MKE SERIES NON CYCLING INTEGRATED FILTRATION

Mikropor is aware of the importance of high quality compressed air and guarantees to provide customers with the highest quality of air. Using clean, dry air is extremely important for all kinds of air powered applications. Moisture or contamination in the air which will come from the standard compressor outlet will cause complicated system errors. These complications will decrease productivity and may affect the production quality of final products.

Advantages

- Low pressure drop saves compressor power
- Quick start and reaction time provides additional production time
- Every dryer is specially designed with the right components to consume the lowest energy
- Highly energy efficient and environmentally friendly R134a refrigerant across all models.
- R513a refrigerant is optional.
- A state-of-the-art heat exchanger design provides the highest cost saving in the industry
- Best in class refrigerant compressors consume less energy against competition dryers
- Pressure switches control the condenser's fan motor for saving energy and letting the system operate at desired conditions
- This is not only a dryer, but an air treatment package that delivers an air quality of class 1.4.1 as per ISO 8573:2010 due to integrated filtration

Applications

Mikropor provides an entire range of products for filtration and air purification applications at a cost effective price.

Applications Include

Food production, dairies, breweries, clean conveying air, chemical plants, pure air and cleanroom technology, pharmaceutical industry, weaving machines, photo labs, paint spraying, powder coating, packaging, control and instrument air, sand and/or shot blasting, general air works, microchip production, optics, process air as well as many other markets.

The MKE Series Refrigerant Circuit and Insulation

Mikropor only uses environmentally friendly R134a refrigerant gas in the dryers. This refrigerant is suitable for both low and high temperature applications. R-134a has excellent thermodynamic properties and can operate at very low pressure compared to other refrigerants. This will in turn increase the refrigerant compressor's service life. With R-134a Mikropor dryers can operate at very high ambient temperatures. Mikropor engineers add extra power to the heat exchangers with excellent and extraordinary no loss insulation system. Mikropor dryers supply constant dew point at all flow ranges. This perfect insulation idea continues on the refrigeration circuit side as well. With this insulation concept and oversized condensers (Even for ultra-high ambient temperatures) Mikropor Refrigerated Air Dryers offer the highest technology with its custom solutions.

Digital Controllers

Digi-Pro digital controller is standard on MKE23-MKE3915

ESD digital controller is standard on MKE5085-MKE12500

Digi-Pro Digital Controller

Mikropor now produces a new generation of air dryers with Digi-Pro series controllers. With the Digi-Pro series controllers, air dryers have outstanding technology for both functionality and dynamism, as well as appearance. New controller design offers users the possibility of making adjustments with one finger, thus easier accessibility. The touch keys have taken the design and dynamism to a top level of technology. The multi-functional display provides an accurate digital dew point display as well as coded alarm monitoring of the refrigerant dryer.

Digital controller with embedded features,

- Digital dew point monitoring
- Energy-saving mode display
- Periodic maintenance interval display
- Status report
- Hours run meter
- Fahrenheit and Centigrade selection

ESD Digital Controller

Mikropor Refrigerated Air dryers with ESD Digital controller have a lot of economy features and alarm capabilities. Refrigeration dryers are usually the most efficient dryer solution for the compressed air applications. With the help of the highly engineered ESD, Mikropor Refrigerated Air Dryers will reduce your energy consumption. ESD helps the service technicians to monitor many useful parameters on the dryer and guides them to troubleshoot any problem very easily. ESD is extremely useful when there is no air coming into the dryer when the dryer is running. Especially during the nights, weekends and holidays many companies do not stop their dryers although they do not run compressed air. ESD saves huge amount of money by simply shutting the dryer down automatically when it is not in use.

Electrical Wires are Separated From Refrigerant Side

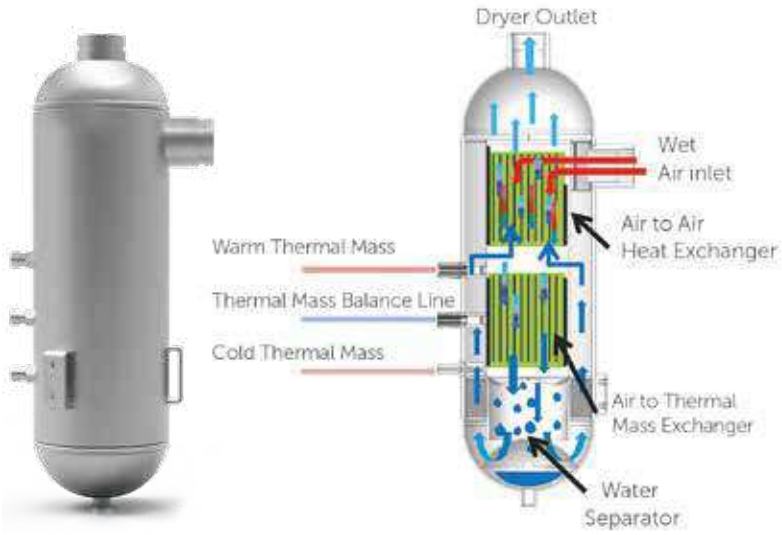
There are very few electrical wires inside the refrigerant side of the dryer. Electrical box has an external cover with access from the outside of the dryer. Therefore there is no need to open dryer panels electrical access.

Compact Design

Mikropor dryers are highly reliable, efficient and have small space demands and offer low cost ownership. Mikropor Refrigerated Air Dryers are suitable for the smallest installation spaces. Having two filters integrated into the dryer frame offers a huge advantage to the service technicians and end users. The integrated filters save labor time, piping cost and space at the facilities where the Mikropor Dryer is used. The compact size also offers flexibility and economy during their transport.

Aluminium Plate Heat Exchanger is Standard

- Very low pressure drop
- Thin aluminium plate thickness
- High heat transfer surface area
- Strong due to external thick cylindrical wall
- Water separator is optimized for best performance



Scroll Compressors

Scroll Compressors are energy efficient and strong against liquid shocks. For energy saving, scroll compressors are used for 400 m^3/h and above MKE Dryers.

Easy Access

Easy access to the cooling components in seconds by the help of screw free panels and plastic handless. Easy for service and offers more working space. Service technicians save time by not having to remove fasteners.

MKE SERIES NON CYCLING INTEGRATED FILTRATION

Zero Clearance Compressed Air Filters with High Performance Elements

Compressed Air Filter kit is standard on the Mikropor Dryers. The filter with X Element (coalescing filter for water removal) is used for up to 1 micron particles and the Filter with Y Element (coalescing filter for oil removal) is used to remove oil down to 0.01 ppm. Zero clearance design helps service technicians to replace the element in minutes. Mikropor Refrigerated Air Dryers are designed by engineers who have received all of the design feedback from field engineers and service technicians. This service friendly design makes Mikropor dryers very unique in the industry. Dryer Filter kit which has two elements, two viton o-rings helps the customers to operate the dryer at its best performance until the next planned maintenance.

Grooved Couplings and Fittings

On compressed air lines, grooved couplings and fittings are commonly used in the industry. These couplings increase flexibility on connections, help the service technician to dismantle and assemble pipes easily and quickly.

Excessive Water Droplet Drains

Liquid water droplets coming from the line to the inlet of the dryer are separated by the inlet filter and drained. The automatic timer drain can be open manually. This allows the system to be depressurized at maintenance service.

Replacement Filter Element

Pressure drop is a huge concern in compressed air. In many applications high pressure drops will cause a decrease in the pressure at the point of use. Sometimes this low pressure is not enough for the machines or processes to perform correctly. In addition, dirt particles and oil in the compressed air system may block the filters quickly. It is important for the end users and service technicians to recognize if there is a problem in the system. The performance of the filters directly affects the pressure drop and system performance. Therefore, it is very important that the filter elements are changed at the filter service time. An alarm/warning indicating that the filters are changed periodically is provided by a digital controller on the Mikropor Air Dryer. When this alarm triggers, the filter must be changed to avoid loss of performance and pressure drop.

Correction Factor for MKE Series

Inlet Temperature (°C)	F1	Ambient Temperature (°C)	F2	Pressure (bar)	F3
30	1,29	20	1,05	4	0,80
35	1	25	1	6	0,94
40	0,92	30	0,98	7	1
45	0,78	35	0,93	8	1,04
50	0,65	40	0,84	10	1,11
60	0,45	45	0,76	12	1,16
-	-	50	0,7	14	1,22
-	-	-	-	16	1,25

Example for Choosing the Correct Dryer;

If a compressor delivers 200 m^3/h at 6 bar the dryer inlet temperature is 40°C and ambient temperature is 30°C
Please choose your Dryer as follows;
200 / 0.94 / 0.92 / 0.98 = 236 m^3/h
The correct dryer for this application is MKE305

Nominal Working Pressure	7 barg	Minimum Inlet Temperature	5°C
Maximum Working Pressure	16 barg	Nominal Ambient Temperature	25°C
Minimum Working Pressure	4 barg	Maximum Ambient Temperature	50°C
Nominal Inlet Temperature	35°C	Minimum Ambient Temperature	5°C
Maximum Inlet Temperature	60°C	Refrigerant	R134a

MKE SERIES NON CYCLING INTEGRATED FILTRATION

Technical Specifications

Model	Capacity (m³/h)	Voltage	Connection Size	Filter Quantity and Type	Element Type	Pressure Drop (mbar)	Control Type	Dimensions		
								Length (mm)	Width (mm)	Height (mm)
MKE-23	23	230V / 1 Ph / 50 Hz	1/2"	1*GKON55X + 1*GKON55Y	MKON55 KIT	95	Digi-Pro	372	369	706
MKE-38	38	230V / 1 Ph / 50 Hz	1/2"	1*GKON55X + 1*GKON55Y	MKON55 KIT	150	Digi-Pro	372	369	706
MKE-53	53	230V / 1 Ph / 50 Hz	1/2"	1*GKON55X + 1*GKON55Y	MKON55 KIT	250	Digi-Pro	372	369	706
MKE-70	70	230V / 1 Ph / 50 Hz	1/2"	1*GKON75X + 1*GKON75Y	MKON75 KIT	220	Digi-Pro	372	369	706
MKE-100	100	230V / 1 Ph / 50 Hz	3/4"	1*GKON155X + 1*GKON155Y	MKON155 KIT	80	Digi-Pro	454	473	832
MKE-155	155	230V / 1 Ph / 50 Hz	3/4"	1*GKON155X + 1*GKON155Y	MKON155 KIT	195	Digi-Pro	453	473	832
MKE-190	190	230V / 1 Ph / 50 Hz	3/4"	1*GKON155X + 1*GKON155Y	MKON155 KIT	290	Digi-Pro	453	473	832
MKE-210	210	230V / 1 Ph / 50 Hz	1 1/2"	1*GKON405X + 1*GKON405Y	MKON405 KIT	195	Digi-Pro	506	556	875
MKE-305	305	230V / 1 Ph / 50 Hz	1 1/2"	1*GKON405X + 1*GKON405Y	MKON405 KIT	290	Digi-Pro	506	556	875
MKE-375	375	230V / 1 Ph / 50 Hz	1 1/2"	1*GKON405X + 1*GKON405Y	MKON405 KIT	180	Digi-Pro	506	556	875
MKE-495	495	230V / 1 Ph / 50 Hz	2"	1*GKON805X + 1*GKON805Y	MKON805 KIT	280	Digi-Pro	648	678	1157
MKE-623	623	230V / 1 Ph / 50 Hz	2"	1*GKON805X + 1*GKON805Y	MKON805 KIT	210	Digi-Pro	648	678	1157
MKE-930	930	230V / 1 Ph / 50 Hz	2"	1*GKON1205X + 1*GKON1205Y	MKON1205 KIT	130	Digi-Pro	947	727	1369
MKE-1200	1200	230V / 1 Ph / 50 Hz	2"	1*GKON1205X + 1*GKON1205Y	MKON1205 KIT	160	Digi-Pro	947	727	1369
MKE-1388	1388	400V / 3 Ph / 50 Hz	3"	1*GKON-HC-1805X + 1*GKON-HC-1805Y	MKON-HC-1805 KIT	320	Digi-Pro	948	798	1459
MKE-1800	1800	400V / 3 Ph / 50 Hz	3"	1*GKON-HC-1805X + 1*GKON-HC-1805Y	MKON-HC-1805 KIT	260	Digi-Pro	948	798	1459
MKE-2500	2500	400V / 3 Ph / 50 Hz	3"	1*GKON-HC-2775X + 1*GKON-HC-2775Y	MKON-HC-2775 KIT	170	Digi-Pro	1163	778	1722
MKE-2775	2775	400V / 3 Ph / 50 Hz	3"	1*GKON-HC-2775X + 1*GKON-HC-2775Y	MKON-HC-2775 KIT	320	Digi-Pro	1163	778	1722
MKE-3330	3330	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	240	Digi-Pro	1577	993	1906
MKE-3915	3915	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	350	Digi-Pro	1577	993	1906
MKE-5085	5085	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	295	ESD-3	1647	1077	2005
MKE-5850	5850	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	320	ESD-3	1647	1077	2005
MKE-6975	6875	400V / 3 Ph / 50 Hz	DN150 Flange	** Externally Connected - F6500 X / Y	6*M1200 KIT	295	ESD-3	2188	1062	2024
MKE-7875	7875	400V / 3 Ph / 50 Hz	DN150 Flange	** Externally Connected - F8500 X / Y	8*M1200 KIT	320	ESD-3	2188	1062	2024
MKE-9000	9000	400V / 3 Ph / 50 Hz	DN150 Flange	** Externally Connected - F11000 X / Y	10*M1200 KIT	320	ESD-3	2247	1200	2044
MKE-10500	10500	400V / 3 Ph / 50 Hz	DN200 Flange	** Externally Connected - F11000 X / Y	10*M1200 KIT	320	ESD-3	2247	1200	2044
MKE-12500	12500	400V / 3 Ph / 50 Hz	DN200 Flange	** Externally Connected - F14000 X / Y	14*M1200 KIT	320	ESD-3	2550	1550	2100

Note: Water condenser is available for all models

Given flows are at 7 barg pressure with reference to 20°C and 1 bar atmospheric air suction as per ISO7183.

** Not integrated and not included in standard package.

ICE SERIES ICE CUBE / STATIC

Static Air Dryers

Ice Cube Dryers have static condensers without a cooling fan.
Therefore they are energy efficient with low noise level and compact design.
Ice Cube Dryers also have long service life and low maintenance needs.

Advantages

- Superior energy saving due to static condenser
- Efficient refrigerant compressor with low pressure drop
- +7°C dew point
- No condenser blockage due to wide condenser design
- Standard expansion valve
- 3-in-1 heat exchanger design (air/air - air/refrigerant - water separator in one block)
- Easy to service auto-drain
- High pressure switch
- No loss of compressed air (Zero Loss)
- Less refrigerant gas used than equivalents, environmentally friendly

Applications

Ideal for hospitals and laboratories with compact design and low noise needs. Ice Cube Dryers are also suitable for other applications which need dry air with a low price.

