



DRY-O-TRON® DB-182 DEHUMIDIFIER



Dehumidification Needed in the Desert? You Better Believe It!

Energy-saving heat recovery design prompts desert town to abandon controlling indoor pool humidity with 10-percent RH outside air.

Taos, N.M. – The idea of using year-round dry outside air of the New Mexico desert to reverse the high humidity loads of a huge 13,000-square-foot indoor swimming pool building sounds logical, in theory. However, the chilling evaporative effects that dry 10-percent relative humidity (RH) air has on a swimmer's body at a local facility employing this strategy confirms that other methods are required.

When city officials of Taos, a resort community in the northern high

on the new \$3.1-million Youth and Family Center, they were persuaded otherwise.

While indoor air comfort concerns got the city's attention, the building committee's opinion was reversed with the fact that a DRY-O-TRON® heat recovery dehumidifier from Dectron Inc., Roswell, Ga., could save the city \$22,800 annually. Mechanical dehumidification was found to be more economical since, instead of heating make-up air at night at an estimated \$6,500 annually, they are

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plains desert of New Mexico, floated the idea of saving on indoor pool mechanical dehumidification costs

recovering heat to warm outside air and provide free pool water heating at an additional savings of approxi-



mately \$12,000 annually.

Dectron's customized DRY-O-TRON® DB-182 not only recovers heat to provide free pool heating, it also extracts heat from exhaust air with a Smart Saver heat pipe option to pre-heat cool desert outdoor air that ranges from -10°F to 90°F year-round, while the pool space temperature remains a constant 84°F. It was determined there would be savings in preheating the outside air, moving less air than would be used in an evaporative cooling system, and providing pool water heating with the features of this unit.

A hidden savings is realized when the moisture recovered from the return air in the dehumidification process is returned to the pool, thus saving water, a valuable commodity in the desert. Dectron estimates that the Taos project returns approximately 190,000 gallons of water, almost the entire volume of the main pool, children's pool, and spa, as condensate per year.

The Taos Youth & Family Center has since become a believer in mechanical dehumidification, as they have noticed a significant difference in the air comfort between the old and new facility – referring to the city's 30-year-old former indoor pool that utilized outdoor air ventilation techniques for humidity control – and are pleased to have finally decided on mechanical dehumidification.

The Taos recreation center committee also entertained the idea of surrounding the indoor pool's perimeter with overhead doors that, when opened, could mimic the effect of an outdoor-style pool. Although it seems it is warm in Taos most of the time in the summer, you really cannot do both (an indoor/outdoor pool) due to the chilling effect of water evaporating too quickly off the skin with the dry, desert air. Also, overhead and sliding doors typically leak a lot of air because they do not have tight air seals or seals that last for more than a few years.

Instead of the large garage-style overhead doors, the facility now boasts huge thermal double-paned windows, which bathe the facility in natural sunlight that aids in solar heating during the winter months.

Rather than the chilling effects of dry, desert air, the Taos recreation

center users are swimming in a constant 84°F, with a perfect 50% RH, environment and a resultant indoor air comfort that is afforded by state-of-the-art engineering and design.

Dectron Inc., an ISO-Certified company, is a global HVAC industry leader. For three decades, Dectron's highly-skilled engineers and technical staff have been designing and manufacturing innovative, state-of-the-art DRY-O-TRON® dehumidification equipment that use leading-edge technology to recycle energy, conserve pool water, and CHLORAGUARD® filter natatoriums. Dectron Inc.'s DRY-O-TRON® line of products encompasses an extensive array of custom and semi-custom systems for industrial, commercial, and residential applications.



Dectron's custom-manufactured DRY-O-TRON® DB-182 dehumidifier

Energy Savings of Mechanical Dehumidification vs. Outside Air Ventilation in the Desert at Taos, N.M. Youth & Family Center.

\$ 6,500

Air heating savings due to heat transfer with Smart Saver heat pipe option for the outside air system.

\$ 12,000

Water heating savings due to pool heating with mechanical dehumidification system and reduced pool evaporation due to less amount of cool, dry desert outside air.

\$ 4,300

Airflow savings over evaporative cooling system.

\$ 22,800

TOTAL Energy Savings/Year



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