Adsorption Air Dryers

ADS 1 to 215

Clean and dry air.
Prevent the risks,
enjoy the benefits.

AVAILABILITY
SERVICEABILITY
RELIABILITY
SIMPLICITY
PARTNERSHIP

TECHNOLOGY YOU CAN TRUST

MARK

User benefits

Boost quality and productivity

- Eliminate any residual water from the net for guaranteed clean compressed air
- Ensure your air network is protected against rust avoiding leakages
- Higher final product quality
- Increase your overall productivity

Save costs

- Prolong the life span of your operation process (machine/equipment...)
- Reduce potential downtime
- Energy management solution available to minimise energy consumption

Easy operation and installation

- Compatible with any compressor technology
- User-friendly communication display providing air quality indication and maintenance requirements
- Ready to install, with an integrated filtration solution (ADS 1 - 10)
- Compact equipment fits in a minimum space

Risks to avoid

Humid, unclean air can cause:

- A dirty air network increases leakage risk
- High maintenance cost of your air network (corrosion), operation process and potential downtime
- Shorten the life span of your operation process (machine/equipment)
- Risk of water contamination in the air network, with potential freezing in winter time
- Lower quality of the final product causing potential risk of product recalls
- Reduced productivity

ADS Adsorption Dryers

A compressor takes humidity from the intake air which turns into condensate during the compression process. This will cause wear and corrosion to the downstream equipment, with potential costly interruption to production, and reduction in the efficiency and service life of the equipment used. Adsorption dryers provide a solution to prevent this negative impact.

The Mark ADS adsorption dryers will eliminate water vapour that may potentially condensate in your compressed air system and cause damage. These dryers use an adsorption material called “desiccant” in order to absorb and remove (by regeneration phase) the humidity from the compressed air. With this method we can reach a PDP < 3°C (-40°C. or -70°C.). This range should also be used when the ambient temperature goes below freezing point, to avoid ice building in pipes and applications. The ADS range is typically used in the chemical, food and pharmaceutical industry and whenever a PDP <3°C is requested.

Adsorption removes the remaining moisture content in the air that will condense out even downstream of a refrigerant dryer. Its technology ‘simulates’ a temperature reduction down to -40°C to -70°C by attracting and retaining moisture with the desiccant media (moisture freezes at +3°C actual temperature reduction) to condense out the very last water content in the air. The moisture is removed from the air flow to your network and released. Adsorption dryers are recommended for the most demanding applications, where no moisture contamination can be accepted.

Standard features and options

STANDARD FEATURES AND OPTIONS	ADS 1 - 10	ADS 20 - 105	ADS 110 - 115
Capacity at 7 bar (- 40°C)	114 - 990 l/1’	1920 - 11400 l/1’	10800 - 21600 l/1’
Dew point	Standard -40°C	Standard -40°C	Standard -40°C
Maximum working pressure	16 bar	14,5 bar	11 and 14,5 bar
Working pressure range	4-16 bar	4 - 14,5 bar	4-11 bar & 11-14,5 bar
Voltages	12 - 24 V - DC 50/60Hz 100 - 115 - 230V - AC 50/60Hz	115 - 230 V - AC 50/60Hz	230 V - AC 50/60Hz
Easy installation	Multiport inlet and outlet	Forklift slot	Forklift slots
Dew point sensor	✘	✔	✔
Dew point -70°C	By derating the air capacity	✔ (-70°C as an option together with derating the air capacity)	

✔ = available ✘ = not available

A compact quality air solution for easy installation and maintenance

ADS 1 - 10 STD RANGE

Compact execution

- Versatile installation with multiport system and six possible connections.
- Compact, reduced footprint, simple design.
- This module can be installed horizontally or vertically, can stand on the floor or be mounted on a wall (optional mounting kit available).
- The inlet prefilter FMM is delivered loose with the dryer but it can be directly fixed on it.
  The outlet postfilters FPRE are integrated in the desiccant cartridges.
- Aluminium head, base and cylinders prevent corrosion.
- Easy to maintain:
  - Maintenance operations can be performed without disconnecting tubing.
  - Adsorbent cartridge with built-in postfilter.
- Automatic electronic control to manage the dryer and phase status with an automatic fault diagnosis, including alarms.
- Each tower is fitted with a high efficiency silencer for quiet operation.

