



Case Study: Fast Food Restaurant

Billion utilize IoT (Internet of Things) based energy management solutions to help fast-food chain stores monitor power consumption and improve ingredient preservation

The Philippines's largest fast food company, has over 2,000 stores in the Philippines, selling hot dogs, fried chicken, hamburgers, spaghetti, and fast-food related meals. For the restaurant chain industry, the preservation of fresh ingredients and quality is essential. The fast food restaurant chain adapts to Billion's Intelligent Energy Management System and successfully optimize the electrical energy efficiency, therefore maintain a great dining environment, strengthen the fresh food control, and reduce unnecessary power consumption and operating costs. The result brings a substantial increase in branch revenue and available cash flow for the cooperation.

Background Story

The Philippines is facing a sharp economic growth in recent years; the energy supply sometimes cannot meet the demand of local industrial and commercial activities, leading to frequent power outages and blackout. At the outlying islands, including Visayas and Mindanao, the situation is subsequently more severe. In addition to the fact that the Philippines are located in the tropical regions of Southeast Asia, power outages can lead to refrigerator's power off; inadequate refrigeration and freezing temperatures can quickly expose fresh ingredients to spoilage deterioration. Due to the wide distribution of fast-food chain stores, the unified management of the quality of food materials encounters great difficulties.

Also, to provide a comfortable dining environment, even if there are no guests in the

restaurant sitting area, lights and air-conditioning are still open, resulting in unnecessary energy consumption and high electricity tariffs. With the dedication to reducing operating costs and improving the quality of ingredients, Billion provides the central energy management system with real-time monitoring of the use of electrical efficiency and power consumption and further strengthens the effectiveness of store management.

Challenges

Leadray, a professional manufacturer of LED light head, who has the no.1 market share in the Taiwanese Street Light industry, partnered Billion to participate in a municipality's tender in Miaoli County, the central part of Taiwan, as both system integrator and LED street light supplier. Leadray was searching for an innovative solution that can add competitive edges to its existing projects. Besides recording the amount of energy saving, remotely powering on and off, and sending out maintenance system alarms, Leadray wanted to integrate an IP camera into its lighting control system to 24/7 monitor and document driving conditions. However, with the current ZigBee wireless and NPLC (Narrowband Powerline Communication) technology, they did not have enough bandwidth to support an IP camera by transferring digital images and video surveillance. Leadray also wanted to see how much energy was saved by the replacement of LED street lights.

Solution

During the cooperation, Billion cooperates with the Pilipino system integrator on the integration of hardware and software development. In each store, Billion installs 1 Smart Energy Gateway (SG6200NXL), 5 Smart Three-phase meter (SG3030), 5 Temperature & Humidity Sensors (SG110-A), 8 PIR sensors (SG100T), 5 Smart Indoor Lighting Controllers (SG200), and 2 Frozen Sensors (SG110-DFX). With the help of the browser-based energy management system, fast food chain operators can review the real-time monitoring of energy consumption and improve the central equipment management to ensure the quality of each branch of the restaurant.

Billion install the temperature & humidity and infrared PIR sensors in different areas of the restaurant, including sitting area, hallway, kitchen, and warehouse. The PIR sensors sense human motion and signal the light controller to turn on the lights; the lighting controllers automatically dim the light and separate the lighting operations into various zones according to the restaurant layout.

Also, Billion uses freezer sensors to measure whether the fridge keeps food at the particular temperature. Corresponding to the opening hours of the fast food chain, Billion's Smart Meter can automatically shut down the power of the common area after the restaurant closes to avoid the scenario when staff forgets to turn off the light or air-conditioners.

Billion's Smart Gateway is an important hub for data transmission; it can transmit the information collected by the front-end sensors and Smart Meters to the system through a variety of wired (RS485/Powerline/Ethernet) and wireless (ZigBee/Wi-Fi/3G/4G) to enable real-time analysis on the browser web energy management platform.

Chain store owner can remotely monitor the power consumption and the usage status of electrical appliances through Billion SEMS - Smart Energy Management Solution to detect aging equipment activity, thereby reduce the cost and time spent on workforce detection. When collaborating with digital smart meters, real-time device power consumption and analysis of historical electricity information can be reviewed by one glance.

The chain store owner can know how much electricity is saved on the monthly basis. When the sensor detects abnormal power consumption, the system will immediately send a warning Email or SMS to the administrator. When the power abnormality is unexpectedly severe, according to the user default value of the control parameters, Billion SEMS can remotely turn off the devices to significantly reduce the wire fire or mechanical damage accident.

Performance

Billion has successfully leveraged Internet of Things (IoT) technology to combine environmental sensing with automation control to improve the efficiency of equipment usage, reduce energy waste, and to reduce carbon dioxide emissions.

The solution helps each store to achieve the most comfortable in-restaurant environment, enhance the overall customer dining experience, and further to achieve the goal of sustainable corporation development.

