

# CONDENSATE REMOVAL AND AIR TREATMENT

Compressed air is an efficient energy source used for many applications and processes. Its optimal use—and better air quality—depends on the removal of all condensates. Group 1 products provide solutions for removing and treating condensates and contaminants.

## COMPRESSED AIR AND WATER

Ambient air contains moisture in the form of water vapor. A compressor converts 7 volumes of ambient air into 1 volume of compressed air. This compression process concentrates water vapor and increases air temperature. As a result, exhaust air is warm and moisture-laden. As it flows through the system pipes, the compressed air cools and the water vapor condenses into liquid. The dewpoint is the temperature to which the air must be exposed for it to continue condensing water droplets. The dryer the air, the lower its dewpoint.



For information purposes, this table shows that a 25 HP compressor can generate close to 200 L of water over an 8-hour operating period, depending on the temperature.

LITERS OF WATER PRODUCED BY A 25 HP COMPRESSOR AFTER 8 HOURS									
Ambient air temperature °C	% Humidity								
	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
38	47.7	70.9	94.1	118.7	141.8	166.4	189.6	212.8	237.3
32	35.6	51.8	69.6	87.3	105.0	121.4	139.1	156.8	174.6
27	25.9	38.2	50.5	62.7	76.4	88.6	101.0	113.2	126.8
21	17.7	27.3	35.5	45.0	54.5	61.4	72.3	81.8	90.0
16	12.3	19.1	25.9	32.4	38.2	45.0	50.5	57.3	64.1
10	9.5	13.6	17.7	21.8	27.3	31.4	35.5	39.6	45.0
4	5.5	9.5	12.3	15.6	17.7	21.8	24.5	27.3	30.0
-1	4.1	5.5	8.2	9.5	12.3	13.6	16.4	17.7	20.5
-7	2.7	4.1	5.5	6.8	7.7	8.6	9.5	10.9	12.3
-12	1.4	2.3	3.2	3.6	4.5	5.5	6.4	6.8	8.2

## WATER LEADS TO CORROSION

The water that builds up in the compressor tank and in the piping is a source of oxidation that can cause significant damage:

- Corrosion or rust in the compressed air system
- Malfunction or premature wear of tools and equipment
- Premature wear and frequent maintenance of FRLs (Air treatment at point of use)
- Blocked valves and openings
- Contaminated finished goods (contaminated paint, proliferation of bacteria and microorganisms)
- Higher maintenance and downtime costs
- More compressed air leaks (less efficient and higher electricity costs)
- Diminished productivity from pressure drops

It's important to treat air at the compressor outlet to prevent these issues. Using an aluminium piping system is also an optimal solution as it will not corrode.

## OTHER CONTAMINANTS IN THE SYSTEM

Ambient air is a mixture of gases and millions of solid particles. These particles can be harmful to a compressed air system and to the quality of finished goods, especially at high concentrations and high speeds.

Lubricated compressors also contribute to air contamination. Oil that makes its way into the system combines with water and other contaminants to form a thick, viscous substance that leads to even more damage at the point of use.

## Top 10 contaminants in a compressed air system



Atmospheric dirt  
Rust or corrosion  
Deposits from pipe walls



Water vapor  
Condensed water  
Water aerosol



Liquid oil  
Oil aerosol  
Oil vapor



Micro-organisms