



**ENERGY SAVING REFRIGERATED COMPRESSED AIR DRYERS**

HES SERIES 90 TO 675 SCFM (153 TO 1148 NM<sup>3</sup>/H)

## SUSTAINABLE ENERGY SAVING SOLUTIONS LOAD MATCHING PROFILE...



Energy costs continue to escalate globally, having a negative impact on plant profitability and production costs. Sustainability initiatives in plant operations must be implemented to maintain a competitive advantage.

Air treatment manufacturers are challenged to design equipment that consumes less energy while operating at reduced load. Hankison HES Series Refrigerated Compressed Air Dryers are the ideal solution!

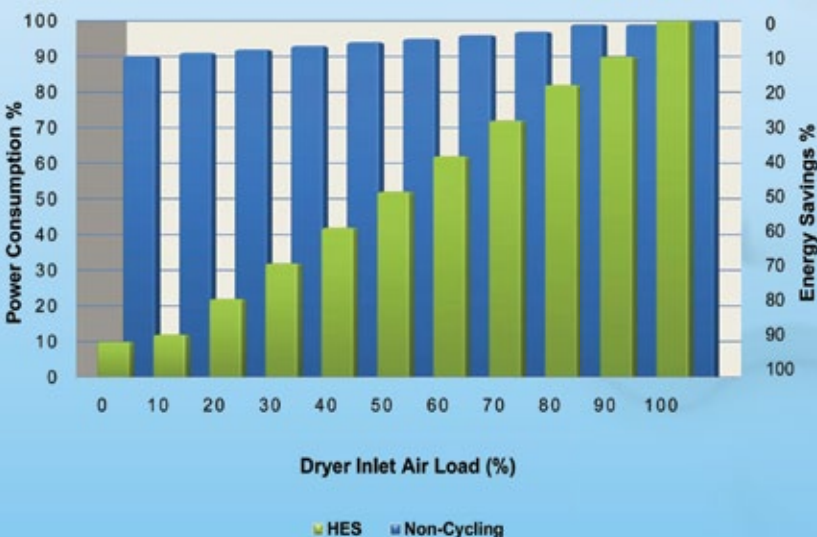
Sustainable energy saving solutions are the driving principle behind Hankison product designs. The HES Series lowers power costs and improves productivity by matching power consumption to compressed air demand.

Non-cycling dryers operate with the refrigeration compressor running continuously, regardless of inlet load conditions. Minimal energy savings are realized from 100% down to 0% inlet air load.

HES Series dryers automatically cycle (on/off) the refrigeration compressor in response to inlet load conditions. As the inlet air load is reduced, the power requirement to dry the air is matched in proportion to the demand.

For example, at 60% inlet air load, a non-cycling dryer consumes 96% of the full load power consumption, a 4% energy savings. By comparison, at 60% inlet air load, an HES Series dryer consumes 62% of the full load power consumption, a 38% energy savings.

The load matching design reduces power costs and saves energy. The example below provides annual HES energy savings with respect to non-cycling designs.



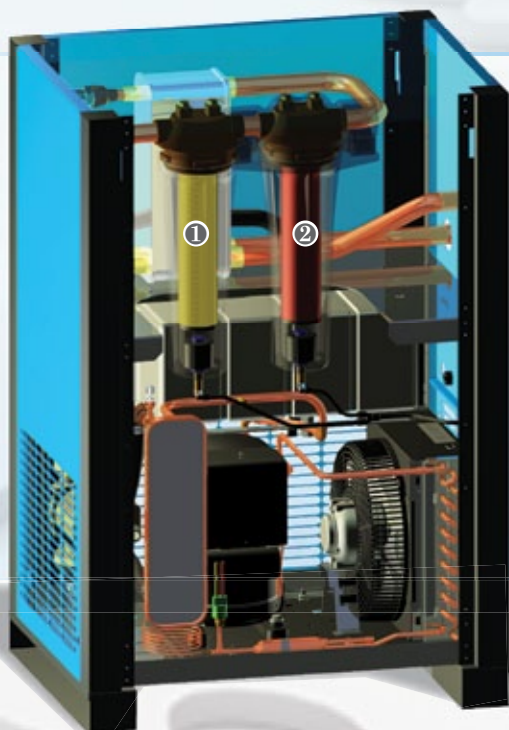
### Example:

