



**ETHA
FILTER**



ADSORPTION DRYERS and
PURIFICATION UNITS

ETHAFILTER, founded in 1992 and operating in the compressed air industry, is pleased to present its up-dated range of adsorption dryers and dedicated versions.

Backed by a long and proven experience, our staff focus on Customer requirements to design and develop solutions which not only ensure product performance, but long lasting reliability, low running costs, appealing quality and with a wide choice of configurations to best suit and satisfy specific applications.

All our engineered system solutions leave our premises, made to measure: Customers are assisted in deciding on the right solution for suiting their needs as we work alongside them from the stage of offer right up to our after-sales and technical assistance services.

Our organisation is structured so as to achieve reduced production times aimed at satisfying the end user with superior quality manufacturing working to tight production schedules.

ADSORPTION DRYERS

It is well known fact that compressed air contains contaminants.

Oil mixed with water condense and other suspended particles, as well as volatile organic compounds or other gas pollutants, create a mix which alters the property of compressed air undermining its application in terms of power, control and processes.

Coalescent filters eliminate condensation and contaminants; however the moisture content remains at saturation level.

In fact the inevitable temperature drops along the compressed air conveying system and expansion at the moment of application, cause an excessive moisture precipitation or even the formation of ice when the system is exposed to low environmental temperatures.

This causes damage to the compressed air line which then steadily worsens resulting in repair costs and production downtimes.

ETHAFILTER dryers, thanks to the technology these products incorporate, ensure optimal purification guaranteeing performance in time and no production downtimes.

WORKING PRINCIPLE

Adsorption dryers exploit the hygroscopic proprietary of minerals, zeolite, which traps an enormous quantity of water vapour within its crystalline structure.

The open pore structure allows for complete regeneration (regeneration is during the “desorption” stage) so the desiccant returns to its original state ready for the next adsorption cycle.

This results in a simple, static drying method and ecological as zeolite is non-polluting and offers superior performance compared to other methods, such as refrigeration which is physiologically limited by frost temperature.

Adsorption dryers can reach dew point temperatures below 0°C, with classes from -20°C to -60°C and deeper.

All of our systems are simple and consist of two towers (concentric for the TWIN-CON range and in parallel for EVO and ZEO), a pair of commutation valves and vent valves for the regeneration process, an electronic circuit board or as an alternative a pneumatic logic, which controls the time cycle.

The time cycle consists of two half cycles: a first half cycle providing for one tower to “adsorb” whilst the other tower is “desorbing” through its regeneration process. The second half cycle is exactly the same as the first half but with the towers inverted.

The result is very dry compressed air, with rarefied residual moisture content, according to three pre-established dew point classes:

class -20°C (P version)	0.11 g H ₂ O/m ³	150ppm _v
class -40°C (S version)	0.015 g H ₂ O/m ³	18ppm _v
class -70°C (D version)	0.003 g H ₂ O/m ³	< 3ppm _v (upon request)

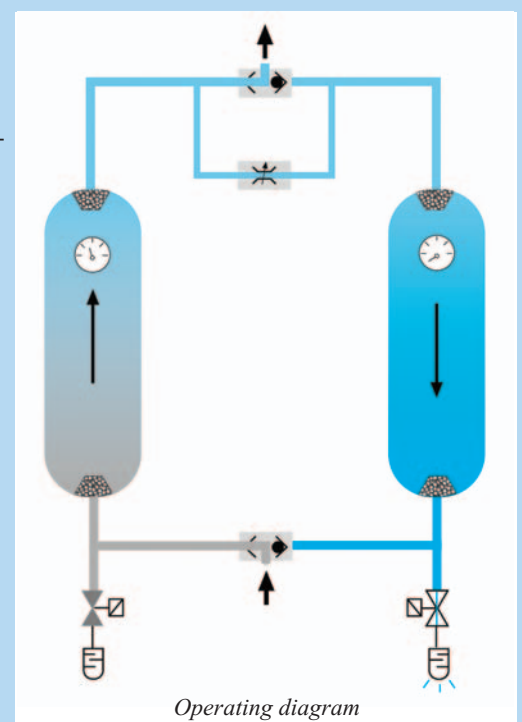
ETHAFILTER offers three types of adsorption dryers divided into groups based on the compressed air capacity:

TWIN-CON^{dryer} for a capacity ranging from 3 Nm³/h a 110 Nm³/h

EVO^{dry} for a capacity ranging from 150 Nm³/h a 480 Nm³/h

ZEO^{dry} for a capacity ranging from 600 Nm³/h a 4.500 Nm³/h

All product groups share the same feature, high-quality manufacturing, guaranteeing customers reliability which is translated into low maintenance costs and system longevity.



