



PURE PERFORMANCE

Dehumidification and drying for industrial
and commercial applications

Dehumidification and drying

 **condair**

Why use a dehumidifier?

Particularly in the industrial and commercial sectors, swimming bath and warehousing industries, users are often confronted with a pressing need to control the humidity of the air.

Ensuring product quality:

Being able to precisely configure the humidity throughout production processes is often an essential factor in ensuring product quality remains consistently high. Using dehumidifiers and dryers helps to ensure that these processes remain safe and stable.

Maintaining operations and preventing downtime:

Dehumidifiers can protect pipework, installations, operating materials and technical appliances from moisture damage. This helps to ensure that equipment is always ready for use and reduces the need for expensive renovations. The risk of production downtime is therefore far lower.

Protecting valuables in storage and archives:

In archives and warehouses, dehumidifiers help to protect valuable items from moisture damage, which can in extreme cases lead to total destruction.

Conservation of out of service machinery:

Machines and equipment that are taken out of service periodically can be protected from corrosion damage with dehumidifiers. This keeps them in peak condition to ensure that they can be put back into service more quickly when the time comes.

Protecting building structures:

Dehumidifiers can be used to prevent/minimize water vapor diffusion through building structures, and so protect them from deterioration over the long term. This in turn reduces the risk of expensive building renovations becoming necessary.

Operational safety and hygiene:

Condensation on walkways can lead to an increased risk of accidents and encourage bacterial growth. Dehumidifiers help to maintain a safe and hygienic environment.



Preventing condensation



Preventing rust and corrosion



Preventing electrical disturbances



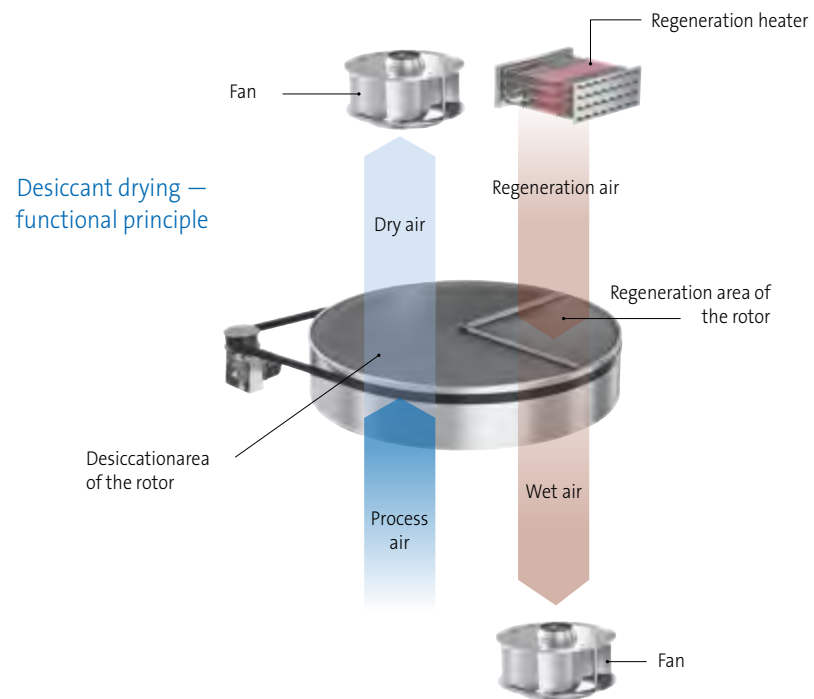
Preventing mold and rot



Ensuring product quality



Preventing clumping



Condair DA series

Condair DA desiccant driers are designed to be used wherever extremely low humidity is needed, such as in industrial drying processes, or where there are very low temperatures to deal with.

The devices' powerful sorption rotors mean that they can be used to bring humidity values down to a minimum at temperatures as low as -30°C.

As well as standard designs with drying capacities of 0.45–182 kg/h, a wide range of specialized versions are also available.

