DIRECT EXPANSION REFRIGERATED AIR DRYER WITH BUILT-IN-FILTERS

PDX

40 - 840m³/h | 50Hz

2 YEARS WARRANTY Compressor & Heat Exchanger

ECO FRIENDLY REFRIGERANT

www.airdit.com

ABOUT DIT

DIT, Franco-Thai manufacturer with more than two decades of experience as an air treatment specialist, leverages its expertise to develop and design products tailored for industrial use in the compressed air field. DIT is constantly focused on achieving optimal performance and possesses several patents, ensuring a leading position in terms of innovation and an ongoing commitment to excellence in performance.

Emboldened by this expertise and in partnership with industry-leading component suppliers renowned for their cost-effective solutions, DIT provides you with a comprehensive selection of the most efficient products available on the market.

Our technical office and commercial team possess the expertise to assist you worldwide with both standard projects and tailor-made solutions. Through valuable suggestions and in response to your preferences, our team excels at identifying the most fitting solutions to meet your specific requirements, enabling you to respond adeptly and globally to address various challenges with precision and expertise.

At DIT, our foremost mission revolves around ensuring client satisfaction. We take great pride in crafting and tailoring solutions that are uniquely designed to meet YOUR specific needs and requirements.

Our PDX line of direct expansion refrigerated air dryers is a valuable addition to our comprehensive range of compressed air treatment solutions. This line complements a wide array of products, including:

- **Refrigeration dryers**
- **Adsorption dryers**
- **Compressed air treatment unit**
- **Filtration**
- **Drains**
- **Oil/Water separators**
- **After coolers**

Together, these offerings provide a comprehensive suite of compressed air solutions to meet your unique client request with respect of all international standards dedicated to compressed air systems.

OPERATING PRINCIPLE

Introduction to PDX Dryers and Refrigeration principle

Unlock the future of air drying with our revolutionary PDX-SAF dryers, featuring cutting-edge direct expansion refrigeration technology and a patented 3-in-1 heat exchanger that ensures exceptional moisture removal and optimal efficiency. This groundbreaking system, equipped with advanced upstream and downstream compressed air filters, guarantees unrivaled air quality and superior performance, transforming your operations with unmatched precision and purity throughout the life of your system.

A cutting-edge high-performance heat exchanger designed for maximum efficiency

Our state-of-the-art stainless steel heat exchanger features a unique three-section design for unparalleled efficiency. The first section functions as an air/air exchanger, pre-cooling moist, water-saturated air upon entry. Next, the air/refrigerant fluid exchanger further cools the compressed air to a precise +3°C, effectively removing moisture via an integrated separator. Developed in collaboration with one of the largest heat exchanger manufacturers, this patented design ensures efficient cooling across diverse air conditions and ambient temperatures, while minimizing resistance to airflow and maintaining an impressively low pressure drop.

Initial cooling for efficiency

At the beginning of the process, the hot and moisture-laden compressed air undergoes preliminary cooling within the air/air heat exchanger. This reduces the cooling requirement in the air/refrigerant gas zone, increasing energy efficiency by more than 45%.

Condensate separation and removal

The moisture droplets separated within the separator are collected and gravity-fed to the condensate drain. The resulting condensate can be efficiently purged using a fully adjustable high-performance sequential drain or, for greater energy savings, a level-detection drain (available as an option starting from the PDX-005 SAF model).

