

A close-up, low-angle shot of an Aventics marine air treatment unit. The unit is dark blue and features a top section with two solenoid valves labeled 'AVENTICS'. Below the valves is a large, cylindrical filter element with vertical ridges. The background is a clear, light blue sky.

Aventics Marine

Effective Air Treatment with RDD Technology



Compressed Air Treatment

Systems with Pneumatic Controls on Ships

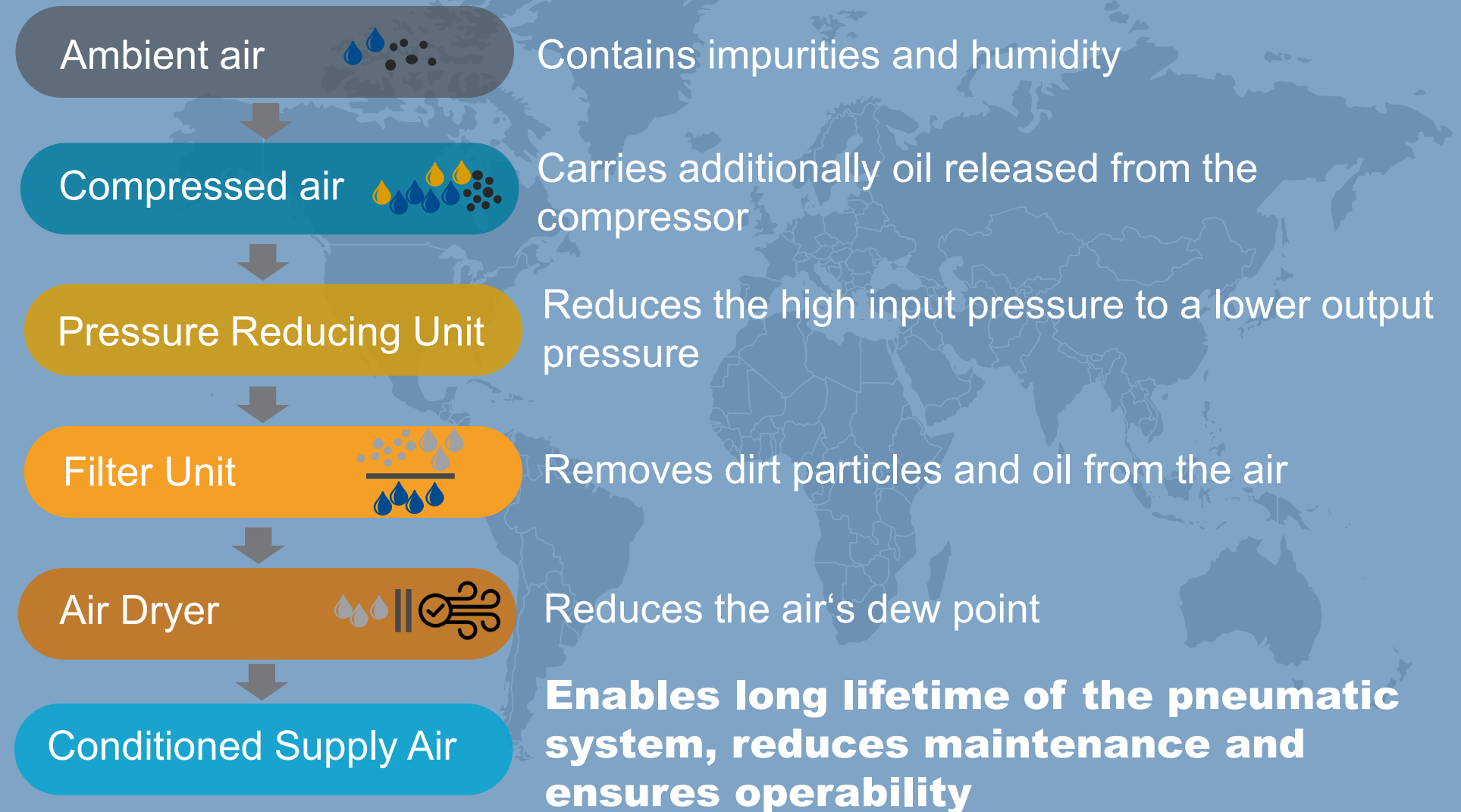


Many applications with pneumatic controls must be fail-safe:

- Horn
- Windshield wipers
- Sliding doors
- Fish processing machinery
- Bulkhead
- Pneumatic sealing
- Winches
- Cargo room ventilation
- De-icing
- Fire doors
- Partition
- Valve control
- Bubble tank sounding
- Engine Start / Stop
- SCR
- Scrubber
- Water treatment
- Soot blower
- ...

