

FIRST COMPRESSOR  
MANUFACTURER IN THE  
WORLD ACCREDITED

**ISO 50001**  
ENERGY MANAGEMENT

ADSORPTION DRYER  
*MultiAir Technology*

**METALPLAN**  
**AIRPOWER**

# METALPLAN IS NUMBER ONE IN ENERGY EFFICIENCY

As the absolute leader in screw compressors up to 25 hp in Brazil, Metalplan is the world's first\* compressor manufacturer accredited in ISO 50001 - Energy Management, demonstrating its commitment to energy efficiency, the foundation for sustainability and competitiveness of companies.

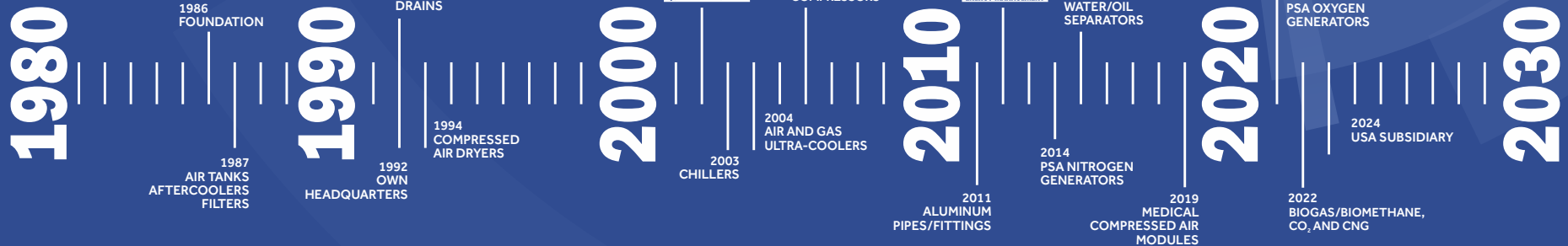
Founded in 1986, Metalplan has a production area of 6.000 m<sup>2</sup>, developing innovative equipment with a high level of nationalization, exporting to over 20 countries.

Its network of authorized distributors and service centers includes over 300 highly specialized companies with extensive geographic coverage, capable of servicing over 100.000 operating equipment.

In recent years, Metalplan has been expanding its horizons to disruptive technologies in gases and renewable energies, such as on-site generation and compression of nitrogen, oxygen, biogas, biomethane, CO<sub>2</sub> and CNG.



\*in the compressed air, gases and industrial refrigeration segment.







*For complete elimination of compressed air moisture, Eurofarma needed to install an adsorption dryer, even though aware of its higher energy consumption. After a thorough analysis of available options, a Hybrid 3000 model was selected, with a dew point of -40°C and heaterless regeneration.*

OIL  
FREE

ISO  
CLASS  
ZERO



HYBRID HD 651  
adsorber

negative  
dew points  
(up to  $-100^{\circ}\text{C}$ )

\*  
MASTER  
CONTROL

TOUCH  
CONTROL

## HYBRID

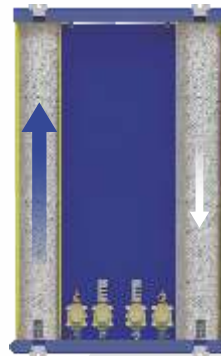
### ADSORPTION DRYER

NEGATIVE MELTING POINTS (DOWN TO  $-100^{\circ}\text{C}$ )  
FOR SPECIAL APPLICATIONS

Some applications require completely dry compressed air, with negative dew points (see ISO 8573 table). Adsorption drying can meet numerous needs, with dew points of up to  $-100^{\circ}\text{C}$ .

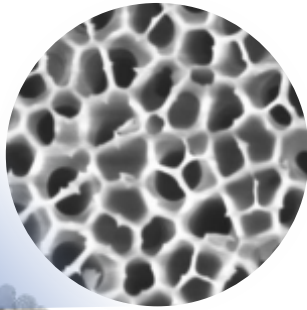
Adsorption is a physical-chemical phenomenon, in which water molecules in the gaseous state are attracted to and retained on the surface of an adsorbent material. After some time, this surface becomes saturated, requiring regeneration.

To allow adsorption and regeneration to be a continuous process, the adsorption dryer has two towers filled with adsorbent material. While one tower adsorbs water molecules, the other tower is in regeneration, with air flows in opposite directions. A system of valves and electronic control directs the flows and determines the adsorption and regeneration times.