Continuous supply of dry air

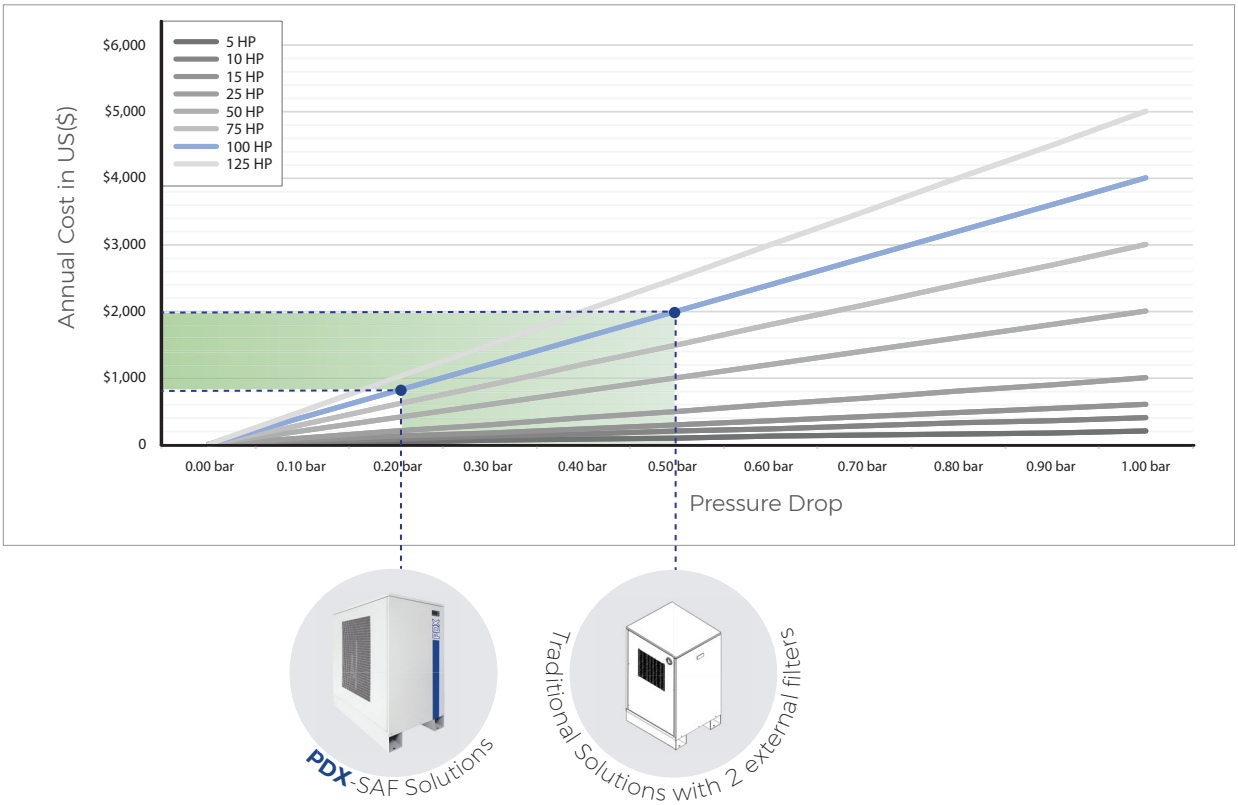
After being dried and cooled in the air/refrigerant gas exchanger, the compressed air is reheated in the air/air exchanger before it continues through the downstream high efficiency compressed air filter ensuring a perfect air purity (class 1, ISO8573.1 solid particles and class 1, ISO8573.1 oil removal, class 4, ISO8573.1 humidity) to the compressed air system. This ensures a steady and uninterrupted supply of dry air for your processes.

EXPERIENCE PREMIUM QUALITY COMPRESSED AIR

Imagine a revolutionary, comprehensive air treatment system that stands alone in its ability to provide ISO8573.1-2010 Class 1.4.1 quality air—independently, efficiently, and cost-effectively. This is no longer just a dream; it's a reality. Designed to enhance productivity and ensure absolute air purity, our system offers unmatched reliability and precision, transforming the way you manage air quality with unparalleled ease and excellence.

Engineered with a focus on energy efficiency and high-performance capabilities, our innovative dryer with integrated filters delivers outstanding performance across all conditions and air qualities, consistently providing immaculate Class 1.4.1 air. Now, you no longer must choose between superior performance and energy efficiency. As pressure drop is one of the leading causes of energy consumption in compressed air systems, we have designed this dryer to minimize pressure losses significantly, leading to substantial energy savings. This revolutionary approach not only boosts your operational efficiency but also delivers tangible benefits, ensuring that your compressed air system operates at peak performance while reducing energy costs. Experience unmatched air quality and operational excellence without compromise.

Evolution of the annual additional energy cost as a function of pressure drop



The annual additional energy cost evolution based on pressure drop can vary significantly depending on your system's specific parameters, such as air compressor efficiency, operational hours, and local energy costs. As pressure drops increases, compressors must work harder to maintain the desired air pressure, leading to higher energy consumption and costs. With these integrated solutions, we offered to the market the most economic solutions in terms of pressure drops with filters included that allows end users to reduce the Operating expenses for the whole compressed air line and ensure a maximum efficiency all time long with a dedicated alarms to change the filter elements when those started to be saturated by dusts and particles. Reducing pressure drop through optimal system design and maintenance can result in substantial energy savings and reduced operational expenses. The graphic above is an estimation of the additional cost generated due to pressure drops on systems. Our system is at least 2-times more performant than traditional system (stand alone dryers and separate upstream and downstream filters) creating a significant energy and money savings. With consideration of 0.25US$ / kW, you can save up 1.000US$ per year on a compressed air installation powered with 100 HP air compressor.

