How It Works

Standard Design:

Moist, filtered compressed air enters the pressurized on-line desiccant-filled drying Tower 1 through valve (A). Up-flow drying enables the desiccant to strip the air stream of moisture.
Clean, dry compressed air exits through valve (E) to feed the air system. Tower 2 (when in regeneration mode) closes valve (B), then depressurizes to atmosphere through muffler (C).
Valves (D & G) open and the heater turns on. A portion of dry compressed air (purge air) is diverted before exiting (E) and passes through the heater. Hot dry purge air desorbs the moisture from the desiccant as it flows down through Tower 2 to exit at valve (D). Once desorbed, the heater turns off and cool dry purge air continues to pass until the desiccant bed is cooled. Finally, valve (D) closes and Tower 2 is repressurized. At a fixed time interval, valve (B) will open and Tower 2 will be placed on-line to dry the bed and valves (A & D) will close. Operations will switch and Tower 1 will be regenerated.

EMS Options With Fa Supercharger Design:

Whereas the standard design operates on a fixed time interval basis, Free-Air Supercharger versions manage the drying and regeneration cycles with precision for systems with variable air demands. The on-line Tower will continue to dry the air stream until the "moisture front" is detected. Only then will the switch-over sequence begin. In regeneration mode the FA Supercharger is engaged and a portion of dry purge air exits valve (F) to be injected into the Y-axis of the FA Supercharger. A3 Purge Technology™ draws ambient air into the X-axis to desorb the desiccant at better than 1:1 amplification. Sensors detect the retreat of the moisture front, disengages the FA Supercharger, eliminates the purge air usage and, initiates the repressurization cycle. The dry, pressurized off-line Tower will remain ready and isolated until sensors detect that the on-line drying Tower is saturated. Then, the switch-over will occur and the process will repeat.

Purge Air Operating Cost Comparison

Annual Cost of Compressed Purge Air

(constant operation at average air demand)

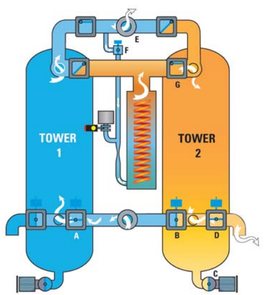
Air Capacity		Regeneration Cost by Technology [1]		
		Heatless Design (industry avg. 15% purge)	HPD Series (standard 7% purge)	HPD Series (w/Free-Air Supercharger 6% purge
flow	Nm^3/min			
100%	30	$ 20,585	$ 9,606	$8,234
90%	27	20,585	9,606	7,411
75%	23	20,585	9,606	6,176
50%	15	20,585	9,606	4,117
35%	10.5	20,585	9,606	2,882
20%	6	20,585	9,606	1,647

[1] Assumes 8760 hours, 10 cents per KwH, 3.73 Nm^3/min per kW

Performance Table

Controller	Pressure Dew Point		EMS Energy Savings Automatic
	-40℃	-20℃	
Standard	S	G	-
Optional Free-Air Supercharger	G	-	✓

S = Seasonal G = Guaranteed ✓ = Included



Shown with Optional Free-Air Supercharger

SPX

HPD Series

Externally Heated
Desiccant Air Dryers

SPX

HPD Series

Externally Heated
Desiccant Air Dryers

Externally Heated
Desiccant Air Dryers

HPD Series

HPD Series Specification

Model	Flow Capacity (Nm^3/min)	Heater Rated Output (kW)	Average (kW)	Dimensions (mm)			Inlet/Outlet Connections	Weight (kg)
				H	W	D		
HPD 8.5	8.50	4.5	2.00	2480	1207	1164	1-1/2" PT	617
HPD 11.3	11.33	6.0	2.67	2649	1346	1315	1-1/2" PT	806
HPD 14.1	14.16	6.0	3.34	2664	1346	1315	2" PT	806
HPD 16.9	16.99	8.0	4.01	2753	1397	1340	2" PT	897
HPD 21.2	21.24	10.0	5.01	2903	1524	1503	3" FLG	1054
HPD 25.4	25.49	12.0	6.01	2895	1524	1503	3" FLG	1061
HPD 29.7	29.73	14.0	7.01	2870	1626	1580	3" FLG	1277
HPD 36.8	36.81	16.0	8.68	2997	1676	1605	3" FLG	1509
HPD 42.4	42.48	19.0	10.00	2946	2032	1682	3" FLG	2311
HPD 50.9	50.97	23.0	12.00	2946	2032	1682	3" FLG	2311
HPD 62.2	62.30	27.5	14.70	3246	2159	1855	4" FLG	3517
HPD 73.6	73.62	32.0	17.40	3246	2159	1855	4" FLG	3517
HPD 90.6	90.61	39.0	21.40	3183	2464	2090	6" FLG	4066

* Rating Conditions : 37.8℃ inlet 6.9 bar inlet pressure, 100% relative humidity, 37.8℃ ambient temperature, and 0.35 bar pressure drop.
* Consult factory for larger models.

