KAESER COMPRESSORS

Refrigeration Dryers TG – TI Series

Flow rate 30.8 to 90 m³/min

TG – TI series

Energy-saving refrigeration dryers

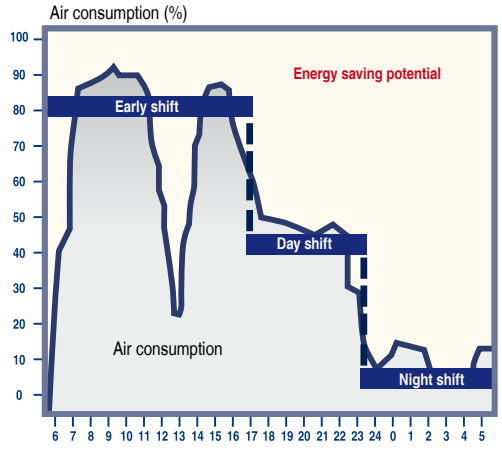
Most compressed air applications require dried compressed air with a pressure dew point of around +3 °C. In addition, the required degree of dryness should be maintained reliably even at high ambient temperatures and should be achieved as efficiently as possible. Energy saving refrigeration dryers from KAESER meet all of these requirements and more.

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. However, the amount of water vapour that air can carry depends on the temperature. As air temperature rises, which occurs during compression, the air's ability to hold moisture increases also. When the air is cooled, its capacity to hold moisture reduces which causes the water vapour to condense. Removing the moisture from the compressed air not only prevents costly breakdowns and production downtime, but also keeps maintenance and repair costs to a minimum.

Exceptional efficiency

Refrigeration drying is usually the most efficient solution for the majority of compressed air applications. Air-drying is now made even more cost-effective with KAESER'S advanced energy-saving system.



The innovative energy-saving system

KAESER's patented energy saving system was designed with optimum performance in mind: In contrast to comparable refrigeration drying systems, energy-saving refrigeration dryers from KAESER are equipped with high efficiency refrigerant compressors. Needless to say, this added user advantage makes a significant contribution towards overall system efficiency.

Energy savings with KAESER

For example: **TH 451** - at an assumed flow rate of 40 %

Annual energy saving: 5,238 €/year
Power consumption TH 451: 2.5 kW
Power consumption of comparable dryer with hot gas bypass control: 5.9 kW x 93 % = 5.49 kW
(5.49 kW - 2.5 kW) x 8760 h/year x 0.20 €/kWh

CO_2 reduction: 15.7 t CO_2/year
157 t CO_2/10 years (1000 kWh energy = 0.6 t CO_2 emissions)

Savings all day, every day

KAESER energy saving dryers consume electrical power only when actually drying air. The energy-saving control uses a combination of compressed air temperature measurement, programmable logic control and a refrigerant compressor that adjusts the size of its compression chamber according to flow volume. Electrical power consumption is directly proportional to air flow rate. For example, at 40% maximum air flow rate, electrical power consumption is only 43% of rated maximum. Energy-saving dryers from KAESER KOMPRESSOREN therefore enable significant savings of several thousand Euro per year.

Efficient compressed air drying

Image: TI 521

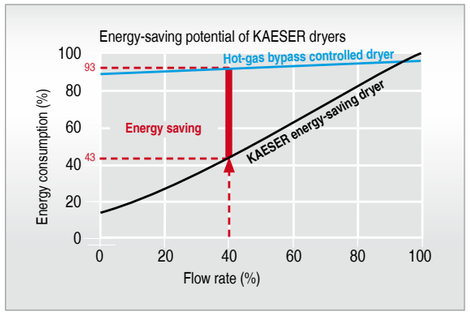
Filters are often installed both up- and downstream from conventional refrigeration drying systems to prevent contamination / blockages. This is not necessary however with TG-TI series dryers.

TG – TI series

Efficient and durable

High efficiency refrigerant compressor

A calibrated solenoid valve adjusts the size of the refrigerant compressor's compression chamber according to the volume and temperature of the compressed air to be cooled. This means that the compressor uses only as much energy as necessary to meet actual cooling requirements.



