

# Products, Concepts, Solutions

## Built on the needs of the customer

For almost 100 years we from ALUP have produced quality compressors.

With our innovative system concepts we offer customised solutions for almost all ranges of application.

Our endeavour lies not only in supplying compressors, we offer ourselves as a competent system provider, who is able

to offer a solution from the compressed air producer to the last compressed air consumer.

That does not only apply to the consultation and installation phase of your new compressor(s), but naturally continues in all interests of service, maintenance and visualisation.

## Challenge us!



**Screw compressors**

- Constant speed  
4 – 400 kW/  
5 – 13 bar
- Variable speed controlled and direct drive  
16 – 260 kW/  
5 – 13 bar
- Oil-free, with water injection  
4 – 250 kW/  
5 – 10 bar



**Piston compressors**

- Oil-free, up to 10 bar  
0.75 – 12 kW
- For normal pressure up to 10 bar  
1.5 – 15 kW
- For medium pressure up to 15 bar  
1.5 – 15 kW
- For high pressure up to 35 bar  
2.2 – 11 kW
- As a Booster for an input pressure up to 15 bar and an output pressure up to 40 bar  
2.2 – 15 kW



**Turbo compressors**

- Oil-free, up to 9 bar  
65 – 370 kW



**Complete Accessories**

- Refrigeration dryers  
0.16 – 145 m<sup>3</sup>/min
- Desiccant dryers  
0.08 – 145 m<sup>3</sup>/min
- Activated carbon adsorbers  
0.08 – 145 m<sup>3</sup>/min
- Filters, all particle sizes  
0.08 – 380 m<sup>3</sup>/min
- Complete Condensate management  
up to 120 m<sup>3</sup>/min



**Control, regulate, monitor**

- Lead-lag control
- Consumption-dependant control
- Visualisation (we bring your compressed air to the PC)
- Tele-monitoring (the Hotline of your compressed air station)

Your specialist

[www.alup.com](http://www.alup.com)

**ALUP**  
Kompressoren

a company of the  
**Abac Group**

**ALUP**  
Kompressoren

Compressed air treatment

Drying

Filtration

Condensate management



Leaflet\_treatment\_gb\_03\_2003

# Clean compressed air for the most demanding requirements

*Prevents corrosion, wear and damage in the mains*

*Improves the efficiency of the compressed air system*

*Prolongs the service life of compressed air consumers*

*Reduces production cost significantly*

*Increases the quality of your products*

*Increases productivity*



No industrial company or craft business can do without compressed air. It is used in such a variety of applications that their listing would be incomplete.

To ensure the optimum utilisation of compressed air, it should be dry, clean and, in some cases, oil-free.

Compressed air treatment is therefore indispensable. However, if treatment is neglected or not adapted to the requirement profile at hand, this will have an adverse effect on the entire compressed air system. This can lead to unnecessary production downtimes and shortens the service life of compressed air consumers.

Reason enough to ensure the correctly adjusted quality of compressed air for each individual application.

# Cyclone separator

ZAS

Cyclone separators remove liquid water from compressed air.

Cyclone separators have been developed for treating compressed air in industrial applications. Due to an optimised design, the three-part housing with swirl insert offers low differential pressures at high flow rates.

Due to the conical shape of the filter housing base, the entrainment of separated aerosols can be ruled out. The turbulence-free section in the lower part of the filter housing prevents condensate already separated from being carried away with the air flow from the wet section.

Optionally cyclone separators are also available as SuperPlus version with electronic condensate drain.

### Equipment features:

- Standard version without condensate drain
- SuperPlus version including electronically controlled condensate drain that drains condensate without compressed air losses



Type ZAS	Flow rate <sup>1</sup>	Connection <sup>2</sup>	Width	Height		Weight	
	m <sup>3</sup> /h	G	mm	Standard mm	SuperPlus mm	Standard kg	SuperPlus kg
125	125	1/2"	80	260	395	1.1	2.0
225	225	3/4"	95	280	415	1.6	2.5
375	375	1"	110	355	490	1.9	2.8
550	550	1 1/4"	110	355	490	1.9	2.8
750	750	1 1/2"	150	470	605	5.2	6.1
1000	1000	2"	150	470	610	5.2	6.1
1650	1650	2 1/2"	180	580	720	9.0	9.9
2250	2250	3"	180	580	720	8.9	9.8
1650 F	1650	DN 80	380	685	925	24.0	27.7
2750 F	2750	DN 125	440	835	1075	48.0	51.7
5000 F	5000	DN 150	540	1000	1240	70.0	73.7
7500 F	7500	DN 200	650	1240	1495	104.0	107.7
10500 F	10500	DN 250	800	1600	1855	174.0	177.7
15000 F	15000	DN 300	900	1930	2185	255.0	258.7

<sup>1</sup> At 7 bar referred to the intake condition of the compressor (1 bar, 20 °C)

<sup>2</sup> Threaded connections, alternatively also available in NPT

Operating pressure max.: 16 bar

# Heavy-duty filters

VA, MA, SA, AK

Compressed air filters ensure the provision of clean air for the most demanding requirements.

Compressed air filters can be used in a variety of applications. They are employed wherever compressed air must be clean, dry and free from oil aerosols.

An exacting requirement profile considering that 1 m<sup>3</sup> of compressed air at a final compression pressure of 10 bar can contain more than 2 billion particles and fluid molecules.

