



## PoleStar Smart<sup>®</sup> Refrigerated Air Dryers

don't just cycle, cycle Smart

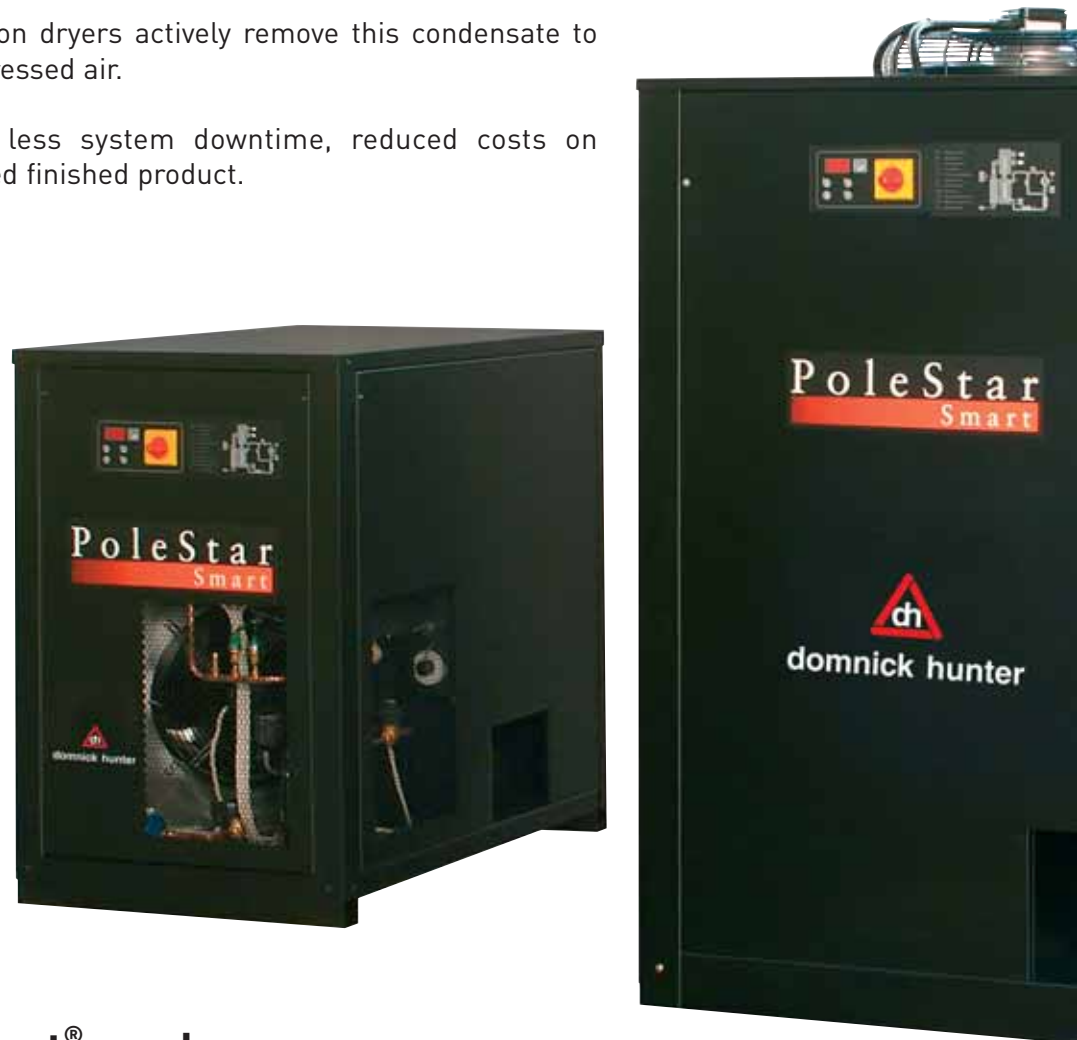
## Why treat compressed air?

The importance of compressed air as a provider of energy for modern industrial processes is widely known. What is often overlooked however is the need to provide quality treatment for this air.

In fact the air entering the system contains condensate which, when cooled, will turn into liquid water, causing extensive damage not only to the compressed air network, but also to the finished product.

PoleStar Smart® refrigeration dryers actively remove this condensate to achieve extremely dry compressed air.

The benefits are notable: less system downtime, reduced costs on maintenance and an improved finished product.



## How Polestar Smart® works

The hot wet air enters PoleStar Smart®, where it immediately passes through the air-to-air exchanger, which cools the incoming air by means of the exiting air.

