



Compressed Air Treatment

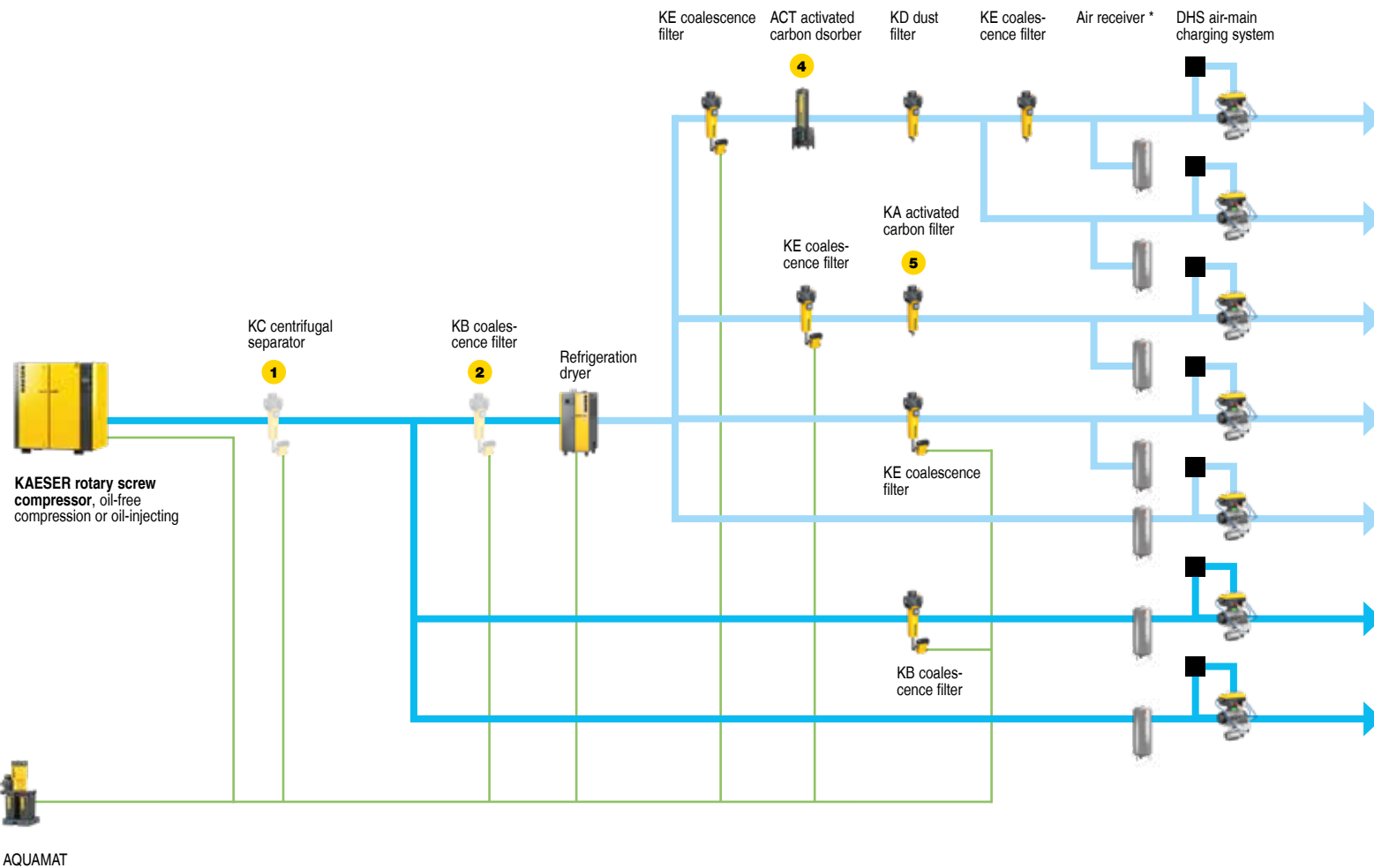
Compressed air treatment diagrams for rotary screw compressors and reciprocating compressors

