

Fresh and healthy air for shoppers with DesiCool air treatment system

Globus, running more than 100 shopping malls in Germany, chose the DesiCool system among several alternatives when looking for a more environmentally friendly and energy saving airhandling solution for their Saarlouis mall.

Globus for many years have used the company Rheimotherm as their consultants regarding equipment selection for air handling systems in their malls. Rheimotherm has installed a high number of Munters MX dehumidification units for the cold stores at these shopping malls and worked closely with Munters on these dehumidification solutions. When Globus asked Rheimotherm to come up with more environmentally friendly and energy saving solutions on the general air handling in the Saarlouis shopping mall, Rheimotherm naturally contacted Munters. Following discussions with Munters green air treatment team, Munters' DesiCool-system was selected as the perfect solution for Globus.

Munters DesiCool system – one of Munters' environmentally friendly air treatment solutions - controls both temperature and humidity in only one unit. DesiCool is driven by a wide range of (excess) heat sources including district heating, solar panels but operates completely in standard cases without the need for refrigerants or compressors.

Project Leader Stefan Berweiler, Rheimotherm, concluded that “ The DesiCool system built within Munters European system manufacturing base TN, is of outstanding quality and the 50,000m³/hr system was remarkably easy to assemble. Munters DesiCool solution is perfect for supermarkets, where excess heat is turned into cooling in summer periods, whilst in wintertime the system works as a heat recovery unit. Compared to a traditional solution Globus expect energy savings “giving us a payback on the system of 3 years”.

There are more than 140 Munters desiccant cooling systems in operation in Europe, DesiCool's performance against conventional air conditioning and on evaluation of energy saving calculations means DesiCool is the most reliable, economic, maintenance and pollution free option.



Benefits:

- Environmentally friendly system without refrigerants
- Energy saving airhandling solution
- Short payback time
- Fresh and comfortable climate for shoppers
- Heat recovery
- Easy maintenance





Natures own principles

Nature's own effective method for humidifying and cooling air is evaporation. Munters have reproduced this effect within their DesiCool air conditioning technology in the form of desiccant cooling, a solution all the more effective as it is achieved by converting surplus heat. Heat which is often regarded as a waste product is converted into cooled and dehumidified air which is then distributed into buildings for improved indoor comfort air conditioning.

Surplus heat to cooling

Munters DesiCool air conditioning system uses this cooling principle to convert surplus heat into productive cooling within one unit, which contains neither a compressor, cooling surfaces nor condensers. In winter, the system provides an extra bonus as a heat recovery unit. The result is typically a reduction in electricity consumption of 60% compared with cooling using compressors, and a heat recovery efficiency of 90% in winter. DesiCool is producing the best indoor climate in a building you can get, throughout the year.

The desiccant section contains a rotating Munters desiccant rotor and reactivation coil in the exhaust air. The coil reactivates the desiccant wheel, i.e. expels the moisture it takes from the external air.

At Globus, the indirect evaporative

cooling component consists of a rotating aluminium exchanger and an evaporative cooler in the exhaust air. The main task of the evaporative cooling component is to cool the exhaust air from the premises so that one can indirectly, via the rotating heat exchanger, cool the warm yet dry air that is generated after drying. Following this indirect cooling stage, the condition of the air is 23.4°C and 7g/Kg

Saving energy costs

The evaporative cooler in the intake air now lowers the temperature of the cool yet dry air from the rotating aluminium heat exchanger to 17.8°C and 9.1g/kg before it is fed into Globus' Saarlouis shopping mall. To run the desiccant cooling process, the desiccant rotor has been specially developed to provide sufficient drying at low air temperatures. This means that you can use water temperatures as low as 60-70°C for the reactivation coil. This also provides the opportunity for using surplus heat from Saarlouis' 60/80°C heat source. More surplus heating means more savings in energy costs.

The evaporative cooler works through water being added to Munters corrugated media designed with a very large surface area. The heat required for evaporation is taken from the air flowing between the "corrugated" laminate. This way, the air is cooled and humidified at the same time. For each gram of water evaporated per kg of air, a temperature reduction of 2.5°C is achieved.

At the Globus Saarlouis shopping mall the 50.000m³/hr DesiCool system, with a combined cooling capacity of more than 159 kW supplies 13.9m³/s to the mall.

The resulting air supplied into the mall maintains a pleasant climate the whole year round. An economic and technical analysis by Globus's consultants showed significantly lower annual energy running costs of 20% meaning the system pays for the added capital investment in 3 yrs. Munters designed the DesiCool system so the running costs are minimum 20% lower than a conventional air conditioning system.

Munters DesiCool air conditioning systems are the green alternative, avoid cooling based on CFC's and HCFC's and are suitable for offices and production premises.



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