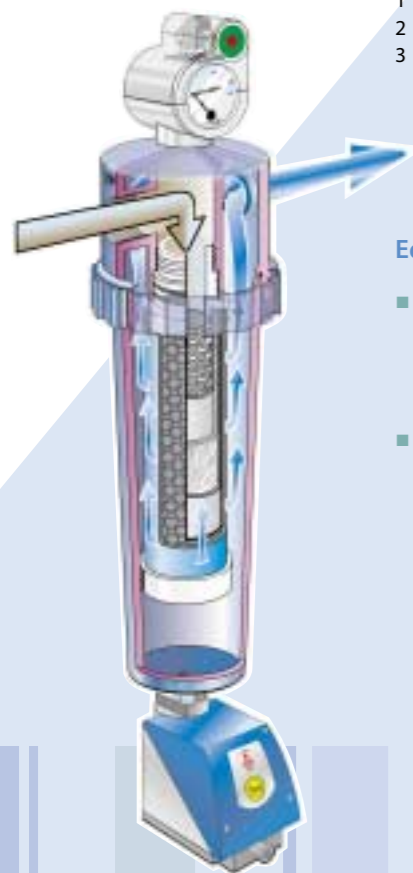
A requirement profile to which ALUP heavy-duty filters are tailored in an optimum way.



## The optimum filter for any requirement profile:

Type of filter	Type	Particles		Residual oil 1	Residual water 2
		Particle size μm	Degree of separation (particles of 0.01 μm) %	Residual oil content mg/m <sup>3</sup>	Residual water content (in liquid form)
Pre-filter	VA	25	-		available
Micro-filter	MA	0.01	99.999	0.1	not available <sup>3</sup>
Submicro-filter	SA	0.01	99.99999	< 0.01	not available <sup>3</sup>
Active carbon filter	AK			0.003	not available <sup>3</sup>

<sup>1</sup> With an inlet concentration of 3 mg/m<sup>3</sup>  
<sup>2</sup> Details refer to a station without upstream compressed air dryer  
<sup>3</sup> The compressed air does no longer contain residual water in liquid form, if the temperature is not reduced downstream from the filter elements (air is 100 % saturated)



### Equipment features:

- Standard version, including
  - Economizer for indicating the differential pressure
  - Float-type drain trap
- SuperPlus version, including
  - Economizer for indicating the differential pressure and the most favourable time for changing the filter element
  - Electronically controlled condensate drain to remove the condensate without pressure losses
- Three-part housing with double O-rings for simple replacement and installation of filter elements
- Extremely light aluminium housing with threaded connection for flows from 20 – 2880 m<sup>3</sup>/h
- Alternatively, for flows ranging between 1440 – 7850 m<sup>3</sup>/h, steel housing with flanged connection

## Filter with threaded connection

Filter type VA, MA, SA, AK	Element type	Flow		Connection G	Standard version (G) <sup>1</sup>			SuperPlus version (GS) <sup>2</sup>			
		nom.	max.		Dimensions		Dimensions		Weight	Weight	Weight
		m <sup>3</sup> /h	m <sup>3</sup> /h		Width mm	Height mm	Width mm	Height mm			
50 G (GS)	03/10 PC	50	70	1/4"	70	285	1	70	420	1.8	
70 G (GS)	03/10 PC	70	90	3/8"	70	285	1	70	420	1.8	
90 G (GS)	04/10 PC	90	120	3/4"	80	335	1.5	80	475	2.3	
180 G (GS)	05/20 PC	180	270	3/4"	95	360	1.9	95	495	2.7	
360 G (GS)	07/25 PC	360	480	1"	110	430	2.2	110	570	3	
670 G (GS)	10/30 PC	670	900	1 1/2"	150	585	6.5	150	730	7.3	
720 G (GS)	10/30 PC	720	1080	2"	150	585	6.5	150	730	7.3	
1080 G (GS)	15/30 PC	1080	1440	2 1/2"	160	795	10	160	870	10.4	
1440 G (GS)	20/30 PC	1440	1920	2 1/2"	180	935	12.6	180	1010	13	
1920 G (GS)	30/30 PC	1920	2800	2 1/2"	180	1185	13.7	180	1260	14.1	
2250 G (GS)	30/30 PC	2250	2880	3"	180	1185	13.7	180	1260	14.1	
2880 G (GS)	30/50 PC	2880	4320	3"	210	1195	20	210	1295	20.4	

All details refer to 1 bar (abs), 20 °C, 70 % r. h.

<sup>1</sup> Aluminium housing with threaded connection and polyester resin powder coating, including float-type drain trap and Economizer

<sup>2</sup> Aluminium housing with threaded connection and polyester resin powder coating, including electronically controlled condensate drain and energy-saving Economizer

Operating pressure: 16 bar. Test pressure: 22.9 bar. Operating temp.: min. +1 °C, max. + 65 °C

## Filter with flanged connection

Filter type VA, MA, SA, AK	Element type	Flow		Connection DN	Standard version (F) <sup>1</sup>			SuperPlus version (FS) <sup>2</sup>			
		nom.	max.		Dimensions		Dimensions		Weight	Weight	Weight
		m <sup>3</sup> /h	m <sup>3</sup> /h		Width mm	Height mm	Width mm	Height mm			
1440 F (FS)	20/30 PC	1440	1920	50	280	1015	33	280	1070	34.5	
1920 F (FS)	30/30 PC	1920	2800	65	320	1315	40	320	1370	41.5	
2880 F (FS)	30/50 PC	2880	4320	80	360	1350	54	360	1400	55.5	
3500 F (FS)	30/50 PC	3500	4800	100	410	1370	90	410	1370	94	
4320 F (FS)	3 x 20/30 PC	4320	5760	100	410	1100	80	410	1235	84	
5760 F (FS)	3 x 30/30 PC	5760	7680	100	410	1370	90	410	1505	94	
7680 F (FS)	4 x 30/30	7680	11520	150	480	1485	130	480	1625	134	

All details refer to 1 bar (abs), 20 °C, 70 % r. h.

<sup>1</sup> Steel housing with flanged connection and polyester resin powder coating, including float drain and Economizer

<sup>2</sup> Steel housing with flanged connection and polyester resin powder coating, including electronically controlled condensate drain and energy-saving Economizer

Operating pressure: 16 bar. Test pressure: 22.9 bar. Operating temp.: min. +1 °C max. + 65 °C

Operating pressure in bar	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Corrective factor	0.25	0.36	0.5	0.6	0.7	0.9	1	1.1	1.2	1.4	1.5	1.6	1.75	1.9	2	2.1

### Conversion factors to other operating pressures

The specified flows refer to a pressure of 7 bar. Flows at different pressures can be calculated using these corrective factors.