HEATLESS DRYERS

TWIN-CON^{dryer} is the result of our experience in adsorption dryers. Thanks to the innovative arrangement with concentric towers, this range of dryers offers the same performance as systems with parallel towers, however, with a reduction on the overall size and weight.

Moreover **TWIN-CON^{dryer}** is designed for being floor mounted, but if required it can be wall or horizontally mounted.

All **TWIN-CON^{dryer}** are supplied as standard with an inlet filter (SMA grade) and a dust filter on the outlet.

Model	Capacity (inlet)		Dimension mm			Connect. DN	Pressure max bar
	Nm ³ /h	NI/min	L	P	H		
TWIN-CON 0,5	3	50	230	240	520	1/4"	15
TWIN-CON 1	6	100	230	240	880	1/4"	15
TWIN-CON 1,5	12	200	230	240	1.130	3/8"	15
TWIN-CON 2	18	300	230	240	1.235	3/8"	15
TWIN-CON 3	24	400	230	240	1.380	3/8"	15
TWIN-CON 4	33	550	410	330	830	1/2"	15
TWIN-CON 6	48	800	410	330	1.035	1/2"	15
TWIN-CON 8	65	1.008	410	330	1.225	3/4"	15
TWIN-CON 11	110	1.830	410	330	1.575	3/4"	15

Data referred to t air = 35 °C, p = 7 bar and dew point = -40 °C; for other temperature and pressure values, please use the correction factors.



EVO^{dry} has been conceived for satisfying medium range flow rates (150÷480 Nm³/h). The conventional two tower structure has been modernised thanks to the use of aluminium extruded tube which ensures the same product performance but at a reduced weight.

Moreover **EVO^{dry}** is appealing thanks to a nice shape enclosure. These dryers are supplied without filters as standard.

Model	Capacity (inlet)		Dimension mm			Connect. DN	Pressure max bar
	Nm ³ /h	NI/min	L	P	H		
EVO ^{dry} 15	150	2.500	500	455	1.265	1"	15
EVO ^{dry} 18	180	3.000	500	455	1.465	1"	15
EVO ^{dry} 22	210	3.500	500	455	1.665	1"	15
EVO ^{dry} 30	300	5.000	740	580	1.270	1 1/4"	15
EVO ^{dry} 37	360	6.000	740	580	1.420	1 1/2"	15
EVO ^{dry} 45	480	8.000	740	580	1.670	1 1/2"	15

Data referred to t air = 35 °C, p = 7 bar and dew point = -40 °C; for other temperature and pressure values, please use the correction factors.



HEATLESS DRYERS

ZEO^{dry} our historical well-known range that has been in production since 1992 when Ethafilter was first founded and today still remains one of our winning products.

Our long experience in this industry has allowed us to modify and evolve our dryers for small and medium flow coverage achieved by the modern concept of TWIN-CON and EVO, whereas for higher capacity applications, which involve far more stringent structural restrictions, we have preferred to continue with this classical product which, thanks to the results obtained, ensures solid system performance and excellent reliability. These dryers are supplied without filters as standard.

