhance productivity, reduce risk, and unlock new growth opportunities.



# Maximize the performance of your critical infrastructure by improving ...

Electrical Safety



Power Availability



Efficiency



## Electrical Safety

Ensuring the safety of your critical infrastructure is a top priority. Schneider Electric's digital solutions help you improve safety, reduce downtime, and increase efficiency. Our advanced safety solutions help you identify and address safety risks before they become a problem. Our digital solutions help you improve safety, reduce downtime, and increase efficiency. Our advanced safety solutions help you identify and address safety risks before they become a problem.

# Balance the risks and benefits of digitization through ...

Cybersecurity



Connectivity



Cybersecurity is critical to the greatest emerging risks to enterprises in the digital age, intersects with the digital transformation of the power industry, and is a key element of the digital transformation of the power industry. Extensive Power utilizes Schneider Electric's cybersecurity solutions systems of energy delivery partners and industry experts. Agility and reliability are helping to realize the full potential of digitization to aid in the planning, designing, deployment, and operation of future-ready power distribution systems.

# Digital intelligence for facility operations

EcoStruxure Power applications achieve real business results. This is where IoT transcends technology. It's about business outcomes:

## Electrical Safety

- Reduce the risk of electrical fires
- Protect maintenance staff and occupants

## Power Availability

- Gain resilience with distributed energy resources
- Avoid downtime from electrical failures
- Enhance electrical asset management

## Efficiency

- Reduce energy usage and costs
- Improve sustainability and compliance

## Cybersecurity

- Ensure resilience to cyberthreats

It is through EcoStruxure Power applications where facility teams ...



## Connect

Connect everything from shopfloor to top floor



## Collect

Capture critical data at every level, from sensor to cloud



## Analyze

Convert data into meaningful insights



## Take Action

Drive action through real-time information and business logic





# Reduce the risk of electrical fires

Striving for zero electrical safety incidents

## Mitigate risks in the electrical installation

- Protect from insulation faults, short circuits, and overloading that can lead to fires
- Monitor connection points in electrical equipment

## Digitize to manage

- Monitor loading on electrical circuits to respond to overload conditions
- Trend and alarm on connection point temperature rise before a fire occurs
- Reduce or eliminate need for thermographic studies

## Analyze to optimize

- Cloud-based analytics to identify patterns and risks
- Notify personnel and proactively plan maintenance



# Protect maintenance staff and occupants

Striving for zero electrical safety incidents

## Ensure the installation is protected

- Complete protection of MV and LV distribution with circuit breakers, relays, and safety switches
- Safeguard electrical distribution to reduce risk of electrical shock

## Digitize the power system to increase awareness

- Active arc flash protection and operator notification
- Insulation fault protection, monitoring, alarming, and reporting
- Augmented reality and mobile apps to enable better informed operators and equipment maintenance beyond the arc zone

## Staff and occupant safety by the numbers +

Contact or exposure to electricity is the **sixth** leading cause of workplace fatalities.\*

There are **5 – 10** arc flash events in the U.S. every day.\*\*

Work-related injuries can cost businesses over **\$30 million (€27M)** in fines, medical costs, litigation, lost business, and equipment costs.\*\*\*

\* Electrical Safety Foundation International (ESFI)

\*\* NFPA – U.S. statistics

\*\*\* Arbill

# Gain resilience with distributed energy resources

Striving for zero unplanned downtime

## Take control of your energy production

- Protect from insulation faults, short circuits, integrated solar, wind, combined heat and power, diesel generators, batteries, and other forms of energy-distribution resources
- Support different microgrid scenarios, including grid-tied, islandable, and off-grid

## Manage energy resources in real-time

- Monitor real-time energy production and consumption
- Manage microgrid scenarios, such as automatic transfer schemes, load sharing, or shedding

## Forecast to optimize

- Analyze demand and other factors such as energy cost to avoid peak charges
- Predict when to produce, consume, store, or sell energy

## Resilience by the numbers +

Power outages cost the U.S. economy **\$100B** per year, and **€150B** in Europe\*

Electrical interruptions in the US caused by extreme weather have **doubled since 2003.\*\***

At least 22 companies in Fortune 500 have announced plans to buy **100% renewable energy.\*\*\***