ADSORPTION DRYER  
**HYBRID**  
*MultiplAir Technology*

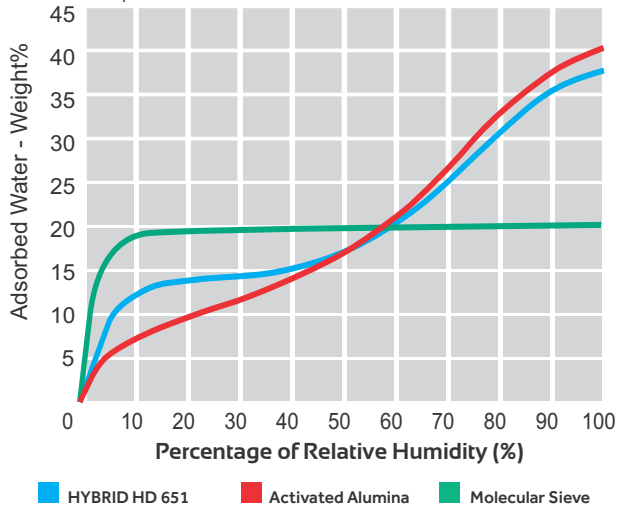




## HYBRID HD 651 AN EXCLUSIVE ADSORBENT

- Hybrid material of activated alumina and molecular sieve.
- High retention capacity of water vapor molecules on its surface, both at low and high relative humidity rates.

Performance of Hybrid-HD 651 at different relative humidities, compared to activated alumina and molecular sieve.



## HYBRID ADSORPTION DRYERS WERE DESIGNED TO PROVIDE THE FOLLOWING BENEFITS:

- High adsorption capacity.
- Low air consumption.
- High energy efficiency.
- Modular capacity control.
- Prevention of bed fluidization.
- Prevention of air flow channeling.
- Low pressure drop.
- Operational simplicity.
- High reliability.
- Compressed air with dew point from  $-40^{\circ}\text{C}$  to  $-100^{\circ}\text{C}$ .
- Absolute humidity from  $0.0104\text{g H}_2\text{O/kgAr}$  to  $0.000001\text{g H}_2\text{O/kgAr}$ .
- Five different regeneration alternatives.
- Exclusive Hybrid HD 651 adsorbent material\*.
- Available for flow rates from  $8.5$  to  $34000\text{ m}^3/\text{h}$ .



\*optional



## TYPES OF ADSORPTION DRYERS

TYPE	REGENERATION AIR	EXTERNAL HEAT SOURCE	MAINTENANCE COST	ADSORBENT MATERIAL LIFE
HEATERLESS	15%	No	Very low	3 to 6 years
VACUUM ASSISTED	1 to 2%	No	low	4 to 8 years
INTERNALLY HEATED	1 to 8%	Yes	low	2 to 4 years
EXTERNALLY HEATED	8%	Yes	low	2 to 4 years
BLOWER PURGE	Zero	Yes	Medium	2 to 4 years

# TECHNICAL DATA

Model <i>HEATERLESS</i>	Nominal Flow Rate		Regeneration Flow Rate		Connections	length	height	width	Weight	Layout
	pcm	m <sup>3</sup> /h	pcm	m <sup>3</sup> /h		mm	mm	mm	kg	
MSA - 015	15	25,5	2,3	3,8	L1/2" NPT	200	467	634	36	
MSA - 020	20	34	3	5,1	L1/2" NPT	200	527	634	38	
MSA - 030	30	51	4,5	7,7	L1/2" NPT	200	598	634	40	
MSA - 040	40	68	6	10,2	L1/2" NPT	200	740	634	45	
MSA - 050	50	85	7,5	12,8	L1/2" NPT	450	882	634	50	
MSA - 060	60	102	9	15,3	L3/4" NPT	450	1025	634	54	
MSA - 080	80	136	12	20,4	L3/4" NPT	450	1309	634	64	
MSA - 100	100	170	15	25,5	L1" NPT	450	1594	634	73	
MSA - 200	200	340	30	51	L2.1/2" NPT	900	1715	700	146	
MSA - 300	300	510	45	76,5	L2.1/2" NPT	950	1715	700	220	
MSA - 400	400	680	60	102	L2.1/2" NPT	960	1765	700	293	
MSA - 500	500	850	75	127,5	L2.1/2" NPT	1150	1765	700	366	
MSA - 600	600	1020	90	153	L2.1/2" NPT	1260	1765	700	439	
MSA - 800	800	1360	120	204	L2.1/2" NPT	1560	1765	700	586	
MSA - 1000	1000	1700	150	255	L2.1/2" NPT	1860	1765	700	732	
MSA - 1250	1250	2125	188	318,8	F3" ANSI B16.5 150	1250	2427	1670	1318	
MSA - 1500	1500	2550	225	382,5	F3" ANSI B16.5 150	1060	2700	2290	1771	
MSA - 2000	2000	3400	300	510	F3" ANSI B16.5 150	1060	3060	2290	1995	
MSA - 2500	2500	4250	375	637,5	F4" ANSI B16.5 150	1220	2708	2360	2631	
MSA - 3000	3000	5100	450	765	F4" ANSI B16.5 150	1220	3060	2360	2939	
MSA - 4000	4000	6800	600	1020	F4" ANSI B16.5 150	2340	2540	2670	4147	
MSA - 5000	5000	8500	750	1275	F6" ANSI B16.5 150	2490	3600	1500	4913	

