

# Rotary Screw Compressors SM Series

With the world-renowned SIGMA PROFILE 

Free air delivery 0.30 to 1.50 m³/min, Pressures 8 / 11 / 15 bar



# SM Series

## SM: Long-term savings

Today's users expect maximum availability and efficiency from their compressors, regardless of size. SM series rotary screw compressors meet all of these needs and more. Not only do they deliver more compressed air for less power consumption, but they also combine ease of use and maintenance with exceptional versatility and environmentally responsible design.

### More air for your money

Kaeser's engineers have significantly boosted the performance of SM series compressors compared to previous models. This impressive feat has been achieved both through airend optimisation and the minimisation of internal pressure losses.

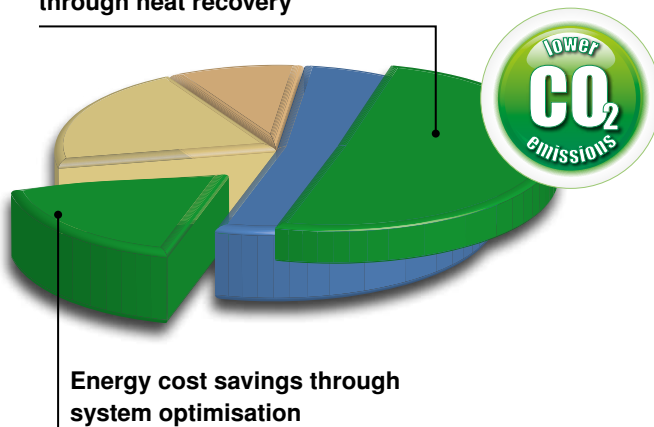
### Energy-saving performance

The efficiency of a machine depends on the total costs incurred throughout the equipment's entire service life. With compressors, energy costs account for the lion's share of total expenditure. Kaeser therefore designed its SM series compressors with optimum energy efficiency in mind. Refinements to the energy-saving Sigma Profile airend rotors and the use of IE3 premium efficiency motors have significantly contributed to the increased performance of these versatile compressors. The addition of the SIGMA CONTROL 2 internal controller and Kaeser's unique cooling system have helped to push the boundaries of efficiency even further.

### Optimised design

The new SM models all share logical and user-friendly design throughout. For example, the left-hand enclosure panel can be removed in a few simple steps and allows excellent visibility of the system's intelligently laid out components. Needless to say, the new SM series was designed to ensure best possible access to all service points. When closed, the sound-absorbing compressor enclosure keeps operational sound levels to a minimum thereby ensuring a pleasantly quiet work environment. In addition, the enclosure features four inlet openings for separate airflow cooling of the compressor, the motor and the control cabinet and for compressor intake air. Last, but not least, SM series compressors are impressively compact, which makes them the perfect choice for applications where space is at a premium.

Potential energy cost savings through heat recovery



- Compressed air system investment
- Maintenance costs
- Energy costs
- Potential energy cost savings

## Quiet, dependable performance



Fig.: SM 12



# SM Series

**Design is in the details**



## SIGMA PROFILE airend

At the heart of every SM system lies a premium quality airend featuring Kaeser's SIGMA PROFILE rotors. With optimised flow characteristics, these rotors play a key role in setting the new standard in specific power performance.



## Maximum efficiency: IE3 motors

Kaeser rotary screw airends are powered by IE3 drive motors for maximum performance and reliability. Use of these motors will become mandatory in the EU from the 1st of January 2015, but users can already enjoy the benefits that these premium efficiency motors have to offer by choosing Kaeser SM series rotary screw compressors.



## SIGMA CONTROL 2

The SIGMA CONTROL 2 ensures efficient control and system monitoring. The large display and RFID reader provide effective communication and maximum security. Multiple interfaces offer exceptional flexibility, whilst the SD card slot makes updates quick and easy.



## Dual-flow fan

The dual-flow fan supplies cooling air to both the drive motor and the entire package. Crescent-shaped fan blades help keep operating sound levels to an absolute minimum.



# SM T (SFC) Series

**Also available with refrigeration dryer and variable speed control**



Fig.: SM 12 T



## SM with energy-saving dryer

The compressed air refrigeration dryer is installed in a separate enclosure to shield it from heat radiated by the compressor; this design approach therefore enhances reliability. The automatic dryer shutdown feature further aids energy-efficient performance.