### Flow rating

The flow through the filter element should be between 50 and 100 % of the **nominal** flow. With higher or lower flow rates, the filtration efficiency deteriorates. The **maximum** flow must not be exceeded.

# Compressed air refrigeration dryers

AD

## Refrigeration dryers – even for the most confined space.

Refrigeration dryers of the AD series can be used flexibly and versatilely,

- as stand-alone unit,
- as wall-mounted unit
- or as “docking dryer kit” (compressor plus refrigeration dryer)

These refrigeration dryers reduce production costs and increase productivity. An efficient, two-stage plate-type heat exchanger system made of stainless steel ensures the reliable operation of the dryer up to an inlet temperature of as high as + 55°C and a pressure dew point of + 3 °C.

### Conversion factors:

In accordance with DIN ISO 7183 refrigeration dryers are designed for an operating pressure of 7 bar, an ambient temperature of 25 °C and an inlet temperature of 35 °C. In the case of other operating pressures and temperatures, use the following conversion factors for series AD and DTE.

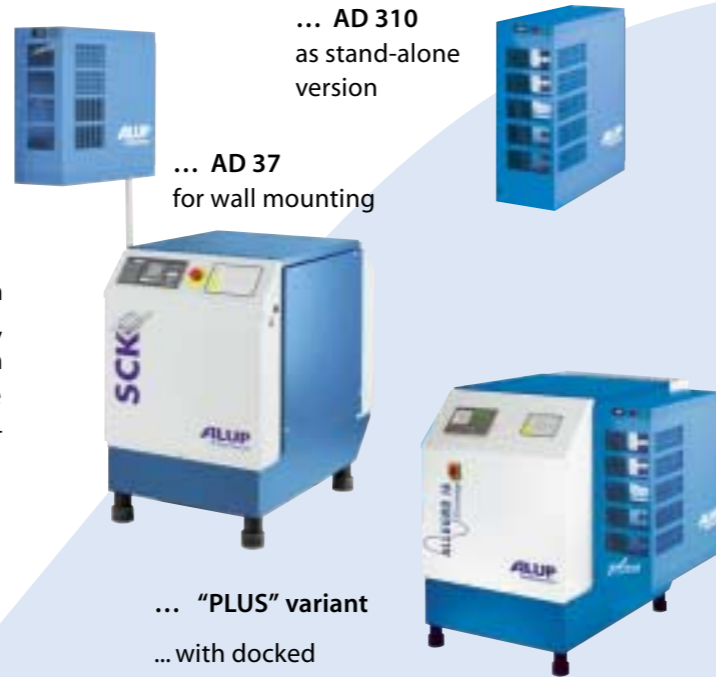
Ambient temperature $t_a$ (°C)	25	30	35	40	45	50
Factor $f_{ta}$	1	0.97	0.94	0.87	0.75	0.5

Operating pressure $p$ (bar)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Factor $f_p$	0.60	0.70	0.80	0.88	0.94	1	1.04	1.06	1.09	1.10	1.12	1.14	1.15	1.16	1.17

Type AD	Flow $m^3/h$	Cooling air requirement $m^3/h$	Compressed air connection G	Power consumption kW	Dimensions				Screw compressor for PLUS version
					Width mm	Height mm	Depth mm	Weight kg	
18	18	260	1/2"	0.15	230	595	650	26	–
23	23	260	1/2"	0.18	230	595	650	26	–
37	37	240	3/4"	0.2	230	595	650	28	SCK 5
50	50	450	3/4"	0.28	230	595	650	40	SCK 8
69	69	450	3/4"	0.28	230	595	650	45	SCK 10
96	96	770	3/4"	0.38	230	595	650	48	SCK 15
140	142	770	3/4"	0.48	230	595	650	52	SCK 22
150	142	770	1"	0.52	300	798	770	58	SCK 21 OPUS 11/15
175	174	770	1"	0.6	300	798	770	60	SCK 26 OPUS 16/18/22 ALLEGRO 16
200	204	770	1"	0.68	300	798	770	65	SCK 31 ALLEGRO 20/24
280	276	1500	1 1/2"	0.85	300	798	770	75	SCK 42 ALLEGRO 28/32
310	312	1500	1 1/2"	0.96	300	798	770	90	SCK 52 ALLEGRO 38

Pressure dew point + 3 °C referred to an ambient temperature of + 25 °C and compressed air inlet temperature of 35 °C at 7 bar  
Refrigerant: R 134 a

## Variation options



... AD 310 as stand-alone version

... AD 37 for wall mounting

... “PLUS” variant

... with docked compressed air cold dryer, also for retrofitting with series

- SCK 5 – 52
- OPUS 11 – 22
- ALLEGRO 16 – 38

DTE

## Refrigeration dryers – proven and powerful

The powerful refrigeration dryers of the DTE series are highly efficient quality dryers that have proven a thousand times in practice. They are convincing through their high efficiency and reliability at inlet temperatures up to + 50 °C and a pressure dew point of + 3 °C.

A novelty is the cost-saving zero-load operating mode. Energy costs are reduced while spontaneous readiness for operation is still given. In addition, this series is characterised by particularly large heat exchanger surface areas that guarantee a constant pressure dew point and a high degree of water separation even under extreme operating conditions.



