ELGi®
Always Better.

AR N SERIES

Non-Cycling Refrigerated Air Dryer

Efficient and Reliable Moisture Elimination

20 - 528 cfm | 0.57 - 14.95 m^3/min

AiRMATE™
AIR ACCESSORIES

AR N SERIES

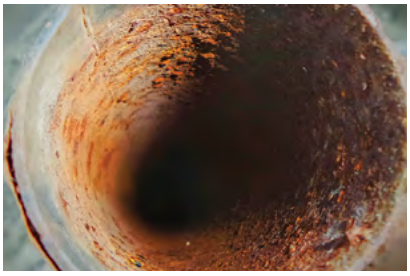
INVEST IN AIR QUALITY

Atmospheric air contains humidity in the form of water vapour. Under various temperature and pressure conditions, this vapour transitions into a liquid state, potentially causing disruptions in downstream processes reliant on compressed air.

To avoid the risk of damage and minimize downtime, it is crucial to eliminate this moisture from the compressed air.

ISSUES ARISING DUE TO THE PRESENCE OF MOISTURE IN COMPRESSED AIR

It causes damage and disrupts the operation of air-driven equipment and instruments.



It corrodes the compressed air piping, leading to leaks and the introduction of impurities in the air.

It results in the degradation of product quality and the growth of microbial contaminants in industries where air comes into contact with the end user's products, such as in food, pharmaceuticals, and chemicals.

AR N SERIES

The ELGi AR N Series ensures the elimination of moisture from compressed air, maintaining a consistent dew point. This enhances the longevity of downstream equipment and raises the product's quality to unprecedented levels.

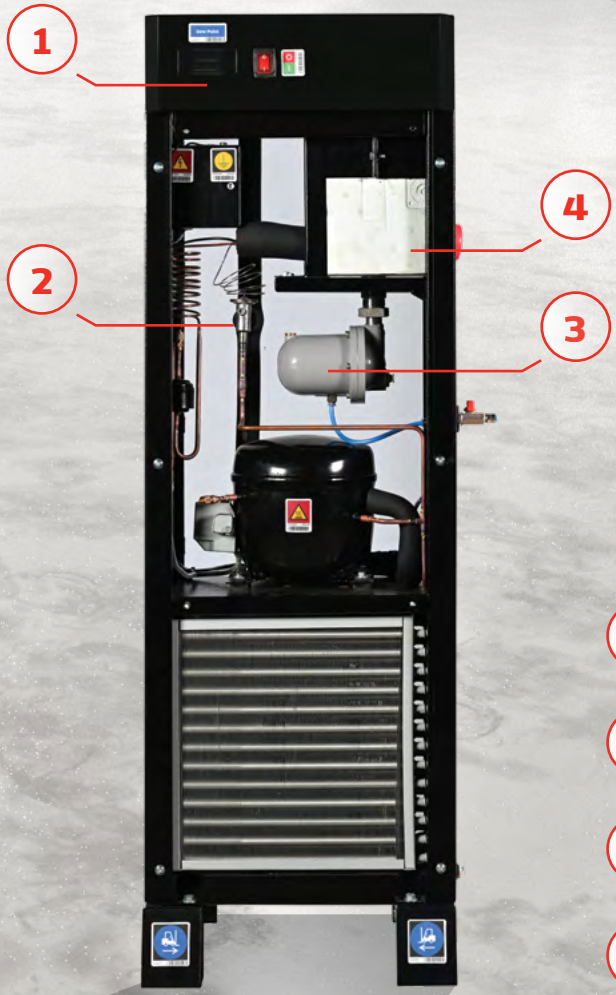
HASSLE-FREE UPGRADATION PROCESS

Switching from standard R134a gas to R513a gas is easier than ever. This smooth transition requires minimal component changes, making it cost-effective and hassle-free.

COMPONENTS OF EXCEPTIONAL RELIABILITY

AR N SERIES Non-Cycling Refrigerated Air Dryer is constructed with highly efficient and dependable components, aimed at minimizing breakdown costs.

AR N Series
NON-CYCLING REFRIGERATED AIR DRYER



1. DEW POINT INDICATOR
2. HOT GAS BYPASS VALVE
3. AUTO DRAIN VALVE
4. EVAPORATOR

Features and Benefits

Dew Point Indicator

Accurately Indicates the dryer's operating zone and alarms.