Compressed Air Treatment

Why Conditioning the Control Air Makes Sense



Compressed Air Treatment

Quality Standards of Compressed Air in Pneumatic Control Systems



Particles ↘

Water ↘

Oil ↘

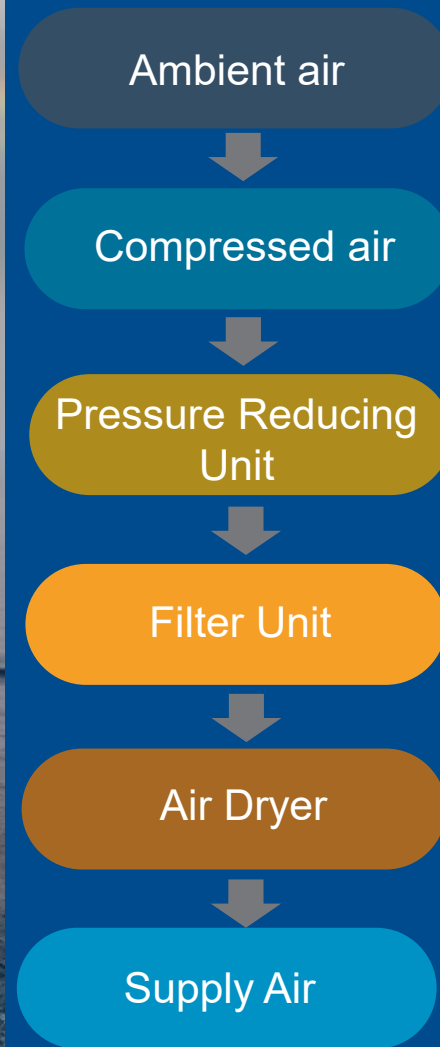
Air quality classification according to ISO 8573 - 2010

Class	Particles			Humidity and liquid water	Total oil ^[10]		
	0,1.. - 0,5 µm [1,6,9]	0,5.. - 1 µm [1,6,9]	1.. - 5 µm [1,6,9]				
0	As specified and more stringent than class 1			As specified and more stringent than class 1		As specified and more stringent than class 1	
1	≤ 20.000	≤ 400	≤ 10	≤ -70°C	[2,5]	≤ 0,01 mg/m ³	[1,3]
2	≤ 400.000	≤ 6.000	≤ 100	≤ -40°C		≤ 0,1 mg/m ³	[1,3]
3	---	≤ 90.000	≤ 1.000	≤ -20°C		≤ 1 mg/m ³	[1,4]
4	---	---	≤ 10.000	≤ +3°C	[1,8]	≤ 5 mg/m ³	
5	---	---	≤ 100.000	≤ +7°C			
6	≤ 5 mg/m ³			≤ +10°C			
7	5.. - 10 mg/m ³			≤ 0,5 g/m ³			
8				0,5.. - 5 g/m ³			
9				5.. - 10 g/m ³			
X	> 10 mg/m ³			> 10 g/m ³	> 5 mg/m ³		[1,4]

With EMERSON components air quality up to class 2 (particles, water and oil) can be achieved.

