

ANALYSIS: MAKING YOUR HOTEL GREENER AND LEANER

By Leon Wasser, MBA, P.Eng.

TORONTO, ON - Hotels are among the most energy intensive of buildings, and electrical costs are typically one of their major business expenses. Given that most hotels operate on rather fine operating margins, reducing power expenditures can have a major impact on a bottom line. It is time to take a harder look at these electrical expenses in order to bring them under closer control.

The two types of loads

All electrical consumption falls into two categories: resistive loads and reactive loads. Resistive loads include devices that pass electricity through filaments to generate heat and light, including traditional incandescent light bulbs, electrical baseboard heaters and hair dryers. Most other devices use power in a more complex fashion called reactive loads. This group includes major hotel systems such as elevators and HVAC equipment as well as the rapidly proliferating range of electronic equipment including televisions, microwave ovens, sound systems and computers.

Power factor consumption

Power Factor is defined as the ratio between apparent power and real power expressed in kilowatts, or the effective ratio of power. It is a measure of the amount of power available to run all the devices in your building. When power is delivered by a utility provider to your property's main electrical room, it arrives at close to 100 per cent power factor. The presence of the reactive loads described above effectively reduces the power actually available due to distortions created by the way they consume power. Generally speaking, all these reactive loads disrupt the smooth and even electrical power wave pattern in different ways.

A typical hotel is likely to have a power factor between 75 and 90 per cent. The higher the proportion of reactive loads ranging from elevators to computers, the lower the power factor. The difference between the apparent power that a hotel is charged for and the real power that it actually uses constitutes both wasted power and cash.

How utilities charge for power

There is considerable variability in power pricing schemes across Canada. Depending on the jurisdiction, electrical power is charged by a combination of Total Consumption over a period expressed in Kilowatt Hours (KWh) and maximum or Peak Demand during the period expressed in Kilowatts (KW), both of which can be reduced through conservation measures. Many jurisdictions also add fixed administrative and transmission charges which are not related directly to usage or subject to conservation measures. Currently, many power suppliers and governments are offering generous financial incentives to customers to reduce either Peak Demand (KW) or Consumption (KWh).

Conservation opportunities knock

There are many ways for hotels to conserve electrical power, some of which are quite easy and inexpensive, and others which are far more costly and disruptive. Resistive loads are typically easier to reduce through simple measures such as replacing incandescent light bulbs with compact fluorescent bulbs, reducing towel use by customers to reduce the power used for washing and controlling the use of baseboard heaters.

Conserving the power required by a hotel's essential building systems is far more difficult. Traditionally, the way to achieve significant power consumption reductions for these systems was to upgrade large motors and com-

pressors to newer energy efficient models. These projects are typically expensive with long paybacks, very disruptive, and, in some cases unfeasible. The rapid proliferation of the reactive loads listed above, as well as, ironically, energy efficient compact fluorescent lights, constitute further reactive loads which cannot be controlled easily by simply reducing demand.

By far the most effective way to deal with these reactive loads is through power factor correction and power quality improvement technology. These systems are installed in a building's electrical room in parallel to the power supply so that no power interruption is required during installation and operation. PowerCon's computerized PowerKure system dynamically and continually adjusts to increase the building's power factor to almost 100 per cent. Typical paybacks for this type of technology are generally in the range of 2 ½ years. These innovative systems effectively re-capture wasted power and recycle it back into the building's power stream to allow the building to significantly reduce both overall KWh Power Consumption and KW maximum Power Demand.

Making your hotel more green

Many hotels are attempting to become more green and energy efficient, both because customers are becoming more attuned to environmental issues and because it makes good business sense. Power conservation should therefore move up among a hotel's many priorities to take its rightful place as a key strategic option and corporate strategy. There are savings to be harvested and it is time for smart hotel operators to take advantage of the opportunity to save.

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