INVERTER DRIVEN DIRECT EXPANSION REFRIGERATED DRYER

iDDX

660 - 9,000 m³/h | 50Hz

2 YEARS WARRANTY Compressor & Heat Exchanger

ECO FRIENDLY R513A NATURAL 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 iDDX 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 iDDX Dryers and Refrigeration principle

Our iDDX dryers utilize direct expansion refrigeration to effectively dry compressed air from the network. Featuring an efficient refrigeration system with an inverter-driven refrigerant compressor using limited quantity of natural refrigerant (R513a) along with a patented 3-in-1 heat exchanger, they optimize drying by maximizing heat exchange across the surface, offering enhanced capacity and energy efficiency.

Heat exchanger description

The stainless-steel heat exchanger has three sections: an air/air exchanger that pre-cools moist air, followed by an air/refrigerant exchanger that cools the air to +3°C, removing moisture with a built-in separator. Developed with a leading manufacturer, it ensures efficient cooling under various conditions and minimizes airflow resistance for a low pressure drop.

Initial Cooling for Efficiency

Compressed air undergoes preliminary cooling in the air/air heat exchanger, reducing cooling demand in the air/refrigerant zone, further enhanced by the inverter-driven compressor for over 45% energy savings. Furthermore, the inverter-driven compressor in our iDDX dryers enhances efficiency by adjusting its speed to match system demand. Unlike traditional compressors that operate at full capacity, it modulates output based on actual needs, significantly reducing energy consumption and wear. This adaptability leads to notable energy savings and longer compressor life, optimizing productivity while ensuring a reliable supply of dry air. By matching performance to demand, it provides improved efficiency and reduced operational costs across various applications. Using R513a as refrigerant provides enhanced energy efficiency due to its medium density which allows for more effective heat exchange improving performance of the refrigeration system.

Condensate Separation and Removal

Collected moisture is gravity-fed to the condensate drain, which can be purged with a high-performance sequential drain or an optional energy-saving level-detection drain from the iDDX 0075 model onwards.

Continuous Supply of Dry Air

After drying and cooling, the compressed air is reheated in the air/air exchanger, ensuring a constant, uninterrupted supply of dry air for your processes, supported by the efficient operation of the inverter-driven compressor.

PERFORMANT, USER-FRIENDLY AND ECOLOGIC

Every product in the range comes equipped with a standard intelligent controller that offers a variety of features to enhance performance and safety. These features include displaying the dew point under pressure, managing the timing of condensate purging, and protecting the compressor and heat exchanger from freezing using electronic safety mechanisms before mechanical intervention. Additionally, the controller's touch screen system provides energy efficiency information, allowing users to control and maximize savings effectively.

DIGITAL CONTROLLER AS STANDARD

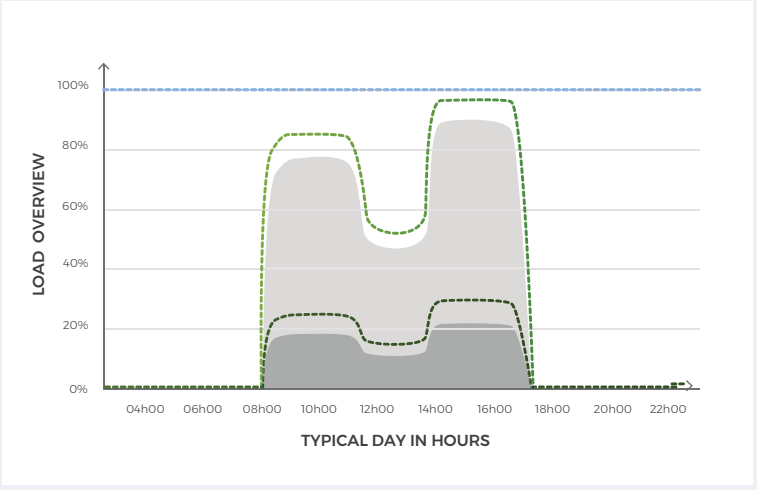
CC02

From the very first model, our refrigerated dryers are outfitted with cutting-edge controllers that define the pinnacle of technological advancement in the industry. These controllers ensure not only the smooth and efficient operation of each unit but also enhance the user experience with a sophisticated and highly intuitive interface. This superior design provides seamless interaction, allowing users to easily access and manage all functions, thereby improving operational control and efficiency. The advanced human-machine interface (HMI) is meticulously crafted to deliver precise control and monitoring capabilities, ensuring that every aspect of the drying process is optimized for peak performance and reliability.

