

AD Adsorption Dryers



AD 7 to 1300

ALUP
Kompressoren

ALUP's heritage

Founded in Germany in 1923, the company derives its name of the automotive products that were manufactured in the Köngen' mechanical workshop where ALUP came into existence: Auto-LUft-Pumpen. Only two years later, the first range of piston compressors was being developed, whilst in 1980 rotary screw compressors were added to the product offer.

Over time, experience grew and innovation prospered, leading to today's high quality product portfolio. As such, the name ALUP Kompressoren has become synonymous with innovative technology blended with a strong sense of tradition.

Today, ALUP Kompressoren is still operating out of its home town Köngen, where everything started in 1923.



Driven by technology Designed by experience

Discover what happens when a passion for technology is fused with hands-on industrial experience. Designs evolve towards more practical installation and maintenance, giving you the freedom to focus on your job. Product ranges include the exact machine you need, with the right options for your performance needs. Return on investment is ensured, while your carbon footprint shrinks. And, because we stay close to our customers, we're one step ahead when your needs change.

**INNOVATION
HANDS-ON
EXPERIENCE
PEACE OF MIND
TOTAL COST
OF OWNERSHIP
PARTNERSHIP**

The benefits of the AD range

During the compression process, a compressor turns humidity in the intake air into condensate. This will cause wear and corrosion to the compressed air network and downstream equipment. The results are costly interruption to production, and reduction in the efficiency and service life of the equipment used. Adsorption dryers provide a solution to prevent these negative impacts.

Clean and dry air

- Residual water is adsorbed by the desiccant material, protecting the air network from corrosion, rust and leakages.
- Higher final product quality.
- Increased overall productivity.
- Adsorption dryers remove the remaining g/m³ air water content in the compressed air that might condense downstream of a refrigerant dryer.



Easy installation

- Ready to install, with the possibility of integrated filtration solutions (AD 7 - 60).
- Compact solution that takes up minimal space.
- Multipoint inlet and outlet (AD 7 - 60).
- Forklift slots (AD 90 - 1300).



User-friendly operation

- User-friendly communication display indicates air quality and maintenance requirements (sensor).
- Compatible with any compressor technology.