Compressed Air Treatment

High-Performing Technology in Rugged Design



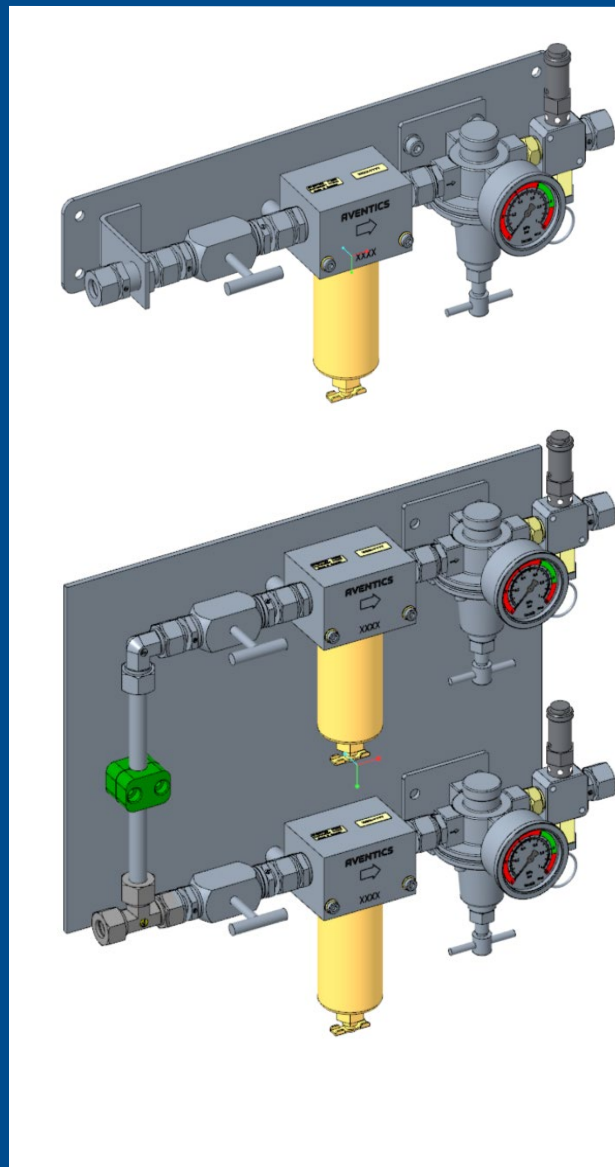
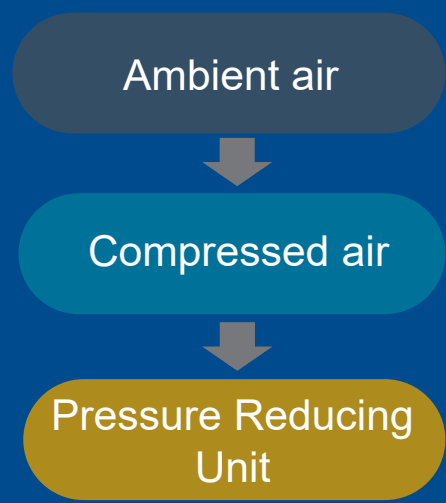
EMERSON offers all elements necessary for effective compressed air conditioning, featuring

- Robust design
- Easy maintenance
- Modular scope
- Design to DNV guidelines
- High-performance RDD Air Dryer

Solutions are scalable from single components to redundant ready-to-install air treatment units.

Compressed Air Treatment

Pressure Reducing Unit with Filter



The compressed air with a pressure of 30 bar (435 psi) is filtered and then reduced to a lower pressure of 0.5 – 10 bar (72 – 145 psi).

- Ready to mount units including filter and pressure regulator
- Rating of filters: 40 μm
- Pressure range 0 – 30 bar (435 psi)
- Single or redundant versions



Filter with condensate drain



Pressure regulator

Compressed Air Treatment

Proven Filter Technology



Ambient air



Compressed air



Pressure Reducing Unit



Filter Unit

AVENTICS Industry Filter Unit – Filter with condensate drain

- Temperature range: -40 to +80 °C (-40 to 176 °F)
- Max. flow: 4,250 NI/min.@ 6.3 bar (91 psi)
- Filter porosity: 5 µm, ISO purity class 5:8:4
- Coalescing filter element: 0.01µm, ISO purity class 2:7:2
- Working pressure range: max. 16 bar (232 psi)
- Manual, auto drain: max. 10 bar (145 psi)
- Maintenance Interval: Visual or electrical indicator
- Operating drain: Manual and automatic style



Compressed Air Treatment

Proven Filter Technology



Ambient air



Compressed air



Pressure Reducing Unit



Filter Unit

AVENTICS Filter Unit – Filter with condensate drain

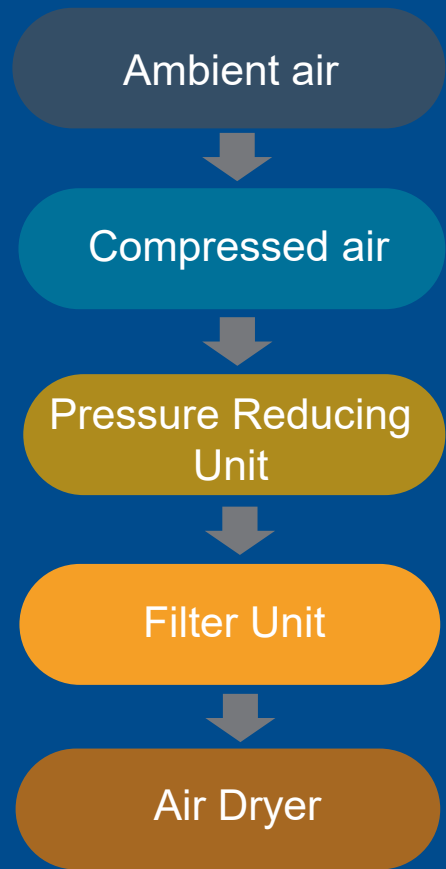
- Temperature range: -40* to +85°C (-40 to 184 °F)
- Flow: 2500 NI/ min.@ 10bar (145 psi)
- Filter porosity: 1 µm, ISO purity class1:-:2
- Filter porosity: 5 µm, ISO purity class3:7:3
- Working pressure range: 12 bar (174 psi) max.
- Classification: Air quality to ISO 8573-1: 2010
- Maintenance interval: Typically 2 years
- Service life: Up to 25,000h
- Operating drain voltage: 24VDC +/-30%
- Protection class: IP65

