Freshline® food processing technologies for poultry
An efficient way to freeze, chill or MAP a broad range of products while enhancing product quality

…tell me more
To remain successful in today’s globally competitive environment, poultry processors look for ways to improve productivity, increase product yield and lower costs while producing high-quality products that keep up with changing consumer demands. Consumers are looking for affordable, healthy food choices without sacrificing quality, taste or convenience. This explains why frozen food items and fresh products packaged in a modified atmosphere are growing categories for foodservice and in-home food preparations.

Enter Air Products. Our Freshline® solutions provide innovative freezing, chilling and preservation systems as well as the technical know-how to help with many of the production challenges facing the poultry industry today. Also, our Halia™ solutions provide wastewater treatment systems specifically adapted to your needs.

The Air Products Freshline team has considerable knowledge of the use of gas-based technology in the poultry sector. By performing audits of your process they will work with you to develop the best solution for each production requirement.

Air Products has over 50 years of experience in the food industry. The innovative gas-based equipment and the gases supplied by Air Products meet the highest safety and quality standards and are fully compliant with all relevant EU and local food legislation.
Why use cryogenic freezing?

Cryogenic freezing means using liquid nitrogen or carbon dioxide to freeze different types of poultry. In industrial poultry processes, cryogenic freezing has considerable advantages, such as:

- Significant reduction in freezing time
- Reduction in weight loss caused by dehydration
- Reduction in enzyme and oxidative deterioration
- Increase in quality and improvement in the texture of the poultry
- Reduction in the size of the water crystals
- Microbial stability
- Improvements to the appearance and colour of the poultry
- High freezing speed
- Flexibility in production
- Low financial investment
- Reduction in space taken up by the equipment
Poultry processing

Whether it is IQF or non-IQF freezing, crust freezing prior to slicing or filleting, coating, chilling, inerting, sparging of your frying oils, controlled atmosphere stunning, campylobacter reduction, Modified Atmosphere Packaging (MAP), or several other processes, Air Products supplies a full line of Freshline systems or gas mixtures that can be tailored to meet your specific needs.

Freshline freezing and chilling systems

Our batch and continuous freezers can process a wide variety of poultry and game products, including raw, cooked, marinated and breaded products. All of our freezing or chilling systems use our high-purity liquid nitrogen, which provides the most efficient means of freezing and cooling available.
Applications and equipments

**Freshline® batch freezer** – Our freezer or chilling unit for pieces of poultry and pre-cooked dishes is specifically designed for freezing and/or ultra-fast refrigeration, using nitrogen as a refrigeration agent.

**Freshline® EF tunnel freezer** – Our unique easy freeze cryogenic freezing or chilling system requires minimal upfront capital investment and is quickly and easily integrated into your existing/new production line, providing you with an easy, low-risk solution. It is simple to operate whilst rapid to install and offers greater flexibility for fast switchovers of products.

**Freshline® MP tunnel freezer** – Our state-of-the-art cryogenic tunnel freezer is designed to provide exceptional performance while incorporating the latest international hygiene features.

**Freshline® DM tunnel freezer** – Our flexible dual-mode freezer allows you to quickly change from processing IQF to non-IQF products using the same freezer.

**Freshline® IQF+ tunnel freezer** – Our very efficient IQF+ freezer allows you to produce high quality IQF products in larger throughputs than standard spray freezing IQF freezers without requiring the high LIN consumption of immersion freezers.

**Freshline® Mixer** – By injecting nitrogen into our specially-designed mixer, poultry products can be mixed and chilled evenly without the risk of clumping.

**Freshline® Tumbler** – Our Freshline Tumbler is a coating technology ideally suited for the high-value prepared meals sector. It can deliver an ideal balance of meat products and sauces, producing portionable, ready-to-heat products. The tumbler works by using a highly efficient batch production method that evenly coats meal ingredients during the freezing process. Our tumbler combines two processes in one system – enrobing with sauce and IQF freezing.

**Freshline® TRS tunnel freezer** – To meet the growing use of high speed cutters, our Freshline TRS tunnel freezer was specially designed for continuous crust chilling, both of cooked and fresh products prior to slicing or filleting.

