Donaldson
FILTRATION SOLUTIONS

HEATLESS ADSORPTION DRYERS ULTRAPAC™ HL

DRY COMPRESSED AIR FOR YOUR APPLICATION

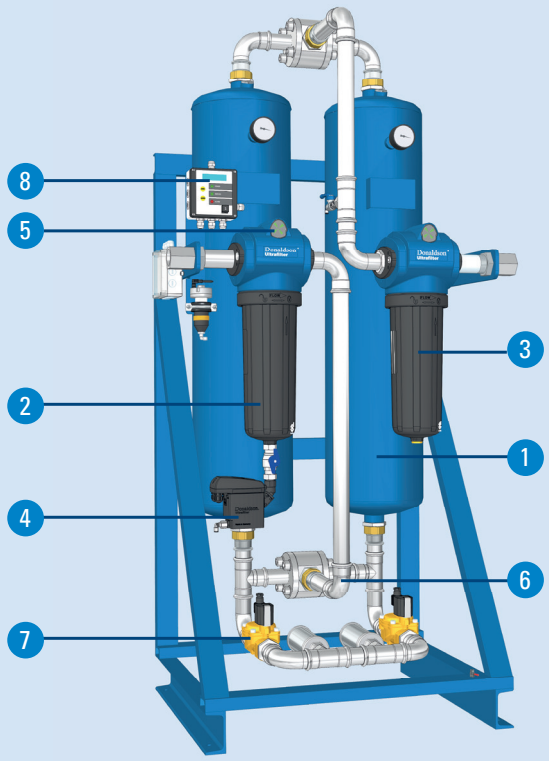
Adsorption Drying – why?

Only dry compressed air is also clean compressed air, because the moisture in the compressed air network conjoins dirt particles, which could lead to corrosion, production downtimes and losses in theproduction quality.

Donaldson's high efficiency adsorption dryers remove moisture from the compressed air and therefore guarantee an efficient and secure production process. State-of-the-art technology and selected materials are the basis for high operational safety. The Ultrapac is equipped with a control system, pre- and afterfilter, condensate drain and silencer.

Maximum efficiency and the highest operational safety, coupled with low operational costs are attributes that convey the advantages of the adsorption dryer. The areas of application are diverse and are matched to the exact requirements of the customer.

The time-controlled adsorption dryer without capacity control operates with a predetermined cycle time for which the dryers are designed, irrespective whether the desiccant might be utilized to the maximum. The dryer's requirement for regeneration air (energy consumption of compressed air) therewith remains constant.



1. Adsorber
2. Prefilter
3. Afterfilter
4. Automatic codensate drain UFM-D
5. Differential pressure gauge
6. Shuttle valve
7. Solenoid valve with silencer
8. Control

Adsorption dryers are always applied where highly purified and dry compressed air is required in accordance with ISO 8573-1.

Examples of application areas:

- Food processing
- Beverage
- Pharmaceutical
- Medical
- Industrial machinery
- Plastic industry
- Laser cutting
- Packaging and bottling
- Packaging
- Optical measuring machines
- Automotive
- Energy

ENERGY-SAVING CONTROL

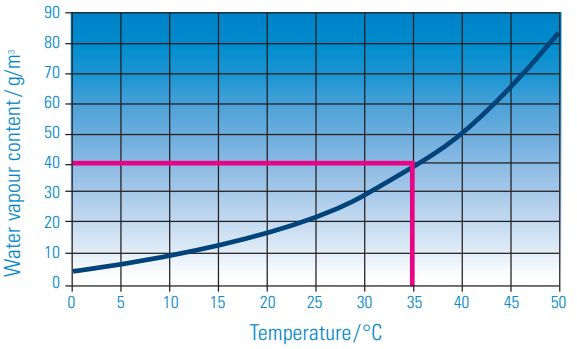
The water load of the dryer depends on the actual operational conditions. If the inlet conditions, airflow, pressure or ambient temperatures vary, the amount of the water loading will also vary.

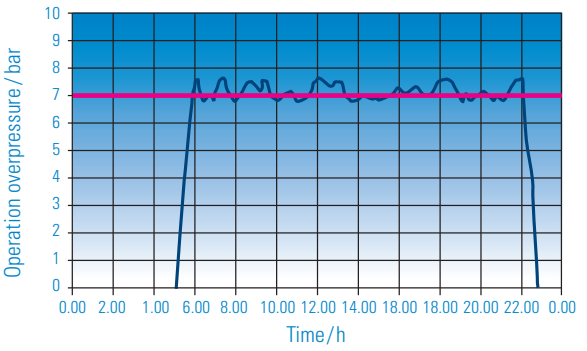
With a continual dewpoint measurement at the outlet of the dryer, the "Ultraconomy" energy-saving control will determine the actual amount of moisture that enters the dryer and will assess the optimum time when the dryer requires regenerating whilst maintaining a constant selected dewpoint.
This leads to considerable savings in regeneration air. An example exemplifies this: a dryer designed for 100 m^3/h, 35 °C inlet temperature and 7 bar (g) operational pressure uses approx. 15 m^3/h regeneration air during a fixed cycle.