*Heaters optional, 1x for each solenoid valve



Compressed Air Treatment

AVENTICS New RDD Air Dryer



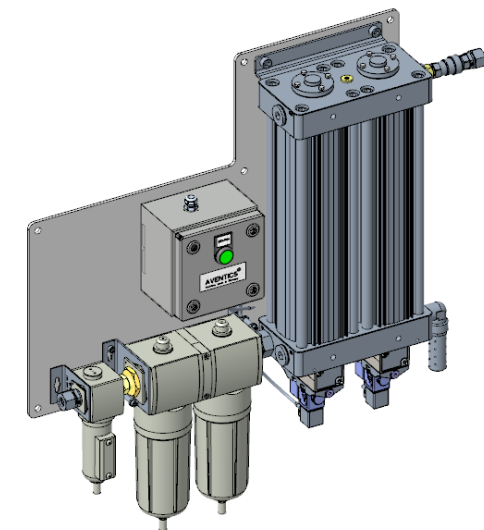
Durable technology for longterm service

- 8 Years free of maintenance
- 25,000 h service life
- Only 15 % air consumption for purge
- Desiccant resists shock and vibration (no dust generation)
- Dew point suppression > 40°C (>104 °F)



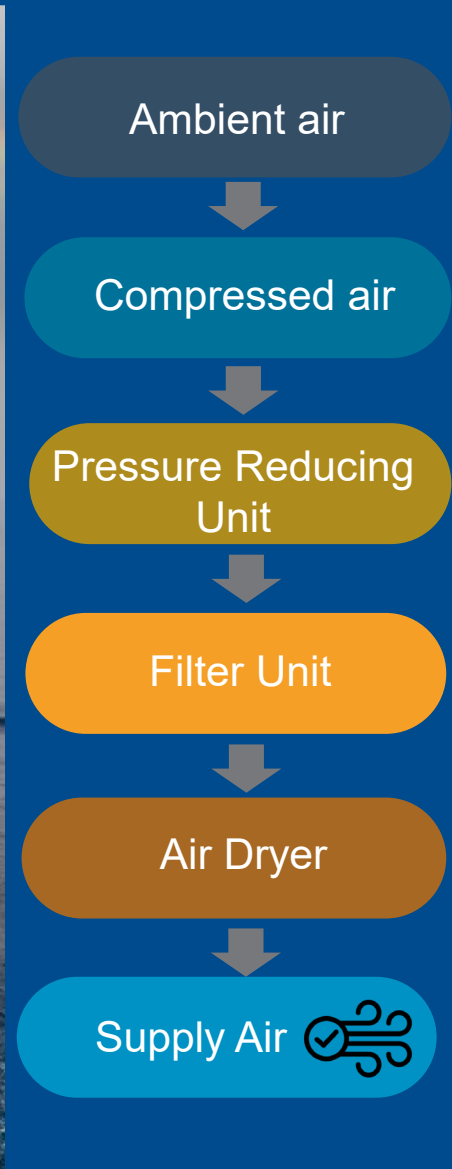
- Temperature range: -40* to +70°C (40 to 158 °F)
- Working pressure: 4 to 12 bar (58 to 174 psi)
- Pressure drop across dryer: <0.3 bar (43.5 psi)
- Air purity class: ISO 8573-1: 2010, Class -:2:-
- Operating voltage: 24VDC +/-30%
- Protection class: IP 65