Inlet Flow

Inlet Flow capacities shown in the Specification have been established at an inlet pressure of 6.9 bar and a saturated inlet temperature of 38℃. To determine maximum inlet flow at other conditions, multiply the inlet flow from the Specification by the multiplier from Table 1 that corresponds to your operating conditions.

Dew Point

Outlet pressure dew point at rated inlet conditions of 6.9 bar and 38℃ saturated. Dew point varies slightly at other conditions. Consult the factory to determine exact outlet pressure dew point at your operating conditions.

Table 1

Pressure kgf/cm^2(psig)	Inlet Temperature ℃ (℉)						
	15.6(60)	21.1(70)	26.7(80)	32.2(90)	37.8(100)	43.3(110)	48.9(120)
4.2(60)	1.03	1.01	0.99	0.80	0.58	0.43	0.32
4.9(70)	1.10	1.08	1.07	0.94	0.68	0.50	0.37
5.6(80)	1.17	1.15	1.14	1.08	0.79	0.58	0.43
6.3(90)	1.24	1.22	1.20	1.18	0.89	0.66	0.49
7.0(100)	1.30	1.28	1.26	1.24	1.00	0.74	0.55
7.7(110)	1.36	1.34	1.32	1.30	1.11	0.82	0.61
8.4(120)	1.42	1.40	1.38	1.36	1.22	0.90	0.67
9.1(130)	1.48	1.46	1.44	1.42	1.33	0.99	0.74
9.8(140)	1.53	1.51	1.49	1.47	1.44	1.07	0.80
10.3(150)	1.58	1.56	1.54	1.52	1.50	1.16	0.87

Operating Conditions

HPD Model	max. working press. bar	min. operating press. bar	max. inlet air temp.	min. inlet air temp.	max. ambient temp.	min. ambient temp.
8.5-90.6	10.3	4.1	49℃	4.4℃	49℃	40℉

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Some specifications in this bulletin may change without notice.

Bulletin C715E, Rev.A (04/14)

Hankison

HPD Series

Externally Heated Desiccant Air Dryers

Slash Purge Air Energy Costs

Since 1948, compressed air users have relied on Hankison to provide compressed air treatment products with integrity. Global demand for Air Quality Class 3 and our advanced Ambient Air Amplification (A3) Purge Technology™ enables us to offer you externally heated purge desiccant dryers with dew point performance guaranteed from 8.5 to 90.6 Nm³/min.

Model HPD 1050

Standard HPD Series Dryers: −20°C to −40°C Pressure Dew Points

Designed for applications that were previously forced to accept a −40°C pressure dew point when simple protection against seasonal freezing is the issue. The standard design delivers ISO 8573.1 dew points between Class 2 and Class 3 automatically. Class 2 (−40°C) dew points protect against freezing during low ambient conditions and Class 3 (−20°C) dew points keep your air system bone dry during the heat of summer.

Applications that require Class 2 (−40°C) dew points year round simply need to select the Free−Air (FA) Supercharger option package.

ISO 8573.1 Quality Classes

Class	Solid Particles			Humidity & Liquid Water		Oil	
	Particle Size, d (micron)			Pressure Dew Point		Total concentration, Aerosol, Liquid, and Vapor	
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	°C	°F	mg / m³	ppm w/w
	Maximum Number of Particles per m3						
0	As Specified			As Specified		As Specified	
1	100	1	0	≤ −70	≤ −94	≤ 0.01	≤ 0.008
2	100,000	1,000	10	≤ −40	≤ −40	≤ 0.1	≤ 0.08
3	Not Specified	10,000	500	≤ −20	≤ −4	≤ 1	≤ 0.8
4	Not Specified	Not Specified	1,000	≤ +3	≤ +38	≤ 5	≤ 4
5	Not Specified	Not Specified	20,000	≤ +7	≤ +45		
6				≤ +10	≤ +50		
				Liquid Water Content, Cw g/m³			
7				Cw ≤ 0.5			
8				0.5 < Cw ≤ 5			
9				5 < Cw ≤ 10			

Per ISO8573−1: 2001(E)

