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Innovation At Every Level

EFFICIENCY

Biola University supports the green energy movement by boosting HVAC efficiency

Biola University – La Mirada, CA, United States

EcoStruxure™ for Buildings helps education facility achieve optimized energy efficiency.

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Life Is On | Schneider Electric

Named one of the nation's greenest colleges, Biola University is a private Christian institution located on 95 acres in the residential neighborhood of La Mirada in Southern California. The campus offers more than one million square feet of floor space housed in 40 major buildings, many of which have been extensively renovated over the past decade to improve their energy efficiency, and decrease the university's overall carbon footprint.

Reducing overhead costs to support campus expansion

Chris Reyes, Manager, Central Plant & HVAC, is leading the charge to reduce overhead costs and operate an energy efficient campus by implementing green energy initiatives where possible. In 2011, Chris was given the task of determining if Biola University needed to make a financial investment to expand its HVAC system's chilling capacity to accommodate a continually growing campus. New dormitories were required to continue with the expanding student population, and the university was concerned about the financial impact of having to bear the cost of both the dorm construction and expanding the current HVAC system. A possible solution was to find a way to increase the efficiency of the existing HVAC system and delay the costly system expansion. The problem that remained was to find any possible cause for the current system not running as efficiently as it could.

Working with other facility staff members, Mr. Reyes noted there was a significant waste of energy caused by students leaving their HVAC systems on during periods when they were not occupying their rooms. As a result, the rooms were continually being air conditioned, thereby causing the university to waste energy. This waste was taxing the existing campus chillers to a point that they were nearing 100% capacity.

Reducing wasted energy

The university uses chilled water as part of the cooling process for the campus buildings and Mr. Reyes needed to find a way for the HVAC system to be more efficient without increasing the

Biola University, La Mirada, CA, United States

Goal

Reduce overhead costs, minimize energy waste, and operate a truly energy efficient campus by implementing widespread green energy initiatives throughout new dorm construction.

Story

Biola's expanding student population required the construction of new dormitories. The university was concerned about the financial impact of having to bear the cost of both the dorm construction and expanding the current HVAC system.

Solution

- Implementation of wireless SE7000 room controllers
- Expansion of the HVAC system's chilling capacity to accommodate the continually growing campus

Results

- Optimized energy efficiency and building control
- Cost-effective solution that fit budget
- Reduced energy waste
- Improved bottom line by more than $11K annually
- Over 100 tonnes air conditioning saved
- Over $1 million saved compared to alternative project

$11K

annual reduction in cooling costs

100

tonnes air conditioning saved

$1M

saved compared to alternative project

current chilling capacity. He was looking for a way to eliminate the need to rely on the students to turn their systems off when leaving the premises. This would decrease the electrical and chilled water usage of the dorms, without sacrificing the occupant's comfort. What he proposed to the university management was to implement a solution using a "smart" thermostat control system that could detect when the dorm room was unoccupied. If the thermostat detected that there was no movement in the room then it would automatically shut off the fan coil to reduce energy consumption. By automating the process of thermostat control in the current dorms, Mr. Reyes deduced that the dorm rooms were unoccupied nearly 30% of the time. By controlling the wasted energy during the unoccupied times, the university could potentially save 100 tonnes of air conditioning during peak hours.

The 100 tonnes of saved air conditioning could then be distributed to other parts of the campus making the cooling process extremely energy efficient. This would improve Biola's bottom line through a yearly savings of more than $11,500 on cooling costs. Using "smart" thermostats would also maximize the HVAC system's ability to cool the entire campus without an increase in energy consumption, taking the university one step closer to being a greener institution.

The room controller advantage

The search began for components that would bring Biola's energy management solution to life; this led Mr. Reyes to Schneider Electric for their leading room controller offer.

The team at Schneider Electric recommended their SE7300 room controller with PIR motion sensor functionality as their solution for Biola. The SE7300 room controller is specifically designed to handle the advanced occupancy routines of campus dorms, while also providing automatic energy savings during occupied periods without sacrificing student comfort.

The pricing and performance of the SE7300 room controllers was what really convinced Mr. Reyes of the value of this project. The total cost of the project was less than $200K, versus the monstrous $1.2 million for a new chiller addition to the campus. Biola's goal of making its campus more efficient and green could be realized for a mere fraction of the price of the alternative.

Leveraging open protocols to reduce costs

The SE7300 room controller is designed for new construction as well as retrofit projects. This was another great benefit for Biola as it would not only be able to retrofit

"Since it was the first project of this type for our office, and considering it was wireless, we anticipated possible cost overruns but in actuality the installation and programming went smoother than we thought and we actually picked up a couple extra percentage points in gross margin. Customer was happy with the job also."

