

Cross-Flow Tunnel

Hot products freezer



Concept

The Messer Cross-Flow Tunnel is a powerful and economical cryogenic freezer. This patented technology utilizes not only cryogenic liquid but high-velocity cryogenic gases to achieve rapid freezing of food products. The Messer Cross-Flow Tunnel is designed for the cooked and prepared food market. Cooked products with high moisture are difficult to freeze and maintain targeted high production rates over the customer's entire production day. The hot steam for the product fills up the freezer with ice buildup and reduces the freezer's performance. The Messer Cross-Flow Tunnel prevents ice from impacting operations. It locks the moisture and flavor into the food product delivering increase product yield over standard freezers. The Messer Cross-Flow Tunnel seals in moisture and reduces dehydration losses by up to five times that of mechanical methods and by up to three times that of conventional cryogenic freezers.

Combining cryogenic and crossflow technologies, Messer has achieved heat transfer rates more than twice that of traditional modular cryogenic freezers. The best-in-class heat transfer rates provide processors with the option to either increase production capacity or to reduce footprint.

The Messer Cross-Flow Tunnel is suitable for a diverse range of food products, including meat protein, seafood, pasta, bakery products and prepared foods. The freezer is easily accessible for cleaning, and flexible to meet growing production requirements.

Refrigerant

The Messer Cross-Flow Tunnel can use either nitrogen or carbon dioxide as the cryogenic medium for an rapid crust freeze that locks in natural flavors and moisture.

Operation

The Messer Cross-Flow Tunnel freezer is designed to deliver a strong freezing impact within a small production space. Upon entry into the freezer, the food product is instantly crust-frozen with liquid cryogen spray. The product is conveyed through the freezer on a customized stainless steel belt and is exposed to a high-pressure cryogenic cold gas flow. The centered-exhaust construction improves the overall cryogenic efficiency by reducing ingress of outside air. The Messer Cross-Flow Tunnel uses powerful motorized blower-wheels, instead of traditional fan blades to increase the static pressure and the overall velocity of the airflow.

Hygiene

The Messer Cross-Flow Tunnel is designed for ease of use and low maintenance with minimal cleaning effort. The Messer Cross-Flow Tunnel features sloping floors and all internal components are made of stainless steel or polyethylene. Modules are fully welded, ground and finished.

Benefits

- Designed for hot & steamy cooked foods
- Low product moisture loss
- Unique Crossflow technology design provides faster, more-efficient freezing
- Blowers/fans for horizontal cryogenic gas movement
- High production capacity
- Cryogen savings with heat transfer rates two to three times those of traditional modular cryogenic freezers
- Elimination of downtime associated with mechanical freezers
- Hygienic design – less water and time required for cleaning
- Low maintenance
- Minimum air infiltration

Technical Data

Designation	Unit	Value
Overall length (L)	ft (m)	15.4 (4.75)
Overall width (W)	ft (m)	10 (3)
Height closed (HC)	ft (m)	6.6 (2)
Height opened (HO)	ft (m)	9.6 (3)
Belt inlet & outlet height (BH)	in (mm)	39 +/-3 (990)+/-(75)
Max. belt loading capacity	lb/ft ² (kg/m ²)	3 (14.6)
Max. product height	in (mm)	4 (100)
Usable belt width	in (mm)	40 (1000)
Usable belt length	ft (m)	10 (3)
Min belt speed	ft/min (m/min)	1.5 (.45)
Max belt speed	ft/min (m/min)	12 (3.6)
Electrical frequency	Hz	60/50
Electrical voltage	Volts	380 - 500
Electrical amps	Amps	99
Exhaust connection	in (mm)	16 (400)
Number of exhausts	#	2
Pneumatic type		GAN/Instr Air
Pneumatic connections	in (mm)	1/2" FNPT
Pneumatic consumption	ft ³ /hr (m ³ /hr)	5 (.15)
Refrigerant type		LIN
Refrigerant connection	in (mm)	1.0" MNPT
Number of legs	#	4
Weight	lbs (kg)	EST 10,000 lbs (4,536)



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