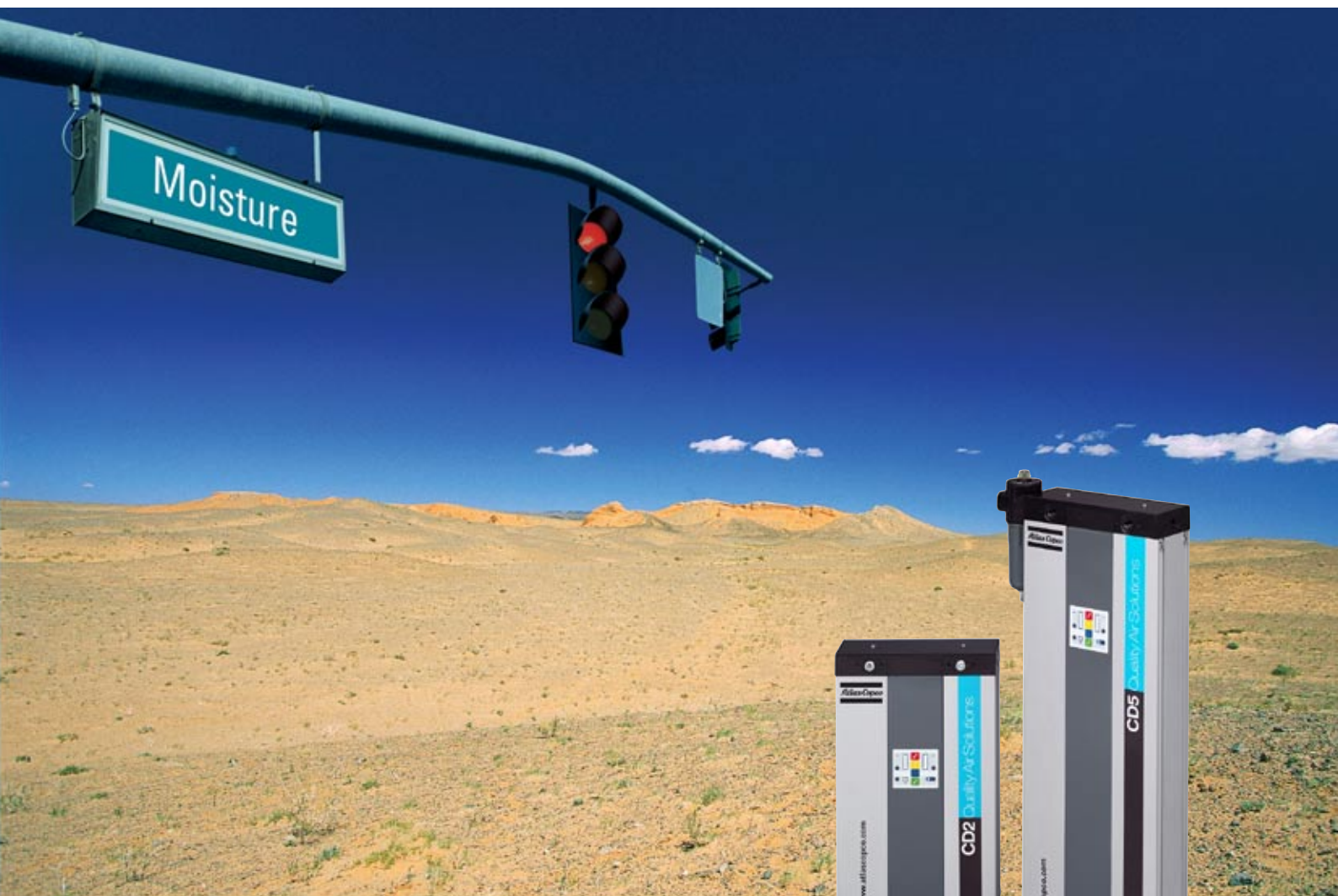


Atlas Copco Compressed air dryers

CD series

Heatless adsorption dryer series



HIGH QUALITY
DRY AIR

Atlas Copco

Why Quality Air?



When the air that surrounds us is compressed, its vapour and particle concentration increases dramatically.

The compression process causes the oil and water vapours to condense into droplets, and then mix with the high concentration of particles. The result is an abrasive oily sludge that in many cases is also acidic. Without air treatment equipment, much of this corrosive sludge will enter the air net.

Effective Quality Air equipment is an investment with a solid return: it efficiently reduces the contamination in the air that would otherwise produce corrosion in the pipework, lead to premature pneumatic equipment failure and cause product spoilage.



