CASE STUDY

MAGNOLIA SCHOOL DISTRICT

Controlling plug and hardwired loads is important to school districts like Magnolia School District (MSD) in Anaheim, Calif.

From projectors to laptop charging carts and Smart TVs, technology has taken hold in classrooms. Unfortunately, these loads are not managed by Building Automation Systems (BAS), meaning MSD had no way to automatically turn devices off when the staff went home. Devices ran 24/7–even though school buildings were empty about 70 percent of the time.

Solution

Magnolia selected ENGIE Services U.S. to develop and deliver a district-wide sustainable energy program that is expected to save over $14 million in energy costs over the life of the project. The comprehensive program included new HVAC units, HVAC/lighting controls, solar shade structures, and plug load management.

During the Investment Grade Audit (IGA), BERT® identified over 500 devices, including vending machines, printers, copiers, projectors, and smart-boards, throughout the district's nine schools that could be turned off nights and weekends. Using exclusive data from years of plug load energy management along with the detailed audit data from the schools, BERT engineers calculated that the district could save almost 52,000 kWh annually. Based on the savings estimate, Magnolia and ENGIE moved forward with BERT, ordering 520 BERT Smart Plugs.

Project at a Glance

ABOUT

Located in Anaheim, Calif., Magnolia School District serves 6,000 pre-K through sixth-grade students.

OPPORTUNITY

Eliminate the overnight load from plug load devices.

SOLUTION

520 BERT Smart Plugs Running Measurement, Control, Analysis, and Threshold

RESULTS

31%
Baseline Load Reduction

69,901
Annual kWh Savings

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BERT also identified over 100 Smart TVs that were not included in the savings estimate because the TVs contained processors managed by the district's IT department. BERT does not usually install Smart Plugs on computers because many IT departments want the ability to perform overnight updates. At Magnolia, BERT worked with IT to coordinate a schedule that allowed BERT to turn off the TVs without impacting computer updates.

By controlling the Smart TVs, BERT significantly increased total energy savings while keeping the number of Berts installed the same. Installers were able to plug the TVs and projectors/smart-boards from the same outlet into a single Bert. In TV-only locations, BERT substituted higher load TVs for some of the smaller load devices listed on the IGA. Detailed information about the installation–including the location, device(s) being controlled, and the Bert MAC address, was captured real-time–allowing BERT to give ENGIE and Magnolia immediate "as-builts" that reflected all changes.

Energy savings are guaranteed so we do everything we can to meet or exceed our IGA savings estimates. By taking the extra time to work with MSD's IT department, total kilowatt savings for the project increased by 35 percent.

Results

BERT eliminated the overnight load at Magnolia School District. After the TVs were controlled, annual kilowatt savings rose from 51,875 kWh to 69,901 kWh.

The Power of BERT

When it comes to intelligent buildings, BERT controls the small things and delivers big. With 120,000 units installed in over 700 buildings, BERT's end-to-end solution typically lowers plug load expense by 40 percent, saving users over 13 million kWh annually.

Using patented technologies and the facility's existing Wi-Fi network, BERT remotely measures, analyzes, and controls plug and hardwired loads, ranging from individual 120V/15A devices to 277V/20A circuits. Frequently installed as a standalone solution, BERT delivers even greater value by integrating miscellaneous electric loads into Building Automation Systems (BAS), enabling the BAS to control all building loads and to collect additional measurement, temperature, and other building data for increased efficiency and comfort.

All MSD Devices– Actual Hourly Loads

46 Watts
Baseline Standby

97 Watts
Daytime Standby

22 Watts
Overnight Standby

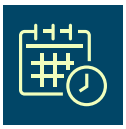
Smart TVs– Actual Hourly Loads

33 Watts
Overnight Standby

Learn how K-12 schools, colleges, offices, local governments, and sporting venues save money and energy by visiting bertbrain.com.

SOFTWARE

BERT's standard BertBrain software offers a robust range of functions.



Control

Automatically power loads off during nights, weekends, and holidays when buildings are unoccupied. Each device, group of devices, building, or group of buildings can have unique schedules based on specific operating hours.

Measurement

Get real-time energy usage data and historical power usage by hour, day, month, year, and user-defined time-period. BERT uses measurement data to establish the Baseline Load for M&V.

Analysis

Centralized server software makes analysis a breeze, with features like the BERT User Interface, a comprehensive reporting system to analyze energy consumption for schedule optimization and savings verification, and a detailed event log.

Threshold

User-defined power threshold settings prevent devices from turning off until the normal shutdown cycle is complete. Every time the device is scheduled to switch off, the threshold is checked. This prevents the device from turning off until the power level falls below the threshold. Threshold works best with copiers, vending machines, projectors, and charging carts.

Temperature

Customers can control devices such as PTAC, AC units, and heaters using high and low temperature set points. Plus, real-time temperature data can be gathered from any location with a Bert in place.