

Air & Gas Dryers:

Heatless Air Dryers

Operating principle

In Heatless Dryers, two vessels filled with desiccant are provided, which cycle automatically, producing Dry air continuously. In these units, wet air enters the bottom of one vessel and passes upwards through the desiccant bed where the moisture is adsorbed. The dry air comes out from the top. A small portion of Dry air is passed downward through the desiccant bed in the second vessel, which is under re-generation. Moisture laden purge air is then vented out to atmosphere. The purge loss is around 7.5% of the total air flow. At preset interval, the vessels changeover automatically, and Dry air is available continuously, without any surges.

Simple Design / Easy operation

This is the simplest type of Air Dryer with Activated Alumina / Molecular sieves drying agent. This design is virtually **maintenance free, fully automatic**, and requires no attention for years. Heatless type dryers do not require any heating for re-generation and therefore are very simple in design and maintenance free.

Low Investment / Low operating cost

- Due to its inherent simple design, investment in this type of dryer is the cheapest and the payback on this investment is very quick.
- Low temperature operation reduces corrosion in towers and desiccant lasts longer.
- Power requirement is single phase 220 /110 volts,50 Hz , 60 watts only for solenoid valves operation.



SPECIFICATIONS FOR HEATLESS COMPRESSED AIR DRYER

MODEL NO.	M3/HR	CFM	PIPE LINE SIZE (MM)	Approx. Space Requirement (mm)		
				L	W	H

IECHL-01	15	10	15NB	600	600	750
IECHL-02	35	20	15NB	600	600	1000
IECHL-03	50	30	15NB	600	600	1200
IECHL-04	85	50	25NB	700	700	1800
IECHL-05	125	75	25NB	700	700	1800
IECHL-06	170	100	25NB	800	800	1800
IECHL-07	250	150	40NB	800	800	2200
IECHL-08	350	200	40NB	1000	1000	2200
IECHL-09	500	300	40NB	1200	1200	2400
IECHL-10	700	400	50NB	1200	1200	2400
IECHL-11	850	500	50NB	1400	1400	2400
IECHL-12	1000	600	50NB	1400	1400	2400
IECHL-13	1300	750	80NB	1500	1500	2500
IECHL-14	1700	1000	80NB	1600	1600	2600
IECHL-15	2125	1250	80NB	1600	1600	2600
IECHL-16	2550	1500	100NB	2000	2000	3000
IECHL-17	3400	2000	100NB	2000	2000	3000
IECHL-18	4250	2500	100NB	2000	2000	3000
IECHL-19	5100	3000	125NB	2000	2000	3000
IECHL-20	5950	3500	150NB	2000	2000	3000
IECHL-21	6800	4000	150NB	2000	2000	3000

- The above compressed air dryer and gas dryer capacities are rated at an inlet temp. of 40°C, 7Kg/cm² (g) , pr (0.7 Mpa). and at an outlet dew point of (-) 40°C
- Supply voltage of 220V- 50Hz - Single phase.

- Above data is only for estimation and can be changed without notice. For special Air & Gas drying systems and higher capacities Please [e mail your requirements to us.](#)

Split -Flow No purge loss dryers

The wet Air / Gas stream is split at the air dryer inlet through a differential distributor valve. Part of this air / gas stream is passed through an external heater and heated to a regeneration temperature of 160-180°C, then it is fed to the Adsorber desiccant tower A containing Silica gel or activated Alumina / Molecular Sieves. Under regeneration thus removing out the moisture from the desiccant bed. A water cooled / air cooled aftercooler condenses the desorbed moisture which is discharged regularly through the automatic drain trap . After condensation this Air/ Gas stream joins the main incoming air stream and goes for drying to the other tower B under drying. Normally a Cycle time of 8+8 hrs is utilized to complete one cycle of operation. After each operation the changeover is effected automatically.

This type of dryer provides an outlet Dew Point of -40 deg C. The Air dryer can be supplied with standard accessories like Simplex / Duplex Prefilters / Afterfilters, Flowmeters, dew point meters etc. The system is fully automatic / semi automatic , with Timer / PLC controls with feedback to/ from main DCS.

APPLICATIONS --

- Instrument air dryers for power plants Refineries & Petrochemicals , chemical & fertilizer plants etc.
- CNG Compressed Natural Gas Drying & conditioning plants , Gas Dryers.
- Hydrogen Gas Drier for generator Cooling Application.