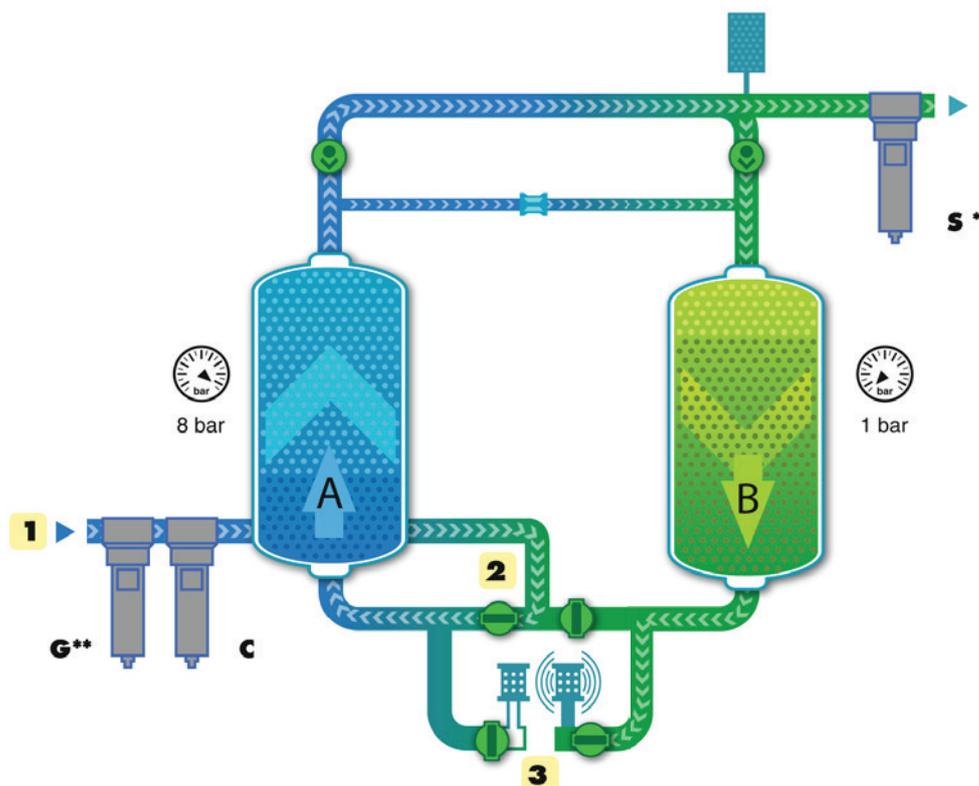


Cost-efficient solution

- Control dew point management solution available to minimize energy consumption (AD 90 - 1300).
- Long maintenance interval.
- Reduced risk of wear, corrosion and rust, lowering maintenance costs.
- Increased lifetime of pneumatic equipment.

How the AD adsorption dryer works

The adsorption drying principle is based on the ability of the desiccant material to adsorb water vapor from the compressed air. Filters before the dryer protect it, while filters after the dryer eliminate desiccant dust. The drying process consists of three phases:



Notes:

* On AD 7 - 60 the outlet filter is built inside the desiccant cartridge.

** Recommended but not included on AD 7 - 940.

Absorbent material

 Unsaturated

 Saturated

 Inlet valve

 Discharge silencer

 Prefilters and Postfilter

 Humidity detector (sensor version)

Drying phase

Wet air from the compressor passes through the **inlet filters (1)** which remove the oil. The air then enters into tower A. The desiccant contained in tower A adsorbs the water vapor molecules. After a fixed (timer) or variable (sensor) time the **inlet valve (2)** deviates the air flow from tower A to tower B, which then becomes the operational tower.

Regeneration phase

During the drying phase in tower A, some dry air is deviated into the top of tower B, where it extracts 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 the air flow again.

Regeneration phase: How to decrease your consumption

One feature of AD adsorption dryer technology is the small amount of air required to eliminate water previously adsorbed by the desiccant material during the air drying phase. This process ensures a constant dew point of -40°C and optimum air quality. For these reasons, there are two types of AD dryers available



AD timer (Timer controlled)

Constant purge air calculated to operate in the most demanding conditions.

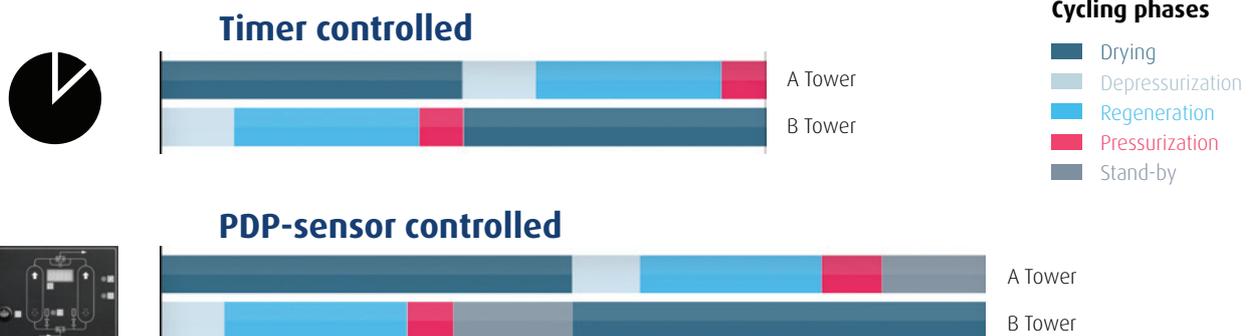
The drying and regenerating process is controlled by a timer, which fixes the drying, regeneration and re-pressurization times. Regeneration air flow depends on the dryer size and is a fixed value.

AD sensor (PDP-sensor controlled)