— Bob Meinking, Control Technologies West, Inc.

its existing buildings, but also use these room controllers in the construction of a new student dormitory opening in 2015. Moreover, this meant Biola could continue to delay the huge cost of expanding the university's HVAC system by leveraging the same plug-and-play room controller technology in the new building. This enabled Biola to breathe new life into his existing HVAC system without the extensive costs of additional software or drivers. The plug-and-play room controllers from Schneider Electric easily integrated into the HVAC system meaning that the university could easily integrate them into the existing energy management system (EMS).

The SE7300 room controllers seamlessly connected to a secure wireless router and then was directed through Schneider Electric's (partner-installed) Andover Continum building management system, which provided connectivity to the campus EMS.

Control Technologies West, Inc., completed the initial installation and integration of the room controllers in 2011. Their integrators replaced the existing Trane controls with the SE7300 fan coil controllers and third-party door switches.

The integration of the SE73000 fan coil controllers provided a quick return on investment. Biola University was able to delay the chiller plant expansion as the HVAC system no longer wasted chilled water sent to unoccupied areas.

In 2014, Biola University is set to construct its new dormitory equipped with room controllers with PIR motion sensors, door switches, and window lockouts. For Biola University, it is just another example as to why this innovative and environmentally conscious institution continues to rank as one of America's finest private Christian universities.

"At every stage the Schneider Electric team provided exceptional service. They design very good products and provide great customer support. It was such a positive experience that we have spec'd out their room controllers for all of our future dormitories."

— Chris Reyes, Manager, Central Plant & HVAC

About Biola University

Biola University, named an “up and coming” national university by U.S. News & World Report three years in a row, is a private Christian university located in Southern California. For more than 100 years, Biola has remained committed to its mission of biblically centered education, integrating biblical principles with every academic program. With a current record-high enrollment of 6,250 students, the university’s six schools offer 145 academic programs, ranging from the B.A. to the Ph.D. For more information, visit www.biola.edu.

About Schneider Electric

Schneider Electric is the global specialist in energy management and automation. With revenues of ~€27 billion in FY2015, our 160,000+ employees serve customers in over 100 countries, helping them to manage their energy and process in ways that are safe, reliable, efficient, and sustainable. From the simplest of switches to complex operational systems, our technology, software and services improve the way our customers manage and automate their operations. Our connected technologies reshape industries, transform cities, and enrich lives.

At Schneider Electric, we call this Life Is On.

EcoStruxure Innovation At Every Level for Building

EcoStruxure™
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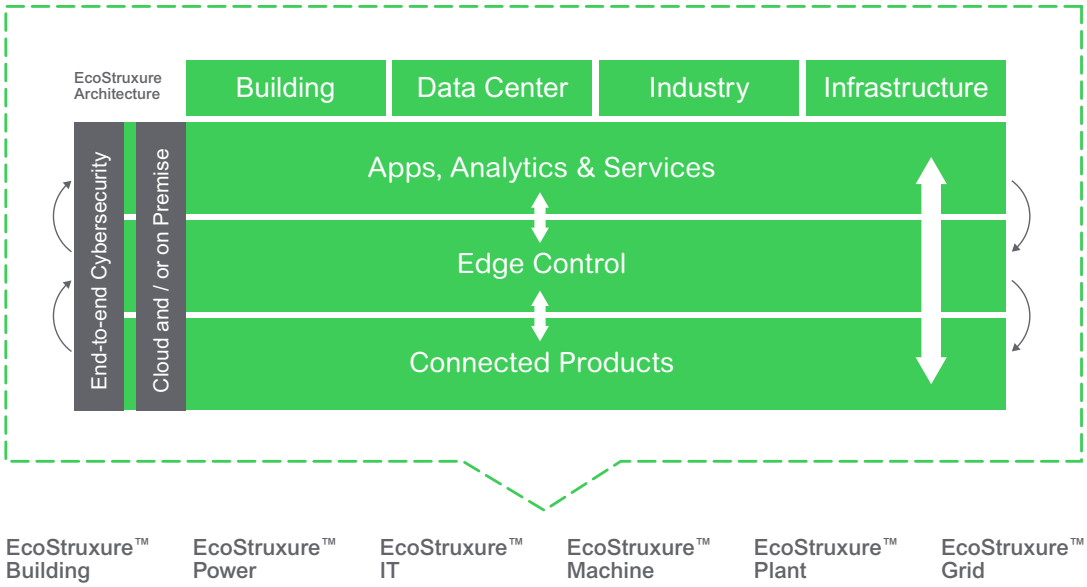
IoT-enabled solutions that drive operational and energy efficiency

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.

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January 2019

998-20420384_GMA-US

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