

EcoStruxure™  
Innovation At Every Level

# SMART

## Harnessing efficiency to inspire innovation

Schneider Electric's EcoStruxure Platform  
Drives Improvement in Lexington, KY  
Manufacturing Site

[se.com/ecostruxure](https://se.com/ecostruxure)

Life Is On

**Schneider**  
Electric



Schneider Electric's Lexington, Kentucky manufacturing plant has long been recognized as a leader in the production of high-quality load centers and safety switches that serve as a basis for commercial and industrial power systems. Having attained ISO 14001, ISO 9001, OHSAS 18001, ISO 50001, and SEP Silver Status certifications, the management of the plant prides itself on its record of worker safety, process efficiency, and responsiveness to customer requirements.

The 500,000 square foot facility relies on 400 employees and state-of-the-art technology to produce over 16,500 finished goods per day. That includes nearly 9,000 load centers and over 6,000 safety switches, completely packaged and ready to ship.

The plant is vertically integrated. The work performed on site includes everything from taking raw rolls of steel and stamping them into properly sized sections, painting the shaped metal enclosures, melting plastic pellets to make the interiors, stamping in the metal bus bars, electro-plating bus bars, and then assembling the components into a final product.

"Our processes are complex and, as with any aged facility, there are multiple applications that have evolved from necessity. Often, these legacy applications made data sharing and analysis difficult as proprietary systems tend to silo valuable information," said Mike Labhart, Schneider Electric's Innovation Leader for North American Smart Factories. "In order to drive higher levels of efficiency, we recognized that those data silos needed to be unlocked," he said.

### Modernizing existing factory assets through an architecture optimized for digitization

The Lexington facility's digitization journey began 10 years ago when connected products were introduced to the factory floor in order to eliminate material handling waste. At the time, the largest RFID system in the world was installed and delivered over \$1 million in productivity. More importantly, this rich base of connected products enabled the facility to take the next steps: more precise edge control, and the laying down of a foundation for a new generation of advanced software apps and analytics.

"By making our existing infrastructure smarter, we are able to extract data that was never available to us because it was trapped in silos and now use that data to make the right decisions quickly," said Steve Lyczkowski, Plant Manager. "We are now quite developed at the connected products level. The push buttons, lights, back lights, terminal strips, limit switches, photo eyes, RFID switches, and Magellis HMIs are all connected. If my technician or my operator on the shop floor has a problem, I get an alert.

## Goal

Boost plant process efficiency and overall market competitiveness by introducing IIoT technologies that modernize and reinvent the control, monitoring, and management processes of the plant.

## Story

As new Industrial Internet of things (IIoT) technologies emerged, it became apparent to the Schneider Electric Lexington factory team that siloed data could now be made accessible in new, more affordable ways. Connectivity and integration became key focus points. A plant modernization project that deployed an EcoStruxure architecture resulted in more than \$6 Million in efficiency savings.

## Solution

The Schneider Electric EcoStruxure architecture provided the cloud and edge control technologies needed to enable advanced connectivity, high efficiency, and modern human machine interfaces for a mobile workforce, so that the factory could more effectively compete in the marketplace.

## Results

- 20% reduction in Mean Time to Repair
- 3.5% year-over-year energy savings
- 5% reduction in system downtime
- Elimination of paper processes
- 2-year return on investment

## Plant Manager factory floor notes: Connected products

“The push buttons, lights, back lights, terminal strips, limit switches, photo eyes, RFID switches, and Magellis HMIs are all connected. If my technician or my operator on the shop floor has a problem, I get an alert. This makes the lines more efficient and I now have the ability to control my core processes remotely.”

— Mike Labhart,  
*Schneider Electric's Innovation Leader  
for North American Smart Factories*

This makes the lines more efficient and I now have the ability to control my core processes remotely,” he said.

For Labhart, the deployment of Schneider Electric's open EcoStruxure architecture serves as a lynch pin for breaking down data sharing barriers, visualizing information more quickly, and enabling predictive analytics for operational efficiency improvement.