Type DTE	Flow $m^3/h$	Cooling air requirement $m^3/h$	Compressed air connection G	Power consumption kW	Dimensions			
					Width mm	Height mm	Depth mm	Weight kg
11	10	260	3/8"	0.13	350	375	300	22
16	15	260	3/8"	0.14	350	375	300	23
26	25	240	1/2"	0.15	350	400	350	25
36	35	240	1/2"	0.16	350	400	350	26
50 P	50	450	3/4"	0.25	450	500	450	40
65 P	65	450	3/4"	0.27	450	500	450	41
80 P	80	450	3/4"	0.33	450	500	450	44
100 P	100	740	1"	0.35	600	550	450	48
125 P	125	740	1"	0.46	600	550	450	50
150 P	150	1000	1"	0.70	600	550	450	52
175 P	175	1000	1"	0.74	600	550	450	53
225 P	225	1300	1 1/2"	0.76	600	650	600	70
300 P	300	920	1 1/2"	0.88	600	650	600	80
375 P	375	920	1 1/2"	0.95	600	650	600	95
450 P	450	920	1 1/2"	1.08	600	650	600	97
550 P	550	2900	2"	1.25	900	1230	800	150
650 P	650	2900	2"	1.28	900	1230	800	152
750 P	750	2900	2"	1.45	900	1230	800	166
850 P	850	2600	2"	1.80	900	1230	800	175
1000 P	1000	3100	2 1/2"	2.40	900	1230	800	177
1175 P	1175	2600	2 1/2"	2.56	900	1230	800	180
1350 P	1350	2600	2 1/2"	2.80	900	1230	800	185
1500 P	1500	2600	2 1/2"	2.95	900	1230	800	190
1650 P	1650	2600	2 1/2"	3.10	900	1230	800	196
1950	1950	10000	DN 100	3.15	1200	1900	1200	430
2250	2250	10000	DN 100	3.70	1200	1900	1200	450
2750	2750	10000	DN 100	4.30	1200	1900	1200	490
3500	3500	9500	DN 150	5.70	1200	1900	1200	610
4000	4000	9500	DN 150	6.30	1200	1900	1200	610
5000	5000	9500	DN 150	8.20	1200	1900	1200	645
7000 W	7000	3.9 <sup>1</sup>	DN 200	10.60	2225	1900	1200	1002
8750 W	8750	4.5 <sup>1</sup>	DN 200	12.90	2225	1900	1200	1171
10500 W	10500	5.5 <sup>1</sup>	DN 250	13.90	3275	1900	1200	1760
12500 W	12500	6.4 <sup>1</sup>	DN 250	18.20	3275	1900	1200	199

<sup>1</sup> Cooling water requirement ( $m^3/h$ ) at water inlet temperature of 25 °C  
Pressure dew point + 3 °C referred to an ambient temperature of + 25 °C and a compressed air inlet temperature of 35 °C at 7 bar  
Refrigerant: R 134 a, P = incl. micro-processor control, W = water-cooled  
DTE 11 – DTE 36 incl. float-type drain trap, DTE 50 P – DTE 12500 W incl. electronically controlled condensate drain

# Adsorption dryer

## heatless

# OekoDry 2000

Complete treatment system with heatless adsorption dryer, pre- and after-filter and condensate drain

### Technical data:

- Pressure dew points:
  - up to -40 °C at 100 % nominal load
  - up to -70 °C at 70 % nominal load and a max. inlet temperature of 35 °C
- Flow rates up to 5 – 100 m<sup>3</sup>/h
- Regeneration air requirement ca. 17 % of the nominal flow
- Operating pressure 4 – 16 bar

Two type series, MINI and MIDI, with a total of 9 frame sizes offer reliable and efficient compressed air conditioning in line with demand. The OekoDry 2000 series is also available as SuperPlus version.

A special advantage of the SuperPlus version is sensing of the desiccant loading condition by means of a micro-processor control.

optimum loading and regeneration time of the desiccant.

In this way, the required amount of valuable regeneration air is reduced by 40 % on average and the service life of the desiccant is considerably prolonged.

The efficiency of the overall system is additionally increased through the use of the new Economizers.

Moreover, the operation of the two filters is monitored and the most favourable time of change of the filter elements established.



Type OekoDry 2000	Nominal flow rate Inlet m <sup>3</sup> /h <sup>1</sup>	Reg. air flow on average - 40 °C m <sup>3</sup> /h	Dimensions				Connection G
			Width mm	Height mm	Depth mm	Weight kg	
0005	5	0.85	300	350	120	7	1/2"
0010	10	1.70	300	595	120	11	1/2"
0015	15	2.55	300	855	120	15	1/2"
0025	25	4.25	300	1385	120	24	1/2"
0035	35	5.95	535	670	195	29	1"
0050	50	8.50	535	925	195	38	1"
0065	65	11.50	535	1175	195	48	1"
0080	80	13.60	535	1435	195	57	1"
0100	100	17.00	535	1685	195	67	1"

<sup>1</sup> Referred to 1 bar (abs) and 20 °C intake condition, 7 bar and 35 °C inlet temperature  
 Pressure dew point: -40 °C at 100 % nominal load  
 -70 °C at 70 % nominal load and a max. inlet temperature of 35 °C  
 Operating pressure: min. 4 bar, max. 16 bar

Operating pressure in bar	4	5	6	7	8	9	10	11	12	13	14	15	16
Corrective factor pressure (f <sub>p</sub> )	0.63	0.75	0.88	1	1.12	1.25	1.38	1.50	1.63	1.75	1.88	2.0	2.13

Inlet temperature (°C)	20	25	30	35	40	45	50
Corrective factor temperature (f <sub>T</sub> )	1.1	1.1	1.1	1.0	0.8	0.7	0.5

$$V_{corr} = \frac{V_{nom}}{f_p \cdot f_T}$$

Example: V<sub>nom</sub> = 20 m<sup>3</sup>/h  
 Inlet temperature = 30 °C  
 Operating pressure = 10 bar

$$V_{corr} = \frac{20 \text{ m}^3/\text{h}}{1.38 \cdot 1.1} = 13.18 \text{ m}^3/\text{h}$$

Calculated dryer size:  
 OekoDry 2000, type 0015

Complete treatment system with heatless adsorption dryer, pre- and after-filter and electronic condensate drain