Auto Drain Valve (Zero-loss)

It efficiently separates moisture from the air without any pressure loss, ensuring the system operates at its optimal performance level.

Hot Gas Bypass Valve

Ensures the secure operation of the compressor, all the while upholding a consistently stable dew point temperature, ensuring efficient and safe performance.

Evaporator

Our high-efficiency stainless steel evaporator chills air to specified dew point temperature, ensuring consistent cooling and long-lasting performance thanks to its exceptional corrosion resistance.

EFFICIENT:
95% of the material is used to transfer heat.

COMPACT:
Brazed plate heat exchangers are extremely compact with better insulation compared with other technologies.

NON-CORROSIVE:
Highly resistant to corrosion.

UNIQUE DESIGN FEATURES

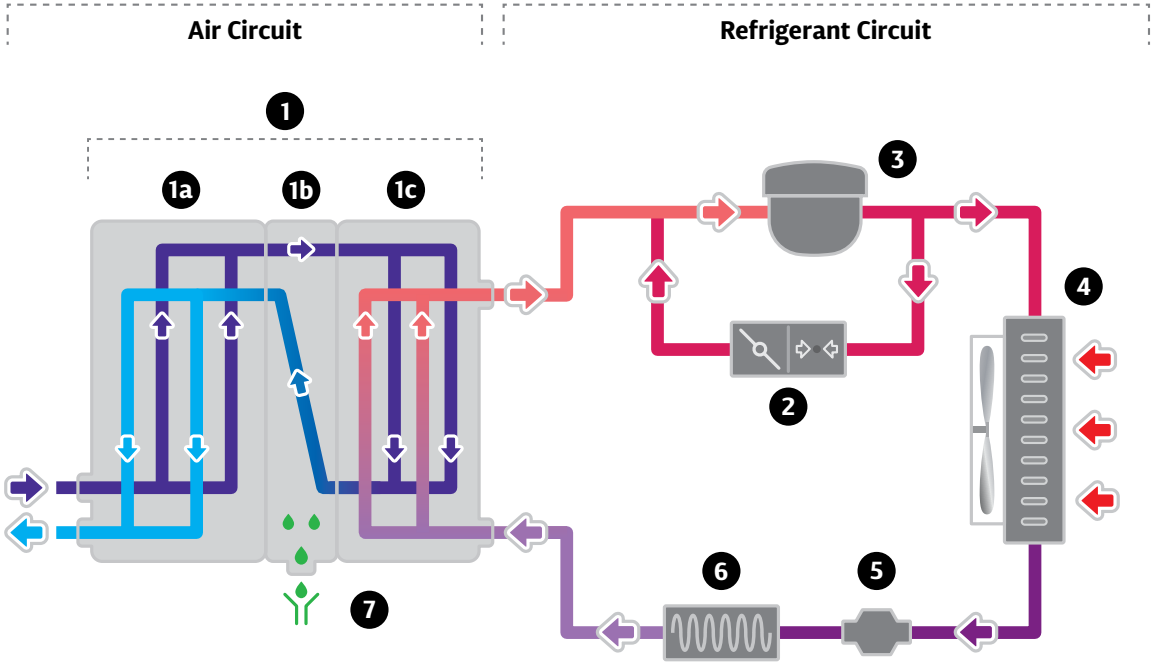
COMPACT DESIGN

Compact air dryer minimizes footprint, wall-mount option up to 40 cfm offers ultimate space saving in production facilities, workshops, garages.

SERVICE-FRIENDLY DESIGN

Features an accessible design for simplified service and maintenance procedures, this product minimizes downtime and costs.

Schematic Diagram



Refrigerant circuit

- Gas at normal temperature and low pressure
- Gas at high temperature and pressure
- Gas/Liquid at normal temperature and high pressure
- Liquid at low temperature and low pressure

Air circuit

- Wet compressed air in
- Dry compressed air out

1. BPHE-Evaporator
1a. Air-air heat exchanger
1b. Moisture separator
1c. Air-refrigerant heat exchanger
2. Hot gas bypass valve
3. Refrigerant compressor
4. Refrigerant condenser
5. Refrigerant filter
6. Capillary tube
7. Auto drain valve

How it works?