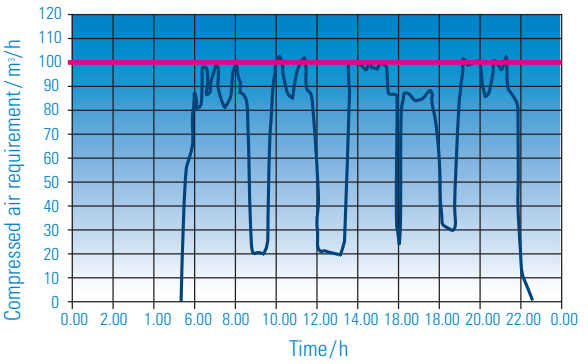
At an average compressed air requirement of 60 %, an average inlet temperature of 30 °C and average pressure of 7.2 bar the water load only still amounts to approx. 45 % of the original value. On average the dryer is now only using 6.75 m^3/h and is therewith saving 8.25 m^3 per hour. According to compressor type and condition this is equivalent to a power consumption of up to 1 kW.

At a full cost price of 3 cents per m^3 of generated compressed air and 8,000 operating hours per year the saving amounts to Euro 1,980.

Individual dryer configuration as per customer's requirements and tailor-made solutions, also for other industrial gases available on request





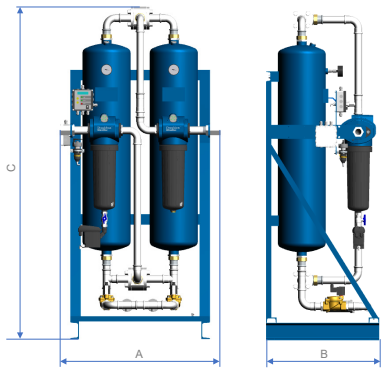


Options: Ultrapac HL-ALD/HL-MSD

- Alternative power supply (24 V DC, 110 V AC)
- Dryers as silicone and separating agent free models
- Purge orifice for specific operating pressure
- 4…20 mA output dewpoint signal
- Tropical version
- -70°C pressure dewpoint measuring system
- Packaging options

ULTRAPAC HL TECHNICAL DATA

Type HL-ALD/ HL-MSD	Nominal inlet flow m³/h (1 bar, 20 °C)*	Average reg. air flow m³/h (1 bar, 20 °C)		Connection DN "	Dimensions		
		HL-ALD	HL-MSD		Width (A) mm	Depth (B) mm	Height (C) mm
0100	100	15.0	20	G 1	705	450	1600
0150	150	23.0	30	G 1	705	450	2025
0175	175	26.3	35	G 1	910	650	1900
0225	225	34.0	45	G 1 1/2	920	650	1900
0300	300	45.0	60	G 1 1/2	920	650	1890
0375	375	56.0	75	G 1 1/2	920	650	2220
0550	550	83.0	110	G 2	1190	750	2220
0650	650	98.0	130	G 2	1190	750	2220
0850	850	128.0	170	G 2	1320	850	2320
1000	1000	150.0	200	G 2	1320	850	2340



* Related to the intake of the compressor +20 °C, 1 bar abs., at a compressed air inlet temperature of +35 °C and 7 bar (g) operating pressure.

Sizing

Type	Pressure dewpoint	Inlet temperature	Operating overpressure (bar)												
			4	5	6	7	8	9	10	11	12	13	14	15	16
HL-ALD	-40 °C*	25 °C	0.75	0.90	1.05	1.20	1.35	1.50	1.65	1.80	1.95	2.10	2.25	2.40	2.55
		30 °C	0.69	0.83	0.96	1.10	1.24	1.38	1.51	1.65	1.79	1.93	2.06	2.20	2.34
		35 °C	0.63	0.75	0.88	1.00	1.13	1.25	1.38	1.50	1.63	1.75	1.88	2.00	2.13
HL-MSD	-40 °C/-70 °C*	25 °C	0.75	0.90	1.05	1.20	1.35	1.50	1.65	1.80	1.95	2.10	2.25	2.40	2.55
		30 °C	0.69	0.83	0.96	1.10	1.24	1.38	1.51	1.65	1.79	1.93	2.06	2.20	2.34
		35 °C	0.63	0.75	0.88	1.00	1.13	1.25	1.38	1.50	1.63	1.75	1.88	2.00	2.13
		40 °C	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70
		45 °C	0.44	0.53	0.61	0.70	0.79	0.88	0.96	1.05	1.14	1.23	1.31	1.40	1.49
		50 °C	0.31	0.38	0.44	0.50	0.56	0.63	0.69	0.75	0.81	0.88	0.94	1.00	1.06

* Depending on operating conditions and sizing

Example: $\dot{V}_{nom}$ = 200 m³/h, Inlet temperature = 30 °C, Operating pressure = 10 bar, Pressure dewpoint = -40 °C
Calculated dryer size: Ultrapac HL-ALD 0150

$$\dot{V}corr = \frac{\dot{V}nom}{f} = \frac{200\ m^3/h}{1{,}51} = 132{,}5\ m^3/h$$

Donaldson® Ultrafilter

Compressed Air Filtration · Filters for Sterile Air, Steam and Liquids · Refrigerant Drying · Adsorption Drying · Condensate Drains · Condensate Purification Systems · Process Air and Gas Processing

Donaldson FILTRATION SOLUTIONS

Total Filtration Management
Donaldson offers a wide variety of solutions to reduce your energy costs, improve your productivity, guarantee production quality and help protect the environment.

Total Filtration Service
A comprehensive range of services keeps your production at peak performance and at the lowest total cost of ownership.

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