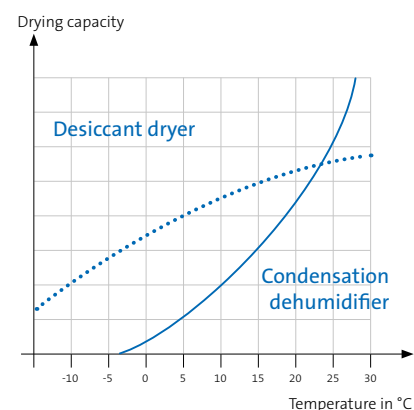
Depending on their size, the devices can be fitted with pre- or post-cooling batteries, heat exchangers or condensation modules prior to delivery. Post-cooling in particular is often necessary due to the heat given off by the dry air, and should be taken into account at an early stage of the planning process.

As well as being able to choose from a range of different regeneration processes, you also have the option to combine existing media of your own, such as steam or PWW systems, with the electrical regeneration heater.

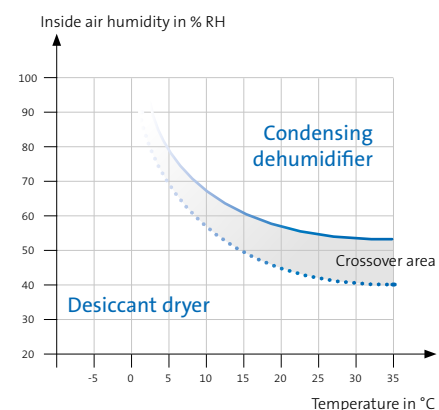
This saves a considerable amount of energy, particularly with larger systems, and can therefore help you achieve a substantial reduction in operating costs.

The sorption rotor used in Condair desiccant dryers is silicone-free. The drying agent is neither respirable nor flammable.

Performance characteristics



Recommended usage by temperature/humidity



Stainless steel housing

All of our desiccant dryers are fitted with a top-quality, incredibly durable AISI 304 stainless steel housing as standard. This ensures operational safety even under the most aggressive conditions, and is also incredibly hygienic.

Comprehensive control options

We offer a variety of control options for the DA 35 series and above which enable you to adapt the device to your own situation. An industry standard 3.5" or 5.7" display is provided to input parameters and operate the electronic controller. Depending on the control option chosen, throttle valves may not be required.

Highly efficient desiccant rotor

The desiccant rotor consists of a fiber optic honeycomb structure, coated with an extremely hygroscopic silica gel. This honeycomb structure creates an enormously effective surface for efficient moisture transmission. The rotor material is hygienic, non-flammable and non-respirable, and the rotors are largely maintenance-free.



Efficient fans

We only use high-quality, directly driven EC fans. Process and regeneration fans are triggered directly via the controller, the airstreams are monitored and displayed on the screen (optional). This ensures maximum operational efficiency and saves time during commissioning and maintenance. The regeneration fan is insulated as standard.

Numerous options

To help you adapt your desiccant dryer to perfectly suit your requirements, we offer a number of additional modules that are both technically and visually tailored to each model. They give you the option to connect heat recovery units, air-cooled condensers, pre- and post-cooling units and heat registers.

Sophisticated construction

All of the components are designed to be easy to remove and maintain. The filter inserts can be replaced easily. As the rotors are positioned horizontally (DA 30 – DA65), the process and regeneration air-side connections are on different sides of the device. This makes assembly simpler and enables you to connect a number of additional modules.

