

Survey of Cryogenic Food Processing Equipment

Air Products features Freshline products at International Poultry Expo

In January, Air Products announced that it planned to exhibit several key products from its portfolio of food processing products at the International Poultry Expo held in Atlanta. Three products in particular—the Freshline LIN-IS, the Freshline DM tunnel freezer and the Freshline continuous sauce chiller—have been designed to help poultry processors get more value out of existing equipment and processes.



The Freshline DM tunnel freezer by Air Products.

The Freshline LIN-IS (liquid nitrogen injection solution) can be retrofitted to new or existing misers, grinders and blenders and manages the temperature of minced or chopped proteins through controlled injection of liquid nitrogen into the product during mixing. The Freshline DM tunnel freezer is a flexible, dual-mode solution with the option to process both individually quick frozen (IQF) and flat or trayed products. This allows for the processing of a variety of poultry items.

The Freshline continuous sauce chiller uses liquid nitrogen to chill many types of liquids and semi-liquids, such as sauces, gravies and marinades. Products can be chilled within seconds or minutes, saving considerable time over batch cooling.

Air Products' line of Freshline freezers can accommodate the needs of manufacturers and processors of varying sizes and capabilities. For more information, visit www.airproducts.com/food.



Linde's CRYOLINE freezer.

Linde introduces CRYOLINE® IQF tunnel freezer

Linde has introduced the high-efficiency CRYOLINE freezer, which it calls the "world's first hygienic IQF tunnel freezer with (patented) rolling-wave action." The freezer features Linde's CRYOWAVE™ technology, a proprietary rolling-wave action that gently tumbles layered products, keeping them separate as they freeze. This process allows items that clump or stick to belts to be chilled or frozen at high production rates, providing significant cost savings over flighted freezers. Other benefits include improved cleanability and reduced maintenance downtime.

"With the right know-how and low capital outlays, new hygienically-designed cryogenic freezing technology using either liquid nitrogen or carbon dioxide can offer many economic benefits immediately," Mark DiMaggio, Head of Food and Beverage, Linde North America, said in a press release.

For more information, visit www.lindefood.com.

Airgas FreezeRight™ TL cryogenic freezer

Debuting in June 2010, the latest addition to the Airgas FreezeRight line of cryogenic freezers is the FreezeRight TL, which has been designed as an efficient, flexible freezing alternative that uses liquid nitrogen or carbon dioxide to flash freeze food items. This single-pass linear freezer maximizes produc-

tion rates, reduces cryogen use and enables more thorough sanitation. Its top-lifting design allows for easy access to internal components.

Greg Caniglia, Director, Engineering Solutions Group, Airgas Merchant Gases, says what really sets the FreezeRight TL apart is its modular design: "The standard FreezeRight TL can be configured with from two to five modules. That provides customers with the ability to meet today's production requirements and the flexibility to easily expand when production requirements increase."



A freezer from the Airgas FreezeRight line.

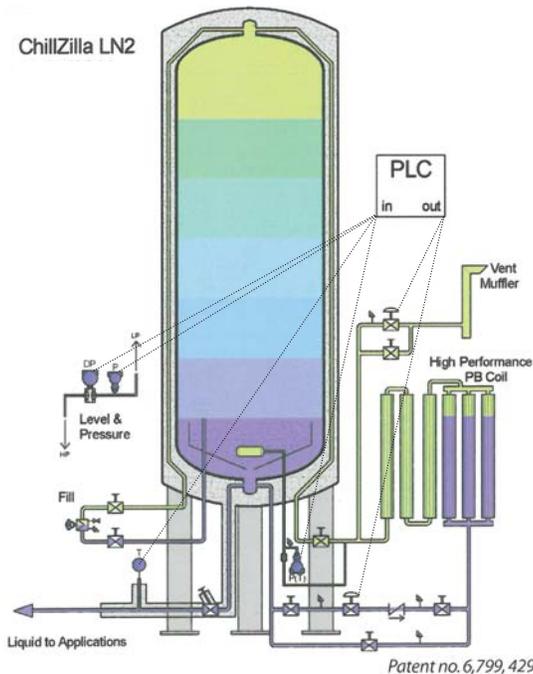
The standard Airgas FreezeRight TL can process more than 500 pounds of product per module per hour. Design features such as improved gas circulation and an enhanced exhaust system optimize cryogen use.

Chart's ChillZilla LN₂ system

Chart Inc. has introduced the ChillZilla Bulk LN₂ food freezing storage system, designed to automatically provide the optimum liquid nitrogen supply to any food freezer. The ChillZilla LN₂ system is ideally suited for IQF or submerged LN₂ immersion freezers, and features a Dynamic Pressure Builder™ for precise saturated liquid supply to the freezer regardless of the LN₂ liquid level.