SPECIFICATIONS FOR SPLIT FLOW NO PURGE LOSS TYPE AIR DRYERS

MODEL NO.	CAPACITY		PIPE LINE SIZE mm	POWER CONSUMPTION KWH/DAY	COOLING WATER REQT. LPM	APROX. OVERALL DIMENSIONS		
	M ³ /HR	CFM				LENGTH mm	WIDTH mm	HEIGHT mm
IECSF-01	163.0	100	25	43.2	14	1600	1400	1800
IECSF-02	244.5	150	25	64.8	21	1800	1500	2000
IECSF-03	326.0	200	25	86.4	28	1800	1500	2000
IECSF-04	489.0	300	40	129.6	42	2000	1500	2200
IECSF-05	652.0	400	40	172.8	56	2000	1500	2200
IECSF-06	815.0	500	50	216.0	70	2000	1800	2200
IECSF-	978.0	600	50	259.2	84	2200	1800	2400

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IECSF -08	1222. 0	750	65	324.0	105	2400	1800	2400
IECSF -09	1630. 0	100 0	65	432.0	140	2500	2000	2600
IECSF -10	2037. 0	125 0	80	518.0	175	2500	2000	2800
IECSF -11	2445. 0	150 0	80	648.0	210	2500	2000	3000
IECSF -12	3260. 0	200 0	100	842.0	280	3000	2000	3000
IECSF -13	4075. 0	250 0	100	1030.0	350	3000	2000	3000

The above air dryer capacities are rated at an inlet temp. of 40°C., 7kg/ Cm²g Pr. (0.7 Mpa) and at an outlet dew point of (-) 40°C. at Atm. Pressure, Supply Voltage of 415 V- 3 PH- 50 HZ or 220V-1PH-50

Hz.

Heat Of Compression Air Dryers

HOC type dryer has NIL operating cost. In this design hot air coming out from Air compressor discharge is used for regeneration of desiccant and so no external electric regeneration heating is required. This design easily produces dry air of (-)40°C Dew point.

A. Characteristics Air capacity: 500 to 6000 NM³/hr

B. Dew point: Up to (-)40°C

Operating principle -Compressed air, directly from Air compressor discharge is taken to Air dryer inlet through insulated pipelines, at 120°C(minimum) temperature. This hot air is passed through one drying vessel where saturated desiccant is regenerated by this hot air. After picking up moisture from desiccant bed, the air is cooled in an intermediate cooler. Here moisture is condensed and removed by auto drain valve. Cooled to 40°C, this air passes through the second drying vessel where moisture gets adsorbed and Dry air comes out. Cycle time is 4 hours regeneration and 4 hours drying. After 4 hours the changeover of vessels takes place automatically. In regeneration cycle heating of the bed is for 2 hours, and thereafter the bed is cooled by dry air. After bed cooling, Dry air is again cooled to 40°C in another cooler and delivered as Dry air at 40°C temp.

Features

- * No power requirement for regeneration
- * No loss of compressed air
- * Maintenance is easy as there are no Blower, no Heaters, and no moving parts
- * Maintains desiccant adsorption capacity to give (-)40°C Dew point for around 5 years
- * Low-pressure drop across the Dryer - less than 0.3kg/cm²
- * Skid mounted construction on channel base frame
- * Fully Automatic, continuous operation
- * Negligible operating cost. It neither requires Electric power for regeneration, nor there is any loss of compressed air.

SPECIFICATIONS FOR HEAT OF COMPRESSION TYPE AIR DRYERS

MODEL NO.	CAPACITY		PIPE LINE SIZE mm	COOLING WATER REQ ^T .LPM	APPROX. OVERALL DIMENSIONS		
	M ³ /HR	CFM			LENGHT mm	WIDTH mm	HEIGHT mm
IECHOC-01	81.5	50	25	12	1400	1200	1800
IECHOC-02	122.7	75	25	18	1500	1200	1800
IECHOC-03	163.0	100	25	24	1600	1400	1800
IECHOC-04	244.5	150	40	36	1800	1500	2000
IECHOC-05	326.0	200	40	48	1800	1500	2000
IECHOC-06	489.0	300	50	72	2000	1500	2200
IECHOC-07	652.0	400	50	96	2000	1500	2200
IECHOC-08	815.0	500	65	120	2000	1800	2200
IECHOC-09	978.0	600	65	144	2200	1800	2400
IECHOC-10	1222.0	750	80	180	2400	1800	2400
IECHOC-11	1630.0	1000	80	240	2500	2000	2600
IECHOC-12	2037.0	1250	100	300	2500	2000	2800
HOC-13	2445	1500	100	360	2500	2000	3000

HOC-15	3260.0	2000	125	480	3000	2000	3000
HOC-16	4075.0	2500	125	600	3000	2000	3400

The above capacities are rated at an inlet temp. of 40°C., 7kg/ Cm²g Pr. (0.7 Mpa) and at an outlet dew point of (-) 40°C. at Atm. Pressure, Supply Voltage of 220 V-1 PH- 50 HZ or 415V-3PH-50 Hz.

