SPX®

Energy Saving Refrigerated Compressed Air Dryers

HES SERIES 90 to 675 scfm (153 to 1148 nm³/h)

Hankison®

Sustainable Energy Saving Solutions

As 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.

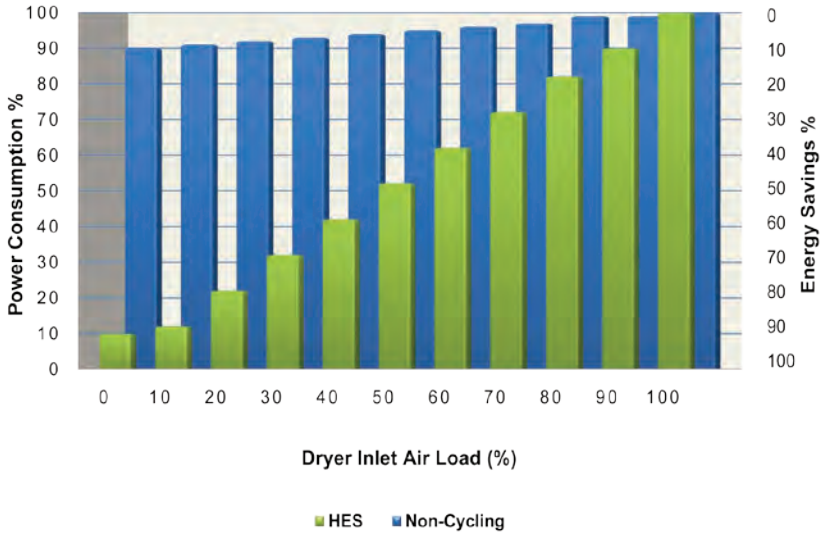
Load Matching Performance

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^3/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

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: 2010 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

❶ 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*

❷ 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: 2010 Quality Classes

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

Air Quality Class	Solid Particles Maximum number of particles per m³			Water Vapor Pressure Dew Point		Oil Total Oil Concentration: Aerosol, Liquid & Vapor	
	0.10 - 0.5 micron	0.5 - 1.0 micron	1.0 - 5.0 micron	°C	°F	mg / m³	ppm $_{w/w}$
0	As specified by the equipment user or supplier and more stringent than class 1						
1	≦ 20,000	≦ 400	≦ 10	≦ -70	≦ -94	0.01	0.008
2	≦ 400,000	≦ 6,000	≦ 100	≦ -40	≦ -40	0.1	0.08
3	-	≦ 90,000	≦ 1,000	≦ -20	≦ -4	1	0.8
4	-	-	≦ 10,000	≦ +3	≦ +37	5	4
5	-	-	≦ 100,000	≦ +7	≦ +45	-	-

Rebate Ready, Energy Saving Design

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

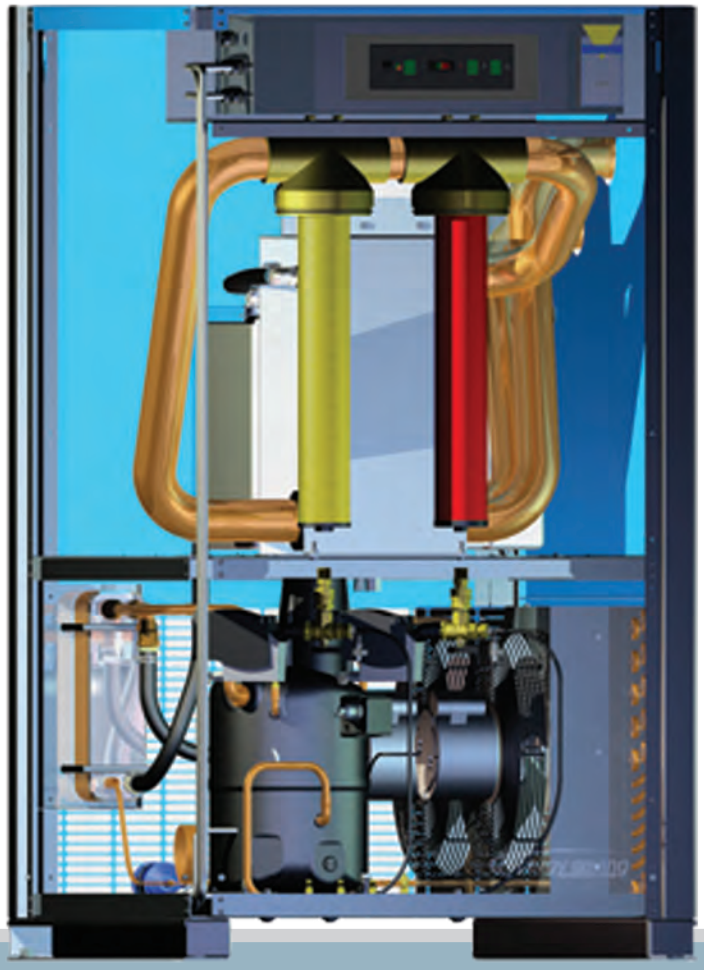
- Compact, thermally efficient
- Ensures delivery of an ISO 8573-1: 2010 Air Quality Class 5 pressure dew point

