

Life Is On

Schneider
Electric

Creating an efficient and productive learning environment

Power Manager for SmartStruxure solution embedded in the building management system increases electrical as well as mechanical efficiency.

Lake Land College
Illinois, US

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Smart energy and power management from Schneider Electric is just one way that Lake Land College educates students about environmental stewardship and the importance of conserving resources while it strives to create a carbon neutral campus.

A leader in education – and energy efficiency

For many adults in the United States, community college provides convenient and affordable access to higher education, with a pathway to additional training or the workplace and the promise of a successful future.

Lake Land College in the state of Illinois is a public community college of over 20,000 students and a leader in creating a greener and cleaner education and campus. When facing 40-year-old aging campus infrastructure, rising utility costs and new construction needs, Lake Land College officials initiated a multi-year plan called *Envision. Educate. Engage for a sustainable future*. Its goal to create a replicable control system that generates energy on campus while reducing consumption.

The holistic approach includes the region's largest geothermal well field, solar and wind energy, and smart grid technology as well as green education programs for students. The efficiency program is helping the college achieve savings beyond its initial projections. Since launching the initiative, Lake Land has reduced CO₂ emissions by 400 tons per year and it is saving more than \$100,000 (€92,000) a year in utility costs.

Going above and beyond the typical college

For more than three decades, Schneider Electric and leading system integrator Dynamic Controls Inc. (DCI) have been Lake Land College's partners for HVAC energy management. Schneider Electric's building management system (BMS) manages all HVAC systems in 15 multi-use buildings on its 308-acre main campus. The BMS now also manages all the newer systems, including state-of-the-art geothermal heat and pumps, photoelectric displays, windmills, and chilled beams for cooling systems – some with third party BACnet[®] protocol – bringing them into a single convenient system. Campus wind power and geothermal energy production and conservation efforts are highlighted in reports and dashboards that will be displayed on monitors throughout campus to showcase results and inspire students and faculty to be aware of their energy consumption.

Goal

Create a carbon neutral campus. Update aging infrastructure and develop a replicable control system that generates energy while reducing consumption throughout the campus.

Solution

Schneider Electric™ building management system (BMS) and power meters enhanced with power monitoring and management from Power Manager for SmartStruxure™ Solution.

Story

The BMS manages traditional HVAC equipment as well as alternative energy systems, bringing them into a single convenient system to monitor and manage energy and power consumption.

Results

- Increased visibility to electrical as well as mechanical operations
- Reduced campus energy consumption and expense
- Greener and cleaner campus to educate and inspire students



Embedded Energy and Power Management Solution

Managing multiple energy programs requires precise measurement of results. While several meters were already on-site, campus facilities personnel recognized the need for additional power meters to monitor and alarm their power solutions to save even more energy and ensure optimal performance. The college installed both third party meters and five Schneider Electric power meters, including the PM5300 meter for overall metering needs.

Furthermore, the college needed bi-directional meters to measure and compare how much energy is generated by the photoelectric arrays and windmills versus the amount being consumed. In addition to the PM5300 meter, DCI introduced the college to Schneider Electric's Power Manager for SmartStruxure™, an embedded software solution for the BMS that provides users with actionable information to increase power awareness and ensure the ongoing health of electrical systems.

"We immediately recognized the value in Power Manager once learning about the monitoring and reporting features, and really appreciate that the data and information stays local within our own systems," says a Lake Land College facilities representative.

Designed for non-electrical experts in buildings or on campuses with non-critical power needs, Power Manager adds electrical systems management – specifically power monitoring and energy accounting capabilities – to Schneider Electric's BMS. It enables Lake Land College to better monitor, manage and optimize their buildings from a single interface, and view power use in a single pane of glass along with HVAC energy use for a holistic picture.

"The installation was seamless and efficient at the college, and we saved them hours in labor costs because the widgets and graphics within StruxureWare™ Building Operation software made it fast and accessible with little set up work required" says Walt Neikirk, Operations Support at DCI. "The dashboards are built-in and it was as easy as 'point and click.'"

Power Manager in Action

Once in place, Power Manager for SmartStruxure was put to use on the Lake Land College campus immediately. Power Manager reports and dashboards help college facility personnel see the benefits and return on investment from their alternative energy sources.

In another situation, facility managers were concerned about surcharges levied by the utility company as a result of a lower than normal power factor level in its energy capacitor bank. Power Manager and Schneider Electric power meters were added to monitor the capacitor bank and send alarms when the power factor dropped below a certain level. As a result of identifying and addressing this issue, the college has saved up to \$1,000 (€918) per year in unexpected surcharges.

\$560K
(€513K)

Saved in energy costs since 2010

400 tons

CO₂ saved annually at Lake Land College

"We immediately recognized the value in Power Manager."

- Lake Land College facilities representative



Power Manager dashboards allow the college to see power consumption across campus in real time.

Additionally, two campus buildings of similar size and function reported a discrepancy in power use on average of approximately 40kW. Regular maintenance checks on the chillers did not discover operational issues. However with Power Manager, the facilities team was able to look at the impact of power quality and performance on the equipment functionality. By having meters in place and monitoring the flow of power, the college was able to identify the issue and take corrective actions to reduce energy waste. As a result, the college has saved approximately \$3,500 (€3,200) per year.



Maintaining leadership in sustainability on campus

Lake Land College is ensuring electrical system health, increasing power quality awareness, and extending equipment lifespan all while maintaining a comfortable and productive learning environment with Power Manager for SmartStruxure solution. Encouraged by the results and ease of use, the college plans to install more meters and continue to leverage power monitoring. The college intends to drill down even further and monitor specific HVAC systems to achieve its ongoing sustainability goals in the *Envision. Educate. Engage for a sustainable future.* program.

Transition from Lake Land's current building management system to Schneider Electric's premier SmartStruxure solution will be swift and seamless because the core element – Enterprise Server software – is in place with Power Manager. This power monitoring solution, and Lake Land College's other wide range of conservation activities, will ensure it continues to be a leader in sustainability in higher education.

25

 countries

Represented by international students at Lake Land College

“Power Manager for SmartStruxure solution is a tool to help find energy and cost savings.”

- Walt Neikirk,
Operations Support,
Dynamic Controls Inc.

Preparing Students for Green Careers of the Future

Lake Land College's commitment to a greener world extends to the classroom with courses that prepare students to become leaders in the technical and business management sides of the growing sustainability field. Programs offered include an associate degree in Renewable Energy and certificates in Sustainable Energy and Renewable Energy Technician. These innovative green tech programs include hands-on training with state-of-the-art industry equipment such as:

- Living lab: ZEB Hall, a net-zero energy building
- Solar energy/photovoltaic systems
- Wind power/wind turbines
- Energy efficient construction & weatherization
- Sustainability & smart grid technology
- Renewable & alternative energy

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