- Air Dryer: Model HES540 rated for 540 scfm (917 nm<sup>3</sup>/h) at ISO 7183 (Option A2) conditions
- Operating Time: 8000 hours
- Cost Of Power: \$0.10/kWh
- Average Inlet Air Load: 60%
- Annual Energy Savings: \$946

## AIR TREATMENT STATION DELIVERS ISO 8573.1 QUALITY CLASS AIR...

The International Organization for Standardization (ISO) identified three forms of contamination as common in compressed air systems - solid particles, water and oil. ISO Standard 8573.1: 2009 categorizes each contaminant and assigns a quality class, ranging from Class 0, the highest purity level, to Class 9, the most relaxed.

The HES Series effectively removes all three contaminant forms in a single air treatment system.



### Innovation at Work

- ① The standard dryer is equipped with a Grade 9 filter/separator-
  - » ISO Quality Class 3: Remaining solid particulate
  - » ISO Quality Class 5: Pressure dew point
  - » ISO Quality Class 5: Remaining oil concentration
- ② Optional Grade 5 high efficiency coalescing filters are available-
  - » ISO Quality Class 1: Remaining solid particulate
  - » ISO Quality Class 5: Pressure dew point
  - » ISO Quality Class 1: Remaining oil concentration

The annual purchase of a maintenance kit provides a lifetime of ISO Quality Class Air.



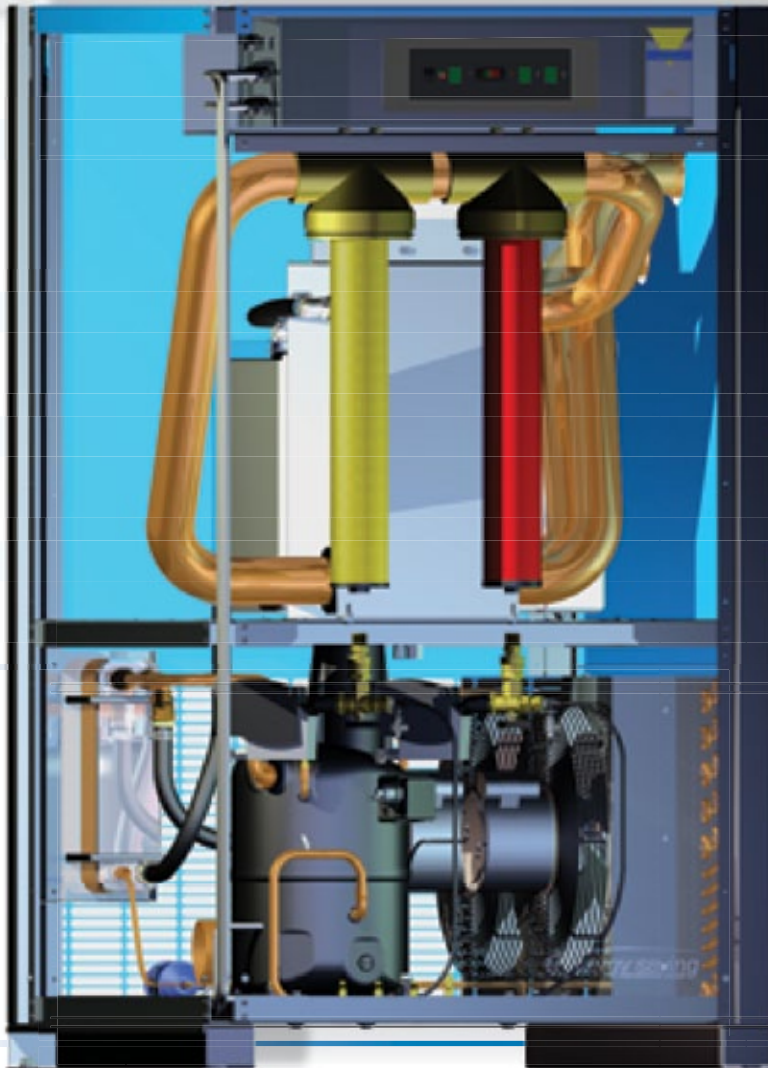
### ISO 8573.1 QUALITY CLASSES

To best define your air quality requirements for specific applications, please refer to the table below.