The perfect treatment components for every application

Installation recommendations for pure compressed air

Rotary screw compressors

Compressed air treatment with refrigeration dryer (pressure dew point down to +3 °C)



- 1 No KC required on compressors with integrated centrifugal separator.
- 2 KB filter stage installed upstream for third-party compressors or contaminated / heavily corroded pipework.
- 3 Dependent on cooling temperature.
- 4 Service life at nominal conditions 12,000 h.
- 5 Service life at nominal conditions 1,000 h.

* Where there are stringent requirements in relation to compressed air quality, the air receiver should always be installed in a branch line downstream from the treatment stage to prevent the entrainment of deposits.

Choose the desired degree of treatment in accordance with your requirement/application:
Application examples: Selection of compressed air purity classes as per ISO 8573-1 (2010)

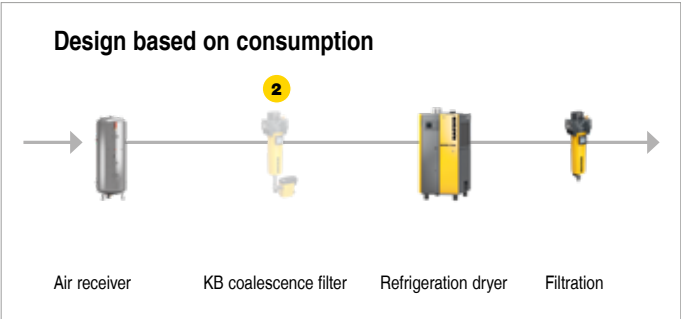
Achievable compressed air purity class	Industry / Application		
Particles	Water	Oil	
1	4	1	Pure-air and clean-room technology, dairies, breweries, food and beverage production
2	4	1	Especially clean conveying air, chemical plants
1	4	1	Weaving machines, photo labs, pharmaceuticals industry
1	4	2	Paint spraying, powder coating, packaging, control and instrument air
4	4	3	General works air, high-quality sand blasting
4	7-X ³	3	Shot blasting
4-6	7-X ³	3-4	Conveying air for wastewater systems

Compressed air purity classes as per ISO 8573-1 (2010):

Particles			
Class	Max. particle count per m³ for particle size d in µm *)		
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0
0	Consult KAESER for applications such as pure-air and clean-room 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
Class	Particle concentration C _p in mg/m³ *)		
6	0 < C _p ≤ 5		
7	5 < C _p ≤ 10		
X	C _p > 10		

Water	
Class	Pressure dew point in °C
0	Consult KAESER for applications such as pure-air and clean-room 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 _w in g/m³ *)
7	C _w ≤ 0.5
8	0.5 < C _w ≤ 5
9	5 < C _w ≤ 10
X	C _w > 10

