DMRI

Danish Meat Research Institute

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Tomorrow's science for today's meat industry

Lars Hinrichsen, Managing Director; DMRI:

"We drive innovation in the meat industry. Our mission is to transform new knowledge into profitable solutions, so our customers can benefit more from their supply chains and core innovation. We cover all aspects of the meat production process and possess world-leading competencies in production efficiency, meat quality and food safety. In other words, we deliver tomorrow's science to today's meat industry.

Besides the advantages of DMRI's specialist knowledge, our customers and partners also benefit from strong international networks and expertise in high quality project management. This provides them with optimal solutions that can be directly and efficiently implemented in their operations.

The open dialogue between DMRI specialists, key customers and other partners is a prerequisite for truly value-creating innovation. Driven by a clear mission, creative teams across companies and across specialties and subjects provide the meat industry with new insight, inspiration and modern and sustainable solutions."

The Danish Meat Research Institute is the world's leading competence centre for meat and slaughtering technology. In close partnership with companies in the meat industry, we transform knowledge into valuable solutions to the benefit of our customers.

High level technology

Jens Ulrich Nielsen, Slaughtering Technology Manager, DMRI:

"We develop modern machines and total production systems to make higher profits on carcasses. A unique feature of our automation portfolio is that we cover all the services needed to bring a new machine from inception to launch. For example, we enhance the efficiency of the slaughtering, cutting and deboning processes and design a coherent system for the specific slaughter line. Our key objectives are to raise productivity and improve the working environment.

Our core expertise is in putting science into practice. We are application-driven, with a clear understanding of the fundamental skills needed to put good science into commercial use. With our specialists optimising the production processes (e.g. machine performance, man/machine interaction, production logistics, plant layouts and cooling capability), the slaugtherhouses clearly benefit from our unique knowledge. Since our specialists work closely together with the customers, we can meet the industry's demands and innovate from desktop to final product."

DMRI has received much recognition for its efforts. A few years ago, His Royal Highness Crown Prince Frederik of Denmark presented DMRI with the Danish Industrial Robot Association's "Automation Prize" for a machine designed to remove surface bones from fore-ends. Much of the machinery at the Danish Crown abattoir in Horsens (the world's most modern) is developed by DMRI.

Ole Carlsen, Plant Manager, Danish Crown Blans, Denmark:

"We have recently installed the new AUTOfom DK, which measures the lean meat percentage of the carcase. DMRI's newly developed machinery has enhanced the efficiency of our production.
It is crucial that all staff groups understand the importance of introducing new machinery to the slaughterhouses and that they participate in the introduction of the machinery and in the day-to-day operations.

We have benefited from working with DMRI, because they have competences in technology transfer, food safety and production quality. The success of our project is reflected in the bottom line."

Quality from gene to plate

Susanne Støier, Research Manager, DMRI:

"We aim to ensure high meat quality for pork and beef by focusing on animal welfare on the day of slaughter and optimising the slaughter and chilling processes.

We constantly drive the development towards cost-effective solutions that improve both animal welfare during transport, lairage and stunning and the meat quality.

We have extensive knowledge of the primary production and processing conditions that affect meat quality, e.g. drip loss, meat colour and eating quality. We improve meat quality through our research into all the factors affecting quality parameters, including the impact of packaging methods on the shelf life, appearance and taste of meat. Our expertise, combined with our insight into consumer demands for meat quality, helps the industry to improve the yield and quality of its meat products.

Using consumer and sensory research and primary product science, we have all the competencies necessary to produce high quality products for the retail sector. As we develop new concepts, it is vital that we cover all the parameters in the supply chain that can affect meat quality, e.g. odour, texture, taint and food safety.

We use a number of analytical methods to evaluate meat quality. For instance, we analyse eating quality in our accredited sensory laboratory, and we conduct consumer surveys to ensure that the qualities fulfil consumer demands and preferences. Our expertise in this field is actively used in our customer partnerships."

Søren Tinggaard, Head of PMO, Danish Crown, Denmark:

"The Danish meat industry is constantly striving for better solutions to improve the use of the primary produce. DMRI is a strong partner, providing us with consultancy that improves efficiency and acting as an important liaison between the industry and the meat science departments at the universities. We collaborate closely on projects and can therefore use the results in the production. We have recently implemented new classification technology at all Danish abattoirs and are currently participating in several innovative projects to improve sorting, traceability and yield using new CT scanning technology."

Safe fresh meat and meat products

Rie Sørensen, Research Manager, DMRI:

"We work to improve the safety of fresh meat on the slaughter line by focusing on slaughter hygiene, breaking the routes of contamination, developing new techniques for removing contamination and performing decontamination in an energy-efficient way.

Our core expertise lies in a holistic approach to preservation, with focus on safety, quality and sensory properties.

We develop mathematical models that the industry can use to predict the risk of growth of pathogens or spoilers and to estimate the shelf life. The safety models are based on data from real food products originating from challenge tests performed in our fully equipped pilot plant and data from commercial plants.

We also focus on quality and efficiency in meat production. We investigate the potentials of new technologies, e.g. new packaging or high pressure, to develop new products. We assist the industry in meeting consumer trends, such as low-salt products, without compromising product quality or safety. We optimise the raw meat, the ingredients and the time and energy consumption in order to meet production costs.

We offer versatile accredited laboratory facilities, with access to modern microbiological and chemical equipment. Further, we measure odour olfactometrically to quantify emissions in the environment and subsequently provide solutions to reduce these emissions. We assist the meat industry in minimising water and energy consumption in order to reduce the environmental impact."