Model	Capacity (inlet)		Dimension mm			Connect. DN	Pression max bar
	Nm ³ /h	Nl/min	L	P	H		
ZEO ^{dry} 55	600	10.000	900	550	1.810	2"	15
ZEO ^{dry} 75	820	13.670	1.200	800	1.970	2"	11
ZEO ^{dry} 90	1.000	16.670	1.200	800	2.010	2 1/2"	11
ZEO ^{dry} 110	1.200	20.000	1.200	800	2.260	3"	11
ZEO ^{dry} 132	1.500	25.000	1.730	1.210	2.450	DN80	11
ZEO ^{dry} 160	1.800	30.000	1.730	1.210	2.500	DN100	11
ZEO ^{dry} 200	2.100	35.000	1.730	1.210	2.750	DN100	11
ZEO ^{dry} 220	2.400	40.000	1.730	1.210	2.750	DN100	11
ZEO ^{dry} 250	2.700	45.000	1.730	1.210	3.010	DN100	11
ZEO ^{dry} 315	3.300	55.000	1.730	1.210	3.260	DN100	11
ZEO ^{dry} 355	3.600	60.000	2.400	1.800	2.650	DN150	11
ZEO ^{dry} 450	4.500	75.000	2.400	1.800	2.900	DN150	11

Data referred to t air = 35 °C, p = 7 bar and dew point = -40 °C; for other temperature and pressure values, please use the correction factors.



Correction factors

INLET FLOW RATE CORRECTION (approximate) as a function of the foreseen pressure dew point at the dryer outlet [F_d]

Foreseen dew point value °C	-10 °	-20 °	-30 °	-40 °	-50 °	-60 °	deeper dew point
Multiplier [F _d]	1,12	1,10	1,04	1,00	0,87	0,70	consult Ethafilter pre-dried air is advisable
Nominal purge rate %				16%			

FLOW RATE CORRECTION (approximate) as a function of the compressed air temperature feeding the dryer inlet [F_t] (by constant isobar)

Compressed air feed temperature °C	upgrade ↗				derate ↘				< 50°
	15°	20°	25°	30°	35°	40°	45°	50°	
Multiplier [F _t]	consult Ethafilter				1,00	0,80	0,75	0,60	consult Ethafilter
Purge air correction (multiply by)	consult Ethafilter				1,00	1,04	1,10	1,12	consult Ethafilter

INLET FLOW RATE CORRECTION (approximate) as a function of the compressed air pressure feeding the dryer inlet [F_p] (by constant isotherm)

Feed air pressure bar _(e)	derate ↘					upgrade ↗							
	5,0	5,5	6,0	6,5	7,0	7,5	8,0	8,5	9,0	9,5	10,0	11,0	13,0
Multiplier	0,70	0,74	0,78	0,91	1,00	1,01	1,03	1,12	1,20	1,25	1,30	1,37	1,70
Purge air correction (multiply by)	1,35	1,25	1,15	1,09	1,00	0,95	0,89	0,86	0,84	0,82	0,81	0,70	0,65

OPTIONAL ACCESSORIES (at an additional cost)

- Dryer inlet and outlet **FILTERS**.
- **SUPER SILENCERS™ KIT**: to maintain the noise level ~ ISO 75 during discharge
- **PNEUMATIC CONTROL** for applications which require a dryer that cannot be powered electrically.
- **EVO^{economy}**: is a new device which reduces up to 80% of costs on energy consumption. In fact the consumption of regeneration air is calculated for system conditions corresponding to full air demand, by maximum temperature and minimum feed pressure. However the demand for compressed air fluctuates most of the time, depending on the production schedules in course, as well as the inlet temperature varies substantially between night and day and on the season. By setting a ranking dew point value in lieu of a fix repetitive time cycle basis, the **EVO^{economy}** economiser allows to prolong the adsorption phase up to a certain extent time, proportionally to the real level of moisture measured by a sensor.



Purification UNIT OILESS / STERI

Our **OILESS** systems encompass the best adsorption and filtering technology in a unit which guarantees the User compressed air completely free of particles, moisture, oil and oil vapours as well as odours produced by volatile organic substances. The resulting purity satisfies provisions provided for in the ISO 8573.1 standard class 1, that is:

- residual moisture $\leq 0,5\%$
- oil and oil vapours $\leq 0,003 \text{ mg/Nm}^3$
- solid particles $\leq 0,1 \mu$

Generous absorbent loads and filtration barriers result in limited running costs and for the first 12 months we guarantee the purity of the compressed air.

