Questions relating to desiccant dehumidifiers

How often will I need to replace the desiccant rotor?

The desiccant rotor is the heart of the dehumidifier and our silica gel rotors have a 3 year warranty on performance. The rotor will normally out-live other mechanical components. Some chemicals can, on rare occasions, have a detrimental affect on silica gel as can contaminated air, so if in doubt – ask. In general we can say that our rotors will operate effectively for at least 10 years.

Can I wash the rotor?

Although the rotor is washable in water or acid based detergent, this is carried out as a last resort and is not included as part of the maintenance routine. Although the procedure is relatively straightforward, do not attempt this without consultation. To avoidcontaminating the rotor it is essential that air filters are regularly maintained.

How is the dehumidifier capacity controlled?

The rotor will only adsorb moisture if it is being continually reactivated. The level of reactivation is dependant on both the reactivation air volume and the reactivation temperature. Full capacity is achieved when the reactivation temperature is between 120°C and 140°C at the nominal airflow. In most cases the reactivation airflow is commissioned at a constant volume, so the drying capacity would be controlled by regulating the air temperature. In steam reactivated units the airflow can be controlled as the steam flow isself regulating.

How do I drain condensate from the unit?

You don't. There is no condensate – so no problems with freezing either. All the moisture is removed from the system as water vapour. The wet air outlet is warm and wet (similar to a tumble dryer outlet) – another reason why desiccant dehumidifiers work much better at lower temperatures.

Electricity is expensive, so what other options are there?

About 90% of the energy used on a desiccant dehumidifier is for heating the reactivation air. All our single phase units operate using electric reactivation only. On larger dehumidifiers there is a choice of steam, direct-fired gas (natural and LPG) or hot water – all of which should reduce running costs. Also see our bespoke Flexisorb system, where a combination of different heaters can be used.

Why is the dry air outlet so warm?

Most of the heat gain is due to the exchange of energy (enthalpy) during the adsorption process. Some heat is transferred from the hot reactivation sector. In our Recusorb systems, this is minimised by the inclusion of a heat recovery (purge) sector.

Why does the wet air outlet duct feel hot?

As the hot reactivation air picks up moisture from the rotor it is cooled (exchange of enthalpy). Normally the wet air outlet is around 50°C. If the amount of available moisture in the rotor is reduced, then the wet air temperature rises. The wet air temperature alarm is normally set at 70°C to 80°C. Should the rotor drive system fail, the wet air outlet temperature will rise rapidly due to the reduction of enthalpy exchange across the reactivation sector.

Should I use a heat exchanger on the wet air outlet?

The Recusorb system utilises a unique internal heat recovery system as standard. The incoming reactivation air is passed through 15% of the rotor face, gaining some 30% of the total reactivation heat required. The heat recovery sector preheats the reactivation air to about 70°C before the heater, thus increasing overall efficiency of the drying process. There would be nothing gained by installing a cross flow heat exchanger to this system as the wet air outlet temperature is usually lower than the temperature leaving the heatrecovery sector.

Which ducts require insulating?

The wet air duct carries moisture laden air which can have a dewpoint in excess of 30°C. On cold days, condensation can easily occur inside the duct. While insulation will help prevent this, as additional protection against condensate running back to the unit, the duct should either slope away from the dehumidifier or a small drain hole drilled at a duct low point. Insulation of other ducts is optional – depending on system air temperatures.