Daily power savings

Energy-saving dryers from KAESER enable significant savings all day, every day. For example, at 40 % air-flow they consume only 43 % of their nominal energy requirement. This results in significant annual savings of several thousand Euro compared with conventional compressed air drying systems.

Premium quality plate heat exchanger

The air/air and air/refrigerant stainless steel plate heat exchangers were specially developed for use in refrigeration dryers. Generously sized copper piping ensures minimal pressure drop and saves additional energy as a result.

Industrial quality control cabinet

Every Kaeser energy-saving dryer is EN 60204-1 compliant and is tested for electromagnetic compatibility in accordance with applicable EMC standards. Unlike equipment conforming to VDE 0700, TG-TI series dryers meet the demanding requirements associated with industrial applications.

Equipment

General design

Tower layout with removable side panels; all panels powder-coated. All cold components are thermally insulated and all materials used are CFC-free. The integrated control cabinet contains a programmable logic controller. The dryer is equipped with stainless steel air-to-air and air-to-refrigerant heat exchangers, internal compressed air copper piping, a condensate separation system, an electronic condensate drain and top-positioned air connecting flanges. Scope of delivery includes refrigerant and oil charge.

Control panel

Display of energy savings, current flow rate and pressure dew point, two-line plain text display, three LED status indicators, ten selectable languages, ON/OFF key, test key for the electronic condensate drain, three timer programming keys for timer, reset key and main switch.

Refrigerant circuit

Hermetically-sealed refrigerant circuit, scroll refrigerant compressor with variable refrigerant compression.

Stainless steel heat exchanger

The air/air and air/refrigerant heat exchangers are manufactured from premium quality stainless steel to ensure long service life and minimal maintenance requirement.

Options

- Integrated stainless steel FE microfilter downstream from the separator, located at the coldest point
- Water-cooled version
- Additional language modules available for control panel
- Profibus converter
- Pressure dew point monitoring
- 1 and 5 year maintenance packages

Technical specifications

Model	Flow rate at 7 bar Working pressure	Max. working pressure	Effective power consumption at 100% flow rate	Effective power consumption at 40% flow rate	Air connection	Condensate outlet	Dimensions in mm	Weight
	m^3/min	bar	kW	kW			W x D x H	kg
TG 301	30.8	16	3.1	1.3	DN 80	2 x R 3/4	1032 x 1270 x 2162	520
TH 371	37.5	16	4.3	1.8	DN 100	2 x R 3/4	1287 x 1270 x 2162	690
TH 451	45.0	16	5.9	2.5	DN 100	2 x R 3/4	1287 x 1270 x 2162	690
TI 521	52.5	16	6.7	2.9	DN 150	2 x R 3/4	1510 x 1438 x 2162	880
TI 601	60.0	16	7.5	3.2	DN 150	2 x R 3/4	1510 x 1438 x 2162	880
TI 751	75.0	16	9.4	4.0	DN 150	2 x R 3/4	1510 x 1438 x 2162	1050
TI 901	90.0	16	11.5	4.9	DN 150	2 x R 3/4	1510 x 1438 x 2162	1200

Power supply 400 V, 50 Hz, 3 Ph – Refrigerant R 404a

Performance data for reference conditions to ISO 7183, option A1: Ambient temperature + 25 °C, air inlet temperature + 35 °C, pressure dew point + 3 °C. The flow rate changes for other operating conditions.

