

Baby, It's Cold Outside: Chasing the Chill From Winter Facility Management

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When it's cold outside, facility managers face a variety of challenges to ensure that occupants are comfortable, healthy and productive inside – while at the same time keeping energy costs low, despite elevated oil, gas and electricity prices.

No matter how cold it gets outdoors, high-performance building practices ensure cost-effective and comfortable conditions indoors. Here's how:

- **Monitor temperatures.**

Research by Alan Hedge, Professor in Cornell University's Department of Design & Environmental Analysis, found that worker performance decreases when occupants are too hot or too cold, while performance improves typically between 69 to 73°F. In addition to personal discomfort, indoor temperature fluctuations can also cause illness, waste energy and increase utility costs.

To avoid problems with inefficient heating, adjust thermostat controls, resolve heat loss programs and stay smart about temperature control. And listen to workers' concerns about the temperature and indoor air quality. Avoid letting temperatures drop too low or occupants may turn to using their own space heaters or engage in "thermostat wars."

- **Don't let the heat get away.**

Identify weaknesses in your HVAC system by picking a cold day to do a heat-loss check on the building envelope, including the roof, windows, doors and insulation. Infrared thermography is an easy, inexpensive way to get to the bottom of heat loss.

Hire a professional thermographer or rent an infrared camera, which provides visual images to reveal temperature variations of object surfaces. This analysis will detect such inefficiencies as cold air leaking through windows, roofs or doors and hot spots created by machinery or people.

- **Stay smart about temperature control.**

Reduce energy costs by setting thermostats to the lowest temperature that will maintain occupant comfort. Don't heat unoccupied spaces, and make sure thermostat controls and equipment sequencing stay in line with occupancy and daylight conditions.

Play close attention to the other features of the building that might affect the temperature. For instance, employees who work near outside walls and windows may get colder easier. Replace worn-out weather stripping and use insulated curtains to keep the cold air out. Reposition furniture or other items that may block air vents, radiators or baseboard heating elements. Check that exhaust fan dampers close properly to prevent cold air from entering. Ensure accurate thermostat readings by placing sensors in the center of the heated area, away from drafts or areas of excessive body heat.

- **Reduce peak and non-peak energy use:**

Avoid operating HVAC and lighting systems at full load when not needed. Program temperature setbacks during off hours and rather than leaving the heat on all night, set controls to pre-condition the space before occupants arrive.

Get occupants involved in turning off lights, shutting doors and alerting management to any problems, such as cold spots.

Undertake strategies for specific use areas. For instance, maintain minimum temperatures in areas with low occupancy, such as warehouses. Upgrade to more efficient lighting where possible.

- **Protect indoor air quality.**

The heating season can dry out indoor air. High static levels, for instance, can indicate low humidity. Adjust the humidity transfer in the air-handling unit to correct. In general, humidity should be held at about 50 percent, depending on a facility's usage.

The U.S. Environmental Protection Agency (EPA) also recommends testing for radon in the winter. During the heating season, ventilation is lower and there is a larger differential between outdoor and indoor pressure, which can lead to higher entry of radon.

- **Think ahead to maintain cooling systems.**

Although cooling systems have been shut down and drained, don't neglect them. Use the winter months to conduct repairs, improvements and equipment replacements.

- **Test your contingency program.**

Regularly check backup equipment and generators and conduct a trial contingency program run with staff. Make sure everyone clearly understands his or her role during a winter emergency, and that systems and evacuations will operate as planned. Update all phone numbers of emergency service providers, such as HVAC service, the utility company and medical response team.

- **Maintain and win.**

The EPA's ENERGY STAR reports that a maintenance program that keeps equipment functioning properly can reduce heating costs by at least five percent. Better yet, you'll reap energy savings if major problems are found and corrected.

Monitor boilers, domestic water heaters and pumps, insulating piping, antifreeze levels, etc. Heating and cooling coils and water pipes are especially vulnerable to freezing and should be monitored regularly. Check any coils that are exposed to the elements to make sure the antifreeze levels will hold up at the lowest possible temperatures in the area. Monitor steam traps, condensate return systems and valves to make sure water circulates to the boiler properly and pressures are correct.

By undertaking these best practice tips, facility managers should be well on their way to enjoying the warm feeling of knowing that their building systems will uphold both the performance and efficiency needed during the cold days and nights of winter.

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