System planner for compressed air treatment - purity classes for compressed air
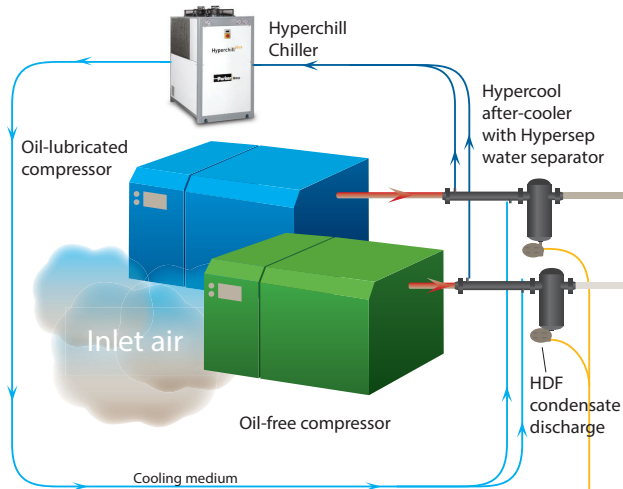
Compressed air generation

Per day a compressor with 1000 m³/h
sucks this quantity of contaminants:
- approx. 329 L water (humidity at 25 °C, 60 % RH)
- millions solids > 2 µm
- trillions solids < 2 µm
- up to 72 g oil vapours (hydrocarbons)

Per day a compressor supplies these 1000 m³/h
compressed in the compressed air supply network with:
- 100 % RH (water saturated)
- trillions solids < 2 µm
- up to 72 g oil (for oil-free compressors) or
- approx. 24-4320 g oil (for oil-lubricated compressors)
  [in accordance with VDMA 15390:2014]