The high cost of low quality air

When it comes to tools, machines and instruments, poor air quality will cause more breakdowns, repairs and replacements. In addition to the remedial costs, the resulting downtime and production delays are often far more expensive than any repair.



The threat to an impeccable reputation

Where the compressed air comes in contact with the product, the stability, scrap rate and final quality of the product can be significantly affected by contamination. Aside from the costs to correct the situation, the potential damage to your product's reputation can not be underestimated.





Money disappearing into thin air

The pipe work that carries the compressed air is often forgotten when calculating the potential cost of poor quality air. Aggressive condensate will cause corrosion, leading to air leaks and a costly waste of energy. A leak of 3 mm is roughly equivalent to an energy waste of 3.7 kW. After one year, this can add up to € 1800.



Persistent pressure on the environment

The energy waste caused by leaks and the unsafe disposal of untreated condensate will adversely affect our environment. Apart from the stringent legislation that imposes heavy fines in case of non-compliance, every waste of energy negatively influences the bottom line. Caring for the environment can be smart business !

From products to total solutions

Based on years of experience, Atlas Copco has the know-how to determine the exact requirements and to offer the right equipment from an extensive range of air treatment products. In addition to providing total solutions, Atlas Copco has built an aftermarket organisation to support your complete installation... from a local point of contact, around the globe.

From compressor to dryer and down to the last filter, Atlas Copco can be your single partner for total quality compressed air solutions.



The complete Quality Air solution

Particles / dust

Water

filtration

drying

adsorption dryer

MD

(for ZR/ZT/ZE/ZA Compressors)



2 3

adsorption dryer

BD



0 1 2 3

refrigerant dryer

FD/ID



4

draining

electronic water drain

EWD

oil/water separation

OSW/OSD/OSM



filter

PD, PDp, DD, DDp & QD



0 1 2

Quality Air process
=
End user satisfaction



Oil

filtration

0

filter
PD, PDp, DD, DDp & QD



air compression

oil-free compressors
ZH/ZR/ZT/ZE/ZA/LF/SF/LXF/H/
S/P/HX-HN/PETPACK®



oil-injected compressors
GA/GR/GX/LE/LT



adsorption dryer CD



0 1 2



Air quality classes ISO8573-1	Dirt (solid particles)				Water		Oil
	Maximum number of particles per m ³ particle diameter (d) size, µm				Max. pressure dew point		Max. concentration
	≤ 0.10	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	°C	°F	mg/m ³
0	As specified by the equipment user or supplier and more stringent than class 1						
1	*	100	1	0	-70	-94	0.01
2	*	100 000	1000	10	-40	-40	0.1
3	*	*	10000	500	-20	-4	1
4	*	*	*	1000	3	+ 37.4	5
5	*	*	*	20000	7	+ 44.6	> 5

* Not specified

A well designed compressed air system ensures that the air quality demands of the process are closely met. With the desired ISO class as a guide, the appropriate components can be selected.

Atlas Copco offers a complete product range that never requires a customer to compromise.

CD – dryers for demanding applications and energy conscious customers



Moisture: an avoidable threat ?

Compressed air entering the air net is always 100 % saturated with water vapour. When cooling down, this moisture will condense, causing damage to your air system... and to your finished products. The amount of water is directly proportional to the flow and although an aftercooler will eliminate 2/3 of the moisture, the remaining third can still be very destructive in many applications, such as instrument air, dry powder conveying or processes with rapid air expansion.

CD totally eliminates moisture

Atlas Copco CD adsorption dryers eliminate the moisture before it can cause any damage. Even the possibility of freezing is non-existent. The CD dryers ensure a reliable process and impeccable end products by offering absolutely dry air to your compressed air system, with a pressure dew point of $-40^{\circ}\text{C}/-40^{\circ}\text{F}$ or even $-70^{\circ}\text{C}/-100^{\circ}\text{F}$.

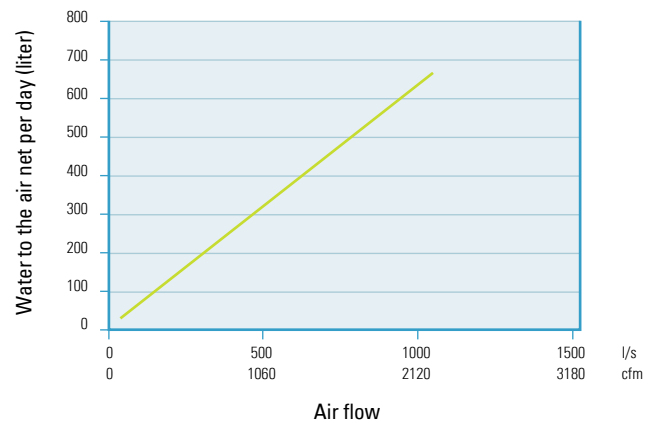
Maximum performance for minimum cost

The robust design ensures that the complete range operates with total reliability, producing the desired pressure dew point even in the most difficult conditions. Coupled with the most advanced control systems, the CD range provides the best quality air for the lowest possible cost.