*Heaters optional, 1x for each solenoid valve

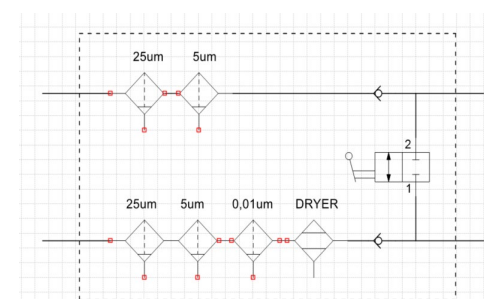
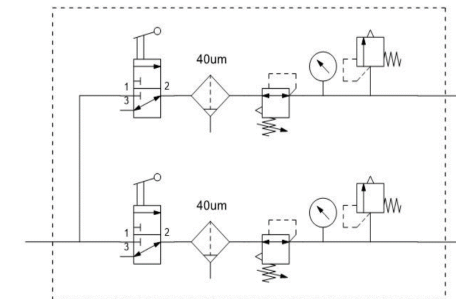
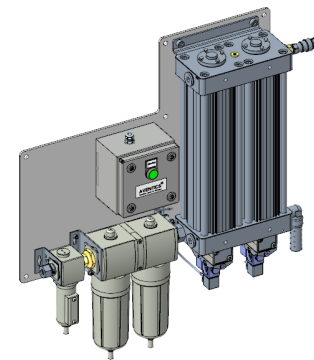
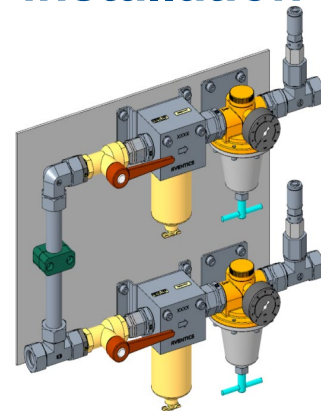


Compressed Air Treatment

Ready-to-Mount, Modular Units for Appropriate Air Quality



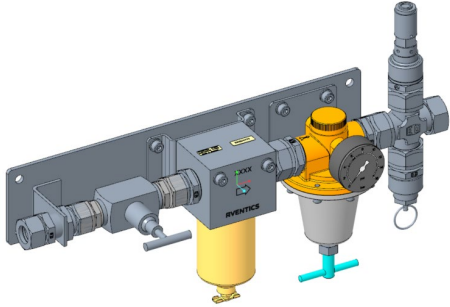
- Various modules to be combined
- Single or redundant versions
- Redundant versions ensure continuous air supply via two pressure outlets operated in parallel or alternately
- Redundant versions provide two air qualities for pilot and blowing air
- Flow rates from 255 to 6,750 NI/min
- Air purity class up to 2:2:2
- Separate pressure reduction and dryer units for more installation flexibility



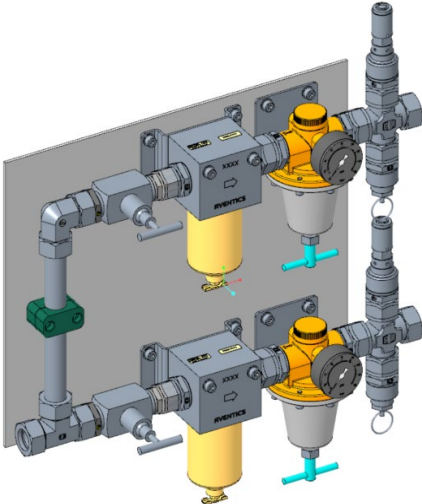
AVENTICS Marine Air Treatment Units – SCOPE of SUPPLY

Product Name	Single (S) Redundant (R)	Pilot Air					Blowing Air		Specifics	Material No.	
		Volume Flow Rate *at 7.5 bar	Quality (ISO)	Particles/Size	Water	Oil	Example of Use	Volume Flow Rate *at 7.5 bar			Quality (ISO)
Air Dryer S 2:2:2 Q2370	S	2370	2:2:2	<100 (1-5 µm) <6000 0.5-1 µm <400000 (0.1-0.5 µm)	Dew point reduction >40°C	<0.1 mg/m³	Engine control Exhaust gas analysis systems	4200	5:8:4	Input pressure: 7.5 bar (109 psi) Pilot air: Filtration 5 µm, Coalescer 0.3, Coalescer 0.01 µm Dryer Blowing air: Filtration 25, 5 µm	R417003735
Air Dryer R 2:2:2 Q2370	R	2370									R417003736
Air Dryer S 2:2:2 Q1000	S	1000			R417003733						
Air Dryer R 2:2:2 Q1000	R	1000			R417003734						
Air Dryer S 2:3:2 Q215	S	215	2:3:2		>20°C			1340	5:8:4	Input pressure: 7.5 bar (109 psi) Pilot air: Filter 25 µm, 5 µm, Dryer w/ integrated coalescer	R417003737
Air Dryer R 2:3:2 Q215	R	215			R417003738						
Filter Unit S 2:7:3 Q2600	S	2600	3:7:3	<1000 (1-5 µm) <90000 (0.5-5 g/m³)	<0.5 g/m³	<1 mg/m³	Tank Level Gauging	4600	6:8:4	Input pressure: 7.5 bar (109 psi) Pilot air: Filtration 25µm, 5µm Coalescer 0.3 µm Blowing air: Filtration 25µm	R417003731
Filter Unit R 2:7:3 Q2600	R	2600									R417003732
Filter Unit S 3:7:3 Q1640	S	1640									R417003729
Filter Unit R 3:7:3 Q1640	R	1640									R417003730
Filter Unit S 6:8:4 Q4200	S	4200	5:8:4	<100000 (1-5 µm)	0.5-5 g/m³	<5 mg/m³	Control of butterfly valves	2600	6:8:4	Input pressure 7.5 bar (109 psi) Pilot air: Filtration 25µm, 5µm Blowing air: Filtration 25µm	R417003727
Filter Unit R 6:8:4 Q4200	R	4200									R417003728
Filter Unit S 6:8:4 Q2450	S	2450									R417003725
Filter Unit R 6:8:4 Q2450	R	2450									R417003726
Filter Unit S 6:8:4 Q1340	S	1340									R417003723
Filter Unit R 6:8:4 Q1340	R	1340									R417003724
Pressure Reducing Unit S 7:8:4 Q6750	S	6750	7:8:4	5-10 mg/m³	<0.5 g/m³	<5 mg/m³	Air Tools	6750	7:8:4	Input pressure: 30 bar (435 psi) Pressure reduction to 7.5 bar (109 psi) Filtration 40 µm	R417003721
Pressure Reducing Unit R 7:8:4 Q6750	R	6750									R417003722
Pressure Reducing Unit S 7:8:4 Q1500	S	1500									R417003719
Pressure Reducing Unit R 7:8:4 Q1500	R	1500									R417003720

