

COMMERCIAL + INDUSTRIAL SERVICES

bulletin

Technological advances in energy generation, distribution and delivery proceed at a remarkable pace. The options available to any commercial or industrial operation are as varied as they are numerous.

At Bay State Gas we strive to provide you the latest in technology and information on the most advanced and efficient natural gas energy solutions that are right for your business.



DESICCANT DEHUMIDIFICATION

Desiccant Dehumidification | Benefits

- > Inhibit growth of disease-causing microbes
- > Contribute to employee health and comfort
- > Reduce employee absenteeism and increase productivity
- > Protect expensive equipment and furnishings
- > Improve air quality
- > Reduce energy costs

Facilities that may benefit from Desiccant Dehumidification include:

- > Refrigerated warehouses
- > Plastic injection molding
- > Food process freezers
- > Clean rooms
- > Pharmaceutical encapsulation and packaging
- > Photographic films and papers
- > Glass lamination
- > Heat sensitive drying applications
- > Surgery Centers

Importance of Good Indoor Air Quality

Heightened efficiency concerns, resulting in more tightly constructed buildings with less ventilation, have created an entirely new set of issues with regard to indoor air quality. Indoor air pollutants contributed by combustion sources, furnishings, cleaning products and construction materials can adversely affect the health and comfort of building occupants to varying degrees. Likewise, humidity levels can also affect human health and comfort.

The optimum humidity level for health is considered to be in the 45% to 55% range. Higher or lower levels can be a problem. High humidity levels encourage the growth of bacteria, mold, fungi and other disease-causing microbes. Low humidity aggravates asthma and other allergy and respiratory-related illnesses. Both contribute to discomfort.

Humidity Control Improves Your Bottom Line

Humidity control offers significant bottom line advantages. Air that is too dry or too moist can adversely affect your facility. Dry air contributes to static electricity, which can negatively impact computers and sensitive electronic equipment. Too much moisture can damage furnishings, wall coverings, flooring and ceiling tiles, and supplies. Additionally, well-maintained humidity levels help control odors from cleaning and disinfecting products and from the growth of mold and mildew.

Desiccant Dehumidification Systems



A dry desiccant system
Photo courtesy of Kathabar, Inc.



Rooftop desiccant system. Photo courtesy of Munters Corp.

Natural gas dehumidification systems wring excess moisture from hot, humid indoor air during the summer, significantly improving indoor air quality.

How Dehumidification Works

Maintaining cooling comfort during hot, humid periods is accomplished by regulating both the temperature (sensible cooling) and the humidity (latent cooling) of the indoor air. With conventional air conditioning, moisture-laden air is passed over a cooling coil, which causes the moisture to condense. The air is cooled and some moisture is removed. Since conventional air conditioning attempts to do two jobs, this compromise of temperature and humidity control can result in losses to either efficiency or comfort. A desiccant dehumidification system assumes responsibility for the humidity component (latent cooling)—usually at least 30% of the total cooling load—allowing the air conditioning unit to be set for optimal temperature control (sensible cooling) which allows for the use of a smaller compressor, eliminating excess chiller capacity.

A desiccant system uses special crystal-like materials (a desiccant) that “absorb,” rather than condense the moisture from the incoming air. In a typical system, the desiccant is mounted on a rotating wheel. As the wheel turns, the desiccant passes alternately through the incoming process air where the moisture is absorbed and through a regenerating zone where the desiccant is dried and the moisture expelled.

Typically, about three-fourths of the desiccant wheel is exposed to the incoming air throughout the process. During regeneration, the desiccant is heated by a direct-fired gas burner or indirect-fired water or steam coil. Working together, conventional air conditioning and desiccant technology can more efficiently handle temperature and humidity control, but desiccant dehumidification can be used as a stand-alone system.

Drying Air with Liquids

Liquid desiccant material is a highly stable, nontoxic solution that attracts moisture. As the air to be dehumidified comes into contact with the liquid desiccant, the moisture is absorbed into the solution. The amount of moisture taken out of the air is

directly related to the concentration and temperature of the solution. The solution is then boiled off, and the moisture is removed and released into the atmosphere. This restores the solution’s ability to reabsorb moisture and begin the cycle again.

Liquid desiccant systems are well suited for full-area conditioning which can eliminate distribution ductwork. However, with a

larger space to condition, the unit must be sized to compensate for room openings, people and the presence of other types of equipment. Since the conditioned air comes in contact with the liquid desiccant

material, these systems are ideally suited for applications requiring removal of bacteria and airborne contaminants from the conditioned space.

Any manufacturing or space conditioning application that is sensitive to humidity, temperature or microorganisms is a natural application for a dehumidification system.



Rooftop desiccant system. Photo courtesy of Munters Corp.



An installed liquid desiccant system. Photo courtesy of Kathabar, Inc.



A large liquid desiccant system designed to control large volume spaces. Photo courtesy of Kathabar, Inc.



Partners In Energy Working Together

YOUR SOURCE FOR ENERGY SOLUTIONS

If you believe that desiccant dehumidification technology is an appropriate consideration for your operation, our **Partners In Energy** program can assist you. We offer financial incentives to help you minimize your upfront cost by sharing a portion of the cost to design, purchase and install the equipment. Simply follow the program guidelines to qualify for matching funds.*

These rebates, combined with the reduction in your overall energy expenses can provide an outstanding return on investment that will pay dividends for years to come.

*Program restrictions apply. Limited time offer.

FOR MORE INFORMATION call us toll-free

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