Twin Tower Adsorption Air Dryer

Clean, Dry and Reliable Compressed Air

Compressed air is an important and indispensable energy that is widely used in nearly all areas of the industries.

However, the atmospheric air draws in by the compressor contains water vapour which will condenses into liquid water when the air cooled past the saturation point. Moisture in the compressed air will causes major quality issues and expensive damages to the user such as premature wear and failure in pneumatic equipment, spoiled products and damaged control system. Having a clean, dry and reliable compressed air supply is essential to maintain efficient and low operating cost.

10 major containments found in the compressed air system:

- Water Vapour
- Water Aerosols
- Condensate Water

- Atmospheric Dust
- Rust
- Pipe scaling

- Oil Vapour
- Liquid Oil
- Oil Aerosols

- Micro-organism

PSI provide completes compressed air treatment solutions with end user in mind. The comprehensive range of PSI products and after sales service will ensure cost effective solutions and committed and continuous supports

PSI PHD / PBD Adsorption Air Dryer

High efficiency PHD / PBD adsorption air dryer with the filters provides the simple and cost-effective solutions for clean and dry compressed air.

PHD / PBD provide clean and dry compressed air quality pressure dew point of -40°C (ISO 8573.1 Class 1.2.1) and optional of -70°C (ISO 8573.1 Class 1.1.1).

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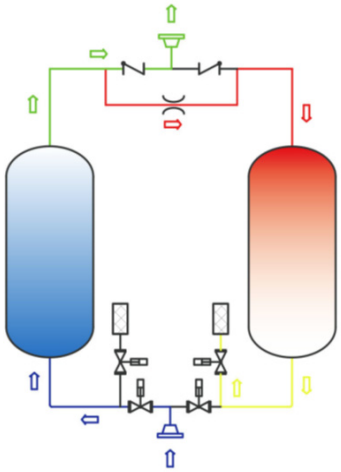
PHD Heatless Adsorption Air Dryer

Features

- Welded vessel designed according to ASME VII, PED, GB or other international standards
- Advance PLC control allows you to monitor the dryer performance via digital readout
- Dew Point Operation System (DPOS) available as option for energy saving and provide maximum energy saving
- Filled with high quality desiccant for stable dew point and lower pressure drop
- Reliable and proven components
- Standard dew point -40°C PDP (-70°C PDP and -20°C PDP available as options)
- Customised solutions are available on request to meet your needs

PHD Operation



The saturated compressed air will be directed via the inlet switching valve into one of the vessel which was filled with high performance desiccant. Moisture in the compressed air will be adsorbed by the desiccant which resulted in dried compressed air exiting from the vessel through the upper valve at the dryer outlet into the production supply (Bottom to Top). While one vessel is removing the moisture from the compressed air (adsorption), the other vessel is regenerating the saturated desiccant bed simultaneously via the Pressure Swing Adsorption method (PSA) method. A small stream of dried air from drying vessel will be directed into regeneration vessel through the orifice and exit from regeneration vessel through the exhaust valve and exhaust silencer (Top to bottom). The expansion from operating pressure to atmospheric pressure will allows the small stream of dried air to remove the moisture that is adsorbed by the desiccant. Pressurisation will take place after vessel B is completely regenerated. The dryer cycle will then switch over and repeat the whole cycle.

PHD dryer uses advance programable logic control in controlling the dryer operation and monitoring of the dryer performance via simple digital readout. With the robust, high technology, fully automated controls, it is the perfect controls for the heatless dryer.

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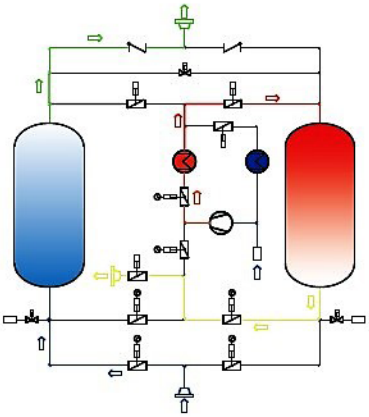
PBD Blower Purge Regeneration Adsorption Air Dryer

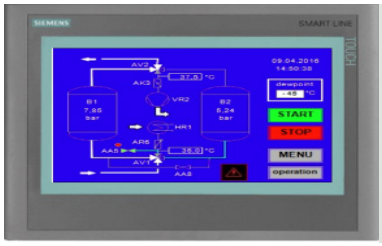
Features

- Zero air loss for regeneration
- Welded vessel designed according to ASME VII, PED, GB or other international standards
- Advance touch screen controls allows you to monitor and record the dryer performance
- Dew Point Operation System (DPOS) available as option for energy saving provide maximum energy saving
- Filled with high quality desiccant for stable dew point and lower pressure drop
- Reliable and proven components
- Standard dew point -40°C PDP
  (-70°C PDP and -20°C PDP available as options)
- Customised solutions is available on request to meet your needs

