Benefits
• Reduced reactivation energy costs by up to 30%
• Reduced post cooling energy costs
• Reduced carbon footprint
ROI of within 1 to 2 years

Rotor Energy Recovery Options
How to cut the energy consumption for reactivation by up to 30%

Reducing energy consumption and minimizing carbon footprint is constantly on the agenda, and today many companies have an Energy Efficiency Program. Munters has developed several options for upgrading our customers existing Munters equipment. Our retrofit Purge solutions optimize the energy efficiency in the dehumidifier, securing energy efficient operation years ahead.
The benefits of our Rotor Energy Recovery Options

Since the majority of the energy required for the desiccant process is used in heating the reactivation airstream, significant energy savings are achieved by recovering the energy in the reactivation cycle. Internal energy recovery systems for the rotor reactivation process can be installed retrofit in a wide range of bigger dehumidifiers (e.g. MX, MA, MCD, ICA, MTS & MDU Series) offering substantial energy savings and short ROI. The Purge sectors can easily be installed on site by our skilled Service Teams and does not involve any external rebuilding – most of the work is done inside the dehumidifier itself.

☑ Reduced reactivation energy costs by up to 30%
☑ Reduced carbon footprint
☑ Reduced post cooling energy costs
☑ Increased rotor performance (EEP)
☑ ROI of within 1 to 2 years

Energy Recovery Purge (ERP)
Reduces energy needed for reactivation

When upgrading the dehumidifier with the ERP system, an extra sector on both sides of the desiccant rotor will be added. This extra sector is placed on the process side where the rotor leaves the reactivation chamber. Fresh air from the reactivation inlet (1) will go through this purge to remove the heat from the rotor material and mix this recovered waste heat with the reactivation air after the heater (2).

Hereby we can reduce the size (and power consumption) of the reactivation heater and still grant the same dehumidification performance. As the ERP removes heat from the rotor material, the process air (3) temperature will be reduced, securing substantial savings in cases where post cooling is needed.

The ERP can be installed retrofit on dehumidifier MX, MDU and MDS Series.

PrePurge
Internal energy recovery in open systems

For MX series dehumidifiers operating in open systems (dehumidifier is placed outside the dehumidified room and does not recirculate the air), the PrePurge is an easy-to-install energy recovery purge solution. The PrePurge only includes one purge sector, leading warm process air from the rotor into the reactivation air stream (1). Hereby a part of the fresh air for reactivation (2) is replaced with warmer air, reducing the energy supply needed for the reactivation heater.

CASE STUDY
Energy optimization of two dehumidification systems, type MX with modulating electrical heater, at pharmaceutical company Coloplast will reduce CO2 emissions by 230 tonnes per year with a payback period of only 6 months.

Extra feature! Easy to install
**PowerPurge™**

**Tailor made purge sector for rotor diameters at minimum 1.3 m**

For dehumidifiers type MDU and MDS where the inlet water content is lower than 12 g/kg, the PowerPurge™ will efficiently recover heat inside the reactivation sector itself. The unique and patented PowerPurge™ system collects waste heat off the hottest section of the desiccant rotor (wheel) and uses that heat to help with the reactivation cycle of the rotor. This reduces the energy supply required for reactivation while lowering the discharge temperature of the process air, decreasing energy costs for eventual post cooling.

One extra purge sector is added on each side of the standard reactivation sector of the rotor, positioned both before and after this sector. A separate air stream (1) recirculates in a closed loop. This air circuit cools the rotor material before it enters into the process air stream. This recovered heat pre heats the rotor material in the second purge sector, before it enters the reactivation sector. This is a very efficient way to reduce the energy needed for the reactivation heater.

**CASE STUDY**

In relation to an extensive energy optimization project at the Ice Center North, a huge ice arena in Denmark, energy updates of two Munters dehumidifiers MXT7500 were performed. The dehumidifiers are now able to take full use of excess heat which has reduced the need of electrical heating supplied for regeneration of the rotor with 2/3 and reduced CO2 emissions by 40 tons per year.

**EEP and Low Dew Point Purge option**

Munters has also developed Purge sectors enhancing the capacity of the rotor itself. Retrofit Low Dew point purge for dehumidifiers in applications where a low dewpoint is required and the Energy Efficiency Purge (EEP) that boosts the performance of the rotor still with the same amount of energy used.

**Munters standard desiccant rotor design**

The Munters desiccant rotor (wheel) works on the principle of sorption, which is the adsorption or the absorption process by which a desiccant removes water vapour directly from the air. The air to be dried passes through the rotor and the desiccant removes the water vapour directly from the air and holds it while rotating. As the moisture-laden desiccant passes through the reactivation sector (90° shielded part of the rotor surface), the water vapour is transferred to a heated airstream, which is exhausted to the outside. This process is continuous, allowing for highly effective and uninterrupted dehumidification. In this continuous process the rotor is carrying heat into the process airstream. It is this energy that we recover and re-use in the reactivation cycle, resulting in lower energy costs in reactivation power and post cooling.
More upgrades for lower cost and increased energy efficiency

Performance Check
Munter’s Performance Check will clarify the performance of the desiccant rotor. Based on the Performance Report issued, our Service Team will advise on recommended actions.

Energy Check
(Consult your local Munters Service Team to check availability)
An Energy Audit goes beyond the dehumidifier and is a 360° audit of both dehumidification system and the complete installation as such. This extensive audit will provide you with recommendations on amendments and upgrades that will grant you better capacity and energy efficiency.

Energy source conversion
In case alternative and less expensive energy sources have become available since the commissioning of the dehumidification system, it can often be beneficial to convert the reactivation energy source from e.g. electricity to gas or steam. The lower energy costs secure a short ROI and reduced CO2 foot print.

Dual reactivation
When waste energy is available, a redesign of the dehumidification system can often secure substantial energy savings, utilizing the waste energy for the reactivation air stream. Based on an analysis of configuration, set-up and control systems our Service Team will evaluate the profitability and calculate savings.

Control options
A number of advanced controls options have been developed that allows for retrofit installation. Update of control systems allows closer control and can be connected to existing MBS systems. Modulating controls enables more energy efficient operation, and alarm options will improve safety.

Welcome to contact your local Munters Service Team for more information

www.munters.com/service