Designed for efficiency and energy savings

With the integration of a frequency inverter system on the compressors, the iDDX refrigerated air dryers achieve exceptional energy savings of over 80% compared to traditional on/off systems, providing a swift return on investment. This advanced technology not only enhances efficiency but also allows users to monitor and visualize the substantial energy savings through the sophisticated energy-saving module included in the unit's controller.

EVOLUTION OF THE DRYER ELECTRICITY CONSUMPTION RELATED TO THE HUMIDITY OF THE COMPRESSED AIR TO BE DESORBED ACCORDING TO THE SEASON AND THE USE



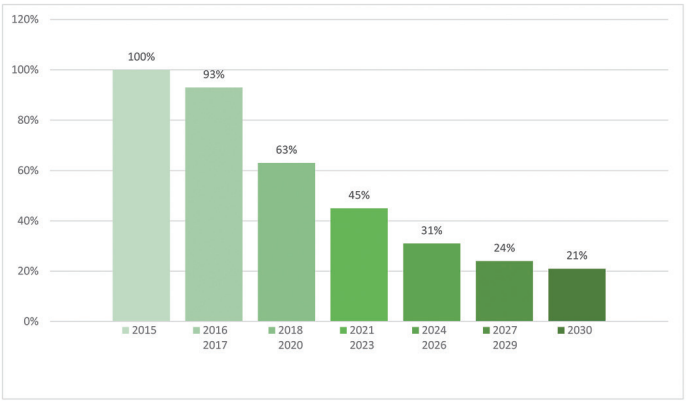
WE COMBINE
ENERGY EFFICIENCY
&
ECOLOGY.
LET'S GO NATURAL.

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

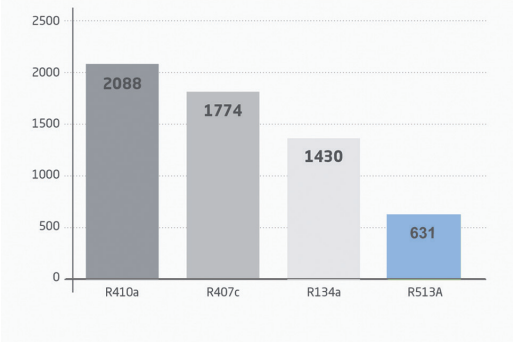


The F-GAS legislation (517-2014) in force aims to reduce the ecological footprint under three decisive axes:

- 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 iDDX range with high performance and low environmental nuisance thanks to natural refrigerant.

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 iDDX R513A dryer.

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.

Compressors

These hermetic Scroll refrigeration compressors efficiently generate cold air to maintain dew point under all conditions and usage scenarios thanks to inverter driven motors.

Variable Frequency Drives

Variable Frequency Drives (VFDs) enhance energy efficiency by adjusting motor speed to match operational needs, reducing energy consumption and mechanical stress. They improve process control, provide smoother operations, and extend equipment lifespan, leading to lower maintenance costs. Additionally, VFDs offer cost savings in various applications, such as Air Dryer systems and industrial processes, by minimizing electrical disturbances and peak energy demand charges.

Controller

Each unit is equipped with an advanced adjustable controller offering a complete set of safeties and benefits.

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.

Easy Setup and Operation

Our direct expansion refrigeration dryer is a plug and play product, with all components seamlessly integrated for a straight forward use. iDDX dryers come equipped with a power cable, allowing for hassle-free commissioning without the need to access the dryer's 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, guarantees long-term durability, even in harsh and dusty environments. Its high-efficiency condenser, featuring durable fins, ensures easy cleaning and exceptional longevity. Environmental responsibility.

Streamlined Maintenance

Maintenance is simplified with easy access via a single panel, facilitating optimal and quick dryer device maintenance. The iDDX dryers are designed for direct access to all components, and technical diagnostics are made easier with pressure taps within the refrigeration circuit and a low-pressure gauge on the condenser side.