# OekoDry C

### Technical data:

- Pressure dew points
  - ≤ -20 °C
  - ≤ -40 °C
  - ≤ -70 °C
- Flows from 5 – 1000 m<sup>3</sup>/h
- Regeneration air requirement at PDP:
  - 20 °C: 14 %
  - 40 °C: 15 %
  - 70 °C: 20 %
 of the relevant nominal flow
- Operating pressure 4 – 16 bar



Type OekoDry C	Nominal flow rate Inlet m <sup>3</sup> /h <sup>1</sup>	Reg. air flow on average			Dimensions				Connection G
		-20 °C m <sup>3</sup> /h	-40 °C m <sup>3</sup> /h	-70 °C m <sup>3</sup> /h	Width mm	Height mm	Depth mm	Weight kg	
0005	5	0.7	0.8	1.0	470	700	340	27	3/8"
0010	10	1.4	1.5	2.0	470	700	340	33	3/8"
0015	15	2.1	2.3	3.0	470	1060	340	41	3/8"
0025	25	3.5	3.8	5.0	470	1060	340	44	1/2"
0035	35	4.9	5.3	7.0	470	1060	340	48	1/2"
0050	50	7.0	7.5	10.0	670	1610	450	107	3/4"
0080	80	11.2	12.0	16.0	670	1610	450	140	3/4"
0100	100	14.0	15.0	20.0	670	1610	450	169	1"
0150	150	21.0	23.0	30.0	770	1980	600	200	1"
0175	175	24.5	26.2	35.0	770	1980	600	225	1"
0225	225	31.5	34.0	45.0	770	1980	600	277	1 1/2"
0300	300	42.0	45.0	60.0	770	1980	600	321	1 1/2"
0375	375	52.5	56.0	75.0	950	2190	700	398	1 1/2"
0550	550	77.0	83.0	110.0	950	2190	700	431	2"
0650	650	91.0	98.0	130.0	950	2190	700	506	2"
0850	850	119.0	128.0	170.0	1100	2350	800	595	2"
1000	1000	140.0	150.0	200.0	1100	2350	800	676	2 1/2"

<sup>1</sup> Referred to 1 bar (abs) and 20 °C intake condition, 7 bar and 35 °C inlet temperature  
 Pressure dew point: -20 °C, -40 °C, -70 °C at 100 % nominal load

Operating pressure in bar	4	5	6	7	8	9	10	11	12	13	14	15	16
Corrective factor pressure (f <sub>p</sub> )	0.63	0.75	0.88	1.00	1.12	1.25	1.38	1.50	1.63	1.75	1.88	2.00	2.13

Type	Pressure dew point	Residual water content	Inlet temperature (°C)	20	25	30	35	40	45	50
-20 °C	-20 °C	0.88 g/m <sup>3</sup>	Corrective factor Temperature f <sub>T</sub> Pressure dew point (°C)	1.2	1.2	1.1	1.0	-	-	-
-40 °C	-40 °C	0.11 g/m <sup>3</sup>	Corrective factor Temperature f <sub>T</sub> Pressure dew point (°C)	1.2	1.2	1.1	1.0	-	-	-
-70 °C	-70 °C	0.0027 g/m <sup>3</sup>	Corrective factor Temperature f <sub>T</sub> Pressure dew point (°C)	1.0	1.0	1.0	1.0	0.8	0.7	0.5

$$V_{corr} = \frac{V_{nom}}{f_p \cdot f_T}$$

Example: V<sub>nom</sub> = 200 m<sup>3</sup>/h  
 Inlet temperature = 30 °C  
 PDP -40 °C  
 Operating pressure = 10 bar

$$V_{corr} = \frac{200 \text{ m}^3/\text{h}}{1.38 \cdot 1.1} = 131.8 \text{ m}^3/\text{h}$$

Calculated dryer size:  
 OekoDry 2000, type 0150

# Adsorption dryer

heatless

OekoDry C

Complete treatment system with heatless adsorption dryer, pre-, after-filter and electronic condensate drain.

Technical data:

- Pressure dew points
  - ≤ -20 °C
  - ≤ -40 °C
  - ≤ -70 °C
- Flows from 1350 – 8750 m<sup>3</sup>/h
- Regeneration air requirement at PDP:
  - 20 °C: 14 %
  - 40 °C: 15 %
  - 70 °C: 20 %
 of the relevant nominal flow
- Operating pressure 4 – 10 bar



Type OekoDry C	Nominal flow rate Inlet m <sup>3</sup> /h <sup>1</sup>	Reg. air flow on average			Dimensions				Connection
		-20 °C m <sup>3</sup> /h	-40 °C m <sup>3</sup> /h	-70 °C m <sup>3</sup> /h	Width mm	Height mm	Depth mm	Weight kg	
1350	1350	189	202	270	1500	2555	950	870	DN 80
1650	1650	231	247	330	1700	2365	1050	1000	DN 80
1950	1950	273	292	390	1800	2585	1163	1105	DN 100
2250	2250	315	337	450	1900	2605	1290	1350	DN 100
2750	2750	385	412	550	2000	2695	1340	1530	DN 100
3500	3500	490	525	700	2200	2680	1490	1720	DN 100
4000	4000	560	600	800	2400	2980	1630	2250	DN 150
5000	5000	700	750	1000	2600	3030	1715	2950	DN 150
6000	6000	840	900	1200	2800	3070	1815	3500	DN 150
7000	7000	980	1050	1400	3000	3080	1915	3865	DN 150
8750	8750	1225	1312	1500	3400	3280	2290	5820	DN 200

<sup>1</sup> Referred to 1 bar (abs) and 20 °C intake condition, 7 bar and 35 °C inlet temperature  
Pressure dew point: -20 °C, -40 °C, -70 °C at 100 % nominal load