Above data is only for estimation and can be changed without notice. For special systems and higher capacities contact us.

Special Note : Energy Saving Heat of Compression type air dryer can be used only with oil free air compressors.

Refrigerated Air Dryers Characteristics

- Air capacity: 50 to 15000 NM³/hr
- Dew point: Up to (-)23°C
- Operating pressure: 0.5 to 100 kg/ cm²g

In small Air capacities upto 500 NM³/hr we offer small Model. This model features very simple and very compact design consisting of a heat exchanger with freon tubes. Air flows outside the tubes and gets cooled to 3°C temperature. Moisture condenses out and is drained continuously. The out going air is of (+)3°C Pressure Dew Point which is equivalent to approx (-)23°C dew point at atmospheric pressure.

Refrigerated Air Dryers

For larger air drying capacities, typically above 500 NM³/hr, we supply skid mounted unit consisting of Air-Freon chiller, Air to Air pre-Cooler and a moisture separator. First air is precooled with outgoing chilled air to around 25°C and then it is cooled in a freon cooler to (+)3°C temperature. This reduces power consumption. Outgoing dry air has (+)3°C Pressure Dew Point and comes out at around 25°C temperature. (+)3°C Dew Point is equal to around (-)23°C Atmospheric Pressure Dew Point.

Dew Point

(-)23°C is the best possible Dew Point achievable from Refrigerated Air Dryers. Lower Dew Point is not possible from Refrigerated Dryer as moisture condensed would start freezing on freon tubes if lower dew points are tried. This (-)23°C Dew point is adequate for most dry air applications and Instrument air requirements.

TECHNICAL SPECIFICATION

MODEL NO.	CAPACITY			PIPE LINE SIZE (MM)	AIR COOLED (AC) Power Consumption KW	WATER COOLED		Refrigerant
	CFM	M3 HR	NM3 HR			Power consumption KW	Water Consumption LPM	
IECRF-01	30	51	42	15	0.15	-	-	R-134A
IECRF-02	60	102	84	25	0.38	-	-	R-134A
IECRF-03	100	170	140	25	0.55	-	-	R-134A
IECRF-04	160	272	224	25	0.80	0.48	8	R-22
IECRF-05	200	340	280	40	1.14	0.61	10	R-22
IECRF-06	300	510	420	40	1.40	0.86	16	R-22
IECRF-07	400	680	560	40	1.88	1.00	20	R-22

IECRF-08	500	850	700	50	2.14	1.40	30	R-22
IECRF-09	600	1020	840	50	2.51	1.60	36	R-22
IECRF-10	700	1190	980	65	3.02	-	-	R-22
IECRF-11	750	1275	1050	65	-	1.94	45	R-22
IECRF-12	900	1530	1260	65	3.56	3.02	55	R-22
IECRF-13	1000	1700	1400	80	4.78	3.17	60	R-22
IECRF-14	1100	1870	1540	80	-	3.45	70	R-22
IECRF-15	1250	2175	1750	80	5.22	3.66	75	R-22
IECRF-16	1350	2295	1890	80	6.06	4.25	80	R-22
IECRF-17	1500	2550	2100	100	6.85	4.93	90	R-22
IECRF-18	1750	2975	2450	100	-	5.88	105	R-22
IECRF-19	1850	3145	2590	100	8.32	-	-	R-22
IECRF-20	2000	3400	2800	100	-	6.76	120	R-22
IECRF-21	2100	3570	2940	125	10.00	-	-	R-22

	0							
IECRF-22	2300	3910	3220	125	10.20	7.60	140	R-22
IECRF-23	2750	4675	3850	125	11.00	8.37	160	R-22
IECRF-24	3000	5100	4200	150	-	9.20	170	R-22
IECRF-25	3250	5525	4550	150	-	10.60	180	R-22
IECRF-26	3500	5950	4900	150	-	11.86	200	R-22
IECRF-27	3750	6375	5250	150	-	11.00	220	R-22
IECRF-28	4000	6800	5600	150	-	12.67	230	R-22
IECRF-29	4250	7225	5950	200	-	13.80	240	R-22
IECRF-30	4500	7650	6300	200	-	14.00	250	R-22
IECRF-31	4750	8075	6650	200	-	14.15	270	R-22
OECRF-32	5250	8925	7350	200	-	17.11	300	R-22

Above Ratings are at the following conditions : Inlet Air Temperature :
 40 °C
 Inlet Air Pressure : 7.0 Kg/cm²g (0.7 Mpa)
 Pressure Dew Point : 2 °C