Model	Capacity (m^3/h)	Voltage	Connetction Size	Absorbed Power (kW)	Max. Amp. (A)	Fuse Amp. (A)	Pressure Drop (mbar)	Dimensions (mm)			Weight
								Width	Length	Height	
IC-50	50	230V / 1 Ph / 50 Hz	1/2"	0,28	2,98	4	140	366	366	521	21
IC-70	70	230V / 1 Ph / 50 Hz	1/2"	0,31	2,08	4	170	366	366	521	23
IC-100	100	230V / 1 Ph / 50 Hz	1/2"	0,43	4,8	8	200	366	366	521	25
IC-130	130	230V / 1 Ph / 50 Hz	3/4"	0,56	4,8	8	180	366	366	758	34

Correction Factor for IC Series

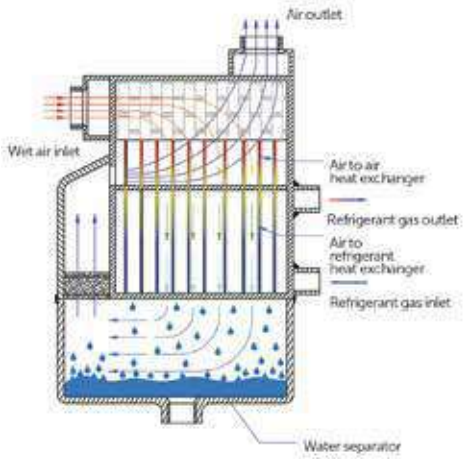
Required Flow / F1 / F2 / F3 = Corrected Flow

Inlet Temperature (°C)	F1	Ambient Temperature (°C)	F2	Pressure (bar)	F3
30	1,29	20	1,05	4	0,80
35	1	25	1	6	0,94
40	0,92	30	0,98	7	1
45	0,78	35	0,93	8	1,04
50	0,65	40	0,84	10	1,11
60	0,45	45	0,76	12	1,16
-	-	50	0,7	14	1,22
-	-	-	-	16	1,25

Nominal Working Pressure	7 barg	Minimum Inlet Temperature	5°C
Maximum Working Pressure	16 barg	Nominal Ambient Temperature	25°C
Minimum Working Pressure	4 barg	Maximum Ambient Temperature	50°C
Nominal Inlet Temperature	35°C	Minimum Ambient Temperature	5°C
Maximum Inlet Temperature	60°C	Refrigerant	R134a

Aluminium Plate Heat Exchanger

- High heat transfer surface area
- Strong due to thick external wall
- Low pressure drop
- Water Separator is optimized for best performance

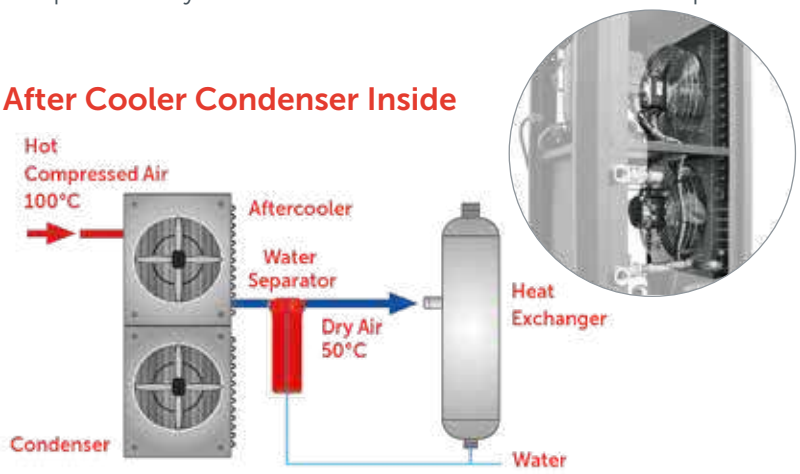


Given flows are at 7 barg pressure with reference to 20°C and 1 bar atmospheric air suction as per ISO7183.

MH SERIES HIGH TEMPERATURE

Most compressor manufacturers do not use an aftercooler on their piston type compressors. Therefore compressed air exits the compressor at about 100°C temperature. Mikropor's High Temperature Dryer has an aftercooler to reduce the inlet temperature.

After Cooler Condenser Inside



Technical Specifications

Model	Capacity (m³/h)	Voltage	Connetction Size	Dimensions (mm)		
				Width	Length	Height
MH-31	31	230V / 1 Ph / 50 Hz	1/2"	447	448	957
MH-52	52	230V / 1 Ph / 50 Hz	1/2"	447	448	957
MH-75	75	230V / 1 Ph / 50 Hz	1/2"	447	448	957
MH-106	106	230V / 1 Ph / 50 Hz	3/4"	447	448	957
MH-160	160	230V / 1 Ph / 50 Hz	3/4"	512	627	877
MH-212	212	230V / 1 Ph / 50 Hz	3/4"	512	627	877

Correction Factor for MH Series

Required Flow / F1 / F2 / F3 / F4 = Corrected Flow

Pressure (bar)	F1	Inlet Temperature (°C)	F2	Ambient Temperature (°C)	F3	Dew Point (°C)	F4
4,1	0,70	4	1,40	4	1,10	3,3	0,65
5	0,75	10	1,40	10	1,10	5	0,73
6	0,80	16	1,40	16	1,10	7,2	0,80
7	0,83	21	1,40	24	1,10	10	1
7,9	0,86	26	1,35	29	1,07	12,8	1,10
8,5	0,90	32	1,30	35	1,03	15,5	1,22
10	0,93	38	1,27	38	1	-	-
11	0,96	65	1,06	40	0,96	-	-
12	1	82	1	45	0,82	-	-
13	1,10	93	0,85	-	-	-	-
14	1,12	98	0,78	-	-	-	-
16	1,15	104	0,75	-	-	-	-

Nominal Working Pressure	12 barg	Minimum Inlet Temperature	5°C
Maximum Working Pressure	16 barg	Nominal Ambient Temperature	38°C
Minimum Working Pressure	4 barg	Maximum Ambient Temperature	43°C
Nominal Inlet Temperature	82°C	Minimum Ambient Temperature	5°C
Maximum Inlet Temperature	104°C	Refrigerant	R134a

Given flows are at 7 barg pressure with reference to 20°C and 1 bar atmospheric air suction as per ISO7183.

Mikropor Air Quality Focus

Mikropor knows the importance of high-quality compressed air and provides customers with the highest quality air possible. Using clean, dry air is extremely important for most air powered applications. Moisture or contamination in the air from the compressor discharge will result in many complications to production equipment. These complications will decrease productivity and may affect the production quality of final product.

Applications

Mikropor provides an entire range of products for filtration and air purification applications to fit various market requirements (ISO 8573.1: 2010 standard). Applications include: Food production, dairies, breweries, chemical plants, pure air and clean room technology, pharmaceutical industry, weaving machines, photo labs, paint spraying, powder coating, packaging, control and instrument air, sand and / or shot blasting, general air works, microchip production, optics, process air as well as many other industries

ISO International Organization for Standardization CLASS 0 ISO 8573-1

The Refrigerant Circuit and Insulation

Mikropor exclusively uses environmentally friendly R134a refrigerant gas in the dryers. This refrigerant is suitable for both low and high temperature applications. R-134a has excellent thermodynamic properties and can operate at very low pressure compared to other refrigerants. This will in turn increase the refrigerant compressor's service life. With R-134a Mikropor dryers can operate at very high ambient temperatures. Mikropor engineers add extra capability to the heat exchangers with a superior no loss insulation system. This perfect insulation philosophy continues to the refrigeration circuit side also. Superior insulation and oversized condensers (for ultra-high ambient temperatures) enable the MCY Series Dryers to offer continuous air quality.

Mikropor MCY Series Cycling air dryers supply constant dewpoint at all flow ranges.

MCY SERIES THERMAL MASS/CYCLING INTEGRATED FILTRATION

kW Saver

Compact Design

MCY Series Air Dryers are highly reliable, efficient, have small space requirements and offer low cost ownership. Integration of pre / post filtration within the dryer cabinet saves labour time, installation cost and valued production space. The compact size also offers flexibility and economy during transportation.

SAFETY - Electrical Cabinet Isolation

- Electrical panel separated from service areas of the dryer.
- Minimization of electrical components from refrigerant side of dryer.
- Electrical controls access without exposure high heat areas.

MCY Advantage

- Best-in-class low package pressure drop saves energy consumption from the supplying air compressor.
- Thermal mass technology offers stable pressure dewpoint at varying loads.
- Mikropor state of the art "3 in 1" cast aluminium heat exchanger provides unmatched longevity & cooling.
- Glycol cooling components are all stainless steel.
- 65°C Max inlet temp.

Mikropor Advanced "3 in 1" Heat Exchanger

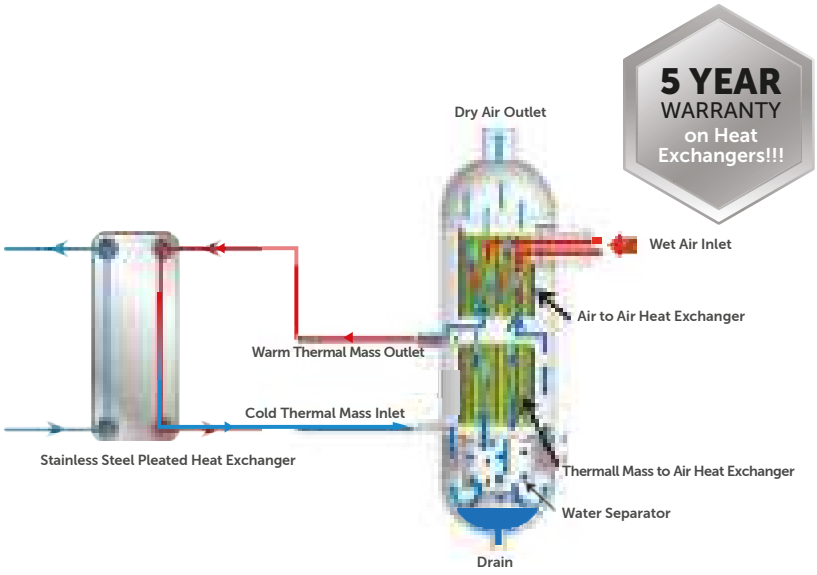
Thermally Optimized Encapsulated Design

- Air to Air Exchanger
- Thermall Mass to Air
- Multistage Moisture Separation

High Strength Aluminium Design

Large Surface Area for Heat Transfer

Robust Cylindrical Casing



5 YEAR WARRANTY on Heat Exchangers!!!

Scroll Refrigerant Compressors:

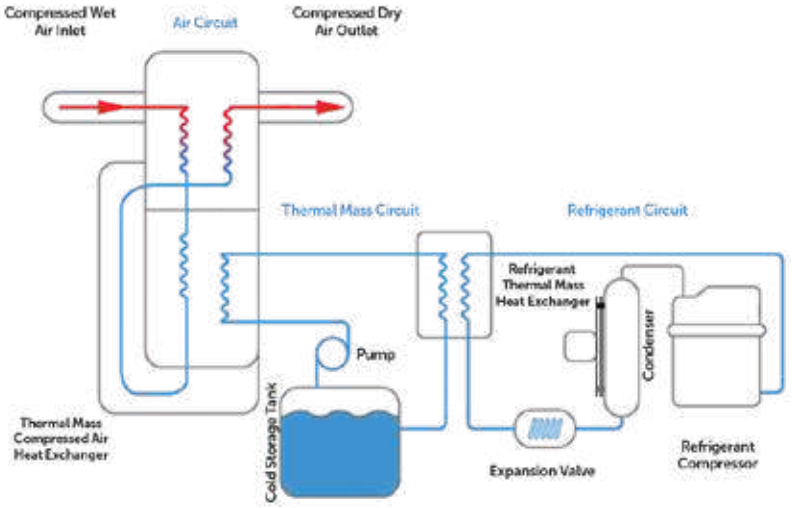
- Have fewer moving parts
- Offer smoother and quieter operation-
- And are more reliable and more efficient than reciprocating types.

Moisture saturated Compressed Air from the Air Compressor enters a Particulate Pre-Filter then into the Thermal Mass Dryer-Compressed Air Travels through a Coalescing Pre Filter and then 3 in 1 Heat Exchanger.

As the compressed air passes through, it is then cooled by the cold Thermal Mass System and water vapor then condenses into liquid and is removed with the drain system.

Cold compressed air then passes by the incoming hot air to re-heat in order to prevent plant air pipes from sweating – then the dried compressed air passes through a Coalescing Post Filter and out to the customers application.

MCY Cycling Series-Working Principle



kW-CY Controllers (495Nm³/h to 930 Nm³/h units)

Mikropor MCY Series Air Dryers incorporate exclusive Digi-Pro series controller. The kW-CY digi-Pro controllers have outstanding technology for both functionality and durability in addition to visual appeal. The new controller design offers ease of adjustment with one finger, with accurate digital dew point display. In addition to coded alarm monitoring of the dryer.

Digital Controller with Embedded Features

- Digital dew point monitoring
- Periodic maintenance interval display
- Status report
- Hours run meter
- Fahrenheit and Centigrade selection

Easy Service

Easy Service

Easy access into the cooling components in seconds by the help of "easy lift" panels with integrated finger slots. Simplifies service access with quick access by technicians (no screws / fasteners to remove).

kW-CY ESD Controller (1200 Nm³/h to 12500 Nm³/h units)

Mikropor MCY Series Air Dryers of larger capacity have ESD Digital Controller. With the help of the highly engineered kW-CY ESD Controller on the MCY Series Cycling Air dryers reduce energy consumption. The ESD interface assists the users to monitor many useful parameters on the dryer and guides them to troubleshoot any problem very easily. During the nights, weekends and holidays many companies do not stop their dryers although the compressors may be stopped. kW-CY ESD Controller saves huge amounts of money by simply shutting the dryer down automatically when it is not in use.

Grooved Couplings and Fittings

- The compressed air circuit utilizes grooved couplings and fittings to ensure a positive connection without leaks
- These couplings assist the service technician to dismantle and assemble pipes easily and quickly.

Service Safety

- The GO Series Filter integration features.
- Zero Loss Drain system integration features.
- Manual valves allow the system to be depressurized safety when service is needed.

- Integral zero air loss drain
- No compressed air Loss
- Low maintenance design
- Reliable
- Robust low operating cost
- Simple installation

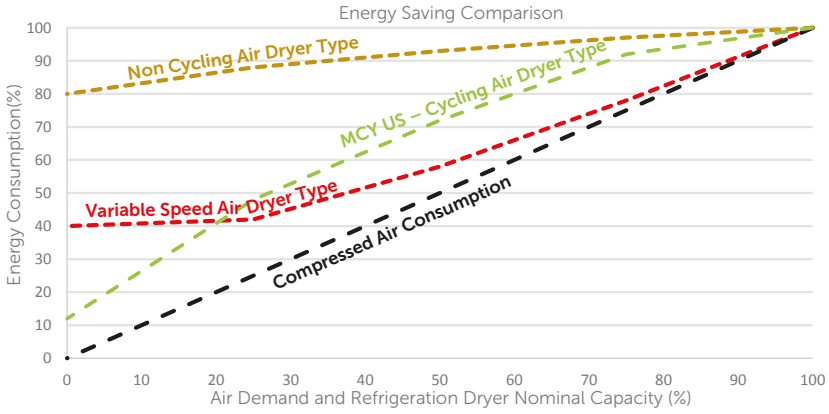
Zero Clearance Compressed Air Filters with High Performance Elements

Mikropor GKON Series compressed air filters are a MCY Series dryer standard. The X Pre-Filter (coalescing filter for water removal) is used for up to 1-micron particles and the Y Post Filter (coalescing filter for oil removal) is used to remove oil down to 0.01 ppm. Listening to customer needs our engineers created a service friendly design. The Zero clearance design helps service technicians to replace the element in just a few minutes.

The MCY Series dryer / filter combination has 2 elements and 2 Viton O-rings to ensure operation of the dryers at its best performance until the next planned maintenance.

Process Air Quality Protection

Pressure drop is a large concern in compressed air. In many applications high pressure drops will cause a decrease in the pressure at the point of use which results the machines or processes not operating correctly. Presence of dirt particles and oil in the compressed air system may result in filter blockage. It is important for the end users and service technicians to recognize if there is a problem in the system. The performance of the filters directly affects the pressure drops and system performance. Therefore, it is very important that the filter elements are changed at the filter service time. MCY Series Digital Controls feature an alarm/warning indicating the appropriate time to change the filter elements. When the indication should occur, the element change will assist to avoid loss of performance and pressure drop.



