by Phil Sprague

Unusual, inexpensive energy saving ideas

Over the years, facility hotel and building managers have introduced many different and unusual methods for saving energy. Some were extremely expensive, while others were more or less just common sense. Some ideas that have been suggested in the marketplace could literally be characterized as outright fraud, where salespeople espouse that their magic black box will bring the building in harmony with nature, while saving energy.

One of these products that seem to reappear periodically is the use of magnets to provide water treatment in swimming pools and air conditioning systems and other ridiculous applications. This product and concept has been around since the early '70s when the energy crisis first began. This is not to say that some day the use of magnets won't have a useful purpose; however, it is currently noted there is absolutely no scientific basis for this product application with swimming pools and HVAC systems.

Landscaping

On the brighter side, there are many useful, practical and cost effective ways of saving energy in a unique way. For example, now that Summer is here, many hotel owners have relandscaped the exterior of their property. Landscape shrubbery can improve the insulation value and comfort of a lodging facility. For example, 6 to 8 foot shrubs planted around outside air conditioners will help to block them from the sun and hence, improve the overall efficiency of the work units.

Planting regular trees in the range of 12 to 14 feet high along the west and northwest side of a building (in the Northern Hemisphere) will enable the maintenance engineer to reduce the air conditioning load during sunset on hot Summer evenings.

Vines can look beautiful growing on the side of a building; however, they can also cause problems to the curtain wall on at a property. The vines retain moisture against the building material on the outside wall, causing early deterioration. They can also block intake vents for heating/cooling systems and be the source of introduction of spores that may exacerbate hotel guest's allergies when the air is distributed through the system.

Remember that all the water used to irrigate the landscape does not result in a like amount sewer charge, because some of the water is lost to evaporation. The corresponding sewer charge is typically 50 percent of a property's water bill; so this idea can save the chief engineer up to $2,000 a year in energy expense. In order to take advantage and realize these savings, it may be necessary to install an inexpensive water meter on the water line serving the irrigation system.

HVAC

Dirty air filters are one of the most commonly abused, inexpensive maintenance items in a hotel. If filters are not cleaned or replaced in a timely manner, a hotel would be better off to remove and throw them away, rather than let them get plugged shut with dirt. Once saturated with dirt and dust, unclean air filters begin to release the dirt they have trapped. As a result, large black spots can result around the air diffusers in the guestrooms, function rooms, and lobbies.

Dirty air filters also significantly reduce the ability of a large fan to distribute fresh air throughout the building. Because air filters are so inexpensive, the prudent facility manager should consider changing them more frequently than recommended. As the old adage goes, an ounce of prevention….

Air filter material can also be used to improve the efficiency of the compressors that serve walk-in coolers and freezers in the kitchen. Each of these compressors has a fan that blows air across a small coil. Place a small piece of air filter material over this coil to prevent it from becoming blocked up with grease and dirt. This will improve the overall compressor efficiency by about 25 percent, and extend the life of the compressor significantly.

Timers

Common sense tells us there is no greater energy savings than 100 percent. This can only be accomplished by turning an energy consuming device completely off. The least expensive way of achieving this is with the use of an inexpensive 24-hour time clock.

There are numerous and unusual ways of applying a time clock in a hotel's energy setting. For example, many hotels have a small game room with up to ten game machines which typically operate 24 hours a day. This might be perceived as a waste of energy and can frequently result in guest complaints from the noises created by the game machines during late-night hours. Find the circuit breaker that runs the game machines and mount a timer beside it that will turn these machines off from 11pm until 6am. Just make sure that the hours of use are conspicuously posted in the game room.

Surprisingly, each game machine can consume about 500 watts of energy. At a cost of $.07 per kilowatt hour, the decision to turn off ten of these machines for 50 percent of the time could save up to $1,500 a year. The cost of adding the time clock should be in the range of $200. Depending on your situation, you might see a return on investment in a matter of two or three months.

