KAESER COMPRESSORS

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Refrigeration Dryers THP Series

Flow rate 0.8 to 106.1 m³/min, Pressure up to 50 bar

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Why is it necessary to dry compressed air?

The atmospheric air drawn into a compressor is a mixture of gases that always contains water vapour. The amount of water vapour air can carry varies and is mostly dependent on temperature.

As air temperature rises – which occurs during compression – the air's capability to hold moisture increases also. When the air is cooled its capacity to hold moisture reduces, which causes the water vapour to condense.

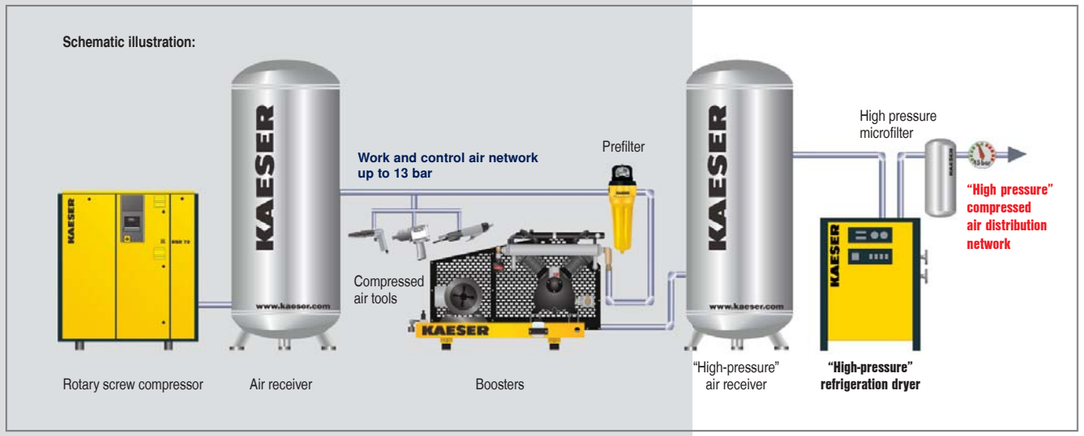
This condensate is then removed in the downstream centrifugal separator or the air receiver. Even then, the air is often still completely saturated with water vapour. This is why, as the air cools further, significant amounts of condensate can accumulate in the air distribution piping and at take-off points.

Therefore, additional drying is essential to avoid production downtime and interruptions, as well as reduce costly maintenance and repair work. Refrigeration drying is usually the most efficient solution for the majority of compressed air applications.

Up to 50 bar: THP series refrigeration dryers

As with lower pressure applications, the following also applies for compressed air at higher pressures, e.g. for blowing air and PET container production: If a pressure dew point of +3 °C is sufficient to meet the application's needs, then a modern compressed air refrigeration dryer provides the most efficient and economical solution for compressed air drying.
KAESER KOMPRESSOREN offers an impressive range of compressed air refrigeration dryers for flow rates up to 106 m³/min and pressures up to 50 bar. Designed and constructed to the very highest quality standards, KAESER THP series dryers deliver outstanding reliability and can be seamlessly integrated as part of an efficient KAESER compressed air system solution.

Application example for a "high pressure" refrigeration dryer



THP – Outstanding quality

Standard version
THP 40-50

Powerful cooling systems

The refrigeration dryers in THP series units feature powerful cooling systems. These include a high quality refrigerant compressor, generously-dimensioned heat exchanger surfaces, as well as cleverly designed cooling air flow. This combination therefore ensures dependable operation even at high temperatures and guarantees stable pressure dew points at all times.

Flow-optimised piping

The smaller the pressure differential within a dryer, the more efficient its performance. All THP dryers operate with exceptionally low pressure differential values thanks to quality, flow-optimised stainless steel piping.

ECO-DRAIN: High pressure version

The 45 bar THP series dryer is equipped as standard with a high pressure version of the ECO-DRAIN 12 condensate drain. This ensures even more efficient condensate removal without any pressure loss and also saves energy. The electronic condensate drain is optionally available for the 50 bar models.