Technical Data

DA desiccant dryer



DA 240

DA 30E

Technical Data		DA 120	DA 240	DA 290	DA 300	DA 400
Drying capacity at 20°C – 60% RH	kg/h	0.45	0.8	1.1	1.1	1.4
Nominal dry air volume	m³/h	120	240	290	300	400
Nominal regeneration air volume	m³/h	35	40	65	65	90
Electrical connected load	kW	0.78	1.05	1.63	1.5	1.97
Electrical load — regeneration heat register	kW	0.73	0.94	1.38	1.38	1.84
Voltage supply	V/Ph/Hz	230/1/50				
Ext. pressure — process air	Pa	60	50	30	80	50
Ext. pressure — regeneration air	Pa	50	50	50	50	50
Process air inlet (H x W)	mm	240 x 205	160 x 290	160 x 290	210 x 350	210 x 350
Dry air connection diameter	mm	100	100	100	125	125
Regeneration air connection diameter	mm	50	80	80	80	80
Dimensions (H x W x D)	mm	316 x 320 x 330	396 x 330 x 359	396 x 330 x 359	430 x 402 x 469	430 x 402 x 469
Weight	kg	13	18	19	27	28

Technical Data		DA 30E 0.9	DA 30E 1.2	DA 30E 1.9
Drying capacity at 20°C – 60% RH	kg/h	0.9	1.2	1.9
Nominal dry air volume	m³/h	300	300	300
Nominal regeneration air volume	m³/h	50	65	85
Electrical connected load	kW	1.4	1.8	2.9
Electrical load — regeneration heat register	kW			
Voltage supply	V/Ph/Hz	230/1/50		400/3/50
Ext. pressure — process air	Pa	200	200	200
Ext. pressure — regeneration air	Pa	140	180	150
Process air connection diameter	mm	200	200	200
Dry air connection diameter	mm	100	100	100
Regeneration air connection diameter	mm	100	100	100
Dimensions (H x W x D)	mm	771 x 554 x 398		
Weight	kg	52	53	53

C = cold room (on request)
E = energy saving
D = deep drying

Technical Data

DA desiccant dryer



DA 35E

DA 65E

Technical Data		DA 35E 3.3	DA 35E 3.8	DA 35E 4.5	DA 35E 5.1	DA 35E 5.6	DA 35D 3.2	DA 35D 4.5
Drying capacity at 20°C – 60% RH	kg/h	3.3	3.8	4.5	5.1	5.6	3.2	4.5
Nominal dry air volume	m³/h	750	1000	1000	1000	1000	405	617
Nominal regeneration air volume	m³/h	135	135	168	202	233	135	202
Electrical connected load	kW	4.9	5.1	6.3	7.4	8.5	4.9	7.3
Electrical load — regeneration heat register	kW	4.6	4.6	5.7	6.9	8.0	4.6	6.9
Voltage supply	V/Ph/Hz	400/3/50						
Ext. pressure — process air	Pa	210	210	210	210	210	210	300
Ext. pressure — regeneration air	Pa	300	300	300	300	250	300	250
Process air connection diameter	mm	250	250	250	250	250	250	250
Dry air connection diameter	mm	250	250	250	250	250	250	250
Regeneration air connection diameter	mm	200	200	200	200	200	200	200
Dimensions (H x W x D)	mm	1090 x 756 x 532						1090 x 756 x 532
Weight	kg	102	110	110	110	110	110	110

Technical Data		DA 65E 7.8	DA 65E 11.1	DA 65E 15.4	DA 65E 19.1	DA 65D 7.1	DA 65D 10.1	DA 65D 14.0
Drying capacity at 20°C – 60% RH	kg/h	7.8	11.1	15.4	19.1	7.1	10.1	14
Nominal dry air volume	m³/h	1900	2600	3700	3700	1100	1500	2200
Nominal regeneration air volume	m³/h	340	460	670	940	340	460	670
Electrical connected load	kW	11.4	16.2	23.6	32.4	11.1	15.7	22.5
Electrical load — regeneration heat register	kW	10.2	14.4	20.4	28.8	10.2	14.4	20.4
Voltage supply	V/Ph/Hz	400/3/50						
Ext. pressure — process air	Pa	400	400	500	500	400	400	400
Ext. pressure — regeneration air	Pa	300	400	400	400	300	400	400
Process air connection diameter	mm	315	400	400	400	315	315	400
Dry air connection diameter	mm	315	400	400	400	315	315	400
Regeneration air connection diameter	mm	200	200	200	200	200	200	200
Dimensions (H x W x D)	mm	1615 x 1165 x 820				1615 x 1165 x 820		
Weight	kg	200	250	250	200	250	250	250