## Variable speed control also available

The use of variable speed control can provide definite advantages for specific applications, which is why the SM 12 is also available with this feature. The frequency converter is integrated into the compressor system's control cabinet.



## Even quieter

The new cooling system provides outstanding cooling performance and enables optimum sound-proofing. Normal conversation can take place right next to the running compressor.



## Maintenance friendly

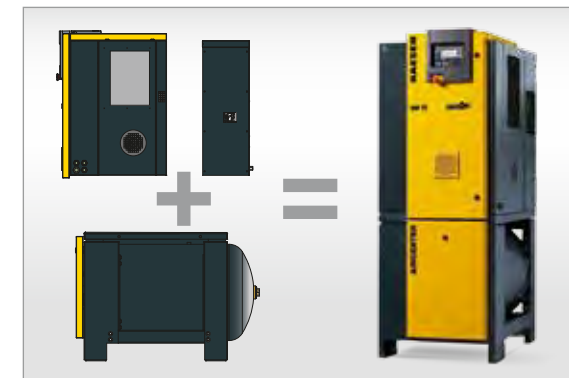
All maintenance work can be carried out from one side of the unit. The left housing cover is easily removed to allow excellent component accessibility.



Fig.: AIRCENTER 12

# AIRCENTER

## The compact and efficient compressed air package



### Connect and go

All this compact compressed air package needs is to be connected to the power supply and compressed air distribution network. That's it!



### Long-lasting air receiver

The 270-litre air receiver is especially designed for installation in AIRCENTER systems. All inner and outer surfaces are coated to provide excellent corrosion protection and ensure long service life.



### Service-friendly design

The left-hand housing cover is easily removed to allow excellent accessibility to all service points. Inspection glasses allow convenient inspection of fluid levels and drive belt tension whilst the unit is in operation.



### Excellent component access

All maintenance and service components are easily accessible, which significantly reduces the downtime associated with service and maintenance tasks. This helps to increase compressed air availability and minimises operating costs.







## Equipment

### Complete unit

Ready-to-run, fully automatic, super-silenced, vibration damped, all panels powder coated. Suitable for use in ambient temperatures up to +45 °C.

### Airend

Genuine KAESER rotary screw, single stage airend with SIGMA PROFILE rotors and cooling fluid injection for optimised rotor cooling.

### Electric motor

Premium efficiency IE3 motor, quality German manufacture, IP 54.

### Fluid and air flow

"Honeycomb" air intake filter, pneumatic inlet and venting valves, cooling fluid separator tank with triple separation system, pressure relief valve, minimum pressure / check valve, thermostatic valve and fluid filter within the cooling fluid circuit, fluid / compressed air combination cooler.

### Refrigeration dryer (with 'T' version)

With electronically-controlled condensate drain. Refrigerant compressor with energy-saving, cycling shutdown feature; linked to operational status of the compressor when inactive. Alternatively, continuous operation can be selected on site.

### Electrical components

Ventilated IP 54 control cabinet, automatic star-delta starter, overload relay, control transformer.

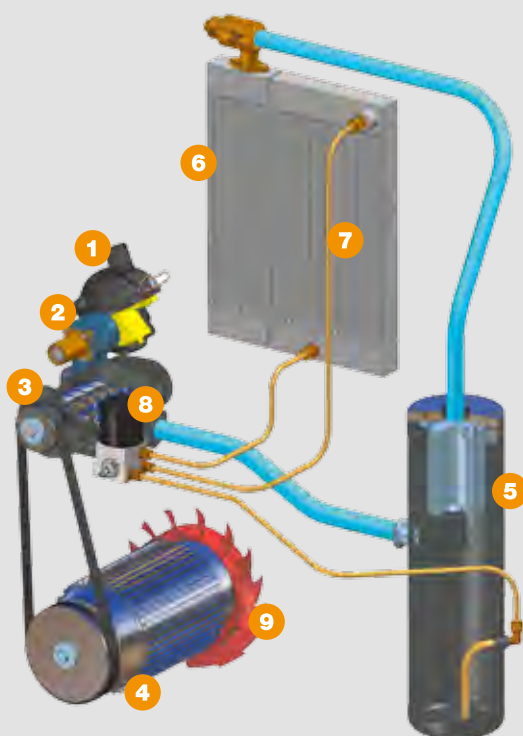
### SIGMA CONTROL 2

Red, yellow and green LEDs show operational status at a glance. Also features a plain text display, 30 selectable languages, soft-touch keys with icons; fully automated monitoring and control. Selection of Dual, Quadro, Vario and Continuous

control modes as required. Interfaces: Ethernet; additional optional communication modules for: Profibus DP, Modbus, Profinet and Devicenet. SD-card slot for data-logging and updates. RFID reader, web server.