The now pre-cooled air then enters the evaporator where it is further cooled down by the cold refrigerant to achieve the target dewpoint temperature. The condensate in the air, which has now become a liquid thanks to the cooling process, is efficiently separated by the demister and removed by the condensate drain.

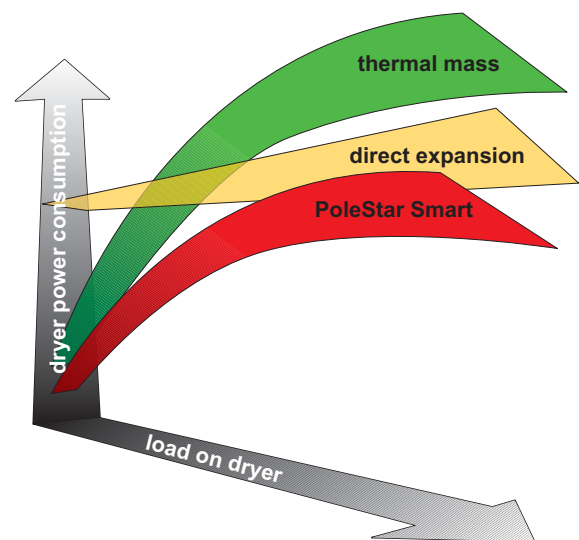
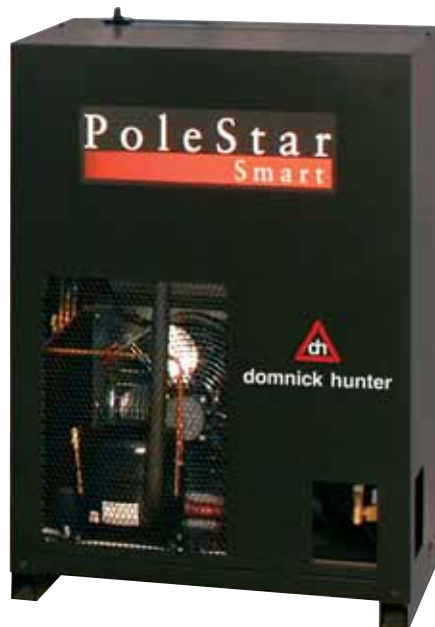
The cold dry air passes back through the return side of the air-to-air exchanger where it is heated up by the incoming air. This process not only saves energy by pre-cooling the inlet air, but also prevents pipe sweating downstream.

## Why PoleStar Smart®?

Compressed air systems are dynamic by nature. The operating conditions fluctuate throughout the day, season and life of the compressed air system. The challenge has always been designing a dryer that optimizes energy efficiency regardless of the demand placed on the system.

PoleStar Smart® does just that - saving energy whether you operate at 0% or 100% load, or any point in between.

Welcome to **PoleStar Smart®**.



### PoleStar Smart®: THE ADVANTAGES

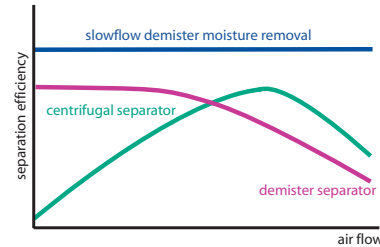
- Optimum dewpoint levels for highest system performance
- Advanced patented design solutions
  - Lowest real operating costs
- High reliability, easy to use and maintain

## Smart technology: the benefits



### SmartPack

The SmartPack (patent pending) heat exchanger features an extremely robust, all-in-one aluminum design, with no interconnecting tubing. SmartPack features the lowest pressure drop in the industry, notable energy savings and guarantees dewpoint. Optimum dewpoint performance is ensured thanks to wide air channels leading to low air velocities, an oversized slowflow demister separator offering perfect condensate separation even at partial air flows and a dew point sensor within the air flow for improved control. The generously sized air-to-air section and Thermal Shield Insulation (TSI) contribute to a very low power consumption.

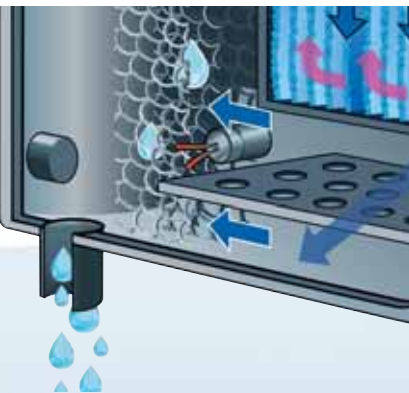


### Smart Specs

PoleStar Smart® has been designed with the reality that compressor rooms are often dirty and poorly ventilated.