Installation for constant air demand



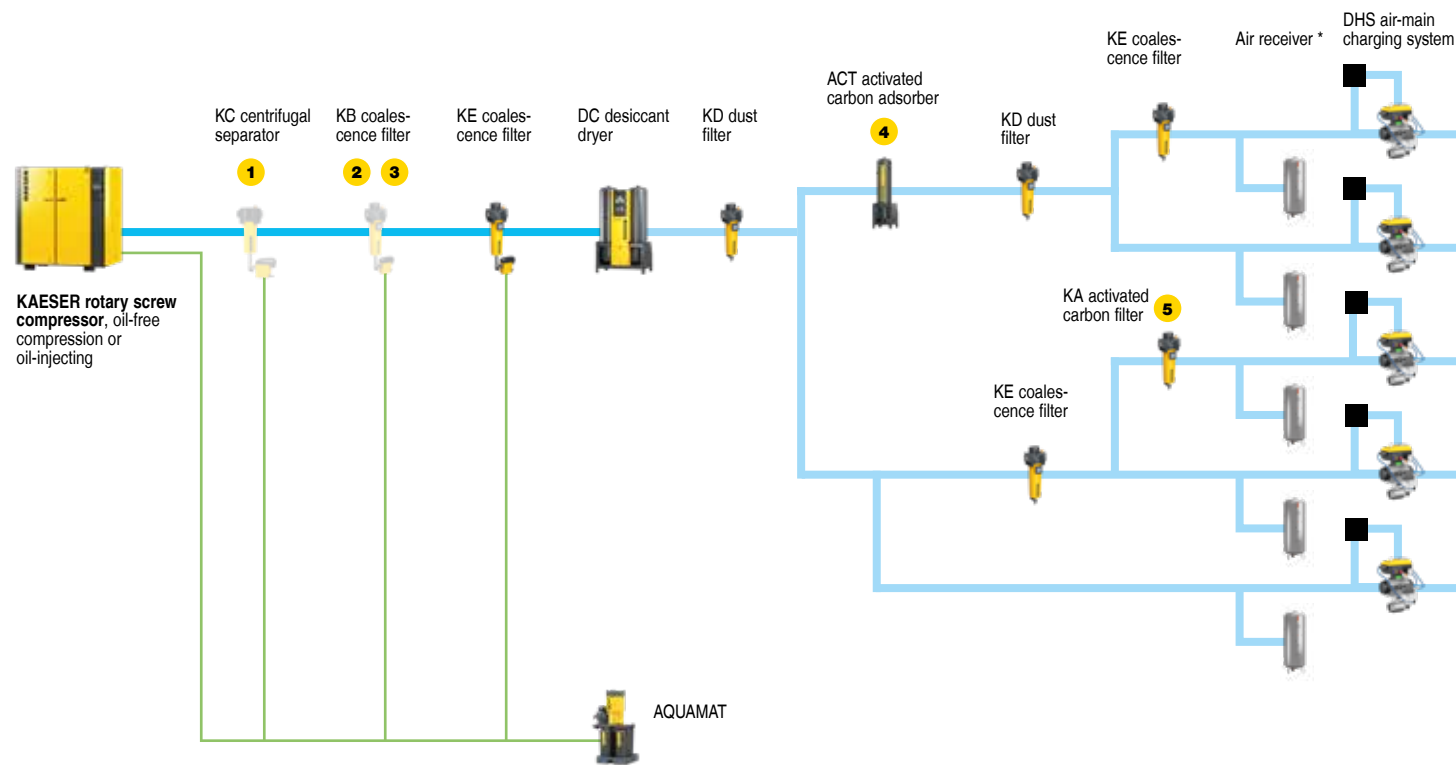
Oil	
Class	Total oil concentration (liquid, aerosol + gaseous) [mg/m³] *)
0	Consult KAESER for applications such as pure-air and clean-room technology
1	≤ 0.01
2	≤ 0.1
3	≤ 1.0
4	≤ 5.0
X	> 5.0

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

Installation recommendations for pure compressed air

Rotary screw compressors

Compressed air treatment with desiccant dryer (pressure dew point down to -70 °C, e.g. for applications at risk from freezing)



- 1 No KC required on compressors with integrated centrifugal separator.
- 2 KB filter stage installed upstream for third-party compressors or contaminated / heavily corroded pipework.
- 3 KB filter stage installed upstream for critical applications requiring high compressed air purity.
- 4 Service life at nominal conditions 12,000 h.
- 5 Service life at nominal conditions 1,000 h.

* Where there are stringent requirements in relation to compressed air quality, the air receiver should always be installed in a branch line downstream from the treatment stage to prevent the entrainment of deposits.