SM series rotary screw compressors also optionally available with SIGMA CONTROL BASIC.

## General design



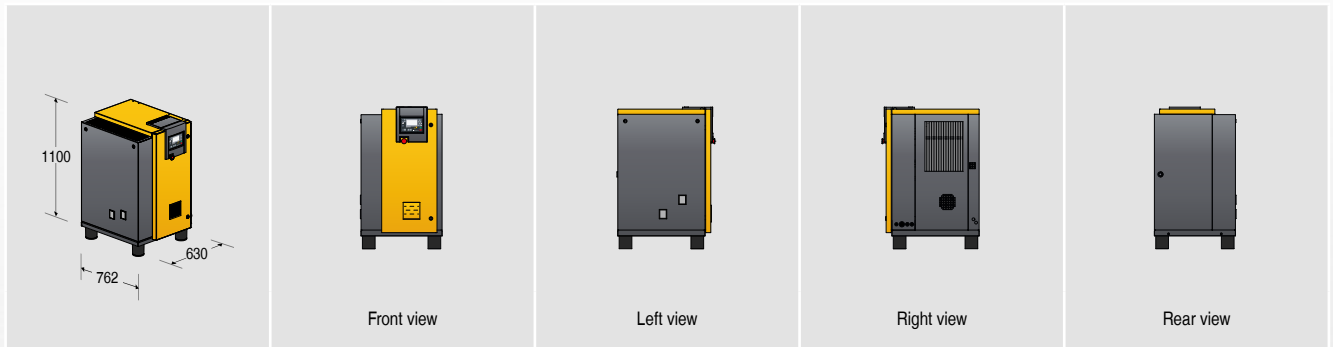
### Standard version

- 1 Intake filter
- 2 Inlet valve
- 3 Airend
- 4 Drive motor
- 5 Fluid separator tank
- 6 Compressed air aftercooler
- 7 Fluid cooler
- 8 Fluid filter
- 9 Fan