Correction Factor for MCY Air Dryers

Inlet Temperature (°C)	F1	Ambient Temperature (°C)	F2	Pressure (bar)	F3
30	1.29	20	1.05	4	0.80
35	1	25	1	6	0.94
40	0.92	30	0.98	7	1
45	0.78	35	0.93	8	1.04
50	0.65	40	0.84	10	1.11
60	0.45	45	0.76	12	1.16
-	-	50	0.7	14	1.22
-	-	-	-	16	1.25

Example for Choosing the Correct Dryer

If an air compressor delivers 500 m^3/h at 6 bar, the dryer inlet temperature is 45°C and ambient temperature is 30°C

Please choose your dryer model as follows; 500 / 0.94 / 0.78 / 0.98 = 695 m^3/h

The correct dryer model for this application is MCY930

MCY Series - Technical Specifications

Model	Capacity (m^3/h)	Voltage	Connection Size	Filter Quantity and Type	Replacement Filter Element Kit	Dimensions (mm)		
						Length	Width	Height
MCY-495	495	230V / 1 Ph / 50 Hz	2"	1*GKON805X + 1*GKON805Y	MKON805 KIT	857	727	1505
MCY-623	623	230V / 1 Ph / 50 Hz	2"	1*GKON805X + 1*GKON805Y	MKON805 KIT	828	728	1763
MCY-930	930	230V / 1 Ph / 50 Hz	2"	1*GKON1205X + 1*GKON1205Y	MKON1205 KIT	828	728	1763
MCY-1200	1200	230V / 1 Ph / 50 Hz	2"	1*GKON1205X + 1*GKON1205Y	MKON1205 KIT	828	728	1763
MCY-1388	1388	400V / 3 Ph / 50 Hz	3"	1*GKON-HC-1805X + 1*GKON-HC-1805Y	MKON-HC-1805 KIT	1148	798	1739
MCY-1800	1800	400V / 3 Ph / 50 Hz	3"	1*GKON-HC-1805X + 1*GKON-HC-1805Y	MKON-HC-1805 KIT	1148	798	1739
MCY-2500	2500	400V / 3 Ph / 50 Hz	3"	1*GKON-HC-2775X + 1*GKON-HC-2775Y	MKON-HC-2775 KIT	1313	878	1788
MCY-2775	2775	400V / 3 Ph / 50 Hz	3"	1*GKON-HC-2775X + 1*GKON-HC-2775Y	MKON-HC-2775 KIT	1313	878	1788
MCY-3330	3330	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	1577	993	1976
MCY-3915	3915	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	1577	993	1976
MCY-5085	5085	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	1797	1077	2075
MCY-5850	5850	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	1797	1077	2075
MCY-6875	6875	400V / 3 Ph / 50 Hz	DN150 Flange	** Externally Connected - F6500 X / Y	6*M1200 KIT	2188	1062	2024
MCY-7875	7875	400V / 3 Ph / 50 Hz	DN150 Flange	** Externally Connected - F8500 X / Y	8*M1200 KIT	2188	1062	2024
MCY-9000	9000	400V / 3 Ph / 50 Hz	DN150 Flange	** Externally Connected - F11000 X / Y	10*M1200 KIT	2247	1551	2114
MCY-10500	10500	400V / 3 Ph / 50 Hz	DN200 Flange	** Externally Connected - F11000 X / Y	10*M1200 KIT	2247	1551	2114
MCY-12500	12500	400V / 3 Ph / 50 Hz	DN200 Flange	** Externally Connected - F14000 X / Y	14*M1200 KIT	2547	1547	2172

** Not integrated and not included in standard package

Nominal Working Pressure	7 barg	Minimum Inlet Temperature	5°C
Maximum Working Pressure	16 barg	Nominal Ambient Temperature	25°C
Minimum Working Pressure	4 barg	Maximum Ambient Temperature	50°C
Nominal Inlet Temperature	35°C	Minimum Ambient Temperature	5°C
Maximum Inlet Temperature	60°C	Refrigerant	R134a


mikropor

MK-DS SERIES DIGITAL SCROLL INTEGRATED FILTRATION

kW Saver

Each and every compressed air user around the world has been looking for a complete solution to associate the best practices of energy management with their refrigerated air dryers, not just to protect the environment, but also to save money on operating costs.

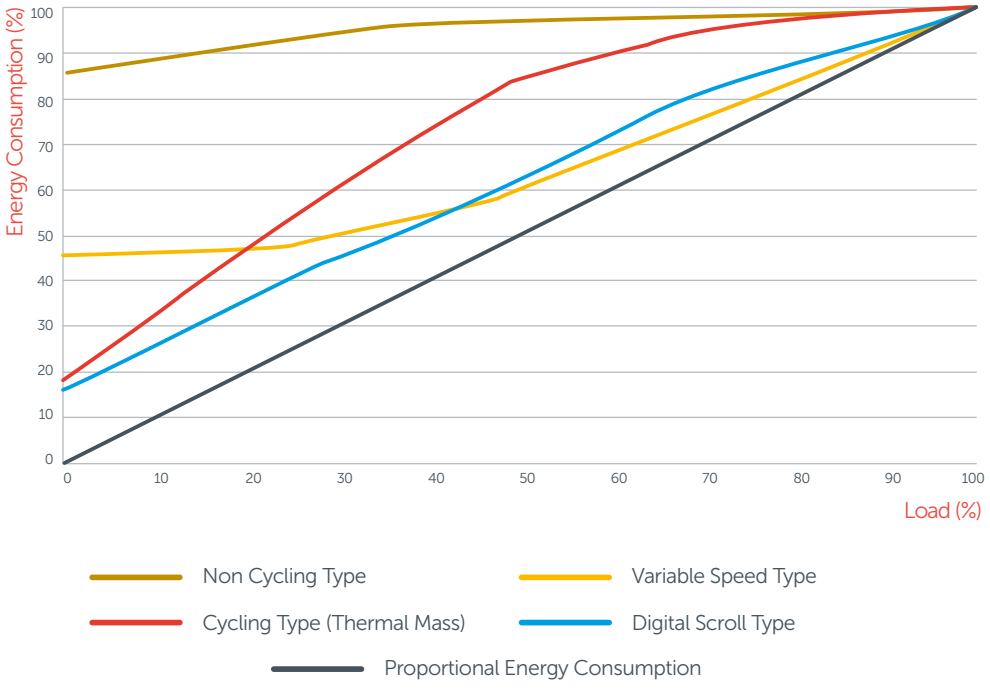
Mikropor is proud to announce that the new MK-DS series explicitly prevails over any other type of refrigerated air dryer by achieving everyone's goal to lower energy costs.

The MK-DS Series, with a specially designed heat exchanger and digital scroll compressor, provides unrivalled energy efficiency in a refrigerated air dryer.

The challenge of maintaining a stable dewpoint and saving energy can be overcome with this latest technological development.

Combining Mikropor's expertly designed heat exchanger, leading filtration technology and digital scroll compression in Mikropor's MK-DS dryers provides the ultimate energy efficiency solution for compressed air systems with varying levels of air demand.

Energy Comparison



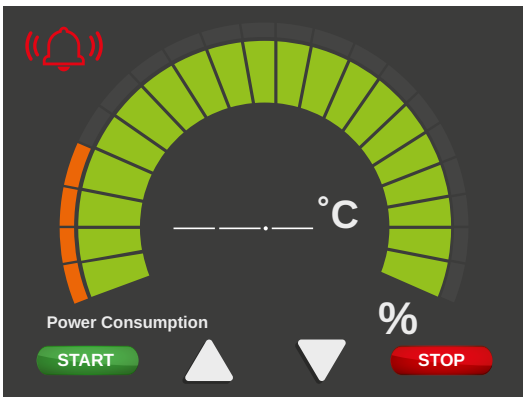
MK-DS SERIES DIGITAL SCROLL INTEGRATED FILTRATION

- **Best in Class** energy saving
- Refrigeration systems are designed with digital scroll compressors and have an automatic switch to control loaded and unloaded states according to real-time air load demand during system operation in order to maximize energy savings.
- Advanced and user friendly electronic control system
- Electronic expansion valve
- Fan speed control
- Integrated filters
- Low pressure drop
- Energy efficiency is maximized through the design of the exclusive aluminium plate type heat exchangers.
- The advanced digital scroll compression technology not only improves efficiency, durability and reliability but also lowers the decibel sound levels compared to a standard refrigerated air dryer.
- Environmentally friendly low-pressure R-134a refrigerant gas is used in digital scroll compressor to pressurize the system.
- The smart control unit named kW-DS Controller provides high energy efficiency with electricity consumption optimized for variable capacities.

kW Saver

STABILITY

PERFORMANCE



The advanced digital scroll technology utilized in Mikropor's MK-DS Series dryers maintains a stable pressure dew point while performing **up to 91% energy savings** during operation.

MK-DS SERIES DIGITAL SCROLL INTEGRATED FILTRATION

kW Saver

How It Works?

Unlike most refrigerated dryers in the industry, Mikopor's MK-DS series utilize a proprietary digital evaporator technology to deliver significant energy savings over traditional cycling and variable speed designs.

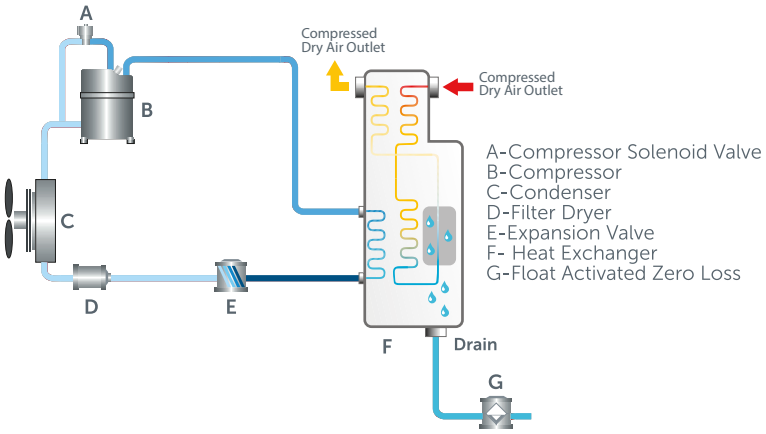
This brand new technological breakthrough offers a vital opportunity to save the highest amount of energy possible in a refrigerated air dryer. The digital compressor operates with various different ranges of inlet flow conditions which also makes it by far the most energy efficient compressor to be utilized in a refrigerated air dryer.

MK-DS Dryers are equiped with a true no-loss condensate drain which provides effective condensate removal without any loss of (valuable) compressed air.

Maximum energy savings are achieved by establishing continuous communication with the temperature probe in the evaporator which adjusts the refrigeration pressure to the temperature of the air exiting the evaporator.

Fundamental Components of the MK-DS Series

- Digital Scroll Compressor
- Electronic Expansion Valve
- Variable Speed Fan Motor
- Highly Engineered Control Algorithm
- Cutting-Edge Technology Electronic Controller



Mikropor's latest MK-DS series refrigerated dryer technology saves the highest amount of energy possible on the market.

Why is MK-DS so energy efficient and cost effective ?

Non-cycling refrigerated dryers are designed to run continuously and consume almost 100% of the nominal power at all loads. Hence, it makes no difference if a facility is operational or not - A non-cycling dryer will just keep running, regardless of the air demand at any given time. As mentioned above, digital scroll technology equipped dryers can be loaded or unloaded automatically depending upon the real-time air load demand and this feature simply makes the MK-DS range much more energy efficient than any other type of refrigerated air dryer.

MK-DS Series - Technical Specifications

Model	Capacity (m^3/h)	Voltage	Connection Size	Filter Quantity and Type	Replacement Filter Element Kit	Con-trol Type
MK-DS-120	v	400V / 3 Ph / 50 Hz	2"	1*GKON1205X + 1*GKON1205Y	MKON1205 KIT	µPc
MK-DS-130	1200	400V / 3 Ph / 50 Hz	2"	1*GKON1205X + 1*GKON1205Y	MKON1205 KIT	µPc
MK-DS-140	1388	400V / 3 Ph / 50 Hz	3"	1*GKON-HC-1805X + 1*GKON-HC-1805Y	MKON-HC-1805 KIT	µPc
MK-DS-150	1800	400V / 3 Ph / 50 Hz	3"	1*GKON-HC-1805X + 1*GKON-HC-1805Y	MKON-HC-1805 KIT	µPc
MK-DS-170	2775	400V / 3 Ph / 50 Hz	3"	1*GKON-HC-2775X + 1*GKON-HC-2775Y	MKON-HC-2775 KIT	µPc
MK-DS-180	3330	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	µPc
MK-DS-190	3915	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	µPc
MK-DS-200	5085	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	µPc
MK-DS-210	5850	400V / 3 Ph / 50 Hz	DN100 Flange	1*GKO5850X + 1*GKO5850Y	GKO5850 KIT	µPc
MK-DS-220	6975	400V / 3 Ph / 50 Hz	DN150 Flange	** Externally Connected - F6500 X / Y	6*M1200 KIT	µPc
MK-DS-230	7875	400V / 3 Ph / 50 Hz	DN150 Flange	** Externally Connected - F8500 X / Y	8*M1200 KIT	µPc
MK-DS-240	9000	400V / 3 Ph / 50 Hz	DN150 Flange	** Externally Connected - F11000 X / Y	10*M1200 KIT	µPc
MK-DS-250	10500	400V / 3 Ph / 50 Hz	DN200 Flange	** Externally Connected - F11000 X / Y	10*M1200 KIT	µPc
MK-DS-260	12500	400V / 3 Ph / 50 Hz	DN200 Flange	** Externally Connected - F14000 X / Y	14*M1200 KIT	µPc

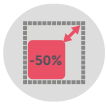
Nominal Working Pressure	7 barg	Minimum Inlet Temperature	5°C
Maximum Working Pressure	16 barg	Nominal Ambient Temperature	25°C
Minimum Working Pressure	4 barg	Maximum Ambient Temperature	45°C
Nominal Inlet Temperature	35°C	Minimum Ambient Temperature	5°C
Maximum Inlet Temperature	50°C	Refrigerant	R134a

MK-HP SERIES HIGH PRESSURE

This design achieves a hyper-efficient 100% contact between the air and refrigerant circuits, delivering state-of-the-art performance and great cooling efficiency.

The state-of-the-art 3-in-1 design features very low differential pressure delivering significant energy savings. The 3-in-1 Heat-Exchanger is compact and allows the dryer to be smaller and reduces the space required for the dryer. Mikropor offers a variety of 3-in-1 dryers equipped with the 3-in-1 Heat-Exchanger to meet a full range of capacity and power requirements.

Mikropor High Pressure Dryers have stainless steel brazed plate heat exchangers.