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Technical Data

DA desiccant dryer



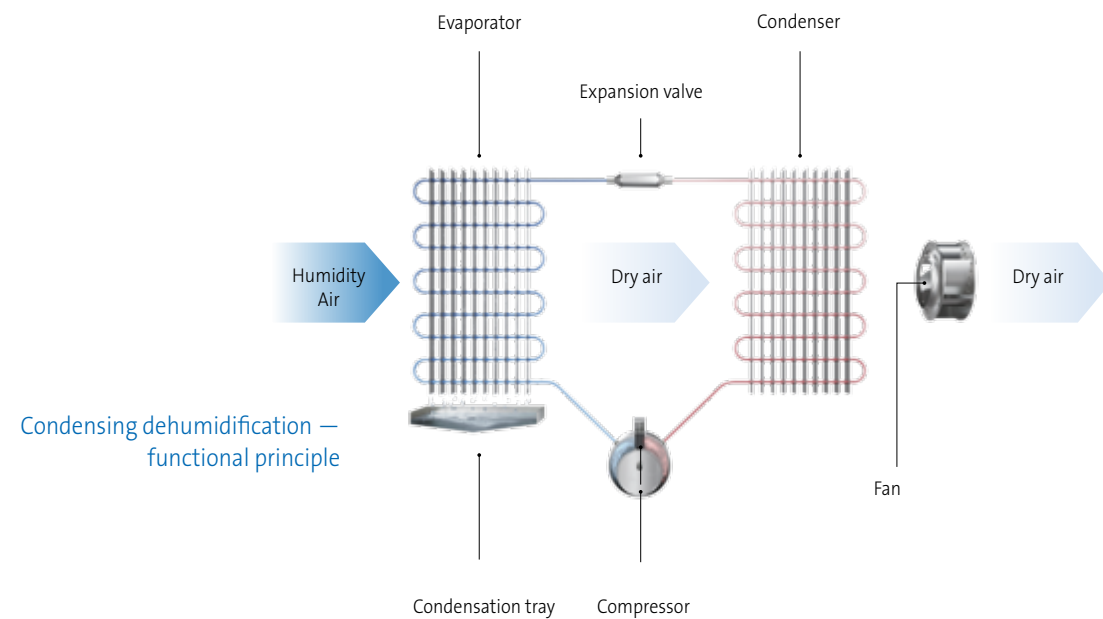
DA 12000 T/P

Technical Data		DA 2000P / 3000T	DA 4000P / 6000T	DA 6000P / 9000T	DA 8000P	DA 12000T
Drying capacity at 20°C – 60% RH	kg/h	14.6/16.6	28.8/32.4	40.3/44.3	56.6	62.6
Nominal dry air volume	m³/h	2000/3000	4000/6000	6000/9000	8000	12000
Nominal regeneration air volume	m³/h	720	1400	1900	2600	2600
Electrical connected load	kW	25	50	65	92	92
Electrical load — regeneration heat register	kW	22	45	59	84	84
Voltage supply	V/Ph/Hz	400/3/50				
Process air inlet (H x W)	mm	950 x 450		1000 x 600	1500 x 800	
Dry air connection diameter	mm	500		560	560	
Regeneration air inlet (H x W)	mm	500 x 500			600 x 600	
Wet air connection diameter	mm	250		315		400
Dimensions (H x W x D)	mm	1480 x 2438 x 1110			1780 x 2438 x 1410	
Weight	kg	750	800	1000	1500	1500