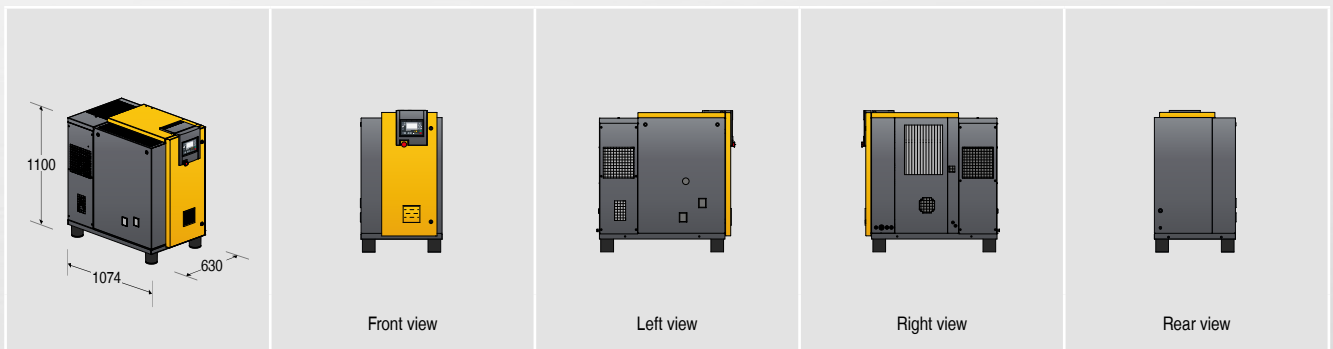


## Views

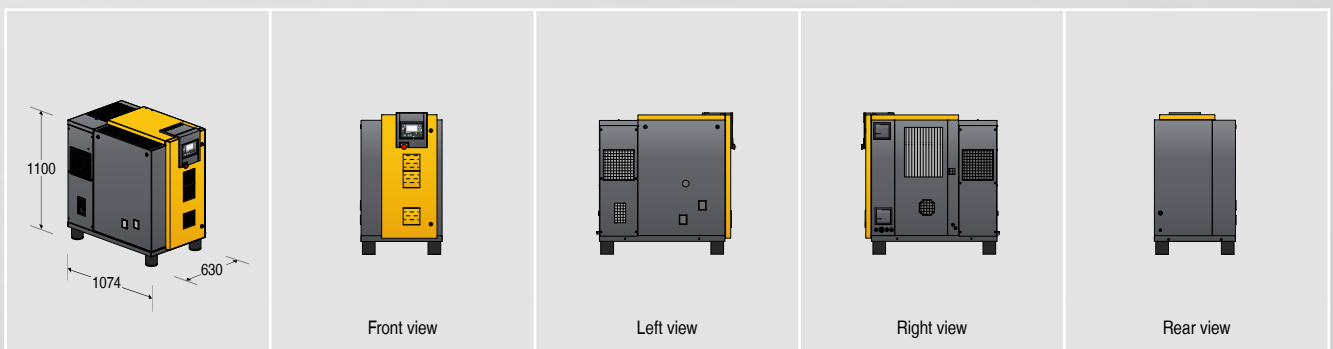
### Standard model



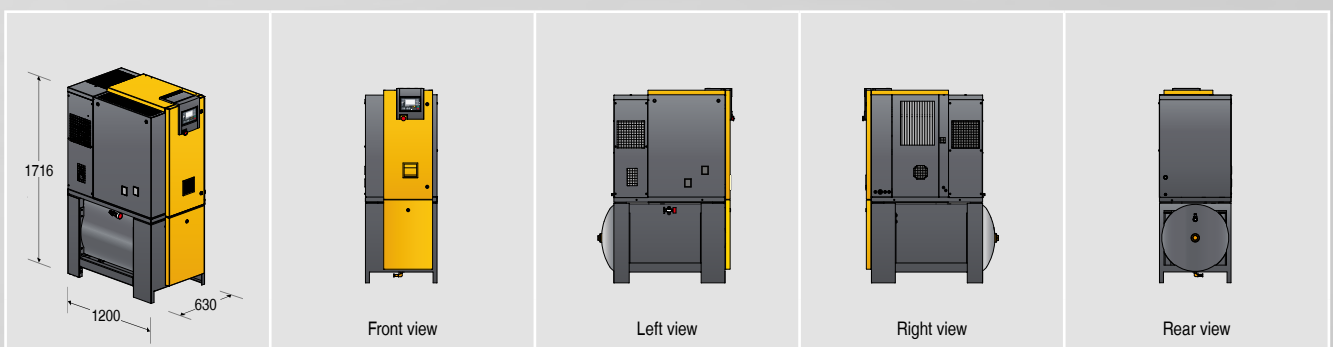
### Model with integrated refrigeration dryer



### Model with refrigeration dryer and variable-speed drive



### AIRCENTER series



Technical Specifications

Standard version

Model	Working pressure	FAD*)	Max. operating pressure	Rated motor power	Refrigeration dryer power consumption	Air connection	Dimensions W x D x H	Sound pressure level**)	Weight
	bar	m³/min	bar	kW	kW		mm	dB(A)	kg
SM 9	7.5 10 13	0.90 0.75 0.60	8 11 15	5.5	–	G ¾	630 x 762 x 1100	64	200
SM 12	7.5 10 13	1.20 1.01 0.77	8 11 15	7.5	–	G ¾	630 x 762 x 1100	64	210
SM 15	7.5 10 13	1.50 1.26 0.99	8 11 15	9	–	G ¾	630 x 762 x 1100	66	220

T-version with integrated refrigeration dryer (refrigerant R 134a)

Model	Working pressure	FAD*)	Max. operating pressure	Rated motor power	Refrigeration dryer power consumption	Air connection	Dimensions W x D x H	Sound pressure level**)	Weight
	bar	m³/min	bar	kW	kW		mm	dB(A)	kg
SM 9 T	7.5 10 13	0.90 0.75 0.56	8 11 15	5.5	0.35	G ¾	630 x 1074 x 1100	64	275
SM 12 T	7.5 10 13	1.20 1.01 0.77	8 11 15	7.5	0.35	G ¾	630 x 1074 x 1100	65	285
SM 15 T	7.5 10 13	1.50 1.26 0.99	8 11 15	9	0.36	G ¾	630 x 1074 x 1100	66	295