“Schneider Electric has many resources and is a leader in the industrial automation space,” said Labhart. “The company decided to make our plant a live showcase for the benefits of the Schneider Electric EcoStruxure architecture.”

EcoStruxure™ is a vendor-neutral, IIoT-enabled architecture which includes an open but tailored stack of connected products; edge control level solutions and software; and cloud-based apps, analytics, and services. End-to-end cybersecurity for supporting applications and data analytics are embedded across the EcoStruxure architecture. This open architecture approach accommodates information technology (IT) and both Schneider Electric and third-party operations technology (OT) equipment and software.

The EcoStruxure architecture allows for much easier management of core processes across the key elements of cloud, edge, and on-premise. Operators, for instance, are able to view cloud



connected critical data anytime, anywhere from any device. Resiliency and visibility are improved through live sensor data, predictive analytics, and smart alarming. Operators also have access to experts monitoring connected assets 24/7.

EcoStruxure improves the agility of manufacturing organizations by enabling key process owners to respond more quickly to market dynamics. By providing a collaborative workspace that connects applications and analytics to machines on the shop floor, the architecture allows teams to view combined intelligent dashboards in real-time, enabling fast and accurate decisions.

### IIoT-driven efficiency gains abound across the shop floor

Labhart and his team have deployed several revolutionary software apps that have dramatically impacted the efficiency across the plant floor:

#### Simpler maintenance process

One recent addition, the EcoStruxure Augmented Operator Advisor, digitizes machine information in an augmented reality format, and the data is viewable from a standard portable tablet. A maintenance technician can walk up to a piece of equipment and determine whether or not a cylinder has retracted inside the machine,

“Utilizing augmented reality reduces our mean time to repair (MTTR) by 20% on critical equipment.”

— Jeremy Elias,  
*Manufacturing  
Engineering Manager*

without ever having to open up the machine, for example.

The tool provides information augmented over a real-time view of the machine and, more importantly, provides the latest set of schematics and documentation as they pertain to that particular machine. Therefore, service technicians no longer have to spend time digging through a panel looking for the print manuals (which are often outdated).

“Utilizing augmented reality reduces our mean time to repair (MTTR) by 20% on critical equipment,” said Jeremy Elias, Manufacturing Engineering Manager. “This allows my technicians more time to perform more productive active machine maintenance.”

### Enhanced energy management

The Lexington plant has also invested in robust, digitized energy management tools. The paint room, for example, has incorporated a series of connected meters that monitor the energy consumption of all critical processes. Through the use of EcoStruxure Resource Advisor and EcoStruxure Power Monitoring Expert tools, facility engineers can visualize real-time energy consumption at the edge and make adjustments to optimize energy consumption.

### Plant Manager factory floor notes: Edge control

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# 3.5%

Target energy reduction across facility using energy management tools.

Meters gather the energy data and visualizations are run on the data that reveal how to most efficiently use kilowatt hours based on the type of metal that’s running through the line. The facility engineer uses the energy management tools to help achieve 3.5% energy savings year-over-year across the facility.

“These tools provide us with monitoring and reporting of local energy usage. We can see the history of spending trends and receive a breakdown and description of how we are consuming the energy we purchase. We can even make accurate predictions of future energy costs and usage trends. We estimate that this increased visibility has produced over



\$6 million in energy savings over the last several years,” said Labhart.

### Increased shop floor efficiency

Across the individual cells of the shop floor, where humans are interacting with industrial machines and robots, safety is always a high priority. New EcoStruxure apps and analytics tools such as [AVEVA](#) Indusoft Web Studio enable lean digitization. The software provides mobile notifications right to shop floor workers regarding machine performance. Both work instruction tools and quality database information are integrated into a single digital application.

The software interface produces standardized KPI reports so that management can make rapid adjustments to shop floor processes to keep enhancing efficiencies. The leadership team anticipates a two-year return on investment as a result of the deployment of these tools. “These new software tools allow us to utilize the cloud for collecting, storing, and visualizing process and performance data for faster, smarter business decisions,” noted Labhart.