Choose the desired degree of treatment in accordance with your requirement/application:
Application examples: Selection of compressed air purity classes as per ISO 8573-1 (2010)

Achievable compressed air purity class

	Particles	Water	Oil
1	1	1-3	1
2	2	1-3	1
1	1	1-3	1
1	1	1-3	2
2	2	1-3	2

Industry / Application

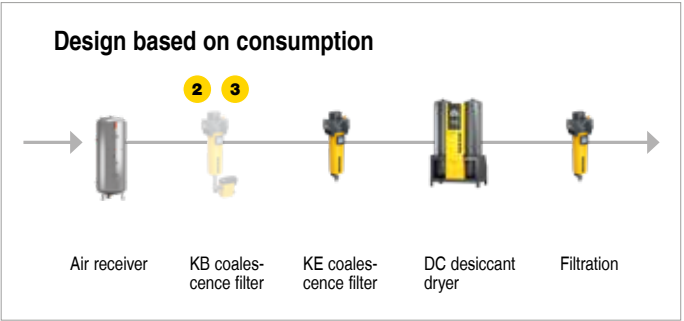
- Pure-air and clean-room technology, dairies, breweries, food and beverage production
- Paint-spraying systems
- Process air, pharmaceuticals industry
- Photo labs
- Especially dry conveying air, paint spraying, fine pressure controllers

Compressed air purity classes as per ISO 8573-1 (2010):

Particles			
Class	Max. particle count per m³ for particle size d in µm *)		
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0
0	Consult KAESER for applications such as pure-air and clean-room 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
Class	Particle concentration C _p in mg/m³ *)		
6	0 < C _p ≤ 5		
7	5 < C _p ≤ 10		
X	C _p > 10		

Water	
Class	Pressure dew point in °C
0	Consult KAESER for applications such as pure-air and clean-room 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 _w in g/m³ *)
7	C _w ≤ 0.5
8	0.5 < C _w ≤ 5
9	5 < C _w ≤ 10
X	C _w > 10

Installation for constant air demand



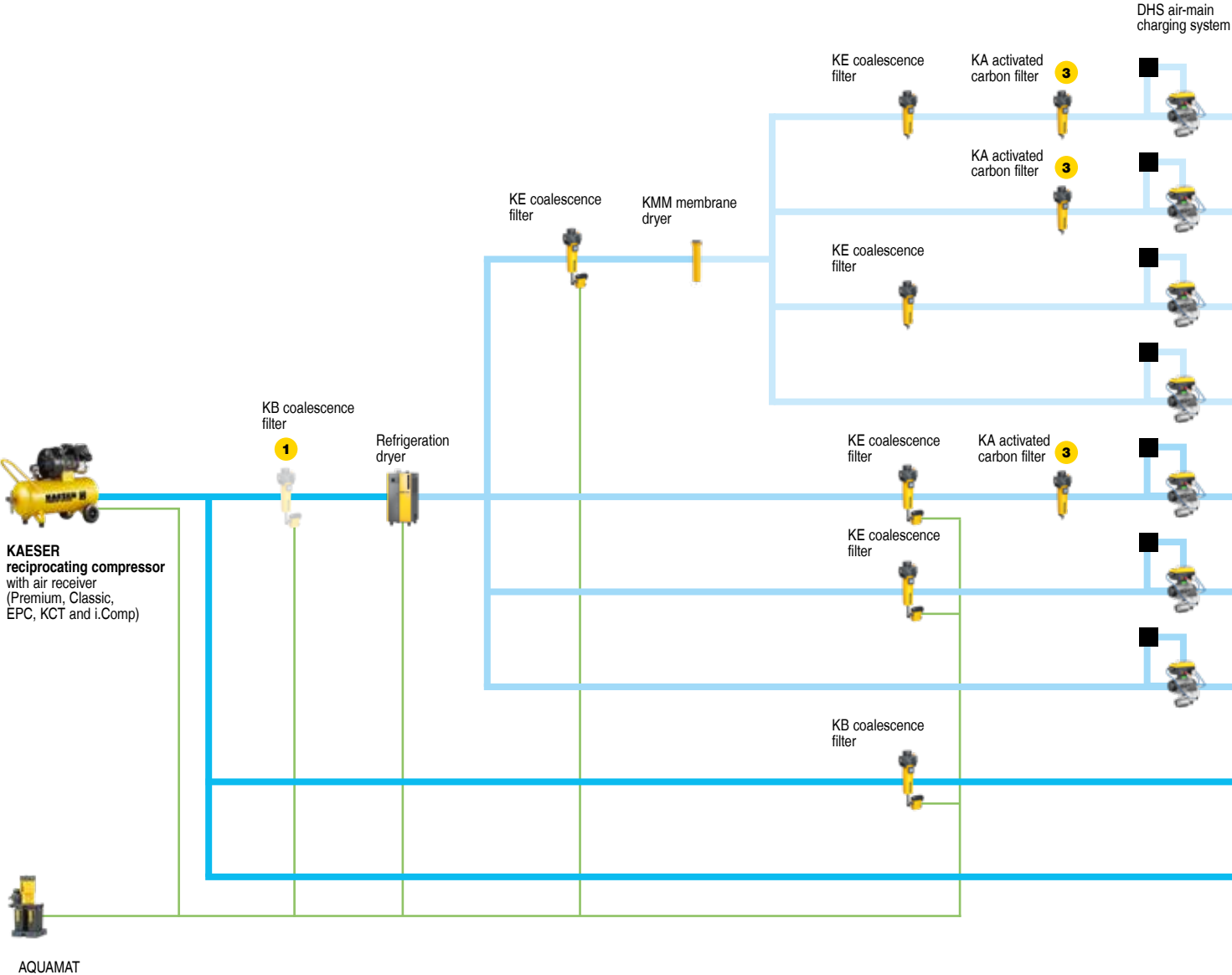
Oil	
Class	Total oil concentration (liquid, aerosol + gaseous) [mg/m³] *)
0	Consult KAESER for applications such as pure-air and clean-room technology
1	≤ 0.01
2	≤ 0.1
3	≤ 1.0
4	≤ 5.0
X	> 5.0

