



Carcass Chilling Survey and Derived Meat Quality

Chilling of hot carcasses is a critical step in the meat production chain, as the rate of chilling significantly impacts the production economy through its effect on meat quality, chill loss, shelf life, and microbial safety.

Typically, the carcass temperature just before chilling falls within the range of 39-40°C, and the objective is to reach approximately 5°C within 20 to 24 hours after slaughter, when the carcasses are usually cut and boned. The meat industry is constantly evolving; capacity increases, carcass weight increases, and old and worn-out processes are no longer adequate and provide poor results in terms of both meat quality and chilling performance. We offer a comprehensive consultancy concept where chilling technology and meat quality go hand in hand.

[Read more](https://dti.dk/chilling-and-quality)
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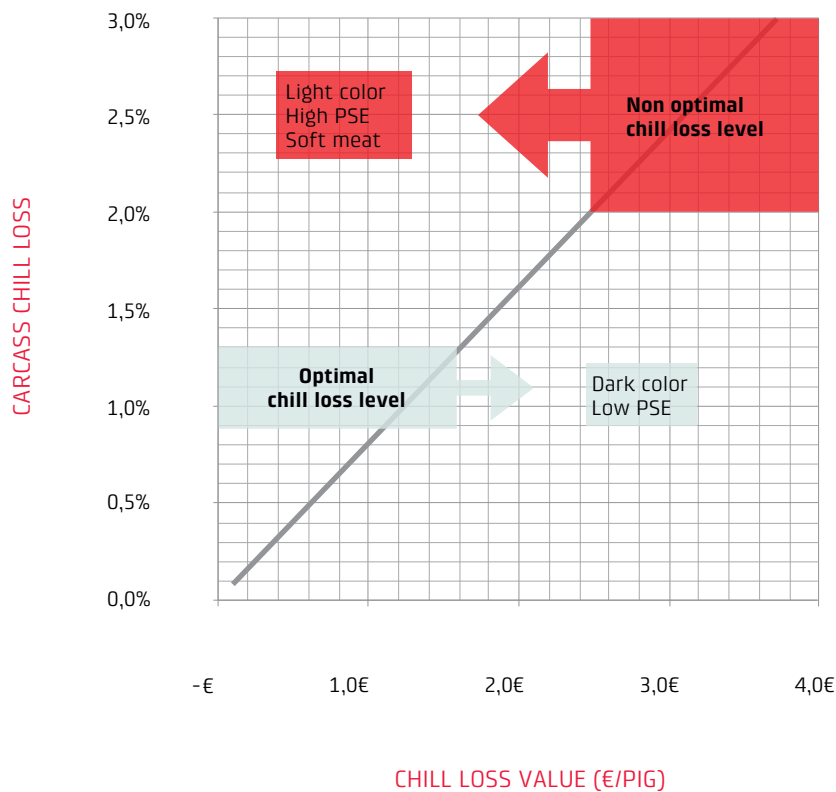
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Maximize your profit

The economic benefits of an effective carcass chilling process stem from the reduction in water vapor loss during chilling and the subsequent enhancement in meat quality. This improvement is particularly notable in color, as the meat darkens, and there is a reduced risk of PSE (pale, soft, exudative meat) in both ham and loin. Eating quality and drip loss from the meat can also be highly affected by chilling.

