

PoleStar

Smart

refrigeration drying solutions

SmartPack

SmartDrainer

SmartControl

SmartSave

SmartPack

SmartDrainer

domnick hunter hiross SpA

HIROSS

Compressed Air Treatment

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 humidity which, when cooled, will turn into liquid water, causing extensive damage not only to the compressed air network, but also to the finished product itself.

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

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



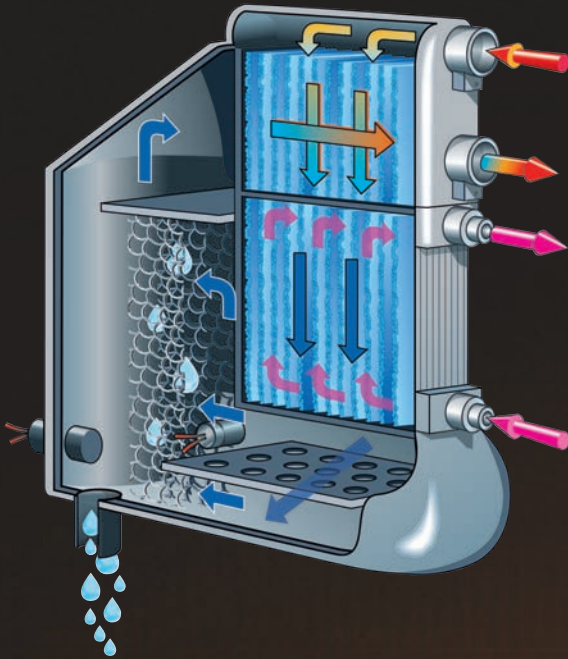
HOW POLESTAR SMART® WORKS

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 dew point temperature. The condensate in the air, which has now become a liquid thanks to the cooling process, is first efficiently separated by the demister and then removed by the condensate drain.

The now dry but cold 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 both heats the exiting air to well above dew point and prevents sweating in the piping.

SMART TECHNOLOGY



SMARTPACK

The SmartPack (patent pending) heat exchanger features an extremely robust, all-in-one aluminium design, with no interconnecting tubing. SmartPack offers class leading pressure drop levels, guaranteeing notable energy savings. Maximum dew point performance is ensured thanks to wide air channels leading to low air velocities, an oversized 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.

SmartPack

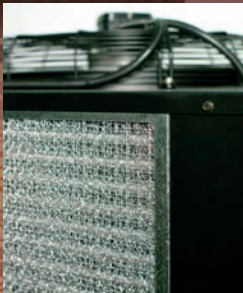
SmartDrainer

SmartControl

SmartSave

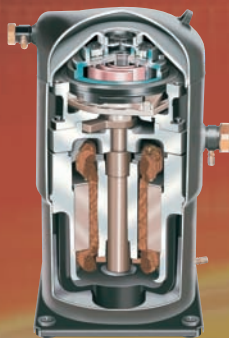
SmartPack

SmartDrainer



GUARANTEED OPERATION

PoleStar Smart® has been designed for trouble free operation in all worldwide conditions, however harsh. All models standardly allow operation up to 60°C air inlet, 50°C ambient, and 14barg working pressure. A condenser pre-filter (standard from PST120) reduces maintenance requirements and improves performance.



COMPLIANT SCROLL COMPRESSORS

PoleStar Smart® uniquely features Compliant Scroll compressors (from PST120), offering energy savings of around 20% when compared with competitive solutions. The ability to tolerate liquid returns coupled with 50% less moving parts render them near indestructible and highly reliable. Low vibration levels increase overall refrigeration circuit longevity.

LOGY: THE BENEFITS

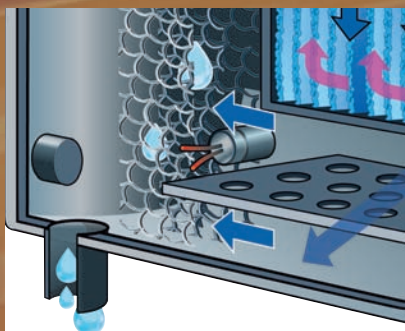


SMARTCONTROL

SmartControl (patent pending), standardly fitted from PST120, maximises ease of use. The multifunction display gives a digital dew point reading and displays coded alarms.