### More precise edge control

The entire Lexington factory floor is populated with monitoring technologies that issue alarms whenever a production anomaly occurs. “If we experience a problem where a sensor fails to track, or a certain temperature is exceeded, an alarm condition exists there at the edge,” Lyczkowski explained. “We are now phasing in the ability to inform appropriate personnel on their mobile devices (where they can be at home or anywhere in the world) to alarm conditions.”

“Schneider Electric PLCs serve as enablers of our edge control, and we have over 300 of these in the plant. We benchmarked the competition against our Schneider Electric PLCs and nothing even came close in terms of performance. Their durability has been rock-solid.”

“We’ve just connected our paint room to begin monitoring about 167 critical variables and are trending historic information so I can go back and perform analysis. We didn’t have that data before, it existed somewhere in a spreadsheet or

someone had written it down. Now everyone in the facility can see it. That’s the Lexington story. We’re taking the step from our connected products up through the edge and into the realm of cloud-based analysis.”

The addition of the new suite of EcoStruxure tools has reduced cumbersome paperwork through digitization and dashboarding, and has enabled predictive analytics through data sharing. According to performance statistics, rapid alarm communication reduced time spent doing paperwork by 90% and system downtime 5%.

### Faster, more accurate decision making via cloud apps and analytics

The solid base of connected devices and advanced edge control has helped the Lexington team to set the stage for deploying cloud-based software apps like [AVEVA Insight](#). “These powerful cloud-based Software as a Service (SaaS) solutions provide us with easy to understand descriptive analytics of data,” said Labhart. “We can easily share dashboard data through mobile apps and we can signal alerts via push notifications. This ability to generate dashboards requires little to no support or training thanks to the intuitive software.”

“Our plant supervisors can now utilize mobile applications to recognize potential material outages before they occur. The critical process variables presented through the dashboards enable us to better predict any risk of material shortage. In fact, these tools are so powerful, we expect a payback on our investment within six months.”

“In the past, supervisors throughout the day would have to run to a computer or be next to a computer and keep in mind ‘I’d better go check to see how this is doing.’ Now they receive push notifications on those value streams that tell them when we will run out of parts or have a parts problem.”

“The new tools also help us to quickly train new employees and bring them up to speed. It used to take someone with a special skill set to go unlock a particular silo of information. Then someone else with a different skill set would be needed

to unlock a separate silo of information in another area of the facility. Whether those two individuals shared that data with other groups or with each other was questionable. Now, thanks to the AVEVA apps and analytic tools, we've connected those processes from a historical perspective. It's very easy for even new employees to plot two variables against one another and perform, in minutes, descriptive analysis that would have taken weeks," he said.

### Only scratching the surface on potential benefits

"We have always been proud of our workforce here in the Lexington plant," said Labhart. "The fact that we were able to provide our employees with tools that made their jobs safer, more productive, and more interesting has helped to boost our efficiency.

"We feel like we are only scratching the surface on the benefits that can accrue as a result of these new digitization tools.



### Plant Manager factory floor notes: Apps and analytics

"The critical process variables presented through the dashboards enable us to better predict any risk of failure. In fact, these tools are so powerful, we expect a payback on our investment within six months."

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We are exploring areas that we've never had the opportunity to look at before. This opens the door to new ways of thinking about our facility and will reveal new ways to improve productivity and efficiency. Much of our data was always isolated in silos and experts were required to try and interpret it. Now people from different areas can go into this system and grab that information through the simple touch of a button."

As new Industrial Internet of things (IIoT) technologies have emerged, it has become apparent that old issues can now be addressed in new, more affordable ways. Connectivity and integration have become a key focus point and plant modernization has directly opened the door to higher profitability.

