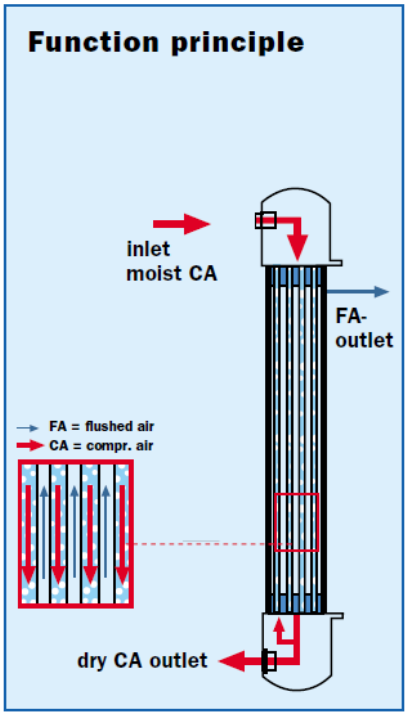
Membrane Compressed Air Dryer

The ecological solution for high compressed air quality in small and mean volume flows.

How does this membrane tube work?

The humid compressed air is a mixture of gases - the components N_2 and O_2 - water vapour and traces of other gases. This humid compressed air flows through a bundle of hollow fibres.



The hollow fibres are composed of a membrane specifically designed to attract water vapour. This means that the water vapour on the inside of the hollow fibres is absorbed, and is then diffused through the very thin selective layer until the water vapour molecules have reached the outside of the membrane. Here, they are again desorbted and removed from the membrane.

Depending on the operational parameters, the water vapour is removed selectively from the compressed air so that the compressed air on the outlet of the membrane dryer shows only little residual water vapour. The moving spirit for the described separation is the partial pressure difference between the inside and the outside of the hollow membrane fibres.

In practice, this means: the higher the pressure in the compressed air system, the better the operation of the membrane dryer.

In order to desorb the water vapour from the outside of the membrane, partial flow is taken from the dried compressed air, expanded to atmospheric pressure, conducted on the outside through the hollow fibre bundle in counterflow to the entering compressed air flow and led to the flushing air outlet.

Depending on the work load of the module, different drying grades of the compressed air can be obtained. A falling pressure dew point at the inlet also results in a falling pressure dew point at the outlet. In this way, the compressed air is perfectly dehumidified under all circumstances.

SPECIFICATIONS

Component	Material/Value
Maximum Temperature	60°C
Maximum Pressure	12.5 barg
Typical Delta P	0.2 barg
Prefiltration Required	0.01 µm Coalescing Filter

Purge Air Consumption		
Inlet PD	Outlet PDP	Approx. %
35°C	15°C	10
35°C	3°C	14
35°C	-20°C	20
35°C	-40°C	29

Technical Features

- Flow rate up to 63m3/hr
- Low pressure drop < 0,2bar
- Dew point reduction up to –40°C for 35°C of air (29% of purge)
- Low purge air requirement 10% for a dewpoint of 15°C
- Compact In-Line Design (spiral wounded membrane fibers)
- Easy to install, Maintenance Free
- High water vapour selectivity, no change of O2/N2 ratio of compressed air, therefore perfectly suitable for medical applications.
- Only corrosion resistant solid synthetic materials are used

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modèle	Débit 7b/35°C	longeur totale mm	Diamètre B mm	Diamètre C mm	Connection BSP	Matériaux de raccordement
SPN 0003	3	224				
SPN 0006	6	325				
SPN 0009	9	427				
SPN 0012	12	503	43,2	58,4	1/4"	
SPN 0018	18	312				
SPN 0024	24	376				
SPN 0036	36	465				
SPN 0048	48	592	61	81,3	1/2"	
SPN 0063	63	411	88,9	109,2	1/2"	NYLON

Performance Correction Factors for Different Pressures									
Pressure psi (bar)	4	5	6	7	8	9	10		
Factor	0.41	0.56	0.76	1	1.22	1.48	1.76	1.86	2.22

Flow rates and dewpoint reductions

Inlet Conditions	35 °C/ 7 barg Pressure dew point reduction :							
Type	Dewpoint Reduction (outlet pressure dewpoint)							
	20 K (15°C)		35K (0°C)		55K (-20°C)		75 K (-40°C)	
	m³/h Inlet	m³/h outlet	m³/h Inlet	m³/h outlet	m³/h Inlet	m³/h outlet	m³/h Inlet	m³/h outlet
SPN 0003	3,0	2,7	2,2	1,9	1,4	1,1	1,0	0,7
SPN 0006	6,0	5,4	4,3	3,7	2,8	2,2	2,0	1,4
SPN 0009	9,0	8,1	6,4	5,5	4,3	3,4	3,1	2,2
SPN 0012	12,0	10,8	8,5	7,3	5,7	4,5	4,1	2,9
SPN 0018	18,0	16,2	12,8	11,0	8,5	6,7	6,2	4,4
SPN 0024	24,0	21,6	17,0	14,6	11,3	8,9	8,2	5,8
SPN 0036	36,0	32,4	25,6	22,0	17,0	13,4	12,4	8,8
SPN 0048	48,0	43,2	34,1	29,3	22,7	17,9	16,4	11,6
SPN 0063	63,0	56,7	44,8	38,5	29,8	23,5	21,6	15,3

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