It's in the air ...

... quality does indeed make a difference!

DESICCANT
ROTORS

References
Corrosion protection
Ice rinks
Cargo on ships
Pharmaceutical industry
Food and candy industry
Dry air storage

DESICCANT ROTORS

Description
The desiccant rotor is the "heart" of our dehumidifiers. The performance of a dehumidifier is dependent upon the choice of the rotor type, rotor size, rotor revolutions, rotor quality and of the quality of the gaskets separating the independent air flows.

The rotor itself is important for the dehumidifier performance but also how its used. The general mechanical and electrical design of the dehumidifier are important elements, too.

Data of the rotor performance is an essential ingredient for the on going development of the rotor capacity. The research and development of this capacity and lower energy consumption is an on going process.

The rotors used in Cotes dehumidifiers are placed at an extremely high level within this development process. Based upon our reseach, we believe that our desiccant rotors are the very best available on the market today.

Rotor types
PPS silica gel rotor, for generel use. This is our standard rotor.
PPM molecular sieve rotor, for very low dew points.
PPH hygienic rotor, especially for clean room applications.
LiCl lithiumchlorid rotor, for special and limited use only.

Rotor design (PPS)
The rotor uses silica gel which from a special patented manufacturing process, is bound to a fibre glass structure. The silica gel itself is the "glue" binding the structure together, in this way a content of 82% silica gel is achieved.

Remaining components are fibre glass 16%, acrylic surface coating 2%. The physical size of the micro-pores are manufactured for performing high water adsorption as well as deep drying.

Rotor Longevity
It is Important that clean filters of right quality are always used. Clean air, without oil vapours, exhaust gases from diesel engines or acids will extend the lifetime of the desiccant rotor to more than 10 years. After this period the desiccant rotor may still maintain 90% of its original moisture removal capacity

Health & Safety
The silica gel is bounded to the fibre glass and will not delaminate. The fibre glass strand is larger than than 7 microns and is non-respirable.The strand is not considered to cause any harm to the human body. Silica gel and the acrylic surface coating have no known toxic properties.

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Principle of operation

Rotor structure close up

The active adsorbent within the desiccant rotor has a micropore structure affording an unbelievably large internal surface.

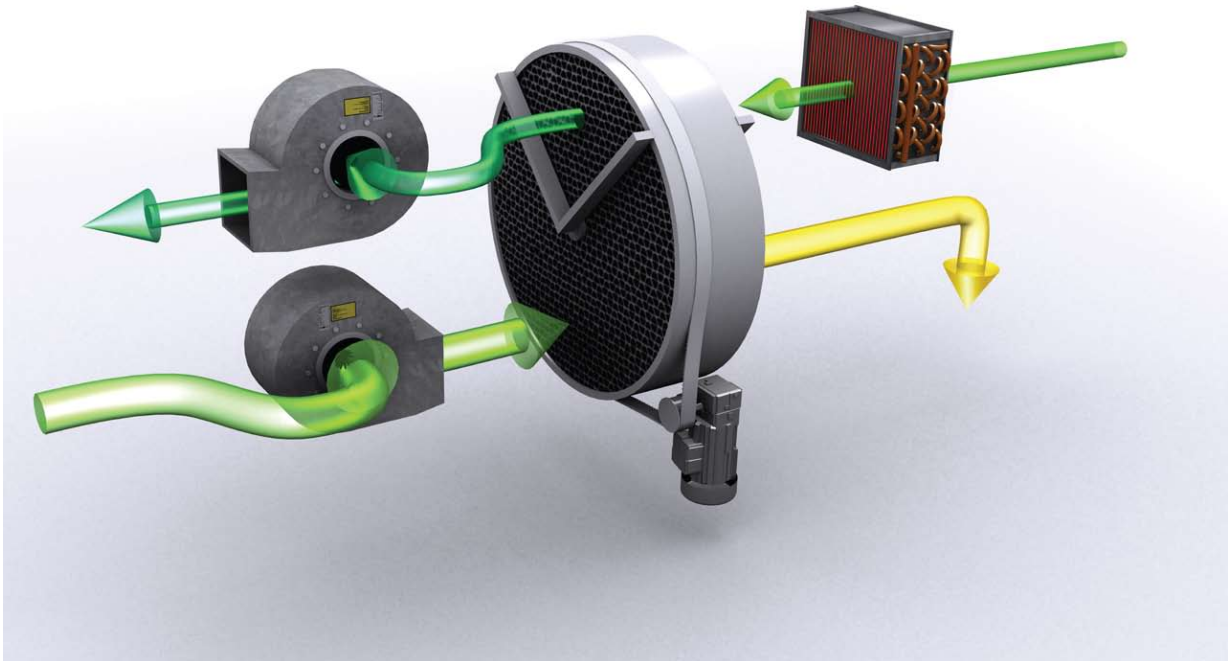
Water molecules from the moisture laden incoming process air are attracted by the forces from the desiccant rotor micropores. The result of this being that the air is dried to a optimum level. In practice the moisture laden process air is passed through the rotor and exits the rotor as dry process air.

The water molecules being adsorbed within the rotors silica gel micropores. The evaporation of these water molecules by heat within the regeneration sector cause a carry over of temperature to the dried process air. The adsorbed water is removed from the rotor by a heated airflow. This heated air, known as the regeneration air, affords the required energy for the regeneration process. This process expells the moisture from the rotors silica gel micropores.

The process to perform a continuous drying and regenerating process consists of the following. The desiccant rotor revolves between 6 and 16 rotations per hour. The rotor is channeled by opposing air flows.

The rotor is designed with many narrow parallel channels, being laden with micropores of silica gel. This combined with the separation of the air flows by gaskets and seals, allows the process to be highly efficient.

The principle of the operation above is a simple and effective way of adsorption and regeneration. Based upon our knowledge of the properties of the desiccant rotor, we are able to optimize the process for different applications. This can be utilised by increasing the delta X for deeper drying. Increasing the moisture removal capacity in kg/h. Installing a purge sector, connecting pre or post cooling coils and heat exchangers.



Dry Air Makers

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