Power: 45W

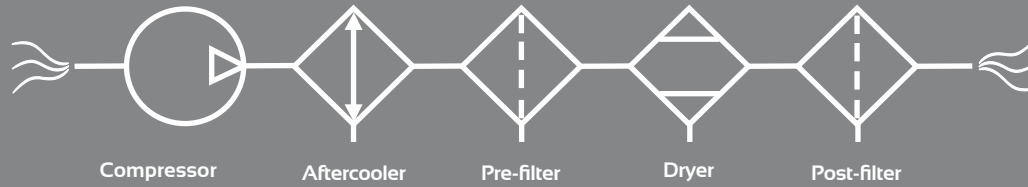
Engineered models available upon request



# COMPRESSED AIR FUNDAMENTALS



## ISO 8573 STANDARD INSTALLATION



Compressor      Aftercooler      Pre-filter      Dryer      Post-filter

## CONTAMINANTS & QUALITY CLASSES

class	SOLID PARTICLES maximum number of particles per m <sup>3</sup> (d = particle size)			class	WATER moisture dew point (°C)	class	OIL - total concentration (liquid/aerosol/vapor) (mg/m <sup>3</sup> )
	0,1µm < d ≤ 0,5µm	0,5µm < d ≤ 1µm	1µm < d ≤ 5µm				
<b>0</b>	<b>CLASS ZERO - as specified by the user or equipment supplier and stricter than Class 1</b>						
<b>1</b>	≤ 20.000	≤ 400	≤ 10	<b>1</b>	-70	<b>1</b>	≤ 0,01
<b>2</b>	≤ 400.000	≤ 6.000	≤ 100	<b>2</b>	-40	<b>2</b>	≤ 0,1
<b>3</b>	-	≤ 90.000	≤ 1.000	<b>3</b>	-20	<b>3</b>	≤ 1
<b>4</b>	-	-	≤ 10.000	<b>4</b>	+3	<b>4</b>	≤ 5
<b>5</b>	-	-	≤ 100.000	<b>5</b>	+7	<b>5</b>	-
	Mass concentration - C <sub>p</sub> (mg/m <sup>3</sup> )	<b>6</b>	+10	<b>6</b>	-		
		Liquid Water C <sub>w</sub> g/m <sup>3</sup> )					
<b>6</b>	0 < C <sub>p</sub> ≤ 5	<b>7</b>	C <sub>w</sub> ≤ 0,5	<b>7</b>	-		
<b>7</b>	5 < C <sub>p</sub> ≤ 10	<b>8</b>	0,5 < C <sub>w</sub> ≤ 5	<b>8</b>	-		
<b>8</b>	-	<b>9</b>	5 < C <sub>w</sub> ≤ 10	<b>9</b>	-		
<b>9</b>	-	<b>X</b>	C <sub>w</sub> > 10	<b>X</b>	> 5		
<b>X</b>	C <sub>p</sub> > 10						

## ISO 8573 COMPRESSED AIR FOR GENERAL USE

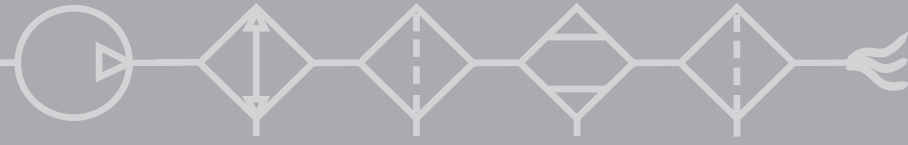
ISO 8573 is the international reference for compressed air systems, focusing on contamination levels.