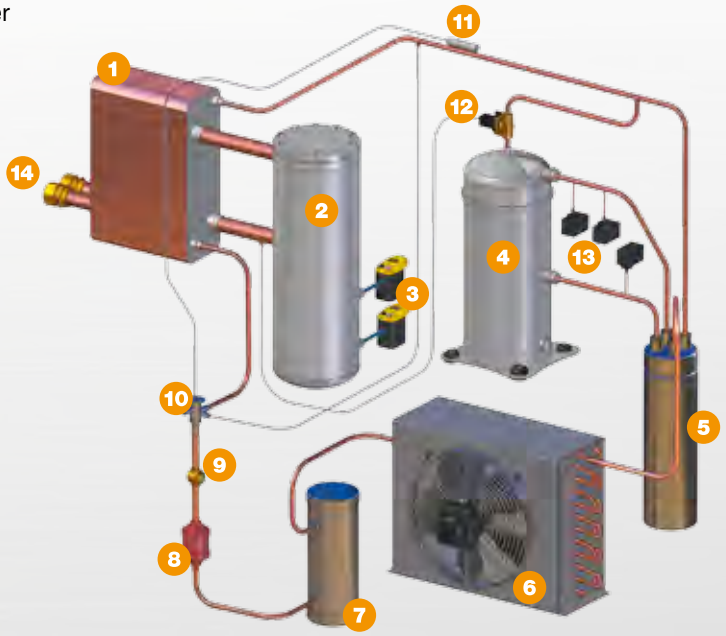
Correction factors for flow rates

Ambient temperature	+ 25 °C	+ 30 °C	+ 35 °C	+ 40 °C	+ 45 °C	–
Correction factor	1.0	0.94	0.89	0.83	0.78	–

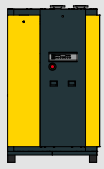
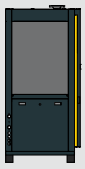
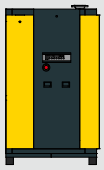
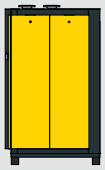
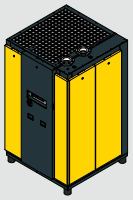
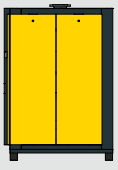
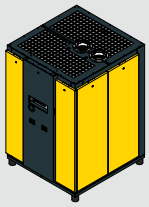
Air inlet temperature			+ 25 °C	+ 30 °C	+ 35 °C	+ 40 °C	+ 45 °C	+ 50 °C
Pressure	3 bar	Correction factor	1.32	1.02	0.81	0.65	0.54	0.44
	5 bar		1.47	1.15	0.93	0.76	0.63	0.53
	7 bar		1.56	1.23	1.00	0.83	0.70	0.59
	9 bar		1.61	1.28	1.05	0.88	0.74	0.63
	11 bar		1.67	1.33	1.10	0.92	0.79	0.68
	13 bar		1.72	1.38	1.14	0.97	0.83	0.72

Function diagram for TG, TH and TI series refrigeration dryers

1. Combined air/air and air/refrigerant heat exchanger
2. Condensate separator
3. ECO DRAIN condensate drain
4. Digital scroll refrigerant compressor
5. Fluid separator
6. Condenser
7. Refrigerant collector tank
8. Filter dryer
9. Sight glass
10. Expansion valve
11. Expansion valve sensor
12. Performance control valve
13. Pressure switch for high/low pressure and fan
14. Compressed air inlet/outlet



Views

Front view	Rear view	View from left	View from right	3-D view
TG 301 Series				
				
TG 371 / TH 451 Series				
				
TI 521 to TI 901 Series				
				

KAESER – The world is our home

As one of the world's largest manufacturers of rotary screw compressors, KAESER KOMPRESSOREN is represented throughout the world by a comprehensive network of branches, subsidiary companies and authorised partners in over 100 countries.

With innovative products and services, KAESER KOMPRESSOREN's experienced consultants and engineers help customers to enhance their competitive edge by working in close partnership to develop progressive system concepts that continuously push the boundaries of performance and compressed air efficiency. Moreover, the decades of knowledge and expertise from this industry-leading system provider are made available to each and every customer via the KAESER group's global computer network.

These advantages, coupled with KAESER's worldwide service organisation, ensure that all products operate at the peak of their performance at all times and provide maximum availability.

LGA InterCert
Certified QM/EM System
ISO 9001:2008 / ISO 14001:2004

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