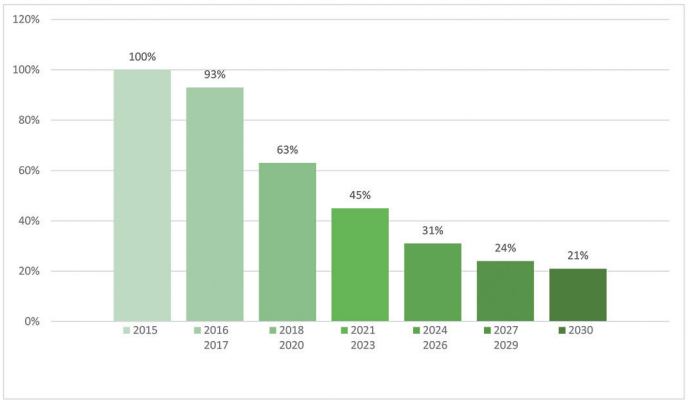
WE COMBINE
ENERGY EFFICIENCY
&
ECOLOGY.

ENVIRONMENTAL IMPACTS

The GWP comes from the translation of Global Warming Potential (GWP) and this designates, as its name suggests, the global warming potential over a period of 100 years for 1 kg of refrigerant emitted into the atmosphere. If the GWP value is large and greater than 1 then the impact of the gas is harmful to the environment.

As Franco-Thai manufacturer, we are committed to integrating the best of both worlds, drawing on the strengths of both cultures. Our high focus on energy efficiency aligns with our adherence to European regulations, which are at the forefront of driving industrial changes in refrigeration. This dedication allows us to ensure that our products not only meet, but exceed, the current standards for environmental responsibility and energy consumption.

F-GAS AVERAGE GOALS

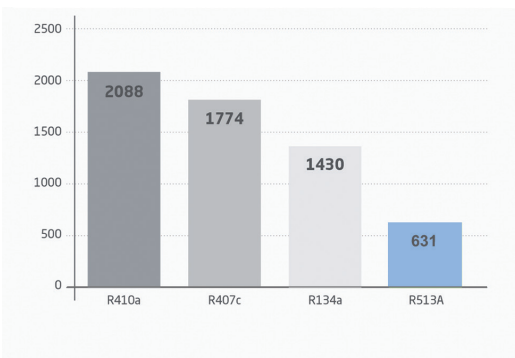


The F-GAS legislation (517-2014) in force aims to reduce the ecological footprint under three decisive axes:

- The inability to use refrigeration appliances powered by gases with a GWP (Global Warming Potential > 2500) by 2020. In this sense, the integrated solutions of R410a are strongly challenged.
- The overall reduction of the European GWP with a decrease from 2017 of 7% compared to 2015, then of 37% from 2018 compared to 2015.
- The introduction of a right to pollute and quota systems to frame Europe's global GWP

At the dawn of 2024, the strengthening of quotas, providing for a 69% decrease in overall GWP consumption compared to the reference years, induces the necessary use of low GWP refrigerants. In this sense, DIT, leader and pioneer of ecological refrigeration solutions is working in this direction with the implementation of the PDX range with high performance and low environmental nuisance.

GWP VALUES OF THE FLUIDS



R513a

A UNIQUE REFRIGERANT FOR ALL MODELS

R513a refrigerant is an excellent fluid with regard to the expectations of the F-Gas 517/2014 regulation since it has a GWP value equal to 631. The latter well below the average of refrigerants available on the market and used in the case of refrigeration dryers allows a serene projection for the years to come." For comparison, in the event of a refrigerant leak, on a dryer equipped with 4 kilograms, the pollution induced for a dryer fed with an HFC R410A fluid will be 8,352 kg of CO2 equivalence, while it will be only 2,524 kg of CO2 equivalence for an PDX R513A dryer.

As a powerful alternative without sacrificing performance, we provide a solution featuring HFC R134a fluid, renowned for its environmental excellence with a 0 ODP. Tailored to your specific needs and the region's refrigerant supply landscape, this option ensures both sustainability and reliability, making it the smart choice for a greener tomorrow.

PRODUCT FEATURES

TECHNICAL FEATURES

3-in-1 Heat exchanger
Constructed with stainless steel brazed plates (AISI316), this heat exchanger offers significant energy savings through its economizer pre-exchanger, minimal pressure drops, and high- performance separator. The stainless-steel plates used in its construction protect against moisture-related corrosion, ensuring exceptional longevity in the market.

Upstream / Downstream filters
Our PDX solution includes two high efficiency filters (micronic and submicronic grade) to ensure purity 1 class filtration on solid particles and oil removal. Those filters are using patented bakelite materials offering a capacity to filter a compressed air up to 80°C inlet air temperature.

Effortless Access with Tool-Free Design
Featuring tool-free, direct handling with no screw-on panels required, our design offers unparalleled convenience and ease of use.

Compressors
These hermetic refrigeration compressors (including pistons, rotary and scroll types) efficiently generate cold air to maintain dew point under all conditions and usage scenarios.

Controller
Each unit is equipped with an advanced parametric controller that ensures optimal performance over time and efficiently manages any anomalies with an integrated alarm system. This innovative feature guarantees the unit's longevity while maximizing operational efficiency. Additionally, the controller's smart alarms alert users when the upstream and downstream filters are saturated and need replacement, ensuring continuous, top-quality performance.