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

Reciprocating compressors

Choose the desired degree of treatment in accordance with your requirement/application:
Application examples: Selection of compressed air purity classes as per ISO 8573-1 (2010)

**Compressed air purity classes as per
ISO 8573-1 (2010):**



- 1 KB filter stage installed upstream for third-party compressors or contaminated / heavily corroded pipework.
- 2 Pressure dew point in accordance with inlet temperature, inlet pressure dew point and purge air volume.
- 3 Service life at nominal conditions 1,000 h.
- 4 Dependent on the contaminants drawn in and on the compressor.

Achievable compressed air purity class

Industry / Application

Particles	Water	Oil
1	2-3	1
2	2-3	1
1	2-3	2
2	2-3	2
1	4	1
1	4	2
4	4	2-X
4	7-X	3
5-X	7-X	3-X

Pure-air and clean-room technology, pharmaceuticals industry, food and beverage production

Paint-spraying systems

Photo labs

Especially dry conveying air, paint spraying, fine pressure controllers

Weaving machines, photo labs, pharmaceuticals industry

Paint spraying, powder coating, packaging, control and instrument air

General works air, high-quality sand blasting

Shot blasting

Conveying air for wastewater systems

Particles			
Class	Max. particle count per m ³ for particle size d in µm ¹⁾		
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0
0	Consult KAESER for applications such as pure-air and clean-room 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
Class	Particle concentration C _p in mg/m ³ ²⁾		
6	0 < C _p ≤ 5		
7	5 < C _p ≤ 10		
X	C _p > 10		

Water	
Class	Pressure dew point in °C
0	Consult KAESER for applications such as pure-air and clean-room 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_w in g/m ³ *)
7	$C_w \leq 0.5$
8	$0.5 < C_w \leq 5$
9	$5 < C_w \leq 10$
X	$C_w > 10$