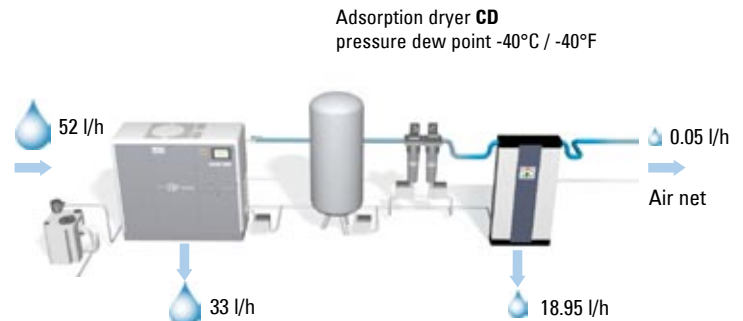
Atlas Copco's dew point dependent purge control significantly reduces energy costs while ensuring a totally stable and reliable dew point. Using the unique Elektronikon controller in combination with a top class PDP sensor, a payback period of less than 6 months is not uncommon.



WATER TO THE AIR NET IF NO DRYER INSTALLED

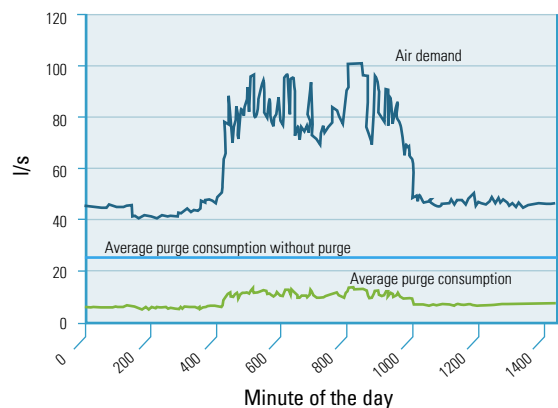


WATER ENTERING AND LEAVING THE COMPRESSOR & DRYER (EXAMPLE)



Reference conditions:
 Compressor flow 1050 l/s – 2226 cfm FAD – Compressed air temp. 35°C
 Ambient air temp. 25°C – Ambient relative humidity 60 % – Pressure: 7 bar(e)

AIR DEMAND AND PURGE CONSUMPTION





Performance reliability through proven working principles

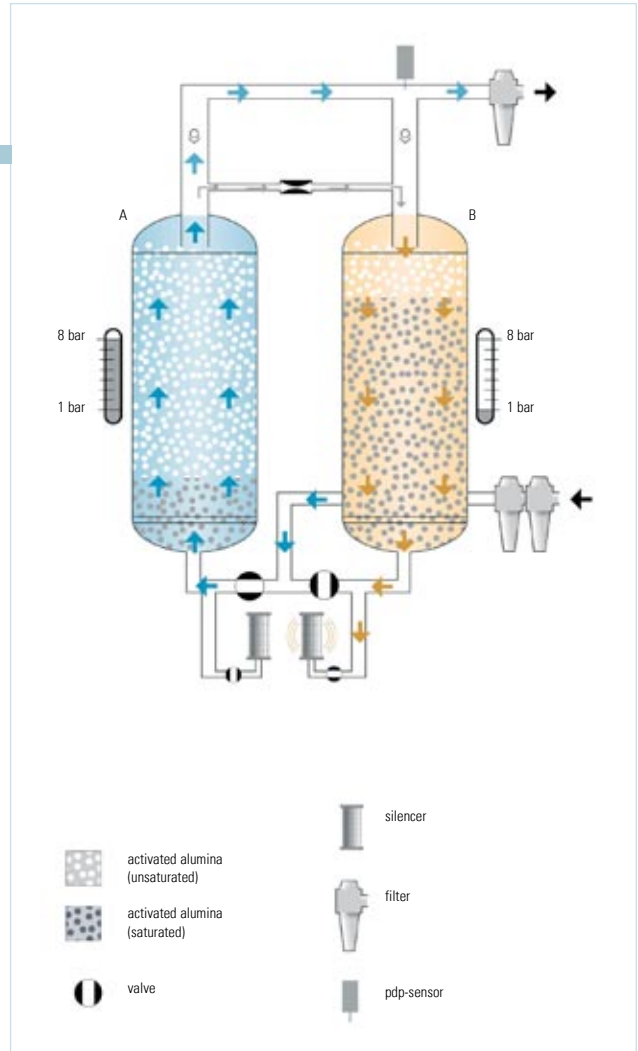
The complete CD dryer range is based on a common working principle, which has been optimised through Atlas Copco's extensive experience and which has successfully served industry for many years.