ADVANTAGES

Cost Efficient Energy Usage
Our innovative 3-in-1 heat exchanger design delivers outstanding performance with an exceptionally low pressure drop of just 0.15 bar at the specified flow rate. This design features a narrow approach between the evaporating temperature and the outlet fluid temperature, offering remarkable energy savings and enhancing system efficiency.

Extented Lifespan
Not only do the filters protect the air dryer from impurities, allowing for precise control of the air entering the dryer, but their presence and lifecycle also guarantee high-quality air for the user, eliminating any risk of oversight. The presence of pleated media on the filter elements ensures a long lifespan.

Time Saving on Maintenance Period
Time-saving and ease of use are guaranteed with our solution, thanks to its tool-free access. The filter housings can also be disassembled by hand, making filter replacements within the unit hassle-free.

Easy Setup and Operation
Our direct expansion refrigeration dryer is a plug-and-play product with all components seamlessly integrated for straight forward use. PDX dryers come equipped with a power and plug allowing for hassle free commissioning without the need to access the dryers internal.

Environmental Responsibility
This new line of refrigeration dryers operates using R513a refrigerant. This refrigerant, classified as group A1 (non-harmful and non-flammable), aligns with European regulation F-Gas 517/2014's recommended alternatives due to its low Global Warming Potential (GWP) value of 631, significantly lower than its predecessor R134a (1430). This aligns with the European directive's goals of phasing out and prohibiting refrigerants with a GWP exceeding 750 for industrial refrigeration equipment.

Durability and Sturdiness
The dryer's robust body, coated with baked epoxy paint, guaran- tees long-term durability, even in harsh and dusty environments. Its high-efficiency condenser, featuring durable fins, ensures easy cleaning and exceptional longevity.

TECHNICAL SPECIFICATIONS

	Rated flow			Connections	Power supply	Dimensions			Weight
Part model	m3/h	m3/min	cfm	BSPP	V/Ph/Hz	W	L	H	kgs
PDX-005 SAF	40	0.7	24	3/4"	230/1/50	620	320	590	38
PDX-010 SAF	70	1.2	41	3/4"	230/1/50	620	320	590	42
PDX-015 SAF	100	1.7	59	1"	230/1/50	620	320	590	45
PDX-020 SAF	125	2.1	74	1"	230/1/50	620	320	590	55
PDX-030 SAF	230	3.8	135	1"	230/1/50	930	500	820	75
PDX-050 SAF	340	5.7	200	1-1/2"	230/1/50	930	500	820	80
PDX-060 SAF	450	7.5	265	1-1/2"	230/1/50	930	500	820	82
PDX-075 SAF	540	9.0	318	1-1/2"	230/1/50	930	500	820	85
PDX-090 SAF	640	10.7	377	2"	230/1/50	1025	616	840	100
PDX-110 SAF	765	12.8	450	2"	230/1/50	1025	616	840	105
PDX-120 SAF	840	14.0	494	2"	230/1/50	1025	616	840	115

Specifications	
Unit operating limits	Ambient temperatures from +5°C to +50°C - pressure from 4 bar to 16 bar
Design conditions	Ambient temperatures +35°C, inlet air temperatures +45°C, pressure dew point +4°C, pressure 7 bar(g)
Refrigerant type	R513a (low GWP refrigerant 631) or R134a (mid GWP refrigerant 1430)

The advertised product weights are net without packaging and expressed in kilograms.
The maximum operating pressure is 16 bar
The maximum compressed air inlet temperature is 65°C
The correction factors details are available from our sales and technical teams, or are specified within our selection software, below is an extract of main values

Dryer maximum airflow = Dryer airflow x K1 x K2 x K3 x K4

Correction Factor

K1	Working pressure	(barg)	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Correction factor	(K1)	0.71	0.79	0.86	0.94	1	1.05	1.09	1.12	1.14	1.17	1.2	1.22	1.24	1.26
K2	Ambient temperature	(°C)	20	25	30	35	40	45	50	-	-	-	-	-	-	-
	Correction factor	(K2)	1.3	1.2	1.1	1	0.91	0.82	0.72	-	-	-	-	-	-	-
K3	Air inlet temperature	(°C)	30	35	40	45	50	55	60	65	70	75	-	-	-	-
	Correction factor	(K3)	1.25	1.2	1.1	1	0.83	0.71	0.58	0.48	0.4	0.35	-	-	-	-
K4	Dew point	(°C)	3	4	5	6	7	8	9	10	-	-	-	-	-	-
	Correction factor	(K4)	0.96	1	1.04	1.09	1.15	1.19	1.23	1.28	-	-	-	-	-	-

SUSTAINABLE AIR & WATER SOLUTIONS FOR
INDUSTRIAL APPLICATIONS

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