Drying | EVERDRY® HOC-P

Regeneration in Partial Flow: the Heat Regenerating Adsorption Dryer EVERDRY® HOC-P

Irrespective of where oil-free compressed pressurized 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, utilized for the regeneration.

An adsorption dryer that utilizes 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 60,000 SCFM are also feasible when required.

Desiccant regeneration is executed in EVERDRY® HOC-P in partial flow by exploiting the compression heat and the cooling in the partial flow and utilizing the cold pressurized air in the volume flow.
No pressurized air is lost for regeneration (ZERO Purge).

Model:	HOC-F	HOC-P	HOC-R
Pressure dew point	Down to -40 °F	Down to -40 °F	Down to -94 °F
Quality Class	-.2.-	-.2.-	-.1.-

› Application Oriented Solutions

- › Added value by utilizing comprehensive competence
- › Total concept instead of just individual components
- › Informative and user-friendly control systems
- › Easy to maintain

› Reliable Process Management

- › Safe function monitoring with sensor technology
- › Galvanized pipe spools
- › Tried and tested, easy to maintain heat exchanger design
- › Optional stainless steel version

› Energy-optimized Concept

- › Utilization of compression heat
- › No pressurized air losses for regeneration
- › Beneficial individual valves
- › Energy-efficient dew point control system

› Durable and Efficient

- › The systems function with operating pressure in every process stage
- › No cyclic loads and stresses on components and the drying agents during pressure changes

Heat Regenerating Adsorption Dryer: In-house Engineering for Individual System Solutions

Profile

- Branch and application-specific requirements (e.g. pressurized 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

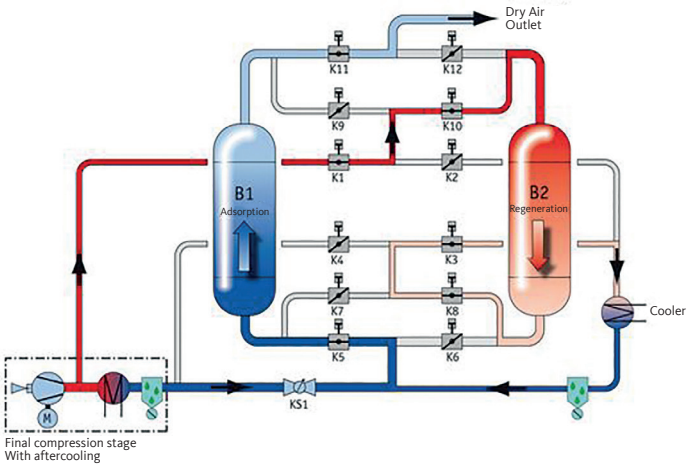
- Installing the system on site
- Optimum setting up and adjustment for the local circumstances

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

Function Process for EVERDRY® HOC-P

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

- **Adsorption / Regeneration**
- **Adsorption / Cooling**
- **Adsorption / Standby**



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

Adsorption B1 / Regeneration B2

The hot compressed air partial flow exiting the compressor flows via the hot air inlet **K1**and the valve **K10** into the regenerating vessel **B2**. The moisture absorbed by the drying agents vaporizes and is routed with the regeneration air partial flow via the valves **K8** and **K3** to the cooler. The compressed air is cooled here to the required adsorption inlet temperature. Any resulting precipitation, which occurs during cooling, will be extracted from the compressed air system via the separator. The cooled regeneration air partial flow then flows into the cold air partial flow from the compressor downstream of the throttle valve **KS1**.
The partial air flow needed for regeneration can be adjusted manually via the throttle valve **KS1**.

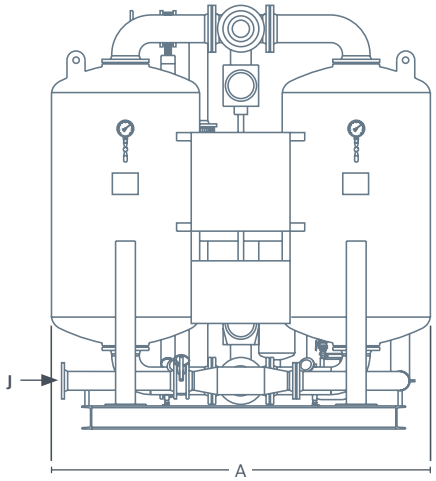
The volume flow now corresponds to that of the compressor's volume flow again. The entire compressed air flow is guided through the valve **K5** into the adsorption vessel **B1** which has been provided for adsorption process. The drying agent bed is flushed through from the bottom to the top during the adsorption process. The moisture will be absorbed by the desiccant during the through flow. The dried compressed air is then routed via the valve **K11** and the system outlet to the consumer positions.