The standard has various quality classes that serve multiple applications in industry and services, excluding human breathing and medicinal use.

Published in 1991, it was translated by Metalplan in 1992, positioning Brazil at the forefront of its utilization.

Its 3rd edition is from 2010, when Class Zero was introduced, with purity levels stricter than those found in Class One.

# COMPRESSED AIR FUNDAMENTALS



ISO 8573 TYPICAL SYSTEMS	quality class	APPLICATIONS
	[1:6:1] <sup>2</sup>	Dry air, with dew point between 5°C and 15°C. Ideal for low flows and protection of valves, cylinders, pneumatic tools, automation, blasting, painting, etc.
	[1:6:1] <sup>2</sup> [1:6:0] <sup>2</sup>	Activated carbon filter eliminates odors, with residual oil of 0.003 mg/m <sup>3</sup> , suitable for dental clinics and similar applications, except for human breathing.
	[1:4:1]	This is the most used treatment system in the industry. Its level of protection meets various sectors such as automotive, plastic, textile, paper, mechanical, metallurgical, etc.
	[1:4:0]	Quality similar to the previous system, with odor elimination and lower residual oil (0.003 mg/m <sup>3</sup> ), important in N <sub>2</sub> and O <sub>2</sub> generation and in the food, chemical, pharmaceutical industries, etc.
	[1:4:0]	Quality similar to the two previous systems, in terms of "water" and "solid particles". Meets Class Zero for the "oil" contaminant with total safety.
	[1:2:1] [1:1:1]	Prevents vapor absorption when air comes into direct contact with hygroscopic materials (cement, resins, powdered or freeze-dried foods and pharmaceuticals). Prevents freezing when air is subjected to negative temperatures. Applied in the generation of gases of very high purity.
	[1:2:1] [1:1:1]	Low dew point and maximum particle retention are essential in the manufacture of optical fibers, chips, critical instrumentation, steelmaking, nuclear reactors, etc.
	[1:2:0] [1:1:0]	Quality similar to the two previous systems, in terms of "water" and "solid particles". Meets Class Zero for the "oil" contaminant with total safety.

1 Energy Plus and Titan Plus dryers have integrated pre and post-filters  
2 only if the compressed air inlet temperature is < 25°C

Install an AQUA + condensate treatment system.



IMPRINTS OF OUR HISTORY





# AFTER-SALE SERVICES



96% OF CUSTOMERS FULLY SATISFIED

In an Annual ISO 9001 Audited Survey, we achieved a 96% customer satisfaction rate for Technical Assistance. This percentage corresponds to the evaluations above 7 (seven), on a scale of 0 (zero) to 10 (ten).

This success is due to over 70 authorized workshops and 200 accredited technicians throughout American continent, supported by an exclusive partnership with National Service for Industrial Training for mechanic training, making our After-Sales Service the most acclaimed in the market.



Typical facade

## COMPREHENSIVE INVENTORY OF ORIGINAL PARTS



MAXIMUM EFFICIENCY IN AFTER-SALES SERVICE



**70** WORKSHOPS  
CERTIFIED

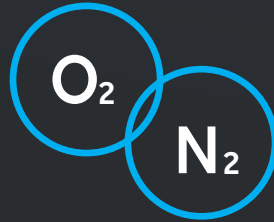
**200** SPECIALIZED  
TECHNICIANS

# OUR SOLUTIONS



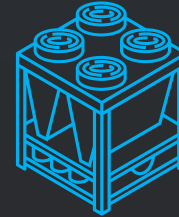
## COMPRESSED AIR

- COMPRESSORS
- DRYERS AND FILTERS
- RESERVOIRS
- 100% ALUMINUM PIPING



## OXYGEN & NITROGEN

- OXYGEN GENERATORS  
PSA / VSA ON SITE
- NITROGEN GENERATORS  
PSA ON SITE



## INDUSTRIAL REFRIGERATION

- WATER CHILLERS
- ULTRA AIR AND GAS COOLERS (-35°C)
- THERMOCHILLERS
- DRY COOLERS



## BIOGAS & CNG

- COMPRESSORS FOR BIOGAS, BIOMETHANE AND CNG
- BOOSTERS
- CHILLERS
- DISPENSERS

e-line

ROTARY SCREW COMPRESSORS



4 to 25 hp

REFRIGERATION DRYERS



20 to 250 pcm

ABSORPTION DRYERS



6 to 32 pcm

COALESCING FILTERS



25 to 300 pcm

AUTOMATIC DRAIN VALVES



electronic & magnetic

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