



DMRI E-QCT

Pig carcass chilling

DMRI Enhanced Quick Chill Tunnel (E-QCT) carcass chilling – Improved profit from increased yields and improved quality

During slaughter process and subsequent chilling, the pH-value of the meat starts to drop. The more rapidly it drops, the more quality problems as a result. Since the 70' DMRI has researched and developed the Quick Chill Tunnel (QCT) principle for pig carcass chilling. With this principle a quick carcass chilling is used to reduce chill loss and control the development in pH-value, to improve the quality traits of pork.

With the E-QCT DMRI can tailor a carcass chilling in accordance with your products and markets, with respect to the lowest possible energy consumption. In most cases the profit can be improved by 3 to 5 EUR per pig.

[Read more](#)

→ <http://www.dti.dk/carcass-chilling>



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Improved profit from better yield and quality

Once installed, the E-QCT solution can reduce chill loss and improve quality, without additional operators or manpower. The improved profitability from reduced chill loss is easy to measure and quantify. Profitability from improved quality traits depend on your market situation. The process is designed to improve your products on the parameters that are most important to your market demands.

E-QCT

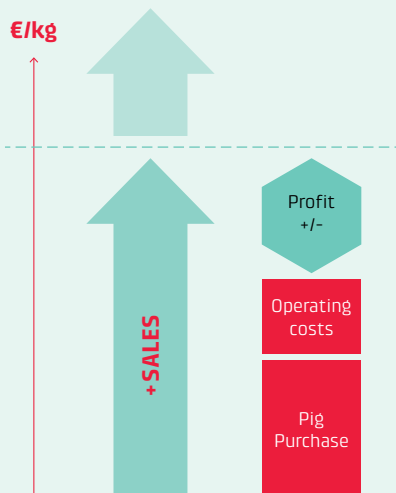
PROFIT CONTRIBUTION

Improved profit from yield:

- Improved yield from reduction in chill loss, 1 to 2,5 %
- = **more sellable volume**

Improved profit from improved quality traits:

- Less PSE occurrence
 - Less drip loss
 - Improved shelf life
 - Darker meat
- = **higher obtainable price/kg**



The E-QCT principle

E-QCT chilling is a two-step process: First step is the quick chilling. Second step is a temperature equalization - EQ -step.

The E-QCT operates with high air velocity and low temperatures to efficiently lower the carcasses temperature as desired. The carcasses are crust frozen, while the core temperature varies according to the thickness of the carcass.

The EQ-step operates with low air circulation and temperature close to the desired cutting temperature. In this step, the carcass temperatures equalize, and the exact, uniform cutting temperature is reached.

THROUGH THE QUICK TEMPERATURE DECLINE IN THE E-QCT, SEVERAL BENEFITS ARE ACHIEVED:

- The meat temperature drop is controlled via design with respect to the carcass attributes
- The low temperature process has an inactivating effect on bacteria, increasing product shelf life
- The meat pH drop is slowed down
- Combination of quick temperature drop and slow pH decline results in improved quality traits:
 - Reduced drip loss
 - Reduced occurrence of PSE
 - Darker meat, typical 0, 5 to 1 point on the Japanese color scale
- Design can be optimized for more demands:
 - More tender meat
 - Postponing development of black bones

E-QCT Maintenance area



THE E-QCT IS AN ENHANCEMENT OF THE QCT:

- An intermediate deck in the E-QCT separates the process and maintenance areas
 - Improved process efficiency
 - Reduced heat ingress reduces energy consumption
 - Better control of airstream reduces energy consumption
- Footbridge in the maintenance area and inspection hatches in the evaporators
 - Improved defrosting cycles reduces energy consumption
 - Less buildup of snow in E-QCT
 - Improved Workers Health & Safety
- Optimized fin spacing in evaporators
 - Reduces need for defrosting, thus reduces energy consumption
 - Reduces build up of snow in E-QCT

CHILLING PROCESS DESIGN:

- Optimized to your meat quality demands
- Low chill loss
- Low drip/packing loss
- Tenderness
- Postponing of black bone development

COOLING EQUIPMENT SPECIFICATION:

- Cooling capacity
- Evaporator design and dimensioning
- Evaporator placement
- Defrosting sequence

CONVEYOR SPECIFICATION:

- Internal logistic solution
- Conveyor length, pitch, layout

BUILDING DETAIL DRAWING AND DESCRIPTIONS:

- Floor, column, wall, and roof construction
- Drains, pressure reliefs, air locks

SECONDARY STEEL DESIGN:

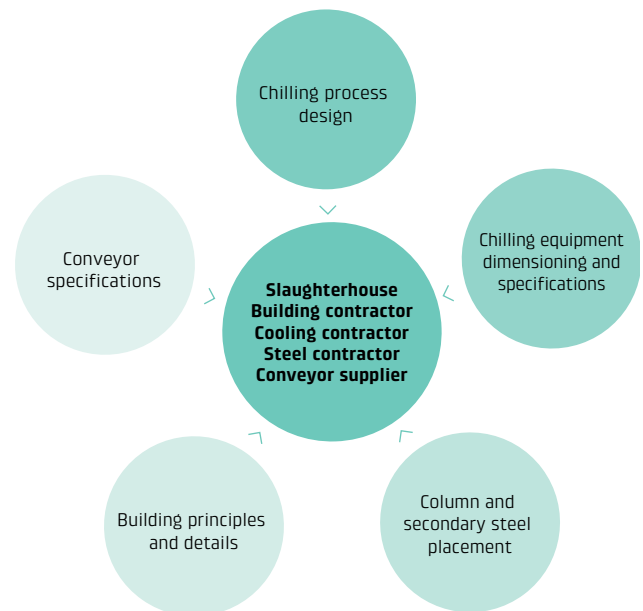
- Avoid conflicts with building and equipment
- Placement of columns and beams according to evaporators and conveyors

As a result of the research performed by DMRI over the years, we possess unique knowledge about the thermal processes of meat, fat, rind, and bone. This knowledge is compiled in our proprietary software, which enables us to simulate carcass chilling processes and accurately predict the resulting chill loss. This software is the backbone in our work when we design a carcass chilling process, adapted to your specific needs.

Basis for the design is the slaughter capacity and characteristics of the carcasses; hot carcass weight, lean meat percentage, and back fat thickness. The process is then optimized to optimally fit your market demands.

DMRI DELIVERABLES:

Stage 3, DMRI Concept Design



E-QCT



EQ-Step



DMRI Design Project work plan

1	Concept Development Plant
2	Master Plan
3	Concept Design
4	Tender Design & Document
5	Procurement
6	Construction
7	Start-up & Commissioning

With basis in your products and markets we take on a holistic approach, to avoid counterproductive sub-optimization.

Stage 1, Concept Development includes estimated CAPEX and consequences to OPEX, to ensure profitability of the project.

Stage 2, Master Plan completes the project description, including layouts.

Stage 3, Concept Design contains all necessary information to obtain comparable bids from qualified suppliers.

If you wish, we can follow the project through each step and assist in the start-up & Commissioning.

If we follow a project all the way through, and it is executed in accordance with our specifications, we can even issue a Chill Loss guarantee.

DMRI —
Food innovation for the future



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