Desorption in full flow: The EVERDRY® HOC-F Heat Regenerating Adsorption Dryer – for compressors with integrated aftercooler –

Irrespective of where oil-free compressed pressurised air has to be generated, the advantages of the EVERDRY® HOC series impress consistently. Their main benefit:

The heat, which is created during the compression process, is not routed into the aftercooler as in conventional processes but, in this case, utilised for the desorption.

An adsorption dryer which utilises the heat from the compression process to create considerable energy savings is probably the most convincing argument when selecting the perfect product! Systems from the EVERDRY® HOC series function with operating pressure in all process stages. The loads and stresses on the components and drying agents, which are normally caused in conventional systems during pressure changes, do not occur in our systems. This therefore guarantees an extended service life for the system components.

Systems with a volume flow of 100,000 m³/h are also feasible when the customer requires them.

The desorption is executed in EVERDRY® HOC-F in full flow by exploiting the compression heat and the cooling in the full flow and utilising the cold pressurised air in the volume flow. No pressurised air losses for regeneration (ZERO Purge).

<table>
<thead>
<tr>
<th>Model:</th>
<th>HOC-F</th>
<th>HOC-P</th>
<th>HOC-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure dew point</td>
<td>Down to -40 °C</td>
<td>Down to -40 °C</td>
<td>Down to -70 °C</td>
</tr>
<tr>
<td>Quality Class</td>
<td>-2.-</td>
<td>-2.-</td>
<td>-1.-</td>
</tr>
</tbody>
</table>
Heat Regenerating Adsorption Dryer: In-house Engineering for Individual System Solutions

Profile
- Branch and application-specific requirements (e.g. pressurised air quality, volume flows, types of energy for regeneration air heating)
- Investment and operating costs, individual amortisation time
- Local acceptance provisions
- Climate zones, local assignment conditions, economical parameters

Concept
- Specifying the type of system design
- Following on with: Developing Individual solutions

Presentation
- Presenting the solution concept

Implementation
- Implementing the project
- In-house engineering by our experienced, competent team of experts

Commissioning
- Installing the system on site
- Optimum setting up and adjustment for the local circumstances

Continuous exchange of information between the customer and our experts
Support / Consulting / Optimisation

Function Process for EVERDRY® HOC-F

The functional processes for systems of the HOC-F series can be fundamentally divided into three stages:

- Adsorption / Desorption
- Adsorption / Cooling
- Adsorption / Standby

The whole procedure is executed with operating pressure, not only in the adsorption stage but also in the desorption and cooling stages. This enables the resulting compression heat to be utilised for desorption for oil-free compressors for pressurised air.

Adsorption B1 / Desorption B2
The hot pressurised air exiting the compressor flows via the hot air inlet and the valve K1 into the desorbing adsorption vessel B2. The moisture absorbed by the drying agents vaporises and is routed with the pressurised air flow via the valves K6 and K3 to the cooler. The pressurised air is cooled here to the required adsorption inlet temperature.

Any resulting precipitation, which occurs during cooling, will be extracted from the pressurised air system via the separator.

The cooled down pressurised air flow now flows via the valve K7 into the adsorption vessel B1 which has been provided for desorption process. The drying agent bed is flushed through from the bottom to the top during the adsorption process.

The moisture is absorbed by the drying agents during the flow through. The dried pressurised air is then routed via the valve K11 and the system-outlet to the consumer positions.

The moisture level in the drying agent reduces with the desorption process. Decreasing moisture levels result in an increase of the outlet temperature of the desorption air flow. The desorption process is concluded when the temperature of the desorption air flow at the adsorber outlet side (in this case B2) has reached the process-technical required temperature.

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**Adsorption B1 / Cooling B2**

To prevent temperature and dew point peaks after the switch over, the stored heat in the drying agents will be cooled by the cold pressurised air flow after the desorption stage. The cold pressurised air flow exiting the compressor will be routed via the valves K4 and K6 into the heated up drying agent bed. The cold pressurised air flow absorbs the stored heat in the drying agents during the through flow process. The heated up pressurised air from the drying agents then flows to the cooler and is then cooled back down to the adsorption temperature.

The cooled down pressurised air flow flows via the valve K7 into the adsorption vessel B1 which has been provided for adsorption process. The drying agent bed is flushed through from the bottom to the top during the adsorption process. The moisture will be absorbed by the drying agents during the through flow process. The dried pressurised air is then routed via the valve K11 and the system outlet to the consumer positions.

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**Adsorption B1 / Standby B2**

When the adsorption stage is monitored via a dew point dependent control system (optional) and is then completed, then the duration of the standby stage is dependent on the loading status of the adsorption vessel (in this case B1). The switch over process will be only be initiated when the drying agent break-down capacity has been reached (increase in the pressure condensation point). If the system is operated in the “Time-dependent switch over” mode, then the initiation of the switching over process will be executed when the set cycle time has expired.

**Switching Over Procedure**

The switch over for the adsorption to the regenerating vessel (in this case B2) is executed after completion of the standby stage. The vessel saturated with moisture B1 is now located in the desorption stage while the adsorption vessel B2 assumes the role for drying the pressurised air.

**Parallel Stage**

Before the switching over process is executed for the adsorption vessel (in this case B1 to B2), this will be switched into parallel function by simultaneously opening the inlet valves K5, K6, K11 and K12 accordingly. The pressurised air flows over both adsorption vessels for approx. 5 – 15 minutes (can be set individually).
The Heat Regenerating Adsorption Dryer:
At home throughout the world.

Do you have questions about the best way of processing your compressed air?

We have the answers! We offer efficient solutions for any type of processing chain. Please contact us with your queries. We would be delighted to tell you more about our condensate treatment, filtration, drying, measuring and process technology, and our comprehensive services.

Visit us at

YouTube

BEKO TECHNOLOGIES Ltd
Unit 11-12 Moons Park
Burnt Meadow Road
North Moons Moat
Redditch, B98 9PA

Phone +44 (0) 1527 575778
info@beko-technologies.co.uk
www.beko-technologies.co.uk

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