Integrating historical data into more operational decisions to pay green dividends

September 04, 2009 - Owners Developers & Managers

Facility managers are under increasing pressure to not only keep occupants comfortable, but also to reduce their energy spend. The old adage, "you can't manage what you can't measure," becomes painfully clear when facility managers are asked to strike this delicate balance with very little readily available, actionable information. Luckily, the information void is starting to change, thanks to new technologies that are becoming more commonplace in facility management.

Some of the best facility teams wear two hats simultaneously: firefighters and data wizards. It's no longer enough to go into the field and keep things running smoothly. Today, facility management teams are expected to analyze workstation information and run business case scenarios to compare different ways they could run their building. Should they adjust their start/stop sequences? Is their economizer strategy right for this week's expected weather? Should they change their set-points?

It's difficult, if not impossible, to make these decisions without doing some analysis of historical data. Seasoned teams are looking to do more than replace equipment at its end of life with something more efficient. They want to use their systems differently, and this means understanding how an operational change in one part of the building affects the rest of the building. So why is this so hard to do?

1. There are only 24 hours in a day. If a team is firefighting, then it's not easy to get ahead of the curve and start analyzing prior operational strategies. Keeping the lights on, staff happy, and the facility safe and operational is a full-time task unto itself.

2. Data is traditionally not in an easily accessible format. If you've relied on your intuition to keep a building running during shoulder seasons, then digging deep into your building management system to review operational performance can be a daunting exercise.

3. Again, there are only 24 hours in a day. Even if you are ready to roll up your sleeves and dig into your data, where do you start? Any given building or energy management system is going to have millions of bits of data. It's practically impossible for a human being to look through all of that data at any given point of time.

These are all common (and valid) reasons for not integrating historical data into more operational decisions, but the pressure to make the most of every kilowatt-hour has opened the door for a new wave of technology that can shoulder the burden for the most onerous parts of data analysis.

Make the most of that thin utility bill by going straight to the meter. Converting real-time pulses from the utility meter into a dashboard style format to review utility consumption information can be useful. What does your demand profile look like? How has your consumption changed related to weather conditions? This information may generate some ideas such as how to adjust start/stop sequences or which systems can be turned down during likely peak demand times to reduce demand charges. Meter data alone will not provide the complete answer, but it is a reasonable

barometer to determine where a team should dig a little deeper.

Make the most of those digital controls. A number of solutions now exist that make the most of building management system data, such as Monitoring-Based Commissioning (MBCx). MBCx allows a team to go beyond tracking how a building is operating to how individual pieces of equipment are operating. Going to this granular level enables facilities to pinpoint specific ways that operations can be optimized - and translated into real dollars. Is your strategy for running your variable frequency drives the right one? Is the difference in temperature between the supply and return water for your chiller being maintained throughout the day? It's hard to know because most building management systems are programmed to tell you when something breaks, not when something is running sub-optimally. Teams can now use sophisticated technology to do the grunt work of identifying subtle changes in a piece of equipment's performance, and as a result, the facilities team can focus on implementing energy efficiency measures. The California Energy Commission's Public Interest Energy Research Program found that MBCx decreased energy usage by a median of 10 percent within one year in a 40 building pilot.

Making the most of data is not easy. Without understanding the fine details of your daily operations, even the best retrofits and upgrades will deliver subpar efficiencies, because how each piece of equipment is running will play a far greater role in determining the value that energy efficiency can provide than what equipment is in place. Technology is stepping up to make it more feasible than ever to run a building efficiently without compromising occupant comfort.

Sangeeta Ranade is an energy efficiency business development manager at EnerNOC, New York, N.Y.