Operating pressure in bar	4	5	6	7	8	9	10
Corrective factor pressure (fp)	0.63	0.75	0.88	1.00	1.12	1.25	1.38

Type	Pressure dew point	Residual water content	Inlet temperature (°C)	20	25	30	35	40	45	50
-20 °C	-20 °C	0.88 g/m <sup>3</sup>	Corrective factor Temperature f <sub>T</sub> Pressure dew point (°C)	1.2	1.2	1.1	1.0	-	-	-
-40 °C	-40 °C	0.11 g/m <sup>3</sup>	Corrective factor Temperature f <sub>T</sub> Pressure dew point (°C)	1.2	1.2	1.1	1.0	-	-	-
-70 °C	-70 °C	0.0027 g/m <sup>3</sup>	Corrective factor Temperature f <sub>T</sub> Pressure dew point (°C)	1.0	1.0	1.0	1.0	0.8	0.7	0.5

$$V_{corr} = \frac{V_{nom}}{f_p \cdot f_T}$$

Example:  $V_{nom} = 2000 \text{ m}^3/\text{h}$   
Inlet temperature = 30 °C  
Operating pressure = 10 bar  
PDP - 40 °C

$$V_{corr} = \frac{2000 \text{ m}^3/\text{h}}{1.38 \cdot 1.1} = 1318 \text{ m}^3/\text{h}$$

Calculated dryer size:  
OekoDry C, type 1350

# Adsorption dryer

heat regenerated

OekoDry W

Externally heat regenerated adsorption dryer with blower and zero purge loss

Technical data:

- Pressure dew point -40 °C at 100 % nominal load
- Flows from 375 – 8750 m<sup>3</sup>/h
- Operating pressure 4 – 10 bar

Especially with higher outputs and pressure dew points, heat regenerated adsorption dryers operate more efficiently and, what is even more important, at lower operating costs. Due to suction gas cooling, the OekoDry W series operates without loss of compressed air. Here, ambient air is directed through the adsorption vessel to cool the unit. This reduces pressure and thus temperature.

A feature that makes the OekoDry W series even more efficient and economical.



Type OekoDry W	Nominal flow rate Inlet m <sup>3</sup> /h <sup>1</sup>	Dimensions				Connection	Average power requirement kW
		Width mm	Height mm	Depth mm	Weight kg		
0375	375	1636	2319	800	845	DN 50	3.3
0550	550	1700	2485	893	1080	DN 50	4.9
0650	650	1750	2457	935	1200	DN 50	5.5
0850	850	1820	2527	985	1380	DN 50	7.1
1000	1000	1830	2672	1050	1570	DN 80	8.4
1350	1350	2320	2854	1100	1890	DN 80	11.3
1650	1650	2370	2922	1180	2110	DN 80	13.8
1950	1950	2620	2986	1256	2650	DN 100	16.1
2250	2250	2670	3006	1280	2950	DN 100	18.5
2750	2750	2820	3064	1470	3850	DN 100	22.6
3500	3500	3430	3130	1682	4310	DN 100	28.2
4000	4000	3530	3214	1852	4820	DN 150	32.9
5000	5000	3730	3314	1987	5440	DN 150	41.2
6000	6000	3930	3485	2087	5930	DN 150	48.7
7000	7000	4145	3517	2187	6690	DN 150	57.0
8750	8750	4620	3530	2475	8205	DN 200	71.0

<sup>1</sup> Referred to 1 bar (abs) and 20 °C intake condition, 7 bar and 35 °C inlet temperature  
Pressure dew point: -40 °C at 100 % nominal load

Corrective factors C1 in dependence upon operating pressure and inlet temperature								
Inlet temperature °C	Operating pressure bar							
	4	5	6	7	8	9	10	
30	0.72	0.92	1.09	1.25	1.36	1.45	1.51	
35	0.55	0.70	0.85	1.00	1.12	1.25	1.37	
40	0.33	0.45	0.58	0.71	0.82	0.92	1.03	

$$V_{corr} = \frac{V_{nom}}{C1}$$

Example:  $V_{nom} = 8000 \text{ m}^3/\text{h}$   
Inlet temperature = 30 °C  
Operating pressure = 9 bar

$$V_{corr} = \frac{8000 \text{ m}^3/\text{h}}{1.45} = 5517 \text{ m}^3/\text{h}$$

Calculated dryer size:  
OekoDry W 6000

# Treatment system for technically oil-free compressed air

## OekoPac 2000

Complete system solution for treating compressed air, inclusive of heatless adsorption dryer, active carbon adsorber, pre- and after-filter and automatic condensate drain.

### Technical data:

- Pressure dew points:
  - up to -40 °C at 100 % nominal load
  - up to -70 °C at 70 % nominal load
  - and a max. inlet temperature of 35 °C
- Flow from 5 – 100 m<sup>3</sup>/h
- Regeneration air ca. 17 % of nominal flow
- Operating pressure 4 – 16 bar
- Residual content of contamination:
  - Particles < 0.01 µm, Degree of separation: 99.999 %
  - Oil (liquid phase) < 0.01mg/m<sup>3</sup>
  - Oil vapours and hydrocarbons < 0.003 mg/m<sup>3</sup>



The OekoPac 2000 series is derived from OekoDry 2000 adsorption dryers and is used to provide absolutely dry and oil-free compressed air.

It is also available in the SuperPlus variant.

A particular benefit of this equipment variant is sensing of the desiccant loading condition using a microprocessor control. This establishes the optimum adsorption and regeneration air of the desiccant. In this way, the required amount of valuable regeneration air can be reduced by 40 % on average and the service life of the desiccant significantly prolonged.

Due to the use of the new Economizers the efficiency of the overall system is increased.

Economizers compute the optimum time of replacement of the filter elements online through continuing evaluation of the energy costs in relation to the cost incurring for changing the filter elements.