The drying process

- ▶ Wet air from the compressors passes through the inlet filters that remove the oil, and enters the dryer.
- ▶ The three way valve assembly then directs the air into the "live" tower, in this example tower "A".
- ▶ The water adsorbing desiccant contained in tower A removes the water vapour from the air as it passes up the tower. By the time the air leaves the tower it is dried to a typical pressure dew point of $-40^{\circ}\text{C}/-40^{\circ}\text{F}$. Over time the desiccant in the tower will become saturated; if left unchecked this would result in a decline of pressure dew point performance.

The regeneration process

- ▶ A small portion of the now dry air is fed into the top of tower B, whilst the remainder leaves the dryer via a filter, which removes any desiccant dust picked up during the drying process.
- ▶ The small portion of dry (purge) air that is fed into tower B is used to re-generate the desiccant. During regeneration, tower B is open to the atmosphere, allowing the purge air from tower A to expand and travel through the tower, taking with it the moisture from the desiccant. The silencers on the outlet ensure quiet operation.
- ▶ The desiccant regeneration process takes several minutes, after which the control system closes the exhaust valve. From that point on the purge air gradually re-pressurises the tower back to the regular system pressure.
- ▶ Once tower B is fully pressurised the 3-way valve on the bottom of the dryer switches over, so that tower B becomes the live tower drying the air, and tower A becomes the regenerating tower.



CD 2-5 – convenience through versatility

The outstanding installation flexibility of the CD2-5 ensures that, regardless of the application, there is no solution more convenient. Perfect for both point of use and regular compressor room installations, these small units offer high performance with minimal maintenance.

Installation

- ▶ Can be mounted either vertically or horizontally
- ▶ Both floor and wall mounting possible
- ▶ Highly compact design saves space
- ▶ Integrated after filter saves space, time and costs
- ▶ Multi port inlet and outlet ensures easy connection to air system
- ▶ Integrated timer drain for pre-filter saves cost and time

Performance & efficiency

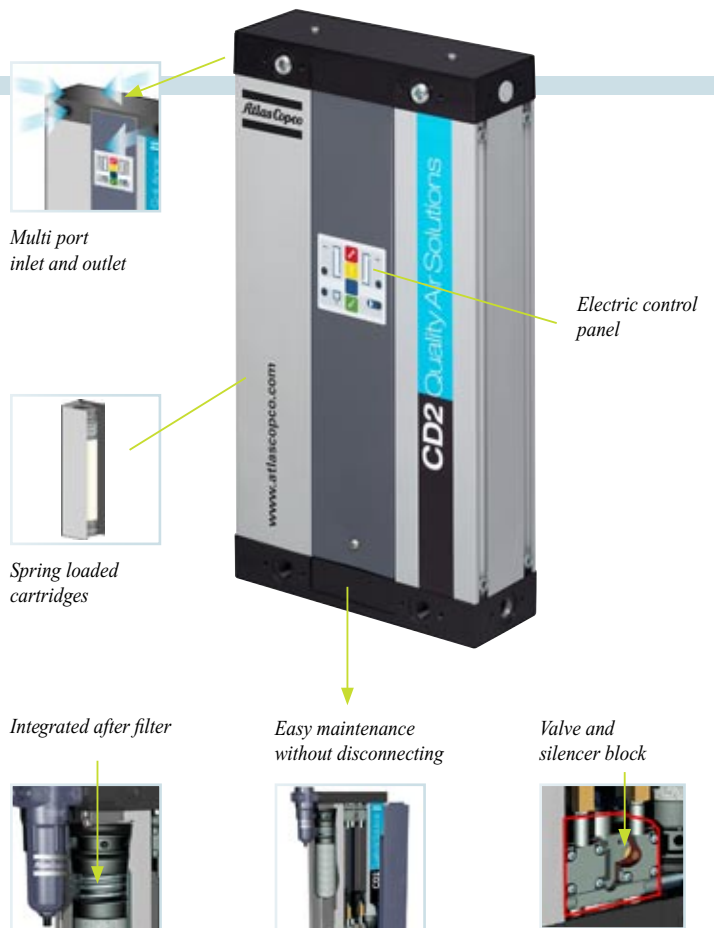
- ▶ $-40^{\circ}\text{C}/-40^{\circ}\text{F}$ pressure dew point as standard
- ▶ $-70^{\circ}\text{C}/-100^{\circ}\text{F}$ pressure dew point possible for reduced flow
- ▶ Very low pressure drop of less than 0.07 bar/1 psi

