

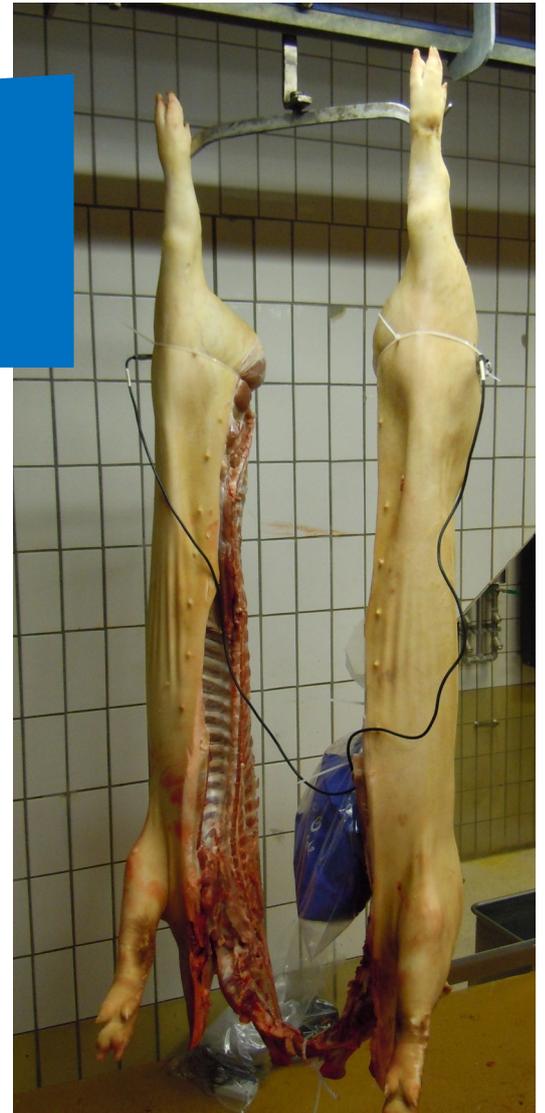
Carcass Chilling Survey and Impacts on Meat Quality

Efficient chilling of freshly slaughtered carcasses is a vital process in the meat production process. The rate at which carcasses are cooled, directly influences operational efficiency and plays a critical role in determining meat quality, chilling loss, shelf life, and microbial safety.

Typically, carcasses enter the chilling process at a temperature of approximately 39–40°C. The industry standard is to reduce this temperature to around 5°C within 20 to 24 hours post-slaughter, at which point carcasses are generally processed for cutting and deboning.

As the meat industry continues to evolve—with increasing production volumes and heavier carcass weights—traditional chilling systems are becoming outdated and insufficient. These legacy processes often fail to meet modern standards for both meat quality and chilling performance.

We offer a comprehensive consultancy service that integrates advanced chilling technologies with meat quality optimization. Our approach ensures that your chilling processes are aligned with current industry demands, delivering measurable improvements in product quality and operational efficiency.



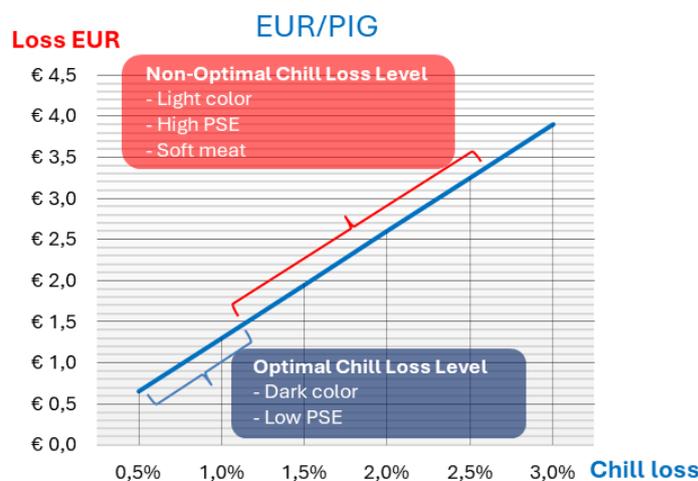
Maximize Profit Through Optimized Carcass Chilling



An efficient carcass chilling process delivers significant economic advantages by minimizing water vapor loss and enhancing overall meat quality. These improvements are especially evident in meat color, which becomes darker and more appealing, and in the reduced incidence of PSE (pale, soft, exudative) conditions in both ham and loin cuts. Additionally, chilling has a direct impact on eating quality and drip loss, both of which are critical to consumer satisfaction and product value.

Reducing chill loss from 2% to 1% can yield cost savings of over €1.3 per carcass. Furthermore, the resulting improvement in meat colour, potentially up to one full point on the Japanese Colour Scale, can increase product value by more than €0.50 per kilogram in premium markets.

By optimizing your chilling process, you not only improve product quality but also unlock substantial financial gains across your production line.

