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FOR COMFORT AND EFFICIENCY IN YOUR BUILDING

Dedicated Heat Recovery:
A Practical Energy Savings Strategy

There is a new awareness today of the need to become better stewards of the energy required to operate facilities. This culture and increasing energy costs are driving the search for new energy saving options.

Few alternatives are more attractive than dedicated heat recovery. Many buildings require the simultaneous use of heating and cooling. (Examples include hospitals, research labs and data centers.) In a dedicated heat recovery system, a water cooled chiller sends condenser water out to the cooling tower where the water is cooled. The removal of the heat (energy) is discharged into the atmosphere. Electricity is required to drive pumps and operate fans to maximize the removal of the heat from the condenser water. The heat that has been removed has been wasted.

A dedicated heat recovery strategy captures the wasted heat that would be sent out to the cooling tower and redirects it to the hot water piping loop. As a result, the system boiler and tower will use less energy (electricity, gas or oil) because the condenser water is now providing the majority of the heat load.

Buildings with simultaneous use of heating and cooling are not the only candidates for a dedicated heat recovery system. Buildings with large domestic hot water requirements can also benefit from implementing this strategy.

Consider a hotel's domestic hot water usage. Water usage could include a heated pool, a spa, laundry facilities, the kitchen and guest rooms. Each need would require different operating temperatures which could be isolated.

The strategy is the same as with the previous application. The condenser water would be redirected to a heat exchanger. The heat coming off the condenser would be used to pre-heat the domestic water, thus dramatically reducing the heating load on the hotel's boilers. Without dedicated heat recovery the boilers would be raising the incoming city water from 55ºF to 120ºF-180ºF, depending on the system the water is serving.

A dedicated heat recovery system could preheat the water to a temperature as high as 120ºF, subsequently dramatically reducing the boiler's load. The preheating is **free** to the owner.

While a Dedicated Heat Strategy is frequently used in hospitals which require simultaneous heating and cooling, it can also be used in other types of facilities that have large domestic hot water needs.

Dedicated heat recovery is a simple strategy for owners to implement which can result in substantial cost savings. This strategy reduces a building's energy usage and carbon footprint while positively impacting the bottom line. Quick payback and various implementation strategies make dedicated heat recovery simple, practical and economical.

For more information about implementing a dedicated heat recovery strategy please call:

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Emerging Energy Tools for High Performance Commercial Real Estate

There has never been a better time for commercial real estate owners and property managers to make a commitment to energy efficiency. Energy is the largest operating expense in a building, energy costs are on the rise, and temperature control and lighting (the largest contributors to energy costs) which together equal space comfort is the most highly cited criteria tenants mention when deciding not to renew a lease.

As owners and property managers across the country implement strategies to save energy, it's becoming clearer that the right approach not only saves energy, but achieves superior building performance and financial outcomes. A 30 percent reduction in energy use can yield a 5 percent increase in net operating income and in overall asset value, according to the U.S. Department of Energy. To achieve these outcomes, property managers need to take a comprehensive approach that involves planning and analysis, strategic energy procurement and intelligent energy conservation.

Assemble a Team, Develop Energy Profile

Effective energy management begins by assembling a team, including the building owner, property manager, engineering, and an energy solutions provider, as well as representatives from various departments including accounting and quality control. Appoint a team leader to own the project and track its progress.

Define program objectives. The energy team's first step is to define the project scope and objectives. It's critical to align energy targets with the building's overall performance goals to keep actions focused on results and to ensure continued commitment. As part of this goal setting, evaluate how the program will help to achieve desired outcomes, such as decreased operating costs, higher operations performance, better occupant comfort and productivity, tax benefits, environmental certification, or others.

Document the facility's energy profile. The energy profile, including energy costs and consumption data, gives the team baseline information from which to set objectives and begin measuring the energy management program's progress.

Accurate data collection and tracking are vital to the profile so that you can benchmark the impact of the facility's energy consumption on operating costs, building performance and the environment.

Start by collecting energy cost and energy use data from utility bills, meter readings and your building automation system. Examine unit price per hour (kW, Btu, etc.) and per month, looking at energy consumed from all fuel sources, whether electricity, gas, oil, steam, or others. Gather at least a year's worth of data on energy costs and consumption to determine daily and seasonal patterns.