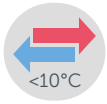


Size Reduced by 50%

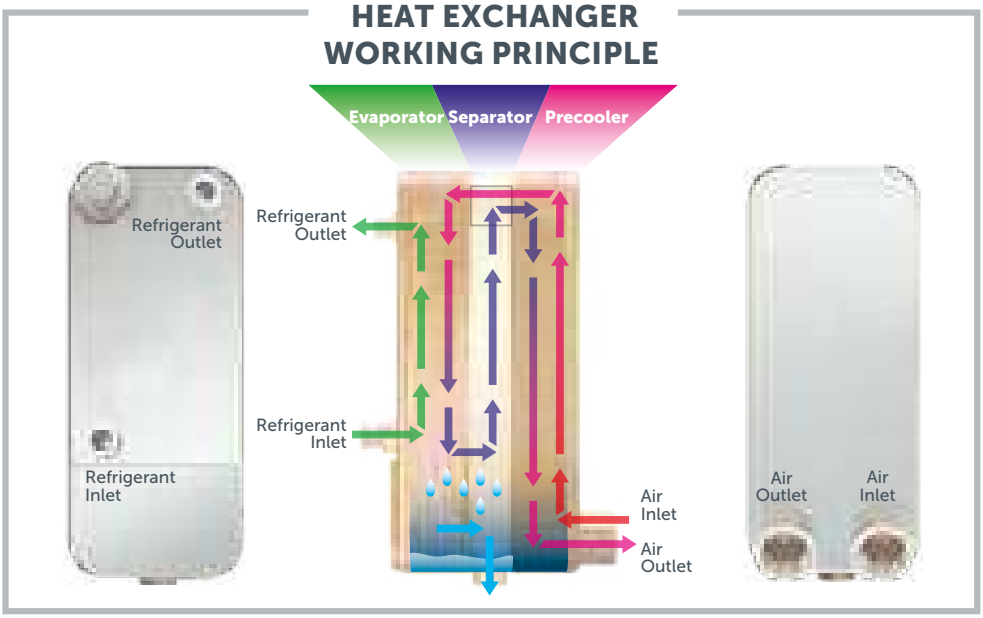
Dewpoint 3°C

Stainless Steel, Anti-corrosion

Working Pressure Up to 45 bar



Inlet/Outlet Temp. Difference <10°C



Mikropor MK-HP range High Pressure Air Dryer Series have state of the art stainless steel brazed plate heat exchanger. It is designed for high pressure air dryers. The heat exchanger has the following sections in one module;

- Air/Air heat exchanger (Economizer)
- Air/Refrigerant heat exchanger (Evaporator)
- Water separator

With reliable stainless steel and optimized efficiency design, Mikropor MK-HP heat exchangers supply size reduction, anti corrosion and great heat transfer.

MK-HP SERIES HIGH PRESSURE

Technical Specifications

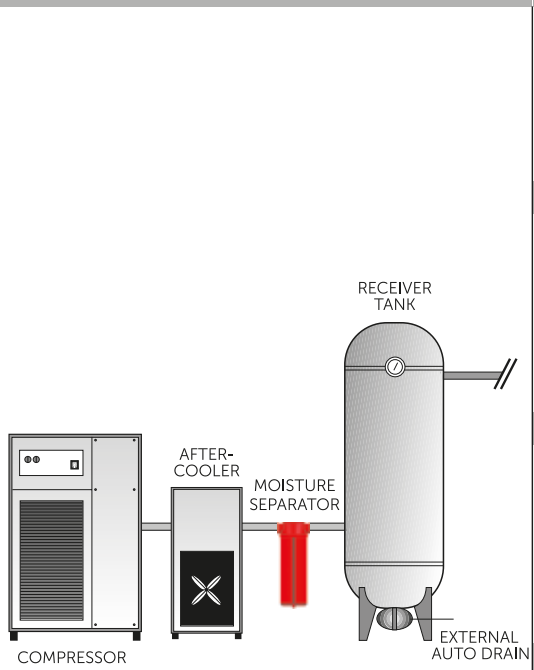
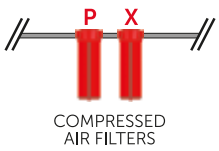
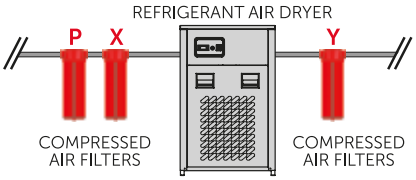
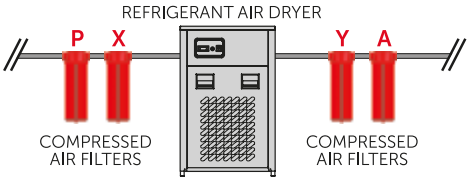
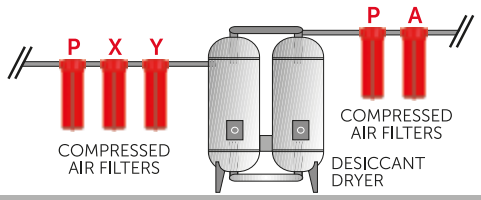
Model	Capacity (m^3/h)	Voltage	Connection Size	Dimensions (mm)		
				Width	Length	Height
MK-HP-50	50	230V / 1 Ph / 50 Hz	3/4"	454	361	553
MK-HP-90	90	230V / 1 Ph / 50 Hz	3/4"	454	361	553
MK-HP-150	150	230V / 1 Ph / 50 Hz	3/4"	453	401	623
MK-HP-220	220	230V / 1 Ph / 50 Hz	3/4"	453	401	623
MK-HP-300	300	230V / 1 Ph / 50 Hz	1 1/4"	505	451	762
MK-HP-400	400	230V / 1 Ph / 50 Hz	1 1/4"	505	451	762
MK-HP-500	500	230V / 1 Ph / 50 Hz	1 1/4"	505	451	812
MK-HP-575	575	230V / 1 Ph / 50 Hz	1 1/4"	505	451	812
MK-HP-775	775	230V / 1 Ph / 50 Hz	1 1/4"	675	501	984
MK-HP-910	910	230V / 1 Ph / 50 Hz	1 1/4"	675	501	984
MK-HP-1000	1000	230V / 1 Ph / 50 Hz	2"	947	727	1169
MK-HP-1160	1160	230V / 1 Ph / 50 Hz	2"	947	727	1169
MK-HP-1500	1500	230V / 1 Ph / 50 Hz	2"	947	727	1169
MK-HP-1600	1600	400V / 3 Ph / 50 Hz	2"	947	727	1459
MK-HP-1800	1800	400V / 3 Ph / 50 Hz	2"	947	727	1459
MK-HP-2200	2200	400V / 3 Ph / 50 Hz	2 1/2"	1162	797	1495
MK-HP-2500	2500	400V / 3 Ph / 50 Hz	2 1/2"	1162	797	1495
MK-HP-2700	2700	400V / 3 Ph / 50 Hz	2 1/2"	1162	797	1495
MK-HP-3000	3000	400V / 3 Ph / 50 Hz	2 1/2"	1162	797	1495
MK-HP-3300	3300	400V / 3 Ph / 50 Hz	2 1/2"	1162	797	1495
MK-HP-3600	3600	400V / 3 Ph / 50 Hz	2 1/2"	1162	797	1495

Correction Factor for MK-HP Series

Pressure (bar)	F1	Inlet Temp. (°C)	F2	Ambient Temp. (°C)	F3
7	-	-			0,20
10	-	-	-	-	0,28
13	-	-	-	-	0,34
15	-	-	-	-	0,40
20	-	-	-	-	0,50
25	-	-	-	-	0,60
30	-	-	-	-	0,75
35	-	-	-	-	0,85
40	1	35	1	25	1
45	0,85	40	0,93	30	1,10
-	0,72	45	0,87	35	-
-	0,63	50	0,82	40	-
-	-	-	0,79	45	-

Nominal Working Pressure	40 barg	Minimum Inlet Temperature	5°C
Maximum Working Pressure	45 barg	Nominal Ambient Temperature	25°C
Minimum Working Pressure	7 barg	Maximum Ambient Temperature	45°C
Nominal Inlet Temperature	35°C	Minimum Ambient Temperature	5°C
Maximum Inlet Temperature	50°C	Refrigerant	R134a

ISO STANDARDS

AIR LINE DESIGN	AIR LINE DESIGN 1	APPLICATION	ISO 8573.1: 2010 CLASS
		SIMPLE	2.-.3
	AIR LINE DESIGN 2		
		GENERAL PURPOSE	1.4.1
	AIR LINE DESIGN 3		
		ODORLESS	1.4.1
	AIR LINE DESIGN 4		
		CRITICAL	1.2.1 (-40 °C / -40°F) 1.1.1 (-70 °C / -94 °F)

Purity Class	ISO 8573.1: 2010 Compressed Air Quality Standard							
	Solid Particulate					Water		Oil
	Max. number of Particles per m^3			Particle Size (micron)	Concentration (mg/m^3)	Vapor Pressure Dew Point	Liquid (g/m^3)	Total Oil (Aerosol, Liquid and Vapor) (mg/m^3)
	0.1-0.5 micron	0.5-1 micron	1-5 micron					
0	As specified and determined by equipment user and supplier							
1	≤20000	≤400	≤10	-	-	≤-70°C	-	≤0.01
2	≤400000	≤6000	≤100	-	-	≤-40°C	-	≤0.1
3	-	≤900000	≤1000	-	-	≤-20°C	-	≤1
4	-	-	≤10000	-	-	≤+3°C	-	≤5
5	-	-	≤100000	-	-	≤+7°C	-	-
6	-	-	-	5	5	≤+10°C	-	-
7	-	-	-	40	10	-	0.5	-
8	-	-	-	-	-	-	5	-
9	-	-	-	-	-	-	10	-

for Solid Particles	for Water	for Oil
Element Type P - Class 3	Mikropor Refrigerated Air Dryers are Class 4	Element Type P - Class 3
Element Type X - Class 2		Element Type X - Class 2
Element Type Y - Class 1	Mikropor Desiccant Air Dryers are Class 1 and 2	Element Type Y - Class 1
Element Type A - N/A		Element Type A - Class 1 (when used with Y)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MMD SERIES MODULAR DESICCANT

The light weight modular design desiccant dryer series brings a new concept in compressed air technology, offering total installation flexibility to meet specific needs.

Mikropor's Modular Desiccant Dryers are less than half the weight and size of a traditional twin tower design, allowing even the largest models to be easily moved through a standard doorway. Mikropor's innovative Modular Air Dryers make it easier and more affordable than ever to deliver high-quality compressed air for virtually herever it's needed.

Mikropor Modular Desiccant Dryers have cosmetic beauty and can be located in clean, pleasant environments eyesore. Offered in sizes from 5 m^3/h to 400 m^3/h with dew point of -40°C to -70°C (optional) these dryers are equipped with everything you need, requiring only air inlet/outlet connections.

Using a highly engineered inlet and purge manifold design, Mikropor proudly offers one of the lowest pressure drop desiccant dryer in the industry.

- Small footprint, lightweight, advanced compact design
- Corrosion protected Aluminium construction
- Hassle-free, reliable electronic controls
- Can be floor, bench or wall mounted
- Quiet enough to be placed in any work environment
- Easy installation, easy maintenance

The new Modular Desiccant Dryers combine proven traditional dryer principles with the latest technology to provide unsurpassed efficiency, flexibility and world-renowned Mikropor reliability for your critical dry air applications.

Various Application Options

Modular Desiccant Air Dryers can be mounted to the wall with easy-to-use mounting brackets to free up additional space and can also be secured to the ground very easily.

Correction Factor for MMD Series

Pressure (bar)	F1	Inlet Temp. (°C)	F2
4.5	0.69	20	1
5	0.75	25	1
6	0.88	30	1
7	1	35	1
8	1.12	40	0.80
9	1.25	45	0.73
10	1.25	50	0.59
11	1.50	-	-
12	1.62	-	-
13	1.74	-	-
14	1.87	-	-
15	1.99	-	-
16	2.11	-	-

MMD SERIES MODULAR DESICCANT

Technical Specifications

Model	Capacity		Voltage	Connection Size	Max. Working Pressure (bar)	Dimensions			
	(m^3/h)	(cfm)				Width (mm)	Length (mm)	Height (mm)	Weight (kg)
MMD3	5	3	115-240V/50-60 Hz.	1/2"	16	320	336	558	17
MMD5	10	5	115-240V/50-60 Hz.	1/2"	16	320	320	633	19
MMD10	20	10	115-240V/50-60 Hz.	1/2"	16	320	320	908	27
MMD15	25	15	115-240V/50-60 Hz.	1/2"	16	370	350	808	31
MMD20	35	20	115-240V/50-60 Hz.	1/2"	16	370	350	1108	42
MMD25	45	25	115-240V/50-60 Hz.	1/2"	16	370	350	1258	48
MMD30	50	30	115-240V/50-60 Hz.	1/2"	16	370	350	1508	54
MMD40	70	40	115-240V/50-60 Hz.	1 1/2"	16	410	495	1250	71
MMD50	85	50	115-240V/50-60 Hz.	1 1/2"	16	410	495	1400	78
MMD60	100	60	115-240V/50-60 Hz.	1 1/2"	16	410	495	1750	92
MMD75	130	75	115-240V/50-60 Hz.	1 1/2"	16	430	622	1300	120
MMD100	170	100	115-240V/50-60 Hz.	1 1/2"	16	430	622	1450	133
MMD120	200	120	115-240V/50-60 Hz.	1 1/2"	16	430	622	1750	152
MMD180	300	180	115-240V/50-60 Hz.	1 1/2"	16	410	734	1499	186
MMD240	400	240	115-240V/50-60 Hz.	1 1/2"	16	410	889	1497	235

HIGH CAPACITY MMD-HC SERIES

Pressure Dew Point	Nominal Inlet Temperature	Nominal Working Pressure	Maximum Inlet Temperature	Maximum Working Pressure	Maximum Ambient Temperature
-40°C / -70°C (opt)	35°C	7 bar	50°C	16 bar	50°C

Given flows are at 7 barg pressure with reference to 20°C and 1 bar atmospheric air suction as per ISO7183.

Model	Capacity		Voltage	Connection Size	Max. Working Pressure (bar)	
	(m^3/h)	(cfm)			bar	psig
MMD HC 340	575	340	115-240 V / 50-60 Hz	2"	16	232
MMD HC 400	680	400	115-240 V / 50-60 Hz	2"	16	232
MMD HC 500	850	500	115-240 V / 50-60 Hz	2"	16	232
MMD HC 590	1000	590	115-240 V / 50-60 Hz	2"	16	232
MMD HC 735	1250	735	115-240 V / 50-60 Hz	3"	16	232
MMD HC 890	1500	890	115-240 V / 50-60 Hz	3"	16	232
MMD HC 1060	1800	1060	115-240 V / 50-60 Hz	3"	16	232

PLC Monitor

The mini PLC is user friendly and shows the working action simultaneously. It is possible to get an alarm signal or remote control thanks to an easy access plug below the dryer. Dew point control and monitoring is possible with a dew point sensor.

MMD-VP SERIES
DESICCANT COMPRESSED AIR DRYERS

kW Saver

It is highly crucial to have clean and dry air in the system to have profitable and efficient manufacturing worldwide. Mikropor MMD-VP Series Modular Vacuum Purge Heatless Desiccant Air Dryers remove water vapor from compressed air, stop corrosion, and inhibit the growth of micro-organisms in critical applications.

Mikropor MMD-VP Series Modular Vacuum Purge Heatless Desiccant Air Dryers supply high-quality dry air which has -40 °C dew point or optionally -70 °C dew point to the system with affordable prices and reliable way. In that way, the production machine has a longer life, minimum maintenance costs, and processed product is produced in a healthy and safe way. The new vacuum purge technology decreased air loss during the regeneration process and make the production more cost-efficient way.