\* Berkeley National Labs, Consequences of Poor Power Quality

– An Overview - 2011

\*\* Climate Central, 2014

\*\*\* NY Times, 2018



# Avoid downtime from electrical failures

## Peace of mind for your power distribution

- Complete protection coordination to reduce outage impact

## Digital power system to enhance visibility

- Ensure operations and maintenance staff are always aware of electrical distribution status
- Monitor and correct power quality conditions that could lead to equipment failure or nuisance tripping
- Restore power in event of failure with root cause analysis and mobile app restoration guidance tools

## Analytics to provide you decision support

- Analyze and optimize electrical distribution health using analytics and expert services to maximize uptime

## Downtime costs by the numbers +

### Semiconductor:

up to **\$4.2M (€3.8M)** per event

### Financial trading:

up to **\$6.6M (€6M)** per hour

### Healthcare:

up to **\$1.1M (€1M)** per event

### Data center:

up to **\$832K (€750K)** per event

### Telecom:

up to **\$33K (€30K)** per minute

### Steel works:

up to **\$388K (€350K)** per event

### Glass industry:

up to **\$277K (€250K)** per event

# Enhance electrical asset management

Striving for zero unplanned downtime

## Go paperless and simplify your life

- Simple QR code with all equipment asset documentation
- Easily manage asset maintenance lifecycle with digital maintenance logbook

## Become more strategic about maintenance

- Monitor, alarm, and report on electrical asset conditions such as breaker status and aging
- Preventative and predictive analytics, notifications, and maintenance recommendations to optimize asset lifetime
- On-site field services to support your maintenance tasks

## Asset management by the numbers +

Poorly maintained switchgear/circuit breakers are **62% more likely** to fail than those under a proper maintenance program.\*

\* IEEE 493



# Reduce energy usage and costs

Striving for zero energy waste

## Raise energy awareness

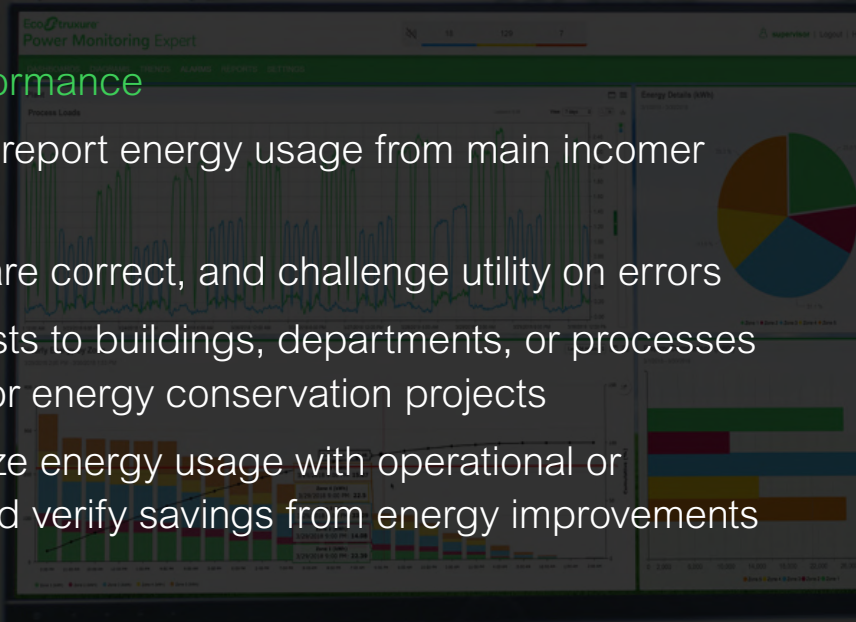
- Complete measurement plan to visualize energy from main incomer to sub-metered loads

## Improve energy performance

- Monitor, trend, and report energy usage from main incomer to load
- Verify energy bills are correct, and challenge utility on errors
- Allocate energy costs to buildings, departments, or processes to identify targets for energy conservation projects
- Model and normalize energy usage with operational or process context and verify savings from energy improvements

## Ensure quality data foundation

- Analyze your system to identify data quality issues and find gaps in your data to improve decision making



## Energy costs by the numbers +

Schneider Electric customers have experienced energy cost improvements of **10 – 30%**.