All models feature oversized condensers to allow operation up to 140°F (60°C) air inlet and 122°F (50°C) ambient.

A condenser pre-filter reduces maintenance requirements, enhances performance and optimizes reliability in dirty environments.



### SmartDrain - Dual Mode Zero Air Loss Drain

The drainage chamber is integrated into the heat exchanger while the valve mechanism is fitted in an easily accessible drain niche. SmartDrain continuously adjusts itself to the actual working conditions, ensuring zero air loss and a notable reduction in system power consumption. An innovative control system continuously monitors for fault situations. If a fault does occur, an alarm is signaled and the drain switches to conventional timed solenoid drain operation. The dual mode circuitry ensures maximum reliability.

## SmartControl with SmartSave Cycling



The multifunction SmartControl provides a versatile platform for user interface and SmartSave Cycling (if enabled). The innovative SmartSave (patent pending) Cycling Control continuously monitors the demand placed on the dryer. At conditions of low demand the refrigerant compressor is cycled off to save energy. A sophisticated algorithm continuously adapts the operation of the dryer for optimum energy efficiency while minimizing the dewpoint spikes common to traditional thermal mass dryers.



- digital dewpoint display
- SmartSave Cycling or direct expansion operation
- self diagnostic control with warnings and alarms
- SmartSave Cycling Control
- optional RS485 BMS interface

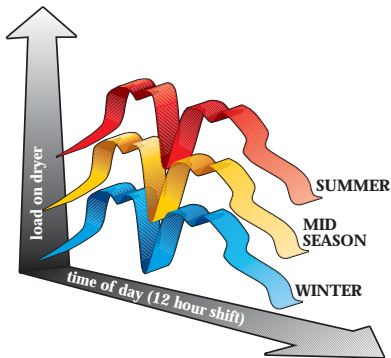
### Compliant Scroll Compressor



PoleStar Smart® features Compliant Scroll compressors, offering energy savings of 20 -30% when compared with piston compressors. The ability to tolerate liquid returns coupled with 50% less moving parts render them nearly indestructible and highly reliable. Low vibration levels increase overall refrigeration circuit longevity.

# Smart Savings: the lowest real operating cost

## Cycling Operation



SmartSave Cycling Control provides energy saving by matching the operation of the dryer to the actual demand on the system.

## Dual Mode Zero Air Loss Drain



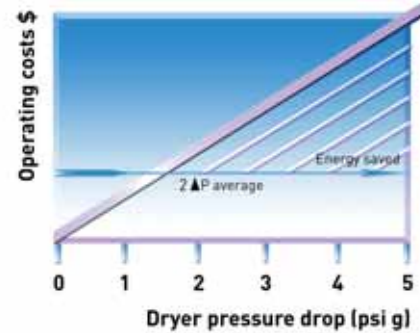
Ensures no compressed air is wasted and dual mode circuitry optimizes drain reliability.

## Compliant Scroll Compressor



Energy savings of at least 20% versus traditional piston compressors

## Lowest Differential Pressure



PoleStar Smart® dryers have an average of 2.0 psid versus the industry average of 5.0 psid.

Example: 500 scfm dryer operating 8760 hours per year

Cost of Power	Savings Realized
\$0.05 per KW =	\$546 per year
\$0.10 per KW =	\$1091 per year
\$0.15 per KW =	\$1638 per year

## Optional Communication Package: Simple BMS interface



- RS485 serial card provides direct communication to Modbus. Requires no gateway or A.N.I.
- Provides visualization of dewpoint, alarm conditions and service indication.
- Provides remote control of the dryer including on/off and alarm reset (depending on actual alarm)



**purecare** goes well beyond simply designing a compressed air network. We stay close to the user, ensuring the system is correctly installed and commissioned and maintained throughout the service life of the dryer.

- extended warranty programs
- genuine domnick hunter preventive maintenance kits
  - factory trained and certified service technicians
    - immediate technical assistance via phone
      - factory auditing
      - training for local personnel
      - global support

purecare ensures that the user's system operates perfectly and at the minimum cost at all times and for many years to come. Because neither time nor technology stand still, we ensure our users will continue to receive the very best support and the most advanced solutions. purecare will allow our users to concentrate on doing what they do best...maximizing their business.

Welcome to **purecare**.