Our **OILESS** systems are ideal for applications which require compressed air with a high grade of purity, still using lubricated compressors upstream which are more simple and economic compared to “dry” compressors in terms of capital investment, energy consumption and maintenance costs.

In the event compressed air purified to the sterile grade is necessary, our **OILESS** range can be transformed into **STERI** thanks to an additional final aseptic filtering stage.

These specific units trap all pollutants which are drawn from the ambient air. Their growth becomes favoured by humidity and temperature content consequent to the compression, thus concentrating germs, viruses and bacteria that can affect the quality and genuineness of products. Typical applications are in beverage and food packaging without preservatives or in the cosmetic and pharmaceutical industries.



Model	Ø	Capacity		Dimension mm		
		Nm ³ /h	NI/min	L	P	H
TWIN-CON ^{oiless} 0,5	1/4"	3	50	230	200	490
TWIN-CON ^{oiless} 1	1/4"	6	100	230	200	855
TWIN-CON ^{oiless} 1,5	3/8"	12	200	230	200	1.105
TWIN-CON ^{oiless} 2	3/8"	18	300	230	200	1.210
TWIN-CON ^{oiless} 3	3/8"	24	400	410	290	1.355
TWIN-CON ^{oiless} 4	1/2"	33	550	410	290	830
TWIN-CON ^{oiless} 6	1/2"	48	800	410	290	1.035
TWIN-CON ^{oiless} 8	3/4"	65	1.008	410	290	1.225
EVO ^{oiless} 11	3/4"	110	1.830	500	455	1.265
EVO ^{oiless} 15	1"	150	2.500	500	455	1.265
EVO ^{oiless} 18	1"	180	3.000	500	455	1.465
EVO ^{oiless} 22	1"	210	3.500	500	455	1.665
EVO ^{oiless} 30	1 1/4"	300	5.000	740	580	1.270
EVO ^{oiless} 37	1 1/2"	360	6.000	740	580	1.420
EVO ^{oiless} 45	1 1/2"	480	8.000	740	580	1.670
OILESS ^{block} 55	2"	600	10.000	1.400	550	1.750
OILESS ^{block} 75	2"	820	13.670	1.650	700	2.070
OILESS ^{block} 90	2 1/2"	1.000	16.670	1.650	700	2.070
OILESS ^{block} 110	3"	1.200	20.000	1.650	700	2.100
OILESS ^{block} 132	DN80	1.500	25.000	1.800	820	2.200

Data referred to t air = 35 °C, p = 7 bar and dew point = -40 °C; for other temperature and pressure values, please use the correction factors. Bigger sizes are available upon request.

SYSTEMS for medical applications med

The use of compressed air in medical applications is governed by the “European Pharmacopoeia” which groups guidelines that are to be respected to ensure maximum hygiene and safety of patients and operators involved in treatments, therapy, diagnosis, preventive treatment and when using surgical instruments fed by compressed air.

Our med systems have been designed to reduce not just the impurities contained in compressed air, but toxic and poisonous substances such as CO, CO₂ and NO_x.

The result a convenient and practical system compared to air bottles “reconstituted” by mixing cryogenic gases.



Model	Ø	Press. bar	Capacity inlet		Capacity outlet		Dimension mm		
			Nm ³ /h	NI/min	Nm ³ /h	NI/min	L	P	H
TWIN-CON ^{med} 0,5	1/4"	9	3	50	2,6	44	230	295	880
TWIN-CON ^{med} 1	3/8"	9	6,6	110	5,8	96	230	295	1.130
TWIN-CON ^{med} 1,5	3/8"	9	13,2	220	11,5	191	230	295	1.235
TWIN-CON ^{med} 2	3/8"	9	20	330	17,2	287	230	295	1.380
TWIN-CON ^{med} 3	1/2"	9	25	415	21,7	361	410	385	830
TWIN-CON ^{med} 4	1/2"	9	36	600	31,3	522	410	385	1.035
TWIN-CON ^{med} 6	1/4"	9	48	800	41,8	697	410	385	1.225
TWIN-CON ^{med} 8	1/4"	9	66	1.100	57,4	957	410	385	1.575
EVO ^{med} 11	1"	9	96	1.600	83,4	1.390	500	540	1.265
EVO ^{med} 15	1"	9	120	2.000	104,5	1.740	500	540	1.465
EVO ^{med} 18	1"	9	150	2.500	130,8	2.180	500	540	1.665
EVO ^{med} 22	1"	9	192	3.200	167,1	2.785	740	665	1.270
EVO ^{med} 30	1 1/4"	9	258	4.300	224,7	3.745	740	665	1.420
EVO ^{med} 37	1 1/2"	9	300	5.000	261,3	4.355	740	665	1.670
ZEO ^{med} 45	2"	9	400	6.700	350	5.850	900	550	1.810

