



Newsletter



■ Less Expensive, More Effective for Leading Plastics Manufacturer

70% energy cost reduction; improved indoor air quality



By installing five units from DuCool's DuTreat series, Panduit Singapore – a leader in innovative wiring and communication solutions has significantly decreased energy consumption from SGD 254K to SGD 72K (USD\$ 123K savings) - a reduction of over 70% in the operational costs of dehumidification. Panduit Singapore manufactures products such as electrical cords, computer hardware and fiber optic cabling infrastructure. To maintain its product's high quality and an efficient production flow, Panduit used a desiccant wheel system to control humidity levels in its production halls. This resulted in significantly high energy costs.

Panduit sought a solution that would improve indoor air quality, cut expenses and protect the environment. With its innovative, proprietary and proven technology, DuCool answered these demands. Together with Etha Engineering Consultants, Panduit Singapore replaced the desiccant wheel by installing three DuTreat units in its production hall and two in its storage room. The results have been overwhelmingly positive.



Improved Indoor Air Quality (IAQ)

- Allows increased ventilation that exceeds ASHRAE and OSHA standards
- Maintains dry ducts eliminating fungus & bacteria growth
- Removes 80% of particles larger than five microns
- Eliminates odors in production halls

"We immediately felt a significant improvement in the indoor air quality. In the production hall, there are no unwanted odors and the air feels much cleaner than in the hall with the desiccant wheels."

VJ, Facility Manager, Panduit Singapore

Reduced Energy Costs

- Reduced Energy Consumption – annual energy savings of SGD 182K (USD 123K)
- In contrast to the previous system, which discharged hot air, DuTreat units introduce cool air, significantly reducing the load on the A/C system and saving energy
- Decreased chiller's water pump capacity to 80%, saving 50% of its power consumption
- LPG not required for desiccant wheel operation, lowering the insurance premiums
- Eliminates need to periodically refresh and replace desiccant wheel

"During a time period of four months, we witnessed an energy savings of SGD 180,000 a year. Our Return of Investment will be 1.6 years."

VJ, Facility Manager, Panduit Singapore

"We have examined thoroughly the issue of energy saving only to find that the DuCool system is the best solution energetically."

Benjamin Kwek, Consultant, ETHA Engineering. ■

Green in Greece

Complete air conditioning for office building using Renewable Energy



Aptly named *Prometheus Pyrphoros* ("Prometheus the Fire-Bringer"), this Greek office building is truly a green structure. Incorporating solar and geothermic energy, the six-floor, 600 sq. meter building operates without fossil fuels.

Keeping with Sol Energy's commitment to green energy sources, DuCool replaced the existing outside air AHU with its DH-3400. Based on DuCool's innovative technology, this unit cools and dehumidifies using cold geothermal water and solar heated water only. The system provides 100% fresh air to the building, improving indoor air quality significantly.

The result? Huge savings – of close to 90% – in operational expenses. At US \$34 per square meter or

US \$3.38 per square foot, this translates into enormous savings. Along with this huge financial benefit, the DuCool unit presents other significant advantages. The system has improved the indoor air comfort level and greatly enhanced efficiency. A truly green air treatment technology, the DH-3400 is refrigerant-free.

And Sol Energy Hellas is more than satisfied. **"DuCool's unit helped us reach comfort zone conditions while reducing energy consumption by 90%,"** said Nikos Manioudakis, Senior Research Engineer for Sol Energy Hellas. **"These savings provide less than a three-year return on investment without even taking any possible tax savings into account."** ■



Waste Energy Benefits Pharma Company

DuCool provides dual advantages to Granules India

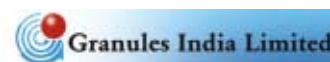
DuCool has presented Granules India, with a complete solution that effectively uses available on-site utilities – at a 30% reduction in annual energy costs. The pharmaceuticals company's Hyderabad plant, one of the largest facilities of its type in the world, sought an energy-saving solution that would make use of available waste energy for on-site use.

The Granules India's press fit capsule production halls require dehumidification and cooling.

In these specific manufacturing halls, stable conditions of 23 (+/-2) °C; 73.4 (+/-2) °F, 50% R.H. are a must.

