

Energy audit, commissioning can reap years of energy savings

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As executives look for ways to improve the bottom line, the energy expense line item is often disregarded or regarded as an uncontrollable factor. Research conducted since the energy crisis of the 1970s has yielded many new technologies and building operation strategies that can significantly lower energy expense without sacrificing comfort. Studies have shown that decreasing the comfort and lighting levels in the workplace can negatively affect employee productivity. However, today's attainable energy efficiency goal achieves the optimum balance of comfort and energy usage that maximizes the bottom line.

50% of the cost of a commercial building lies in operation and maintenance expenses over a 40-year life, according to the American Society of Heating, Refrigeration and Air-Conditioning Engineers. Early and thoughtful investments in efficient building envelope materials (doors, windows, exterior, roof), HVAC systems, lighting and office equipment can yield significant long-term savings.

Savings can be achieved by increasing insulation, particularly in the ceiling and/or floor. Application of solar film or installation of curtains or blinds, especially on windows facing south or west can significantly reduce air conditioning requirements. Lighter colored roofing and exterior walls reflect heat, helping reduce air conditioning requirements.

Close your windows and doors. Let your HVAC system do its job in providing the right level of outside air per current standards. Be sure the doors and windows are insulated. A vestibule at high traffic entrances can significantly reduce air infiltration and act as an insulator.

HVAC represents 40% of energy usage in U.S. commercial buildings, according to Department of Energy/Energy Information Agency statistics. A proper preventive maintenance program and annual commissioning program can provide immediate reductions in energy usage. Frequent replacement of dirty filters, cleaning of coils and replacement of worn belts and bearings are a few tasks that can quickly yield energy savings and increase the heating and cooling capacity of your system.

Commissioning ensures that a building performs according to the design intent and energy budget. Annual commissioning, as part of a comprehensive energy study and preventive maintenance plan, provides the best possible energy efficiency throughout the life of the building.

To take energy efficiency to the next level, capital improvements may be warranted. A certified energy manager can help you identify and verify the savings of these improvements. In newer buildings, energy efficient strategies may have originally been designed into the building but are in disrepair. Minimal expense can give way to quick paybacks in these instances. In older buildings, thoughtful retrofit and replacement of older equipment will save energy as well as minimize maintenance expense.

A properly functioning energy management system is the basis for many HVAC energy savings strategies. Savings are generated by simply scheduling HVAC equipment off or reverting to a minimum setpoint during unoccupied periods. Smaller facilities can reap similar savings through the use of programmable thermostats. Other strategies use variable control of temperatures, water flow or airflow to more closely meet conditioning needs without over-cooling, over-heating or over-pumping.

Using similar techniques, energy savings on air handling unit equipment at the New Orleans Airport has been estimated at approximately \$200,000, or \$0.29 per square foot annually. Use of compact fluorescent lights in lieu of incandescent bulbs yields a quick payback with minimal effort. Moreover, cooling costs are reduced since fluorescent lamps create much less heat than incandescent bulbs.

Daylighting is a relatively new lighting strategy whereby natural light is allowed to penetrate a space. Window design, orientation and overhangs minimize heat gain. Light sensors variably control lights that supplement the natural light.

Lighting retrofits at Neshoba Elementary and High schools generated \$34,362 in annual savings.

The explosion of computers in the workplace has created an increase in energy usage within buildings. Monitors, CPUs, printers and other peripherals not only use energy but create heat as well. The Energy Star program administered by DOE evaluates equipment for energy efficiency. Look for the Energy Star seal when evaluating office equipment.

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So how do you make savings happen?

1. Know your limitations.

Your staff may be competent in maintaining equipment but may lack the time or expertise to implement the measures. Advanced energy savings measures may require an energy professional.

2. Identify special financing options.

Grants, credits or special loans are sometimes available through the state or federal government, or local utilities. Energy services companies provide a turnkey approach to energy retrofits providing financing, project management and commissioning.

3. Seek experienced assistance.

A Certified Energy Manager can quickly pre-qualify your facility for savings in a preliminary energy audit. This type of audit can be performed for \$.05-\$.07 per square foot, depending on the type and use of your facility.

4. Make the savings permanent.

Once energy savings are being generated, be sure to make them permanent by instituting ongoing commissioning of your facility. Annual review of the original design and energy savings measures implemented will ensure that energy efficiency will continue year after year.

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