Application Areas

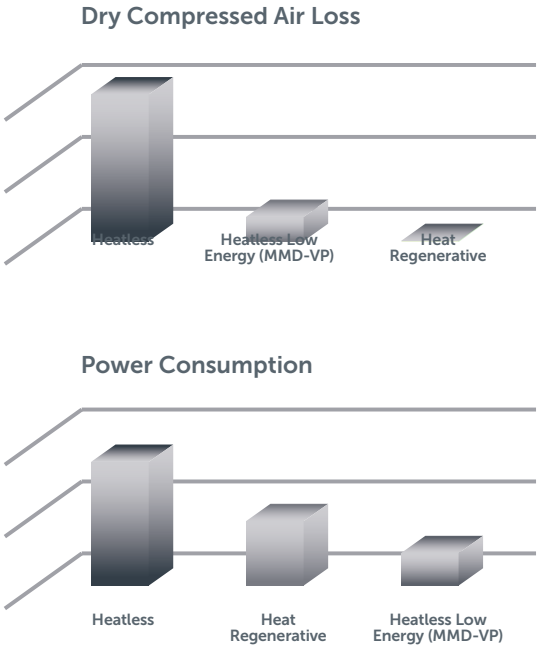
- Food & Beverage
- Pharmaceutical
- Automotive
- Electronic
- All industries which needs air quality is -40°C dew point or optionally -70°C dew point

Advantages

- **High-Quality Dry Air according to Standards**
  - Includes pre and post air line filtration
  - Dew point in Class 1 and Class 2 quality in accordance with ISO8573.1
  - Suitable for all industrial applications
  - -40°C dew point can be achieved (optional -70°C)
- **Modular Design**
  - It has a lightweight and compact design compared to traditional dryers
- **Low Energy Heatless Technology**
  - 13% more air can be usable due to new vacuum technology
  - Energy consumption can be lower 60% compared to the heatless dryers and 40% lower energy consumption against heat regenerative dryer
- **Lower Total Cost of Ownership**
  - Low operation costs
  - Longer lifetime of parts and shorter maintenance times

MMD-VP SERIES
DESICCANT COMPRESSED AIR DRYERS

kW Saver



Features

- **Standard Properties**
  - Corrosion protected aluminum construction
  - Lightweight with a compact design
  - High-efficiency regeneration due to the vacuum pump addition
  - High crush strength adsorption material
  - User-friendly controller
  - Easy installation and maintenance
- **Optional Propertie:**
  - PLC touch screen monitoring and controller
  - Dew point sensor

Working Principle

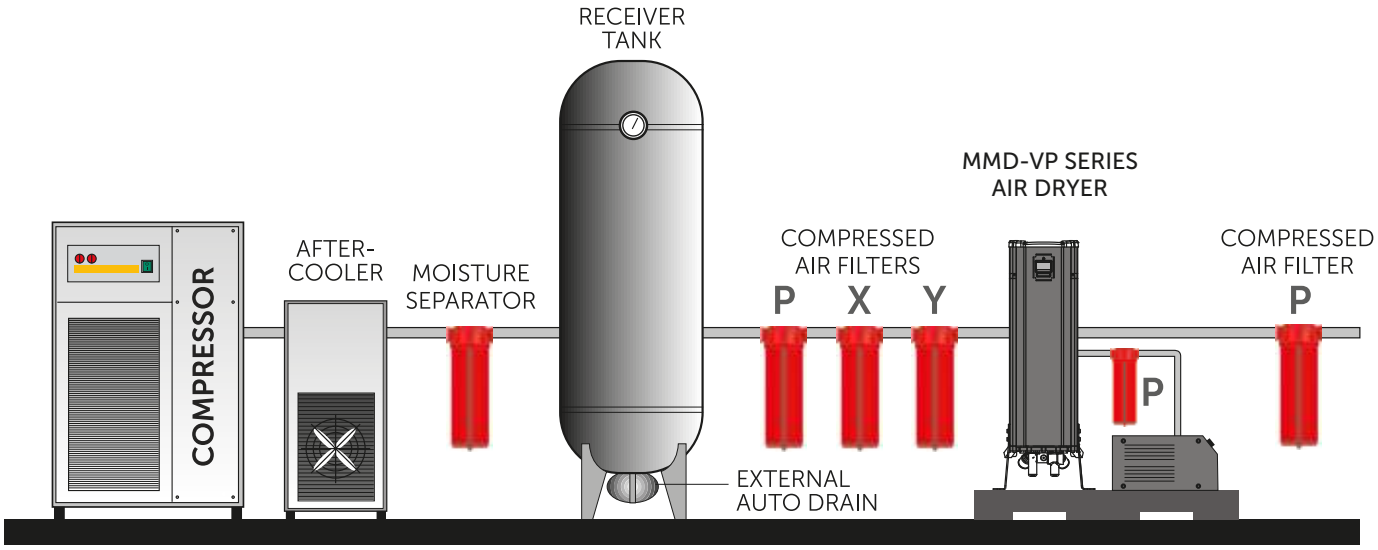
In that MMD-VP system, two towers allow for continuous adsorption of water vapor from compressed air by using the hygroscopic desiccant with high crush strength and a high surface/ volume ratio. Firstly, pre-filtered compressed air flows into one of the towers. In that tower, water is held at high pressure. After the adsorbent has been saturated. Then, the adsorption of water vapor is switch over to the other tank and the second tank starts to adsorption. Meanwhile, the regeneration process started in the first tank by depressurizing the tower without the use of heat.

The wet bed is dried by a small portion of dry air from the outlet at near atmospheric pressure and with help of a vacuum pump. The output of the dried air efficiency is increased by using the vacuum pump. Just only 2% of dried air need to be used for the regeneration process of dried air. After the regeneration process will be finished and the adsorption process will be taken over in the first tank again. With that cycle -40°C (-70°C optional) dew point can be achieved continuously.

MMD-VP SERIES
DESICCANT COMPRESSED AIR DRYERS

kW Saver

AIR LINE DESIGN



Technical Specifications

Model	Flow Rate (m³/h)	Vacuum Pump (kW)	Connection Size	Voltage	Max. Working Pressure (bar)	P Filter Model
MMD-VP-60	100	1,1	1 1/2"	400/3/50	16	GON-35
MMD-VP-75	130	1,1	1 1/2"	400/3/50	16	GON-35
MMD-VP-100	170	1,3	1 1/2"	400/3/50	16	GON-35
MMD-VP-120	200	2,2	1 1/2"	400/3/50	16	GON-35
MMD-VP-180	300	2,2	1 1/2"	400/3/50	16	GON-35
MMD-VP-240	400	3	1 1/2"	400/3/50	16	GON-35
MMD-VP-340	575	4	1 1/2"	400/3/50	16	GON-35
MMD-VP-400	680	4	2"	400/3/50	16	GON-35
MMD-VP-500	850	5,5	2"	400/3/50	16	GON-35
MMD-VP-590	1000	5,5	2"	400/3/50	16	GON-35
MMD-VP-740	1250	7,5	3"	400/3/50	16	GON-35

Correction Factor for MMD-VP Series

Inlet Temperature (°C)	F1	Pressure (bar)	F2
20	0,69	4,5	1
25	0,75	5	1
30	0,88	6	1
35	1	7	1
40	1,12	8	0,8
45	1,25	9	0,73
50	1,25	10	0,59
	1,5	11	
	1,62	12	
	1,74	13	
	1,87	14	
	1,99	15	
	2,11	16	

To determine the correct model, dryer flow rate should be divided by multiplication of the related F1 and F2 values.

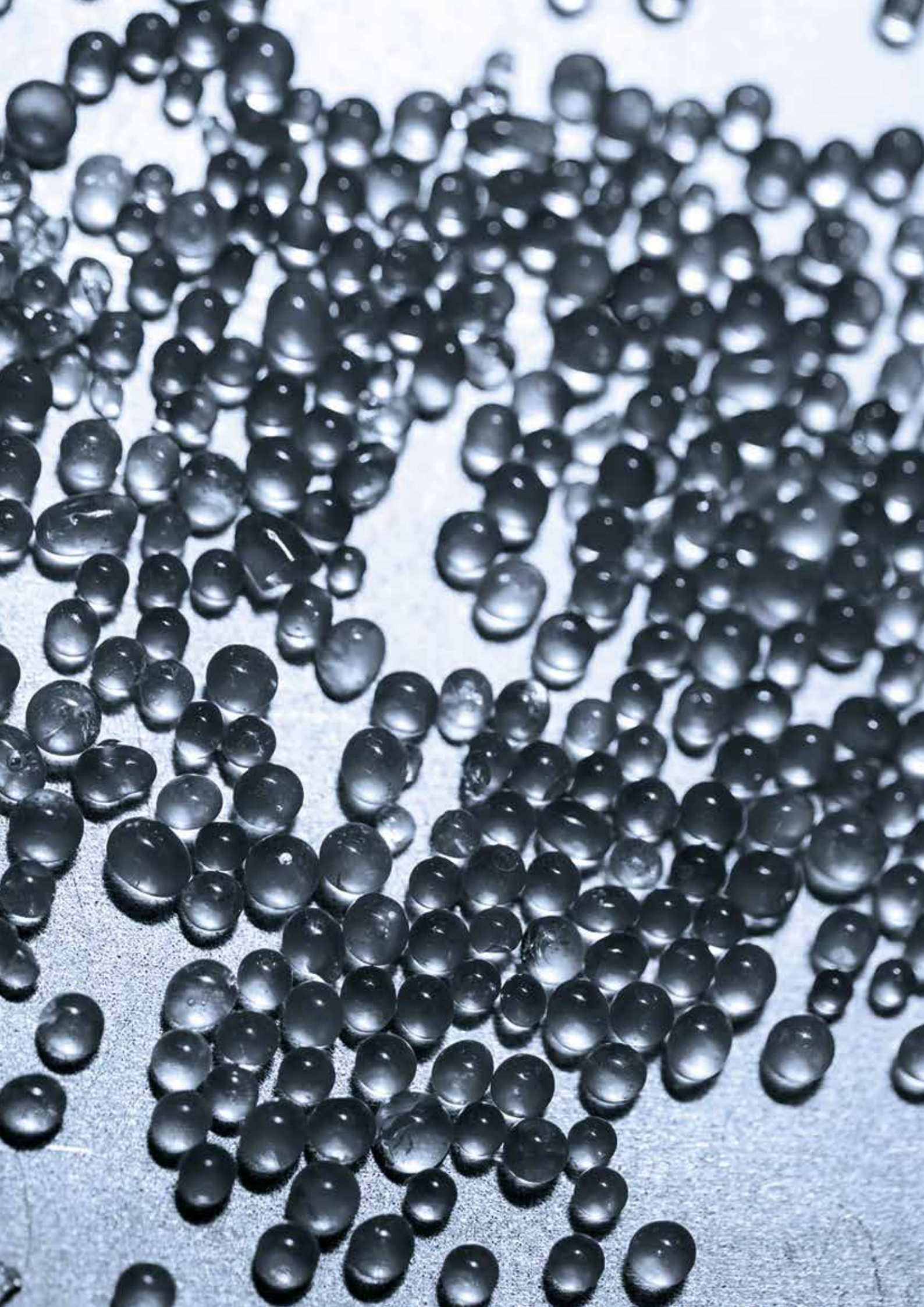
Correct Model = (Dryer Flow Rate)/[(F1) . (F2)]

Example for Choosing the Correct Dryer:

If a compressor delivers 400 m³/h at 6 bar and the inlet temperature is 40°C. Please choose your dryer as follows;

400 / (0.88*0.8) = 568 m³/h

So, the correct dryer for this application is MMD-VP 340.



MDA SERIES HEATLESS DESICCANT

Mikropor MDA Heatless Desiccant Air Dryers provide constant -40^{0}C (-70^{0}C Optional) pressure dew point. These dryers are designed to supply clean and very dry compressed air for critical applications. Pre-filters and after-filters are standard on all Mikropor Heatless Air Dryers to keep the air stream clean and maintain the integrity of the desiccant medium. A very reliable electronic controller is utilised so the dryer operates perfectly through its service life. MDA Heatless Desiccant Dryers are equipped with special valves and high quality desiccants in order to assure performance and provide the lowest pressure drops available in the market.

Principle of Operation

The twin tower design allows for continuous adsorption of water vapor from compressed air by using the hygroscopic desiccant with high crush strength and a high surface/volume ratio. Drying is accomplished by passing compressed air through one desiccant bed adsorbing moisture while the other is being simultaneously regenerated with the expanded purge air.

Regeneration of desiccant is accomplished without the use of heat. The wet bed is dried by diverting a small portion of the super-dry air from the outlet at near atmospheric pressure. The purge flow rate is adjustable to suit the specific outlet conditions (desired dew point). The super dry air flows in a counter direction through the wet bed, sweeping all the water vapor previously absorbed by the desiccant. MDA ensures pressure equalization in the twin towers prior to switching.

This prevents line surge and minimizes desiccant attrition. The tower being reactivated will be gradually re-pressurized at the end of its reactivation cycle before switch over takes place. Purge flow and de-pressurization are in downward direction, counter to the drying air flow.

This saves ENERGY and helps the world become more "GREEN"

MDA SERIES HEATLESS DESICCANT

PLC is Standard

MDA Desiccant Dryers have an extremely reliable electronic controller for optimal performance over the lifetime of the dryers. The touch screen HMI is capable of showing the cycles as well as the valves as they operate in real time. This is also capable of showing dew points. User friendly multi-lingual HMI helps the end users understand the operation of the system and identify any issues easily.

Correction Factor for MDA Series

Pressure (bar)	F1	Inlet Temp. (°C)	F2
4.5	0.69	20	1
5	0.75	25	1
6	0.88	30	1
7	1	35	1
8	1.12	40	0.80
9	1.25	45	0.73
10	1.37	50	0.59

All desiccant dryers are designed according to Pneurop conditions as per ISO 7183.

Ordering

If a compressor delivers 850 m^3/h at 9 bar pressure and 45°C inlet temperatures please choose your dryer as follows; 850/1.25/0.73 = 931 m^3/h the correct dryer for this is MDA1000

Activated Alumina

In order to achieve consistent dew point, Mikropor uses a mixture of adsorption media in its heatless range of desiccant dryers. Activated Alumina, Molecular Sieve and Silica Gel are used in varying ratios depending on the application.

Technical Specifications

Model	Connection Size	Inlet Flow Rate		Voltage	Max. Working Pressure (bar)	Pressure Drop (mbar)	Total Weight (Packed) (kg)	Activated Alumina (kg)	Dimensions (mm)		
		(m^3/h)	(cfm)						Width	Length	Height
MDA 130	1"	130	80	230/1/50-60	10	≤130	160	40	600	814	1312
MDA 185	1"	185	100	230/1/50-60	10	≤130	180	54	600	808	1566
MDA 250	1"	250	150	230/1/50-60	10	≤130	200	75	760	772	1580
MDA 300	1 1/2"	300	200	230/1/50-60	10	≤130	250	100	690	900	1558
MDA 360	1 1/2"	360	215	230/1/50-60	10	≤130	250	100	690	900	1558
MDA 440	1 1/2"	440	250	230/1/50-60	10	≤130	340	1250	698	900	1759
MDA 575	1 1/2"	575	300	230/1/50-60	10	≤130	500	151	680	900	1991
MDA 680	2"	680	400	230/1/50-60	10	≤130	535	202	680	960	2216
MDA 850	2"	850	500	230/1/50-60	10	≤130	750	264	857	1016	2277
MDA 1000	2"	1000	600	230/1/50-60	10	≤130	755	357	1010	1075	2386
MDA 1250	DN80/PN16	1250	700	230/1/50-60	10	≤130	1000	404	1100	1294	2413
MDA 1500	DN80/PN16	1500	800	230/1/50-60	10	≤130	1050	454	1010	1300	2547
MDA 1800	DN80/PN16	1800	1000	230/1/50-60	10	≤130	1215	566	1110	1513	2479
MDA 2200	DN80/PN16	2200	1250	230/1/50-60	10	≤130	1550	708	1110	1460	2793
MDA 2700	DN80/PN16	2700	1500	230/1/50-60	10	≤130	1890	852	1252	1533	2831
MDA 3200	DN100/PN16	3200	1750	230/1/50-60	10	≤130	2240	954	1212	1653	3054
MDA 3600	DN100/PN16	3600	2000	230/1/50-60	10	≤130	2330	1070	1210	1653	3268
MDA 4400	DN100/PN16	4400	2500	230/1/50-60	10	≤130	3000	1436	1535	1905	2910
MDA 5000	DN150/PN16	5000	3000	230/1/50-60	10	≤130	3180	1670	1714	1843	3382
MDA 6300	DN150/PN16	6300	4000	230/1/50-60	10	≤130	3450	2016	1693	2114	3328
MDA 7200	DN150/PN16	7200	4500	230/1/50-60	10	≤130	3600	2446	1795	2518	3047
MDA 8800	DN150/PN16	8800	5000	230/1/50-60	10	≤130	3850	2906	1795	2518	3341
MDA 10800	DN200/PN16	10800	6000	230/1/50-60	10	≤130	4200	3354	1875	2583	3747
MDA 12500	DN200/PN16	12500	7360	230/1/50-60	10	≤130	6470	3894	1935	2545	4175

Given flows are at 7 barg pressure with reference to 20°C and 1 bar atmospheric air suction as per ISO7183.