Other features include: insulation baffle with dedicated upper fill port for uninterrupted LN₂ supply during transport refill; high performance two-stage ambient pressure builder vaporizer for maximum efficiency;

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Programmable Logic Controller with actual LN₂ supply and storage temperature, pressure and level monitoring for precise tank pressure control (PB and Vent); and a high flow automatic pressure building valve that improves response time and performance after a fill along with a tighter operating pressure dead-band, among other features.

The ChillZilla LN₂ system is also ideally suited for other LN₂ applications, such as cryogenic rubber deflashing.

Chart is also focusing on technology for the food and beverage industry through its Cryotech International division, based in San Jose CA. Cryotech International was acquired by Chart Industries in the summer of 2010. In addition to designing and supplying a liquid nitrogen delivery system to iCream Cafe in Chicago (see photo on page 22), the Cryotech division has also developed systems for ice cream makers Smitten Ice Cream and Blue Bunny.

Chart continues to develop technologies for LN₂ dosing with improvements to products like SoftDose technology and the UltraDoser FS150. SoftDose was developed in response to the demand for tight pressure specifications on ultra-lightweight packaging.

"A side chute has been added to the SoftDose family of products, which allows LN₂ to be dosed

at an angle to minimize, and in some cases eliminate, splashing of the product for consistent LN₂ doses to each and every container," said Monica Karimoto, Product Manager, Dosing Systems.

The company's IntroDoser has been revamped and renamed the UltraDoser FS150. With this next generation, the system is easily upgradable (controller only in most cases) and completely vacuum insulated (compared to the original IntroDoser.) The system is ideal for fixed line speeds up to 150 containers per minute.

For more information, visit www.chartindustries.com.

New food industry products from Air Liquide Industrial

Air Liquide Industrial U.S. LP ("Air Liquide Industrial") has recently developed two new state-of-the-art cryogenic freezing systems to meet the growing needs of the food processing industry. The ALIGAL™ CC continuous current liquid nitrogen immersion freezer and the ALIGAL FZ cryogenic tunnel freezer both employ proprietary design elements developed by Air Liquide Industrial experts.

The ALIGAL CC is a proprietary continuous current liquid nitrogen immersion freezer developed to provide versatility in freezing, while

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maximizing the quality and production capacity of small, diced or sticky products. The ALIGAL CC can even freeze liquid products into something as small as a pellet or as large as a 5–10 gram serving.

Continuous current liquid nitrogen flow is a new concept in cryogenic freezing. The product never touches a belt until it is already crust-frozen and transported to the carryout conveyor belt. The continuous flow of liquid nitrogen eliminates product deforming or sticking to a stainless steel belt, thus minimizing yield loss and maximizing product quality and appearance.

The ALIGAL CC also features a lift-top design and the stainless steel construction allows easy access to the interior of the freezer for sanitation and easy cleaning. The freezer has been designed to meet FDA and USDA sanitation standards and requirements.

Requiring only a 17 ft x 5 ft footprint, the standard ALIGAL CC can easily be installed in a matter of hours.

Nitrogen consumption is reduced to a minimum when the ALIGAL CC unit is combined with an integrated cryogenic post freeze tunnel, achieving a high level of efficiency and lowered operating costs.

The ALIGAL FZ freezing tunnel has been designed to meet the needs of food processors seeking increased productivity, excellent sanitary design, ease of operation and maintenance with a minimal capital and installation cost.

Constructed of stainless steel components with a seamless, gel-coated fiberglass freezer enclosure, the ALIGAL FZ sets a new standard in ease of sanitation and hygienic design. The design also exceeds standards set by the USDA and the European Hygienic

Engineering and Design Group (EHEDG).

Two sanitary seals, removable in seconds, separate the top and bottom half of the ALIGAL FZ. The conveyor belt is raised for complete access above and below the belt for cleaning and sanitation of the entire interior of the tunnel. The curved surfaces and self-draining design keep your freezer clean and eliminate trapped water or food particles which can promote the growth of bacteria.



The ALIGAL FZ freezer from Air Liquide.

Processors have shown up to a 70% reduction in sanitation time and costs.

The ALIGAL FZ contains 33% more freezing zone and a 50% increase in convection when compared to similar systems. The curved lid design enables cryogenic vapor to easily return to the six fans for maximum convection, providing a highly efficient use of the refrigeration available in each pound of cryogen. Processors will immediately benefit from the ALIGAL FZ with greater productivity at a reduced operating cost.

For more on the ALIGAL FZ and ALIGAL CC including video demonstrations on both, visit www.us.airliquide.com/en/solutions-by-industry/solutions-products-services/food-and-beverage.html, or contact Rolf Wieland, BD and International Expert Food and Cryogenics, Air Liquide Industrial US, LP, rolf.wieland@airliquide.com. 

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