Air Quality Classes ISO 8573.1	Solid Particles			Humidity and Water		Oil	
	Maximum number of particles per m <sup>3</sup> Particle size (d), µm			Maximum Pressure Dew Point		Maximum Concentration, Aerosol, Liquid and Vapor	
	0.10 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	°C	°F	mg / m <sup>3</sup>	ppm w/w
<b>0</b>	<b>As specified by the equipment user or supplier and more stringent than class 1</b>						
<b>1</b>	≤ 20,000	≤ 400	≤ 10	≤ -70	≤ -94	≤ 0.01	≤ 0.008
<b>2</b>	≤ 400,000	≤ 6,000	≤ 100	≤ -40	≤ -40	≤ 0.1	≤ 0.08
<b>3</b>	-	≤ 90,000	≤ 1,000	≤ -20	≤ -4	≤ 1	≤ 0.8
<b>4</b>	-	-	≤ 10,000	≤ +3	≤ +37	≤ 5	≤ 4
<b>5</b>	-	-	≤ 100,000	≤ +7	≤ +45		
	<b>Mass Concentration C<sub>p</sub> (mg/m<sup>3</sup>)</b>						
<b>6</b>	0 < C <sub>p</sub> ≤ 5			≤ +10	≤ +50		
				<b>Liquid Water Content, C<sub>w</sub> g/m<sup>3</sup></b>			
<b>7</b>	5 < C <sub>p</sub> ≤ 10			C <sub>w</sub> ≤ 0.5			
<b>8</b>				0.5 < C <sub>w</sub> ≤ 5			
<b>9</b>				5 < C <sub>w</sub> ≤ 10			
<b>x</b>	C <sub>p</sub> > 10			C <sub>w</sub> > 10		> 5	> 4

\* Not Specified  
Per ISO 8573.1: 2009

## REBATE READY ENERGY SAVINGS DESIGN PERFORMANCE - RELIABILITY...



### Optimized Cabinet Design

- Promotes ease of access from all four sides
- Certified to CSA C22.2 No. 236-05 / UL 1995

### Stainless Steel Brazed Plate Heat Exchangers

- Compact, thermally efficient
- Ensures delivery of an ISO 8573.1: 2009 Air Quality Class 5 pressure dew point

### Integral Filtration

- Standard Filter/Separator removes solids down to 3.0 microns and oil aerosols to 5.0 mg/m<sup>3</sup>
- Optional Cold Coalescer removes solids down to 0.01 microns and oil aerosols to < 0.01 mg/m<sup>3</sup>

### No Air Loss Condensate Drains *\*Standard on all models*

- Mechanical float drain are standard on models 90-140 scfm (153-238 nm<sup>3</sup>/h)
- Electric demand drain are standard on models 190-675 scfm (323-1148 nm<sup>3</sup>/h)

### Hermetically Sealed Refrigerant Compressor

- Environmentally friendly R-134a refrigerant
- High reliability, long service life

### Rugged Glycol Reservoir

- Stores food-grade propylene glycol cooling media
- Leak-free, rotational molded construction

### Reliable Thermal Media Circulation Pump

- Continuously moves cooling medium through the dryer
- Cartridge design promotes reliability and ease of service

### HES Series Options:

- Advanced Electronic Controls emm+™ (*models 190 to 675 scfm*)
- Cold coalescing separator elements
- NEMA 4 electrics (*models 190 to 675 scfm*)
- Water-cooled condensing unit (*models 190 to 675 scfm*)
- Low ambient protection
- 3 valve block and by-pass
- Four gauge package (panel mounted)