SmartControl manages the SmartSave (patent pending) function, and informs the user when the dryer is in energy saving mode.

Maintenance intervals are automatically signalled, whilst a Status Report (showing the last 8 events) and working hour counter simplify service. Standard volt free contacts and an RS485 serial card option allow remote monitoring.



SMARTDRAINER

The SmartDrainer is standardly fitted from PST120.

The drainage chamber is integrated into the heat exchanger itself, whilst the valve mechanism is fitted in an easily accessible drain niche.

SmartDrainer continuously adjusts itself to the actual working conditions, ensuring zero air loss and a consequent notable reduction in system power consumption.

A self diagnostic troubleshooting software avoids any fault situations, and if an error does occur an alarm will be signalled and the drain continues to operate with a pre-programmed drain pattern.

SMART SAVINGS: THE LO

CAPITAL COSTS

The dryer's buying price, when measured over a 5 year period, actually only accounts for around 25% of the total costs.

PoleStar Smart® has laid particular attention to keeping maintenance costs at an absolute minimum.

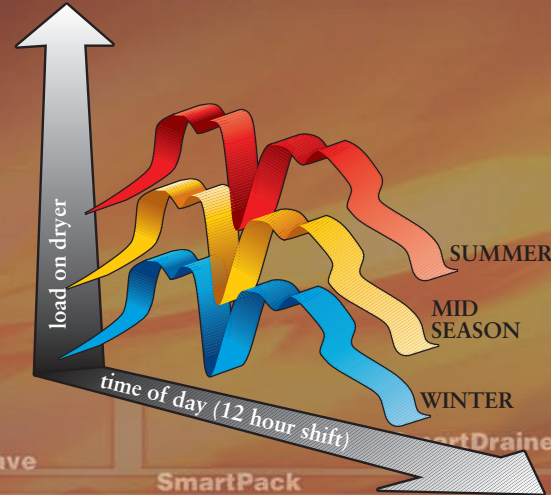
The highest quality components, integrated with the latest design solutions and manufactured with the most sophisticated testing procedures guarantee PoleStar Smart's® long-term reliability. Easy access to all parts and dedicated maintenance kits simplify servicing.



MINIMAL DIRECT ENERGY

The dryer's electrical energy consumption over 5 years.

PoleStar Smart® leads the market with the oversized air-to-air exchanger, Compliant R407C and a direct exchange concept (w



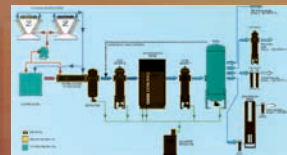
SmartControl supervises SmartSave operation using multiple sensors to ensure maximum savings without dew point spikes.

SmartPack's all-in-one aluminium construction with its Thermal Shield Insulation maximizes SmartSave's energy saving potential. The result: the most energy efficient package available, whatever the weather conditions.

PoleStar Smart® consumes less energy per load, and saves more energy at partial load.

SELECTING THE OPTIMUM DRYER PACKAGE

The PoleStar Smart® selection software allows accurate product selection according to the user's individual application, ensuring the right dryer is selected and guaranteeing optimal operation at all times.



PoleStar Smart's® energy consumption is user-specific and computer-optimized. Local ambient temperature variations and humidity are taken into account, giving a realistic energy consumption under real conditions.

