



# **HYDROGARD<sup>®</sup>** **Refrigerated** **Air Dryers**

*HGD and DES Series*



## HYDROGARD® Refrigerated Compressed Air Dryers

### *Time-Tested Reliability*

Since 1961, Deltech has delivered products engineered to efficiently remove contaminants from compressed air systems across multiple applications. Moving forward our designs have advanced, employing the latest in filtration and dehydration technology. Today, Deltech prides itself on being a leader in the compressed air industry known for scope of product offering and superior performance capabilities.

### *Protect Profitability*



HYDROGARD Refrigerated Air Dryers optimize productivity and profitability by delivering stable dew point control. The HYDROGARD Series provides premium performance, advanced heat transfer technology and integral 3 micron rated filtration.

Hydrogard dryers meet the globally recognized ISO 8573.1 Quality Classes for compressed air treatment. Maintenance costs are reduced downtime is minimized as improved air quality extends the service life of pneumatically operated components and production equipment.

Ask us about our Pyramid™ Refrigerated Drying System for high efficiency filtration capable of removing solids down to 0.01 micron and oil aerosols to 0.008 ppm/wt.

### *Protect your Investment*

Maintain the ISO Air Quality Class specified and extend the warranty.

**5  
YEAR**



#### **Premium Warranty Coverage**

Deltech HGD and DES dryers are covered by a standard two year warranty. With the annual purchase of a maintenance kit, the warranty is extended an additional three years.

Covers all major components, parts and labor.

*Contact your local distributor for more details.*

## **HYDROGARD® Quality Air**

Deltech dryers not only dry the air, but deliver filtered air to the your application. HYDROGARD refrigerated air dryers employ a two-phase process to deliver clean, dry compressed air that meet ISO Quality Class Standards.

Compressed air enters the dryer and is chilled in a brazed plate heat exchanger. Cold liquid refrigerant and warm compressed air flow counter-current through a series of high-yield passages crafted from 316ss plates. Alternating layers promote energy efficiency and effective thermal cooling for precise pressure dew point control. The chilled air stream then enters a Separator/Filter that removes the condensate and all particulates 3 microns and larger. The unique Separator/Filter provides consistent moisture removal at all flow rates. Dry, filtered compressed air exits the dryer.

## **The HYDROGARD® Solution**

Whatever your plant demands are for compressed air Deltech has the answer! Choose from the below technology platforms:

- Traditional HYDROGARD dryers (Models HGD100-3000) deliver continuous-duty operation and performance.
- Energy Saving HYDROGARDES models (DES 800-3000) are designed to match power consumption to actual load.

### **A Global Unit of Measure for Compressed Air**

ISO 8573.1 was developed in 1992 by ISO (International Organization for Standardization) to help plant engineers specify desired compressed air quality globally by providing “Quality Classes” for solid particulates, moisture and oil.



## **Choose your Platform\***

- For Fluctuating Air Load Demand: Select the DES Series
- For Continuous or Peak Duty Operation: Select the HGD Series
- For Reduced Demand or Periodic Shut-Down: Select the DES or HGD in “Schedule mode”

\*Based on Typical Plant Air Demands



## HYDROGARD® HGD Series 100 through 3,000 scfm



### ***HYDROGARD Non-cycling Drying Systems***

#### **HGD Series 100 to 3000**

- Deliver continuous-duty operation and performance
- Reliable, non-cycling refrigeration compressors
- Integral two-part drying and filtering process
- CSA approved

### ***Easy to View Controls***

#### **Models HGD100 to 150**

- On/off switch
- Power-on light
- Dew point temperature indicator alerts operator to overload condition or refrigeration system fault

### ***emm™ Controller***

#### **Models HGD200 to 3000**

- Advanced 24 volt control package saves energy
- User-friendly interface
- Ten language communications
- "Schedule mode" allows one or two-shift operations to save energy by scheduling the dryer to turn on and off as needed
- Drain push-to-test button
- Power-on and compressor-on lights
- Operator alert light indicates that service is required
- Dew point temperature indicator
- Remote monitoring of the emm™ through the RS-232 Communication Port
- Standard NO and NC voltage-free alarm contacts
- Fault condition diagnostics with user-friendly text display