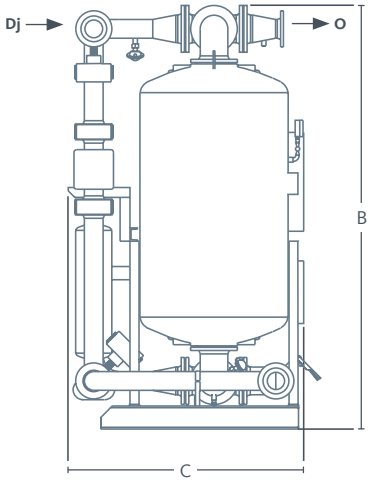
The moisture level in the drying agent reduces with the regeneration process. Decreasing moisture levels result in an increase of the outlet temperature of the regeneration air flow.
The regeneration process is concluded when the temperature of the regeneration air flow at the adsorber outlet side (in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

EVERDRY® HOC-P

- Fully automated for continuous operation
- Regeneration in a partial flow using the compression heat
- Cooling via the partial flow of the cold compressed air volume flow
- Hot and cold air from the compressor
- Designed for indoor installation
- Flow-optimized valves to minimize the pressure loss

TRUE ZERO PURGE





EVERDRY®	HOC-P 0750	HOC-P 1100	HOC-P 1700	HOC-P 2300
Volume flow rate (SCFM)	470	765	1000	1350
Connection 150# Flange (in): J – O	2	3	3	4
Connection 150# Flange (in): Dj	2	3	3	3
Dimensions				
A (in)	56	63	71	81
B (in)	84	83	89	96
C (in)	41	47	53	61
Weight (lb)	2420	3190	4070	5060

Dj: hot air inlet
J: cold air inlet
O: dry air outlet

Notice: the table only shows standardised installation sizes.
Systems up to 60,000 SCFM on request

Operating conditions*	
Medium	Compressed air
Volume flow (Vnom)	14.5 PSIG, 68°F, 0% RH
Operating pressure	100 PSIG
Inlet temperature	100 °F
Inlet humidity	saturated
Pressure dew point	up to –40 °F
Cooling water	77 °F

Electrical connection*	
Power supply	3 Ph. | 460 V | 60 Hz
Connected load	0.15 kW (control panel only)
Protection class	NEMA 4 (no explosion protection)
Version	UL
Permissible voltage deviation	+/– 10 %

* Different conditions on request

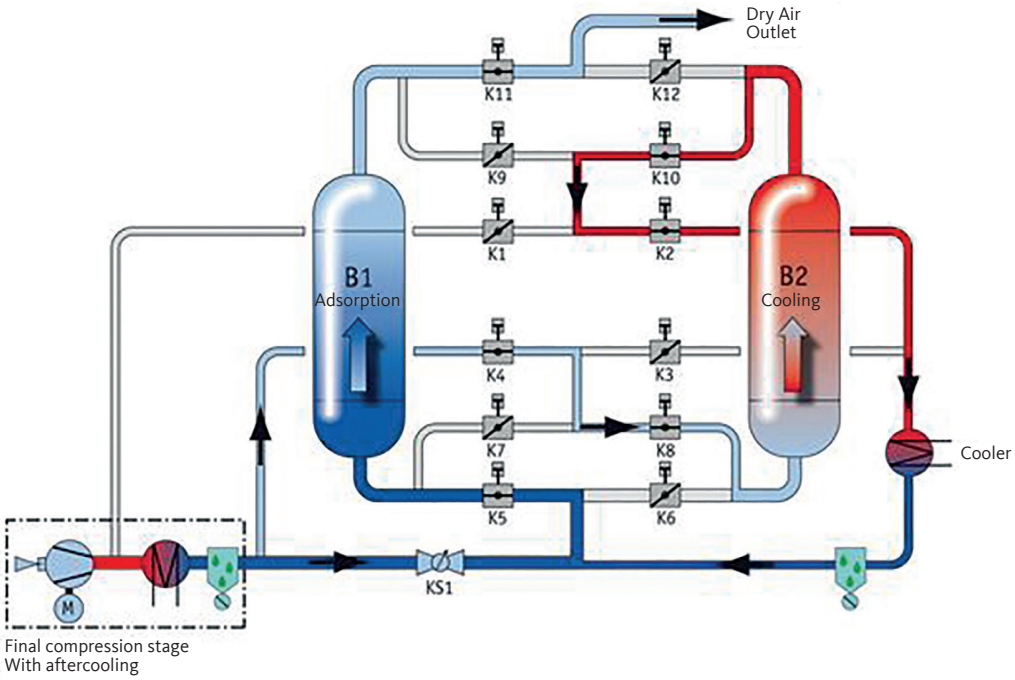
Limits of use*	
Operating pressure	73-150 PSIG
Final compression temperature	284-356 °F
Ambient temperature	40 ... 104 °F
Maximum cooling water temperature	90 °F