WEST REAL OPERATING COSTS

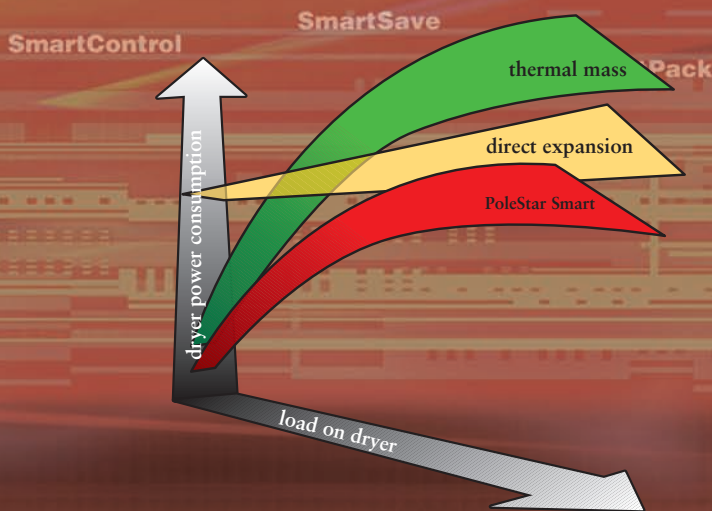
ENERGY COSTS

Energy typically accounts for about 50% of the total costs

the lowest full load power consumption; this thanks to an Scroll compressors, environmentally friendly refrigerant which avoids the increased power consumption of thermal mass type dryers).

Fluctuating air demand and seasonal weather changes mean that, in real conditions, a dryer rarely operates at full load; typical dryers either operate continuously or inefficiently adapt themselves to these working conditions, wasting valuable energy.

The SmartSave function (patent pending, fitted from PST120) automatically, continuously and precisely adapts dryer energy consumption according to the real operating conditions, avoiding unnecessary wastages.

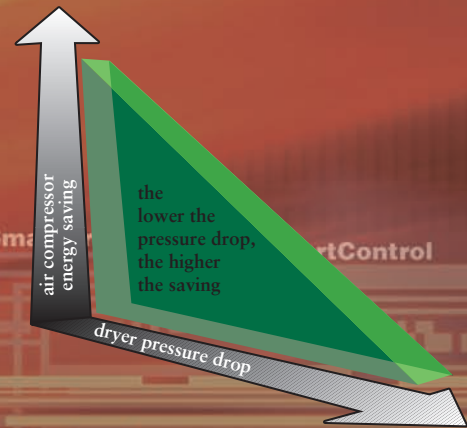


REDUCED INDIRECT COSTS

The electrical energy the air compressor requires to overcome the pressure drop created by the dryer accounts for about 25% of the overall costs over 5 years.

PoleStar Smart® offers average pressure drops which are about one half those of traditional solutions.

This benefit is further increased when also specifying Hiross filters.



The air compressor spends further energy replenishing compressed air losses from traditional condensate drains. The SmartDrainer, standard from PST120, automatically adapts its drainage pattern to avoid any compressed air losses, thereby saving energy.

energy savings, when installed in the compressed air network, are also calculated under real conditions, shift patterns, seasonal electricity costs are all considered, output according to real operating

The software furthermore allows a comparison versus traditional dryer technologies, showing how PoleStar Smart® not only maximizes performance, but also minimizes costs.



TOTAL CUSTOMER CARE

Every compressed air network differs from that of the next. Each customer solution needs to be personalised according to the application, the conditions, the local laws and the environmental legislations. Total Customer Care ensures expert consultancy in the selection of the optimum solution for each individual need. A solution created by people who know the user's application. A solution which offers the best performance at the lowest cost, in conformance to all local legislations. A solution born from over 40 years experience as a leader in compressed air treatment technology.

And thanks to the extensive range of Hiross products, a solution without compromises. But, as the name implies, Total Customer Care goes well beyond simply designing a compressed air network. We stay close to the user, ensuring the system is correctly installed and commissioned. Regular service, dedicated preventive maintenance kits, factory auditing, training for the local personnel, and worldwide support ensure that the user's system operates perfectly, and at the minimum cost, at all times and for many years to come. And because neither time, nor technology, stands still, we ensure our users will continuously receive the very best support and the most advanced solutions. Solutions which will allow our users to concentrate on doing what they know best, maximizing their business.

Welcome to Total Customer Care.



SmartDrainer

SmartControl

SmartSave

SmartPack

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POLESTAR SMART: THE ADVANTAGES

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

CHOOSE YOUR POLESTAR SMART®...