65% of surveyed Facility Managers observed payback of **2 – 5** years for energy efficiency projects.\*

\* FacilitiesNet.com

# Improve sustainability and compliance

Striving for zero energy waste

## Minimize impact with green products

- The Green Premium EcoLabel™ indicates product environmental information, including regulatory compliance and end-of-life instructions
- Energy-efficient electrical design support and active management systems help achieve building certifications (e.g., LEED)

## Streamline sustainability reporting

- Monitor energy and convert kWh to CO<sub>2</sub> KPIs to track reduction performance
- Monitor backup power system testing and operational parameters to report to regulatory authorities
- Comprehensive and certified energy data management system in accordance with ISO50001

## Energy costs by the numbers +

Building owners report that green buildings — whether new or renovated — command a **7% increase** in asset value over traditional buildings.\*

European Commission signed an agreement with member representatives to set an energy efficiency goal of **32.5% by 2030**.\*\*

The Singapore Building and Construction Authority (BCA) set a target that **80%** of buildings be “green” by 2030.

\* Dodge Analytics 2016

\*\* European Commission



# Ensure resilience to cyber threats

Striving for zero cyber intrusions impacting operations

## A first line of defense

- Use products developed following the Secure Development Lifecycle
- Ensure certified products have cybersecurity features that are in accordance with global standard IEC® 62443

## Ensure cybersecurity defense in depth

- Manage all aspects of a cybersecurity strategy — people, process, and technology — to assess risk level
- Design and implement cybersecurity solutions by OT security experts, supported by a network of partners
- Monitor, detect, and respond to cyber risks during the operations phase of the system

## Cybersecurity by the numbers +

IoT security costs will rise to **20%** of a company's IT budget by 2020, compared to just 1% in 2015.\*

**31%** of organizations have experienced cyberattacks on operational technology infrastructure.\*\*

\* Forbes Magazine, 2016

\*\* Cyber Defense magazine, 2019

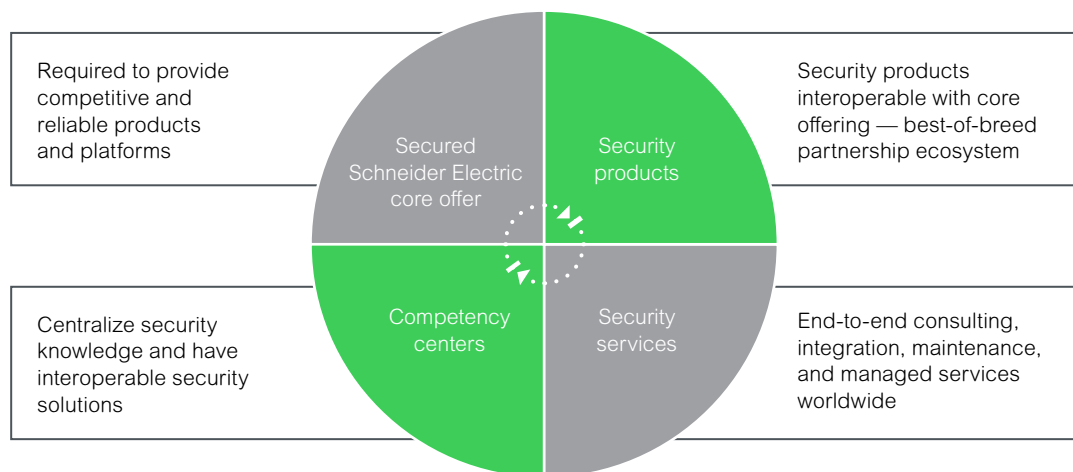




# The best defense

Schneider Electric has adopted a “defense in depth” strategy to prevent or minimize cyberattacks. This multi-pronged defense system adheres to IEC® 62443 standards, and it involves the creation of a multi-layered and multi-technology strategy to safeguard critical systems.

## Our 360° Cybersecurity Solutions



ISO 27000



IEC 62443



ISA 99

## Cybersecurity is in our product and software DNA:



EcoStruxure Asset Advisor



EcoStruxure Power Advisor



EcoStruxure Power Monitoring Expert



EcoStruxure Power SCADA Operation

# Cybersecurity services

The defense in depth strategy is not just an implementation tool, but a holistic security approach. We don't just safeguard, but assess, manage, and monitor your systems with the help of Schneider Electric's Portfolio Lifecycle Methodology.



# The power to improve any business

Our segment-oriented EcoStruxure Power architectures help our customers manage fully compliant, flexible, and scalable power systems — capable of meeting their needs today, and future-ready to support their evolving demands.



# Proven technologies for any business

EcoStruxure Power is an IoT-enabled architecture and platform that digitizes and simplifies medium- and low-voltage electrical distribution systems. It leverages the most advanced measurement, sensing, mobility, cloud, analytics, and cybersecurity technologies to enable real-time management and control of all energy-related processes.