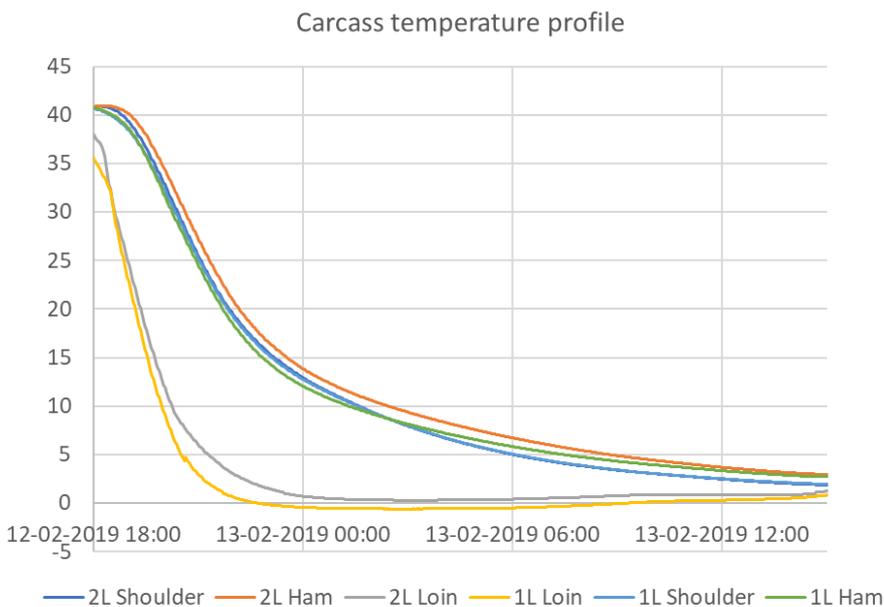


Optimizing the Chilling Process to Enhance Meat Quality

The chilling method plays a pivotal role in determining final meat quality. In quick chill tunnels (QCT), process air temperatures can drop below -20°C , enabling rapid surface cooling. In contrast, conventional batch chilling systems typically maintain temperatures above 0°C throughout the process. Both methods rely on air as the primary chilling medium, though some facilities incorporate *spray chilling*, where chilled water is intermittently sprayed onto carcasses to enhance cooling efficiency.

The most effective chilling strategy involves a two-stage process: **quick chilling followed by temperature equalization**. Initially, warm carcasses pass through a QCT, where the surface temperature rapidly drops below freezing, causing a thin crust to form. Meanwhile, the internal muscle temperature decreases more gradually.

Following the QCT, carcasses are transferred to an EQ equalization chill maintained at $0\text{--}4^{\circ}\text{C}$. Over the next 16–20 hours, the temperature stabilizes uniformly across the entire carcass, reaching an optimal $4\text{--}5^{\circ}\text{C}$. This two-step approach ensures both high chilling performance and superior meat quality, minimizing quality defects and maximizing product value.



Our Approach to Enhancing Your Carcass Chilling Process

We offer a structured, end-to-end approach to optimizing your carcass chilling process, designed to improve meat quality and ensure consistent, efficient production. From initial diagnostics to implementation support, our methodology is both comprehensive and results-driven. A typical project is carried out in the following key phases:

1. Initial Assessment

Quality issues in pork production often arise from a combination of factors, not just the chilling process. Our assessment begins with a thorough evaluation of animal handling, slaughter procedures, and chilling operations. This holistic view allows us to identify all potential contributors to meat quality challenges.

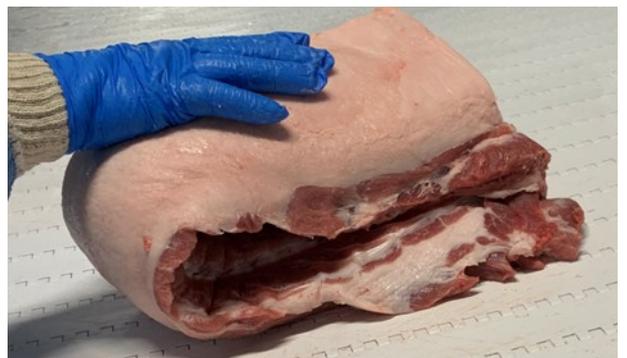


2. Survey Objectives

The primary objective of our survey is to accurately identify the root causes of your specific meat quality problems. Based on our findings, we deliver a detailed, actionable plan with targeted recommendations. This plan equips your team with the insights needed to address and resolve the identified issues effectively.

3. Survey Documentation

All findings are thoroughly documented in a comprehensive report, including data analysis, photographs, statistical evaluations, and expert observations. This report forms the foundation for a strategic improvement plan. Where needed, INTERCOOL FOOD TECHNOLOGY provides hands-on support to implement changes in the most critical areas.



By following this structured approach, we not only help you optimize your carcass chilling process but also empower your team with the knowledge and tools to sustain high meat quality standards over the long term.

INTERCOOL FOOD TECHNOLOGY LTD.

Your solution facilitator

Niels Conradsen

Senior Project Manager

C +45 2815 0615

M nco@intercool.dk

