Snapshot Report

AMPC
AUSTRALIAN MEAT PROCESSOR CORPORATION

2022-1022 Snapshot report

Rapid Cooling of hot boned trimmings

Project Code
2022-1022

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Project Description

To implement a chilling system for hot boned beef trim prior to packaging directly from the carcass via a cooling system. A benchtop evaluation process of all the suppliers in this space was used to decide the most appropriate and economical system to achieve fast chilling of hot boned meat. A nitrogen tunnel system that could be integrated by speed and volume was decided on and purchased to undertake the project. This project outlines the methodology needed to understand process flows, line management, chilling times and microbial benchmarks and the establishment of critical limits to achieve a process suitable and within the time temperature microbial limits of our customer.

Project Content

The project was to test and implement an innovative chilling system that was both efficient and cost effective in cooling meat with process improvements that include reduced microbial loading and in time process flow management

Project Outcome

The liquid nitrogen tunnel freezer is a large-scale freezing machine suitable for large-capacity processing production on Food factory assembly lines. It has the features of strong freezing capability, simple operation, and a high degree of automation. The liquid nitrogen freezer employs new heating technology, temperature control techniques, and liquid nitrogen dispersion technology to ensure uniform and stable control over the processes of programmed heating, constant temperature maintenance, and cooling. It uses liquid nitrogen as a refrigerant to meet cooling and environmental requirements. The freezer comes in various specifications and can be designed and manufactured according to requirements. The low temperature can reach -196 ℃. When it comes into contact with food, it quickly absorbs heat upon vaporization. The ultra-low temperature and high heat exchange rate enable rapid freezing. This rapid freezing results in small ice crystals, helping to maintain the texture of the food, preventing moisture loss, and achieving nearly zero loss, preserving the original colour, Flavors, and quality of the food. The vaporized refrigerating nitrogen gas is evenly controlled and directed to the front end of the freezer, achieving heat exchange, and thereby increasing the efficiency of nitrogen utilization. This equipment, utilizing liquid nitrogen as a refrigerant, represents a new type of device in the food freezing industry. The project undertaking by EC Throsby was intended to speed up the process of Hot Boned beef, this system would eliminate eight hours of lag time.

Benefit for Industry

The capability of this equipment allows us to produce an ongoing supply of hot boned trim for the US market with significant reduction in microbial activity. This technology delivers efficient and economical fast chilling using nitrogen in line with daily production.

Subhead 1 sample – 10 point

Fig 3 Raw material spec for cooling tunnel

Fig 4 cooling tunnel in operation test phase

Test Results

AF647 23062022.pdf

AF647 27062022.pdf

F647 21062022.pdf

28/06/2022 10:29	13
28/06/2022 10:44	11.5
28/06/2022 10:59	4
28/06/2022 11:14	3.5
28/06/2022 11:29	4
28/06/2022 11:44	4.5
28/06/2022 11:59	5
28/06/2022 12:14	5
28/06/2022 12:29	5
28/06/2022 12:44	5
28/06/2022 12:59	5
28/06/2022 13:14	5
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28/06/2022 18:29	5