Space-Efficient Design and Efficient Connections

The iDDX dryer is designed with a vertical orientation to minimize its footprint. Compressed air inlets and outlets are positioned at the rear of the dryer, with a minimum spacing of 12 cm, ensuring ample space for installing upstream and downstream filters while maintaining accessibility for filter element replacement.

TECHNICAL SPECIFICATIONS

	Rated flow			Connections	Power supply	Dimensions(mm)			Weight
Part model	m3/h	m3/min	cfm	BSPP	V/Ph/Hz	W	L	H	kgs
iDDX-0075 SA	660	11	388	2"	400/3/50	1012	733	1424	103
iDDX-0100 SA	900	15	530	2"	400/3/50	1012	733	1424	115
iDDX-0125 SA	1080	18	636	2-1/2"	400/3/50	1012	733	1424	148
iDDX-0150 SA	1380	23	812	2-1/2"	400/3/50	1012	733	1424	168
iDDX-0200 SA	1800	30	1059	2-1/2"	400/3/50	1012	733	1424	326
iDDX-0250 SA	2160	36	1271	3"	400/3/50	1012	733	1424	356
iDDX-0300 SA	2580	43	1518	3"	400/3/50	1012	733	1424	396
iDDX-0400 SA	3660	61	2154	4"	400/3/50	1000	1852	1615	656
iDDX-0500 SA	4320	72	2542	6"	400/3/50	1000	1852	1615	826
iDDX-0600 SA	4740	79	2789	6"	400/3/50	1000	1852	1615	1256
iDDX-0800 SA	6540	109	3849	8"	400/3/50	1200	2582	1888	1406
iDDX-1000 SA	7260	121	4273	10"	400/3/50	1200	2582	1888	1636
iDDX-1200 SA	9000	150	5297	10"	400/3/50	1200	2582	1888	1858

Specifications	
Unit operating limits	Ambient temperature from +5°C to +50°C - pressure from 4 bar to 16 bar (10 bar over 1800 m3/h)
Design conditions	Ambient temperature : +25°C, inlet air temperature +35°C, pressure dew point +3°C, pressure 7 bar(g)
Refrigerant type	R513a (Low GWP refrigerant)

The advertised product weights are net without packaging and expressed in kilograms.
The maximum operating pressure is 16bar.
The maximum compressed air inlet temperature is 65°C.
The correction factors in this sales leaflet may not be precise because each dryer equipped with an inverter-driven compressor, provides additional capacity beyond the design conditions by operating the refrigerant compressors at a higher speed. For applications that differ from the specified usage conditions, we invite you to contact our sales and technical teams. They can provide detailed information about the actual capacities of the units and their operational range without compromising the dew point.

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)	0.57	0.72	0.82	0.92	1	1.06	1.08	1.11	1.14	1.18	1.19	1.21	1.24	1.26
K2	Ambient temperature	(°C)	20	25	30	35	40	45	50	-	-	-	-	-	-	-
	Correction factor	(K2)	1.04	1	0.96	0.9	0.84	0.76	0.71	-	-	-	-	-	-	-
K3	Air inlet temperature	(°C)	30	35	40	45	50	55	60	65	-	-	-	-	-	-
	Correction factor	(K3)	1.18	1	0.85	0.7	0.61	0.56	0.49	0.43	-	-	-	-	-	-
K4	Dew point	(°C)	3	4	5	6	7	8	9	10	-	-	-	-	-	-
	Correction factor	(K4)	1	1.03	1.07	1.16	1.19	1.22	1.24	1.27	-	-	-	-	-	-

SUSTAINABLE AIR & WATER SOLUTIONS FOR
INDUSTRIAL APPLICATIONS

DRYER INDUSTRIAL (THAILAND) CO.,LTD.

HEAD OFFICE & FACTORY
19/9 Moo.1 T.Nongchak A.Banbueng
Chonburi 20170 Thailand

WEBSITE
www. airdit.com

THAILAND INQUIRIES
th@airdit.com
038-485-301

INTERNATIONAL
int@airdit.com
+66-38-485-301

111K-0111A-15