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

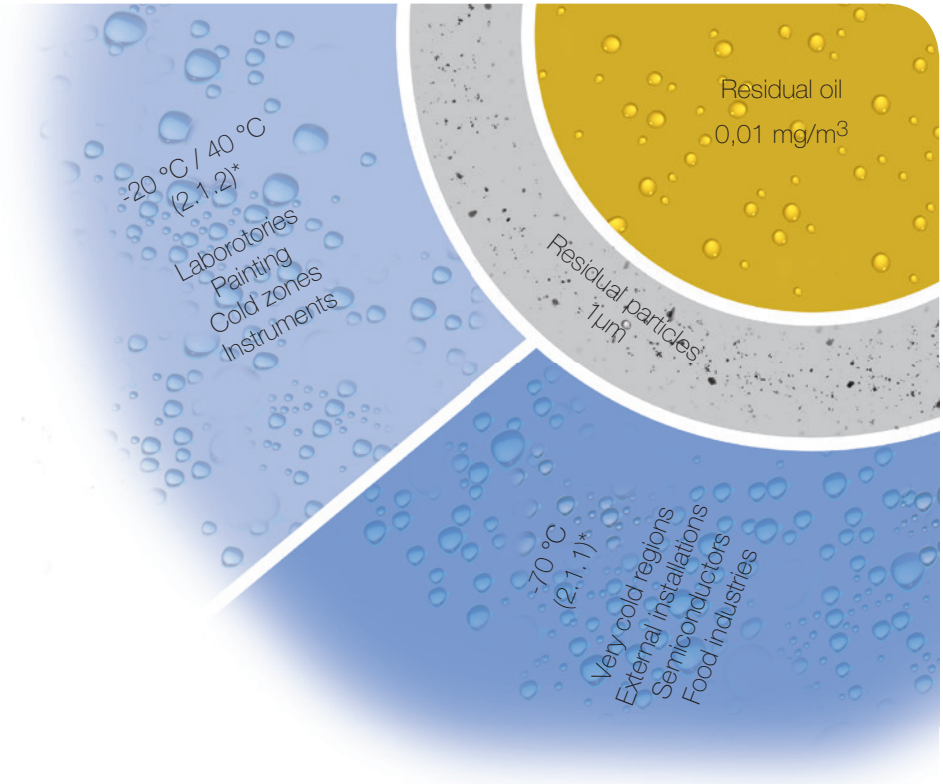
STANDARD FEATURES AND OPTIONS	ADS 1 - 10	ADS 15 - 156	ADS 110 - 215
Capacity at 7 bar (- 40°C)	114 - 990 l/1’	1500 - 15600 l/min	10800 - 21600 l/1’
Dew point	Standard -40°C	Standard -20°C Standard -40°C	Standard -40°C
Maximum working pressure	16 bar	14 bar	11 and 14,5 bar
Working pressure range	4-16 bar	4 - 14 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
Dew point sensor	✘	Optional	✔
Dew point -70°C	By derating the air capacity	✔ Available on the -40°C version (for models ADS 21 and larger) and with a rated flow reduction of 30%	

✔ = available ✘ = not available

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:

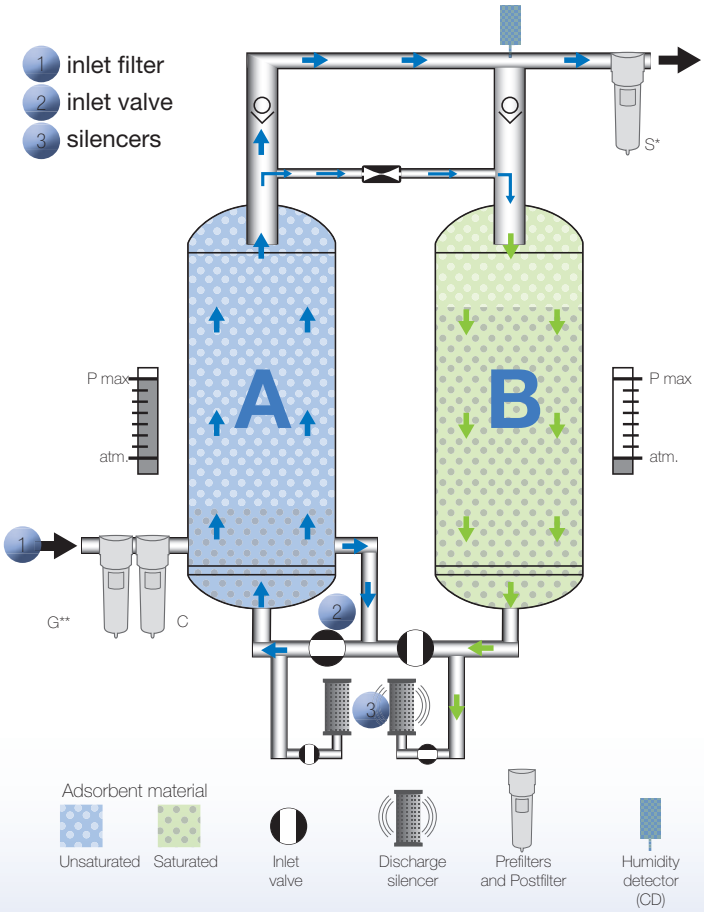
Wet air from the compressors passes through the **inlet filter (1)** which removes the oil and enters into vessel A.
The desiccant adsorbs the water vapor molecules.
After a fixed (STD) or variable adsorbing time (CD) the **inlet valve (2)** deviates the airflow from vessel A to vessel B, where the air continues to be dried.

Regeneration:

During the drying phase in vessel A, some dry air is deviated into vessel B. Flowing from top to bottom, the dried air is able to remove the water vapor from the desiccant material. During this phase, vessel B is open to the atmosphere, allowing the purge air to expand.
The **silencers (3)** on the outlet ensure quiet operation.

Pressurization:

Once regeneration has taken place, vessel B is pressurized again so that the **inlet valve (2)** can change the air flow again.



* On ADS1-10 outlet filter is built inside of the desiccant cartridges.
** Recommended but not included on ADS1-156

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 C is delivered loose with the dryer but it can be directly fixed on it.
  The outlet postfilters 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 15 - 156

Reliability

- improved flow
- unique valve system
- desiccant protection
- flow distributor - swirl

Performance

- high-efficiency silencers
- lower noise level
- very low purge consumption
- PDP -20°C / -40°C
- PDP -70°C optional
- dew point sensor (optional)

Features

- digital controller
- nozzle purge set for different pressures
- synchronization possibility with the compressor
- two included filters (loose)

Options

- PDP sensor and selection
- Wall-mounting kit for units with 2 columns

- New “swirl” technology ensures optimal distribution of the airflow and decreases uneven wear of the desiccant.

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 G - C and the outlet postfilter S have to be mounted on the air distribution line. The filters are included but not pre-mounted.

Components

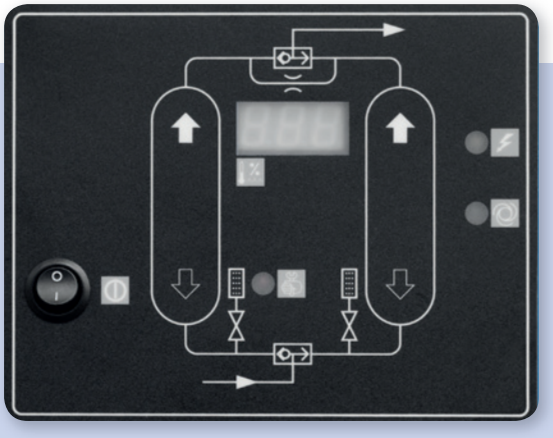
1. Wide vessels for optimum air spread and reliable drying.
2. Air outlet connection.
3. Robust frame, including fork lift slots for easy installation.
4. Pressure dew point sensor (ADS / CD).
5. Pressure dew point digital display (ADS / CD).
6. Two manometers integrated in the control panel to show 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 for PDP -40°C version

For dimensions & weight for the version PDP **-20°C**, please refer to the dimension drawing

