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## CRYOLINE®XF. Spiral freezer.

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**Concept** The CRYOLINE®XF is a high-performance spiral freezer built for relatively large production capacities. The patented CRYOLINE®XF technology delivers twice the heat transfer rate of standard cryogenic spiral freezers, making it twice as powerful. In addition, the CRYOLINE®XF has a smaller footprint, a higher production capacity and a higher efficiency than existing cryogenic spiral freezers.

The CRYOLINE®XF is the perfect choice for a wide range of high-quality food products: meat proteins, ready meals, seafood, bakery products etc. It is suitable for the most difficult high-temperature and high-moisture products, such as cooked poultry, seafood and prepared meals. Freezing with cryogenics allows for a very low operating temperature and thus a very fast freezing action. This preserves the quality and shape of the product, and provides increased product yield.

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**Refrigerant** The CRYOLINE®XF technology employs either nitrogen or carbon dioxide as cryogenic medium, which ensures maximum efficiency.

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**Operation** The CRYOLINE®XF uses an advanced cross-flow technology which substantially reduces freezing time and improves cryogen efficiency while reducing overall freezer size. It provides twice the heat transfer rate of conventional spiral freezers, by covering nearly 100% of the belt freezing surface area with a high-velocity gas flow. The very high heat transfer rate correlates with a high operating efficiency as the freezer can be operated at warmer temperatures. Steady-state losses are minimized due to the reduced overall size (50% less stainless steel to be cooled down).

The spiral freezer acts as a heat exchanger, in which the cryogen is sprayed directly onto the product, thus efficiently extracting heat from it. The cryogenic gas is circulated around the product at high velocity and then extracted by the exhaust system. The exhaust system is equipped with a controller which monitors the temperature in the spiral freezer. This ensures that the gas is fully utilized before leaving the spiral freezer, keeping gas consumption and running costs low.

The CRYOLINE®XF has an HMI (Human Machine Interface) touch screen control. The main menu displays the current product, motor speeds, safety status, machine messages, selected operational mode, freezer temperature and access to other screens/menus. In the event of a fault, the operator is given specific information about the cause of the fault in the message display area. Recipes can be simply loaded by accessing the recipe screen, allowing the storage/recall of the operational parameters of all product types and thus ensuring consistent operation.

**Hygiene** All CRYOLINE® freezers are designed for hygiene and ease of sanitation. The simplicity of the design enables the customer to maximize productivity by reducing cleaning and maintenance downtime. Meeting or even exceeding the latest, very strict food hygiene regulations, the CRYOLINE®XF is designed to ensure food safety and sanitation simplicity. Made from laser-cut stainless steel, with sloped, solid surfaces, rounded corners and polished welds that simplify wash-down, it enables total accessibility to all internal parts and areas, thus saving time and money. Moreover, the freezer has a built-in self-cleaning belt washer system. CIP (“clean-in-place”) optional.

Through its sophisticated construction and hygienic design, the CRYOLINE®XF minimizes food contamination risks by facilitating daily cleaning activities and thus allows for a very high level of food safety. The design of the CRYOLINE®XF supports methods for verifying and certifying hygienic design principles and was designed using the following standards: the NSF/USDA 3-A dairy standard, BS 14159 standards and EHEDG.

**Model range** The CRYOLINE®XF is currently available in 760 mm (30 in) belt width. The product line will be expanded to include a 1066 mm (42 in) belt width model.

**Standard configuration** The fully assembled and pre-tested freezer is delivered with the following features:

- Stainless steel mesh belt
- Drive motor with variable-speed control
- Two blowers/fans for horizontal gas movement
- Mounted HMI control panel, automatic gas supply controller and temperature readout
- Made of sandwich panels with polyurethane insulation as well as inner and outer stainless steel facing
- Fully welded construction
- Liquid nitrogen spray manifold and exhaust system
- Emergency shutdown switches, flash light warning system and safety lockouts
- Stand with adjustable feet, allowing ease of cleaning below the freezer

**Options** As optional features, Linde offers a belt washer and the CIP system (“clean-in-place”).

## Technical data **CRYOLINE®XF 700**

Voltage	3 ph (3/N/PE) 380–500V 50/60Hz (power) 24 vdc (control)	
Liquid connection type	1"/25.4 mm NPT or vacuum-insulated pipework or similar	
Vapor connection type	½"/12.7 mm NPT	
<b>Exhaust system</b>		
Number of connections	3 (1 in-feed (10"/254 mm), 1 out-feed (8"/203 mm) and 1 central (10"/254 mm))	
<b>Belt washer connections</b>		
Fitting size	1"/25.4 mm NPT	
<b>Belt</b>		
B48-12/16-16	Grid-style belt with mesh overlay	
B72-12/16-17	Standard option	
Belt turn ratio	1.1:1	
Overall belt width	30"/762 mm	
Usable belt width	28"/711 mm	
In-feed height (top of belt)	32"/813 mm	
Out-feed height (top of belt)	85"/2,159 mm	
<b>Product constraints</b>		
Max. product height	4"/101 mm	
<b>Freezer dimensions</b>		
Height	10.5 ft/3,200 mm with legs	
Leg adjustment	4"/101 mm	
Freezer width	13.2 ft/4,024 mm closed, 16.8 ft/5,120 mm door open	
<b>Overall length</b>	21.2 ft freezer – 24.2 ft in/out-feeds – 27.3 doors open	646 cm freezer – 737 cm in/out-feeds – 832 cm doors open
<b>Freezer weight</b>	Approximately 18,000 lb/8,165 kg	