Open and  
Interoperable



Cost-optimized  
and Scalable



Flexible

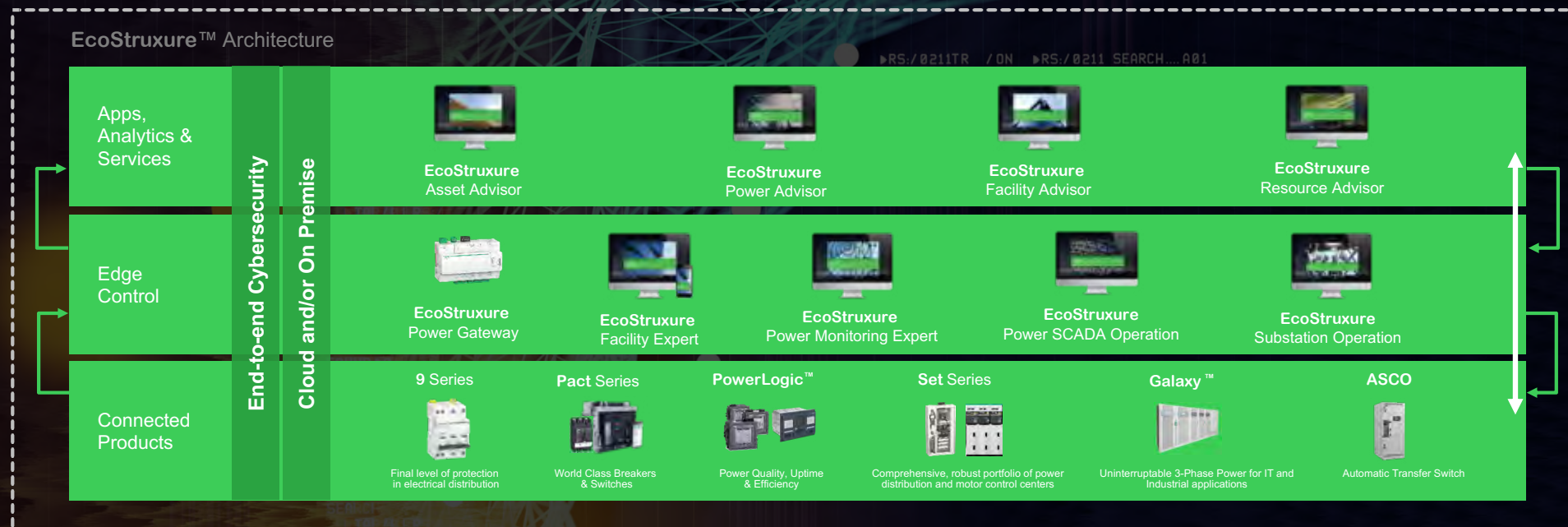


The EcoStruxure Power architecture is a fully distributed, IoT-enabled system that provides a single point of control for all energy-related processes. It is designed to be open and interoperable, allowing for easy integration with existing systems and new technologies. The architecture is also cost-optimized and scalable, making it suitable for a wide range of applications and environments. Finally, the architecture is flexible, allowing for easy customization and configuration to meet specific business needs. The EcoStruxure Power architecture is a proven technology that delivers the benefits of IoT-enabled electrical distribution systems to a wide range of businesses and industries.

# EcoStruxure Power – your complete solution

Innovation at every level for a connected, three-tiered system

At the core of all the EcoStruxure Power solutions are three interwoven levels of innovation: connected products, edge control, and apps, analytics, and services. Continuously communicating in real time within a cybersecure environment, they give you complete visibility to optimize your network.





### Easergy P3

Compact protection with integrated feeder, motor, and transformer protection functions for standard MV applications.

MV Switchgear

ATS

MV/LV Transformer

UPS

LV Switchgear

Harmonic Filters

Panelboard /  
Switchboard



### ASCO 7000 Series

Medium-voltage automatic transfer switch (ATS) offers many configurations, options, and switching modes (including open, delay, and closed) to provide customers with a metal-armored switch cabinet and control equipment conforming to the IEC 62271-200 standard.

NSXm

+ ComPact NSX/NSXm

This is only a sample of the EcoStruxure Ready connected products applicable for an EcoStruxure Power architecture.