Inlet compressed air referred to p = 9 bar t = + 25°C humidity = 2.3 g H₂O/m³

Outlet compressed air quality is guaranteed with following residual values:

- residual water vapour: ≤ 60 ppm_v
- carbon dioxide (CO₂): < 300 ppm_v
- sulphur dioxide (SO₂): ≤ 1 ppm_v
- nitrogen monoxide and dioxide: ≤ 2 ppm_v in total
- carbon monoxide (CO): ≤ 5 ppm_v
- oxygen title: 20.9% ± 1% tol.
- residual oil: ≤ 0.1mg/m³, odour and taste free

SYSTEM for breathable air resp

Our range *resp* has similar features to the med line and is designed for purifying and supplying compressed air for breathable applications.

These systems are used in applications which require breathable air as for instance paint shops, decompression chambers, when inspecting tanks and when building tunnels.

Our RESP systems respect the International Breathing Air Standards (standard ISO EN 12021).



Model	Ø	Press. bar	Capacity inlet		Capacity outlet		Dimension mm		
			Nm ³ /h	NI/min	Nm ³ /h	NI/min	L	P	H
TWIN-CON ^{resp} 0,5	1/4"	7	2	40	2,1	35,2	230	295	880
TWIN-CON ^{resp} 1	3/8"	7	5	88	4,6	76,8	230	295	1.130
TWIN-CON ^{resp} 1,5	3/8"	7	11	176	9,2	152,9	230	295	1.235
TWIN-CON ^{resp} 2	3/8"	7	16	264	13,8	229,7	230	295	1.380
TWIN-CON ^{resp} 3	1/2"	7	20	332	17,4	288,9	410	385	830
TWIN-CON ^{resp} 4	1/2"	7	29	480	25,0	417,7	410	385	1.035
TWIN-CON ^{resp} 6	3/4"	7	38	640	33,5	557,8	410	385	1.225
TWIN-CON ^{resp} 8	3/4"	7	53	880	45,9	765,9	410	385	1.575
EVO ^{resp} 11	1"	7	77	1.280	66,7	1.112,4	500	540	1.265
EVO ^{resp} 15	1"	7	96	1.601	83,6	1.392,5	500	540	1.465
EVO ^{resp} 18	1"	7	120	2.001	104,7	1.744,6	500	540	1.665
EVO ^{resp} 22	1"	7	154	2.561	133,7	2.228,7	740	665	1.270
EVO ^{resp} 30	1 1/4"	7	206	3.441	179,8	2.997,0	740	665	1.420
EVO ^{resp} 37	1 1/2"	7	240	4.000	209,1	3.485,2	740	665	1.670
ZEO ^{resp} 45	2"	7	320	5.362	280,1	4.681,5	900	550	1.810

Inlet compressed air referred to p = 7 bar and t = + 25°C

Outlet compressed air quality is guaranteed with following residual values:

