

PRIMEIRO FABRICANTE  
DE COMPRESSORES DO  
MUNDO CERTIFICADO

**ISO 50001**  
GESTÃO DE ENERGIA

ULTRA-COOLER  
COMPRESSED AIR

**METALPLAN**  
CHILLERS



# 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.

1980

1986 FOUNDATION  
1987 AIR TANKS AFTERCOOLERS FILTERS

1990

1992 OWN HEADQUARTERS  
1993 ELECTRONIC DRAINS  
1994 COMPRESSED AIR DRYERS

2000

2002 ISO 9001 QUALITY MANAGEMENT  
2003 CHILLERS

2010

2004 AIR AND GAS ULTRA-COOLERS  
2006 ROTARY SCREW COMPRESSORS  
2011 ALUMINUM PIPES/FITTINGS  
2012 ISO 50001 ENERGY MANAGEMENT  
2014 PSA NITROGEN GENERATORS  
2015 WATER/OIL SEPARATORS  
2019 MEDICAL COMPRESSED AIR MODULES

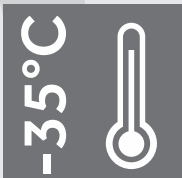
2020

2021 PSA OXYGEN GENERATORS  
2022 BIOGAS/BIOMETHANE, CO<sub>2</sub> AND CNG  
2024 USA SUBSIDIARY

2030

The companies of the **Jacto** group are focused on innovative solutions that represent significant gains in productivity and quality. About 20 years ago, **Unipac** introduced the **SubZero** into its plastic packaging blowing line. Currently, **Unipac** has ten **SubZero** units, which contribute significantly to the production of parts ranging from 5 to 200 liters.



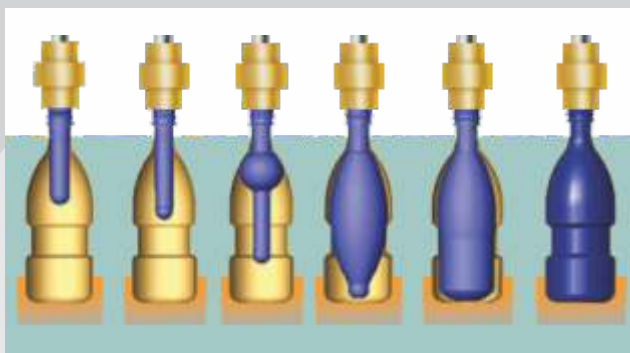


## SUPER-COOLED COMPRESSED AIR FOR PLASTIC PACKAGING BLOWING AND OTHER APPLICATIONS

Compressed air at  $-35^{\circ}\text{C}$  increases the blowing speed of plastic parts by up to 80% compared to compressed air at ambient temperature.

With the help of a new blowing pin, air renewal during blowing, and an increase in parison extrusion capacity, the cooling time/permanence of the part in the mold can be drastically reduced, with a notable gain in productivity.

There is also more quality and uniformity in the part, as its cooling occurs on both the internal (super-cooled air) and external (chilled water in the mold) surfaces.



# SUBZERO

## ULTRA-COOLER COMPRESSED AIR



### OPERATING PRINCIPLE

Upon entering the SubZero, compressed air is treated according to ISO 8573 quality class [1:2:1], with a dew point below  $-60^{\circ}\text{C}$ .

This procedure prevents the freezing of any moisture trace inside the SubZero when compressed air is cooled to  $-35^{\circ}\text{C}$ .

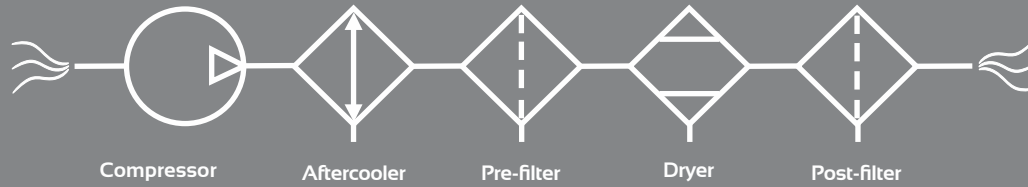
### TECHNICAL DATA

MODEL	NOMINAL FLOW		MINIMUM FLOW		REGENERATION FLOW		CONNECTIONS AIR	DIMENSIONS (mm)		
	pcm	m <sup>3</sup> /h	pcm	m <sup>3</sup> /h	pcm	m <sup>3</sup> /h		length	height	width
SUBZERO 140	80	140	40	70	15	25	3/4"	1500	1720	800

# 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

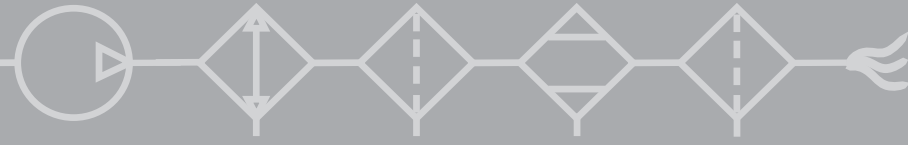
ISO 8573 is the international reference for compressed air systems, focusing on contamination levels.

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
	<p><b>[1:6:1]<sup>2</sup></b></p>	<p>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.</p>
	<p><b>[1:6:1]<sup>2</sup></b> <b>[1:6:0]<sup>2</sup></b></p>	<p>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.</p>
	<p><b>[1:4:1]</b></p>	<p>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.</p>
	<p><b>[1:4:0]</b></p>	<p>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.</p>
	<p><b>[1:4:0]</b></p>	<p>Quality similar to the two previous systems, in terms of "water" and "solid particles". Meets Class Zero for the "oil" contaminant with total safety.</p>
	<p><b>[1:2:1]</b> <b>[1:1:1]</b></p>	<p>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.</p>
	<p><b>[1:2:1]</b> <b>[1:1:1]</b></p>	<p>Low dew point and maximum particle retention are essential in the manufacture of optical fibers, chips, critical instrumentation, steelmaking, nuclear reactors, etc.</p>
	<p><b>[1:2:0]</b> <b>[1:1:0]</b></p>	<p>Quality similar to the two previous systems, in terms of "water" and "solid particles". Meets Class Zero for the "oil" contaminant with total safety.</p>

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

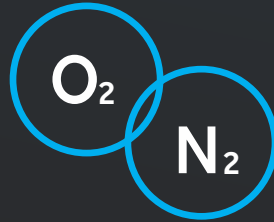


# OUR SOLUTIONS



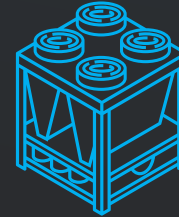
## COMPRESSED AIR

- 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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FIRST COMPRESSOR  
MANUFACTURER IN THE  
WORLD ACCREDITED

**ISO 50001**  
ENERGY MANAGEMENT