Efficiency Rating	X Pre Filter	Y Pre Filter	P After Filter
	1 micron particle removal and 0.5 mg/m^3 oil removal	0.01 micron particle removal and 0.1 mg/m^3 oil removal	5 micron particle removal (Removes desiccant particles after the dryer)

*For special requirements please contact our Technical Department.

Pressure Dew Point	Nominal Inlet Temperature	Nominal Working Pressure	Maximum Inlet Temperature	Maximum Working Pressure	Maximum Ambient Temperature
-40°C / -70°C (opt)	35°C	7 bar	50°C	10 bar	50°C

MBP SERIES HEATED DESICCANT

A centrifugal blower and high efficiency heater eliminate the use of valuable compressed air for desiccant regeneration. The completely automatic drying system uses blower to pull ambient air and pass it through the heater. This hot air stream flows opposite to drying flow direction. Hot air above 200^{0}C regenerates the moisture inside desiccant bed and strips it completely of all moisture. The advanced control system monitors the dew point and adjusts the heating/regeneration accordingly thereby providing valuable energy savings.

- Dew point monitoring and control
- Computer Control-Display Status
- Display Alarms-Display Pressure
- Remote Start/Stop-Low Pressure Alarm
- Minimum pressure monitoring valve
- High pressure switches and alarms
- Externally heated or heatless dryer functions integrated to the MBP

Qualified for Energy Technology List ™

Correction Factor for MBP Series

Pressure (bar)	F1	Inlet Temp. (°C)	F2
4.5	0.69	20	1
5	0.75	25	1
6	0.88	30	1
7	1	35	1
8	1.12	40	0.80
9	1.25	45	0.73
10	1.37	-	-

Technical Specifications

Model	Capacity (m^3/h)	Connection Size	Max. Working Pressure (bar)	Pressure Drop (mbar)	Voltage	Average Power (kw)	Fuse Amp.	Activated Alumina (kg)	Dimensions (mm)		
									Width	Length	Height
MBP 850	850	2"	10	≤130	400/3/50	10,49	36	264	1290	1180	2299
MBP 1000	1000	2"	10	≤130	400/3/50	11,28	36	357	1200	1310	2415
MBP 1250	1250	DN80	10	≤130	400/3/50	10,83	50	404	1610	1270	2468
MBP 1500	1500	DN80	10	≤130	400/3/50	12,14	50	454	1610	1270	2563
MBP 1800	1800	DN80	10	≤130	400/3/50	15,21	65	566	1563	1515	2479
MBP 2200	2200	DN80	10	≤130	400/3/50	19,31	70	708	1563	1455	2789
MBP 2700	2700	DN80	10	≤130	400/3/50	26,06	87	852	1615	1514	2836
MBP 3200	3200	DN100	10	≤130	400/3/50	25,04	87	954	1710	1660	3054
MBP 3600	3600	DN100	10	≤130	400/3/50	33,90	121	1070	1710	1660	3268
MBP 4400	4400	DN100	10	≤130	400/3/50	37,84	121	1436	1975	2492	2910
MBP 5000	5000	DN125	10	≤130	400/3/50	46,25	136	1670	2045	2560	3382
MBP 6300	6300	DN150	10	≤130	400/3/50	62,29	170	2016	2090	2963	3328
MBP 7200	7200	DN150	10	≤130	400/3/50	69,38	170	2446	2020	3363	3047
MBP 8800	8800	DN150	10	≤130	400/3/50	75,15	250	2906	2020	3363	3341
MBP 10800	10800	DN200	10	≤130	400/3/50	94,60	280	3354	2492	3481	3765

Given flows are at 7 barg pressure with reference to 20°C and 1 bar atmospheric air suction as per ISO7183.

Pressure Dew Point	Nominal Inlet Temp.	Nominal Working Pressure	Max. Inlet Temp.	Max. Working Pressure	Max. Ambient Temp.
-40°C	35°C	7 bar	45°C	10 bar	40°C

-70°C (optional)

04

GAS GENERATION SYSTEMS

GAS GENERATION SYSTEMS

MNG SERIES PSA NITROGEN GENERATORS

Pressure Swing Adsorption (PSA) type Nitrogen Generation system that is used to separate and enrich Nitrogen from Oxygen employs CMS (Carbon Molecular Sieve) for adsorbent. Carbon Molecular Sieve (CMS) adsorbs Oxygen and Water Vapor molecules under certain pressure while allowing Nitrogen to pass through.

The Nitrogen Generator is a Two-Bed Adsorber System

The Nitrogen Generator consists of two adsorber vessels filled with CMS, a valve assembly, air filters, main pressure regulator, and a product receiver tank. Clean and dry air is directed to one of the adsorber beds where oxygen and water vapor is adsorbed faster than nitrogen in the pore structure of the CMS, thus increasing the nitrogen purity of the product gas stream to the desired level (95-99.999% as required by customer). This product flows out from the top of the adsorber bed, through the valve and into the product receiver at a pressure slightly below the feed air pressure.

Applications

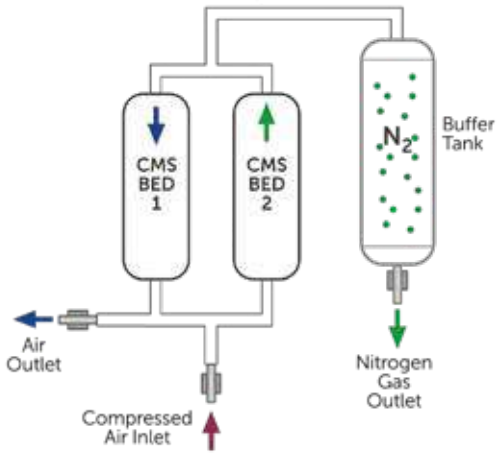
- Metal industry
- Chemical industry
- Purge
- Plastic industry
- Charge nitrogen gas in tires
- Production process and storage of food

Standard

- Oxygen Analyzer / Nitrogen Purity Sensor
- Flow Meter
- Carbolescer with oil indicator
- Nitrogen Generator / Silencer
- Basic Logo or Crouzet mini plc for modular type
- Siemens HMI color touch screen for twin towers
- Buffer Tank (Standard for MNG 10 to MNG 2050)
- T Filters are standard in all models

Optional

- Dew Point Sensor



MNG SERIES PSA NITROGEN GENERATORS

Features

- Simple structure, compact design, full automated operation
- Replaces manifold usage (see pic .1)
- Touch Screen HMI for controlling the complete system (see pic. 2)
- HMI Screen for monitoring and visualizing the progress
- Rapid start-up and safety system
- Superior silencer design gives low noise levels during depressurization and purge
- Durable piston valves for long-life operation (see pic. 5)
- On demand production, low cost
- High performance
  *The purity and capacity of nitrogen gas is designed to meet customer requirements (Nitrogen Purity 95%~99.999% is available)
- Minimum maintenance cost.
  *Replace filter element periodically only and service your compressor as normal

Replaces Manifold Usage - Pic. 1

Touch Screen HMI - Pic. 2

Dew Point Sensor - Pic. 3

Long Life Piston Valve - Pic. 5

Air Filter

MNG SERIES PSA NITROGEN GENERATORS

Technical Specifications

Model	Air Demand @ Following Purity Level (m^3/h)									
	95%	97%	98%	99%	99.50%	99.90%	99.95%	99.99%	99.999%	
MNG-10	5,6	5,0	4,5	4,0	3,6	3,1	2,8	2,5	2,0	Modular
MNG-20	9,0	8,0	7,3	6,4	6,2	5,0	4,5	4,0	3,3	
MNG-35	16,6	14,8	13,4	11,8	10,8	9,1	8,3	7,4	6,0	
MNG-60	27,6	24,6	22,4	19,6	17,9	15,2	13,8	12,3	10,0	
MNG-95	47,5	42,4	38,5	33,7	30,9	26,2	23,7	21,1	17,2	Twin Tower
MNG-120	63,4	56,6	51,4	45,1	41,3	35,0	31,7	28,2	23,0	
MNG-150	77,6	69,2	62,9	55,1	50,5	42,9	38,8	34,5	28,1	
MNG-250	123,5	110,2	100,1	87,7	80,4	68,3	61,7	55,0	44,8	
MNG-330	163,5	145,8	132,5	116,1	106,4	90,3	81,7	72,7	59,3	
MNG-450	220,9	197,0	179,1	156,9	143,8	122,1	110,4	98,3	80,1	
MNG-510	253,0	225,7	205,1	179,8	164,7	139,8	126,5	112,6	91,7	
MNG-570	281,0	250,6	227,8	199,6	182,9	155,3	140,5	125,1	101,9	
MNG-730	367,8	328,1	298,2	261,3	239,3	203,3	183,9	163,7	133,3	
MNG-910	450,0	401,3	364,8	319,6	292,8	248,7	224,9	200,2	163,1	
MNG-1110	547,0	487,9	443,5	388,6	355,9	302,3	273,4	243,4	198,3	
MNG-1230	603,4	538,2	489,2	428,7	392,7	333,5	301,6	268,5	218,8	
MNG-1370	668,6	596,4	542,1	475,0	435,1	369,5	334,2	297,6	242,4	
MNG-1820	904,1	806,3	732,9	642,2	588,3	499,6	451,9	402,3	327,7	
MNG-2050	1054,7	940,3	854,7	748,9	686,0	582,6	527,0	469,2	382,2	
MNG-2550	1263,9	1127,2	1024,6	897,8	822,4	698,4	631,8	562,5	458,2	
MNG-2950	1558,9	1390,4	1263,8	1107,4	1014,4	861,5	779,2	693,8	565,1	
MNG-3540	1827,0	1629,5	1481,1	1297,8	1188,8	1009,6	913,2	813,1	662,3	
MNG-4160	2106,8	1879,0	1708,0	1496,6	1370,9	1164,2	1053,1	937,6	763,7	
MNG-5560	2536,2	2261,9	2056,0	1801,7	1650,1	1432,9	1267,6	1128,5	920,0	
MNG-6050	3218,5	2816,3	2558,4	2239,8	2058,9	1745,0	1581,7	1400,0	1129,5	
MNG-7500	3829,0	3350,4	3043,6	2664,6	2449,3	2075,9	1881,7	1665,5	1343,7	
MNG-9170	4183,1	3730,6	3390,9	2971,3	2720,7	2363,4	2091,0	1861,3	1516,7	
MNG-11200	5108,8	4556,4	4142,5	3629,1	3323,3	2886,8	2553,8	2273,7	1851,7	

	95%	97%	98%	99%	99,50%	99,90%	99,95%	99,99%	99.999%
A/N Ratios	2	2,3	2,4	2,7	3	4	4,1	5,2	8,4

Given flows are at 7 barg pressure with reference to 20°C and 1 bar atmospheric air suction as per ISO7183.

MNG SERIES PSA NITROGEN GENERATORS

Technical Specifications

Model	Free Nitrogen Delivery @ Following Purity Level (m^3/h)									
	95%	97%	98%	99%	99.50%	99.90%	99.95%	99.99%	99.999%	
MNG-10	2,7	2,2	1,9	1,5	1	0,8	0,7	0,5	0,2	Modular
MNG-20	4,4	3,5	3,1	2,4	2	1,3	1,1	0,8	0,4	
MNG-35	8,1	6,5	5,6	4,4	3,5	2,3	2,0	1,4	0,7	
MNG-60	13,5	10,8	9,4	7,3	6	3,8	3,4	2,4	1,2	
MNG-95	23,3	18,6	16,2	12,6	10,4	6,6	5,9	4,1	2,0	Twin Tower
MNG-120	31,0	24,8	21,6	16,8	13,9	8,8	7,8	5,5	2,7	
MNG-150	38,0	30,4	26,4	20,6	17,0	10,8	9,6	6,7	3,3	
MNG-250	60,5	48,3	42,1	32,7	27,1	17,2	15,2	10,6	5,3	
MNG-330	80,0	63,9	55,7	43,3	35,8	22,8	20,1	14,1	7,0	
MNG-450	108,2	86,4	75,2	58,5	48,4	30,8	27,2	19,0	9,5	
MNG-510	123,9	99,0	86,2	67,1	55,5	35,3	31,2	21,8	10,9	
MNG-570	137,6	109,9	95,7	74,5	61,6	39,2	34,6	24,2	12,1	
MNG-730	180,1	143,9	125,3	97,5	80,6	51,3	45,3	31,6	15,8	
MNG-910	220,3	176,0	153,2	119,2	98,6	62,7	55,5	38,7	19,3	
MNG-1110	267,8	214,0	186,3	145,0	119,9	76,2	67,4	47,0	23,5	
MNG-1230	295,4	236,0	205,5	159,9	132,3	84,1	74,4	51,9	25,9	
MNG-1370	327,4	261,5	227,7	177,2	146,6	93,2	82,4	57,5	28,7	
MNG-1820	442,6	353,6	307,9	239,6	198,2	126,0	111,4	77,8	38,8	
MNG-2050	516,2	412,4	359,0	279,4	231,1	146,9	130,0	90,7	45,3	
MNG-2550	618,8	494,4	430,4	334,9	277,1	176,1	155,8	108,7	54,3	
MNG-2950	763,2	609,8	530,9	413,1	341,8	217,2	192,1	134,1	67,0	
MNG-3540	894,5	714,6	622,1	484,1	400,5	254,6	225,1	157,1	78,5	
MNG-4160	1031,4	824,1	717,4	558,3	461,9	293,6	259,6	181,2	90,5	
MNG-5560	1241,7	992,0	863,6	672,1	556,0	353,4	312,5	218,1	109,0	
MNG-6050	1532,6	1224,5	1066,0	829,6	686,3	436,2	385,8	269,2	134,5	
MNG-7500	1823,3	1456,7	1268,2	986,9	816,4	519,0	458,9	320,3	160,0	
MNG-9170	2048,0	1636,1	1424,3	1108,4	917,0	582,9	515,5	359,7	179,7	
MNG-11200	2501,2	1998,3	1740,0	1353,8	1120,0	712,0	629,6	439,4	219,4	

Reference Conditions

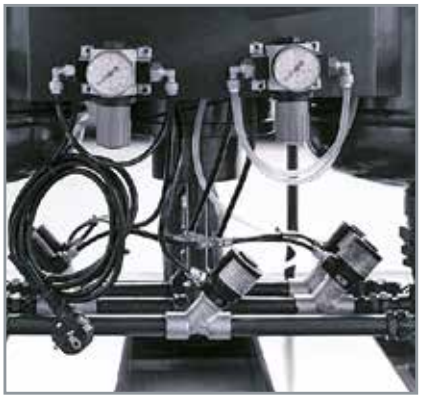
Inlet Compressed Air Pressure	Outlet Nitrogen Pressure	Ambient Temperature	Inlet Air Dew Point	Purity
7.5 bar	6 bar	25°C	≤ 3°C	99.5%

