Tracking energy usage and waste

With the rising cost of electricity and other utilities, landlords are always looking for ways to reduce their energy costs. Some building owners have installed suite submeters, which enable tenants to assume responsibility for their electricity consumption, as well as conserve energy and reduce costs. To better understand and improve upon your building's energy usage, you can now install an energy monitoring system, which will give you the data you need to make informed decisions.

Understanding energy monitoring systems and analytics

Energy monitoring systems combine hardware and software to track and measure energy demand and consumption throughout a building. They can provide real-time energy usage results in 15-minute intervals, and can pinpoint when equipment is running contrary to normal operating schedules. They can also produce analytic data and a visual depiction of energy demand and consumption.

There are many ways to analyze and use data pulled from your energy monitoring system. You can benchmark or baseline one building's energy usage against other buildings in your portfolio. The system enables you to profile daily consumption or demand for one or multiple buildings, and you can display and compare tenant versus common area energy consumption. You can also normalize (or standardize) energy demand and usage based on a number of variables, such as temperature, intensity or vacancy levels, and you can review and compare weekly, monthly, yearly and historical data.

"Anywhere a meter is installed, you can get the energy usage information you need," said Shannon Williams, Vice President, Carma Billing Services Inc. "Like our CARMAplus+ software, you can rank buildings by energy use, show which units are consuming the most energy, and even do a floor-by-floor comparison."

Producing reports and notifications

One of the key benefits of an energy monitoring system is its ability to produce a range of detailed reports. You can produce ranking reports, such as a suite usage report to show which units are consuming the most electricity, or a building portfolio ranking report to order the buildings based on energy usage. You can produce reports according to areas of the building, such as common areas, retail space, suite units, etc., which can show if these areas are using a consistent ratio of electricity. You can also produce interval comparisons, which will indicate changes in building performance.

Energy monitoring systems can be programmed to produce alarms and notifications when certain events occur or thresholds are exceeded. You can be notified when a building or submeter deviates from normal behaviour, such as a 10 per cent increase or decrease in electricity usage from the previous week. You can set up an alarm to provide immediate notification of critical issues, which enables you to deal with a problem without having to wait weeks or months. You can also set variances for critical systems (such as emergency backup power) that cannot exceed a set level of demand, and set up alarms to identify repetitive events, such as lights being left on for a set period of time.

"Some people will set an alarm to register low consumption within a unit," said Williams. "A low usage alarm could indicate that a tenant has vacated a suite before the end of their lease. Conversely, the alarm could indicate unusually high energy usage in a vacant suite, or to identify illegal activity, such as grow-ops. This would enable the property manager to address the issue immediately."

Reducing electricity usage in common areas

Since you control what happens in the common areas, you can make energy efficient choices that work for you. However, common areas are not typically metered, so you cannot always monitor your energy usage. Creating a virtual meter enables you to subtract the suites' energy usage from the main meters to provide total common area energy usage. This will enable you to identify unusual energy usage and demand patterns in this area.

For greater granularity, you can install submeters in various common areas, such as lobbies, laundry rooms, entertainment and exercise

rooms, and meeting rooms, to drill down to identify and rectify causes of high electricity usage. For example, you can measure how much electricity is going toward lighting to determine if it is worth investing in lighting upgrades. You can also identify if lighting is being left on during non-peak hours or when outside lights are being left on during the day.

"You can also compare how much money is being used in the laundry versus how much electricity and water is costing," said Williams. "This can help justify upgrades to newer, more energy efficient washers and dryers, and help you to take steps to encourage tenants to do laundry during off-peak hours when power is less expensive."

Helping tenants to save energy

An energy monitoring system can be used to directly benefit tenants, which can produce goodwill and improve tenant retention. For example, according to the *Ontario Residential Tenancies Act*, tenants entering into a submetered unit are entitled to its historical consumption data. You can use the data from the energy monitoring system to pull data for potential renters.

You can also produce suite ranking reports to show which units are using the most amount of electricity. You can quickly examine which units are consuming an above average amount of electricity. You can inform tenants of high energy usage and supply them with energy conservation tips or produce a building-wide occupant energy initiative to educate tenants on how to reduce their energy consumption.

"We were able to help tenants who were experiencing high consumption in their unit for no obvious reason," said Williams. "We were able to identify where the high usage was coming from by utilizing real-time graphic profiles and turning off and on appliances in the unit. An inefficient freezer was identified as the culprit."

Conclusion

Energy monitoring systems have many applications that can help with tracking and reducing overall energy usage, as well as the associated costs. There are different ways to use the data to make informed decisions on whether to invest in energy efficient upgrades, and where to focus your efforts. You can also help tenants to reduce their energy bills and identify where electricity is being wasted. It all begins with tracking your energy usage, and then allowing the system to display the results in a useful manner. RHB

By David Gargaro, with special thanks to Shannon Williams for contributing her expertise. For more information on energy monitoring systems, visit www.carmaindustries.com.