### ***The Complete Package***

#### **All Models**

- Integral moisture separator/filters remove bulk liquid and solid particulate down to 3 micron
- Optional Pyramid™ filtration captures solids to .01 micron and oil to .008 ppm/w
- 316 stainless steel, brazed plate heat exchangers provide efficient heat transfer and low pressure drop
- No air loss condensate drains



**HYDROGARD: Superior Performance**

# HYDROGARD<sup>®</sup>ES Energy Saving Refrigerated Air Dryers

## *DES Series, 800 to 3000 scfm*

HYDROGARDES series dryers save energy by matching power consumed to real time demand. Equipped with advanced technology, the HYDROGARDES delivers purified compressed air while saving energy!

## *The Technology Behind the Savings*

### **Integrated Filtration**

- Standard integrated filtration removes bulk liquids, particulates down to 3 micron and oil to 5 ppm/wt.
- Optional Pyramid™ Refrigerated Drying system with integral filtration removes solids to 0.01 micron and oil aerosols to 0.008 ppm/wt.
- Electric demand drain effectively discharges condensate without air loss

### **Axial Engagement Compression**

- Instantaneously loads and unloads based on demand
- Axial engagement compression raises and lowers the fixed upper scroll to engage or disengage the orbiting lower scroll
- Manages refrigerant flow, stabilizes dew point and saves energy

### **HYDROGARDES Controller**

- Advanced controls precisely manage the refrigerant compression process
- Regulates the flow of cold liquid refrigerant and maintains stable dew point control
  - For example, if the heat load coming into the dryer represents 70% of the design capacity, the compressor will remain loaded for 70% of the time. This delivers approximately 30% energy savings.

The HYDROGARDES controller automatically scrolls through five LCD screens that display:

- Date/Time/Operating Status
- Hours-to-Service
- Total Compressor Operating Hours
- Instantaneous Load<sup>1</sup>
- Cumulative Energy Savings<sup>2</sup>

<sup>1</sup> "Instantaneous Load" is displayed in "real time" as a percentage of design capacity. In the example above, it would display 70% load.

<sup>2</sup> "Cumulative Energy Savings" provides for US Dollar or Euro cost inputs.



### ***Save Energy, Save Money***

**The HYDROGARDES provides return on your investment:**

- Energy savings to up to 91%
- Precise matching of input kW power to real time air load
- Qualifies for energy rebates offered by utility companies
- ISO 8573-1 Quality Class performance

## Performance Integrity Certification



Deltech is proud to support the CAGI Refrigerated Dryer Performance Verification Program.

The Compressed Air & Gas Institute (CAGI) of North America has established a third party certification program to ensure you get the performance you pay for. Participating manufacturers may display the performance data on their web site from which a fair comparison and an informed buying decision can be made.

Visit [www.deltech-spx.com](http://www.deltech-spx.com) for current performance data on Deltech refrigerated dryers.

### ISO 8573.1 Quality Classes

Class	Solid Particles			Humidity and Liquid Water		Oil	
	Particle Size, d (μm)			Pressure Dew Point		Total concentration, Aerosol, Liquid, and Vapor	
	0.10 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0				
	Maximum Number of Particles per m³			°C	°F	mg / m³	ppm w/w
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, C <sub>w</sub> g/m³			
7				C <sub>w</sub> ≤ 0.5			
8				0.5 < C <sub>w</sub> ≤ 5			
9				5 < C <sub>w</sub> ≤ 10			
Per ISO 8573.1: 2001(E)							

