T O P P T R Y K L U F T A / S

Adsorption air dryers

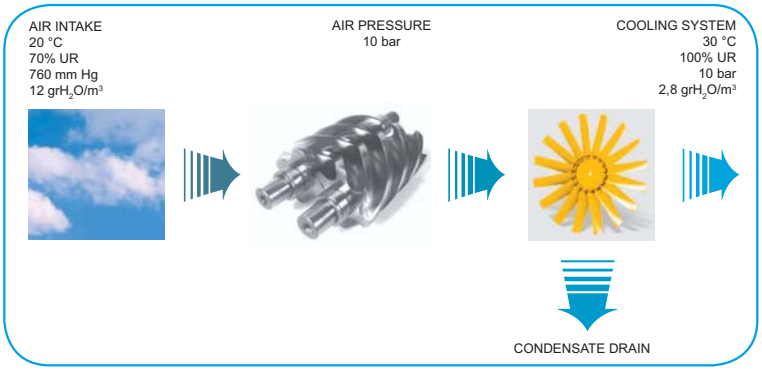
ADS 1 ÷ 215

www.topptrykluft.dk

TECHNOLOGY YOU CAN TRUST

COMPRESSED AIR

A compressor that operates in an ambient temperature of 20°C and 70% relative humidity, takes in 12 gr of water for every Nm^3 of air.



Compressed air is cooled at 30°C and condensed water vapour is separated, while 2.8 gr of water for every Nm^3 of air that condense can remain in the air (compressed at 10 bar as in the example) in vapour form.

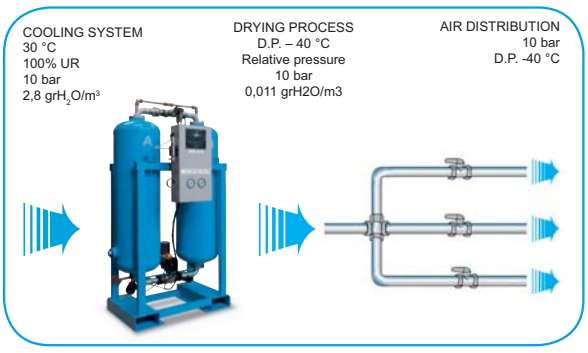
In the event of particularly rapid expansion and/or particular ambient conditions, compressed air for the application may be cooled to such an extent that the temperature drops below its Dew Point.

If the temperature falls below its dew point (*), further condensation takes place resulting in separation of humidity and formation of condensate.

(*) The Dew Point is the value of the temperature when we have the max. water vapour concentration in the air, at one specific pressure.

Over time, this may lead to:

- serious damage to the distribution network, the machines using the compressed air and the final product.
- plugs of ice forming in the tubing in certain situations.

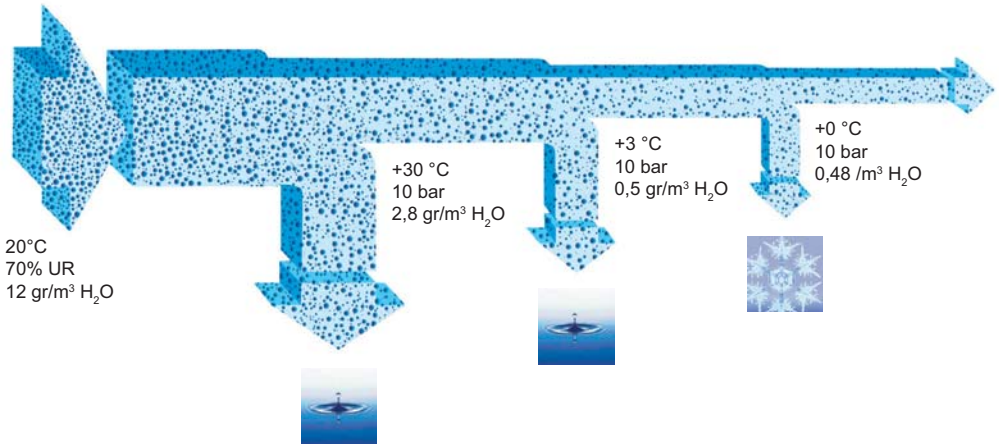


Today compressed air is a primary and essential source of energy for most production processes, from small businesses to large industries.
Filtered compressed air is no longer sufficient. Modern industries require compressed air that is increasingly filtered with low dew point and condensate.