Technical Data		DA 12000P	DA 18000T	DA 18000P	DA 25000T	DA 25000P
Drying capacity at 20°C – 60% RH	kg/h	92.2	98.3	128.7	132.5	181.5
Nominal dry air volume	m³/h	12000	18000	18000	25000	25000
Nominal regeneration air volume	m³/h	4000	4000	5700	5700	8000
Electrical connected load	kW	146	149	197	195	278
Electrical load — regeneration heat register	kW	135	135	180	180	255
Voltage supply	V/Ph/Hz	400/3/50				
Process air inlet (H x W)	mm	1500 x 800	1500 x 900		2000 x 1000	
Dry air connection diameter	mm	560	800		1000	
Regeneration air inlet (H x W)	mm	600 x 600	800 x 800			
Wet air connection diameter	mm	400			500	
Dimensions (H x W x D)	mm	2030 x 3660 x 1710	2230 x 3046 x 1910	2230 x 3657 x 1910	2530 x 3657 x 2410	
Weight	kg	1700	1950	2500	3000	3500

P = process version
T = turbo version





Condair DC series

Condair Condensing dehumidifiers have many different applications across the industrial, commercial and warehousing sectors. They are based around a refrigerant circuit system, and are generally used in areas which require a relative humidity of up to 45%. Condair condensing dehumidifiers can be configured in a variety of ways to suit our customers' individual needs. So we always have the optimum device for any application.

The standard devices in the Condair DC series cover a broad range of applications. Their dehumidification capacities range from 75 l/24h to 930 l/24h. Their enormous ventilation capacities of up to 8,000 m³/h mean that just one or a few devices are required to control the humidity in even the largest of buildings. They can be free-standing or configured for mobile use, and can even be connected to the air duct network to ensure optimum distribution of the dehumidified air.

For temperature-sensitive areas, we offer special temperature-neutral versions. The condensation heat from the dehumidifier is drawn away via an external condenser so that the room temperature is not affected.

Condair condensing dehumidifiers come with a hot-gas defrosting system as standard to ensure safe, economical operation even at low room temperatures.

Durable housing

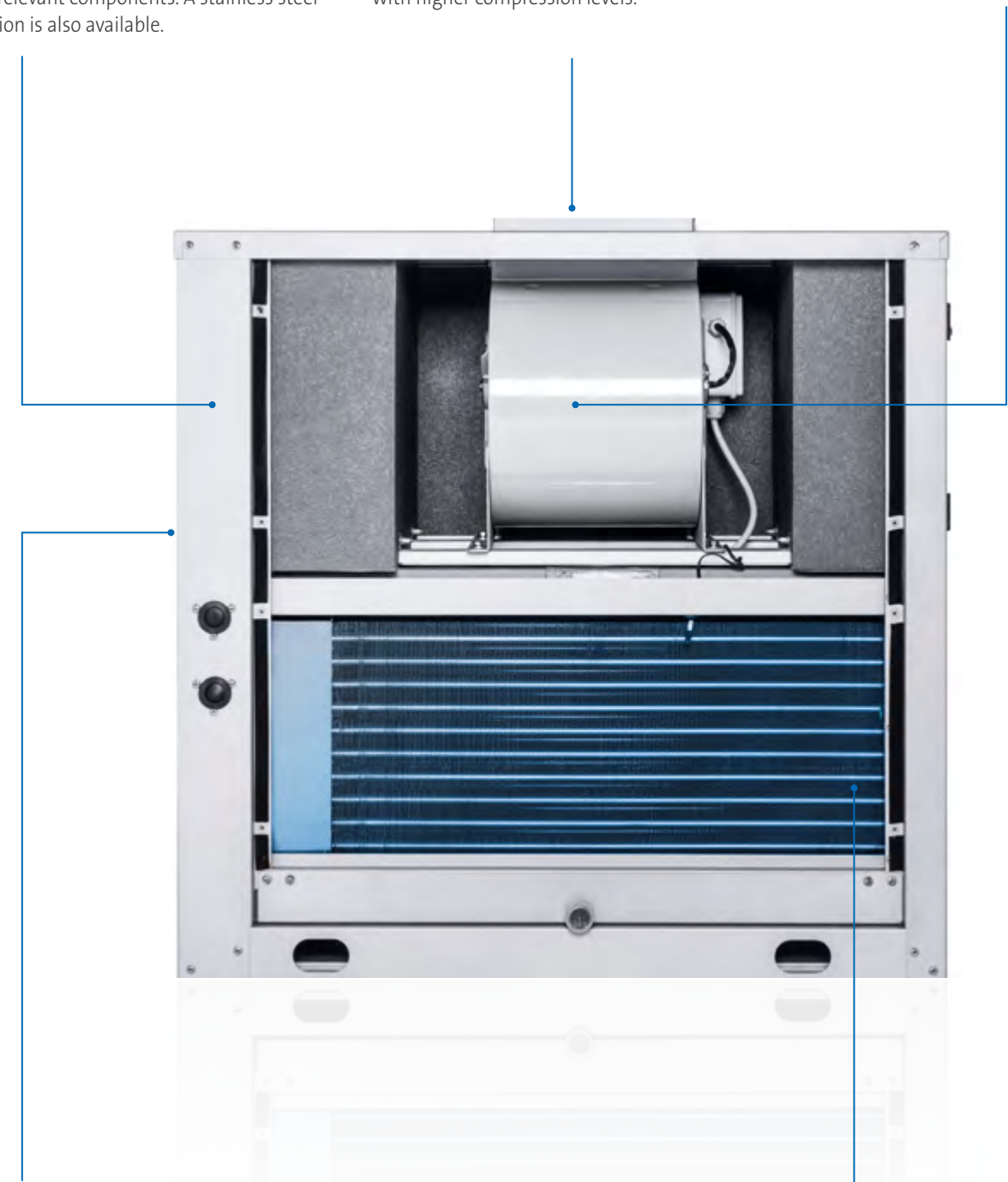
The robust, hot-dip galvanized RAL 9006 housing provides maximum protection against the aggressive environmental conditions often experienced in the industrial sector. The housing is easy to disassemble to ensure fast access to all of the relevant components. A stainless steel version is also available.