Through-the-wall units

Through-the-wall heating/cooling units have about a two-inch, round hole open directly to the outside for ventilation in guestrooms. Frequently, the knobs controlling these apertures will be found set in the "open" position. Additionally, there usually are openings around the entire perimeter of the through-the-wall unit, providing more than adequate outside air. When performing guestroom maintenance, engineering staff members should ensure these openings are closed. Consider removing the cover to the through-the-wall unit and disconnecting the knob so that no matter what position it is in, the outside air opening is "closed". This will save both heating and cooling energy.

Natural gas

Combustion air is required in any areas of the hotel where natural gas is used. Typical areas include the property's water heater room, pool heater room, kitchen, laundry, and boiler room. Without combustion air, carbon monoxide can build up and become a very serious health problem to guests and staff. It can even occasionally cause death. The combustion air system must be designed and installed correctly to eliminate oversized combustion air openings. It is not uncommon to find openings that are frequently three to four times larger than required by code in many of today's hotels.

Sometimes water heater rooms have supplemental heaters to make up for the introduction of extremely cold air through oversized openings during Winter. This results in a significant waste of energy. It is extremely important that a hotel retain a professional to verify that a facility's combustion air system is designed and installed correctly and provides the proper amount of air.

Combustion air systems may be checked using a rule-of-thumb formula. It is estimated that about one-half inch of free air opening is required for every 5,000 BTU's of input to a property's heating equipment. Simply note the BTU size on the label of the equipment and divide it by 5,000. The mathematical result will be about double the square inch opening required for that piece of equipment. Note the actual size of the hole through the wall to the outside and determine the square inch area. Applying the rule-of-thumb approach will help maintenance personnel identify whether they have a problem and should bring in a professional service technician to remedy it.

Pools and spas

One of the most popular amenities in limited-service hotels these days is a small indoor swimming pool and spa/ Jacuzzi. These pools and hot tubs are typically designed to be used in a small, enclosed, lockable separate room. The pool rooms are normally provided with a heating/ cooling and dehumidification system that operates continuously because of the problems with humidity buildup in these sealed spaces. The entire cause of this problem is obviously the standing water in the pool and hot tub. Water evaporates to the space, while also releasing energy to the space.

An incredibly simple and inexpensive method of totally eliminating this problem during closed periods is with the use of an inexpensive pool cover. One person can easily install a cover on the pool and hot tub in less than a few minutes. The savings in energy, water and chemicals, much less the reduction in damage to the facility, are extremely attractive. The cost of a pool cover can be less than $300, and a hot tub cover is less than $100. Most covers are comprised of heavy duty sheet fabric that looks somewhat like packaging material with air bubbles in it. They can easily be folded up and stored in the pool equipment room during open periods.

Pictured below: The cost of a cover for this pool would only be a few hundred dollars compared to the costs of wasted energy to remove the humidity from the air and replace the water lost due to evaporation. Chemical costs and energy costs can be reduced with the simple addition of a cover for the pool and spa.

When the cover is on the pool and hot tub, it completely eliminates evaporation of water and chemicals and helps to maintain the water temperature. Obviously, the loss of chemical in the evaporation water is also eliminated. A good water treatment program for an indoor pool can cost $1,000 to $2,000 a year. Using a pool cover will cut this cost in half. The energy required to heat the pool and hot tub during nighttime periods can be set back, since heat loss will be reduced significantly.

Moreover, the HVAC system serving the small pool area can usually be turned off for an entire closed period. Typically, these HVAC systems are provided with a low limit sensor that would turn the system on should it become too cold in the space. As with the other recommendations, this project requires minimal investment and will, on average, provide a payback within a matter of months.

Conclusion

These are just a few inexpensive and unusual ideas that can help reduce the cost of energy in hotels. As most are well aware, the cost of both gas and electricity has been increasing at a steady rate for years, and there is no change in sight. Hotel owners and operators need to take advantage of every practical opportunity to reduce energy consumption without affecting guest comfort. ✧

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