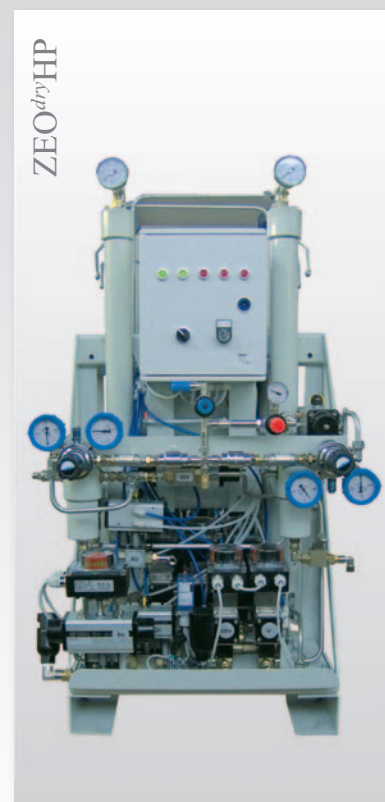
- dew point: - 40 °C (at atmosphere)
- residual water vapour: 0.107 g H₂O/m³
- residual oil and v.o.s: ≤ 0.3mg/m³, odour and taste free
- carbon dioxide (CO₂): ≤ 300 ppm_v
- carbon monoxide (CO): ≤ 5 ppm_v
- oxygen titre: 20.9% ± 1% tol.

DRYERS for medium pressure ZEOdry HP

This range of medium pressure adsorption dryers has been designed and developed to be used for instance in marine applications, for testing sealing effectiveness and other specific processes.

The simple design and meticulous selection of control and command instruments enhance product reliability which is ensured by the static principle of the adsorbing towers.

Our technological resources are applied so as to develop details and parts satisfying all pressure and fluid classes.



Model	Ø	Press. bar	Capacity inlet		Dimension mm			Weight kg
			Nm ³ /h	NI/min	L	P	H	
ZEOdry 6HP PN40	1/4"	40	25	420	300	230	1.000	65
ZEOdry 8HP PN40	3/8"	40	50	840	400	230	950	75
ZEOdry 11HP PN40	3/8"	40	100	1.660	400	230	1.100	90
ZEOdry 22HP PN40	1/2"	40	200	3.330	450	250	1.400	145
ZEOdry 30HP PN40	3/4"	40	300	5.000	500	250	1.500	200
ZEOdry 37HP PN40	3/4"	40	400	6.700	600	300	1.150	260
ZEOdry 55HP PN40	1"	40	600	10.000	600	3.000	1.600	300

Compressed air capacity and inlet temperature are referred to 40 bar (g) and 35 °C. For other values, please use the following correction factors:

Correction factor

“T” CORRECTION FACTOR in relation to the inlet compressed air temperature

To find out the corrected capacity “Q”, multiply the nominal capacity by the following factor:

Compressed air temperature	20°C	25°C	28°C	30°C	32°C	35°C	38°C	40°C	45°C	48°C	50°C
“T” factor	0,75	0,75	0,75	0,77	0,87	1	1,15	1,2	1,5	1,75	1,9

“P” CORRECTION FACTOR in relation to the supply air pressure of the dryer

To find out the corrected capacity “Q”, multiply the nominal capacity by the following factor:

Pressure feed	30 bar (e)	32 bar (e)	35 bar (e)	37 bar (e)	40 bar (e)
“P” factor	0,76	0,80	0,88	0,93	1

CORRECTED CAPACITY “Q” = NOMINAL CAPACITY Q_{nom} x FACTOR “T” x FACTOR “P”

For other sizes or higher pressure please consult Ethafilter.

ACTIVE CARBON towers CAS

This range of systems has been developed for applications which require the total elimination of oil vapours contained in gas and in compressed air. Thanks to the use of these absorbing towers which are filled with granular activated carbon, high-quality product performance is achieved, with a residue of <math> <0,003 \text{ mg/m}^3 </math> (at 20 °C) of oil and volatile hydrocarbons.

All the CAS towers are fitted with a coalescing sub-microfilter (SMA grade) on the inlet to protect the active carbon from residual oil aerosols, as well as a dust filter on the outlet (RD1 grade) to eliminate any traces of dust particles. This guarantees that the activated carbon lasts up to 8,000 hours*.

These systems can be used across a number of industries food, drink, pharmaceutical, sanitary, hospital, chemical and electronic.

* guaranteed for compressed air at the inlet with a class 2 dew point (- 40°C).



