

# 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 gases but also high-velocity crossflow cryogenic gases to achieve rapid chilling and 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 impacting operations and locks the moisture and flavor into the food product delivering increase product yield over standard freezers. The Messer Cross-Flow Tunnel will seal in moisture and reduce 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 users with the option to either increase production capacity or to reduce overall required

length, due to a smaller freezer 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 accessible for fast and reliable sanitation, and can be expanded to satisfy growing production requirements.

## Refrigerant

The Messer Cross-Flow Tunnel can use either nitrogen or carbon dioxide as the cryogenic medium for an instant 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 stainlesssteel belt and is exposed to a high-pressure cryogenic coldgas 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.

The Messer Cross-Flow Tunnel is controlled via the built-in touch screen. The main menu displays the current product, motor speeds, safety status, machine messages, selected operational mode, freezer temperature, and provides access to other screens and 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 entered into the unit's computer by accessing the recipe screen, where the user can store and recall the operational parameters of all product types.

### 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
- Lowest dehydration rate in the industry
- 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 <sup>2</sup> (kg/m <sup>2</sup> )	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 <sup>3</sup> /hr (m <sup>3</sup> /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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