Hyperchill Chiller

Oil-lubricated compressor

Hypercool after-cooler with Hypersep water separator

Inlet air

Oil-free compressor

HDF condensate discharge

Cooling medium

ISO 8573-1:2010

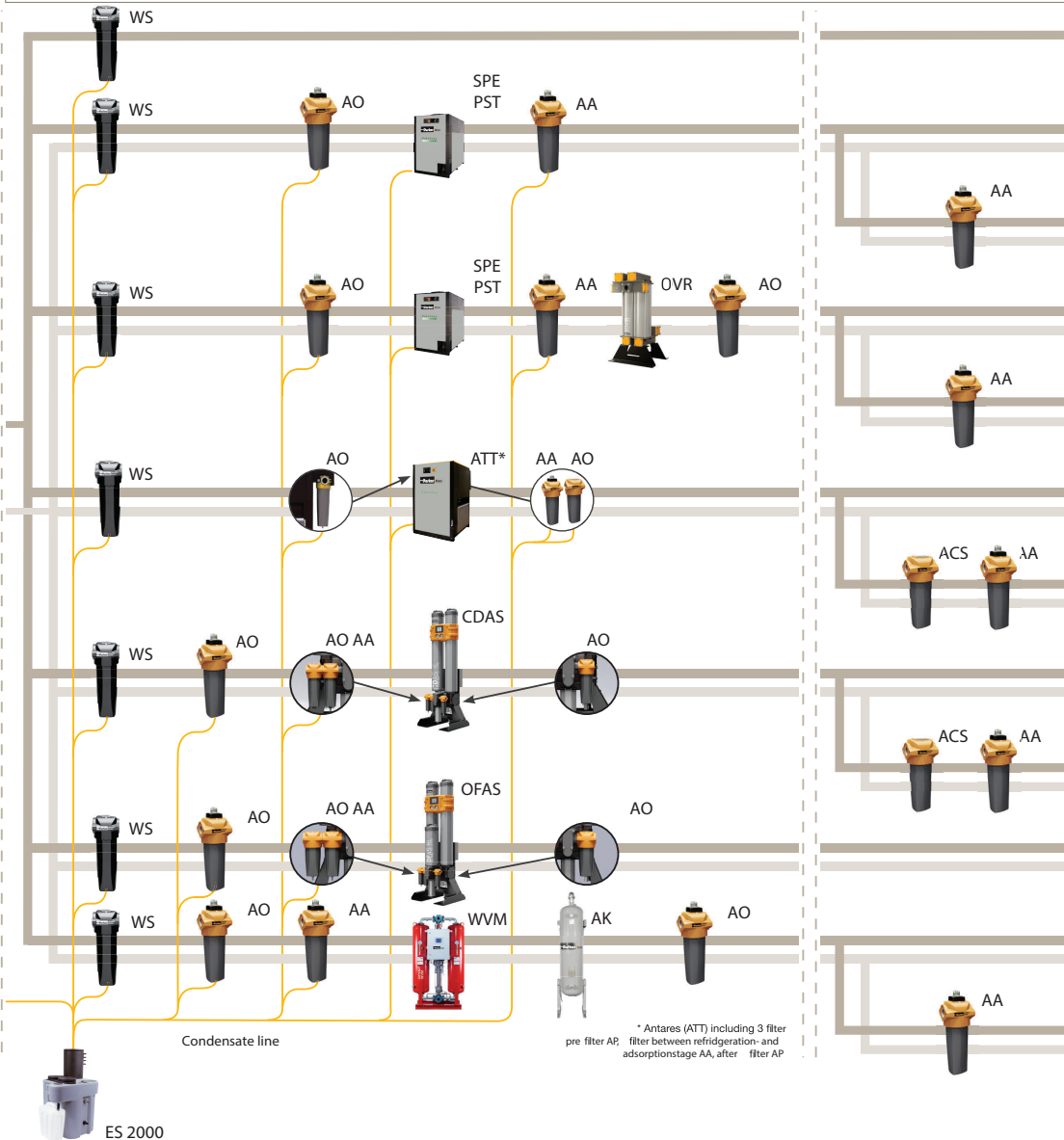| Class	Solid particulate Maximum number of particles per m³ Particle size			Water (vapour state) pressure dew-point in °C	Oil (vapour, aerosols, liquids) Content in mg/m³
	0,1 - 0,5 µm	0,5 - 1 µm	1 - 5 µm		
0	As specified between the supplier and equipment user (better than class 1)				
1	≤ 20.000	≤ 400	≤ 10	≤ -70	≤ 0,01
2	< 400.000	≤ 6.000	≤ 100	≤ -40	≤ 0,1
3	not agreed	≤ 90.000	≤ 1.000	≤ -20	≤ 1
4	not agreed	not agreed	≤ 10.000	≤ +3	≤ 5
5	not agreed	not agreed	≤ 100.000	≤ +7	not agreed

Reference conditions 1 bar, 20 °C, 0 % relative humidity; pressure dew-point at compressor end-pressure of 8 bar

Parker | domnick hunter
Parker | Hiross
Parker | Zander

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Centralised compressed air treatment

Note: The purity classes under ISO 8573-1 consider a specific measuring point in the compressed air supply grid. Components, such as pipes and isolation valves, influence the compressed air quality and must therefore be suitable for achieving a particular purity class. The treatment lines shown are therefore only provided for orientation.

WS
WS AO SPE PST AA
WS AO SPE PST AA OVR AO
WS AO ATT* AA AO
WS AO AA CDAS AO
WS AO AA OFAS AO
WS AO AA WVM AK AO

Condensate line

ES 2000

* Antares (ATT) including 3 filter pre filter AP, filter between refrigeration- and adsorptionstage AA, after filter AP

Decentralised compressed air treatment

AA
AA
ACS AA
ACS AA
AA

Purity classes acc. to ISO 8573-1:2010

Particles	Water and moisture	Total oil
–	7-8	–
2	4-6	2
1	4-6	2
2	4-6	1
1	4-6	1
2	1-4	2
1	1-4	1
2	1-2	2
1	1-2	1
2	1-2	1
2	1-2	1
1	1-2	1