Components

1. Prefilter removes particulates and coalesced liquids from the air sytem.
2. Removable front panel allows for easy access for servicing without disconnecting the pipe system.
3. Postfilters, integrated in the dryer, removes particulate in the air stream.
4. Electronic control housed in an IP65 box which enables:
   - regeneration cycle management
   - regulation status
   - default diagnosis
   - remote default report

MULTIPORT INLET AND OUTLET
THIS ARRANGEMENT ENSURES EASY AND FAST INSTALLATION

Applications for ADS 1 - 215

Energy efficient and solid performance

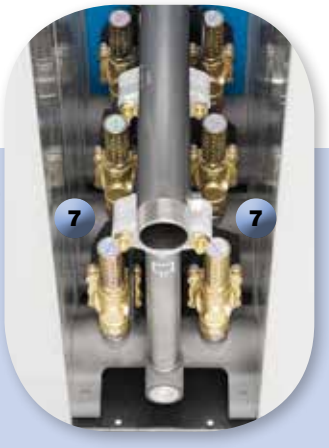
ADS 20 - 105 STD RANGE

Control dewpoint as option (CD)

- 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.

Components

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 inlet connection.
7. High efficiency silencers with integrated safety valve.
8. Dew point sensor.



Perfectly clean and dry air system with a clever dew point management

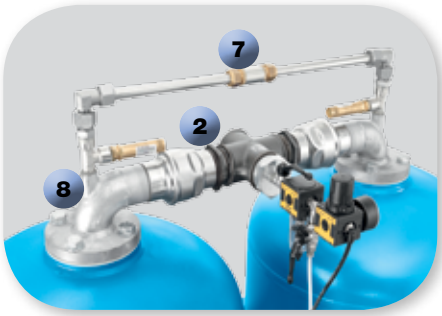
ADS 110 - 215 RANGE

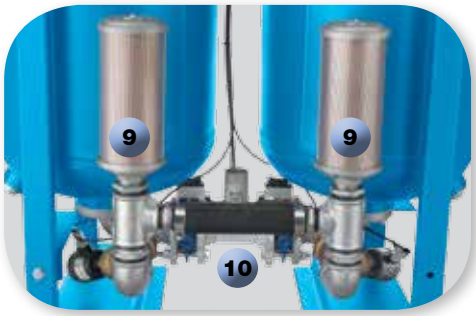
Electric timer control (STD) • Control dew point (CD)

- Developed with high quality components.
- ADS dryers guarantee a stable dew point of -40°C.
- The use of an optimised 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 a dew point control 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.

Components

1. Wide vessels for optimum air spread and reliable drying.
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 two vessels.
7. Purge nozzle for regeneration.
8. Galvanized piping with flanged connections.
9. High efficiency silencers with integrated safety valve.
10. Air inlet connection.
11. Inlet valves, long service interval.



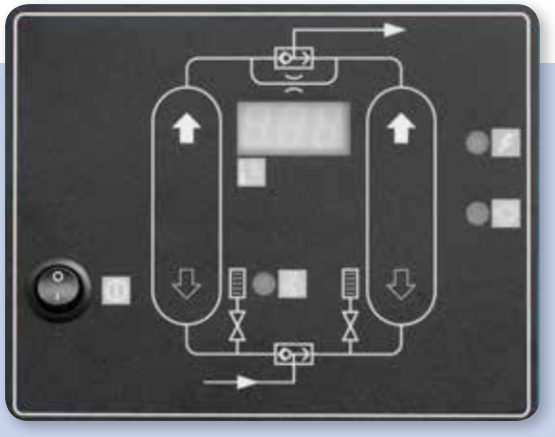


How to decrease your energy consumption?

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.