SFC – Version with variable speed drive

Model	Working pressure	FAD*)	Max. operating pressure	Rated motor power	Refrigeration dryer power consumption	Air connection	Dimensions W x D x H	Sound pressure level**)	Weight
	bar	m³/min	bar	kW	kW		mm	dB(A)	kg
SM 12 SFC	7.5 10 13	0.34 - 1.24 0.34 - 1.04 0.30 - 0.78	8 11 15	7.5	–	G ¾	630 x 762 x 1100	67	220
SM 12 T SFC	7.5 10 13	0.34 - 1.24 0.34 - 1.04 0.30 - 0.78	8 11 15	5.5	0.35	G ¾	630 x 1074 x 1100	67	295

AIRCENTER – Version with refrigeration dryer and compressed air receiver

Model	Working pressure	FAD*)	Max. operating pressure	Rated motor power	Refrigeration dryer power consumption	Air receiver volume	Air connection	Dimensions W x D x H	Sound pressure level**)	Weight
	bar	m³/min	bar	kW	kW	l		mm	dB(A)	kg
AIRCENTER 9	7.5 10 13	0.90 0.75 0.55	8 11 15	5.5	0.35	270	G ¾	630 x 1200 x 1716	64	390
AIRCENTER 12	7.5 10 13	1.20 1.01 0.77	8 11 15	7.5	0.35	270	G ¾	630 x 1200 x 1716	65	400
AIRCENTER 15	7.5 10 13	1.50 1.26 0.99	8 11 15	9	0.36	270	G ¾	630 x 1200 x 1716	66	410

AIRCENTER SFC – Version with variable speed drive

Model	Working pressure	FAD*)	Max. operating pressure	Rated motor power	Refrigeration dryer power consumption	Air receiver volume	Air connection	Dimensions W x D x H	Sound pressure level**)	Weight
	bar	m³/min	bar	kW	kW	l		mm	dB(A)	kg
AIRCENTER 12 SFC	7.5 10 13	0.34 - 1.24 0.34 - 1.04 0.30 - 0.78	8 11 15	5.5	0.30	270	G ¾	630 x 1200 x 1716	67	410

\*) FAD complete system as per ISO 1217 : 2009, Annex C: absolute inlet pressure 1 bar (a), cooling and air inlet temperature 20 °C

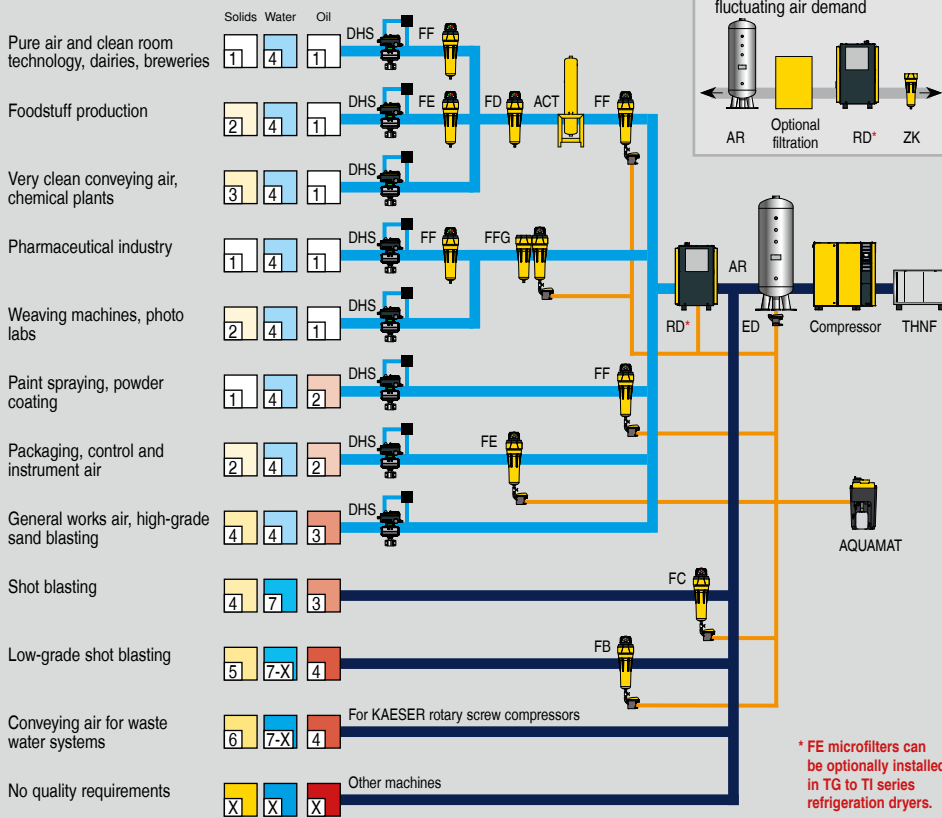
\*\*) Sound pressure level as per ISO 2151 and the basic standard ISO 9614-2, tolerance: ± 3 dB(A)