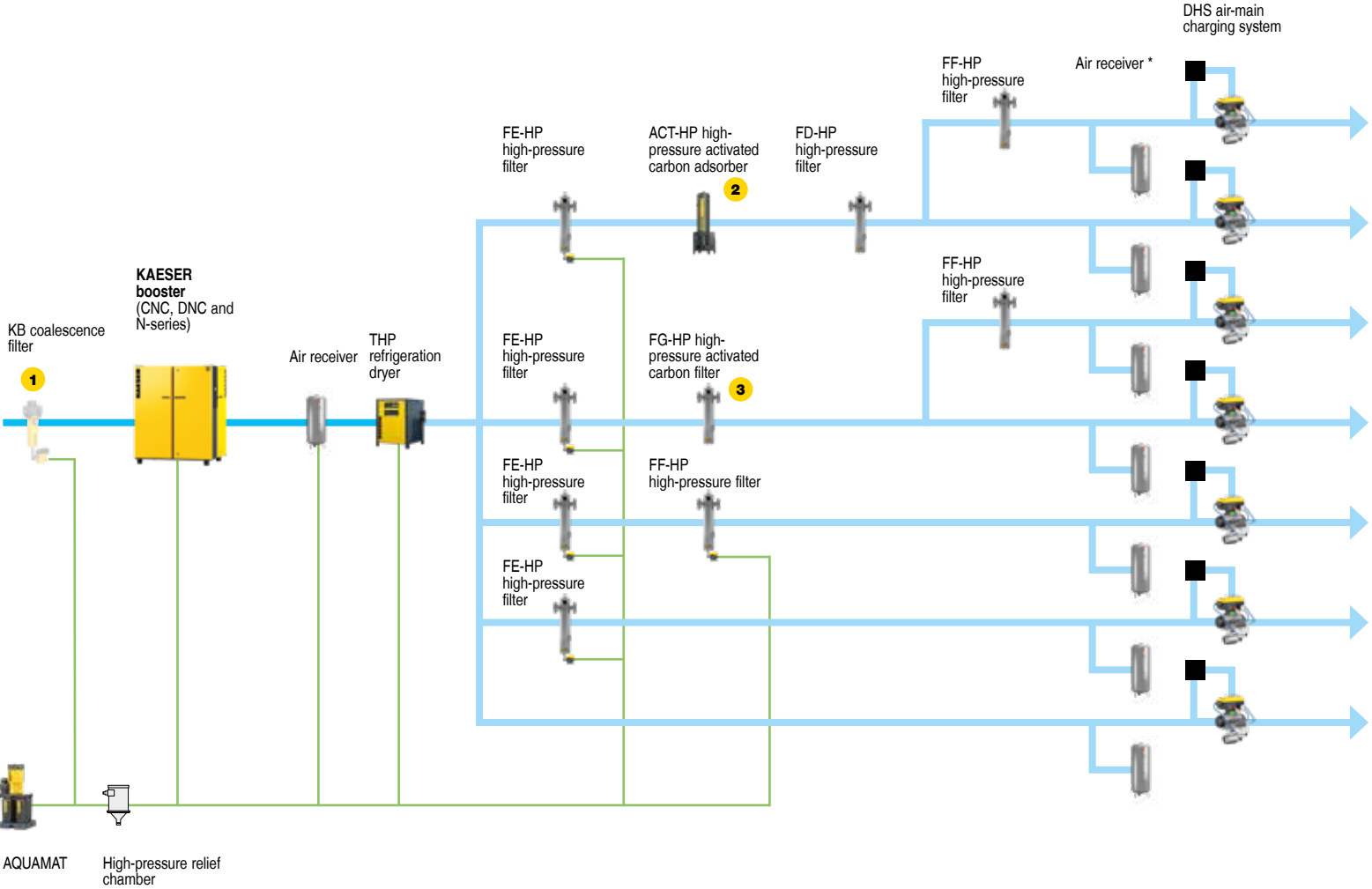
Oil	
Class	Total oil concentration (liquid, aerosol + gaseous) [mg/m ³] *)
0	Consult KAESER for applications such as pure-air and clean-room technology
1	≤ 0.01
2	≤ 0.1
3	≤ 1.0
4	≤ 5.0
X	> 5.0

^a) At reference conditions +20 °C, 1 bar(a), 0% humidity.

