

# ADSORPTION DRYER

## R-DRY CO2 400-20000 BVA

(Heat regenerated adsorption dryer)



### DESCRIPTION

R-DRY CO2 400-20000 adsorption dryers are designed for continuous separation of water vapour from compressed carbon dioxide thus lowering the dew point. R-Dry dryers have two columns that operate alternately. Adsorption takes place under pressure in the first column while the second column regenerates (heated ambient air for desorption + ambient air in vacuum mode for cooling). A dryer consists of two columns, filled with desiccant beads, a blower, heater, controller with an LCD display, valves, manometers, and a support construction. A proven and robust design enables efficient and reliable operation, fast installation and simple maintenance.

### DRYER RATING ACCORDING TO ISO8573-1

Solid particles <sup>(1)</sup>	Water <sup>(1),(2)</sup>	Oil <sup>(1)</sup>
2	1-3	1

<sup>(1)</sup>Typical result based on standard configuration and nominal operating conditions

<sup>(2)</sup>Dependant on a specific design. Class 2 when operated at nominal operating conditions.

### TECHNICAL SPECIFICATIONS

Operating pressure	4 – 25 bar
Operating temperature (inlet)	1,5°C to 42,5°C (for temperature >35°C apply correction factor)
Ambient temperature	1,5°C to 50°C (check also blower suction conditions)
Pressure dew point	-40°C (lower PDP on request)
Voltage, Frequency	400V, 50Hz (60Hz on request)
Protection class (controller)	IP 54
Standard communication protocols	Modbus TCP/IP, Profinet TCP/IP S7 (only with Siemens device) or Profinet IO
Filter requirement (inlet)*	Super fine coalescing; residual oil cont. <0,01mg/m3; 0,01µm
Filter requirement (outlet)*	Dust filter; 1µm
Column insulation	OPTIONAL (recommended)
Valve position switches	OPTIONAL
Optional communication protocols	Modbus RTU or Profibus
<b>DRYER TYPES</b>	<b>BVA (standard)</b>
Desorption	Blower ambient air (vac.)
Cooling	Blower ambient air (vac.)
Blower suction conditions max.	25% RH at 40°C
	37% RH at 35°C
	50% RH at 30°C
	70% RH at 25°C
	90% RH at 20°C
Compressed carbon dioxide losses	0%**

\* Filters are included as standard but not mounted on the dryer

\*\*A small quantity of compressed CO<sub>2</sub> is used to re-pressurise the vessels, to operate the valves and to measure dew point

### MATERIALS

Columns, construction, support	Steel / Stainless Steel (columns) for higher inlet temperatures and/or dew points
Column inner protection	/
Column and construction outer protection	Epoxy painted (if carbon steel)
Desiccant support screen	Stainless steel
Valves	Brass, aluminium, steel, stainless steel

Seals	NBR, FKM
Fittings, Screws, plugs	INOX, brass, steel (zinc plated)
Lubricant	Shell cassida grease RLS 2
Piping – Galvanized steel / Stainless Steel (for higher inlet temperatures and/or dew points)	
Filters – Aluminium / Stainless Steel (for higher inlet temperatures and/or dew points)	
Desiccant	Activated Alumina

**SIZES**

Model	Conn. IN & OUT <sup>(5)</sup>	Inlet flow [m <sup>3</sup> /h] <sup>(3)</sup>	A [mm]	B [mm]	C [mm]	Mass [kg]	Vessel Volume [l] <sup>(6)</sup>	Blower power [kW]	Heater power [kW]	Filter
R-DRY 400	DN50	390	1400	800	2270	1000	108	1,3	3,5	AF 0476
R-DRY 600	DN50	590	1500	810	2320	1400	167	1,6	5,5	AF 0706
R-DRY 780	DN50	780	1700	800	2350	1800	221	1,6	7	AF 0706
R-DRY 1000	DN50	930	1750	950	2380	1900	266	1,6	8	AF 0946
R-DRY 1200	DN80	1150	1900	1000	2550	2200	333	1,6	10	AF 1506
R-DRY 1600	DN80	1600	2150	1000	2620	2600	474	4	14	AF 1756
R-DRY 2000	DN100	1950	2200	1200	2750	3400	583	4	17	AF 2006
R-DRY 2500	DN100	2530	2430	1200	2750	3800	769	7,5	22	AF 2406
R-DRY 3000	DN100	2990	2600	1200	2880	4000	917	8,5	26	BF 300
R-DRY 3600	DN100	3680	2800	1350	2850	4800	1146	8,5	32	BF 450
R-DRY 4100	DN125	4100	3000	1350	2850	5100	1291	8,5	35	BF 450
R-DRY 5000	DN125	4990	3200	1500	2950	5900	1609	15	45	BF 600
R-DRY 6500	DN150	6550	3520	1750	3050	7200	2166	15	56	BF 900
R-DRY 7700	DN150	7700	4480	1900	2600	7900	2592	15	70	BF900
R-DRY 10000	DN200	10250	4300	2200	3550	12000	3584	22	95	BF 1200
R-DRY 12000	DN200	11700	4400	2500	3550	14200	4173	Depends on project		BF 1200
R-DRY 14000	DN200	14800	4800	2600	3650	16800	5463	Depends on project		BF 1500
R-DRY 16000	DN200	16000	5000	3200	3650	18500	6201	Depends on project		BF 1800
R-DRY 18000	DN250	18200	5200	3500	4200	20000	6982	Depends on project		BF 1800
R-DRY 20000	DN250	20200	6000	3500	4350	23000	7820	Depends on project		BF 2500

<sup>(3)</sup>Refers to 1bar(a) and 20°C at 7 bar operating pressure , inlet temperature 35°C and pressure dew point at outlet -40°C

<sup>(5)</sup>Refers to dryer inlet and outlet connection without filters.

<sup>(6)</sup>Volume per vessel

**CORRECTION FACTORS**

To calculate the correct capacity of a given dryer based on actual operating conditions, multiply the nominal flow capacity by the appropriate correction factor(s).

$$Corrected\ capacity = Nominal\ inlet\ flow\ capacity \times c_{OP} \times c_{OT}$$

**OPERATING PRESSURE**

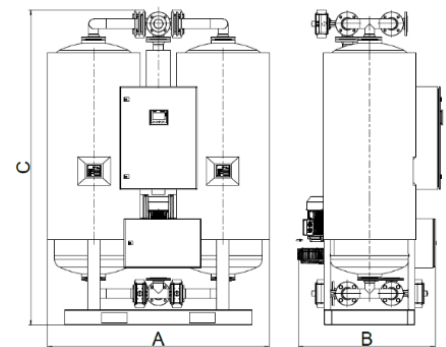
[bar]	4	5	6	7	8	9	10	11
[psi]	58	72	87	100	115	130	145	160
c <sub>OP</sub>	0,63	0,75	0,88	1	1,13	1,25	1,38	1,50

**OPERATING TEMPERATURE**

[°C]	25	30	35	40	42,5
[F]	77	86	95	104	108
c <sub>OT</sub>	1	1	1	0,7	0,52

**DEW POINT**


[°C]	-40 °C	-40 °C	-40 °C
[F]	-40 F	-40 F	-40 F
c <sub>D</sub>	1	1	1



**MAINTENANCE**

For maintenance, please follow the operating manual. Check the dryer operation weekly.

INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE

	Our quality management system is certified by BUREAU VERITAS in conformity with ISO 9001:2008 Reg. number: 200285
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