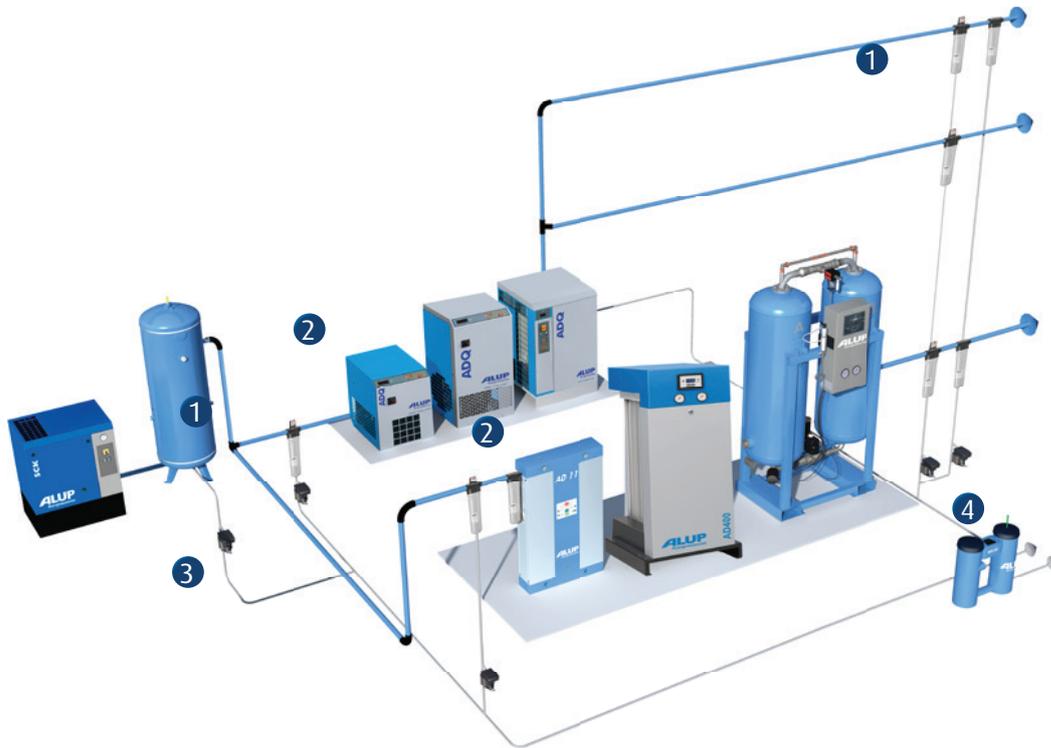
Purge air flow is variable and is based on achieving a constant dew point for significant energy savings.

The electronic Pressure Dew Point control (sensor) 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 the desiccant in the active tower is saturated. The regeneration part of the cycle stays fixed. As most of the time the compressor and dryer run at less than 100% load, this results in significant extension of the drying time and a reduction in purge air consumption. Typically, the extra investment in Pressure Dew Point control is paid back in a few months by savings made on dryer running costs.

Dew point control of the regeneration air volume is therefore a guaranteed return on investment.



Multiple air treatment solutions from ALUP



1. Oil and dust filtration

Our network filters are ideal for the treatment of residual oil and dust particles. Depending on the filtration level, our ALUP filters capture and eliminate:

- Particles down to 0.01 micron such as smoke and dust.
- Oil particles at concentrations as low as 0.03 ppm.

2. Water separation

Our air drying solutions eliminate the water vapor that can potentially condense in your compressed air system. Select the drying solution that best meets your needs:

- The ADQ refrigeration dryer eliminates water down to a pressure dew point of 3°C.
- The AD adsorption dryer eliminates moisture down to a dew point as low as -20°C, -40°C or -70°C depending on the dryer type.

3. Condensate drains

Capacitive condensate drains allow easy discharge of condensate throughout the complete compressed air chain to ensure zero air loss.

4. Oil-Water Separator

Our OWS oil-water separator will clean the removed condensate in order to be in line with local environmental legislations.

AD Adsorption Dryers: Multiple models, multiple benefits

AD 7 - 60



Technical info

AD 7 - 60

Capacity at 7 bar (-40°C)	7-59 m ³ /h
Dew point	Standard -40°C
Maximum working pressure	16 bar
Working pressure range	4-16 bar
Voltages	12-24 V - DC 50/60 Hz 100-115-230 V - AC 50/60 Hz
Easy installation	Multipoint inlet and outlet
Dew point sensor	Not available
Dew point -70°C	By derating the air capacity



Fast and easy installation

- Multipoint inlet and outlet arrangement ensures easy and fast installation.
- Unit can be installed horizontally and vertically. It can stand on the floor or can be mounted to the wall (optional mounting kit).
- The inlet pre-filter C is delivered loose with the dryer but can be directly fixed on it.
- The outlet post-filters are integrated in the desiccant cartridges.