Maintaining the correct dew point for compressed air ensures correct operation throughout the production process.

MARK has over 30 years' experience in drying compressed air, and offers the optimum solution to satisfy any demand.

DRYING PROCESS



The cooling process does not allow the temperature to fall below 0°C (solidification of water). However, specific applications or particular ambient conditions require dew point temperatures of below 0°C.

Only adsorption dryers can achieve this, because condensate separation takes place WITHOUT lowering the temperature of the compressed air or gas.

Principle

Drying phase:

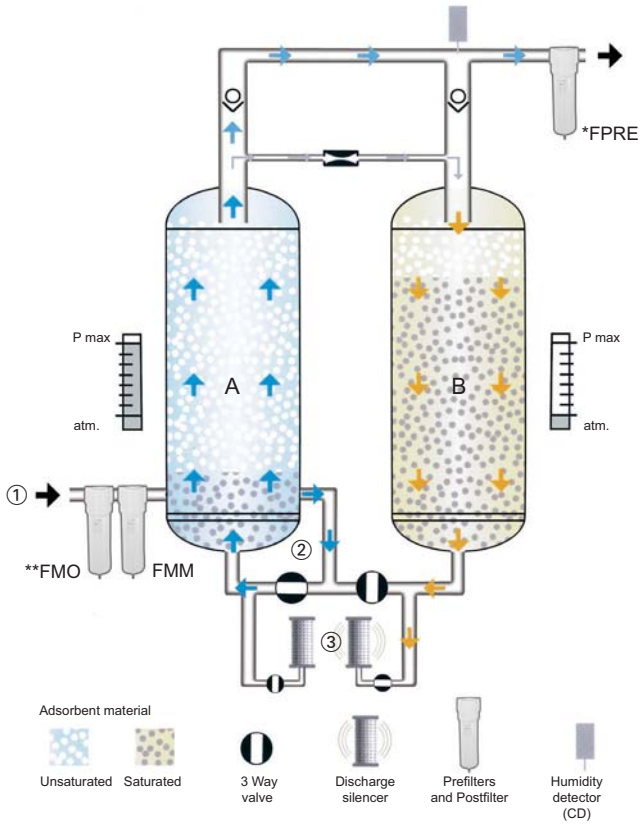
Wet air from the compressors passes through inlet filter ① which removes the oil and enters in to tower A.
The desiccant contained in it adsorbs the water vapor molecules.
After a fixed (STD) or variable time (CD) the 3 way valve ② deviates the airflow from tower A to tower B and it becomes the operative tower.

Regeneration phase:

During the drying phase in the tower A, some dry air is deviated into the top of tower B, extracting the trapped water vapor from the desiccant material. During this phase, tower B is open to the atmosphere, allowing the purge air to expand.
The silencers ③ on the outlet ensure quiet operation.

Pressurization phase:

Once regeneration has taken place and tower B is pressurized, the 3 way valve ② changes air flow again.



Notes:
* On ADS1-3 outlet filter is built inside of the desicant cartridges.
** Recommended but not included on ADS1-80.

ADS 1 - 11 RANGE

ADS 1 – 3 STD
Compact execution

- Versatile installation with multiport system and six possible connections.
- Compact execution.
- This module can be installed horizontally or vertically, can stand on the floor or be mounted on a wall (optional mounting kit available).
- Easy to maintain:
  - Maintenance operations can be performed without disconnecting tubing.
  - Assorbent cartridge with built-in postfilter.
- Automatic electronic control to manage the dryer and phase status with an automatic fault diagnosis, including alarms.

TECHNICAL INFO

- Capacities from 120 up to 300 l/1' at 7 bar.
- Standard dew point - 40 °C.
  (-70°C. by derating the FAD).
- Max. working pressure 16 bar.
- Working pressure range 4 - 16 bar.