There's a large volume of data to collect. Rather than charting it in a spreadsheet, consider using an energy software program to manage and analyze the information. The software should suit your project scope and be able to manage information on the building's systems on the basis of energy utilization. It should also be certified by the Internal Revenue Service to ensure that energy savings translate into tax deductions.

Evaluate energy use patterns. In addition to costs, evaluate when, where and how all building systems and equipment use energy. Involve various departments and even occupants, who can provide information on the building's energy consuming equipment and activities.

Procuring and Generating Energy

The facility's energy profile should include supply-side intelligence, including information on how the energy used in the building is generated, transmitted and delivered and how this impacts your utility bills.

Pay less for your energy. It is possible to lower cost per kilowatt for electricity. Doing so requires a thorough understanding of your utilities, such as rate structures and demand charges, pricing fluctuations, procurement options, how to minimize fuel shortages and blackout risks, and more.

Electric utility customers are charged for different services. Along with a basic set customer fee paid monthly or seasonally, most customers pay for the energy they use in kilowatt-hours. Large and commercial users of electricity are also charged for something called "demand," based on meter readings of the highest rate of electrical current during a billing period.

The price of the demand charge depends on how much and when the building uses its power, and will be a large part of the bill if the facility uses a lot of power over a short period of time, and a smaller part of the bill if the customer uses power at a more constant rate throughout the month.

The good news is that a building can significantly trim its demand charges and even reduce its per-kilowatt rate by controlling energy use during on-peak periods, which are periods during which the utility company incurs the highest demand for power in its service area.

There are many innovative possibilities for reducing on-peak energy loads, such as ice storage solutions in which a chiller operates in chiller mode during the day and in ice-making mode at night to provide cooling to the building the next day during on-peak hours. This solution actually improves the reliability of the power grid by shifting peak cooling loads to off -peak hours.

It is also important to note that many of the energy conservation measures mentioned throughout this article are eligible for rebate money from utility providers. Lighting incentives could range from $10 to $60 per fixture. Ice Storage rebates can start at $190 per kW shifted. Controls system solutions are also available which can lead to even greater savings. The rebate money received from such projects can dramatically reduce the first cost for building improvements.

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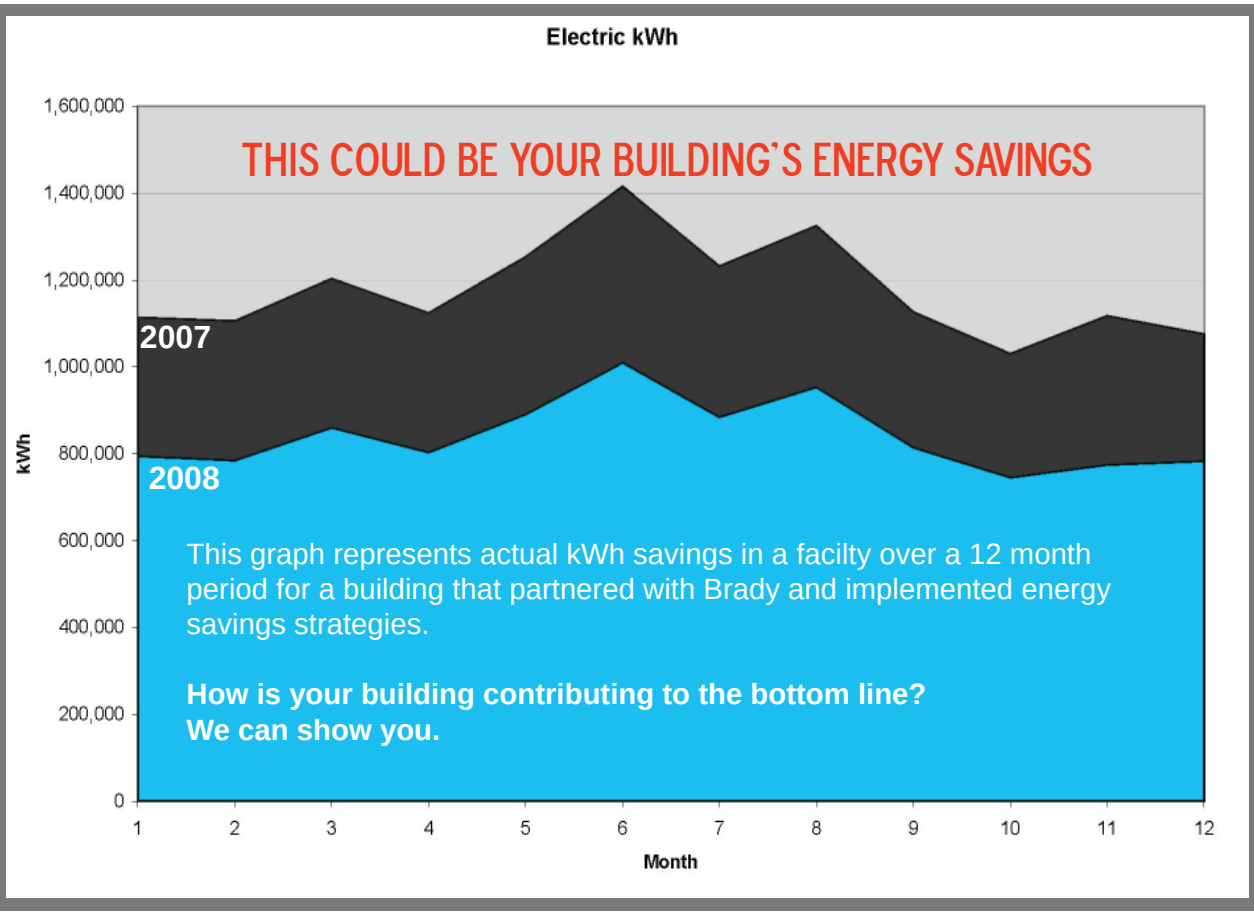

