

Dehumidification : Theaters

Cost-Effective Climate Control for Theaters





THE PROBLEM

Movie theaters are usually interior rooms with no exterior glass and are often uncomfortably cold and humid. This is directly related to the low sensible heat load in the space and the high moisture load due to ventilation air and tightly seated movie goers. These are not the most ideal conditions for patrons who expect a comfortable experience while viewing movies.

Theaters that use conventional air conditioning to control space comfort for patrons are only doing half the job. Engineering studies have shown that relative humidity, not just temperature, has an important impact on human comfort. While conventional air conditioning systems reduce humidity under ideal conditions, they are not designed to control humidity. As circumstances vary within the building or temperatures rise and fall outside conventional air conditioning can not keep up. As a result the humidity increases inside the theater and customers become uncomfortable. To meet customer expectations, the air conditioning is set at a lower temperature. This, “overworking” of the air conditioning increases energy costs, operating costs and makes the movie theatre unpleasantly cool. Despite all of these adjustments, the attempt to control humidity fails and uncomfortable movie goers are soon putting on sweaters even in the summertime.

THE SOLUTION

Munters DryCool product provides movie theatre operators the ability to create the desired climate by providing independent control of temperature and humidity. The DryCool unit works in conjunction with the existing air conditioning system or as a stand-alone unit. It controls humidity on an as needed basis, running only when humidity levels threaten comfort. The DryCool unit operates cost effectively because all of the energy required for the operation of its’ desiccant dehumidifier is recycled from cooling components. The DryCool unit is a 100% outdoor air unit that will not only control space humidity it also helps provide space cooling. When there is a call for cooling, the DryCool unit helps lower energy costs by providing cooling at a higher Coefficient of Performance (COP) than the existing air conditioning system.

THE COMFORT ZONE

Comprehensive studies conducted by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) on indoor human comfort has shown that people are most comfortable when the relative humidity is kept between 25% and 50% When humidity is under control, people are comfortable at higher temperatures. For example, during summer months, when energy for air conditioning costs the most, temperatures can be allowed to rise to 78°F as long as humidity is maintained below 45%. Using data collected over 50 years of research, ASHRAE as established a “Human Comfort Zone.” Thanks to Munters innovations in indoor climate control, movie theaters can operate in the “Comfort Zone”, both cutting energy costs and pleasing customers.



BENEFITS

Independent Humidity Control

With the Munters DryCool unit, humidity can be controlled independently of temperature. Traditional air conditioning system designs assume that the cooling process will remove any moisture needed to control humidity. However, when fresh air is both cool and humid, cooling coils may not operate because the sensible heat load is low. This allows moisture to build up, making patrons uncomfortable. With the Munters DryCool unit, indoor humidity is never allowed to rise when outside temperatures drop.

Energy Cost Reduction

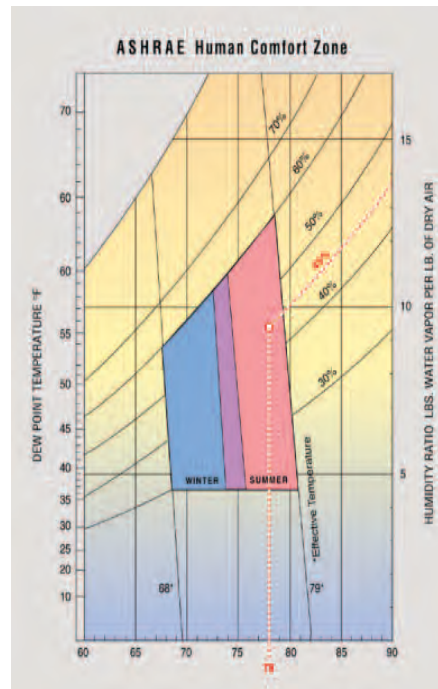
The movie theatre can operate at higher temperatures, while achieving superior comfort. Lower humidity means patrons feel more comfortable at temperatures in the high seventies. There is no need to over cool to control humidity, so the air conditioning set points can be raised, improving your COP up to 20%.

Avoid Cool and Reheat

A Munters DryCool unit cost-effectively eliminates humidity from building makeup air. Unlike systems that first sub-cool the air to lower the humidity then reheat it to create the desired temperature, the Munters DryCool unit removes humidity by using a desiccant wheel. The desiccant wheel is regenerated using recycled heat from the cooling components, providing dry air to the air conditioning system at a low operating cost. The end result is an energy efficient 100% make-up air humidity control unit available.

Customer Comfort

Your movie theatre can be kept inside the ASHRAE Comfort Zone without concerns about weather changes and humidity produced by those occupying the movie theater. Your movie goers will be comfortable, not chilled by cold and clammy drafts so complaints will be eliminated.



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 DryCool product 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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