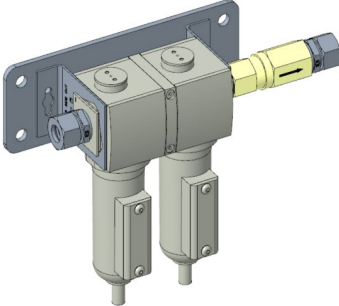
Product Examples



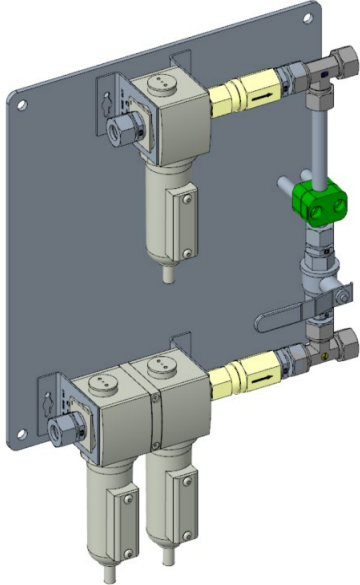
Pressure Reducing Unit (single) R417003721



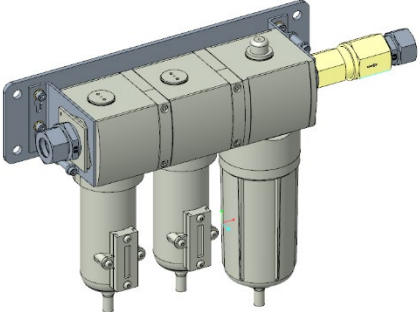
Pressure Reducing Unit (redundant) R417003722