**Freshline® LIN-IS** – Our controlled temperature system enables the even cooling of poultry and game products in preparation for the ideal texture to be formed and further processed.

**Freshline® SafeChill™ Technology** – Our patented campylobacter intervention uses super-chilled air to effectively reduce the campylobacter count by 1 log (90%) or more on highly contaminated carcasses. Can be used alone or combined with other interventions. Its precision avoids any damage to the poultry which can be sold as fresh. This fully automated and modular system can operate up to 3 shifts per day and support any current or future processing speed.
Extending shelf life using Freshline Modified Atmosphere Packaging (MAP)

Demand for chilled poultry and game has increased rapidly in recent years and there is now an extensive market for both whole birds and prepared portions. As with other meats, poultry and game are perishable products and are therefore subject to spoilage from aerobic bacteria that flourish at chill temperatures.

When used in conjunction with careful temperature control (ideally between −1°C and +2°C) MAP can more than double the shelf life of these products. Research has shown that fresh poultry and game products packed in air typically spoil after 4-7 days, whereas packed in Freshline MAP gases spoilage does not occur until 10-21 days (depending mainly on the type of cut, whether the product has “skin on” or “skin off,” the species, the fat content, the initial microbial load and the storage temperature).

For chilled raw poultry and game, the principal spoilage mechanism is microbial growth, particularly growth of Pseudomonas species and Achromobacter species. These aerobic spoilage bacteria are very effectively inhibited by inclusion of CO₂ in the atmosphere of your packaging while the addition of oxygen helps maintain the reddish colour of the “skin off” products for a longer period.

Typical Mixtures include – 30% CO₂/70% N₂, 30% CO₂/70% O₂, 30% CO₂/20% O₂/50% N₂ for retail and up to 100% CO₂ for bulk.

Air Products offers a range of pure and premixed food grade gases for the food industry. These gases can be supplied in a range of forms including cylinders, cylinder packs, small bulk tanks, large bulk tanks, generators and on site supply systems.

In addition, our Freshline team, equipped with analysis equipment, is available to undertake process trials to ensure you find the perfect gas mixture for your product.
Freshline food quality and traceability pledge

Air Products and its subsidiaries have been providing gas-based equipment, services and products to the food and beverage industry globally for more than 50 years. Our portfolio is comprehensive and offers flexible solutions for freezing and chilling food, modified atmosphere packaging, beverage applications and wastewater treatment. Through a strict regime of internally and externally audited management systems, our gases meet and often exceed the Government and EU requirements for food quality and traceability. All of our gas cylinders are supplied to the highest specification and include tamper-proof shrink wrap systems to prevent contamination complete with a batch numbered certificate of conformity for traceability.

For added security, our unique Freshline Plus cylinders have been specially developed to offer new standards of hygiene and safety in food packaging environments. Every cylinder is fitted with an integrated bacterial filter and protected by antimicrobial technology coatings, giving you peace of mind that you are introducing the purest gas into your food packaging environment every time.

Halia Wastewater solutions

As well as our Freshline® solutions, Air Products also offers water treatment solutions, including:

- Improvement of existing wastewater treatment systems and increasing their treatment capacity with oxygen injection
- Temporary aeration requirements
- Wastewater disinfection for reuse applications
- New system design
Ask Air Products
…and expect more.

Air Products’ Freshline solutions offer you the high-purity gases and equipment, the international supply capability, and – most important – the unmatched industry experience and technical support to help you succeed just about anywhere in the world.

We can help you improve your productivity, lower your costs, maximize your returns, and, as a result, allow you to continuously grow in a very competitive market.

Next to our standard applications, we also offer custom made solutions to ensure your needs are met and your expectations reached, always.

What you are looking for doesn’t exist yet? Air Products can help you!

Our experts are always happy to invest their food know-how in joint R&D projects. Together we can develop new concepts and processes that will allow you to meet the future with a head start from your competition.

For more information about joint R&D or on any of our offerings, call Air Products today to speak with a food industry expert, or visit us at the website below:

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