## SUSTAINABILITY - SAFETY...

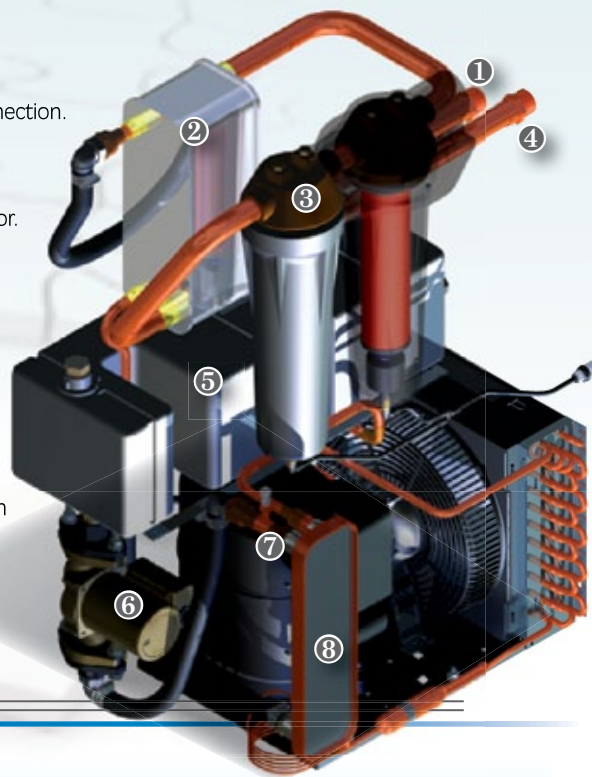
### HES OPERATION

#### The Drying Process-Compressed Air Circuit:

- ① Warm, saturated compressed air enters the dryer through the inlet pipe connection.
- ② Air travels through the air-to-air heat exchanger and the glycol-to-air heat exchanger. Propylene glycol surrounds the passages and cools the air to the desired pressure dew point.
- ③ Moisture, solid particulates and oil aerosols are removed by the filter/separator. A no-air-loss condensate drain discharges contaminants from the system.
- ④ Dry, filtered air exits the dryer for use.

#### The Cooling Process-Glycol Circuit:

- ⑤ Glycol exits the air-to-glycol heat exchanger and then enters the glycol storage tank.
- ⑥ A circulation pump continuously moves the thermal medium throughout the circuit.
- ⑦ A thermal sensor monitors the glycol temperature and turns the refrigeration compressor off whenever the glycol is cooled to its lowest temperature. The cooling medium continues to dry the air. After the medium warms up, the thermal sensor restarts the refrigeration compressor.
- ⑧ The glycol-to-refrigerant heat exchanger chills the thermal media and travels back to the air-to-glycol heat exchanger.



### TWO LEVELS OF CONTROLS

#### Standard Level I (HES90-HES675)

Easy to monitor controls provide dryer status

- Dryer on/off switch
- Dryer on light
- Thermal medium temperature
- Dryer energized (**HES190-HES675**)
- Compressor on light



Standard Level I (HES90-HES140)



Standard Level I (HES190-HES675)

#### Optional Level II (HES190-HES675)

HES Series emm+™ microprocessor controller

- Operator Interface Displays:
  - » Date/time/operating status
  - » Hours to service
  - » Total compressor operating time
- Energy Savings Interface:
  - » Daily average load
  - » Monthly average load
  - » Annualized energy savings in Dollars or Euros
  - » Scheduler mode for automatic start/stop operation



Optional Level II (HES190-HES675)

## OUR COMMITMENT TO YOU...

### PERFORMANCE CERTIFICATION

Hankison is a member of the Compressed Air and Gas Institute, a non-profit organization that develops and publishes standards serving the compressed air industry.



CAGI members may participate in an independently controlled Performance Certification program for refrigerated air dryers 200 scfm to 1000 scfm. Certification through a third party laboratory ensures the integrity of printed and electronic information.

Performance data, including energy consumption, for flow models HES240 to HES675, are posted on the Hankison website.

Please visit the Hankison website at [www.hankisonintl.com](http://www.hankisonintl.com) to view this information (click *CAGI Data Sheets*)

### CUSTOMER SUPPORT SOLUTIONS

#### "Peace of Mind"

As an extra measure of protection, Hankison provides an extended warranty beyond the standard 2 year coverage.

Purchase a maintenance kit on an annual basis and receive an additional 3 years of protection, parts and labor.

All major components are covered.

#### Register on-line

Receive automatic email reminders when it's time to service your product.

Register on-line at [www.hankisonintl.com](http://www.hankisonintl.com) (click *Dryer Registration*)

**HANKISON**

Product Registration

Please complete the form below to register your product. Please print and save the information provided to you.

☐ I purchased this product from Hankison  
☐ I purchased this product from a distributor

Product Name:   
Model Number:   
Date Purchased:   
Date of Service:   
Contact Name:   
Company Name:   
Address Line 1:   
Address Line 2:   
City:   
State:   
Zip:   
Phone Number:   
Email Address:

Please provide information on where you purchased your product:

Business Name:   
City:   
State:   
Zip:

Extended Warranty Program  
Hankison provides an extended warranty beyond the standard 2 year coverage. To qualify for this warranty, you must register your product on the Hankison website. Registration is required to qualify for the warranty. Registration can be done online at [www.hankisonintl.com](http://www.hankisonintl.com).