Advanced Design

Self−seated check valves for tight shutoff and durability

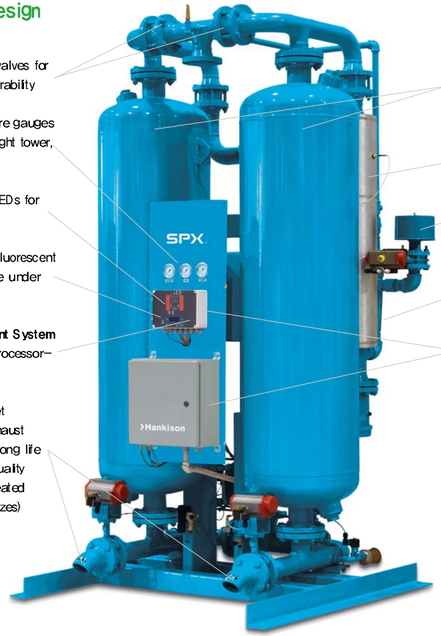
High−quality pressure gauges display left tower, right tower, and purge pressure

Function Indicator LEDs for easy monitoring

Easy−view vacuum fluorescent text display is visible under any condition

Energy Management System − advanced microprocessor−based control

Premium quality inlet switching/purge exhaust butterfly valves for long life on 3" and larger (Quality pneumatic angle−seated valves for smaller sizes)



Towers filled with extra, highgrade activated alumina to deliver superior performance

Low−watt density heater saves energy and prevents premature desiccant aging

Heavy−duty air intake filter

Optional **EMS** controlled **Free−Air−Supercharger** uses **A³ Purge Technology™** to reduce purge costs

NEMA 4 Construction

Energy Savings and −40°C Pressure Dew Points

Energy Management System

The EMS uses rugged temperature & humidity sensing technology that does not require calibration. Constant desiccant bed monitoring ensures stable dew point control. Algorithmbased A3 Purge Technology™ controls precisely engage the FA Supercharger when needed to manage the bed regeneration cycles and boost the airflow through the tower. Compressed purge air volume is reduced, further optimizing energy conservation.

Free−Air Supercharger with A3 Purge Technology

Select an EMS option package for fast returns−on−investment. Energy saving logic controls the A3 Purge Technology™ to synchronize the engagement cycles of the Free−Air−Supercharger (FAS) to mirror plant air demands. This design features a precision venturi blower assembly, engineered to drastically reduce purge air consumption.

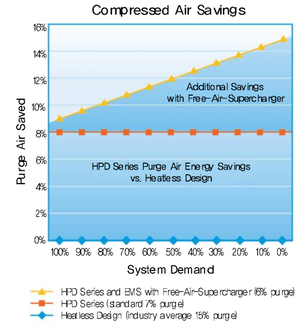
In fact, an HPD Series dryer with an EMS package may enable the use of a smaller air compressor. Total system efficiency would then be superior due to the linear energy−saving potential of the dryer. Purge air savings of up to 15% are possible in direct proportion to demand when compared to typical heatless designs. Consistent −40°C pressure dew points and fast returns−on−investment are automatic year round.

ISO 8573.1 Air Quality Standards

30 Nm³/min System Profile Comparison

Air Capacity	Air Demand	Time (per year)		HPD Series Savings		
				Standard Design	Includes Option	Savings with
Percent	Nm³/min	Percent	Hours		FA1 or FA2	FA1 or FA2
100	30	40	3,504	$ 4,391	$ 4,940	$ 549
90	27	5	438	549	659	110
75	23	15	1,314	1,647	2,161	515
50	15	15	1,314	1,647	2,470	823
35	10.5	20	1,752	2,196	3,541	1,345
20	6	5	438	549	947	398
Average	**16**	**100**	**8,760**	**$10,979**	**$14,718**	**$3740**

Annual Savings (optional EMS with FA Supercharger vs. standard HPD)...$3,740
EMS option FA1 − payback within 8.2 months



HPD Series Product Features

Controller	Pressure Dew Point per ISO 8573.1		Free−Air Supercharger	EMS Control	Vacuum Fluorescent Text		Languages	Power Recovery		Dry Contacts		Overlay w/ Circuit Graphics & LED Indicators Alarm LEDs with Text Display			
Model	ISO Class 3 −20°C (−4°F)	ISO Class 2 −40°C (−40°F)	Venturi Blower	Automatic Energy Savings	Digital Dew Point Monitoring	2 Line, 16 Characters (high−visibility in darkness or sunlight)	English Spanish French	Automatic Restart after Power Loss	Remote Indication of Alarm	Power On	Heater On	Tower Status (drying switchover heat, cool, etc.)	Tower Switchover Failure (low heater temp/high heater temp)	Sensor Over−range & Under−range	Service Reminder
Standard	G	S	–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Option FA1	–	G	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Option FA2	–	G	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

S = Seasonal G = Guaranteed ✓ = Included