Model	Ø	Capacity		Activated carbon load Kg
		Nm ³ /h	NI/min	
TWIN ^{cas} 1	1/4"	6	100	2
TWIN ^{cas} 1.5	3/8"	12	200	3
TWIN ^{cas} 2	3/8"	18	300	3.5
TWIN ^{cas} 3	3/8"	24	400	4
TWIN ^{cas} 4	1/2"	33	550	5
TWIN ^{cas} 6	1/2"	48	800	7
TWIN ^{cas} 8	3/4"	65	1.008	10
TWIN ^{cas} 11	3/4"	110	1.830	12
EVO ^{cas} 15	1"	150	2.500	13
EVO ^{cas} 18	1"	180	3.000	16
EVO ^{cas} 22	1"	210	3.500	19
EVO ^{cas} 30	1 1/4"	300	5.000	28
EVO ^{cas} 37	1 1/2"	360	6.000	33
EVO ^{cas} 45	1 1/2"	480	8.000	42
ZEO ^{cas} 55	2"	600	10.000	52
ZEO ^{cas} 75	2"	820	13.670	80
ZEO ^{cas} 90	2 1/2"	1.000	16.670	90
ZEO ^{cas} 110	3"	1.200	20.000	110

Inlet flow rates are referred to: feed air pressure 7,5 bar (g); feed air temperature 35 °C; dew point $\leq +3$ °C. In case of different parameters please consult Ethafil-ter. Inlet protection filter (SMA grade) and final dust filter (RD1 grade) are included.

ES RANGE

These dryers with heat activated regeneration (external supply) desorb by using heat for removing the humidity content, thus causing its removal by evaporating what has been deposited on the desiccant layers during the previous phase of adsorption.

As the required heat is supplied externally it is possible to easily access the conveying and heating system.

This type of dryer is the ideal solution when energy costs and quality compressed air have to be reconciled above all for centralised large capacity applications or low pressure applications which are not very compatible with conventional “heatless” dryers.

The ES range is the result of meticulous engineering which thanks to the use of superior quality components as the heating core and diffusers in stainless steel and various monitoring instruments guarantee high performance and exceptional reliability.

These systems are highly flexible and can be adapted to satisfy specific application requirements.



Model	Ø	Capacity		Power (kW)				Dimension mm		
		Nm ³ /h	NI/min	Installed	Heater	Blower	Average consumpt.	L	P	H
ES 15	1"	150	2.500	2,3	1,5	0,8	1,1	1100	700	1650
ES 18	1"	180	3.000	3,3	2,2	1,1	1,6	1100	700	1850
ES 22	1"	210	3.500	4,1	3	1,1	2	1100	700	1800
ES 30	1 _"	300	5.000	5,6	4,1	1,5	2,6	1200	750	1850
ES 37	1 _"	360	6.000	6,7	4,5	2,2	3,2	1300	800	1900
ES 45	1 _"	480	8.000	7,2	5	2,2	3,5	1400	900	1950
ES 55	2"	600	10.000	8,2	6	2,2	4	1400	950	2000
ES 75	2"	820	13.670	10,2	8	2,2	5	1500	950	2100
ES 90	2 _"	1.000	16.670	12	9	3	6	1500	1000	2150
ES 110	2 _"	1.200	20.000	15	12	3	7,5	1600	1100	2250
ES 132	DN80	1.500	25.000	21	17	4	9	1700	1200	2350
ES 160	DN100	1.800	30.000	23	19	4	10,5	1800	1250	2500
ES 200	DN100	2.100	35.000	26	22	4	12	1900	1300	2600
ES 220	DN100	2.400	40.000	29,5	25	5,5	16,5	1900	1300	2800
ES 250	DN100	2.700	45.000	34,5	29	5,5	15	2000	1350	2800
ES 315	DN100	3.300	55.000	40	32,5	7,5	18	2100	1400	2800
ES 355	DN150	3.600	60.000	44,5	37	7,5	19,5	2300	1500	2950
ES 450	DN150	4.500	75.000	52,5	45	7,5	22	2500	1650	2900

Capacities in chart are referred to air at p = 7 bar and t = 35 °C



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