Need Assistance?  
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## HES SERIES SPECIFICATIONS

### HES Series Product Specifications

Model	Rated Flow <sup>1</sup>		Voltages	Power	In/Out Connection <sup>2</sup>	Dimensions						Weight		Std Δp <sup>3</sup> Grade 9		Opt Δp <sup>4</sup> Grade 5	
	scfm	nm <sup>3</sup> /h				H		W		D		lbs	kg	psig	bar	psig	bar
HES90	90	153	100/1/50	0.95	1.0"	38	965	27	686	20	508	241	109	2.9	0.2	4.1	0.3
HES120	120	204	115/1/60	1.28	1.0"	38	965	27	686	20	508	258	117	3.7	0.3	5.0	0.3
HES140	140	238	208-230/1/60	1.29	1.0"	38	965	27	686	20	508	263	119	4.1	0.3	5.5	0.4
HES190	190	323	220-240/1/50	1.36	1.5"	39	991	34	864	32	813	408	185	3.3	0.2	4.6	0.3
HES240	240	408		1.94	1.5"	39	991	34	864	32	813	478	217	4.4	0.3	5.7	0.4
HES280	280	476	208-230/3/60	1.95	1.5"	46	1168	35	889	32	813	497	225	4.4	0.3	5.7	0.4
HES360	360	612	380-420/3/50	2.07	2.0"	46	1168	35	889	32	813	540	244	3.0	0.2	4.1	0.3
HES450	450	765	460/3/60	2.49	2.5"	58	1473	35	889	42	1067	708	321	3.6	0.2	4.9	0.3
HES540	540	918	575/3/60	3.08	2.5"	58	1473	35	889	42	1067	793	360	3.7	0.3	5.3	0.4
HES675	675	1148		4.35	2.5"	58	1473	35	889	42	1067	844	382	4.3	0.3	6.6	0.5

<sup>1</sup> Rated Flow Capacity - Conditions for rating dryers are in accordance with ISO 7183 (option A2) working conditions: inlet air temperature 100°F (38°C), inlet air pressure 100 psig (6.9 bar), ambient air temperature 100°F (38°C), 100% saturated air, operating on 60 Hz power supply.

<sup>2</sup> BSP connections available

<sup>3</sup> Pressure drop inclusive of integral filtration

<sup>4</sup> Cumulative pressure drop includes Grade 9 and Grade 5 filter/separator elements

Flow Model		Max. Working Pressure (Float Drain)		Max. Working Pressure (Electric Drain)		Min. Working Pressure		Max. Inlet Air Temperature		Min. Inlet Air Temperature		Max. Ambient Air Temperature		Min. Ambient Air Temperature	
scfm	nm <sup>3</sup> /h	psig	bar	psig	bar	psig	bar	°F	°C	°F	°C	°F	°C	°F	°C
90 -140	153 - 238	250	17.2	-	-	30	2.1	130	54	40	4	110	43	40	4
140 - 675	204 - 1148	-	-	232	16.0	30	2.1	130	54	40	4	110	43	40	4

**Table 1 - Capacity Correction Factors**

Inlet Pressure		Inlet Temperature					
		80°F 27°C	90°F 32°C	100°F 38°C	110°F 43°C	120°F 49°C	130°F 54°C
30	2.1	1.24	0.92	0.71	0.56	0.44	0.35
50	3.4	1.40	1.07	0.83	0.66	0.54	0.44
80	5.6	1.55	1.19	0.95	0.77	0.63	0.52
100	6.9	1.61	1.25	1.00	0.82	0.68	0.56
125	8.6	1.67	1.30	1.05	0.86	0.72	0.61
150	10.3	1.71	1.34	1.08	0.90	0.75	0.64
175	12.1	1.75	1.37	1.11	0.92	0.78	0.66
200	13.8	1.77	1.39	1.14	0.95	0.80	0.68
250	17.2	1.81	1.43	1.17	0.98	0.83	0.72

**Table 2 - Correction Factors for Ambient Temperature\***

Ambient Temperature	80°F 27°C	90°F 32°C	100°F 38°C	110°F 43°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).

## OUR GLOBAL NETWORK...

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