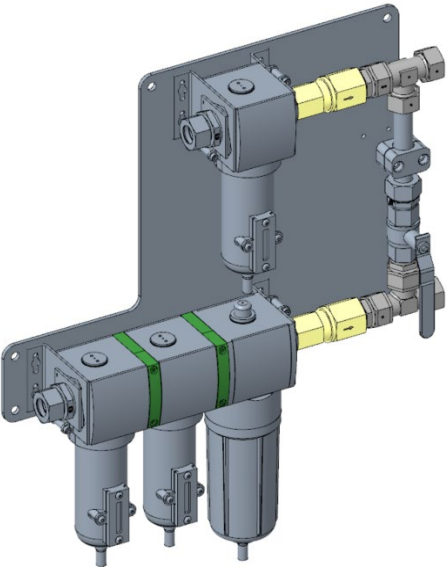
Filter Unit (single) R417003725



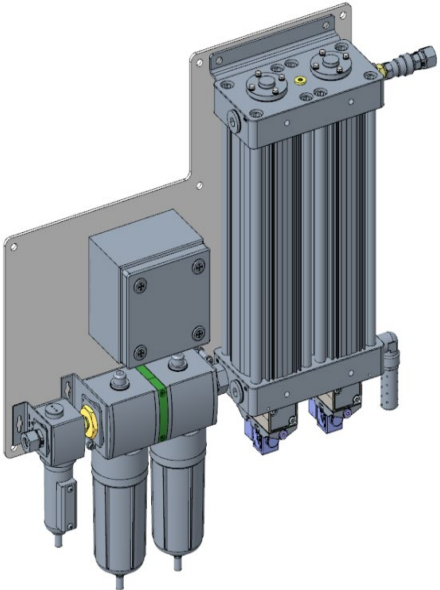
Filter Unit (redundant) R417003726



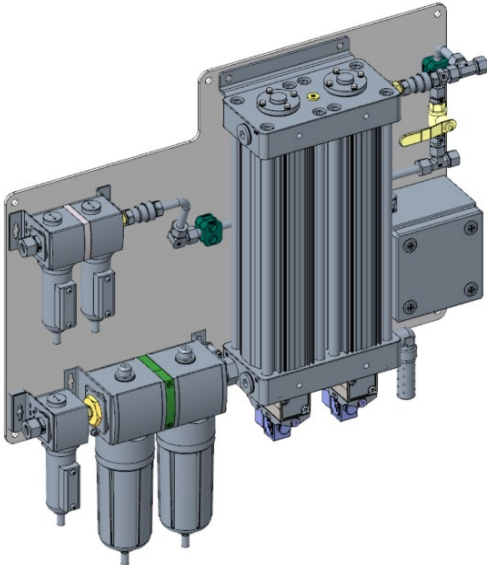
Filter Unit (single) R417003729



Filter Unit (redundant) R417003730



Air Dryer (single) R417003735



Air Dryer (redundant) R417003736



Aventics Marine

Contact us:
Marinesales.aventics@Emerson.com

AVENTICS[™]



Backup

Compressed Air Treatment

Pressure Reducing Stations



Ambient air



Compressed air



Pressure Reducing Unit

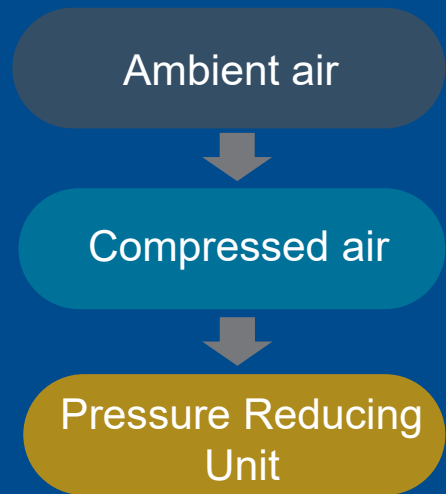
Single pressure reduction station

- Compact unit including filter, safety and drain valve
- Approved by DNV
- Temperature Range: -20 to +70°C (-4 to 158 °F)
- Flow: 1,100 NI/min
- Filter porosity: 25 - 40 µm
- High Pressure input: 30 bar (435 psi)
- Pressure Range output: 2.5 – 15 bar (36 – 217 psi), adjustable
- Protection Class: IP65



Compressed Air Treatment

Pressure Reducing Stations



Twin pressure reducing station

- Compact unit including filter 20 μ , safety and drain valve
- Fully redundant design with one output
- Approved by DNV
- Input pressure 40 bar (580 psi)
- Output pressure 6 – 9.5 bar (87 – 137 psi)
- 1,400 NI/min
- 0 - 70°C (0 – 158 °F) ambient temperature range



Compressed Air Treatment

Why Your System Cannot Do Without Air Dryer



Ambient air



Compressed air



Pressure Reducing Unit



Filter Unit



Air Dryer

About the dew point

After filtering the compressed air no longer contains water particles. But there is still moisture in form of vapor, which might later condense and damage the system. To prevent condensate the compressed air's dew point must be lower than the temperature of the air in the system.

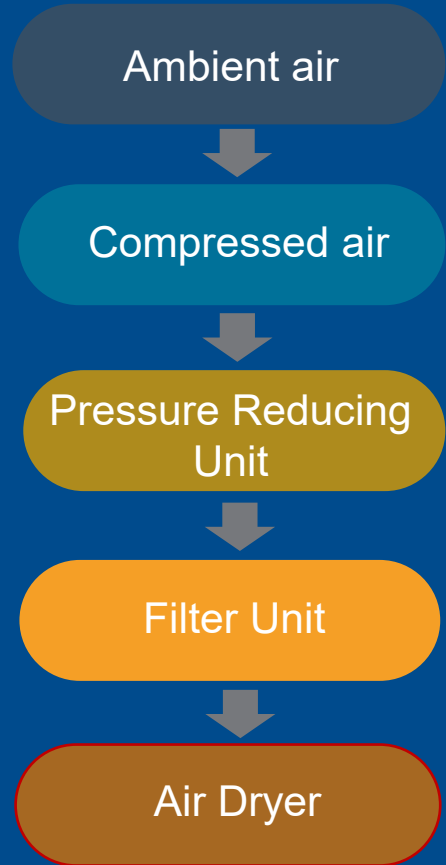
The pressure dew point is a temperature at which the relative humidity is 100% at the current water vapor content, thus reaching water vapor saturation.