User-friendly and durable operation

- Electronic control offers:
 - Regeneration cycle management.
 - Regulation status.
 - Default diagnosis.
 - Remote default report.
- Each tower is fitted with a high-efficiency silencer for quiet operation
- Aluminium head, base and cylinders prevent corrosion.
- Standard dew point is -40°C but can be set at -70°C by derating the FAD.



Easy and quick maintenance

- Use of desiccant cartridges with two integrated post-filters.
- Cartridge replacement in the inlet pre-filter C done in no time.



AD 90 - 940



Technical info

AD 90 - 940

Capacity at 7 bar (-40°C)	90-936 m ³ /h
Dew point	Standard -20°C, -40°C
Maximum working pressure	14 bar
Working pressure range	4-14 bar
Voltages	115-230 V - AC 50/60 Hz
Easy installation	Forklift slot
Dew point sensor	Available
Dew point -70°C	Available on the -40°C (for models AD125 and larger) and with a rated flow reduction of 30%



Robust and space-saving

- Base frame makes it easy to transport by forklift.
- Compact dryer can be installed on the floor (standard floor mounting kit).



User comfort

- Low noise level due to high-efficiency silencers with integrated safety valve.
- Easy pressure check thanks to pressure gauges.



Reliable performance

- Standard components tested for continuous service.
- Inlet pre-filter C and outlet post-filter S are included but not pre-mounted. They have to be mounted on the air distribution line.

Cost-efficient solution

- Control dew point management solution (sensor) available to minimize energy consumption (as an option).
- Standard dew point -20°C, -40°C

AD 90-940

AD 650 - 1300 (timer): Electronic timer control AD 650 - 1300 (sensor): Dew point management system



Technical info	AD 650 - 1300 (timer/sensor)
Capacity at 7 bar (-40°C)	648-1296 m ³ /h
Dew point	Standard -40°C
Maximum working pressure	11 and 14.5 bar
Working pressure range	4-11 bar and 11-14.5 bar
Voltages	230 V - AC 50/60 Hz
Easy installation	Forklift slots
Dew point sensor	Available
Dew point -70°C	Available (-70°C as an option together with derating the air capacity)

AD 650 - 1300 (timer) / AD 650 - 1300 (sensor)



Smooth operation and user comfort

- Pressure dew point digital display (AD sensor)
- Two manometers integrated in control panel to show pressure in vessels A and B.
- High-efficiency silencers with integrated safety valve.



Cost-efficient solution

- Pressure dew point sensor (AD 650 - 1300 sensor).
- Standard dew point is -40°C (-70°C as an option together with derating the air capacity).



Durable and efficient performance

- Galvanized piping with flanged connections.
- Inlet valves with long service interval.
- Wide vessels ensure a low air speed and a longer contact time for an available drying phase.



Easy installation and compact design

- Robust frame including forklift slots.
- The unit is rather low for its capacity due to flanges built into the vessels.



Application areas

- Chemical and pharmaceutical industries.
- Petrochemical plants.
- Food industry.
- Transportation of hygroscopic materials.
- Quality painting.
- Textile production.
- Semiconductors.
- Cable pressurization.
- Beer and drinks production.
- Low temperature environments.
- Whenever a pressure dew point less than 3°C is required.



Technical data for PDP -40°C version

Type	Regulating pressure bar	Air inlet capacity (1) with PDP -40°C m³/h	Working pressure range bar	Filters (2)			Inlet/ Outlet connections	Dimensions (A x B x C) mm	Weight kg
				G 0,1 mg/mc	C 0.01 mg/mc	S (MPPS=0,1 µm) 99,81%			
AD 7	7	7	4-16	n.a.	C 45	Integrated in the dryer	3/8"	92 x 281 x 445	13
AD 11	7	10	4-16	n.a.	C 45		3/8"	92 x 281 x 504	14
AD 18	7	17	4-16	n.a.	C 45		3/8"	92 x 281 x 504	17
AD 25	7	26	4-16	n.a.	C 45		3/8"	92 x 281 x 815	20
AD 40	7	42	4-16	n.a.	C 45		3/8"	92 x 281 x 1065	24
AD 60	7	59	4-16	n.a.	C 90		3/8"	92 x 281 x 1460	31

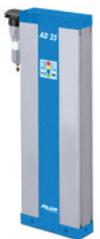
Notes:

(1) Data measured at reference conditions: Air inlet temperature = 35°C, relative humidity = 100%, regulating pressure (see technical data table).