- Within the evaporator, the wet compressed air enters the heat exchanger and gets cooled and reaches the dew point by exchanging the heat with outgoing cool, dry air, and the refrigerant.
- During this cooling process, water vapor in the compressed air condenses into water droplets.
- Accumulated moisture collects at the bottom of the heat exchanger.
- The collected moisture is subsequently drained.
- The refrigerant gas from the evaporator is compressed by the compressor, and hot refrigerant gas is pumped out.
- The temperature of the refrigerant gas is reduced in the air-cooled condenser.
- Filtration of refrigerant takes place in the liquid fine filter.
- The refrigerant's temperature is further reduced to the dew point as it passes through the thermostatic expansion valve/capillary tube before entering the evaporator.

Technical Specifications

Model	Inlet Flow		Pressure Drop	Max. Inlet Pressure	Max. Inlet Temperature	Inlet / Outlet Size	Electrical Input	Dimensions L x B x H			Gross Weight
	cfm	m^3/min	bar g	bar g	°C	BSP	V/Ph/Freq.	mm			kg
AR 020N	20	0.57	0.11	16	60	1/2" BSP F	230 / 1 / 50	387	581	499	40
AR 040N	40	1.13	0.14	16	60	1/2" BSP F	230 / 1 / 50	387	581	499	40
AR 080N	72	2.04	0.26	16	60	1/2" BSP F	230 / 1 / 50	416	332	1295	65
AR 100N	98	2.78	0.17	16	60	1-1/4" BSP F	230 / 1 / 50	416	332	1295	75
AR 150N	142	4.02	0.20	16	60	1-1/4" BSP F	230 / 1 / 50	416	350	1320	90
AR 210N	206	5.83	0.22	16	60	1-1/4" BSP F	230 / 1 / 50	500	405	1496	105
AR 310N	309	8.75	0.28	16	60	1-1/2" BSP F	400 / 3 / 50	600	454	1496	122
AR 400N	380	10.76	0.26	16	60	1-1/2" BSP F	400 / 3 / 50	640	504	1660	130
AR 500N	528	14.95	0.20	16	60	2" BSP F	400 / 3 / 50	640	452	1825	170

Note:

- Pressure dew point 3 °C for the reference condition ambient temperature 25 °C, Inlet temperature 35 °C, Pressure 7 bar
- Contact our sales representative for sizing of the dryer
- R134a for all the models
- Standard for Compressed air dryer- Specification & Testing is ISO 7183 - Table 2, Option A1
- Reference standard for Noise Level is ISO 2151, Second Edition
- Can be upgraded to R513a. Always consult ELGi professionals before attempting any refrigerant upgrades.
- Due to continuous engineering improvements, the specifications are subject to change without prior notice.

Correction Factor

The dryer's output is calculated at nominal conditions*, it is necessary to use correction factors to select correct dryer based on the operating conditions

Inlet Air Pressure (bar.g)	4	5	6	7	8	10	12	14
Factor F1	0.78	0.86	0.93	1	1.05	1.15	1.22	1.26

Ambient temp (°C)	<=25	30	35	40	45	50
Factor F2	1	0.98	0.95	0.89	0.8	0.67

Inlet temp (°C)	<=30	35	40	45	50	55	60
Factor F3	1.15	1	0.84	0.71	0.59	0.5	0.45

Dew point (°C)	3	5	7	10
Factor F4	1	1.1	1.21	1.39

*The nominal condition refers to an ambient temperature of 25°C with inlet air at 7 barg and 35°C.