### Evolution of the Lexington Smart Factory

Modernizing this working facility in operation for more than 60 years needed to be done over time, requiring the Lexington team to strategically balance the need to embrace new, connected technologies with the needs of the business and a set operating budget. This successful digitization evolution took a step-by-step approach, adding new EcoStruxure technologies individually where they would provide the greatest value and connecting them with existing equipment. As a team that successfully evolved a brownfield facility into a smart factory, the team is able to offer strategies and talk through the challenges they faced to help visiting customers who are exploring IIoT-connected technologies overcome those same hurdles toward their modernization goals.

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# EcoStruxure™

## Innovation At Every Level

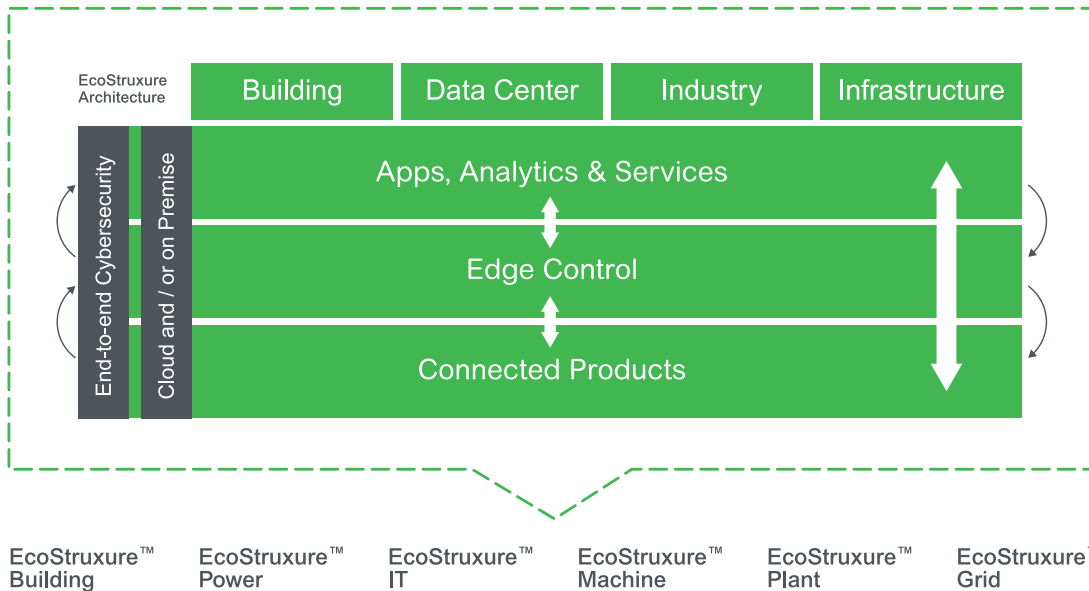
### IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure is Schneider Electric’s open, interoperable, IoT-enabled system architecture and platform.

EcoStruxure 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. EcoStruxure™ has been deployed in 480,000+ sites, with the support of 20,000+ system integrators and developers, connecting over 1.6 million assets under management through 40+ digital services.

### One EcoStruxure architecture, serving 4 End Markets with 6 Domains of Expertise



### Connected Products

The Internet of Things starts with the best things. Our IoT-enabled best-in-class connected products include breakers, drives, UPSs, relays, sensors, and more. Devices with embedded intelligence drive better decision-making throughout operations.

### Edge Control

Mission-critical scenarios can be unpredictable, so control of devices at the edge of the IoT network is a must. This essential capability provides real-time solutions that enable local control at the edge, protecting safety and uptime.

### Apps, Analytics & Services

Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid environments. EcoStruxure enables a breadth of agnostic Applications, Analytics, & Services for seamless enterprise integration.

### Find out more about EcoStruxure

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# Learn More



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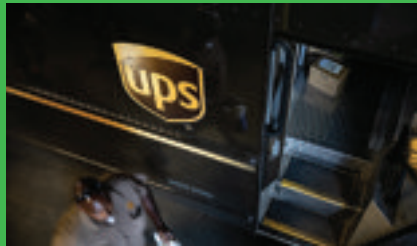
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Explore the Global Digital Transformation Benefits Report



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September 2019

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998-20655256\_GMA-US

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