

# Freshline® LIN-IS

## Precise heat removal in the meat industry



### Freshline LIN-IS benefits

- Meat blends/mixes are more uniform
- Meat appearance is improved by minimizing exposure to oxygen
- Consistent and repeatable cooling process
- Cost-effective
- Reduced aroma and flavor loss

Freshline LIN-IS is used to control the temperature of meat through precise injection of liquid nitrogen into the product during processing.

The high-speed processing required to be successful in the meat industry generates more heat than it ever has in the past. Injecting liquid nitrogen during processing allows you to retain both processing speed and product quality.



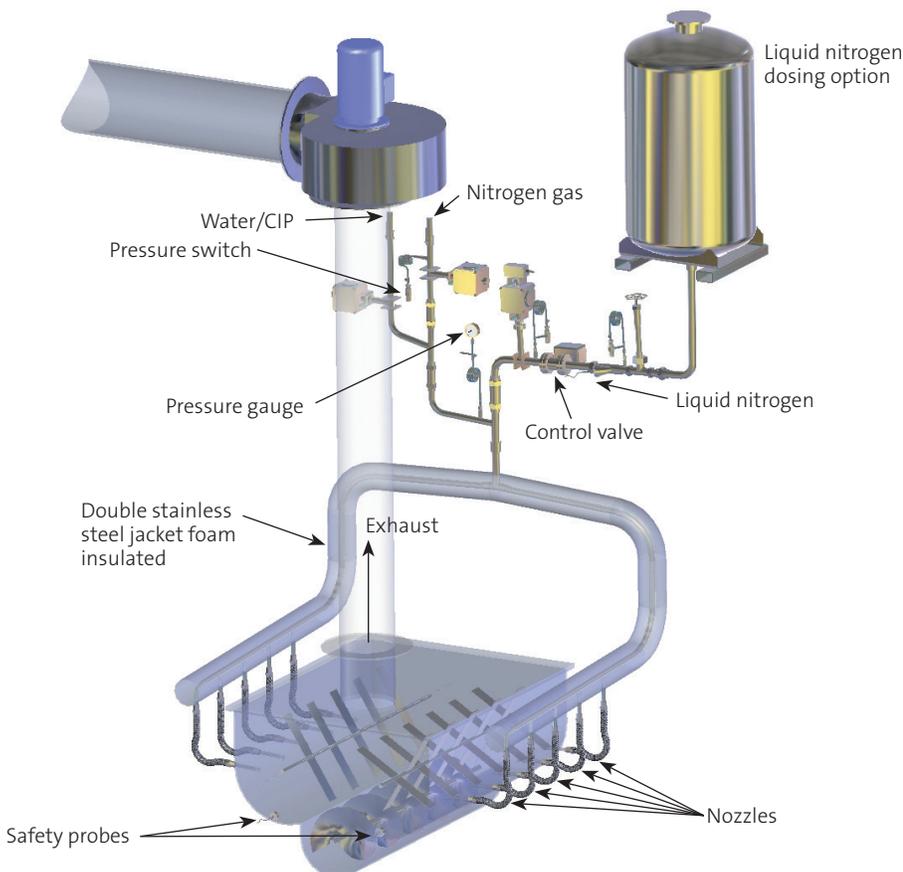
Almost by definition, food processing involves some form of heat, which needs to be removed before packaging or shipping. In meat processing, fats melt or soften under the influence of relatively little heat. With the high processing speeds required to be competitive today, more heat is generated during meat processing. This causes softening or melting of the necessary and desired fats and will result in a poor-quality end product.

The heat generated during processing can be easily and accurately offset with liquid nitrogen. Injecting liquid nitrogen during blending and/or grinding brings the awesome power of a  $-320^{\circ}\text{F}$  cryogenic liquid into intimate contact with your meat. The mixing and blending of the meat with liquid nitrogen quickly and efficiently removes precisely the quantity of heat desired. Whether you want to remove the heat from friction and mechanical energy or facilitate further cooling, liquid nitrogen is up to the job. Stabilizing the fats in the blended product makes downstream processing much easier, produces a higher-quality finished product, and improves processing uptime.

## How it works

With Freshline LIN-IS, liquid nitrogen is injected into the meat blend through nozzles installed in your mixer/blender/grinder. The nozzle size, arrangement, and configuration is custom-engineered for your processing equipment and desired results. Precise temperature control and nitrogen use is achieved through one of several optional proprietary control schemas. Recipe functionality, exhaust systems, safety controls, and integration into your controls are all part of the full service package that Air Products offers. For a simple animation of the process, go to [airproducts.com/food](http://airproducts.com/food).

**Figure 1: Freshline LIN-IS schematic**



## Ask Air Products . . . and expect more

In addition to the equipment, we supply the training and safety systems necessary for a quality installation and expert technical support before, during, and after installation. Whether your packaging, cooling, chilling or freezing applications include bakery goods, fruit and vegetables, poultry, meats, ready meals or anything in between, 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, help make you more competitive in a very competitive market.

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