ADSORPTION DRYERS ADS 1 - 215

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 Connec-tions	Dimensions			Weight
	BAR	psi	BAR	l/1'	m^3/h	cfm	°C	Pre filters		Post filters	Gas	L	W	H	kg
ADS 1	16	232	7,0	114	7	4,1	-40	n.a.	FMM 10	Integrated in the dryer	3/8"	281	92	445	13
ADS 2	16	232	7,0	168	10	5,9	-40	n.a.	FMM 10		3/8"	281	92	504	14
ADS 3	16	232	7,0	282	17	10	-40	n.a.	FMM 10		3/8"	281	92	635	17
ADS 4	16	232	7,0	426	26	15,3	-40	n.a.	FMM 10		3/8"	281	92	815	20
ADS 7	16	232	7,0	708	42	24,7	-40	n.a.	FMM 10		3/8"	281	92	1065	24
ADS 10	16	232	7,0	990	59	34,7	-40	n.a.	FMM 10		3/8"	281	92	1460	31
ADS 20	14,5	210	7,0	1920	115	67,7	-40	n.a.	FMM 20	FPRE 20	1"	550	242	998	64
ADS 24	14,5	210	7,0	2400	144	84,8	-40	n.a.	FMM 20	FPRE 20	1"	550	242	998	64
ADS 27	14,5	210	7,0	2700	162	95,3	-40	n.a.	FMM 33	FPRE 33	1"	550	242	1243	78
ADS 36	14,5	210	7,0	3900	234	138	-40	n.a.	FMM 33	FPRE 33	1"	550	242	1611	98
ADS 42	14,5	210	7,0	4500	270	159	-40	n.a.	FMM 60	FPRE 60	1"	550	358	998	133
ADS 55	14,5	210	7,0	5400	324	191	-40	n.a.	FMM 60	FPRE 60	1"	550	358	1243	158
ADS 60	14,5	210	7,0	6300	378	222	-40	n.a.	FMM 85	FPRE 85	1"	550	358	1611	256
ADS 80	14,5	210	7,0	7800	468	275	-40	n.a.	FMM 85	FPRE 85	1"	550	358	1611	256
ADS 95	14,5	210	7,0	9600	576	339	-40	n.a.	FMM 85	FPRE 85	1" ½	550	520	1611	310
ADS 105	14,5	210	7,0	11400	684	403	-40	n.a.	FMM 130	FPRE 130	1" ½	550	520	1611	310
ADS 110	11	159	7,0	10800	648	381	-40	FMO 130	FMM 130	FPRE 130	1" ½	1040	840	1760	445
	14,5	210	12,5	12900	774	456	-40								
ADS 130	11	159	7,0	13200	792	466	-40	FMO 130	FMM 130	FPRE 130	1" ½	1040	840	1760	445
	14,5	210	12,5	15900	954	561	-40								
ADS 180	11	159	7,0	18000	1080	636	-40	FMO 170	FMM 170	FPRE 170	2"	1046	894	1876	600
	14,5	210	12,5	21600	1296	763	-40								
ADS 215	11	159	7,0	21600	1296	763	-40	FMO 250	FMM 250	FPRE 250	2"	1100	923	1914	650
	14,5	210	12,5	25800	1548	911	-40								

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:** ADS 1-10: the filters can be directly fixed on the dryer. ADS 20-215: the filters have to be mounted on the air distribution line.
For conditions differing from the reference conditions, use the below correction factor table.

Correction factors

Correction factors	ADS/14,5 or 16 bar (max. working pressure)													
Air Inlet Pressure - bar	4	5	6	**7**	8	9	10	11	12	13	14	14,5	15	16
ADS 1 - ADS 10	0,62	0,75	0,87	**1**	1,12	1,25	1,37	1,5	1,62	1,75	1,87	1,93	2	2,12
ADS 20 - ADS 105	0,62	0,75	0,87	**1**	1,12	1,25	1,37	1,5	1,62	1,75	1,87	1,93		

Correction factors	ADS/11 bar (max. working pressure)								ADS/14,5 bar (max. working pressure)				
Air Inlet Pressure - bar	4	5	6	**7**	8	9	10	11	11	**12,5**	13	14	14,5
ADS 110 - ADS 215	0,47	0,68	0,84	**1**	1,1	1,2	1,3	1,38	0,89	**1**	1,04	1,11	1,15

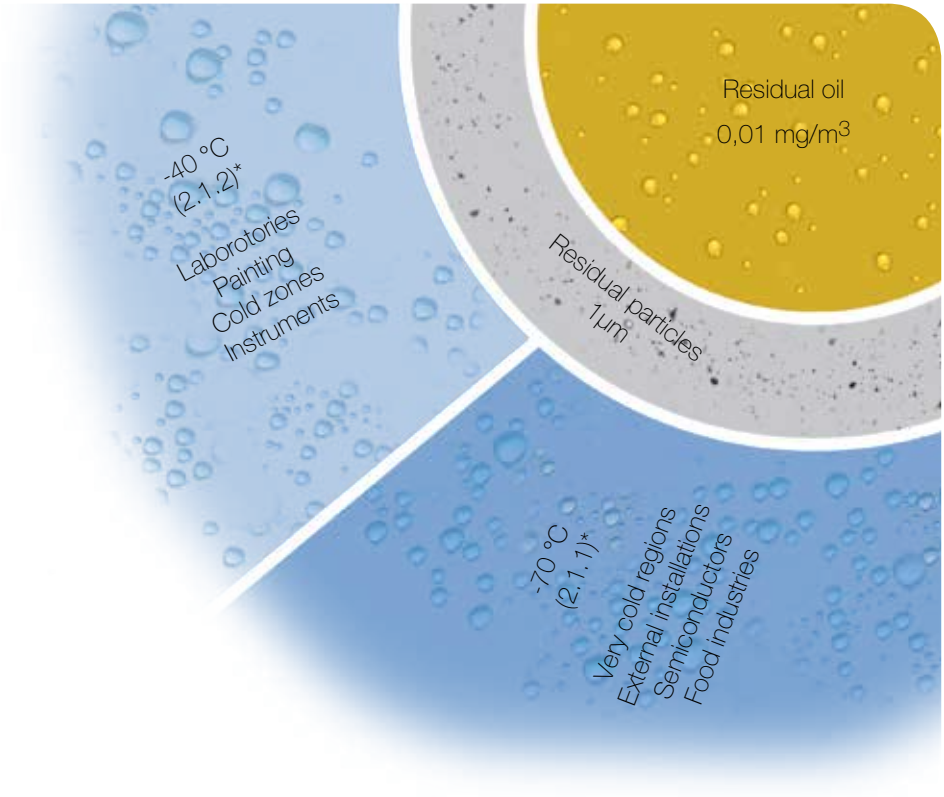
Correction factors							
Air Inlet Temperature °C	20	25	30	**35**	40	45	50
ADS 1 - ADS 10	1,07	1,06	1,04	**1**	0,88	0,78	0,55
ADS 20 - ADS 215	1	1	1	**1**	0,84	0,71	0,55