# Edge control for actionable intelligence



## Digital Logbook by Facility Expert

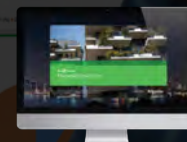
An intuitive mobile tool for electrical asset tracking. Keep record of important documentation and maintenance schedules, share tasks with instructions, generate reports, and more.



**EcoStruxure**  
Power Monitoring Expert



**EcoStruxure**  
Power SCADA Operation



**EcoStruxure**  
Facility Expert



# Analytics-based services maximize data value



## EcoStruxure Power Advisor

is an analytics-based suite of services for power management systems that optimizes network reliability and increases the operational efficiency of services teams by finding and prioritizing issues anywhere in the power distribution system. Data quality analytics provide insights and recommendations that establish a trustworthy data foundation and facilitate ongoing electrical network health. Electrical network analytics detail system and trend summaries that identify weaknesses and propose mitigation solutions to prevent a detrimental impact on operations.





# EcoXperts: here to help

## Domain expertise — anywhere power is critical

Critical Power EcoXperts have proven expertise in deploying power management systems, employing advanced metering networks, managing power quality, and using best-in-class software tools to help clients operating large buildings and critical facilities manage energy costs, improve electrical system reliability, and optimize electrical equipment performance.

Trained and certified by Schneider Electric, EcoXpert™ partners are the implementation arms of EcoStruxure, pioneering the future of intelligent buildings and IoT, to deliver smarter, integrated, and more efficient services and solutions to our customers.

[Discover the value of our EcoXpert program](#)



# Connected people and technologies

Powering greater design, engineering, and deployment efficiency

Schneider Electric helps you lead the digital transformation for power with:

- An industry-leading, comprehensive technology portfolio
- A vast wealth of domain knowledge, experience, and expertise
- A collaborative, multi-local partner ecosystem with the global reach, regional expertise, and local representation necessary to facilitate integrated project delivery.

EcoStruxure Power enables a connected project lifecycle featuring greater design and engineering productivity, simpler installation and commissioning, and digital systems that are compliant to the wide range of standards influencing the industry.

## The power to streamline every project

### Paradigm shift in building design



Integrated Project Delivery

Digitization

### Creating new opportunities



Innovation and  
Productivity



Risk and  
Cost

Reduced document errors and omissions	<b>61%</b>
Reduced rework	<b>36%</b>
Reduced construction cost	<b>30%</b>
Reduced project duration	<b>22%</b>
Fewer claims/litigation	<b>17%</b>

Source: The Value of BIM for Owners: Save Time and Money During the Building Lifecycle, Autodesk, 2014



# Increase productivity through collaboration

## Create. Collaborate. Scale.

Schneider Electric Exchange: The world's first cross-industry open ecosystem dedicated to solving real-world sustainability and efficiency challenges. Schneider Electric Exchange brings together experts and innovators to leverage the power of collective intelligence within a dynamic, single workspace.

[Join Exchange](#)

## Get more done.

[mySchneider Partner Portal:](#)

Access a wealth of technical documentation, prescription materials, project reference designs, exclusive white papers, training, dedicated support, and digital tools.

[Discover mySchneider](#)



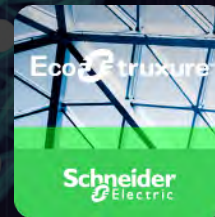
# Simplify workload and expedite projects with digital tools

EcoStruxure Customer Lifecycle Software brings together a set of easy-to-use digital tools built on the EcoStruxure platform. With applications covering design through installation and beyond, EcoStruxure Customer Lifecycle Software is a new way to bring innovation, productivity, and simplicity to any project phase.



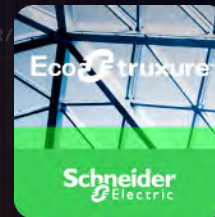
## EcoStruxure Power Design

With EcoStruxure Power Design, consulting engineers are better able to engineer safe, reliable, and future-ready solutions that meet or exceed standards. Secure project lead time, control costs, and save time and money.



## EcoStruxure Power Build

With EcoStruxure Power Build, panel builders can increase their productivity, building quality switchboards faster and more easily incorporating the latest technologies.



## EcoStruxure Power Commission

With EcoStruxure Power Commission, panel builders and contractors can deliver a new level of reliability when they install and commission a system, testing and validating architectures with relative ease.





**PARTNER**LOGO

Authorized Partner

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**Partner URL**

**Partner Phone**

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Learn more about EcoStruxure Power

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