

Desiccant dehumidification helps improve indoor air quality

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Humidity is a problem for most commercial buildings. It adversely affects employee morale, product appearance and longevity, and ultimately profits. It is also expensive to correct.

Humidity is known to cause: hotels to renovate rooms damaged by moisture; supermarkets to contend with cold aisles, poor product appearance, and frost buildup on refrigeration coils; fast food restaurants to suffer high employee turnover rates due to uncomfortable kitchen working conditions; and office buildings to suffer from poor equipment performance and high employee absenteeism due to illnesses.

There are two ways to correct humidity problems: cool the air to condense moisture or dry the air using a desiccant. Most commercial businesses use air conditioning to control humidity. The results are often lower-than-needed temperatures and higher-than-desired energy costs. In addition, conventional air conditioning can be ineffective when the dehumidification load is greater than the temperature cooling load.

For example, controlling humidity through air conditioning in supermarkets and frozen food aisles to become too cold for customer comfort and the energy costs too steep for management comfort.

In contrast, desiccant dehumidification removes humidity without lowering the temperature and without raising energy consumption. It does this by breaking the link between humidity control and temperature control.

Desiccant systems work by taking moisture-laden air and passing it through a rotating desiccant wheel to extract the moisture from the air. The air emerges dry and warm from the desiccant wheel. This warm, dry air is then passed through a rotating heat exchanger wheel where it is first cooled and then introduced to a building's HVAC system.

A desiccant system can also have a cogeneration unit in conjunction with it. The cogeneration unit generates electricity from a generator driven by a natural gas-fired internal combustion engine. The cogenerator delivers electricity to the building, heat to regenerate the desiccant wheel or supplemental space heat during the winter months.

Desiccant dehumidification systems, with and without cogeneration units, are under serious consideration by many commercial businesses. However, most potential customers are not familiar with either desiccants or cogeneration, so they require analysis, demonstration and education of these systems.

The advantages of desiccant dehumidification as compared to

conventional air conditioning are as follows:

— Lower first cost. Desiccant dehumidification provides more latent cooling than standard vapor compression systems, resulting in smaller ductwork and less air handling equipment required.

— Lower operating costs. Desiccant dehumidification eliminates the over-cooling often required with con-

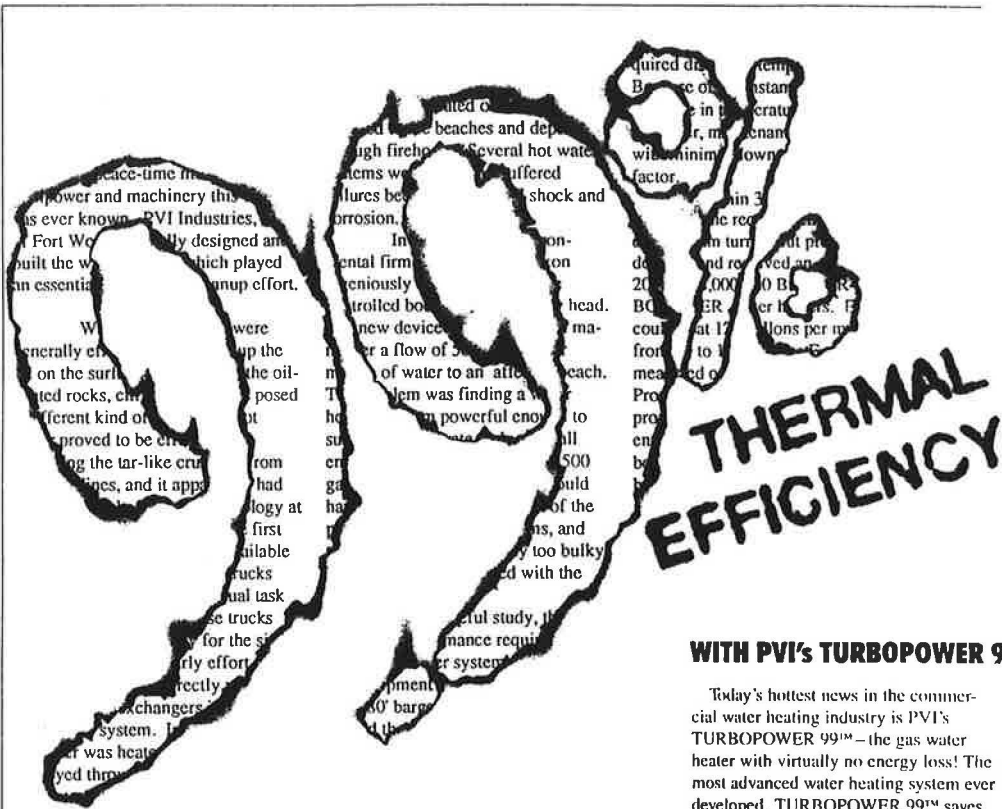
ventional equipment to achieve acceptable humidity levels.

— Reduced maintenance. Desiccant dehumidification systems, in general, only require lubrication and regular air filter changes.

In addition, several energy and environmental issues have led businesses to look for ways to simultaneously reduce energy consumption and eliminate humidity problems. Three of the most critical issues are

electrical power generation and transmission shortages; the greenhouse effect and ozone layer destruction by CFCs; and indoor air quality.

Desiccant dehumidification systems, when coupled with a cogeneration unit, can provide efficient power generation at a cost competitive with utility power. These systems will simultaneously produce electrical power and reduce air-conditioning and refrigeration loads.



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