DuCool provided Granules India with a DuHandling unit which cools and dehumidifies the space by using chilled water @10-11 °C; 50-52 °F and waste heat from steam condensate. To achieve this, the DH unit supplies 800 CFM, while consuming only 0.8 kW. Today, the DuCool DuHandling unit uses waste energy to supply the plant's dehumidification and

cooling needs. The system insures product flow, improved product quality, cool dry air, condensation control, refrigeration control and savings, and utilization of available energy sources, while cutting energy expenses. ■



Meat-ing all Needs

Factory remains dry while cutting expenses

TönniesFleisch, specializes in the slaughter and butchery of pigs and cattle, and produces high-quality meat products. The company's four-thousand employee plant, in the town of Rheda-Wiedenbrück, Germany, is one of its three ultra-modern facilities in central Europe.

In 2008, TönniesFleisch added a new wing to this plant. The process conducted in the wing requires a washing and cleaning water system, which produces excessive humidity. To counter this problem, DuCool supplied TönniesFleisch with a complete turn-key solution. Consisting of a pre-treatment AHU, six DuCool DuHandling units and a post-treatment AHU, this entire system is centrally controlled, and can be operated and monitored remotely.

At the TönniesFleisch facility, DuCool's system maintains required air conditions year round.

Providing deep dehumidification with low energy consumption, the system:

- Eliminates the need for reheating - reducing energy consumption by 43%
- Eliminates the need for a defrosting system
- Uses available waste heat and chilled water
- Increases the chiller COP - allows use of higher cold water temperature
- Provides high quality air, eradicating up to 91% of airborne micro-organisms
- Increases safety, using chilled water instead of ammonia
- Offers simplicity, requiring water piping instead of high pressure ammonia gas piping

TönniesFleisch reaps wide-ranging benefits from the DuCool system. The meat company reports a sharp decrease in operational electrical consumption. Its workers now enjoy a safer, more pleasant environment as the result of reduced moisture in production hall air and drier floors. In addition, the hall's lower humidity level prolongs the lifespan of its equipment. The bottom line: savings of thousands of Euros monthly for TönniesFleisch. ■



■ Single Energy Source for NY Office Building

Turnkey tri-generation system reduces energy demands

DuCool has presented Roxanne Management Corp. with a turnkey tri-generation system for its Great Neck NY Building. The CCHP (Combined Cooling, Heating, and Power Generation) system significantly decreases energy demands by efficiently using primary energy, such as fossil fuel (gas, diesel) and renewable energy sources such as solar power.

Roxanne Management owns Barstow Medical Center, a three-story office building, which houses medical clinics, in Great Neck, NY, US. The company relied on three AHU rooftop units with a gas furnace, a DX cooling unit, compressor, condenser and three boilers for its heating and cooling needs. Roxanne Management sought to reduce the building's energy consumption, while improving indoor air conditions, thus, creating a green facility that uses renewable energy to reduce CO₂ emissions.

Tri-generation is the simultaneous production of mechanical

power, heat and cooling from a single energy source. DuCool's system uses desiccant dehumidification combined with evaporative cooling, a combination often referred to as desiccant cooling. The desiccant cooling systems can work with lower grade heat, i.e. hot water, at temperatures of 125-185°F. An additional advantage, the DuCool system improves indoor air quality by eliminating 91% of bacteria and microorganisms in a single pass, as well as 80% of particles and allergens larger than five microns. ■



■ Chilling out Naturally

Renewable energy to dramatically cut skating rink's operation costs

DuCool has designed a system that will decrease the energy consumption of the Pines Ice Arena in Florida, USA, by 61%. The system will use available energy sources, offsetting grid energy needed by 85%.

A mammoth facility, the ice rink is housed in an 80,000 square feet building with maximal occupancy of about 1,500 people. Water vapor in the rink can make ice cloudy,



dull and slushy resulting in unpleasant and unsafe skating conditions. In addition, excessive humidity demands that refrigeration equipment will operate for longer hours, at great expense. DuCool's system cost-effectively addresses these problems by providing the crucially required effective dehumidification and cooling.

By installing highly efficient equipment, producing energy by onsite co-generation, using waste energy and harvesting renewable solar and thermal energy, the system will cut slash rink expenses. The DuCool's system is expected to reduce grid energy consumption by 85%, increase gas consumption by 11%, lower water consumption by 50%, and cut annual energy costs by about 61%. ■

Company Profile

DuCool systems cool, heat, dehumidify, disinfect and clean the air while providing independent control of temperature and humidity. These solutions are powered by renewable energy sources such as solar panels, geothermal water and waste heat from multiple sources, providing considerable savings to commercial and industrial users.

DuCool systems utilize a patented liquid desiccant process for dehumidification and air conditioning that is considerably more efficient and effective than other standard HVAC solutions. DuCool systems can be configured as stand-alone solutions or coupled with existing conventional systems to provide a superior hybrid application.



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