# HYDROGARD® Series Specifications

## HGD Series Product Specifications

Model	Rated Flow <sup>1</sup>		Voltages	Power <sup>2</sup>	Connections <sup>3</sup>		Height		Width		Depth		Weight		Total Pressure Drop with Integral 3 micron Filtration	
	scfm	nm <sup>3</sup> /h	V/pH/Hz	kW	in	mm	in	mm	in	mm	in	mm	lbs	kg	psig	kg/cm <sup>2</sup>
HGD100	100	170	100/1/50	0.93	1 NPT	25.4	38	965	29	737	20	508	251	114	3.6	0.25
HGD125	125	212	115/1/60	1.28	1 NPT	25.4	38	965	29	737	20	508	273	124	4.0	0.28
HGD150	150	255	208-230/1/60 22-240/1/50	1.30	1 NPT	25.4	38	965	29	737	20	508	279	127	4.7	0.32
HGD200	200	340	460/3/60 380-420/3/50	1.26	1-1/2 NPT	38.1	39	991	34	864	32	813	425	193	3.7	0.26
HGD250	250	425		1.96	1-1/2 NPT	38.1	39	991	34	864	32	813	453	205	4.6	0.32
HGD300	300	510		2.0	1-1/2 NPT	38.1	46	1,168	35	883	32	813	527	239	5.0	0.34
HGD400	400	680		2.03	2 NPT	51	46	1,168	35	889	32	813	571	259	3.7	0.26
HGD500	500	850		2.68	2-1/2 NPT	64	58	1,473	32	813	42	1,067	684	310	4.4	0.3
HGD600	600	1,019	208-230/3/60 460/3/60 380-420/3/50 575/3/60	2.62	2-1/2 NPT	64	58	1,473	32	813	42	1,067	691	313	4.6	0.32
HGD750	750	1,274		3.60	2-1/2 NPT	64	58	1,473	32	813	42	1,067	734	333	5.3	0.37
HGD1000	1,000	1,699		5.83	3 ANSI Flg.	76.2	85	2,159	49	1,245	41	1,041	1,146	520	3.4	0.23
HGD1250	1,250	2,124		6.73	4 ANSI Flg.	102	85	2,159	49	1,245	51	1,295	1,521	690	3.6	0.25
HGD1500	1,500	2,549		7.52	4 ANSI Flg.	102	85	2,159	49	1,245	51	1,295	1,547	702	4.7	0.32
HGD1750	1,750	2,973		9.89	6 ANSI Flg.	152.4	85	2,159	55	1,397	60	1,524	1,940	880	3.4	0.23
HGD2000	2,000	3,398		10.70	6 ANSI Flg.	152.4	85	2,159	55	1,397	60	1,524	1,986	901	4.4	0.3
HGD2500	2,500	4,248		12.91	6 ANSI Flg.	152.4	85	2,159	55	1,397	60	1,524	2,315	1,050	3.5	0.24
HGD3000	3,000	5,097		16.92	6 ANSI Flg.	152.4	85	2,159	55	1,397	60	1,524	2,646	1,200	5.0	0.34

The HYDROGARD emm™ controller is standard on models HGD200-3000

Refrigerants utilized on models HGD100-HGD750: R-1345a, models HGD1000-HGD3000: R-404a

Models HGD100-150: standard internal mechanical drain {dryer MOP 250 psig (17.6 kg/cm<sup>2</sup>) optional electric timed drain {dryer MOP 200 psig (14 kg/cm<sup>2</sup>)}

Models HGD600-3000 utilize electric demand drains as standard {dryer MOP 232 psig (16 kg/cm<sup>2</sup>)}

Panel mounted emergency shutdown switch standard on models HGD1000 & larger

Maximum Operating Pressure: 232 psig (16 kg/cm<sup>2</sup>), Maximum Inlet Temperature: 120°F (49°C)

All models are certified UL1995/CSA 22.2 No. 236-95

<sup>1</sup> Rated Flow Capacity - Conditions for rating dryers are in accordance with CAGI (Compressed Air and Gas Institute) Standard ADF100 working conditions: inlet air at 100 psig (7 kg/cm<sup>2</sup>) and 100°F (38°C) saturated, ambient air at 100°F (38°C), operating on 60 Hz power supply