EVERDRY®	HOC-P 2900	HOC-P 3400	HOC-P 4200	HOC-P 5000	HOC-P 6000
Volume flow rate (SCFM)	1700	2000	2470	2950	3530
Connection 150# Flange (in): J – O	4	4	6	6	6
Connection 150# Flange (in): Dj	3	4	4	6	6
Dimensions					
A (in)	81	114	136	173	118
B (in)	96	99	103	106	109
C (in)	67	65	71	73	77
Weight (lb)	5,830	6,380	7,590	8,580	9,680

Dj: hot air inlet
J: cold air inlet
O: dry air outlet

Adsorption B1 / Cooling B2

To prevent temperature and dew point spikes after the switch over, the stored heat in the drying agents will be cooled by the cold compressed air partial flow after the regeneration stage. The cold compressed air partial flow exiting the compressor will be routed via the valves **K4** and **K8** into the heated up drying agent bed. The cold compressed air partial flow absorbs the stored heat in the drying agents during the through flow process. The compressed air partial flow heated up by the desiccant flows to the cooler where it is cooled back down to the adsorption temperature. The cooled cooling air partial flow then flows into the cold air partial flow from the compressor downstream of the throttle valve **KS1**. The volume flow now corresponds to that of the compressor's volume flow again. The entire compressed air flow is guided through the valve **K5** 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 is adsorbed by the drying agents during the flow through.
The dried compressed air is then routed via **K11** and the system outlet to the consumer positions.



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.

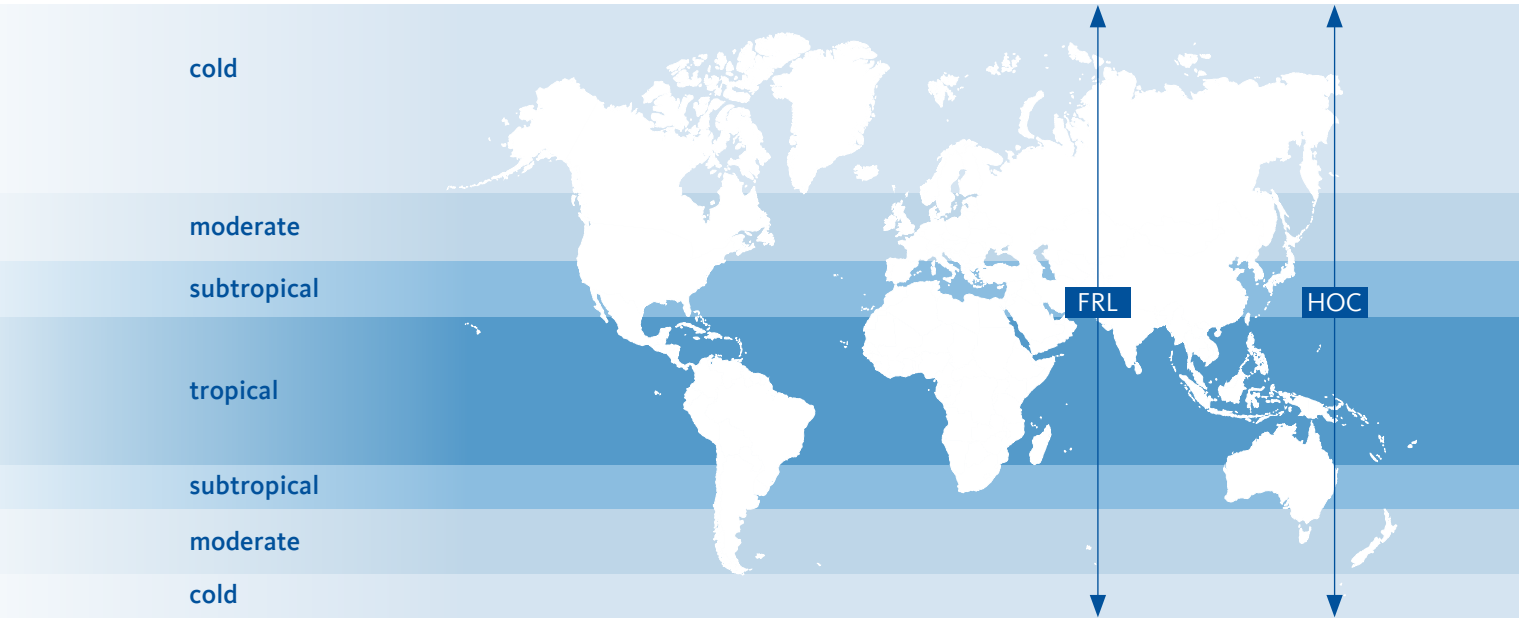
Parallel Stage

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 pressurized air flows over both adsorption vessels for approx. 5 – 15 minutes (can be set individually).

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 in the regeneration stage while the adsorption vessel **B2** is responsible for drying the compressed air.

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.

BEKO TECHNOLOGIES CORP.
900 Great Southwest Pkwy SW
Atlanta, GA 30336
USA

Phone +1 (404) 924-6900
www.bekousa.com

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