Installation recommendations for pure compressed air

Boosters

Choose the desired degree of treatment in accordance with your requirement/application:
Application examples: Selection of compressed air purity classes as per ISO 8573-1 (2010)



- 1 KB filter stage installed upstream for third-party compressors or contaminated / heavily corroded pipework.
- 2 Service life at nominal conditions 12,000 h.
- 3 Service life at nominal conditions 1,000 h.

* Where there are stringent requirements in relation to compressed air quality, the air receiver should always be installed in a branch line downstream from the treatment stage to prevent the entrainment of deposits.

Achievable compressed air purity class

Particles	Water	Oil
1	4	1
3	4	1
1	4	1
2	4	1
1	4	2
2	4	2
4-5	4	4-X

Industry / Application

Clean-room technology
PET bottle production
Pure-air and clean-room technology, pharmaceuticals industry, food and beverage production
Paint-spraying systems
Weaving machines, photo labs, pharmaceuticals industry
Paint spraying, powder coating, packaging, control and instrument air
General works air, high-quality sand blasting

Compressed air purity classes as per ISO 8573-1 (2010):

Particles			
Class	Max. particle count per m³ for particle size d in µm *)		
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0
0	Consult KAESER for applications such as pure-air and clean-room 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
Class	Particle concentration C _p in mg/m³ *)		
6	0 < C _p ≤ 5		
7	5 < C _p ≤ 10		
X	C _p > 10		

Water	
Class	Pressure dew point in °C
0	Consult KAESER for applications such as pure-air and clean-room 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 _w in g/m³ *)
7	C _w ≤ 0.5
8	0.5 < C _w ≤ 5
9	5 < C _w ≤ 10
X	C _w > 10

Oil	
Class	Total oil concentration (liquid, aerosol + gaseous) [mg/m³] *)
0	Consult KAESER for applications such as pure-air and clean-room 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.

Compressed air station: Low and high pressure



Illustration shows from left to right:

- | | |
|--|---|
| (1) SIGMA AIR MANAGER 4.0 compressed air management system | (8) DN booster |
| (2) Rotary screw compressor | (9) High-pressure air receiver |
| (3) Air receiver | (10) THP refrigeration dryer |
| (4) SECOTEC energy-saving refrigeration dryer | (11) FE-HP coalescence filter with electronic ECO-DRAIN condensate drain, FG-HP activated carbon filter |
| (5) KE coalescence filter with electronic ECO-DRAIN condensate drain, KA activated carbon filter | (12) AQUAMAT i.CF oil/water separator |
| (6) DHS 4.0 air-main charging system | (13) High-pressure relief chamber |
| (7) AQUAMAT i.CF oil/water separator | (14) DHS 4.0 air-main charging system |

More compressed air for less energy

The world is our home

As one of the world's largest manufacturers of compressors, blowers and compressed air systems, KAESER KOMPRESSOREN is represented throughout the world by a comprehensive network of wholly owned subsidiaries and authorised distribution partners in over 140 countries.

By offering innovative, efficient and reliable products and services, KAESER KOMPRESSOREN's experienced consultants and engineers work in close partnership with customers to enhance their competitive edge and to develop progressive system concepts that continuously push the boundaries of performance and technology. Moreover, decades of knowledge and expertise from this industry-leading systems provider are made available to each and every customer via the KAESER group's advanced global IT network.

These advantages, coupled with KAESER's worldwide service organisation, ensure that every product operates at the peak of its performance at all times, providing optimal efficiency and maximum availability.



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