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Maintain Facility Efficiency to Stay Cool this Summer.

BY: RICHARD HALLEY

By: Richard Halley, District Manager,

Trane New York – New Jersey

This summer, maintaining the energy efficiency of buildings is more critical than ever.

The Energy Efficiency Administration reports that this year, despite recent increases in world oil prices, global oil consumption will continue to grow and strain demand. This inevitably means high energy costs for facilities.

Thus this summer, ensuring that facility systems are running efficiently, regardless of weather conditions is critical to keeping occupants comfortable – and costs down.

Managing peak usage keeps energy costs down

Peak usage determines rates. Facility managers are quite familiar with the demand charges utilities impose. The charge, which determines the facility's seasonal rates, is based on the highest rate at which the customer used energy during a billing cycle. This means even brief usage peaks can significantly increase a facility's utility costs.

Monitoring power usage carefully through the building automation system helps to target possibilities for load shedding or load shifting to avoid power demand peaks. Close monitoring will also help determine if there are inefficiencies in the cooling equipment to plan for replaceme or updates during the winter.

Demand charges can be controlled. Load shedding strategies could include shifting major power demands from daytime to night, when there is less strain on the energy grid, and rates are lower.

One way to shift demand load is to bring in cool outside air at night, then use window film or awnings to block the sun from heating indoor space during the day. By pre-cooling the building each day with cooler fresh air and limiting the sun load during the peak sun hours, it is possible to delay the onset of peak cooling loads.

Small adjustments can achieve major savings. Having workers come in an hour or two later can have a major impact on the demand charges a facility incurs. It also helps to use rooms that can be cooled individually, and avoid cooling entire buildings or floors during off-hours. Lighting sensors adjusted to daylight savings can save significant energy as well.

When there is an isolated problem, it should be addressed individually rather than overcooling the entire facility. If, for example, a building space heats up due to south-facing exposure, the windows in that area could be treated or equipment relocated to resolve the problem.

Creative cooling systems increase efficiency. To decrease peak load, raise efficiency, and lower environmental impact, increasing numbers of facilities are implementing innovative heating and cooling systems, from solar and geothermal systems to ice storage.

One example involves the installation of a thermal storage solution that greatly increased

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energy efficiency during the summer months. The organization expanded its centralized chiller plant to serve five buildings on its campus. The system uses a 1500-ton chiller, which charges 84 ice tanks at night when energy rates are lower. The ice is melted during the day to produce chilled water that is distributed through underground chilled water pipes to cool the buildings. In addition, a condensate reclamation system captures air handler condensate for cooling tower make-up, saving about three million gallons of water per year.

These types of cooling solutions are gaining popularity as facility engineers seek ways to control energy costs and lower dependency on purchased energy.

Keep productivity up during the heat

Occupants' comfort affects productivity. We've all been in facilities where one worker is sweating while another is shivering. It is important not only to occupant comfort but to a facility's productivity to ensure that spaces remain properly cooled in the summer. Studies show that thermal comfort impacts worker performance, as well as student performance and patient incomes.

When it is hot outside, generally a comfortable indoor temperatures can be up to the mid-70's. Any "hot spots" caused by windows or equipment should be corrected and thermostats should be placed in the center of the room, away from equipment or windows.

Summertime air quality important to facility health. Maintaining indoor air quality is also critical to productivity. Studies indicate that Americans spend up to 90 percent of their day indoors. According to the US Environmental Protection Agency, air quality inside buildings can be two to five times worse than outside air, and building-related illnesses account for $60 billion of annual productivity lost nationwide.

In the summertime, facility managers have the challenge of ensuring ventilation standards are up to ANSI/ASHRAE standards, while ensuring that comfort levels remain ideal and efficiency isn't lost. There are a variety of sensors available that can help monitor air quality factors and help to avoid the typical problems related to allergens as well as other quality issues related to lack of outside air.

System checkups maintain efficiency. If all the pre-season work has been done, it is less likely the facility will face cooling emergencies, and summer maintenance should run smoothly.

Some maintenance considerations include:

Inspect pumps and cooling towers
Test motors when the system is running at its highest load to make sure they're not overloaded
Ensure contactors are all secure, within tolerance, starters, motor starters are operating.
Keep a close eye on refrigeration leakage
Make sure condenser and evaporator coils stay clean
Check that drain pans are properly sloped for correct drainage and that metal pans are not rusted

By taking the right measures, facility managers can rest easy that their buildings stay high-performing and energy efficient throughout the summer.

For more information, contact David Pospisil, Trane New York – New Jersey, (973) 434-2188.

SIDEBAR:

Be prepared in case of emergency

Even if all preventive measures are taken, there is always the possibility of a cooling system breakdown. Facilities with critical cooling demands require a cooling contingency plan, which should include backup solutions for quick installation of temporary equipment to ensure operations continue until the situation is resolved.

Key components of a contingency plan:

Document the current HVAC equipment in use, ranging from critical HVAC system information to component details

Identify potential sources of failure, the probability of failure and document the cooling required to maintain critical areas
Match specific equipment and all required connection components needed to support critical areas. Determine required response time frame and budget.
Determine the appropriate location for the temporary equipment and the logistics to set it in place, as well as electrical and water connection points.
Assign roles and responsibilities for each entity involved in the plan and staff members.
Plan how to adopt the existing system and controls to best prepare the facility for the use of a temporary solution.
File, review, train and update the response plan and system specifics on a regular basis.

Conduct periodic cooling contingency drills.

For more information, contact: David Pospisil at TRANE New York – New Jersey at phone 973-434-2188 or email: dpospisil@trane.com.

Here is the information on the article author that goes after the article text