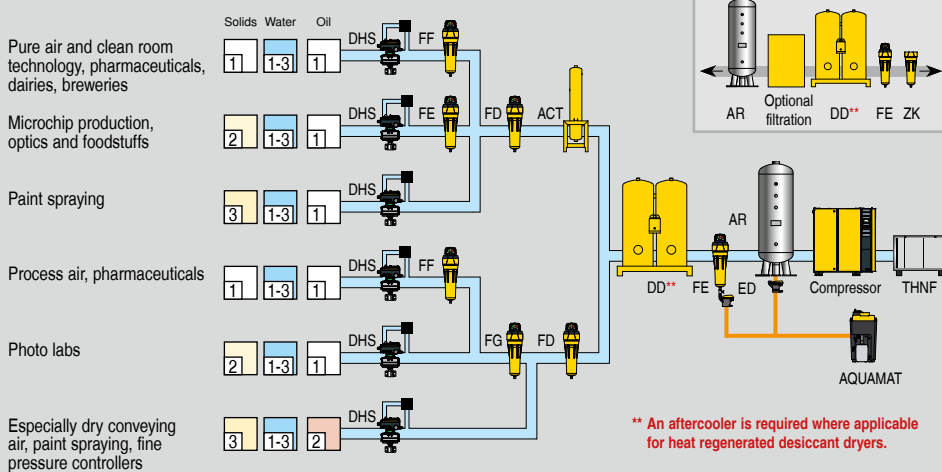
## Choose the required grade of treatment according to your field of application:

Air treatment using a refrigeration dryer (pressure dew point +3 °C)

Application examples: Selection of treatment classes to ISO 8573-1 (2010)



For non frost protected air systems: Compressed air treatment with a desiccant dryer (down to -70 °C pressure dew point)



Explanation	
ACT	Activated carbon adsorber
AQUAMAT	AQUAMAT
DD	Desiccant dryer
DHS	Air-main charging system
AR	Air receiver
ED	ECO DRAIN
FB / FC	Pre-filter
FD	Particulate filter
FE / FF	Microfilter
FPG	Activated carbon and microfilter combination
FG	Activated carbon filter
RD	Refrigeration dryer
THNF	Bag filter
ZK	Centrifugal separator

Compressed air quality classes to ISO 8573-1(2010):

Solid particles / dust			
Class	max. particle count per m³ of a particle size with d [µm]*		
	0.1 ≤ d ≤ 0.5	0.5 ≤ d ≤ 1.0	1.0 ≤ d ≤ 5.0
0	e.g. Consult KAESER regarding pure air and cleanroom technology		
1	≤ 20,000	≤ 400	≤ 10
2	≤ 400,000	≤ 6,000	≤ 100
3	Not defined	≤ 90,000	≤ 1,000
4	Not defined	Not defined	≤ 10,000
5	Not defined	Not defined	≤ 100,000
Particle concentration C <sub>p</sub> in mg/m³ *			
6	0 < C <sub>p</sub> ≤ 5		
7	5 < C <sub>p</sub> ≤ 10		
X	C <sub>p</sub> > 10		

Water	
Class	Pressure dew point, in °C
0	e.g. Consult KAESER regarding pure air and cleanroom technology
1	≤ -70 °C
2	≤ -40 °C
3	≤ -20 °C
4	≤ +3 °C
5	≤ +7 °C
6	≤ +10 °C
Class	Concentration of liquid water C <sub>w</sub> in g/m³ *
7	C <sub>w</sub> ≤ 0.5
8	0.5 < C <sub>w</sub> ≤ 5
9	5 < C <sub>w</sub> ≤ 10
X	C <sub>w</sub> > 10

Oil	
Class	Total oil concentration (fluid, aerosol + gaseous) [mg/m³]*
0	e.g. Consult KAESER regarding pure air and cleanroom technology
1	≤ 0.01
2	≤ 0.1
3	≤ 1.0
4	≤ 5.0
X	> 5.0

\* ) At reference conditions 20 °C, 1 bar(a), 0% humidity