Reliability

- ▶ Fully anodised tubes prevents all corrosion
- ▶ Top quality valve a silencer block provides failsafe operation
- ▶ Spring loaded cartridges reduces desiccant “dusting”

Maintenance

- ▶ Complete maintenance possible without disconnecting from pipe system
- ▶ Desiccant cartridges with integrated filter ensures fast servicing
- ▶ Fault diagnosis on control panel enables fast problem solving



Control

- ▶ Electronic timer control with purge pause function
- ▶ Fully electronic with complete status annunciation
- ▶ Automatic fault diagnosis with volt free alarm contact
- ▶ Full remote monitoring capability
- ▶ Electrical panel protected to IP65 / NEMA 4

Options CD2-5

- Wall mounting kit
- Floor mounting kit
- $-70^{\circ}\text{C}/-100^{\circ}\text{F}$ PDP
- Remote monitoring cable
- Remote monitoring cable and software



CD7-60 – simple, reliable, effective

The CD7-60 is a compact, simple, reliable unit, designed to provide high quality air all year round. With very simple installation and minimal servicing, the CD7-60 range is the perfect choice for those applications that need to run day in, day out without problems.

Installation

- ▶ Floor and wall mounting
- ▶ Compact space saving design
- ▶ Pre and after filters can be mounted directly on the unit to save space
- ▶ Multi port inlet and outlet ensure easy connection to air system

Performance & efficiency

- ▶ $-20^{\circ}\text{C}/-4^{\circ}\text{F}$ pressure dew point as standard
- ▶ $-40^{\circ}\text{C}/-40^{\circ}\text{F}$ pressure dew point possible for reduced flow
- ▶ $-70^{\circ}\text{C}/-100^{\circ}\text{F}$ pressure dew point possible as an option
- ▶ Very low pressure drop of less than 0.15 bar/2 psi

Reliability

- ▶ Base, heads and tubes all corrosion resistant
- ▶ Silencers include safety valve to maintain operation in the event of blockage
- ▶ Self cleaning shuttle valve and purge nozzle assembly facilitate maintenance free and reliable operation

Control

- ▶ Timer control with purge pause function
- ▶ Fully automatic for autonomous operation
- ▶ Electrical panel protected to IP54 as an option



Options CD7-60

- Pneumatic control
- IP54 control panel
- $-70^{\circ}\text{C}/-100^{\circ}\text{F}$ PDP
- Stainless steel canopy

CD65-1050 – high performance for critical applications

The CD65-1050 are built to perform across a range of conditions, providing top quality air for the most demanding environments and applications. Containing nothing but top end components, and with a control algorithm based on years of experience and know-how, these units offer unprecedented reliability.

Installation

- ▶ Pre and after filters come pre-mounted on each unit*
- ▶ Inlet and outlet pipes can be swivelled to provide maximum installation flexibility
- ▶ All units include fork lift slots and lifting eyes to simplify positioning

Performance & efficiency

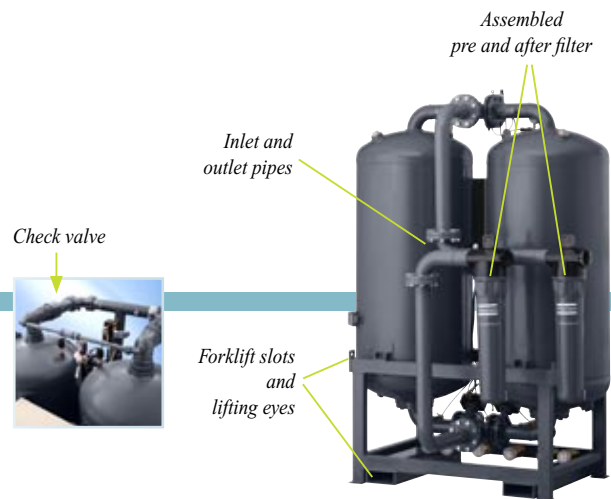
- ▶ All units are rated as standard for $-40^{\circ}\text{C}/-40^{\circ}\text{F}$, with $-70^{\circ}\text{C}/-100^{\circ}\text{F}$ optional
- ▶ Very low air speeds coupled with a massive desiccant overfill ensure reliable performance
- ▶ The use of a pressure dew point sensor in the outlet ensures that the control system saves the maximum amount of purge air possible