Type OekoPac 2000	Nominal flow rate Inlet <sup>1</sup> m <sup>3</sup> /h	Reg. air flow on average – 40 °C m <sup>3</sup> /h	Connection G	Dimensions			
				Width mm	Height mm	Depth mm	Weight kg
0005	5	0.85	1/2 "	189	300	343	12
0010	10	1.70	1/2 "	189	300	591	19
0015	15	2.55	1/2 "	189	300	853	25
0025	25	4.25	1/2 "	189	300	1377	32
0035	35	5.95	1 "	322	532	665	29
0050	50	8.50	1 "	322	532	917	38
0065	65	11.50	1 "	322	532	1169	48
0080	80	13.60	1 "	322	532	1421	57
0100	100	17.00	1 "	322	532	1673	67

<sup>1</sup> Referred to 1 bar (abs) and 20 °C intake condition, 7 bar and 35 °C inlet temperature  
Pressure dew point: -40 °C at 100 % nominal load, -70 °C at 70 % nominal load and a max. inlet temperature of 35 °C  
Operating pressure: min. 4 bar, max. 16 bar

In the case of other operating pressures and temperatures, use the following conversion factors for the OekoPac 2000 and OekoPac OP series.

Operating pressure in bar	4	5	6	7	8	9	10	11	12	13	14	15	16
Corrective factor pressure (f <sub>p</sub> )	0.63	0.75	0.88	1	1.12	1.25	1.38	1.50	1.63	1.75	1.88	2.0	2.13

Inlet temperature (°C)	20	25	30	35	40	45	50
Corrective factor temperature (f <sub>T</sub> )	1.1	1.1	1.1	1.0	0.8	0.7	0.5

$$V_{corr} = \frac{V_{nom}}{f_p \cdot f_T}$$

Example:  $V_{nom} = 20 \text{ m}^3/\text{h}$   
Inlet temperature = 30 °C  
Operating pressure = 10 bar

$$V_{corr} = \frac{20 \text{ m}^3/\text{h}}{1.38 \cdot 1.1} = 13.18 \text{ m}^3/\text{h}$$

Calculated unit size:  
OekoPac 2000, type 0015

## OekoPac OP

The OekoPac OP series too is a complete treatment system for technically oil-free compressed air. It comprises pre-filtration in three stages, each with a level-controlled condensate drain, heatless adsorption dryer, active carbon adsorber, after-filter and a special shut-off feature against the penetration of oil – just to be on the safe side. Real operational reliability!



### Advantages of this system solutions:

- Compact system solution with electronic control unit
- Oil-free compressed air that meets the most exacting demands, 100,000 times cleaner than breathing air
- Pressure dew points up to -50 °C at 100 % nominal load and a regeneration air requirement of 15 %
- Optionally pressure dew points up to -70 °C at 100 % nominal load and a regeneration air requirement of 20 %
- Flows from 5 – 8750 m<sup>3</sup>/h
- Operating pressure: 4 – 16 bar
- Residual content of contamination:
  - Particles < 0.01 µm, Degree of separation: 99.999 %
  - Oil (liquid phase) < 0.01mg/m<sup>3</sup>
  - Oil vapours and hydrocarbons < 0.003 mg/m<sup>3</sup>

Type 0005 – 1000 complete and ready for connection as cabinet version in a steel housing with pre-, micro- and submicro-filter, adsorption dryer, oil vapour adsorber and dust filter.  
Type 1350 – 8750 of open design with pre-, micro- and submicro-filter, adsorption dryer, oil vapour adsorber and dust filter. Operating pressure: 4 – 16 bar; pre-filter with electronic condensate drain

Type OekoPac OP	Nominal flow rate Inlet <sup>1</sup> m <sup>3</sup> /h	Reg. air flow on average – 50 °C m <sup>3</sup> /h	Connection G	Dimensions			
				Width mm	Height mm	Depth mm	Weight kg
0005	5	0.8	3/8"	650	700	340	35
0010	10	1.5	3/8"	650	700	340	45
0015	15	2.3	3/8"	650	1060	340	58
0025	25	3.8	1/2"	650	1060	340	62
0035	35	5.3	1/2"	650	1060	340	66
0050	50	7.5	3/4"	940	1610	450	147
0080	80	12.0	3/4"	940	1610	450	192
0100	100	15.0	1"	940	1610	450	231
0150	150	23.0	1"	1140	1980	600	273
0175	175	26.3	1"	1140	1980	600	305
0225	225	34.0	1 1/2"	1140	1980	600	378
0300	300	45.0	1 1/2"	1140	1980	600	438
0375	375	56.0	1 1/2"	1580	2190	700	543
0550	550	83.0	2"	1580	2190	700	588
0650	650	98.0	2"	1580	2190	700	690
0850	850	128.0	2"	1600	2350	800	812
1000	1000	150.0	2 1/2"	1600	2350	800	923
1350	1350	202.5	DN 80	2250	2555	950	1330
1650	1650	247.5	DN 80	2550	2365	1050	1525
1950	1950	293.0	DN 100	2700	2385	1135	1690
2250	2250	337.5	DN 100	2900	2605	1290	2155
2750	2750	412.5	DN 100	3050	2695	1340	2430
3500	3500	525.0	DN 100	3400	2680	1490	2915
4000	4000	600.0	DN 150	3650	2980	1630	4005
5000	5000	750.0	DN 150	3950	3030	1715	4620
6000	6000	900.0	DN 150	4250	3070	1815	5475
7000	7000	1050.0	DN 150	4550	3080	1915	6190
8750	8750	1312.5	DN 200	5150	3280	2290	9150

<sup>1</sup> Referred to 1 bar (abs) and 20 °C intake temperature, 7 bar and inlet temperature of 35 °C  
Pressure dew points: up to -50 °C at 100 % nominal load and regeneration air requirement of 15 %

# Active carbon adsorber

AKC

Active carbon adsorbers for removing oil droplets and oil vapours completely from compressed air.