ADS 4 – 11 STD
Reliable – space saving

- Compact, reduced footprint, simple design.
- Easy to install thanks to:
  - Wall mounting kit, allowing zero footprint installation.
  - The inlet prefilter FMM and the outlet postfilter FPRE can be assembled directly to the IN/OUT connections of the dryer.
  - Small sizes.
- Aluminium head, base and cylinders prevent corrosion.
- The timer card control system includes a remote control contact (P4) as standard.
- Suction and discharge devices in anticorrosive aluminium, with self-cleaning spool valve for inversion phases, ensure maintenance free and reliable operation.
- Each tower is fitted with a high efficiency silencer for quiet operation.

TECHNICAL INFO

- Capacities from 402 up to 1020 l/1' at 7 bar.
- Standard dew point -20 °C.
  (- 40°C. by derating the FAD).
  (-70°C as an option together with derating the FAD).
- Max. working pressure 11 and 16 bar.
- Working pressure range 4-11 bar. and 11-16 bar.

ADS 20 - 80 RANGE

ADS 20 - 80 STD
(CD: control dew point as option)

- Reliable operation with standard components tested for continuous service.
- The compact dryer can be installed on the floor (floor mounted kit as standard).
- The inlet prefilter FMM and the outlet postfilter FPRE, have to be mounted on the air distribution line. The filters are included but not pre-mounted.

① Base frame makes it easy to transport by fork lift.

② Pressure gauge – tower A.

③ Pressure gauge – tower B.

④ Stainless steel purge nozzle.

⑤ Air outlet connection.

⑥ Air intlet connection.

⑦ High efficiency silencers with integrated safety valve.

TECHNICAL INFO

- Capacities from 1917 up to 7800 l/1' at 7 bar.
- Standard dew point -40°C.
  (-70°C. as an option together with derating the FAD).
- Max. working pressure 16 bar.
- Working pressure range 4 - 16 bar.

ADS 110 - 215 RANGE

ADS 110 - 215
STD: electronic timer control
CD: control dew point

ADS/STD

Developed with high quality components, ADS dryers guarantee a stable dew point of -40°C. The use of an optimized desiccant volume and a wide vessel, ensure a low air speed and a longer contact time.

Purge phases are controlled by an electronic timer on the standard models (ADS/STD).
There is also control dew point version (ADS/CD) where the drying phase is dew point dependent and is controlled by our electronic dew point management system.
The two inlet prefilters FMO-FMM and the outlet postfilter FPRE have to be mounted on the air distribution line. The filters are included but not pre-mounted.

① Wide vessels for optimum air speed and reliable drying. Unit is rather low for its capacity due to flanges that are built into the vessels.

② Air outlet connection.

③ Robust frame, including fork lift slots for easy installation.

④ Pressure Dew Point sensor. (ADS/CD)

⑤ Pressure Dew Point digital display. (ADS/CD)

⑥ Two manometers integrated in the control panel to show pressure in the vesse ls A/B.

⑦ Stainless steel purge nozzle.

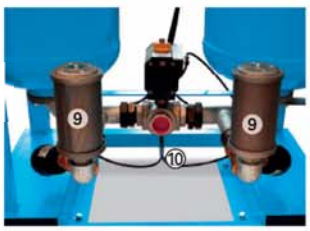
⑧ Galvanized piping with flanged connections.

⑨ High efficiency silencers with integrated safety valve.

⑩ Air inlet connection.

⑪ Stainless steel 3 way valve – long service interval.

ADS/CD

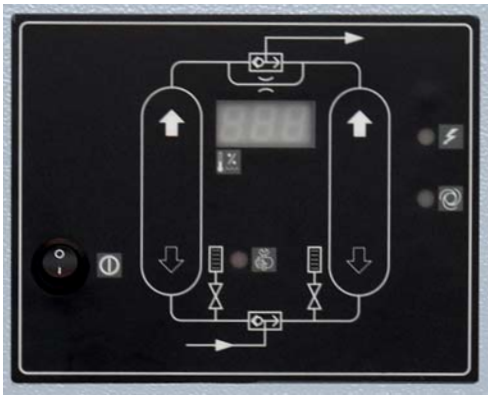


TECHNICAL INFO

- Capacities from 10800 up to 21600 l/1' at 7 bar.
- Standard dew point -40°C.
  (-70°C. an option together with derating the FAD).
- Max. working pressure 11 and 16 bar.
- Working pressure range 4-11 bar and 11-16 bar.