Reliability

- ▶ To avoid inconvenient breakdowns, each model is fitted with a fully stainless steel 3-way valve and two stainless steel check valves
- ▶ High efficiency silencers reduce the noise level to a minimum, and include a safety release valve in case of blockage, ensuring continuous operation

Control

- ▶ The CD65-1050 can be fitted with either a simple timer control system, or the energy saving Elektionikon system, that includes dew point dependent purge control and full dryer status annunciation
- ▶ All control systems are fitted inside an IP54 cubicle



Options CD65-1050

- Pneumatic control
- Filter alarm connected to control system
- $-70^{\circ}\text{C}/-100^{\circ}\text{F}$ PDP
- 3 valve dryer bypass
- Inlet and outlet filter bypass
- Dual filters with switchover valves
- 7 valve dryer and filter bypass

* Filters are optional on CD390-1050

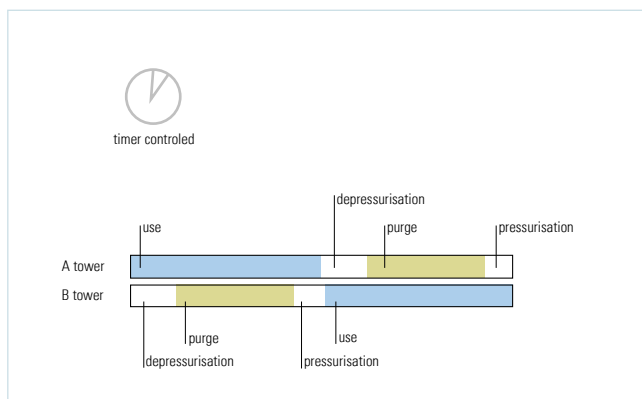
Choice of control system to match varied customer demands



Simple reliability - timer control system

The drying and regenerating process in its most simple form is controlled by a pre-set timer, which fixes the drying, regeneration and re-pressurisation times such that the dryer works reliably in a range of conditions. This means of course that the amount of purge air consumed is fixed, regardless of the inlet conditions.

However, to eliminate purge loss when the compressor is unloaded, all timer based controllers from Atlas Copco include a “purge pause” facility. This means that the load/unload signals from the compressor can be fed back to the dryer causing it to “pause” and therefore consume no purge air whilst the compressor is unloaded.

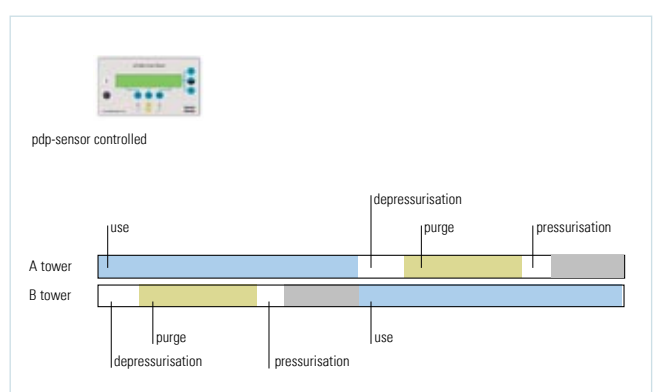


The biggest savings from the best control system

Elektronikon® – the smart investment

Atlas Copco's patented Elektronikon® is an advanced microprocessor based, real time operating system, which allows comprehensive control and monitoring through a clear and simple user interface. The Elektronikon® control system includes dewpoint dependent purge control (DDPC), which enables the average amount of purge air to be more efficiently regulated, resulting in significantly reduced running costs.

To be able to achieve this more dynamic control, a pressure dewpoint sensor is introduced into the dryer outlet piping, with the signal being sent back to the Elektronikon® control system, which replaces the simple timer card.



The basic regeneration cycle remains unchanged, with the time for depressurisation, regeneration and re-pressurisation being fixed. However, the towers do not necessarily switch over immediately after the regeneration cycle has been completed. Instead the delivered PDP is monitored and only when it begins to deteriorate beyond the required level, do the towers switch over. During the time between the completion of the regeneration cycle and the switchover point, no purge air is used whatsoever, meaning the dryer is running almost for free. DDPC can significantly reduce running costs, and a return on investment below 6 months is not uncommon. For those with an eye for both the bottom line and the environment, DDPC is the smart investment.