PBD Operation

The saturated compressed air will be directed via the inlet switching valve into one of the vessel which was filled with high performance desiccant. Moisture in the compressed air will be adsorbed by the desiccant which resulted in dried compressed air exiting from the vessel through the check valve at the dryer outlet into the production supply (Bottom to Top). While vessel A is removing the moisture from the compressed air , vessel B is regenerating the saturated desiccant bed simultaneously . Ambient air will be pull in by the blower to the external heater and heated. The hot ambient air will then be directed into the saturated desiccant bed to remove the moisture adsorbed by the desiccant and exit through the exhaust connection. Once the regeneration end temperature is reached, the high technology control will stop the heater. Ambient air will continue to be circulate by the blower to cools the hot desiccant bed. The blower will stop once the required cooling end temperature reached. Pressurisation will take place after vessel B is completely regenerated. The dryer cycle will then switch over and repeat the whole cycle.





PBD dryer uses high technology and powerful programable logic control and touch screen control for dryer operation and monitoring of the dryer performance. The controls monitor and record multiples parameter. The dryer operation is fully automated which makes it user friendly.

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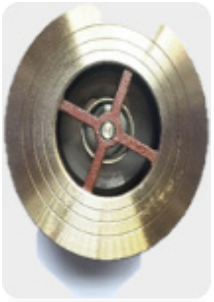
PHD / PBD Key Components

2/2 Way Angle Seat Valve

- Suitable for high viscosity media
- Design for higher flow rate and longer life cycle

High Performance Desiccant

- High crush strength
- High surface area for higher adsorption capacity
- Low abrasion which reduces the pressure and premature blockage of downstream filter



Reliable Check Valve

- Corrosion resistant material internally, stainless steel valve disc and spring
- Longer life span and low maintenance

High Performance Butterfly Valve

- Easy maintenance
- Corrosion resistant material internally, stainless steel valve disc and valve stem
- Telfon valve seat suitable for high temperature

High Efficiency Blower

- Efficient and reliable blower built to last
- Designed with low noise level and vibration as compare with others

Low Watt Density Heater

- Designed low watt density heater to ensure lower surface area and longer life span of the heating element
- Heater are protected with safety heater thermostat to prevent heating element from overheat

Energy Saving - With the Dew Point Operation System (DPOS), the PHD/PBD dryer was equipped with dew point sensor monitoring the dryer outlet dew point of the compressor air and extending the standard fixed adsorption cycle. At times the actual load conditions is lower than the designed conditions which resulted the desiccant to be underutilise and higher operating cost. The DPOS will controls the dryer cycle to match the actual load conditions. It also provides real time monitoring of the dryer outlet dew point and option of dew point alarm.

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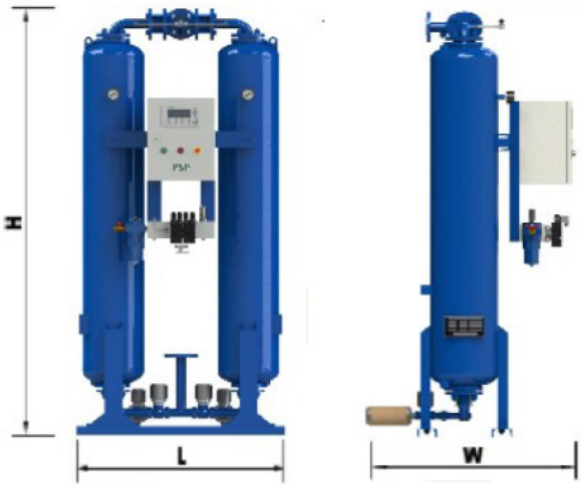
Technical Data PHD

Model	Air Connection Size	Nominal Flow Rate		Dimensions (mm)			Weight (kg)	Recommended pre filter	Recommended after filter
		cfm	m^3/h	L	W	H			
PHD120	DN25	71	120	779	549	1788	198	PG216PLF	PG216PDM
PHD180	DN25	106	180	839	549	1703	325	PG216PLF	PG216PDM
PHD360	DN40	212	360	1060	618	2020	510	PG522PLF	PG522PDM
PHD480	DN40	282	480	1060	618	2020	520	PG522PLF	PG522PDM
PHD600	DN50	353	600	1200	738	1824	585	PG792PLF	PG792PDM
PHD720	DN50	424	720	1200	738	1824	600	PG792PLF	PG792PDM
PHD900	DN50	530	900	1200	733	2028	680	PF1200PLF	PF1200PDM
PHD1200	DN65	706	1200	1500	914	1973	870	PF1200PLF	PF1200PDM
PHD1500	DN65	883	1500	1530	962	2056	975	PF1548PLF	PF1548PDM
PHD1800	DN80	1059	1800	1630	1199	2019	1150	PF2400PLF	PF2400PDM
PHD2100	DN80	1236	2100	1790	1207	2049	1275	PF2400PLF	PF2400PDM
PHD2400	DN80	1412	2400	1830	1232	2079	1350	PF2400PLF	PF2400PDM
PHD3000	DN100	1766	3000	2012	1316	2238	1600	PF3600PLF	PF3600PDM
PHD3600	DN100	2119	3600	2150	1387	2518	2100	PF3600PLF	PF3600PDM