Dependable performance even at high ambient temperatures

The quality of a refrigeration dryer is best judged by how effectively and reliably it can separate condensate, particularly at high ambient temperatures. With this in mind, the developers at KAESER KOMPRESSOREN created the THP refrigeration dryer series: Featuring a highly efficient refrigeration circuit and a corrosion-resistant copper soldered stainless steel plate heat exchanger, these dryers are designed for optimum performance. The key aim of any refrigeration dryer is to provide reliable condensate separation, which is why KAESER uses a separate stainless steel condensate separator. The flow-optimised piping also ensures minimal pressure differential. KAESER refrigeration dryers combine all of these features to ensure exceptional air treatment in accordance with EN 60204-1, which means dependable, sustained pressure dew point performance of +3 °C even at high ambient temperatures up to +43 °C.

Technical specifications

Model *	Flow rate at max. working pressure ** m³/min	Pressure loss ** bar	Effective power consumption ** kW	Refrigerant	Electrical connection	Air connection (inner thread)	Condensate outlet	Dimensions W x D x H mm	Weight kg
...up to 45 bar * **									
THP 85-45	8.5	0.26	1	R 134 a	400V 3 Ph 50 Hz	DN 25	R 1/2	1036 x 1128 x 1277	168
THP 142-45	14.2	0.4	1.46			DN 25			172
THP 212-45	21.2	0.5	1.6			DN 40			211
THP 283-45	28.3	0.81	2.55			DN 50		1036 x 1144 x 1277	218
THP 354-45	35.4	0.74	4.48	R 404 a		DN 50			268
THP 496-45	49.6	0.65	5.6			DN 80		1362 x 1588 x 1464	465
THP 565-45	56.6	0.81	8.02			DN 80			590
THP 850-45	85	0.81	10.21			DN 80			710
THP 1061-45	106.1	0.74	13.36			DN 80			719
...up to 50 bar * **									
THP 8-50	0.8	0.25	0.23	R 134 a	230V 1 Ph 50 Hz	R 1/2	R 1/4	501 x 521 x 660	39
THP 13-50	1.3	0.2	0.27						41
THP 18-50	1.8	0.22	0.42						43
THP 27-50	2.7	0.27	0.59						48
THP 40-50	4	0.25	0.68			R 1 1/2		651 x 500 x 955	114
THP 50-50	5	0.28	0.95						127

*) Max. air inlet-/ambient temperature 50/43 °C – **) Performance data for reference conditions as per DIN/ISO 7183, Option A1: Max. operating pressure, ambient temperature +25 °C, compressed air inlet temperature +35 °C, pressure dew point +3 °C. Flow rates and differential pressure differ for other operating conditions. – ***) The max. operating pressure is reduced to 40 bar for inlet temperatures of +50 °C and higher

Correction factors for deviating operating conditions (Flow rate as per DIN / ISO in m³/min x Correction factor c...)

Correction factors for other working pressures

Working pressure (bar)	3	4	5	6	7	8	9	10	11	12	13	14	15	16
k_p	0.75	0.84	0.9	0.95	1	1.04	1.07	1.1	1.12	1.15	1.17	1.19	1.21	1.23

Correction factors for deviating inlet temperatures

Temperature (°C)	30	35	40	45	50	55	60
k_{Ti}	1.18	1.0	0.84	0.73	0.64	0.55	0.49

Correction factors for deviating ambient temperatures

Temperature (°C)	25	30	35	40	45
k_{Ta}	1	0.95	0.89	0.84	0.78

(Please consult KAESER regarding additional correction factors)

KAESER KOMPRESSOREN SE
P.O. Box 2143 – 96410 Coburg – GERMANY – Tel +49 9561 640-0 – Fax +49 9561 640130
e-mail: productinfo@kaeser.com – www.kaeser.com