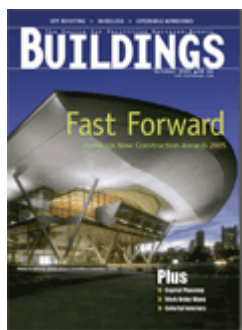




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Humidify Your Buildings

Systems today improve comfort when properly designed and installed

Like it or not, most of us spend the greater part of our leisure and work time indoors, and indoor air quality (IAQ) has a direct effect on how well we function inside. We all have ideal temperature and humidity ranges in which we perform best and feel most comfortable. Excessively high or low humidity causes significant environmental and physiological changes. Bacteria and viruses are most often spread by the air breathed indoors - and these micro-organisms have an extended life in very moist or very dry atmospheres.

A humidification system is a natural fit with your HVAC system to help create a healthy environment, improve occupancy comfort, and preserve processes and materials. When properly designed and installed, a humidification system should maintain the

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Proper Absorption Distance Ensures Successful Operation

Steam dispersion units are installed in ducts or air-handling units to provide rapid, drip-free absorption. One factor determining whether a humidification system succeeds

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recommended relative humidity (RH) level between 40- and 60-percent RH to help minimize growth of allergenic or pathogenic organisms (see chart).

For optimum control of humidity and moisture, duct safety switches should be installed in all humidification systems. Every humidification system should include at least two safety controls: One, called an *air-flow proving switch*, shuts down the humidifier if duct air-flow stops for any reason. The second, a *duct-mounted humidistat*, overrides the controlling humidistat if relative duct humidity conditions become extreme. The duct high-limit humidistat is usually set at 90-percent relative humidity. If the duct RH rises above that setting, it will temporarily shut down the humidifier. Both of these devices are easily installed by your mechanical contractor and prevent saturation from over-humidification.

So why aren't more buildings humidified? It's partly a lack of understanding about the benefits of proper humidification; another reason may be that engineers don't size and specify humidification equipment. Here are some questions to help you determine whether a humidification system is right for your building:

- *Do occupants have dry skin, allergies, nasal irritations, or chapped lips?* Maintaining a 40- to 60-percent RH helps decrease bacteria and viruses in the air. Low humidity (below 40-percent RH) causes nasal and throat membranes to dry and increases susceptibility to colds

or fails is *available absorption distance*: the length of ductwork required for proper steam absorption.

When humidification steam is released into the air, a portion of it cools and condenses into white mist. As the mist disperses, it re-evaporates and disappears. This mist – if it contacts solid surfaces before re-evaporating – tends to condense and pool as water, causing microbial growth and the associated foul-smelling, unhealthy air.

The key to solving this problem is proper steam absorption. There must be a sufficient length of straight, unimpeded duct downstream of the steam dispersion

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and viral infections. Levels above 60 percent allow micro-organisms to flourish.

- *What is the climate like?* In particularly cold climates where a heating system runs for long periods, the air can become dry. This can lead to the occupant complaints mentioned previously. It also increases static electricity, which can be uncomfortable and affect the performance of electronic equipment.
- *Are there materials that need to be preserved?* Proper humidification levels are needed in museums and printing facilities containing original artwork. This prevents materials such as wood, paper, paintings, and fabrics from peeling, cracking, chipping, and distortion.
- *Is "clean-steam" required?* Some environments, such as schools, hospitals, long-term care facilities, and cleanrooms, demand indoor air that's free from impurities. In these cases, systems that disperse chemical-free steam can be used to humidify the facility without adding impurities to the air.

unit so the steam can evaporate before condensing on coils, dampers, fans, and other objects.

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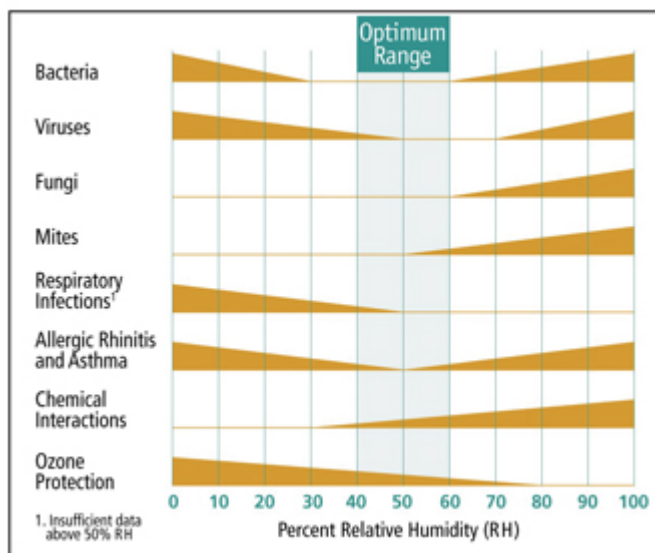
Taking the time to learn about your tenants' needs, concerns, and environments can help you decide whether you need a humidification system. When correctly designed and installed, a humidification system will deliver a comfortable environment that contributes to high productivity and comfort.

Ricardo Lira, PhD, is director of engineering at Eden Prairie, MN-based DRISTEEM Corp. (www.dristeem.com).

Decrease in bar width indicates a decrease in negative IAQ factors and complaints.

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