<sup>2</sup> At 35°F (2°C) evaporator and 100°F (38°C) ambient

<sup>3</sup> BSP connections and DIN flanges available

## DES Series Product Specifications

Model	Rated Flow <sup>1</sup>		Voltages	Power <sup>2</sup>	Connections <sup>3</sup>		Height		Width		Depth		Weight		Total Pressure Drop with Integral 3 micron Filtration	
	scfm	nm <sup>3</sup> /h	V/pH/Hz	kW	in	mm	in	mm	in	mm	in	mm	lbs	kg	psig	kg/cm <sup>2</sup>
DES800	800	1,359	208-230/3/60 460/3/60 380-420/3/50 575/3/60	4.28	3 ANSI Flg.	76.2	85	2,159	49	1,245	41	1,041	1,124	510	2.4	0.17
DES1000	1,000	1,699		4.68	3 ANSI Flg.	76.2	85	2,159	49	1,245	41	1,041	1,146	520	3.4	0.23
DES1250	1,250	2,124		6.34	4 ANSI Flg.	102	85	2,159	49	1,245	51	1,295	1,521	690	3.6	0.25
DES1500	1,500	2,549		8.68	4 ANSI Flg.	102	85	2,159	49	1,245	51	1,295	1,563	709	4.7	0.32
DES1750	1,750	2,973		10.35	6 ANSI Flg.	152.4	85	2,159	55	1,397	60	1,524	1,940	880	3.4	0.23
DES2000	2,000	3,398		11.72	6 ANSI Flg.	152.4	85	2,159	55	1,397	60	1,524	1,997	906	4.4	0.3
DES2500	2,500	4,248		14.00	6 ANSI Flg.	152.4	85	2,159	55	1,397	60	1,524	2,315	1,050	3.5	0.24
DES3000	3,000	5,097		18.33	6 ANSI Flg.	152.4	85	2,159	55	1,397	60	1,524	2,646	1,200	5.0	0.34

The HYDROGARD<sub>es</sub> controller is standard

All models utilize R-404a refrigerant with AEC scroll compressors

Models DES800-3000: utilize electric dedicated demand drains as standard {dryer MOP 232 psig (16 kg/cm<sup>2</sup>)}

Panel mounted emergency shut down switch standard

Maximum Operating Pressure 232 psig (16 bar), Maximum inlet temperature: 120°F (49°C)

All models are certified UL1995/CSA 22.2 No. 236-95

<sup>1</sup> Rated Flow Capacity - Conditions for rating dryers are in accordance with CAGI (Compressed Air and Gas Institute) Standard ADF100 working conditions: inlet air at 100 psig (7 bar) and 100°F (38°C) saturated, ambient air at 100°F (38°C), operating on 60 Hz power supply

<sup>2</sup> At 35°F (2°C) evaporator and 100°F (38°C) ambient.

<sup>3</sup> BSP connections and DIN flanges available.

## Capacity Correction Factors

To adjust dryer capacity for conditions other than rated, use Correction Factors (multipliers) from Tables 1 and 2.

**Example:** What is the capacity of a 1,000 scfm model when the compressed air at the inlet to the dryer is 150 psig and 100°F (38°C), and the ambient temperature is 90°F (32°C)?

**Answer:** 2,000 scfm (rated flow from above Specifications Tables) x 1.08 (correction factor for inlet temperature and pressure from Table 1) x 1.06 (correction factor for ambient temperature from Table 2) = 2,290 scfm

Table 1 - Capacity Correction Factors

Inlet Pressure		Inlet Temperature			
		90°F	100°F	110°F	130°F
psig	kg/cm <sup>2</sup>	32°C	38°C	43°F	49°F
54	3.51	1.07	0.83	0.66	0.44
80	5.62	1.19	0.95	0.77	0.52
100	7.03	1.25	1.00	0.82	0.56
125	8.79	1.31	1.05	0.86	0.61
150	10.55	1.34	1.08	0.90	0.64
175	12.30	1.37	1.11	0.92	0.66
200	14.06	1.39	1.14	0.95	0.68
250	17.58	1.43	1.17	1.02	0.72

Table 2 - Correction Factors for Ambient Temperature\*

Ambient Temperature	80°F	90°F	100°F	110°F
	27°C	32°C	38°C	49°C
Multiplier	1.12	1.06	1.00	0.94

\* Air-cooled models only. For water-cooled use a 1.15 multiplier if cooling water is less than 95°F (35°C).

## The Deltech Commitment

Deltech sets the standard of excellence in technology for today's growing industries.

We build relationships by commitment to understanding the processes and requirements of our customers. As a result, the compressed air solutions we develop enable users of Deltech products to meet their objectives of improved productivity and optimized efficiency. We will continue to dedicate our research and development resources in providing new and innovative air treatment products inspired by our valued customers.



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