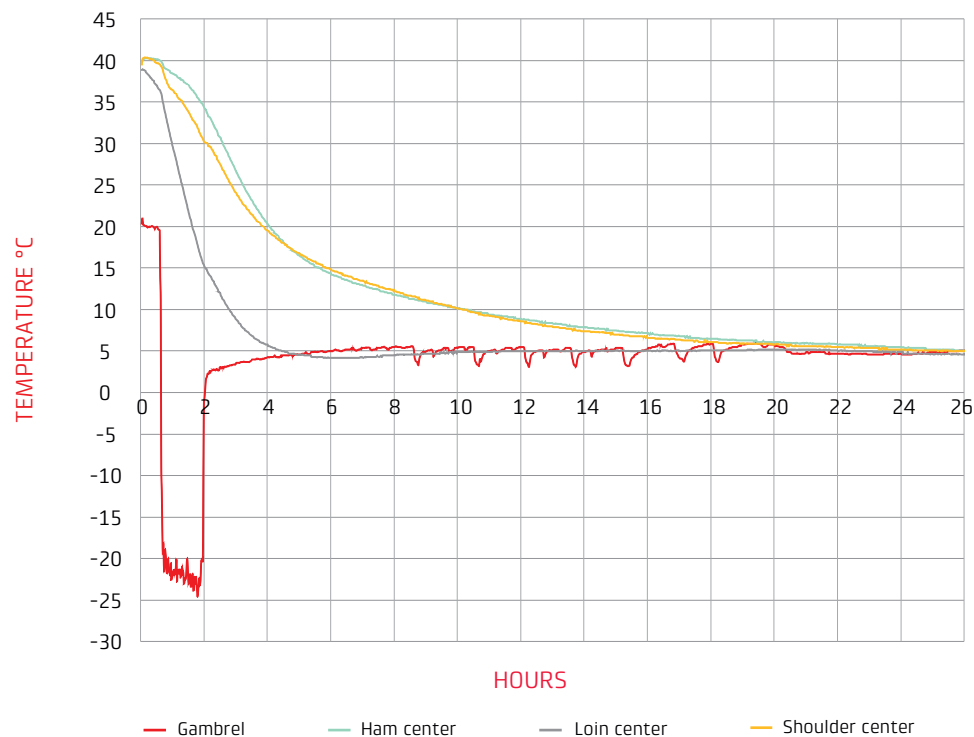
Decreasing chill loss from 2% to 1% typically leads to saving more than 1 euro per pig. Additionally, the resulting darker meat color, which may vary by up to 1 point on the Japanese Color Scale, can potentially increase the value by more than 0.5 euro per kilogram in certain high-price markets.



The optimal chilling process to enhance meat quality

In quick chill tunnels (QCT), the process air temperature can be below -20°C , while in conventional, slow batch chilling systems, it is usually maintained above 0°C during the entire chilling process. Both QCT and batch chilling methods utilize air as the chilling medium. In some cases, water can be added in a process called 'spray chilling,' where chilled water is sprayed onto the warm carcasses during the chilling process.

The most optimal chilling process consists of two coherent steps: a QCT followed by equalization – equally crucial for both chilling performance and meat quality. The warm carcasses pass through a QCT which induces the surface temperature to rapidly fall below freezing point, leading to crust freezing of the carcasses, while the core temperature of the muscles decreases at a slower pace. Subsequently, the carcasses are moved to a room at $0-4^{\circ}\text{C}$, where the temperature equalizes and reaches $4-5^{\circ}\text{C}$ uniformly across the entire carcass within 16-20 hours.



Our approach to enhancing your carcass chilling process.

Our approach to enhancing your carcass chilling process is comprehensive and systematic. We will guide you from the initial optimization considerations through the implementation of necessary changes, ultimately leading to a reduction in your quality issues and ensuring smooth production operations. A typical project follows the structured phases outlined below:

1. INITIAL ASSESSMENT:

The root causes of quality problems in pork are often multifaceted, stemming from various factors beyond just the chilling process. Our survey will focus on evaluating animal handling, the slaughter process, and the chilling process itself, all of which can impact meat quality adversely.

2. SURVEY OBJECTIVES:

The primary goal of the survey is to pinpoint the origins of the specified meat quality issues you are facing. By identifying these causes, we aim to offer a detailed list of recommendations in an actionable plan. This plan will equip you with the necessary insights to effectively address and resolve the identified problems.

3. SURVEY DOCUMENTATION:

Our survey findings are meticulously documented with data, photographs, statistical analyses, observations, and more. This comprehensive report serves as the foundation for devising a strategy to implement solutions that will mitigate or eliminate the existing issues. DMRI stands ready to provide assistance in the areas identified as critical for improvement.

By following this structured approach, we aim to not only enhance your carcass chilling process but also empower you with the knowledge and tools needed to maintain optimal meat quality standards.



DMRI —
Food innovation for the future



Lars Kristensen
Head of Meat Quality, PhD
Process Design and Operations
✉ Lrk@teknologisk.dk
☎ +45 72 20 26 70
www.DMRI.com



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