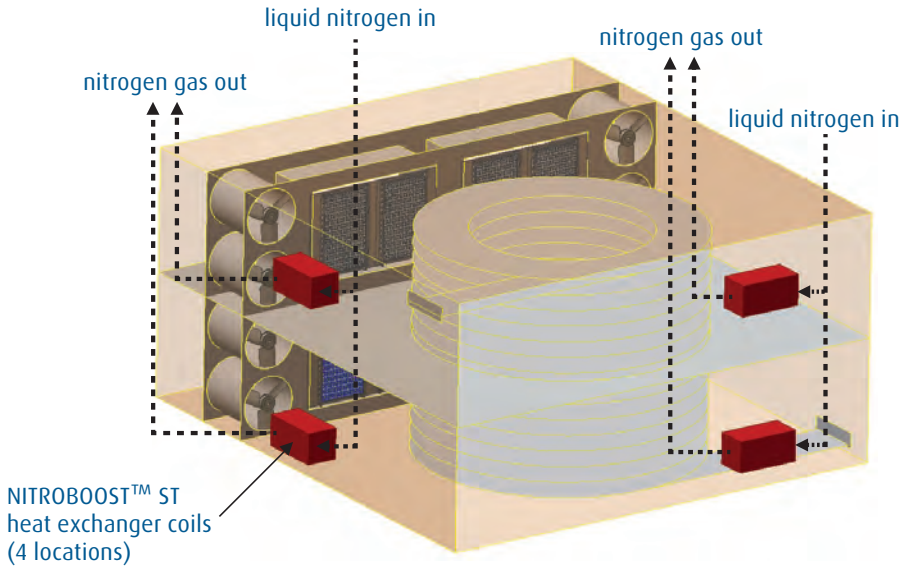
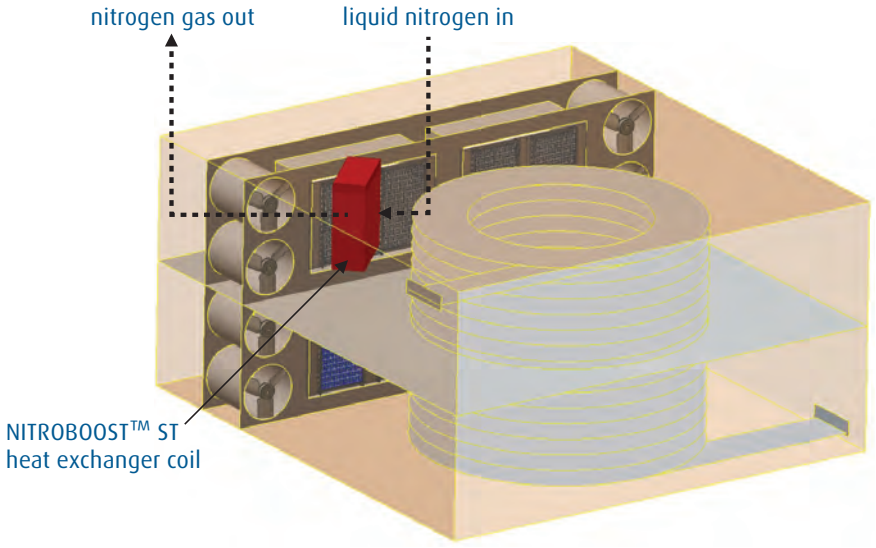
NITROBOOST™ ST supplemental refrigeration system for spiral and tunnel freezers.

Compact, efficient way to boost freezer performance.



NITROBOOST heat exchanger coils installed on spiral freezer exterior.



NITROBOOST heat exchanger coils installed within spiral freezer interior.

Challenge

Mechanical spiral or tunnel freezers sometimes struggle to maintain their target operating temperature due to inadequate refrigeration capacity. This problem can manifest at different times during the day, depending on production throughput and frost accumulation on the refrigerant coils. To deal with this problem, food processors often reduce their production rate or run the risk of product quality issues from inadequate freezing. Replacing the freezer or upgrading the mechanical refrigeration system can be very expensive and require weeks of downtime.

Linde Approach

Linde developed the NITROBOOST™ ST supplemental refrigeration system to answer this challenge. It installs on existing spiral and tunnel freezers and delivers a rapid, flexible increase to the refrigeration capacity. The NITROBOOST ST system operates only when needed, making it a cost-effective option for optimizing capacity without having to invest in new equipment or facility renovation.

Added to a typical spiral or tunnel freezer, this solution helps restore processing lines back to the desired product temperatures and production rates. It reduces process variations, eliminating downtime caused by frost build-up or the product being out of the temperature specification.

How does it work?

NITROBOOST™ ST heat exchanger coils use liquid nitrogen as the refrigerant rather than ammonia or freon, allowing them to remain compact in size while delivering substantial additional refrigeration capacity. The coils are small enough to fit within – or be mounted on – existing spiral or tunnel freezers. Liquid nitrogen travels through a closed-loop pipeline as it is conveyed to the coils from a storage tank and then nitrogen gas is safely vented to the outdoor atmosphere.

The NITROBOOST ST system detects when the mechanical freezer is trying to reach its target operating temperature and triggers the LIN flow to accelerate the cool down process and maintain a consistent operating temperature despite variations in heat load. NITROBOOST ST coils also can be controlled to defrost at different times relative to the mechanical system. This strategy can help optimize freezer production, defrosting and sanitation schedules.

Benefits

- → Space-saving design fits in or on existing freezer so no additional production space required
- → Minimal downtime required to retrofit freezer with NITROBOOST ST system
- → Economical approach only boosts refrigeration when needed
- → Improved product quality via tighter temperature control, irrespective of outdoor temperature
- → Greater productivity with less downtime for temperature or frost problems
- → Low maintenance system
- → Expert technical support for evaluation, design, installation, start-up and testing

Features

- → Self-contained system, complete with coils, fans, defrost mechanism and controls
- → Nitrogen stays within the pipeline and is safely vented directly outdoors
- → High cooling capacity with a compact size
- → Easy-to-use automatic defrost mechanism
- → No change to mechanical freezer operations
- → Expert technical support for evaluation, design, installation, start-up and testing

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