CONTROL DEW POINT - CD

How to decrease your consumption?

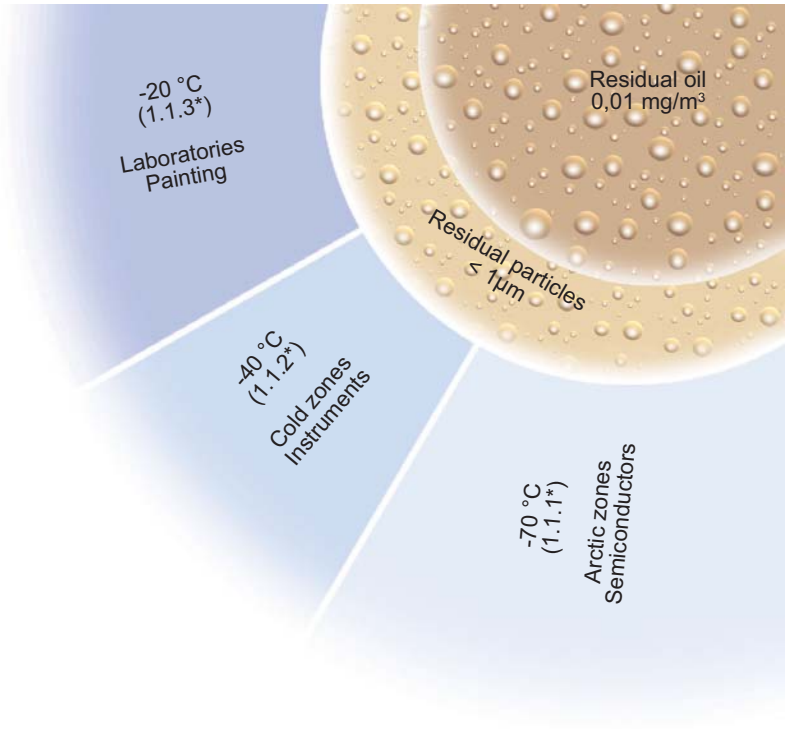


The electronic Pressure Dew Point control (CD) extends the drying phase of the dryer's cycle. It is done by measuring PDP of compressed air on the dryer outlet and only switching the columns when desiccant in the active tower is saturated. The regeneration part of the cycle stays fixed.
As most of the time compressor and dryer runs < 100% load, this results in a significant extension of the drying time and a reduction in purge air consumption.
Typically the extra investment in a Pressure Dew Point control is paid back in a few months by savings made on dryer running costs.

Quality air with the ADS dryer

Particularly for:

- The chemical and pharmaceutical Industries.
- Petrochemical plants.
- Food industry.
- Transportation of hygroscopic materials.
- Quality painting.
- Textile production.
- Semiconductors.
- Cable pressurization.
- Beer and drinks production.
- Applications in low-temperature environments.



* Quality class according to ISO 8573-1

ORIGINAL PART

Original parts fit the best.
Only they will guarantee the original performance of your machine.To ensure maximum working efficiency and a long life time, every part must conform to specific technical standards. With the use of Original Parts you are certain about the quality, life time, utilized material and the impact on other components. All these aspects are important to make the right choice for spare parts. Only with original components can you be sure about these factors. Therefore your best choice is an Original Part.