Nominal dryer flow rated at inlet pressure 7 barg, inlet air temperature 35°C and pressure dew point -40°C



Product Selection PHD

Correction factor for pressure (CP)

5 barg	6 barg	7 barg	8 barg	9 barg	10 barg
1.51	0.88	1.00	1.13	1.25	1.38

Correction factor for inlet air temperature (CT)

35°C	38°C	40°C	42°C	45°C	50°C
1.00	1.00	0.90	0.81	0.69	0.54

1. Selected the correction factor (CP) and (CT).
2. Calculate the dryer capacity require using the following:
   Actual flow rate = Nominal air flow x CP x CT

The above product selection is for pressure dew point -40°C, consult factory for pressure dew point -70°C

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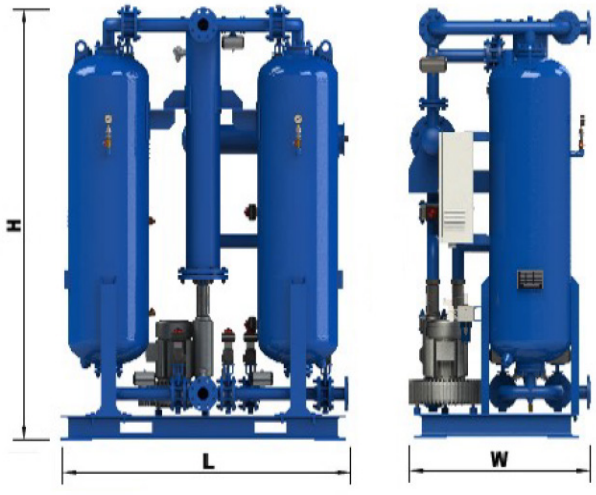
Technical Data PBD

Model	Air Connection Size	Nominal Flow Rate		Dimensions (mm)			Weight (kg)	Recommended pre filter	Recommended after filter
		cfm	m^3/h	L	W	H			
PBD1080CL	DN65	636	1080	1818	1127	2324	1970	PF1200PLF	PF1200PDM
PBD1320CL	DN65	777	1320	1818	1117	2450	2090	PF1548PLF	PF1548PDM
PBD1500CL	DN65	883	1500	1818	1117	2550	2165	PF1548PLF	PF1548PDM
PBD1980CL	DN80	1165	1980	2279	1342	2607	2680	PF2400PLF	PF2400PDM
PBD2640CL	DN100	1554	2640	2540	1566	2667	3600	PF3600PLF	PF3600PDM
PBD3000CL	DN100	1766	3000	2540	1586	2667	3750	PF3600PLF	PF3600PDM
PBD3600CL	DN100	2119	3600	2590	1680	2614	4285	PF3600PLF	PF3600PDM
PBD4200CL	DN125	2472	4200	4116	2364	2778	5600	PF4800PLF	PF4800PDM
PBD4800CL	DN125	2825	4800	4116	2376	2888	5900	PF4800PLF	PF4800PDM
PBD5400CL	DN150	3178	5400	4166	2588	2832	6600	PF7200PLF	PF7200PDM
PBD6000CL	DN150	3531	6000	4366	2578	2872	7750	PF7200PLF	PF7200PDM
PBD7200CL	DN150	4237	7200	4516	2591	2852	8740	PF7200PLF	PF7200PDM
PBD9000CL	DN200	5297	9000	5313	2906	2875	10540	PF9000PLF	PF9000PDM
PBD12000CL	DN200	7062	12000	5701	3175	3104	13500	PF12000PLF	PF12000PDM

Nominal dryer flow rated at inlet pressure 7 barg, inlet air temperature 35 °C and pressure dew point -40°C



Product Selection PBD

Correction factor for pressure (CP)

5 barg	6 barg	7 barg	8 barg	9 barg	10 barg
0.75	0.87	1.00	1.13	1.25	1.38

Correction factor for inlet air temperature (CT)

35°C	38°C	40°C	42°C	45°C
1.18	1.00	0.90	0.81	0.69

1. Selected the correction factor (CP) and (CT).
2. Calculate the dryer capacity require using the following:
   Actual flow rate = Nominal air flow x CP x CT

The above product selection is for pressure dew point -40°C, consult factory for pressure dew point -70°C.

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