# Technical specifications

DRD265 - DRD6000 capacities are based upon:

Ambient temperature:	100°F (38°C)
Inlet temperature:	100°F (38°C)
Inlet pressure:	100 psi g (7 bar g)

For flow rates at other conditions, please contact domnick hunter for correct sizing.

Model	Air Connections	Nominal Capacity	Dimension ins (mm)			Weight		Primary Voltages	Recommended Filtration
			A	B	C	lbs	kg		
DRD265	2" NPT - F	265	28 (711)	42 (1067)	41 (1041)	320	145	230V/3Ph/60Hz & 460V/3Ph/60Hz	-035GNFI or -040HNFI
DRD325	2" NPT - F	325	28 (711)	42 (1067)	41 (1041)	320	145	230V/3Ph/60Hz & 460V/3Ph/60Hz	-035GNFI or -040HNFI
DRD400	2" NPT - F	400	28 (711)	42 (1067)	41 (1041)	320	145	230V/3Ph/60Hz & 460V/3Ph/60Hz	-040HNFI
DRD500	2" NPT - F	500	28 (711)	42 (1067)	41 (1041)	342	155	230V/3Ph/60Hz & 460V/3Ph/60Hz	-045HNFI or -050JNFI
DRD700	3" NPT - M	700	32 (813)	52 (1321)	46 (1168)	529	240	230V/3Ph/60Hz & 460V/3Ph/60Hz	-050JNFI
DRD800	3" NPT - M	800	32 (813)	52 (1321)	46 (1168)	529	240	230V/3Ph/60Hz & 460V/3Ph/60Hz	-050JNFI
DRD1000	3" NPT - M	1000	32 (813)	52 (1321)	46 (1168)	551	250	460V/3Ph/60Hz	-055JNFI
DRD1200	3" NPT - M	1200	40 (1016)	67 (1702)	43 (1092)	816	370	460V/3Ph/60Hz	-055JNFI
DRD1600	4" Flg	1600	40 (1016)	68 (1727)	71 (1803)	1279	580	460V/3Ph/60Hz	-250ODFI
DRD2000	6" Flg	2000	40 (1016)	68 (1727)	71 (1803)	1477	670	460V/3Ph/60Hz	-250ODFI
DRD2400	6" Flg	2400	40 (1016)	68 (1727)	71 (1803)	1521	690	460V/3Ph/60Hz	-300ODFI
DRD3000	6" Flg	3000	40 (1016)	81 (2057)	71 (1803)	1609	730	460V/3Ph/60Hz	-350PDFI
DRD3800	6" Flg	3800	40 (1016)	81 (2057)	71 (1803)	1830	818	460V/3Ph/60Hz	-350PDFI
DRD5000	8" Flg	5000	40 (1016)	87 (2210)	89 (2261)	2425	1100	460V/3Ph/60Hz	-400QDFI
DRD6000	8" Flg	6000	40 (1016)	87 (2210)	89 (2261)	2624	1190	460V/3Ph/60Hz	-400QDFI

## Technical data

Maximum ambient temperature:	122°F (50°C)
Maximum inlet temperature:	140°F (60°C)
Minimum ambient temperature:	41°F (5°C)
Maximum Pressure:	203 psi g (14 bar g)
Refrigerant:	R407C

## Flow correction factors

To obtain dryer capacity at new conditions, multiply nominal capacity x C1 x C2 x C3

### Ambient Temperature (C1)

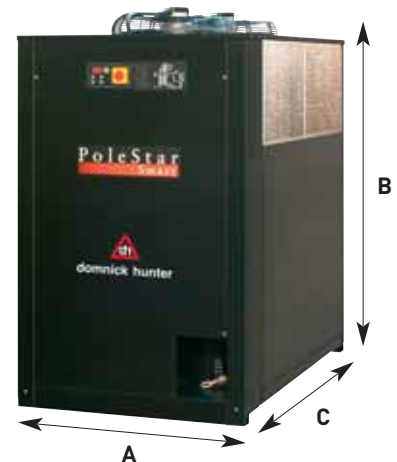
°F	90	100	110	120	122
°C	32	38	43	49	50
Correction Factor	1.05	1.00	0.94	0.79	0.71

### Inlet Temperature (C2)

°F	90	100	110	120	130	140
°C	32	38	43	49	54	60
Correction Factor	1.22	1.00	0.82	0.68	0.56	0.46

### Inlet Pressure (C3)

Pressure psi g	50	80	100	125	150	174	203
Pressure bar g	3	6	7	9	10	12	14
Correction Factor	0.77	0.93	1.00	1.07	1.12	1.15	1.18



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