Type	Max. Working Pressure		Operating Pressure	Air Treatment Capacity ①			Standard Dew Point	G 0,1 mg/mc	C 0,01 mg/mc	S (MPPS=0,1 µm) 99,81%	Inlet / outlet Connec-tions	Dimensions			Weight
	BAR	psi	BAR	l/1'	m^3/h	cfm	°C	Pre filters ②		Post filters	Gas	A	B	C	kg
ADS 1	16	232	7,0	114	7	4,1	-40	n.a.	C 7	Integrated in the dryer	3/8"	92	281	445	13
ADS 2	16	232	7,0	168	10	5,9	-40	n.a.	C 7		3/8"	92	281	504	14
ADS 3	16	232	7,0	282	17	10	-40	n.a.	C 7		3/8"	92	281	635	17
ADS 4	16	232	7,0	426	26	15,3	-40	n.a.	C 7		3/8"	92	281	815	20
ADS 7	16	232	7,0	708	42	24,7	-40	n.a.	C 7		3/8"	92	281	1065	24
ADS 10	16	232	7,0	990	59	34,7	-40	n.a.	C 15		1/2"	92	281	1460	31
ADS 15	14	203	7	1500	90	53	-40	n.a.	C 15	S 15	1"	401	620	1070	87
ADS 21	14	203	7	2100	126	74	-40	n.a.	C 21	S 21	1"	401	620	1115	88
ADS 27	14	203	7	2700	162	95	-40	n.a.	C 30	S 30	1"	401	620	1285	99
ADS 33	14	203	7	3300	198	116	-40	n.a.	C 48	S 48	1"	401	620	1465	114
ADS 39	14	203	7	3900	234	138	-40	n.a.	C 48	S 48	1"	401	620	1615	124
ADS 54	14	203	7	5400	324	191	-40	n.a.	C 84	S 84	1" 1/2	571	620	1285	165
ADS 66	14	203	7	6600	396	233	-40	n.a.	C 84	S 84	1" 1/2	571	620	1465	197
ADS 78	14	203	7	7800	468	275	-40	n.a.	C 84	S 84	1" 1/2	571	620	1615	211
ADS 99	14	203	7	9900	594	350	-40	n.a.	C 114	S 114	1" 1/2	571	620	1915	245
ADS 117	14	203	7	11700	702	413	-40	n.a.	C 156	S 156	1" 1/2	738	620	1615	298
ADS 156	14	203	7	15600	936	551	-40	n.a.	C 156	S 156	1" 1/2	738	620	1915	328
ADS 110	11	159	7,0	10800	648	381	-40	G 114	C 114	S 114	1" ½	840	1040	1760	445
	14,5	210	12,5	12900	774	456	-40								
ADS 130	11	159	7,0	13200	792	466	-40	G 156	C 156	S 156	1" ½	840	1040	1760	445
	14,5	210	12,5	15900	954	561	-40								
ADS 180	11	159	7,0	18000	1080	636	-40	G 216	C 216	S 216	2"	894	1046	1876	600
	14,5	210	12,5	21600	1296	763	-40								
ADS 215	11	159	7,0	21600	1296	763	-40	G 216	C 216	S 216	2"	923	1100	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 15-215: 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 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 15 - ADS 156	0,62	0,75	0,87	**1**	1,12	1,25	1,37	1,5	1,62	1,75	1,87			

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 15 - ADS 156	1	1	1	**1**	0,84	0,67	0,55
ADS 110 - ADS 215	1	1	1	**1**	0,84	0,71	0,55

Correction factors			
Pressure Dew Point °C	-20	**-40**	-70
ADS 1-10 & ADS 110- 215	n.a.	**1**	0.7
ADS 15 - ADS 156	1	**1**	0,7

Adsorption air dryers
Range ADS 1 • 215

MARK

- A high quality product offering you technology you can trust.
- Our products are easy to use and guarantee high reliability.
- Distributors are always nearby ensuring availability of both products and support.
- Choosing our high performance products entails a partnership that will boost your business.
- Safeguarding long-term productivity through optimal serviceability and use of original parts.

ORIGINAL PART

Care. Trust. Efficiency.

Care.
Care is what service is all about: professional service by knowledgeable people, using high-quality original parts.

Trust.
Trust is earned by delivering on our promises of reliable, uninterrupted performance and long equipment lifetime.

Efficiency.
Equipment efficiency is ensured by regular maintenance. Efficiency of the service organization is how Original Parts and Service make the difference.

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