T O P P T R Y K L U F T A / S

TECHNICAL DATA

Type	Max. working pressure		Operating pressure	Air treatment capacity			Standard Dew Point	FMO 0,1 µm 0,1 mg/mc	FMM 0,01 µm 0,01 mg/mc	FPRE 1 µm n.a. mg/mc	Inlet / outlet connections	Dimensions			Weight
	bar	psi		m³/1'	m³/h	cfm	°C.	Pre filters		Post filter	gas	L	W	H	Kg
ADS 1	16	232	7,0	0,120	7,2	4,2	-40	n.a.	FMM 10	INTEGRATED IN THE DRYER	3/8"	281	92	445	13
ADS 2	16	232	7,0	0,180	10,8	6,4	-40	n.a.	FMM 10		3/8"	281	92	504	14
ADS 3	16	232	7,0	0,300	18,0	10,6	-40	n.a.	FMM 10		3/8"	281	92	635	17
ADS 4	11	159	7,0	0,402	24,1	14,2	-20	n.a.	FMM 10	FPRE 10	1/2"	273	164	895	25
	16	232	12,5	0,540	32,4	19,1									
ADS 8	11	159	7,0	0,720	43,2	25,4	-20	n.a.	FMM 10	FPRE 10	1/2"	273	164	895	26
	16	232	12,5	0,780	46,8	27,5									
ADS 11	11	159	7,0	1,020	61,2	36,0	-20	n.a.	FMM 10	FPRE 10	1/2"	273	164	1095	31
	16	232	12,5	1,320	79,2	46,6									
ADS 20	16	232	7,0	1,917	115	67,7	-40	n.a.	FMM 20	FPRE 20	3/4"	550	177	998	50
ADS 24	16	232	7,0	2,400	144	84,8	-40	n.a.	FMM 20	FPRE 20	3/4"	550	177	998	50
ADS 27	16	232	7,0	2,700	162	95,3	-40	n.a.	FMM 33	FPRE 33	3/4"	550	177	1243	60
ADS 36	16	232	7,0	3,600	216	127	-40	n.a.	FMM 33	FPRE 33	1"	550	378	999	100
ADS 42	16	232	7,0	4,200	252	148	-40	n.a.	FMM 60	FPRE 60	1"	550	378	999	100
ADS 55	16	232	7,0	5,400	324	191	-40	n.a.	FMM 60	FPRE 60	1"	550	378	1243	120
ADS 60	16	232	7,0	6,000	360	212	-40	n.a.	FMM 60	FPRE 60	1 ½"	550	540	998	150
ADS 80	16	232	7,0	7,800	468	275	-40	n.a.	FMM 85	FPRE 85	1 ½"	550	540	1243	180
ADS 110	11	159	7,0	10,800	648	381	-40	FMO 130	FMM 130	FPRE 130	1 ½"	960	754	1716	445
	16	232	12,5	12,900	774	456									
ADS 130	11	159	7,0	13,200	792	466	-40	FMO 130	FMM 130	FPRE 130	1 ½"	960	754	1716	445
	16	232	12,5	15,900	954	561									
ADS 180	11	159	7,0	18,000	1080	636	-40	FMO 170	FMM 170	FPRE 170	2"	1064	833	1832	600
	16	232	12,5	21,600	1296	763									
ADS 215	11	159	7,0	21,600	1296	763	-40	FMO 250	FMM 250	FPRE 250	2"	1118	859	1869	650
	16	232	12,5	25,800	1548	911									

Notes:

① Reference conditions:

- Operating pressure : see the technical data table.
- Operating temperature : 35 °C.
- Relative humidity : 100 %

② Filters are delivered loose with the dryer:

ADS1-11: the filters can be directly fixed on the dryer .
ADS20-215: the filters have to be mounted on the air distribution line.

For working pressure different from " operating pressure " use the correction factors table.

Correction factors	**ADS/11 bar**								**ADS/16 bar**					
Air Inlet Pressure - bar	4	5	6	**7**	8	9	10	11	11	**12,5**	13	14	15	16
ADS4 up to 11 ADS110 up to 215	0,47	0,68	0,84	**1**	1,1	1,2	1,3	1,38	0,89	**1**	1,04	1,11	1,19	1,24

Correction factors	**ADS/16 bar**												
Air Inlet Pressure - bar	4	5	6	**7**	8	9	10	11	12	13	14	15	16
ADS1 up to 3 ADS20 up to 80	0,62	0,75	0,87	**1**	1,12	1,25	1,37	1,5	1,62	1,75	1,87	2	2,12

Correction factors						
Air Inlet Temperature °C.	25	30	**35**	40	45	50
ADS1 up to 215	1	1	**1**	0,84	0,71	0,55

Correction factors			
Pressure Dew Point °C.	**-20**	-40	-70
ADS4 up to 11	**1**	0,88	0,7

Correction factors		
Pressure Dew Point °C.	**-40**	-70
ADS1 up to 3 ADS20 up to 215	**1**	0,7

According to UNI EN ISO 9001: 2000 and UNI EN ISO 14001

ORIGINAL PART

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