(2) Filters are delivered loose with the dryer.

AD 7 up to 60: the filters can be directly fixed on the dryer.

For other conditions than the reference conditions, use the correction factor table.



Technical data for PDP -40°C version

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

Type	Regulating pressure bar	Air inlet capacity (1) with PDP -40°C m³/h	Working pressure range bar	Filters (2)			Inlet/Outlet connections Gas	Dimensions (A x B x C) mm	Weight kg
				G 0,1 mg/mc	C 0.01 mg/mc	S (MPPS=0,1 µm) 99,81%			
AD 90	7	90	4 - 14	n.a.	C 90	S 90	1"	401 x 620 x 1070	87
AD 125	7	126	4 - 14	n.a.	C 125	S 125	1"	401 x 620 x 1115	88
AD 160	7	162	4 - 14	n.a.	C 180	S 180	1"	401 x 620 x 1285	99
AD 200	7	198	4 - 14	n.a.	C 290	S 290	1"	401 x 620 x 1465	114
AD 235	7	234	4 - 14	n.a.	C 290	S 290	1"	401 x 620 x 1615	124
AD 325	7	324	4 - 14	n.a.	C 505	S 505	1" 1/2	571 x 620 x 1285	165
AD 400	7	396	4 - 14	n.a.	C 505	S 505	1" 1/2	571 x 620 x 1465	197
AD 470	7	468	4 - 14	n.a.	C 505	S 505	1" 1/2	571 x 620 x 1615	211
AD 600	7	594	4 - 14	n.a.	C 685	S 685	1" 1/2	571 x 620 x 1915	245
AD 700	7	702	4 - 14	n.a.	C 935	S 935	1" 1/2	738 x 620 x 1615	298
AD 940	7	936	4 - 14	n.a.	C 935	S 935	1" 1/2	738 x 620 x 1915	328
AD 650 11 bar	7	648	4 - 11	G 685	C 686	S 686	1" 1/2	840 x 1040 x 1760	445
AD 650 14.5 bar	12.5	774	11 - 14.5						
AD 800 11 bar	7	792	4 - 11	G 935	C 935	S 935	1" 1/2	840 x 1040 x 1760	445
AD 800 14.5 bar	12.5	954	11 - 14.5						
AD 1080 11 bar	7	1080	4 - 11	G 1295	C 1295	S 1295	2"	894 x 1046 x 1876	600
AD 1080 14.5 bar	12.5	1296	11 - 14.5						
AD 1300 11 bar	7	1296	4 - 11	G 1295	C 1295	S 1295	2"	923 x 1100 x 1914	650
AD 1300 14.5 bar	12.5	1548	11 - 14.5						



Notes:

(1) Data measured at reference conditions: Air inlet temperature = 35°C, relative humidity = 100%, regulating pressure (see technical data table).

(2) Filters are delivered loose with the dryer.

AD 90 up to 1300: the filters have to be mounted on the air distribution line.

For other conditions than the reference conditions, use the below correction factor table.

Correction factors

AD/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
AD 7 - 60	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
AD 90 - 940	0.62	0.75	0.87	1	1.12	1.25	1.37	1.5	1.62	1.75	1.87	-	-	-

AD/11 bar (max. working pressure)

Air inlet pressure (bar)	4	5	6	7	8	9	10	11
AD 650 - 1300	0.47	0.68	0.84	1	1.1	1.2	1.3	1.38

AD/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
AD 650 - 1300	0.47	0.68	0.84	1	1.1	1.2	1.3	1.38	0.89	1	1.04	1.11	1.15

Air inlet temperature (°C)	20	25	30	35	40	45	50
AD 7 - 60	1.07	1.06	1.04	1	0.88	0.78	0.55
AD 90 - 940	1	1	1	1	0.84	0.67	0.55
AD 650 - 1300	1	1	1	1	0.84	0.71	0.55

Pressure dew point (°C)	-20	-40	-70
AD 7 - 60 & AD 650 - 1300	n.a.	1	0.7
AD 90 - 940	1	1	0.7





DRIVEN BY TECHNOLOGY DESIGNED BY EXPERIENCE



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ALUP KOMPRESSOREN
REPRESENTATIVE



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.