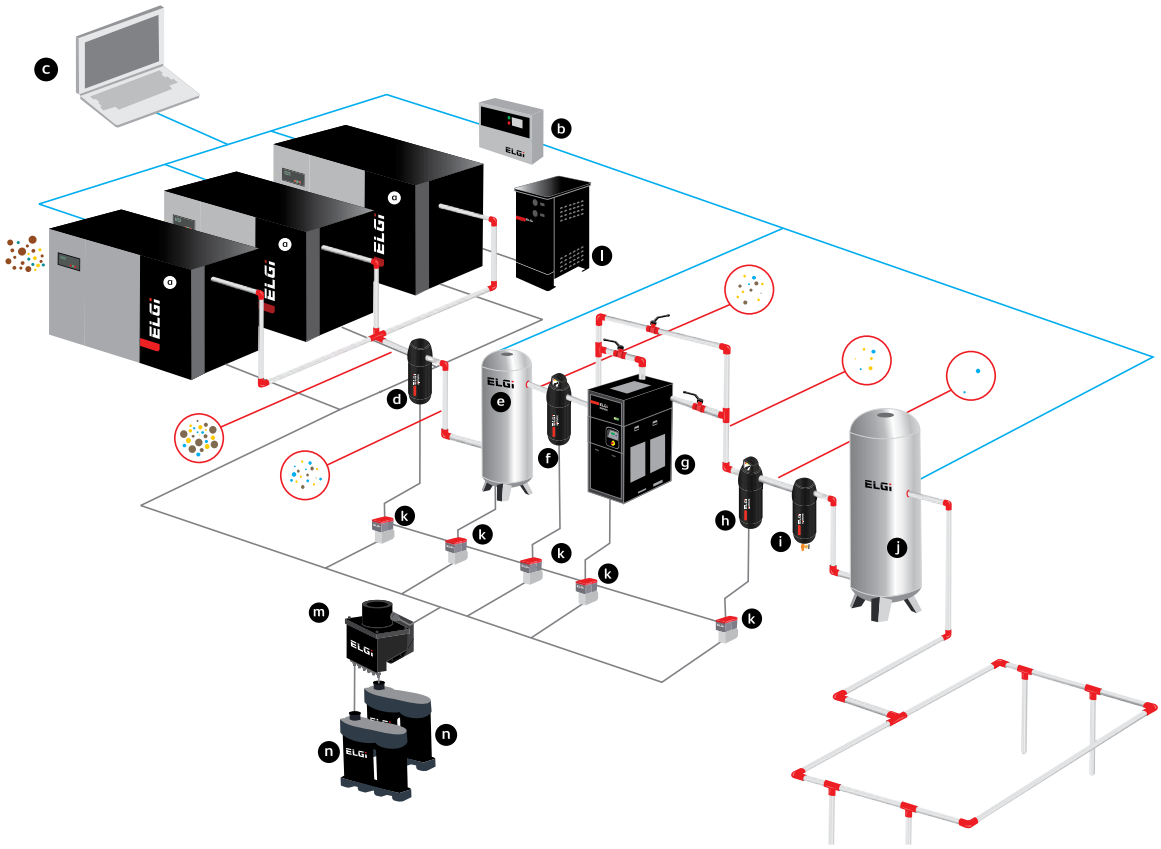
How to calculate dryer minimum nominal capacity to meet rated conditions = **Actual Rated Capacity / F1 x F2 x F3 x F4**

For Example :

Inlet air flow to dryer : 200 cfm
Inlet air pressure : 10 bar
Ambient temp. : 45 °C
Inlet air temp. : 55 °C
Dew Point required : 5 °C

Dryer cfm capacity required = 200/(1.15 x 0.8 x 0.5 x 1.1)
= 395 cfm

Compressed Air Supply System



a. EG Series Compressor
b. UPTIME Manager
c. Remote - Central Control
d. Moisture Separator
e. Airmate Receiver Wet
f. Airmate Filter: Pre-Coalescing
g. AR N Refrigerated Dryer
h. Airmate Filter: Fine Coalescing
i. Airmate Filter: Carbon
j. Airmate Receiver Dry
k. Drain Valve
l. Heat Recovery System
m. MAXI Distributor
n. EOS – Oil Water Separator

- Dust Particles
- Oil
- Moisture

ELGi

Always Better.

Elgi Equipments Limited is a global air compressor manufacturer with a broad line of innovative and technologically superior compressed air systems.

ELGi has consistently worked towards ensuring that its customers achieve their productivity goals while keeping the cost of ownership low. ELGi offers a complete range of compressed air solutions from oil lubricated and oil free rotary screw compressors, oil lubricated and oil free reciprocating compressors and centrifugal compressors, to dryers, filters, and downstream accessories.

The company's portfolio of over 400 products has found wide application across industries.

60+
Years of Customer-Centric Innovation

2 Mn+
Installations Worldwide

120+
Countries and Counting

DEMING PRIZE
2019

ELGi is the first globally established industrial air compressor manufacturer to be awarded the Deming Prize for Excellence in Total Quality Management.

ELGi®

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