MODEL	Air flow with pressure dew point				Nominal absorbed power (kW)	Air connect.	Dimensions (mm)			Weight kg
	3°C		7°C				Width	Height	Depth	
	m³/min	cfm	m³/min	cfm						
PST040	4	141	4,8	170	0,58	1 1/2"	615	791	552	65
PST050	5	177	6,0	212	0,96	1 1/2"	615	791	552	66
PST060	6	212	7,2	254	0,95	1 1/2"	615	791	552	68
PST075	7,5	265	9,0	318	1,08	1 1/2"	703	945	562	83
PST095	9,5	335	11,4	403	1,39	1 1/2"	703	945	562	83
PST120	12	424	14,6	516	1,41	2"	706	1.064	1.046	145
PST140	14	494	17,0	600	1,37	2"	706	1.064	1.046	145
PST180	18	636	21,8	770	1,76	2"	706	1.064	1.046	155
PST220	22	777	26,9	950	1,59	2 1/2"	806	1.316	1.166	230
PST260	26	918	31,7	1.121	2,29	2 1/2"	806	1.316	1.166	240
PST300	30	1.059	36,6	1.293	2,89	2 1/2"	806	1.316	1.166	245
PST350	35	1.236	42,6	1.504	3,60	2 1/2"	806	1.316	1.166	250
PST460	46	1.624	56,1	1.981	3,52	DN100	1.007	1.690	1.245	470
PST520	52	1.836	62,6	2.211	4,28	DN100	1.007	1.690	1.245	490
PST630	63	2.225	76,3	2.695	5,24	DN100	1.007	1.722	1.657	580
PST750	75	2.649	90,8	3.207	6,91	DN150	1.007	1.722	1.657	670
PST900	90	3.178	108,7	3.839	9,86	DN150	1.007	1.722	1.657	690
PST1200	120	4.238	145,2	5.128	10,94	DN150	1.007	2.048	1.657	830
PST1500	150	5.297	181,3	6.403	15,25	DN200	1.007	2.208	2.257	1.100
PST1800	180	6.357	217,7	7.688	18,64	DN200	1.007	2.208	2.257	1.190

Performances refer to air-cooled model with air suction of FAD 20°C/1 bar A, and the following operating conditions: air suction 25°C/60% RH, 7 bar g working pressure, pressure dew point as shown above, 25°C cooling air temperature, 35°C compressed air inlet temperature. All indicated data refers to DIN ISO 7183. All models supplied with refrigerant R407C and for operation up to 14 bar g. 50 Hz models 040-095 supplied with 230/1/50 power supply, models 120-1800 with 400/3/50. Water-cooled versions available from model 220. The 60Hz version of the PoleStar Smart models is available from 7m³/min air flow.

Air flow correction factors for differing working conditions

A) working pressure correction factor	bar g	3	4	5	6	7	8	9	10	11	12	13	14
		0,74	0,83	0,90	0,96	1	1,03	1,06	1,08	1,10	1,12	1,13	1,14
B) compres. air inlet temp. correction factor	°C	30	35	40	45	50	55	60					
		1,21	1	0,84	0,70	0,59	0,49	0,41					
C) ambient temperature correction factor	°C	20	25	30	35	40	45	50					
		1,06	1	0,94	0,88	0,82	0,76	0,70					
D) pressure dew point correction factor (referred to 3°C dew point)	°C	3						5					10
		1						1,10					1,40


To obtain the required air flow multiply the air flow by the above correction factors (ie. Air flow x A x B x C x D). PoleStar Smart® can operate up to ambient temperatures of 50°C and inlet temperatures of 60°C. The above correction factors are approximative: for a precise selection always refer to the software selection program.



The Quality and Environment Management Systems of domnick hunter hiross S.p.A. have been approved by Lloyd's Register Quality Assurance to the following Quality and Environment Management System standards: ISO9001:2000 (Certificate LRC160001) and ISO14001:2004(Certificate LRC160001/14).

Data contained in this publication is to be considered as indicative only. The manufacturer reserves the right to modify data without prior notice.

The Hiross product range: Aftercoolers, Separators, Filters, Refrigeration Dryers, Adsorption Dryers, Condensate Drains, Oil/Water Separators, Water Chillers, Dry Coolers.



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