

By Geoff Griswold



Energy Savings

Why These Tips Work

With the recent push by the White House to address environmental issues, energy conservation has, once again, come into sharp focus.

Some hotels do nothing to conserve energy, while others make a cursory effort at it. The fact is for some nominal cost and effort, real energy savings can be gained, along with the hotel doing its part to reduce greenhouse gases and addressing other environmental concerns.

The two biggest energy costs in a hotel are lighting and heating. The other two, air conditioning and what is called base load (fans, motors, etc) are significant as well.

Lighting can be up to 30 percent of a hotel's energy costs. The simplest way to reduce lighting costs is to replace incandescent bulbs with fluorescent lamps. These lamps do cost more than standard incandescent bulbs, but they last much longer. An average, good quality, 60-watt incandescent bulb cost around \$.60 and can last up to one year.

An equivalent 60-watt fluorescent bulb cost \$2 and can last up to six years. The cost per year for the incandescent bulb is \$0.60 while the cost of the fluorescent is \$0.33 per year. Also, the fluorescent bulb uses 75 percent less energy than the incandescent bulb.

Improvements in fluorescent bulbs actually enhance room ambience, rather than detract from it. Retrofit projects can be eligible for rebates programs thus reducing overall project costs. Overall energy cost savings from a retrofit project can exceed 20 percent.

The modern incandescent bulb has not changed that drastically since Thomas Edison invented it in 1879. Bulbs have a metal base with two contacts that form an electrical circuit. The contacts are attached to two wires which, in turn, are attached by a thin metal wire called a filament. The bulb is filled with an inert gas (usually Argon).

When connected to electricity, electrons flow from one contact to another creating energy by heating the atoms in the bulb. The atoms release mostly infrared light photons

when the heat in the bulb reaches 4000 degrees Fahrenheit.

The fluorescent bulb has similar components but works differently. The lamp is a sealed glass tube containing mercury and inert gas (Argon). The inside of the glass is coated with a phosphor powder. There are two electrodes, one at each end. As electricity flows through the tube, the mercury changes to a gas. Electrons and charged atoms collide with the mercury electrons to increase the energy level. When the electrons return to their original energy level, they release light photons. The phosphors coating the tube emit light when exposed to the photons.

The reason incandescent bulbs are not efficient is the heat required to make light.

Much of the energy required to heat the bulb is wasted. Since fluorescent bulbs do not require nearly as much heat to produce light, they are 4 to 6 times more efficient. As an example, a 15-watt fluorescent bulb produces as much light as a 60-watt incandescent bulb.

Another, sometimes overlooked, area of energy savings is preventive maintenance.

Since heating and cooling can require as much, if not more, energy than lighting, special attention should be paid to the equipment in these areas.

Equipment configurations for heating/cooling vary among hotels, depending on the size and age of the property. One common component of all systems are heating and cooling coils.

For cooling, the unit's compressor compresses cool Freon, causing it to become hot. The gas passes through a set of coils dissipating the heat and condensing into a cool liquid. Air passes through the cool coils absorbing heat that is in the room.

If the outside of the coils is dirty or clogged, the compressor has to work harder to achieve the temperature demanded by the thermostat. Regular cleaning of coils can increase the efficiency of any unit, prolonging its life and saving energy.

There are many other areas of preventative maintenance that require attention such as motor/fan revolution, proper belt tension and correct Freon levels, to name a few.

There are many energy saving control units on the market today, ranging from simple guest room devices to sophisticated, computerized energy systems that monitor everything. The most basic of these controls is the thermostat.

An analog thermostat uses a mercury switch in a glass vial. There are also two thermometers, one that displays the temperature on the front of the unit and another that controls the operation of the heating/cooling units. The second thermometer is a bimetallic strip rolled into a coil that expands with heat and contracts with cooling. The mercury switch is mounted on top of the coil and is tripped to engage the proper unit (either heating or cooling).

One problem with analog thermostats is they are not very accurate. The device can be off by as much as 5 degrees either way. A digital thermostat uses a device called a thermistor (an electronic resistor) to measure temperature instead of a metallic coil. This device is much more accurate in recording temperatures. Digital thermostats are also programmable so they can cut back on energy when it is not needed and also control minimum and maximum temperatures in a guestroom.

Digital thermostats, used in conjunction with motion sensors, can save up to 25 percent off heating and cooling bills, with no additional energy control devices required.

Phil Sprague, a hospitality energy consultant, said that hotels that have installed fluorescent bulbs and digital thermostats with motion sensors have saved 20 percent to 30 percent on their energy costs.

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