NOTE : Refrigerated Air Dryers based on eco-friendly refrigerants like R-134a / 404a / 407c are available on request. For a QUOT please contact us

Internal Heater Dryers

This Desiccant air dryer provides an efficient, economical and easy to maintain method of drying compressed air and gases. The drying medium (Silica gel , Activated Alumina or Molecular Sieves) is contained in two carbon steel pressure vessels. While chamber I is drying, air is passed over an electrical heater embedded in chamber II and carries out the desorbed moisture of this chamber. This type of system utilizes about 2-3% of the compressed air as a purge. It is an ideal system for drying gases requiring ultra low drying up to (-80°C) dew point. Each column remains in line for about 6-8 hours. For regeneration, the desiccant is heated for about 3-4 hours and then cooled for another 3-4 hours before changeover. The operation is fully automatic. a semi automatic operation with the help of selector switches can also be provided. PLC controls are available as option.

DIOXIDE CO₂ , NITROUS OXIDE, OXYGEN etc.

APPLICATIONS - Ultra low Dew Point drying of Air & Gases Like NITROGEN , ARGON, CARBON



			PIPE LINE SIZE mm	POWER CONSUMPTION KWH / DAY/	APROX. OVERALL DIMENSIONS		
					LENGHT mm	WIDTH mm	HEIGHT mm
			25	14.40	1400	1400	1800
			25	21.60	1500	1500	2000
			25	32.4	1500	1500	2000
			25	43.2	1600	1600	2000
			40	64.0	1700	1700	2200
			40	86.4	1800	1800	2400
IECIHR-06	489.0	300	40	86.4	1800	1800	2400
IECIHR-07	652.0	400	50	110.0	2000	2000	2600
IECIHR-08	815.0	500	50	129.6	2200	2200	2600
IECIHR-09	978.0	600	50	172.8	2300	2300	2800
IECIHR-10	1222.0	750	65	194.4	2400	2400	2800

IECIHR-11	1630.0	1000	65	259.2	2500	2500	3200
IECIHR-12	2037.0	1250	80	302.4	2600	2600	3400
IECIHR-13	2445.0	1500	80	388.80	2800	2800	3400
IECIHR-14	3260.0	2000	100	518.4	2900	2900	3600
IECIHR-15	4075.0	2500	100	604.80	3000	3000	4000

The above air dryer capacities are rated at an inlet temp. of 40°C., 7kg/ Cm² Pr (0.7 Mpa). and at an outlet dew point of (-) 40°C. at Atm. Pressure, Supply Voltage of 220 V- 1 PH- 50 HZ or 415V-3PH-50 Hz.

Blower Heat Regenerated Dryers

This Compressed air dryer is similar to the Internal Heater type air dryer except that no compressed air is wasted. For regeneration, an external air blower provides the atmospheric air which is pre-heated in an external heater, to regenerate the desiccant bed in an open through system . Therefore no compressed air is wasted for regeneration. The unit can be offered in fully automatic mode or semi-automatic mode through push buttons.

APPLICATIONS - Drying of instrument air in Power Plants , Chemical & Fertilizer plants Etc.

MODEL NO.	CAPACITY		PIPE LINE SIZE mm	POWER CONSUMPTION KWH / DAY/	APROX. OVERALL DIMENSIONS		
	M ³ /HR	CFM			LENGHT mm	WIDTH mm	HEIGHT mm
IECBHR-01	163.0	100	25	60.00	1600	1400	1800
IECBHR-02	244.5	150	25	72.45	1800	1500	2000
IECBHR-03	326.0	200	40	101.70	1800	1500	2000
IECBHR-04	489.0	300	40	144.90	2000	1500	2200
IECBHR-05	652.0	400	50	195.76	2000	1500	2200
IECBHR-06	815.0	500	50	246.60	2000	1500	2200
IECBHR-07	978.0	600	50	289.75	2000	1800	2400
IECBHR-08	1222.0	750	65	369.91	2200	1800	2400
IECBHR-09	1630.0	1000	65	508.52	2400	1800	2600
IECBHR-10	2037.0	1250	80	594.92	2500	2000	2800
IECBHR-11	2445.0	1500	80	724.52	2500	2000	3000
IECBHR-12	3260.0	2000	100	949.53	3000	2000	3000
IECBHR-13	4075.0	2500	100	1210.08	3000	2000	3000

The above air dryer capacities are rated at an inlet temp. of 40°C., 7kg/ Cm² Pr. and at an outlet dew point of (-) 40°C. at Atm. Pressure, Supply Voltage of 220 V-1 PH- 50 HZ or 415V-3PH-50 Hz.