Emerging Trends

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REALLY SMART BUILDINGS

Technological advances have led to the most intelligent building systems yet

Technological advancements over the past several decades have made building automation systems (BAS) increasingly attractive. These “smart” systems control a variety of functions within the restaurant facility and promise to provide both economic and time-saving benefits.

I remember testing an energy management system in the late 80s that controlled HVACs for temperature, night setback, demand limiting and duty cycling and had remote access. I used a dialup connection to monitor and make real-time changes at various restaurants across the nation. It took several minutes just to establish the connection. Then, observing the temperatures and adjusting times and temperatures were elementary at best. Also, I had to wait for the monthly utility invoice to review possible energy savings.

Needless to say, it was a full-time job for monitoring and controlling just a few stores. Now, facility managers can conveniently and easily access and monitor equipment performance from their smartphones—but few have locked into this technology.

I had a great conversation with Jay Fiske from Powerhouse Dynamics concerning his view on the recent advancements and the future of smart building controls as they relate to our industry. Currently HVAC and thermostat functions comprise the majority of data collected, analyzed and acted upon in stores. Due to technological advances, other system operational metrics will soon be included.

The following are brief reviews of these systems and potential optimization of each:

Refrigeration Equipment

There is a huge opportunity to monitor both walk-in and line refrigeration equipment performance to ensure food is being kept at the proper temperature and the system is operating at peak efficiencies. Different metrics—such as head pressure, run times, box temperature, relative humidity and dry bulb temperature—can be monitored and tracked via controllers installed by the manufacturer. Then, adjustments can be made automatically.

For instance, in a walk-in freezer, there are different periods during the day when the system

goes into a defrost cycle, which temporarily increases the box temperature. If the box temperature does not increase for a minimum period over a day or so, there may be an issue with the defrost system, which could result in coil icing and may increase system run times to keep the box temperature within range. A smart building system would be able to analyze this and send an alert to a facility manager, general manager and/ or service tech. The facility manager or tech will be able to remotely access the data and precisely determine the problem before it reaches a critical stage.

Depending on the severity of the issue, he or she can schedule a trip to the restaurant during non-peak times to make the necessary repairs. Thanks to the remote access and the asset management system, the facility manager will also know which parts are needed and can bring them, rather than having to leave and pick them up after visiting the store. This will save money in the overall service call and utility costs. Most importantly, it will save all the food in the freezer from being discarded if a failure were to go unnoticed for a few hours, letting the temperature go beyond the safe minimum. In addition, defrost cycles will be initiated on an as-needed basis only, saving additional utility dollars.

Cooking Equipment

Another big opportunity with a smart building is the control and review of data for cooking equipment, such as fryers, ovens, broilers and hot pans. Manufacturers have begun installing controllers in their equipment for data storage Their total operational costs are high, since they consume a large amount of energy and incur high oil charges, which usually are greater than their energy costs. Consistent cooking methods, along with “clean” grease, are a must for product quality and customer satisfaction.

New fryers track fry oil quality internally, alerting store operators when to filter and/or change the oil. Traditionally, maintaining oil quality has been a time-consuming manual process. This often results in wasted oil or oil that is used beyond its normal lifecycle, which may produce sub-quality food. Temperature monitoring will also be used for more consistent cooking and to track potential maintenance issues—for instance, if the oil temperature is taking too long to “recover,” there may be an issue with the burners, gas pressure or regulators. Again, the system can send an alert to the facility manager, service representative and/or store operators for further inspection and review. Reporting and alerting on equipment usage will increase product quality.

Other Equipment

Other equipment that may be connected to smart buildings in the future may include:

• Lighting/signage: Auto on/off, dimming, time changes, bulb replacements, etc.

• Air balancing: AI-type systems that constantly monitor and adjust HVACs and kitchen hood demand controls for a positive air balance in the restaurant.

• Plumbing: The system will monitor and record water usage for dish machines, faucets, toilets, irrigation systems and more for proper operation.

• Auto control of door openers/closers: This will allow for better store ambient conditions

• All energy management functions

• Waste/recycling operations: The system will provide automatic decision making for waste and recycling pick-ups

Food safety tasks that are performed manually throughout the day will also become automatic. Using probes and other wireless sensors, smart systems will take over food temperature monitoring and recording. They will even send data directly to the local health department for their records and follow-up. Automating data collection and reporting will reduce risk and encourage labor savings. Overall food safety will improve, which is good for everyone.

In conclusion, “smart buildings” will become “really smart buildings” by proactively identifying equipment usage and performance issues, which reduces R&M costs and improves operating efficiencies. Plus, having a single platform to receive, store, transmit and provide accessibility to all equipment/system metrics will enable facility managers to handle their day-to-day duties more efficiently. RFMA has several great vendors that can steer you in the right direction for converting your restaurant into a smart restaurant. Don’t be left behind. Get ahead of the curve.

Special thanks to Jay Fiske of Powerhouse Dynamics for providing valuable input and insight for this article.

I’m always looking for feedback. Feel free to contact me at (972) 805-0905, ext. 3, or email at jeff@rfmaonline.com.

Dover and out.

Jeff Dover’s facilities career started in 1985. He has been employed by several major chains (Ponderosa, Steak & Ale, Bennigan’s, TGI Friday’s, Fuddruckers and recently Five Guys Burgers

and Fries). His technical education enabled him to take the lead as energy manager, facilities manager and director of facilities at the various brands.