MNG SERIES PSA NITROGEN GENERATORS

N2 NITROGEN

Model	Buffer Tank Volume	Buffer Tank	Connections		Dimensions (mm)		
			Air Inlet	Nitrogen Outlet	Width	Length	Height
MNG-10	26 L	GELM-100	1/2"	1/4"	610	1500	1090
MNG-20	35 L	GELM-100	1/2"	1/4"	675	1150	1308
MNG-35	52 L	GELM-100	1/2"	1/4"	736	1179	1787
MNG-60	70 L	GELM-100	1/2"	1/4"	932,5	1115,5	1485
MNG-95	97 L	GELM-250	1"	1/4"	920	1090	1485
MNG-120	126 L	GELM-300	1"	1/4"	1260	955	1450
MNG-150	151 L	GELM-500	1"	1/4"	1230	954	1650
MNG-250	280 L	ELM 150	1"	1/4"	1298	1256	1971
MNG-330	408 L	ELM 150	1"	1/4"	1520	1477	2023
MNG-450	464 L	ELM 150	1"	1/4"	1555	1423	2155
MNG-510	515 L	ELM 300	1 1/2"	1/4"	1560	1582	2022
MNG-570	573 L	ELM 300	1 1/2"	1/4"	1582	2208	2225
MNG-730	712 L	ELM 300	1 1/2"	3/4"	1945	1812	2082
MNG-910	1,042 m^3	ELM 300	1 1/2"	1"	1945	1812	2477
MNG-1110	1,290 m^3	ELM 600	1 1/2"	1"	2010	1872	2525
MNG-1230	1,402m^3	ELM 600	2"	1"	2052	1909	2735
MNG-1370	1,498 m^3	ELM 600	2"	1 1/4"	2052	1903	2945
MNG-1820	2,019 m^3	ELM 600	2"	1 1/2"	1668	3599	2634
MNG-2050	2,336 m^3	ELM 800	DN80	1 1/2"	1841	3490	3120
MNG-2550	-	ELM 1200	DN80	2"	1920	2430	3185
MNG-2950	-	ELM 1200	DN80	2"	2070	2580	2630
MNG-3540	-	ELM 1600	DN80	2"	2120	2492	3055
MNG-4160	-	ELM 1600	DN80	2"	2176	2484	3375
MNG-5560	-	ELM 2100	DN 100	2 1/2"	2860	3490	3942
MNG-6050	-	ELM 2100	DN100	DN80	3260	3554	4145
MNG-7500	-	ELM-2750	DN100	DN80	3260	4164	4255
MNG-9170	-	ELM 4200	DN 100	DN80	3371	4746	4420
MNG-11200	-	ELM 4200	DN 150	DN100	3130	5091	4772

Note: Mikropor supplies buffer tank volumes for 99,0% and higher Nitrogen purities. For purities lower than 99,0%, it may be necessary to use an additional tank. (Buffer Tanks are standard for MNG 10 to MNG 2550)



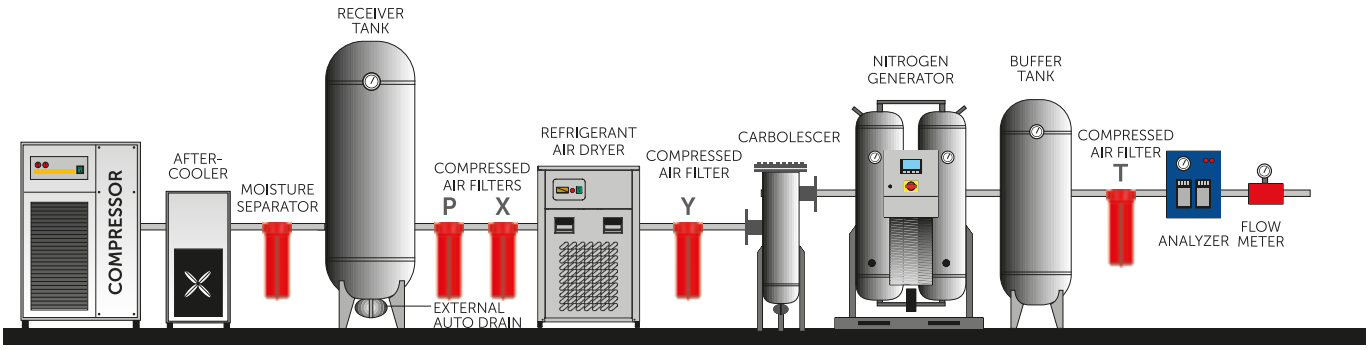
Correction Factor for MNG Series

Inlet Pressure (bar)	F1	Ambient Temp. (°C)	F2
6	0,82	5	0,85
6,5	0,88	10	1
7	0,94	15	1
7,5	1	20	1
8	1,05	25	1
8,5	1,1	30	0,91
9	1,14	35	0,82
9,5	1,2	40	0,74
10	1,21	45	0,6

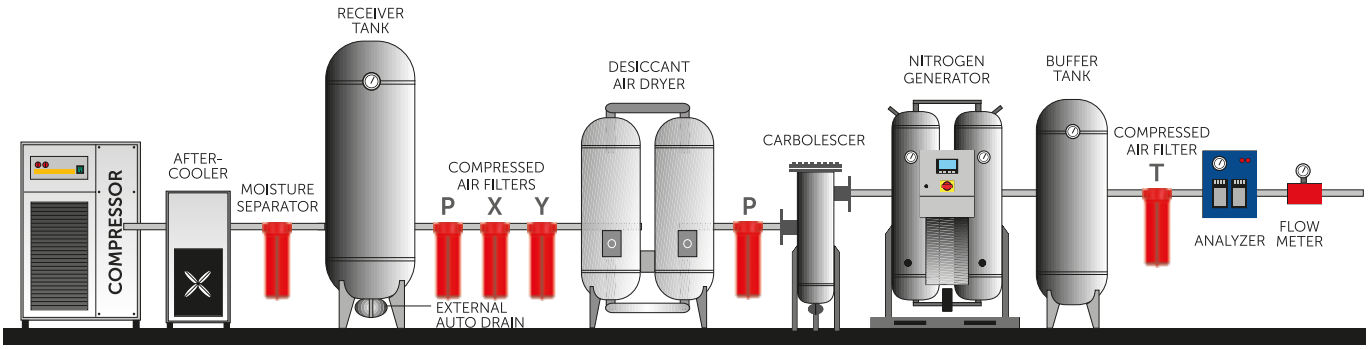
To determine the nitrogen generator model in the reference conditions divide the nitrogen flow rate to the factors mentioned above.

"Mikropor reserves the right to change the design and/or dimensions and/or weight of his products at any time without any notice or liability."

AIR LINE DESIGN



AIR LINE DESIGN



MDX SERIES NITROGEN PURIFIER SYSTEMS

Most PSA Nitrogen Generator users require the highest levels of Nitrogen purity by the most cost-effective means possible.

Mikropor's brand new MDX Nitrogen Purifier System offers an extremely economic way to increase Nitrogen purity levels beyond 99.5% or 99.9% all the way up to 99.999% purity.

The MDX range increases Nitrogen purities by utilizing a specially designed catalyst with a large surface area. As a result of the reaction on the catalyst surface, the residual oxygen content is reduced to maximum 10 ppm level.

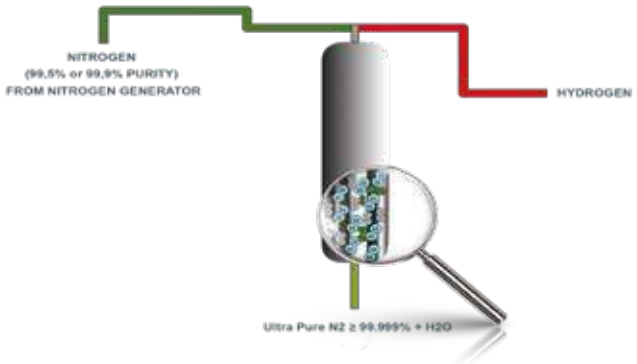
Mikropor's MDX Nitrogen Purifiers, combined with Mikropor's MNG Nitrogen Generators, utilise a small amount of Hydrogen gas during the reaction process to achieve high levels of Nitrogen purity by avoiding compressed air loss.

The MDX System, in conjunction with MNG Nitrogen Generators, will significantly reduce power consumption and still achieve the highest possible levels of Nitrogen purity.

Working Principle

In comparison to the current applications, Nitrogen produced from a nitrogen generator at 99.5% or 99,9% purity level can be converted to 99.999% by Mikropor's compact design Nitrogen Purifier System which also provides high savings in nitrogen production costs.

The system uses a catalytic reaction, whereby residual Oxygen from the MNG generator is removed from the PSA Nitrogen Generator output by utilising a reaction between the remaining Oxygen and Hydrogen gas to produce a purity of 99.999% Nitrogen. The only by-product of this catalytic reaction is water.



The total cost of hydrogen required for the reaction is very low and provides significant long-term savings.

High purity nitrogen can in fact be produced by utilizing lower capacity air compressors and downstream equipments throughout this newly developed nitrogen purification process.

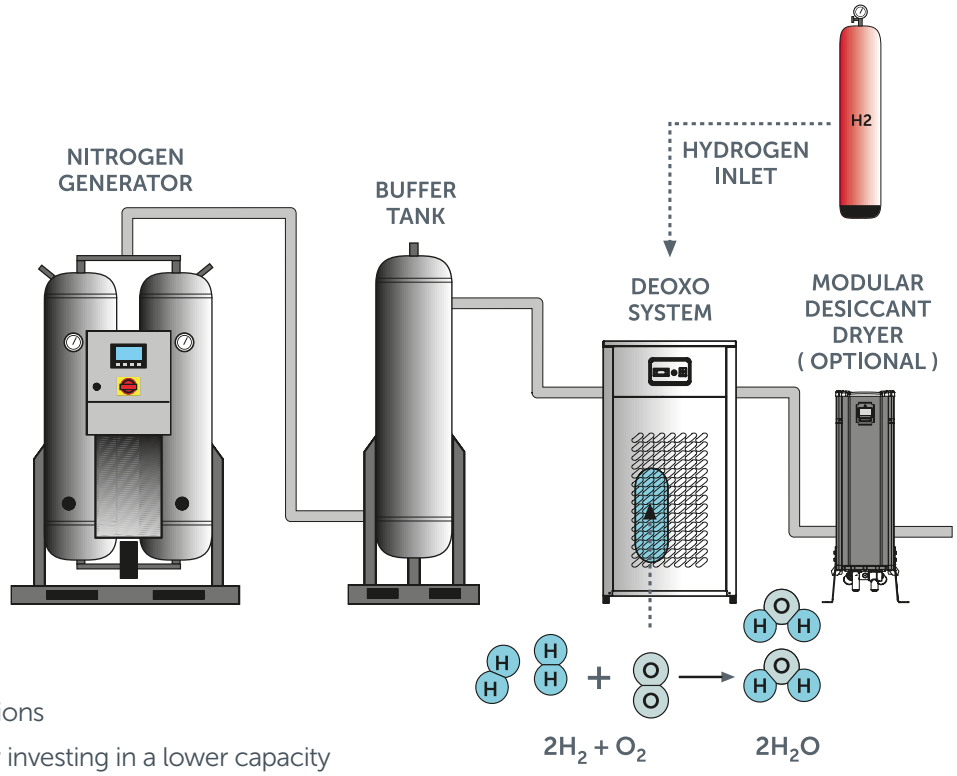
The reaction increases the Nitrogen temperature. That is why Mikropor's MDX Nitrogen Purifier System has been integrated into a High Temperature Air Dryer combining two products into a single unit to give a complete solution.

MDX SERIES NITROGEN PURIFIER SYSTEMS

Inlet Nitrogen Purity (99.5% or 99.9%)

Model	MDX - 10	MDX - 20	MDX - 35	MDX - 60	MDX - 95	MDX - 120	MDX - 150	MDX - 250	MDX - 330
N_2 Flow at 99.999% Purity (m^3/h)	1	2	3.5	6	10.4	13.9	17	27.1	35.8
Model	MDX - 450	MDX - 510	MDX - 570	MDX - 730	MDX - 910	MDX - 1110	MDX - 1230	MDX - 1370	MDX - 1820
N_2 Flow at 99.999% Purity (m^3/h)	48.4	55.5	61.6	80.6	98.6	119.9	132.3	146.6	198.2

Nitrogen	99.999%
Oxygen	<10 ppm
Dew Point*	<3°C
*: -40°C Optional	



Advantages

- Effective pay-back period
- Minimised installation area
- Long life efficiency (> 10 years)
- Top-quality high-performance solutions
- Cost reduction and Power Saving by investing in a lower capacity MDX rather than installing a higher capacity MNG system solely for the same N2 purity level.
- Up to 99.999% nitrogen purity with minimum space and energy requirement
- Low energy consumption
- Low CO2 emission
- Heavy-duty construction designed for rough conditions and industrial use
- High quality & durable components
- System that delivers min. 99.999% purity with a very low A/N (air : nitrogen) ratio (3.0 instead of 8,4)
- Compact design, fully automatic system
- 24/7 Nitrogen gas production in desired purities
- High energy saving
- Low cost and customized production
- Minimum maintenance cost

MOG SERIES PSA OXYGEN GENERATORS

(Capacity 0,2 Nm³ /h -150 Nm³ /h; Purity 90% - 95%)

Mikropor Oxygen Generators are a Pressure Swing Adsorption (PSA) system supplying pure oxygen to the airline. Zeolite molecular sieve (ZMS), an effective adsorbent, separates oxygen and other molecules like nitrogen and argon gas in the dry air. Non-oxygen molecules are adsorbed by ZMS under constant pressure, so oxygen is produced.

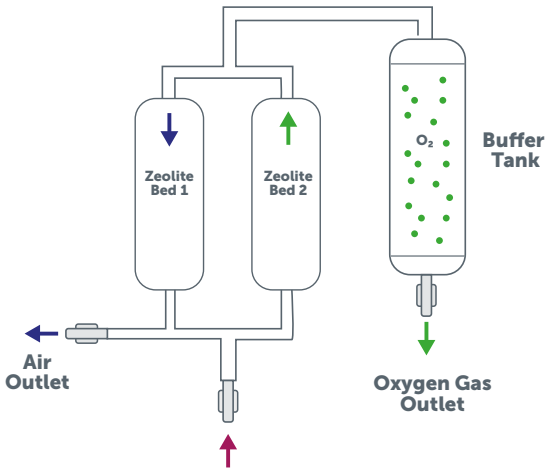
Working Principle

Mikropor Oxygen Generators are two-bed PSA systems filled with ZMS adsorbers. Including filters, a pressure regulator, valves and assemblies; the oxygen generation process is mainly the separation of oxygen and nitrogen from the clean and dry air. In a bed, zeolite adsorbs non-oxygen molecules such as nitrogen, argon gas, oil aerosol in the dry air and, at that moment, the regeneration cycle begins in an other bed. Pure oxygen is stored in the special buffer tank. The system provides to the user uninterruptible oxygen up to 95% purity.

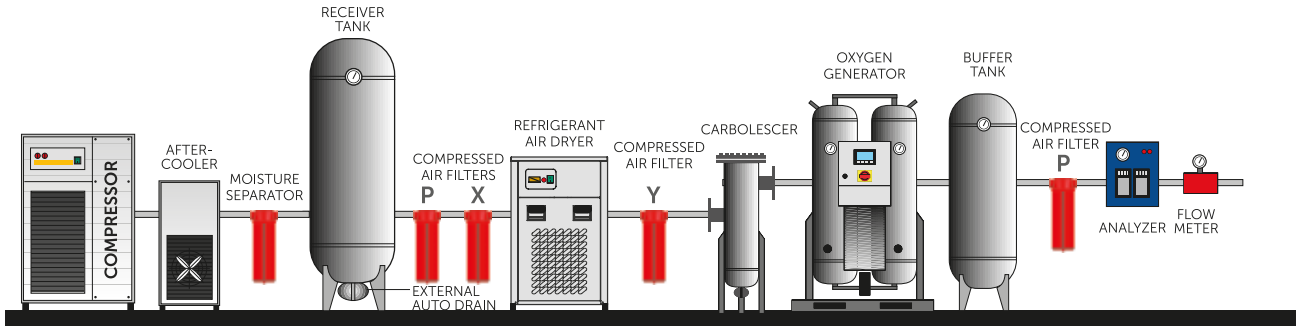
In order to achieve high purity oxygen production special zeolite granules are used. Zeolite, a microporous aluminosilicate mineral, is used as a molecular sieve and as an adsorbent of a wide variety of molecules.