Complete remote monitoring interface

The benefits of Elektronikon® don't end with DDPC. There is no better alternative for remote control and monitoring. With the addition of one ComBox, an Elektronikon® installation can be accessed directly from a PC or via an existing building management system, using a choice of protocols. Through participation in our various AirMonitor services, a complete Atlas Copco compressed air system can be monitored over the internet.



Full equipment management and protection

Elektronikon® provides total control and complete protection of the machine. Continuous and extensive monitoring ensures that the operating efficiency is maximised and that under no circumstances the unit is ever pushed beyond its safe and reliable operating limits.

Technical data

CD2-1050

CD dryer	Inlet capacity 11 bar(g) 160 psi(g)		Inlet capacity 16 bar(g) 232 psi(g)		Nominal pressure dew point		Pressure drop (excl. filters)		Included filtration			Inlet/outlet connection
	l/s	cfm	l/s	cfm	°C	°F	bar	psi	Pre filters		After filter	
									1 micron 0.1 ppm	0.01 micron 0.01 ppm	1 micron	
CD 2	2	4	3	7	-40	-40	0.05	0.7	N/A	PD 9	Integrated	3/8"
CD 3	3	6	5	11	-40	-40	0.06	0.9	N/A	PD 9	Integrated	3/8"
CD 5	5	11	8	18	-40	-40	0.07	1.0	N/A	PD 9	Integrated	3/8"
CD 7	7	14	9	19	-20	-4	0.02	0.3	N/A	PD 9	DDp 9	1/2"
CD 12	12	25	13	28	-20	-4	0.08	1.2	N/A	PD 17	DDp 17	1/2"
CD 17	17	36	22	47	-20	-4	0.14	2.0	N/A	PD 17	DDp 17	1/2"
CD 24	24	51	30	64	-20	-4	0.12	1.7	N/A	PD 32	DDp 32	1/2"
CD 32	32	68	40	85	-20	-4	0.15	2.2	N/A	PD 32	DDp 32	1"
CD 44	44	93	56	119	-20	-4	0.12	1.7	DD 44	PD 44	DDp 44	1"
CD 60	60	127	76	161	-20	-4	0.15	2.2	DD 60	PD 60	DDp 60	1 1/4"
CD 65	65	138	80	170	-40	-40	0.20	2.9	DD 120	PD 120	DDp 120	1 1/2"
CD 80	80	170	95	201	-40	-40	0.20	2.9	DD 120	PD 120	DDp 120	1 1/2"
CD 100	100	212	120	254	-40	-40	0.20	2.9	DD 120	PD 120	DDp 120	1 1/2"
CD 140	140	297	170	360	-40	-40	0.20	2.9	DD 150	PD 150	DDp 150	1 1/2"
CD 170	170	360	207	439	-40	-40	0.20	2.9	DD 175	PD 175	DDp 175	1 1/2"
CD 230	230	488	280	594	-40	-40	0.20	2.9	DD 280	PD 280	DDp 280	2"
CD 280	280	594	340	721	-40	-40	0.20	2.9	DD 280	PD 280	DDp 280	2"
CD 390	390	827	N/A	N/A	-40	-40	0.15	2.2	N/A	PD 390*	DDp 390*	Dn80
CD 520	520	1102	N/A	N/A	-40	-40	0.15	2.2	N/A	PD 520*	DDp 520*	Dn80
CD 780	780	1654	N/A	N/A	-40	-40	0.10	1.5	N/A	PD 780*	DDp 780*	Dn100
CD 1050**	1050	2226	N/A	N/A	-40	-40	0.07	1.0	N/A	PD 1050*	DDp 1050*	Dn125

* Optional ** The CE version of the CD 1050 has a maximum working pressure of 9 bar(g)/130 psi(g), the ASME version has a working pressure of 11 bar(g)/160 psi(g)

Reference conditions

Compressed air inlet temperature: 35°C / 100°F
Inlet relative humidity: 100 %

Dryer inlet pressure, after inlet filtration: 7 bar(g) / 102 psi(g)
Nominal working pressure 11 bar(g)/160 psi(g) units: 7 bar(g) / 102 psi(g)
Nominal working pressure 16 bar(g)/232 psi(g) units: 12.5 bar(g) / 181 psi(g)

To adjust the performance of each dryer for different inlet conditions, use the correction factors below.