Integral Filtration

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

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

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

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

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

HES Series Options:

- **Advanced Electronic Controls emm+™ (models 190 to 675 scfm)**
- **Cold coalescing separator elements**
- **NEMA 4 (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)**

Delivers Performance, Sustainability & Safety

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.

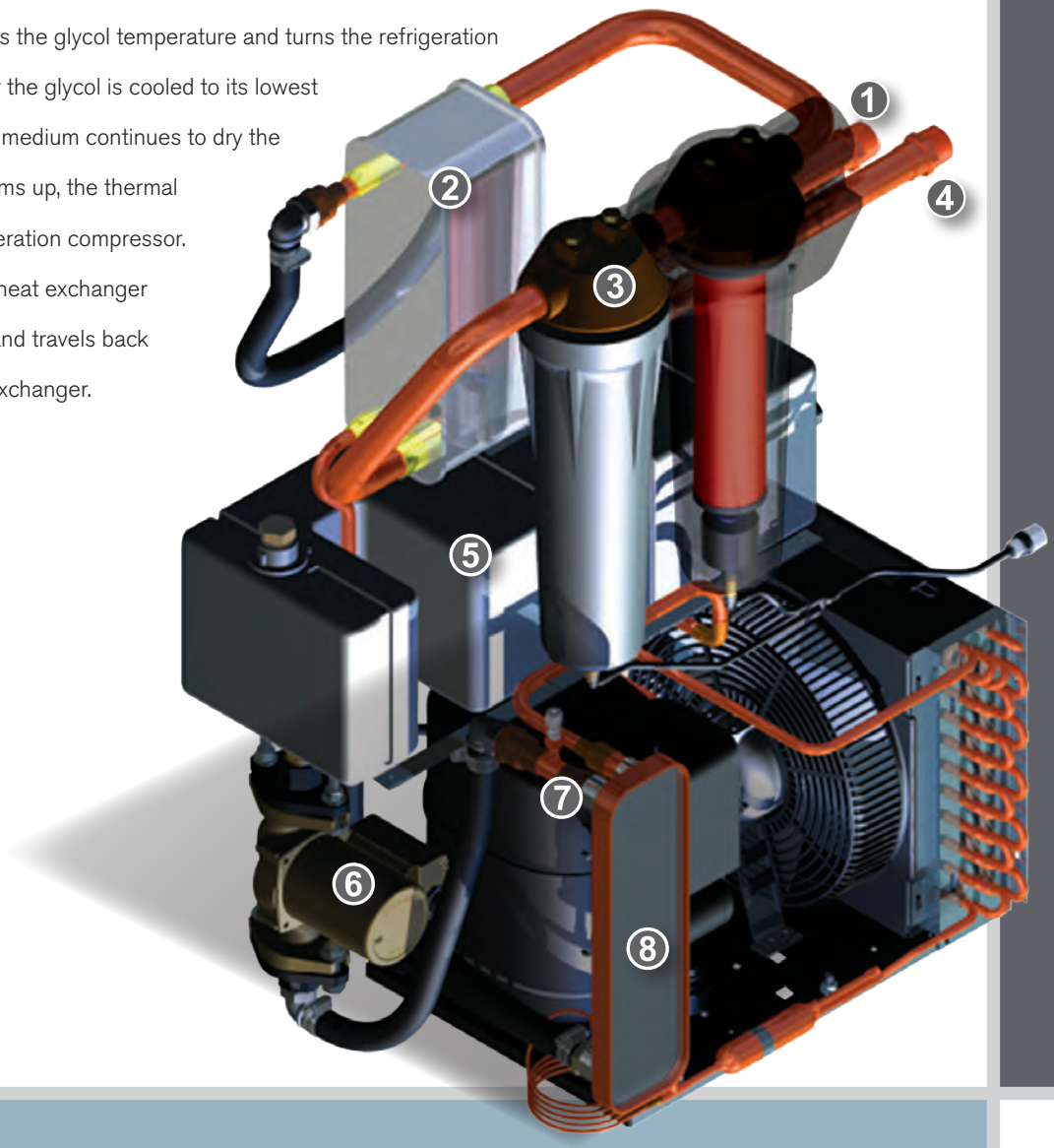
The Cooling Process-Glycol Circuit:

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.



Our Commitment to You

Performance Tested and Rated in Accordance with
ISO 7183
200-1000 SCFM
CAGI Refrigerated Dryer Performance Verification Program
CAGI Compressed Air & Gas Institute
Program administered by Intertek Testing Services

Third Party Performance Certification

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

CAGI members may participate in an independently controlled Performance Verification Program for refrigerated air dryers in the flow range of 90 scfm to 675 scfm. Certification through a third party laboratory provides end-users an industry accepted basis for comparison of refrigerated air dryer performance and selection.

Standardized performance data sheets are posted on the Hankison website.

Please visit the Hankison website at **www.hankisonintl.com** to view this information.

Customer Support Solutions

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. Receive automatic e-mail reminders when it's time to service your product.

Register on-line at **www.hankisonintl.com**

Product Specifications

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	nm³/h	psig	barg	psig	barg	psig	barg	°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
190 - 675	**323 - 1148**	-	-	232	16.0	30	2.1	130	54	40	4	110	43	40	4

Model	Rated Flow [1]		Voltages	Power	Inlet/Outlet Connection [2]	Dimensions H	W	D	Weight	Std Δp[3] Grade 9		Opt Δp[4] Grade 5	
	scfm	nm³/h	V/ph/Hz	kW	NPT		in	in	lbs	psig	barg	psig	barg
HES90	90	153	100/1/50 115/1/60 208-230/1/60 220-240/1/50	0.95	1.0"	38	27	20	241	2.9	0.2	4.1	0.3
HES120	120	204		1.28	1.0"	38	27	20	258	3.7	0.3	5.0	0.3
HES140	140	238		1.29	1.0"	38	27	20	263	4.1	0.3	5.5	0.4
HES190	190	323	208-230/3/60 380-420/3/50 460/3/60 575/3/60	1.36	1.5"	39	34	32	408	3.3	0.2	4.6	0.3
HES240	240	408		1.94	1.5"	39	34	32	478	4.4	0.3	5.7	0.4
HES280	280	476		1.95	1.5"	46	35	32	497	4.4	0.3	5.7	0.4
HES360	360	612		2.07	2.0"	46	35	32	540	3.0	0.2	4.1	0.3
HES450	450	765		2.49	2.5"	58	35	42	708	3.6	0.2	4.9	0.3
HES540	540	918		3.08	2.5"	58	35	42	793	3.7	0.3	5.3	0.4
HES675	675	1148		4.35	2.5"	58	35	42	844	4.3	0.3	6.6	0.5

[1] *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.*

[2] *BSP connections available*

[3] *Pressure drop inclusive of integral filtration*

[4] *Cumulative pressure drop includes Grade 9 and Grade 5 filter/separator elements*

Table 1 - Capacity Correction Factors

Inlet Pressure		Inlet Temperature					
		80°F	90°F	100°F	110°F	120°F	130°F
psig	barg	27°C	32°C	38°C	43°C	49°C	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	90°F	100°F	110°F
	27°C	32°C	38°C	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).

HES Series

90 to 675 scfm

(153 to 1148 nm³/h)

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Based in Charlotte, North Carolina, SPX Corporation (NYSE: SPW) is a global Fortune 500 multi-industry manufacturing leader.

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ISSUED 8/2013 HES-90