Active carbon adsorbers provide absolutely oil-free compressed air without any smell or taste for flow ranges from 5 – 8750 m<sup>3</sup>/h.

Active carbon adsorbers ensure:

- Freedom from oil with a residual oil content ≤ 0.003 mg/m<sup>3</sup> due to excellent oil vapour adsorption
- Assessable service life of the active carbon, ca. 10,000 operating hours
- Absolute operational reliability
- Highest level of power, reliability and quality
- Lower pressure differentials
- Constant efficiency



$$V_{corr} = \frac{V_{nom}}{f_p \cdot f_T}$$

Example:  $V_{nom} = 200 \text{ m}^3/\text{h}$   
 Inlet temperature = 30 °C  
 Operating pressure = 10 bar

$$V_{corr} = \frac{200 \text{ m}^3/\text{h}}{1.38 \cdot 1.1} = 144.93 \text{ m}^3/\text{h}$$

Calculated adsorber size:  
 AKC, type 0150

Operating pressure in bar	4	5	6	7	8	9	10	11	12	13	14	15	16
Corrective factor pressure ( $f_p$ )	0.62	0.75	0.88	1	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.0	2.13

Inlet temperature (°C)	20	25	30	35	40	45	50
Corrective factor temperature ( $f_T$ )	1.0	1.0	1.0	1.0	0.9	0.8	0.5

Type AKC	Nominal flow rate Inlet <sup>1</sup> m <sup>3</sup> /h	Connection G	Dimensions			
			Width mm	Height mm	Depth mm	Weight kg
0005	5	3/8"	150	485	160	5.0
0010	10	3/8"	150	590	175	7.0
0015	15	3/8"	150	820	175	9.0
0025	25	1/2"	200	780	200	10.0
0035	35	1/2"	200	940	200	12.0
0050	50	3/4"	290	1200	350	24.0
0080	80	3/4"	290	1536	350	29.0
0100	100	1"	320	1456	350	36.0
0150	150	1"	320	1907	350	41.0
0225	225	1 1/2"	380	1769	450	66.0
0300	300	1 1/2"	440	1746	450	70.0
0375	375	1 1/2"	440	1953	450	82.0
0550	550	2"	550	1995	600	95.0
0650	650	2"	550	2020	600	161.0
0850	850	2"	600	2115	600	180.0
1000	1000	2 1/2"	660	2237	600	190.0
1350	1350	DN 80	700	2555	700	201.0
1650	1650	DN 80	800	2365	800	331.0
1950	1950	DN 100	850	2585	850	395.0
2250	2250	DN 100	950	2605	950	459.0
2750	2750	DN 100	1000	2695	1000	585.0
3500	3500	DN 100	1150	2680	1150	680.0
4000	4000	DN 150	1200	2980	1200	975.0
5000	5000	DN 150	1300	3030	1300	1105.0
6000	6000	DN 150	1400	3070	1400	1320.0
7000	7000	DN 150	1500	3080	1500	1625.0
8750	8750	DN 200	1700	3280	1700	2750.0

<sup>1</sup> All details refer to 1 bar (abs) and 20 °C intake condition, 7 bar and 35 °C inlet temperature  
 Ambient temperature: min. 4 °C, max. 50 °C  
 Inlet preconditions: PDP – 40 °C, residual oil content 0.03 mg/m<sup>3</sup>

# Condensate management

ULTRAMAT/AQUAMAT

ULTRAMAT – optimum condensate drain

ULTRAMATS are electronically and level-controlled condensate drains that can be used wherever effective, operationally reliable and cost-efficient condensate drain is required.



Advantages of this system:

- Loss-free operation
- Generously dimensioned internal cross-sections, hence very insensitive to contamination and condensate with extreme particle content
- Less malfunction, increased reliability

- Considerably improved function of the oil/water separators due to reduced tendency of the condensate to emulsify
- Very low noise during operation; of particular importance when the drain is used in a decentralised arrangement at workplaces
- Voltage supply 24 V and 230 V
- Potential-free contacts as standard

Type ULTRAMAT	Connected flow rates		Filter	Pressure range bar	Compressed air connection G	Dimensions			
	Compressor	Dryer				Width mm	Height mm	Depth mm	Weight kg
05	5	10	50	0.8 – 16	1/2"	90	100	130	0.7
10 K	10	20	100	0.8 – 16	3/4"	88	133	144	1.0
100 K	100	200	1000	0.8 – 16	1"	150	203	240	3.7

Performance data referred to temperate climate.  
 Initial condition: 1 bar (abs); 20 °C; 70 % rel. humidity  
 7 bar; 35 °C; 100 % rel. humidity

Temperature range:  
 Standard: + 1 °C to + 60 °C  
 With heater: – 25 °C to + 60 °C

AQUAMAT oil/water separating systems for conditioning of condensates in line with environmental requirements.

ALUP AQUAMATS condition compressed air condensates, whose average oil content of 5 % is too hazardous to the environment to be drained without conditioning. The values achieved allow draining of the condensate into the public sewage system.



Advantages of this system:

- Ease of operation and service-friendliness
- Simple and quick filter replacement
- Waste water test kit included in the scope of supply
- Automatic maintenance indication
- Reduced disposal cost



Type AQUAMAT	Piston compressors max. flow		Screw compressors max. flow		Dimensions			
	Turbine and synthetic oil	VDL oil	Turbine and VDL oil	Synthetic VCL oil	Width mm	Height mm	Depth mm	Weight kg
120	1	0.5	1.5	1	345	555	320	8.5
250	2	1	3	2.5	440	655	430	19.5
450	3.5	1.5	6	4.5	477	725	460	23.5
900	7	3	12	9	665	840	510	35.0
1800	14	6	24	18	775	961	650	67.0
3600	18	12	48	36	1750	961	650	136.0
7200	56	24	96	72	3700	961	650	272.0

Temperature range: Standard: + 1 °C to + 60 °C

With heater: – 25 °C to + 60 °C