Pressure dew point correction (K_d):

Pressure dew point	°C	-20	-40	-70
	°F	-4	-40	-100
CD 2-5	K_d	1	1	0.7
CD 7-60	K_d	1	0.88	0.7
CD 65-1050	K_d	1	1	0.8

Inlet pressure correction factor (K_p):

Inlet pressure	11 bar(g)/160 psi(g) version							
	bar (g)	4	5	6	7	8	9	10
	psi (g)	58	73	87	102	116	131	145
CD 2-5	K_p	0.62	0.75	0.87	1	1.12	1.25	1.37
CD 7-1050	K_p	0.47	0.68	0.84	1	1.12	1.25	1.37

Inlet pressure	16 bar(g)/232 psi(g) version						
	bar (g)	11	12.5	13	14	15	16
	psi (g)	160	181	189	203	218	232
CD 2-5	K_p	1.5	1	1.04	1.11	1.19	1.26
CD 7-1050	K_p	1.5	1	1.04	1.11	1.19	1.26

Inlet temperature correction factor (K_t):

Inlet temperature	°C	25	30	35	40	45	50
	°F	77	86	95	104	113	122
CD 2-1050	K_t	1	1	1	0.84	0.71	0.55

Example:

What is the capacity of an CD44, working at 8 bar(g)/116 psi(g), with an inlet temperature of 40°C/104°F with a required pressure dew point of -40°C/-40°F?

Find each correction factor :

$$K_d = 0.88 \quad K_p = 1.12 \quad K_t = 0.84$$

$$\text{Actual capacity} = \text{nominal capacity} \times K_d \times K_p \times K_t$$

$$\text{Actual capacity} = 44 \times 0.88 \times 1.12 \times 0.84$$

$$\text{Actual capacity} = 36 \text{ l/s or } 77 \text{ cfm}$$

Dimensions & weight

CD dryer	Dimensions (L x W x H)						Weight	
	mm		inch		mm		kg	lbs
	mm	inch	mm	inch	mm	inch	kg	lbs
CD 2	92	3.6	281	11.1	445	17.5	13	29
CD 3	92	3.6	281	11.1	504	19.8	14	31
CD 5	92	3.6	281	11.1	635	25.0	17	38
CD 7	290	11.4	176	6.9	855	33.7	26	58
CD 12	290	11.4	176	6.9	855	33.7	27	60
CD 17	290	11.4	176	6.9	1055	41.5	32	71
CD 24	385	15.2	227	8.9	1100	43.3	50	111
CD 32	385	15.2	227	8.9	1100	43.3	54	120
CD 44	484	19.1	406	16.0	1255	49.4	125	278
CD 60	488	19.2	406	16.0	1255	49.4	130	289
CD 65	715	28.1	664	26.1	1512	59.5	230	511
CD 80	715	28.1	664	26.1	1512	59.5	250	555
CD 100	715	28.1	664	26.1	1627	64.1	280	622
CD 140	732	28.8	690	27.2	1642	64.6	340	755
CD 170	764	30.1	723	28.5	1651	65.0	430	955
CD 230	947	37.3	808	31.8	1728	68.0	500	1110
CD 280	1037	40.8	838	33.0	1740	68.5	550	1221
CD 390	1337	52.6	770	30.3	2256	88.8	800	1776
CD 520	1593	62.7	920	36.2	2300	90.6	1100	2442
CD 780	1876	73.9	1474	58.0	2300	90.6	1400	3108
CD 1050**	2250	88.6	1283	50.5	2687	105.8	2000	4440



The face of innovation

What sets Atlas Copco apart as a company is our conviction that we can only excel in what we do if we provide the best possible know-how and technology to really help our customers produce, grow and succeed.

There is a unique way of achieving that - we simply call it the Atlas Copco way. It builds on **interaction**, on long-term relationships and involvement in the customers' process, needs and objectives. It means having the flexibility to adapt to the diverse demands of the people we cater for.

It's the **commitment** to our customers' business that drives our effort towards increasing their productivity through better solutions. It starts with fully supporting existing products and continuously doing things better, but it goes much further, creating advances in technology through **innovation**.

Not for the sake of technology, but for the sake of our customer's bottom line and peace-of-mind.

That is how Atlas Copco will strive to remain the first choice, to succeed in attracting new business and to maintain our position as the industry leader.



Never use compressed air as breathing air without prior purification in accordance with local legislation and standards.

Service competence

Atlas Copco is committed to provide the levels of after-sales care that you require. Our highly trained engineers offer the best possible support and assistance in operating your equipment with the most modern diagnostic tools available.

Global capability

Global capability with local presence means that we can respond rapidly to any situation anywhere in the world. Our world class logistics ensures timely delivery of our range of guaranteed quality spare parts.



ISO 9001

From design to production and delivery of compressors, Atlas Copco adheres to the ISO 9001 management system.



ISO 14001

Atlas Copco's Environmental Management System forms an integral part of each business.

Atlas Copco

www.atlascopco.com