Flexible connection options

Condair DC dehumidifiers can either be operated independently or connected to a ventilation duct network. Separate connection frames are available for this. For longer duct networks and specialist applications, we offer more powerful fans with higher compression levels.

EC fan

High-quality, directly controlled EC fan. The fan is very energy-efficient and quiet to run. A variety of external compressors can be installed on the device. The fan housing is soundproof and completely separate from the cooling circuit.



Controller

The dehumidifier is controlled fully electronically via a microprocessor. Operation and error notifications are displayed on the integrated screen, which can also show operating hours. The microprocessor controls important functions such as defrosting and compressor operation. A potential-free contact is provided for issuing the operation/error notifications.

Cooling circuit

Highly efficient R410A cooling circuit. We only use well-known branded components in our cooling circuits. The pressure is balanced via electronic expansion valves, and once the corresponding parts of the housing are disassembled, all components are easily accessible. Specialized versions, e.g. for operation at higher temperatures, are available on request.

Heat exchangers

In all versions of the device, the heat exchangers feature a special coating to protect them from aggressive environmental conditions as standard. Special varnishes and coatings are available if the device is to be operated under particularly aggressive conditions.

Technical Data

DC condensing dehumidifiers



DC 200

Technical Data		DC 75	DC 100	DC 150	DC 200	DC 270
Dehumidification capacity at 30°C – 80% RH	l/24h	73.0	95.2	157.1	194.3	263.1
Dehumidification capacity at 20°C – 60% RH	l/24h	34.5	50.2	66.0	90.6	111.4
Dehumidification capacity at 10°C – 70% RH	l/24h	26.6	33.7	43.9	60.7	75.7
Air flow	m³/h	800	1000	1500	1800	3800
Nominal power consumption ¹⁾	kW	1.1	1.72	1.98	2.64	4.90
Maximum current consumption ²⁾	A	1.55	2.07	2.34	2.72	17.9
Available ext. pressure (extended pressure optional)	Pa	50–150				
Operation range — humidity	% RH	1–99				
Operation range — temperature ³⁾	°C	5–36				
Voltage supply	V/Ph/Hz	230/1/50				400/3/50
Sound pressure level ⁴⁾	dB(A)	52	54	60	62	63
Refrigerant	-	R410A				
Dimensions (H x W x D)	mm	800 x 819 x 400		981 x 1055 x 554		1378 x 1154 x 704
Weight	kg	85	90	130	135	140