Correction factors		
Pressure dew point °C	**-40**	-70
ADS 1 - ADS 215	**1**	0,7

APPLICATIONS & DRYING PROCESS

Application for 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.
- ... and whenever a pressure dew point less than 3°C is requested.



* Quality class according to ISO 8573-1

The drying process

Drying phase:

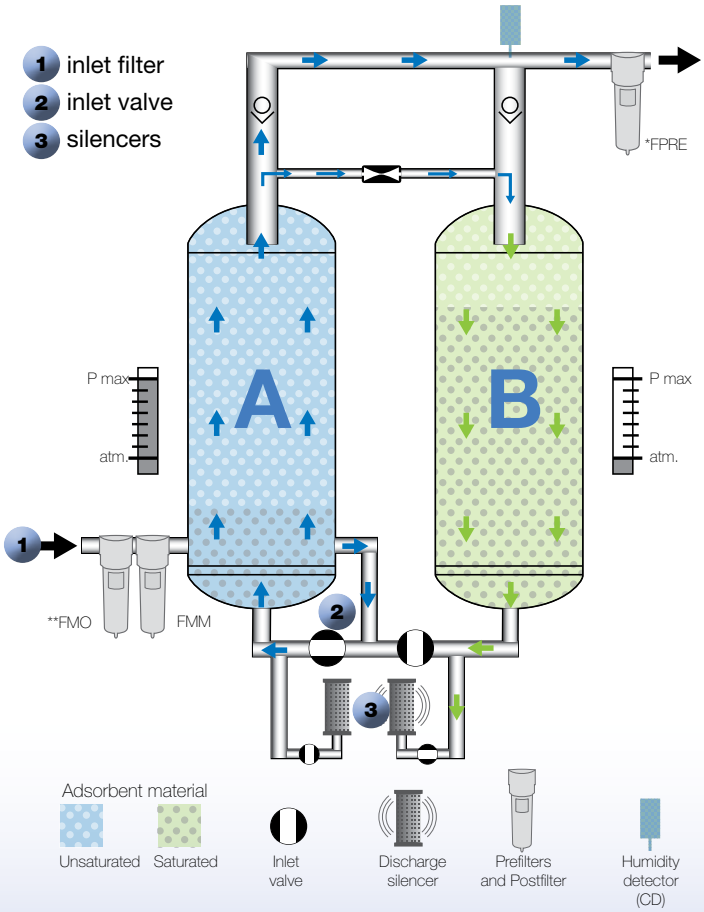
Wet air from the compressors passes through the **inlet filter (1)** which removes the oil and enters into tower A.
The desiccant contained in it adsorbs the water vapor molecules.
After a fixed (STD) or variable time (CD) the **inlet valve (2)** deviates the airflow from tower A to tower B and it becomes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



* On ADS1-10 outlet filter is built inside of the desiccant cartridges.
** Recommended but not included on ADS1-105

Adsorption air dryers
Range ADS 1 • 215

MARK

- A high quality product and **technology you can trust**
- Choosing our high performance compressor ensures your compressed air **availability**
- Our products are **simple**, **easy to use** and give strong **reliability**
- **Serviceability** and aftermarket are guaranteed
- Original Parts and Services
- Dealers are always nearby and complete the strong **partnership** you can expect

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