Carsten Christensen, Quality Manager, Tulip Food Company , Denmark:

"DMRI delivers knowledge and know-how, enabling us to maintain high standards in the production chain. Food safety in particular is a key issue, with product handling and process methods constantly being optimised. We often benefit from DMRI, because they are able to link all the quality and safety parameters that are included in a successful new meat recipe or product. For example, DMRI has developed a computer model that can predict the growth of the pathogenic bacterium Listeria monocytogenes in heat-treated sliced cooked meat products.

Companies can use this model both internally and externally and with customers and authorities for product development and adaptation."

IT ensures productivity and quality control

Peter Wagner, Measurement Systems Manager, DMRI:

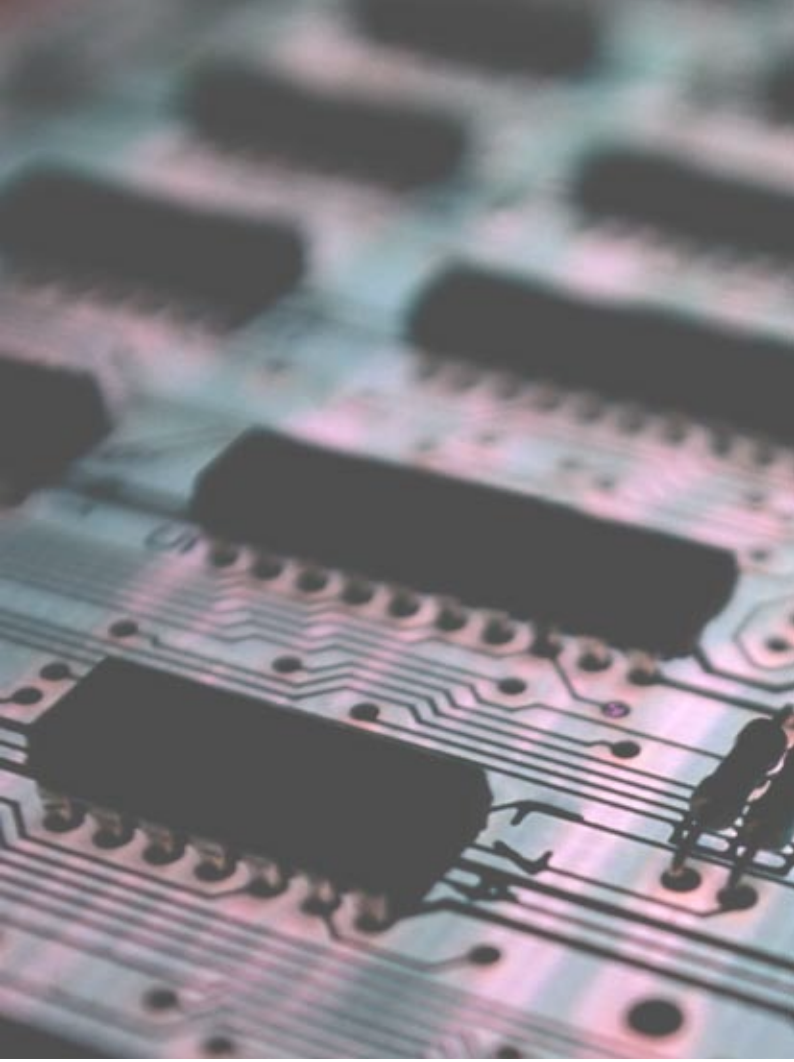
"All machinery and production systems are based on computer programs. We perform statistics, computer programming, CT scan imaging and develop specially designed control systems that put "life" into the robots. Our core expertise lies in using state-of-the-art technology, including CT scanning, vision systems and customised IT systems, to make equipment for a more efficient production process.

We develop and improve equipment for the classification and sorting of cattle, pigs and poultry. CT scanning has been used to better define the structure of carcasses and predict their quality characteristics at the beginning of the slaughter line. CT scanning has also been used to determine a better reference for the lean meat percentage at all abattoirs in Denmark.

Our team of experts has developed the new AUTOfom DK, which has been installed at several Danish abattoirs. Using ultrasound measurements, the AUTOfom determines the lean meat percentage of the carcase.

We also develop systems for visual meat inspection. An on-line system helps the veterinarians to keep track of the pigs on the slaughter line, ensuring effective quality control.

With the new machinery developed by DMRI, the plants can both produce more efficiently and improve the working environment for the employees."



Professor Rasmus Larsen, DTU Informatik, Technology University of Denmark:

"We often participate in projects in the Danish food industry. The meat industry in particular is strongly represented in our project portfolio as an important scientific partner.

We take part in innovative initiatives that focus on the industrial use of scientific knowledge.

From a university perspective, DMRI serves as an ideal link between the scientific community and the industry. Dozens of students have completed a PhD at DMRI, and recently two people with PhD degrees started a small company dealing with data transfer and meat imaging - an example of a spin-off."

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DMRI in brief

Founded in 1954, The Danish Meat Research Institute's research and development activities cover the entire production chain, from the collection of the animals at the farm, slaughter and meat processing to the finished product - in other words "from gene to plate".

In the meat industry, our efforts result in superior product quality, improvements in efficiency and maximum food safety - which also reflects our core expertise. When our consultants implement solutions, they put their knowledge into practice.

Business is conducted by experts who have a close and systematic collaboration with the in-house scientists. The scientific integration with the Product Safety, Meat Quality, Automation and IT departments ensures that the latest scientific knowledge is rapidly converted into technology know-how. We provide solutions to the food industry based on years of experience from the meat industry.

The Danish Meat Research Institute employs a staff of 120 people who conduct research and development on behalf of the meat industry, both nationally and abroad. A large number of projects are also carried out in co-operation with national and international research institutes.

DMRI
Maglegaardsvej 2
DK-4000 Roskilde
Tel. +45 4630 3030
Fax +45 4630 3132
e-mail dmri@danishmeat.dk
www.dmri.com