Consider alternative ways to generate energy. In areas where utility rates are extremely high or supply is limited, a facility might find it cost-effective to generate some or all of its own energy. There are many options from wind farms and cogeneration plants to geothermal and solar technologies. Self-generated energy puts control of power costs and reliability in the facility's hands and also achieves environmental benefits. To fully understand how the facility can optimize purchasing tactics and building systems to reduce the cost of energy, the energy team should consider securing the help of an energy solutions expert.

Energy Conservation and System Efficiency

The success of your energy management program will rely heavily on how much you reduce energy consumption as well as how intelligently you do it. The energy team must base decisions on how much time and money to invest in efficiency measures on the overall building performance and financial goals.

Energy conservation measures range from simple and inexpensive, such as an energy awareness program, to complex and investment-intensive, such as installing a building controls system that can monitor and analyze energy from the Web or retrofitting the HVAC system.

Gain efficiencies in HVAC and lighting. According to the United States Energy Information Administration, in a typical commercial building, heating and cooling comprise almost 20-40% percent of total energy use, making those systems obvious targets for efficiency improvements.

New technology, legislation and industry standards are constantly raising the bar on HVAC equipment efficiency and performance. Options include highly efficient HVAC systems with integrated controls to reduce energy consumption while maintaining indoor comfort and air quality.

When it comes to lighting, installing highly efficient fixtures and sensor technologies can significantly reduce a facility's energy bill.

Before investing in any new system, conduct a lifecycle analysis to evaluate which investments will provide the best payback and fit the building's energy management objectives. In addition, ensure that facility management undergoes extensive training to properly operate these systems in order to leverage their total potential for efficiency.

Treat your systems as long-term assets. Proper maintenance of building systems has a significant long-term impact on energy efficiency. Reactive maintenance programs risk losing money, time and equipment, while predictive maintenance programs help to diminish equipment failure and ensure higher efficiency. Performance contracts can also be implemented to help owners fund energy-related retrofits and new construction through guaranteed energy savings over the life of the contract.

One of the most cost-effective means of improving energy efficiency in commercial buildings is re-commissioning. This involves a systematic process to ensure that all building systems perform correctly and interact with one another according to the original design intent and the building's operational demands.

Stay Committed

Whatever strategies you implement, the most important thing is that your energy management team remains informed and highly committed to taking the facility to the next level of operational and financial performance.

This article is courtesy of

TRANE

TRAINING SCHEDULE UPDATE

Fall owner training classes are quickly filling up.

Greensboro Location:
Basic AC
(9/16-9/17)
Tracer Summit Workshop
(9/23-9/24)
Rotary Chiller
(9/30)
CenTraVac Owner Operator Workshop (10/7-10/8)

Raleigh Location:
CenTraVac Owner Operator Workshop (10/14-10/15)

Call (800) 849-1915 to reserve your seat today.

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