If a gas loaded with moisture (water vapor) cools down, liquid water in the form of fog in the gas or dew on solid surfaces occurs at a certain temperature.

This temperature is called dew point temperature or simplified dew point.

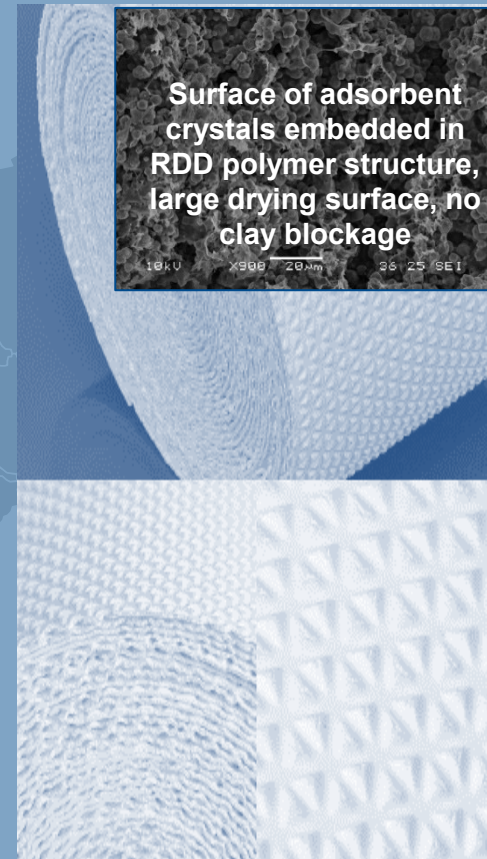
Compressed Air Treatment

AVENTICS Roll up Desiccant Drying Technology (RDD)



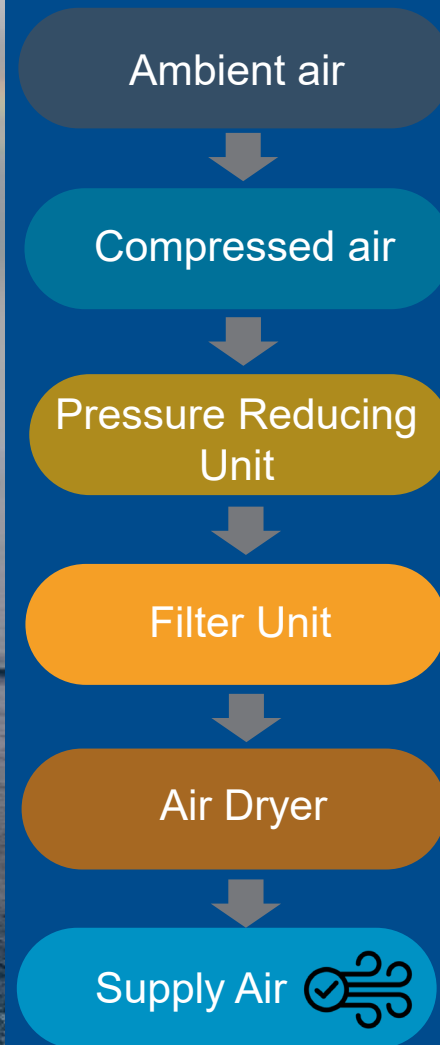
RDD Technology

- Is a revolutionary and patented adsorption media.
- Consists of adsorbent crystals immobilized in a durable polymer support structure, produced in the form of a continuous embossed sheet.
- Provides flow paths between the layers due to a final bossing process for optimum performance
- Has been developed for demanding applications in the purification of compressed air and gases
- Overcomes the disadvantages of granular materials such as channeling, by-pass, bed fluidization, dust generation, miss-use (flooding), short service life and degradation due to high water loading
- Can be installed in any orientation overcoming the many disadvantages of granular materials, especially in environments susceptible to shock and vibration.



Compressed Air Treatment

Temperature Drop – Small Change with Unpleasant Effect



In addition to the temperature-related change in ambient conditions, friction also influences the conditions in the pneumatic system. A temperature drop due to a change in ambient temperature is obvious. A drop in temperature inside the pneumatic system may require an explanation:

Any resistance, such as pipe bends, valves or other pneumatic components, generates friction and a change in velocity. This in turn leads to a pressure difference and thus to a change in temperature. This change leads to an increase in dew point and the escape of water. The water washes out the lubrication of valves and cylinders, affecting the function of the system and shortening its life.

Using an air dryer ensures proper a system function, long system life and increases safety.