CRYOLINE® CX600. Spiral Freezer.

Concept

The CRYOLINE®CX600 is a high-performance spiral freezer built for medium production capacities and best-in-class freezing efficiency. The patented CRYOLINE CX600 technology delivers higher average gas flow velocity leading to higher heat transfer rates than standard cryogenic spiral freezers to minimise product dehydration. In addition, the CRYOLINE CX600 has a footprint and cost advantage compared to existing spiral freezer solutions thanks to its new solid surface self-stacking belt that allows double the amount of belt inside a smaller box. double the belt inside a smaller box. The solid drum guarantees stability of the belt stack during operation. The broad production range of 1 to 3 tons per hour offers both flexibility and scalability. The CRYOLINE CX600 is the perfect choice for a wide range of high-quality food products: meat proteins, ready meals, seafood, bakery products etc., such as raw, cooked, and marinated poultry, seafood and prepared meals. Freezing with cryogens 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.

Refrigerant

The CRYOLINE CX600 technology employs either nitrogen or carbon dioxide as cryogenic medium, which ensures maximum efficiency and flexibility.

Operation

The CRYOLINE CX600 uses an advanced cross-flow technology which substantially reduces freezing time and improves cryogen efficiency while reducing overall freezer size. It provides 50 % higher heat transfer rate compared with 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 minimised due to the reduced overall box size and weight.

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 CRYOLINE CX600 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, historical data, 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 as well as the limited box size enable the customer to sanitise easily and safely while maximizing productivity by reducing cleaning and maintenance downtime. Meeting or even exceeding the latest, food hygiene regulations, the CRYOLINE®CX600 is designed to ensure food safety and sanitation simplicity. Made from laser-cut stainless steel, with sloped, 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.

Through its sophisticated construction and hygienic design, the CRYOLINE CX600 minimises food contamination risks by facilitating daily cleaning activities and thus allows for a very high level of food safety. The design of the CRYOLINE CX600 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.

Standard Configuration

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

- → Stainless steel self-stacking belt
- → Drive motor with variable-speed control
- → Four blowers/fans for horizontal gas movement
- → Control panel includes HMI interface with up to 30 recipes and data logging capability
- → Polyurethane insulation as well as inner and outer stainless steel facing
- → Fully welded construction
- → Liquid nitrogen spray manifold and exhaust system including inlet, outlet, and central connections
- → Emergency shutdown switches, flash light warning system and safety lockouts
- → Stand with adjustable feet, allowing ease of cleaning below the freezer

Benefits

- Broad production capacity range, offers flexibility
- Higher freezing efficiency thanks to push-pull, 2 pass gas flow and the exceptional belt-length in a small, light weight box
- Elimination of downtime associated with mechanical freezers
- Reduced overhead and unit cost
- Minimised floor space per production output
- Improved product quality with moisture and flavour locked in due to high heat transfer rate
- Safety and ease of maintenance – small box allows safe cleaning, less water and time required for cleaning
- Includes belt washer at outfeed, and prepared for optional CIP system connection

Technical data

Voltage	380–500 V
Liquid connection type	38 mm
Vapour connection type	13 mm
Length	4388 mm (box)/5184 mm (w/motors)
Width	3118 mm
Height	3259 ± 100 mm
Number of tiers/tier clearance	16 tiers @ 80 mm, 12 tiers @ 110 mm
Product inlet/outlet height	744/2024 ± 100 mm
Usable belt length	110 meters
Usable belt width	600 mm
Belt area	65 square meters @ 16 tier
Weight	5.4 tonnes
Retention time	5 to 50 minutes (adjustable)
Belt speed	2.2 to 22 m/min
Number of legs	9 – height adjustable
Protection class	IP 66

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