Technical Data		DC 350	DC 450	DC 550	DC 750	DC 950
Dehumidification capacity at 30°C – 80% RH	l/24h	340.2	418.8	566.8	751.1	939.3
Dehumidification capacity at 20°C – 60% RH	l/24h	168.5	223.9	267.1	391.0	501.0
Dehumidification capacity at 10°C – 70% RH	l/24h	118.3	160.9	180.2	269.8	349.6
Air flow	m³/h	4200		5500	7000	8500
Nominal power consumption ¹⁾	kW	6.26	8.59	8.00	11.60	15.50
Maximum current consumption ²⁾	A	14.2	17.9	18.9	28.3	38.3
Available ext. pressure (extended pressure optional)	Pa	50–150				
Operation range — humidity	% RH	1–99				
Operation range — temperature ³⁾	°C	5–36				
Voltage supply	V/Ph/Hz	400/3/50				
Sound pressure level ⁴⁾	dB(A)	64	64	66	66	66
Refrigerant	-	R410A				
Dimensions (H x W x D)	mm	1378 x 1154 x 704			1750 x 1504 x 854	
Weight	kg	211	215	415	423	430

1) at t_a=30°C; humidity=80°C 2) at t_a=35°C; humidity=80°C 3) low temperature version for permanent operation below 10°C available on request
4) Laboratory values at 1 m in open air as per ISO 9614, actual values may vary





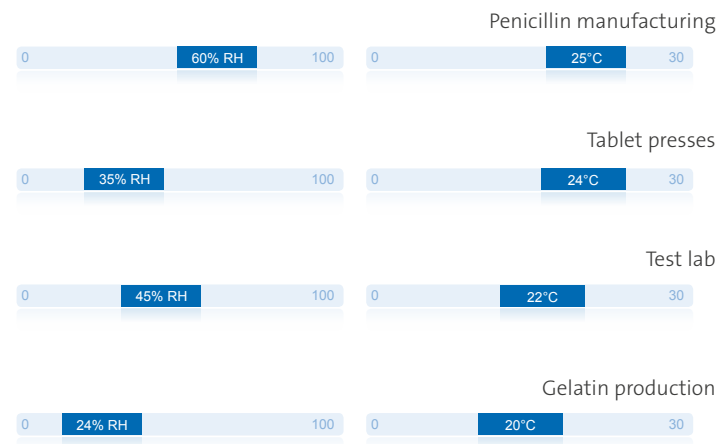
Storage and cooling

Excessively high humidity is a serious problem in many parts of the warehousing industry. The main causes of this are air infiltrating from outside and moisture evaporating from the products being stored themselves. There are a number of symptoms, including moisture damage on packaging, clumping, mold and corrosion, that can all have a negative impact on product quality. Condensation can form on walkways, technical equipment, vertical blinds and other components, preventing you from ensuring that you have a safe and hygienic work environment.

The consequences of outside air infiltrating cold storage facilities can be even more dramatic. Ice can form on goods, walls, floors, walkways and

equipment, and fog can negatively affect the health of employees working in the area. Condensation can damage or even contaminate the goods being stored, meaning that you have to make additional effort and incur additional costs to ensure that the necessary hygiene standards are met.

By using a suitable dehumidification system, you can guarantee the safe and efficient operation of your warehouses and cold storage facilities. Our systems ensure optimum product quality, and provide a safe and hygienic work environment.



Pharmaceutical industry

Many pharmaceutical products are made from hygroscopic raw materials in powdered or granulated form. High and uncontrolled humidity during the tableting and packaging process can cause a variety of problems that are often difficult to solve.

If powders or granulates come into contact with the water vapor in the air, this can have a serious effect on both the production process and product quality.