Oxygen generation by utilising PSA technology follows these steps:

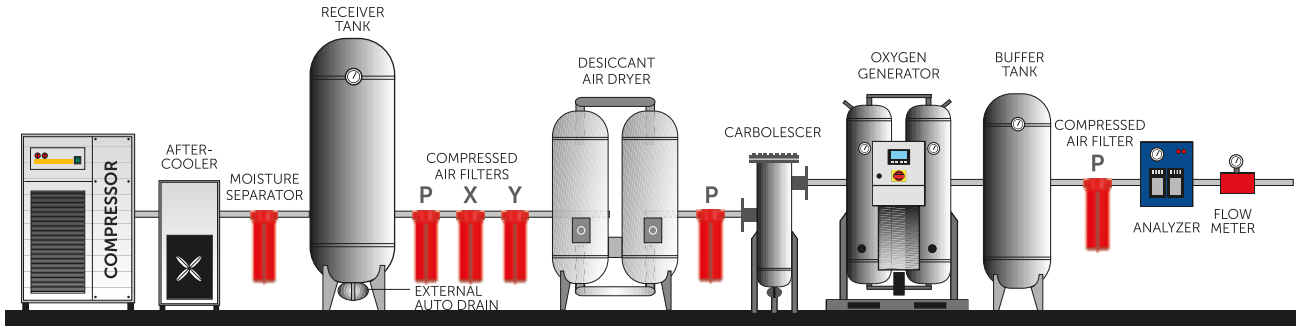
- **Pressurization:** Air is compressed to the tank to get the desired level of oxygen.
- **Adsorption:** Zeolite molecular sieve lets the oxygen flows and holds the other molecules at high pressure.
- **Regeneration:** The pressure of the tank is reduced. In that way, saturated zeolite molecules can be reused again.
- **Pressure Equalization:** After the regeneration cycle pressure valve is opened and pressure equalization of the two tanks is started to minimize the energy loss.



STANDARD AIR LINE DESIGN



PREMIUM AIR LINE DESIGN



MOG SERIES PSA OXYGEN GENERATORS

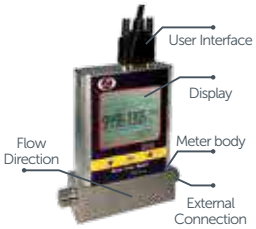
Features

- Touch screen PLC for monitoring the system
- High oxygen generation capacity and purity level as customer required
- On-demand production
- A long or infinite lifetime of the special zeolite granule
- Special silencer at the exhaust
- Highly minimized noise level at the outlet
- Quick start
- Oxygen purity level is monitored on the screen if the customer have oxygen analyzer
- Minimum maintenance cost
- Oil indicator

* Replace filter elements periodically, and get normal service for the compressor.

** Buffer tank is not standart on these models.

Long Life Valve



Flow Meter

Touch Screen PLC

Oxygen Analyzer

Optional

- Flowmeter
- Dew Point Sensor
- Oxygen Analyzer
- Carbon Dioxide Analyzer
- Touch Screen PLC for Moduler Type

Applications

- Medical Industry
- Metal Industry
- Ozone Systems
- Glass Industry
- Mining Process
- Laboratories
- Fishing Farms
- Paper Industry
- Industrial Ovens

Correction Factor

To determine the oxygen generator model in the reference conditions, divide the oxygen flow rate to the related factors value.

Correct Model= (Oxygen Flow Rate) / (F1) (F2)

Inlet Temp. (°C)	F1	Inlet Pressure (bar)	F2
10	1	6	1
15	1	6,5	1
20	1	7	1
25	1	7,5	1
30	0,91	8	1,05
35	0,82	8,5	1,11
40	0,74	9	1,17
45	0,6	9,5	1,25
_	_	10	1,33

NOMINAL CONDITIONS	
Ambient Temperature	20°C
Ambient Pressure	1013 mbar
Inlet Temperature	20°C
Inlet Pressure	7,5 barg
Unit Outlet Oxygen Purity	%90-95
Compressed Air Inlet Quality	ISO 8573-1Class1-4-1
Max. Compressed Air Inlet Temperature	45°C
Max. Ambient Temperature	45°C
Min. Compressed Air Inlet Temperature	5°C
Min. Ambient Temperature	0°C
Min. Compressed Air Inlet Pressure	4 barg
Max. Compressed Air Inlet Pressure	10 barg
Pressure Dew Point	≤3°C

Technical Specifications

Model	Air Demand @ Following Purity Level (m³/h)			Free Oxygen Delivery @ Following Purity Level (m³/h)			ELM Models	Connection Sizes		Mimimum Recommended Buffer Tank Volume (L)	Partical Filters (P Filters)
	90%	93%	95%	90%	93%	95%		Air Inlet	Oxygen Outlet	For 90% Purity	
MOG-25	2,8	2,7	2,8	0,3	0,2	0,2	G- 100 ELM-C	1/2"	1/2"	5,6	GON-35
MOG-40	4,7	4,5	4,6	0,4	0,4	0,4	G- 100 ELM-C	1/2"	1/2"	9,4	GON-35
MOG-70	8,4	8,2	8,3	0,8	0,7	0,6	G- 100 ELM-C	1/2"	1/2"	16,9	GON-35
MOG-120	14,3	13,9	14,1	1,3	1,2	1,1	G- 100 ELM-C	1/2"	1/2"	28,8	GON-35
MOG-140	17,1	16,7	17,0	1,6	1,4	1,3	G- 100 ELM-C	1/2"	1/2"	34,5	GON-35
MOG-175	21,4	20,9	21,2	1,9	1,7	1,6	G- 100 ELM-C	1/2"	1/2"	43,2	GON-35
MOG-240	28,6	27,9	28,3	2,6	2,3	2,2	G- 100 ELM-C	1/2"	1/2"	57,6	GON-35
MOG-380	46,1	45,0	45,6	4,2	3,7	3,5	G- 200 ELM-C	1"	1/2"	92,9	GON-35
MOG-530	64,2	62,6	63,5	5,8	5,2	4,9	G- 250 ELM-C	1"	1/2"	129,3	GON-35
MOG-660	80,7	78,7	79,8	7,3	6,6	6,1	G- 300 ELM-C	1 1/2"	1/2"	162,5	GON-35
MOG-800	98,8	96,4	97,7	9,0	8,0	7,5	G- 500 ELM-C	1 1/2"	1/2"	199,0	GON-35
MOG-970	118,5	115,6	117,2	10,8	9,6	9,0	G- 600 ELM-C	1 1/2"	1/2"	238,8	GON-35
MOG-1210	148,2	144,5	146,5	13,5	12,0	11,3	G- 850 ELM-C	1 1/2"	1/2"	298,5	GON-35
MOG-1900	233,0	227,3	230,3	21,2	18,9	17,7	ELM- 150 -C	DN50	1/2"	469,4	GON-35
MOG-2310	283,3	276,3	280,0	25,8	23,0	21,5	ELM- 300 -C	DN50	1/2"	570,6	GON-35
MOG-2850	346,2	337,8	342,3	31,5	28,1	26,3	ELM- 300 -C	DN50	1/2"	697,5	GON-35
MOG-3810	468,1	456,7	462,8	42,6	38,1	35,6	ELM- 300 -C	DN50	1/2"	943,1	GON-55
MOG-4440	545,9	532,6	539,7	49,6	44,4	41,5	ELM- 600 -C	DN50	1/2"	1099,8	GON-55
MOG-5350	654,4	638,4	647,0	59,5	53,2	49,8	ELM- 600 -C	DN50	1/2"	1318,4	GON-70
MOG-6570	807,2	787,5	798,1	73,4	65,6	61,4	ELM- 600 -C	DN50	1/2"	1626,2	GON-100
MOG-7700	946,0	922,9	935,3	86,0	76,9	71,9	ELM- 600 -C	DN50	1/2"	1905,8	GON-100
MOG-9050	1109,5	1082,3	1096,9	100,9	90,2	84,4	ELM- 800 -C	DN80	3/4"	2235,1	GON-150
MOG-13200	1621,0	1581,3	1602,6	147,4	131,8	123,3	ELM- 1200 -C	DN80	3/4"	3265,5	GON-150
MOG-15700	1928,4	1881,2	1906,5	175,3	156,8	146,7	ELM- 1200 -C	DN80	3/4"	3884,9	GON-225
MOG-17700	2166,0	2112,9	2141,3	196,9	176,1	164,7	ELM- 1600 -C	DN80	1"	4363,4	GON-225
MOG-21600	2645,7	2581,0	2615,7	240,5	215,1	201,2	ELM- 1600 -C	DN80	1 1/2"	5329,9	GON-300

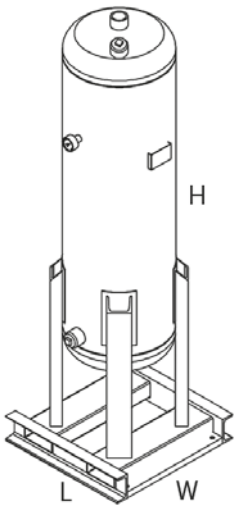
MCT SERIES ACTIVATED CARBON TOWER

Many industries such as the electronic and hospital industries, pharmaceutical industries, food and beverage sectors require the removal of residual oil vapors and odors from the compressed air. Mikropor's solution for this application is the MCT Series activated carbon towers. With standard pre and after filters such as particulate filters, water coalescers and oil coalescers, the oil content inside the compressed air can be reduced to 0.01 mg/m^3 (0.01 ppm) for applications of EXTREME air quality such as hospital, pharmaceutical industries, or food and beverage industries, the residual oil content may need to be reduced to 0.003 mg/m^3 (0.003 ppm). MCT filters such as Mikropor activated carbon G series, GO series, F series filters or MCT activated carbon towers are a must for these types of applications.

Correction Factor

Operating Pressure (bar)	PSI	Correction Factor
1	15	0,5
3	44	0,71
5	73	0,87
7	100	1
9	131	1,12
10	145	1,15

Max. Recommended Operating Temperature	Max. Oil Carryover at 21°C (mg/m^3)	Max. Working Pressure
50°C	0,003°C	10 bar



MCT SERIES ACTIVATED CARBON TOWER

Technical Specifications

Model	Connection Size	Flow Rate (m^3/h)	Max. Working Pressure (bar)	Activated Carbon (kg)	Housing Dimensions (mm)		
					Length	Width	Height
MCT130	1"	130	10	14	347	450	1172
MCT185	1"	185	10	20	450	563	1413
MCT250	1"	250	10	28	430	601	1370
MCT300	1 1/2"	300	10	37	500	649	1336
MCT360	1 1/2"	360	10	37	500	649	1336
MCT440	1 1/2"	440	10	46	500	648	1536
MCT575	1 1/2"	575	10	56	469	604	1733
MCT680	2"	680	10	74	550	540	1936
MCT850	2"	850	10	97	580	600	1957
MCT1000	2"	1000	10	128	657	638	1617
MCT1250	DN80	1250	10	149	708	880	2400
MCT1500	DN80	1500	10	167	708	880	2558
MCT1800	DN80	1800	10	210	810	980	2423
MCT2200	DN80	2200	10	262	810	1100	2600
MCT2700	DN80	2700	10	320	910	1100	2758
MCT3200	DN100	3200	10	356	866	1050	3023
MCT3600	DN100	3600	10	400	866	1050	3237
MCT4400	DN100	4400	10	537	1130	1250	2914
MCT5000	DN100	5000	10	624	1130	1310	3420
MCT6300	DN150	6300	10	754	1230	1230	3365
MCT7200	DN150	7200	10	845	1430	1430	3075
MCT8800	DN150	8800	10	1009	1430	1430	3369
MCT10800	DN200	10800	10	1148	1430	1430	3863

Given flows are at 7 barg pressure with reference to 20°C and 1 bar atmospheric air suction as per ISO7183.

MBS SERIES BREATHING AIR SYSTEM

Breathing Air Solutions

High-quality compressed air is crucial to many industries and has a vital role in breathing air applications. Mikropor breathing air purifiers are designed to eliminate hazardous substances in the air conforming to related standards. (Mikropor breathing air purifiers are designed to protect against a range of contaminants that may be present in a compressed air fed breathing air system.)

Technical Specifications

Model	Capacity		Connection Size	Replacement Filter Kit Model	Voltage	Max. Working Pressure (bar)
	(m^3/h)	(cfm)				
MBS 5	10	5	1/2"	G100-ELM	115-240V/50-60Hz.	16
MBS 10	20	10	1/2"	G100-ELM	115-240V/50-60Hz.	16
MBS 15	25	15	1/2"	G100-ELM	115-240V/50-60Hz.	16
MBS 20	35	20	1/2"	G100-ELM	115-240V/50-60Hz.	16
MBS 25	45	25	1/2"	G150-ELM	115-240V/50-60Hz.	16
MBS 30	50	30	1/2"	G200-ELM	115-240V/50-60Hz.	16
MBS 40	70	40	1 1/2"	G250-ELM	115-240V/50-60Hz.	16
MBS 50	85	50	1 1/2"	G300-ELM	115-240V/50-60Hz.	16
MBS 60	100	60	1 1/2"	G500-ELM	115-240V/50-60Hz.	16
MBS 75	130	75	1 1/2"	G600-ELM	115-240V/50-60Hz.	16
MBS 100	170	100	1 1/2"	G851-ELM	115-240V/50-60Hz.	16
MBS 120	200	120	1 1/2"	G1210-ELM	115-240V/50-60Hz.	16
MBS 180	300	180	1 1/2"	ELM 300	115-240V/50-60Hz.	16
MBS 240	400	240	1 1/2"	ELM 300	115-240V/50-60Hz.	16
MBS 250	440	250	1 1/2"	ELM 300	115-240V/50-60Hz.	16
MBS 300	575	300	1 1/2"	ELM 600	115-240V/50-60Hz.	16
MBS 400	680	400	2"	ELM 600	115-240V/50-60Hz.	16
MBS 500	850	500	2"	ELM 600	115-240V/50-60Hz.	16
MBS 600	1000	600	2"	ELM 600	115-240V/50-60Hz.	16
MBS 700	1250	700	DN80	ELM 800	115-240V/50-60Hz.	16
MBS 800	1500	800	DN80	ELM 1200	115-240V/50-60Hz.	16
MBS 1000	1800	1000	DN80	ELM 1200	115-240V/50-60Hz.	16
MBS 1250	2200	1250	DN80	ELM 1600	115-240V/50-60Hz.	16

Given flows are at 7 barg pressure with reference to 20°C and 1 bar atmospheric air suction as per ISO7183.

Contaminants	CSA Z180.1	European Pharmacopoeia	OHSA Grade D
Water	Pressure dew point of 5°C below lowest system temp.	67 ppm (-45°C atmospheric dew point)	-
Oil/Lubricant	<1 mg/m^3	0,1 mg/m^3	5 mg/m^3
Carbon Dioxide (CO_2)	<500 ppm	<500 ppm	<1000 ppm
Carbon Monoxide (CO)	<5 ppm	<5 ppm	<10 ppm
Nitrogen Oxides ($NO+NO_2$)	-	<2 ppm	-
Sulphur Dioxide (SO_2)	-	<1 ppm	-
Oxygen (O_2)	-	21±1	-
Taste and Odor	-	Free	-

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Ahi Evran OSB Mah. Oğuz Cad. No: 5 Sincan, 06935, Ankara-Turkey

+90 312 267 0700 mikropor@mikropor.com

mikropor

www.mikropor.com

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