

Dehumidification: Multi-Unit Buildings

Cost-Effective Climate Control for Multi-Unit Facilities





Challenges for Multi-Unit Building Designers

In the past, individual cooling/heating units (PTAC's, fan coils, etc.) in each room may have been adequate to condition the 15 scfm per room of outside air required under old building codes. Now, 30 scfm per room is more typical of what is required by modern codes. Pre-drying ventilation air allows individual room cooling units to be downsized because they do not need to do any moisture removal. As a result, central treatment of all fresh air is becoming more acceptable as the best practice for multi-unit HVAC design.

Hotels & Resorts

Guests will not necessarily choose a hotel based on indoor air quality, but more and more hospitality chains are promoting a healthier environment for their guests. Superior indoor air quality is likely to become a differentiating factor for companies looking to increase guest loyalty to their brands. It is also true that guests will certainly object to staying in a room that smells of mildew or has stains on its walls and ceilings. Hotel guests naturally want a clean, fresh smelling room that is maintained at a comfortable temperature and humidity level.

To prevent mold, mildew, and odor the hotel must keep moisture out of the building's structural and decorative components and keep all the fabrics and carpet dry. Drying the ventilation air to below a 45 degree dew-point and keeping the building under positive pressure are two ways to maintain proper humidity control.

In addition to the IAQ benefits, controlling moisture will help prolong the life of the building and its materials.

Eldercare buildings

Many of the same indoor air quality issues that apply to hotels and resorts also apply to assisted living and other eldercare facilities. Ventilation rates are often high in order to maintain sufficient fresh air changes, reduce the concentration of infectious particles, and to keep the building smelling clean and bright. Additionally, humidity problems can often be exacerbated in assisted living facilities due to the fact that many older residents desire the indoor temperature to be higher than younger employees. The answer is not as simple as lowering the thermostat in an attempt to remove more moisture from the occupied space. We know that as one's activity level goes down, so does the tolerance for colder temperatures. By keeping the temperature higher and the humidity lower, both staff and residents can be kept comfortable.



Dormitories & Condominiums

The densely occupied conditions inside a dormitory or condominium lead to large amounts of outside air per square foot of interior space. Humidity from the outside air is coupled with potentially large common bath/shower areas, kitchen activities, and frequent movement through doors that allow moisture to enter the building. Humidity control is essential to maintain resident comfort and keep energy costs to a minimum. By using dedicated outside air pretreatment units, less expensive cooling equipment can be utilized to handle the comfort requirements.

Future Challenges for Designers

- Low-cost Code Compliance

Munters allows you to meet code requirements of 30 cfm per person using less energy than was used by conventional systems to provide 15 cfm per person – as specified by the previous ASHRAE standard. Energy recovery captures over 70% of the energy of your exhaust air and gas-fired desiccants remove moisture at a fraction of the cost of older cool/reheat systems. Consequently, your facility can comply with the new codes – providing your visitors with superb indoor air quality – while your HVAC systems cost far less to operate.

- Dry, Healthy Duct Work

The Munters system removes moisture in a vapor phase with desiccants rather than by condensation with a cooling coil. Because the air is not saturated as it enters your ductwork, your supply air duct stays dry. Dry air helps prevent fungus and bacteria from growing in duct linings and drain pans so the building is less at risk from the health problems caused by such contamination. ASHRAE recognizes the importance of dry duct work in Standard 62, which calls for maintaining the humidity under 70% RH to avoid microbial growth. That criterion is very difficult to satisfy with cooling-based air systems. However, Munters equipment allows you to supply cool, dry air while meeting ASHRAE guidelines.

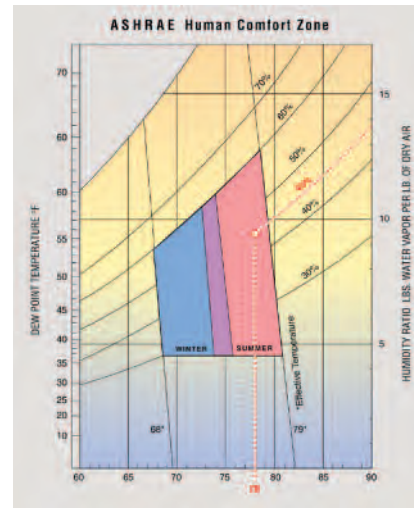
- Increase Your Cooling COP

When conventional cooling systems must remove moisture, the air is overcooled and then reheated. Those systems operate at a very poor coefficient of performance (COP). In contrast, when you install Munters, there is no need to overcool the building to dehumidify. Since the cooling system is not required to remove moisture, you can set your thermostat to a higher, more efficient, and more comfortable operating temperature. This will likely improve the overall coefficient of performance by more than 15%.

- Retrofit Applications for IAQ Improvements

When you need to modernize your building to improve indoor air quality (IAQ), the new fresh air

load may exceed the capacity of existing equipment. The Munters system preserves your equipment investment and avoids the interruption of major reconstruction. Because the Munters units can be placed on the roof near the fresh air intake of your existing air handling equipment, there is no need to rebuild duct work or replace equipment in the mechanical room. While the Munters equipment is being installed, the existing system continues to heat and cool the occupants. Your building operations can continue smoothly during a retrofit.



Research by ASHRAE was consolidated in the 1993 edition of the ASHRAE Handbook of Fundamental. It shows that during summer months, the majority of the population is most comfortable between temperatures of 74°F and 80°F with coincident relative humidities between 25% and 45% RH. The Munters system is ideally suited to maintain that condition by supplying fresh air from the weather that is neither too cool, nor too humid - ideal for human comfort during summer months.



Munters is the world leader in humidity control with products and services for dehumidification, humidification and cooling of air. Customers are found in a wide range of segments, the most important being insurance-, utilities-, food-, pharma- and electronics-industries.

Manufacturing and sales are carried out via the Group's own companies in more than 25 countries in Europe, Americas, and Asia. The Group has 2,900 employees and net sales of SEK 4,100 million. Munters is listed on Stockholmsbörsen, the Stockholm Stock Exchange. For more information see www.munters.us



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