Powdered materials can clump together and block pneumatic transportation systems, which can in turn result in extensive cleaning work, and therefore downtime, being required. If this additional moisture causes irregularities in the dosing process, the effectiveness of the active chemicals may be limited and uncontrollable.

Variations in volume, weight, color and product characteristics, and a possible reduction in the shelf life of the product, can all have a negative effect on brand and company image.

High humidity and high levels of condensation can also encourage bacteria and mold to grow. This in turn can result in long interruptions to the production process with devastating financial consequences.

Laboratories, too, need to precisely control their humidity to ensure that they produce accurate, reliable results. Dehumidification systems can keep humidity at the optimum level during the production and packaging process, and so ensure maximum production security and efficiency.

Condair offers a wide range of technologies and additional options to help you tailor a solution to your specific requirements.





Water supply facilities

Condensation is one of the biggest challenges faced by companies operating and maintaining equipment at water supply facilities, particularly during the warmer months of the year. The infiltration of warm, humid air into cooler buildings can lead to condensation forming on the pipes and fittings that carry the water, and other colder components.

Powerful dehumidification systems can effectively and efficiently protect technical equipment in water supply facilities from all kinds of moisture-related damage. They can also help to significantly reduce the amount of downtime required for maintenance by keeping equipment in peak condition. Plus, they keep the working environment safe and hygienic for staff.

This can cause considerable damage to technical systems and the building itself:

- Destruction of anti-corrosion coatings.
- Corrosion of electrical contacts and damage to sensitive electronics.
- Droplet and puddle formation.
- Mold build-up and microbe growth.
- Clumping of chemicals and additives.
- Wet surfaces representing a safety risk for staff.





Food, production and storage

When it comes to producing, processing and storing foods, it is incredibly important for companies to adhere to the strictest of hygiene standards. As well as moisture infiltration from warm, humid external air, people and the products themselves, the often regular and intensive cleaning measures necessary in this field can also cause an enormous additional build-up of moisture at production facilities. Dehumidifiers are the most effective and efficient solution to ensure you maintain the optimum conditions for uninterrupted, hygienic and safe operation.

Large volumes of water vapor can be drawn away incredibly quickly to reduce build-ups of condensation and water droplets, minimizing interruptions to operation after cleaning. Transport systems, too, can be made available more quickly post-cleaning.

Potential dangers for staff, such as those posed by wet walkways and fog are avoided, and mold cannot even begin to grow.

Efficiency

One traditional method of dehumidification that is still commonplace today is a simple ventilation and circulation system, whereby the damp air is sucked in via a ventilator and drier air streams in from outside. This external air must then be reheated, which takes a huge amount of energy. This method is therefore incredibly wasteful.

It is far more efficient to run dehumidifiers based on a closed cooling circuit system. All Condair industrial dehumidifiers work according to the heat pump principle, whereby all of the warmth given up in the heat pump circuit is used to heat the room. This considerably decreases operating costs. Compared to a simple ventilation system with supply and exhaust air streams, a dehumidifier can be up to 60 % more efficient.

Desiccant driers can also be very efficient if the media available on site, such as steam or PWW, is combined with the electrical regeneration heater.

Using a hybrid regeneration battery like this saves a considerable amount of energy, particularly with larger systems, and can therefore help you achieve a substantial reduction in operating costs.

Planning and service

We offer a wide and comprehensive range of dehumidification options. For this reason, we recommend that when it comes to selecting your system, you consult a specialist who can offer objective, expert advice for planners, installers and operators.

The experts at Condair GmbH are happy to help you plan, design and select the optimum dehumidification system for your needs.

And if you ever experience an issue, help is available fast for both industrial and commercial customers. Condair GmbH offers a nationwide customer service program which you can also

use to source maintenance and commissioning services for your dehumidifier as needed.

Condair GmbH offers the following services alongside its products:

- Planning support
- On-site consultation and sales with our specialists
- Software-supported design and calculations
- Nationwide after-sales service
- Replacement parts



