Industry 4.0
The future of manufacturing

Thursday 11th October 2018
09.00 – 16.00
Hotel Legoland, Aastvej 10, 7190 Billund

Industry 1.0 – The first industrial revolution – began at the end of the 18th century when the steam engine made a huge difference for the sprouting industry. Less than hundred years later Industry 2.0 was a reality. The second industrial revolution introduced concepts as mass production and assembly lines. Next level – Industry 3.0 – started about 1970 with the first digital technologies and the development towards fully automated production lines and plants was a reality. Now – in this century – we are with higher speed than ever facing the 4th industrial revolution – called Industry 4.0. This wording and this revolution cover digital technologies combined in intelligent networks that enables computers and software tools to communicate, to make decisions and corrections etc. This development is based on the capability to handle big amount of data and the ability to understand and use all the information hidden in the data.
The programme for this seminar will include a general introduction to Industry 4.0, case studies and presentation of solutions that will become a reality in the dairy industry – today or tomorrow!

Please notice start time!

Mejeriteknisk Selskab

Coming seminars

Industry 4.0 - the future of manufacturing

24 October
GENERAL ASSEMBLY IN THE DANISH SOCIETY OF DAIRY TECHNOLOGY

6 December
MORE FOR LESS - THE EFFECIENT DAIRY

Registration

Registration no later than 5th of October at mejeritekniskselskab.dk

TARGET GROUP

This seminar is relevant to everybody involved in development, production, optimization, food safety and quality etc. within the dairy industry. From an educational point of view the seminar is relevant to Dairy Technicians, Dairy Technologists, MSc in Dairy Science & Technology, Food Engineers and other people involved or interested in the subject.

Programme

09.00 - 09.30	**Registration and coffee**
09.30 - 09.40	**Welcome and presentation of the programme**
09.40 - 10.10	**Is Industry 4.0 the future of dairy?** Steffen Lundgaard Jørgensen, Senior Solution Architect, Global Dairy IT, Arla Foods
10.10 - 10.40	**The future tool for increased competitiveness in the dairy industry** Divisional Manager, Bo Giede Bøving, Au2mate
10.40 - 11.10	**Production optimization and virtual collaboration platforms** Head of Engineering Data & Tools Management Lars Voigt, GEA Process Engineering A/S
11.10 - 11.30	**Break**
11.30 - 12.00	**How to use large amounts of data to optimize production** Professor Rasmus Bro, University of Copenhagen
12.00 - 12.30	**Reuse of quality water in the dairies based on "Big Cheese Data"** Associate Professor Klavs Martin Sørensen, University of Copenhagen
12.30 - 13.30	**Lunch**
13.30 - 14.00	**The Digital Twin** Team Lead Lars Christian Jacobsen, NIRAS
14.00 - 14.30	**Adding value through Industry 4.0** Key Account Manager Claus Børresen, Bila
14.30 - 14.50	**Break**
14.50 - 15.20	**Industry 4.0 and the use of online NIR sensors** BU Manager Nordic Per Sand, Q-Interline A/S
15.20 - 15.50	**Collection and use of data in Danish dairy herds ... an option for the dairies** Senior Specialist Lars Arne Hjort Nielsen, SEGES
15.50 - 16.00	**Closure**

Price

Kr. 2.195,- + VAT
for members of The Danish Society of Dairy Technology

Kr. 2.695,- + VAT
for non-members.

STUDENTS

Dairy Technology- and Dairy Engineer students may participate in the seminar paying 250 kr. The participant fee, however, will be paid primarily by Danish Dairy Engineers' Association (Dansk Mejeriingeniør Forening) or Danish Dairy Managers' Association (Foreningen af mejeriledere og funktionærer), based on students' membership of one of those associations.

GOLD SPONSORS

AAK

Kold College

THEM ØST

Erhvervsakademiet Lillebælt

SILVER SPONSORS

ECOLAB

procudan

Eltronic
PRODUCTION IT & AUTOMATION

Mejeriteknisk Selskab

The Danish Society of Dairy Technology
Munkehatten 28 - 5220 Odense SØ, Denmark

Notice that slight details in the programme might occur.
Changes will immediatey be updated on our website. .

Speaker:

Content

Steffen Lundgaard Jørgensen, Arla Foods

Is Industry 4.0 the future of dairy?

Technology is evolving with enormous speed and increasingly we see how technology change our way of living, interacting, do business, etc. Technology powered changes, or Industry 4.0, are changing factories and supply chains as well. In fact, we already see machines which predict and call for maintenance themselves, operators who are trained in 3D simulators, and remote service assistance via avatars in augmented reality glasses. This presentation takes offset in experiences with industry 4.0 and addresses what industry 4.0 means for dairy. How should dairy work with Industry 4.0 to benefit and stay on top?

Bo Giede Bøving Au2mate

The future tool for increased competitiveness in the dairy industry

The dairy plants become larger and more complex and at the same time the demands for rapid adaptation and improved efficiency increase. New Technologies forming part of Industry 4.0 offer a toolbox to support the efficiency of workflow, operation and maintenance of the dairies. Based on implementation of several digital applications in the dairy factories this presentation will highlight three main subjects: Interface, OEE and line control. The interface part is covering real-time, and high valid data exchange in the production IT systems. The OEE part is covering a live application of performance optimization and the line control part covers integration between ERP and production IT.

Lars Voigt, GEA Process Engineering A/S

Production optimization and virtual collaboration platforms

This presentation will introduce a range of digital solutions developed ti increase productivity of process lines. Detailed component simulations using real life operating conditions are used to ensure the equipment is optimized for the actual process. Advanced control software is added to ensure the plant is operating optimally 24/7 over the life-time of the process line. In addition several virtual collaboration platforms aiming at faster skills development and more efficient knowledge sharing is presented and demonstrated.

Rasmus Bro University of Copenhagen

How to use large amounts of data to optimize production

Chemometrics and modern spectroscopic sensors can be used to understand, optimize and control complex processes. It will be presented how e.g. fermentations can be monitored or how flavour profiles are understood. Working with big amount of data requires a lot of attention and the lecture will present how to get as much information out of the data that are available and how to make sure that the information is visualized in such a way that it is useful and operational for all levels in the organization.

Klavs Martin Sørensen University of Copenhagen

Reuse of quality water in the dairies based on "Big Cheese Data"

This lecture will present a new project, which aims to provide a tool that allows the cheese making dairies to reduce intake of clean tap water and drastically reduce the amount of water discharged as waste. The Danish dairies produces about 400,000 tons of cheese per year, the importance of quality control is paramount, and the industry seeks to move to 100% online quality control of all cheeses. This is a very

Speaker:

challenging task due to the cheese size and shape, and heterogeneity and quality gradients. The project will demonstrate how near-infrared spatially resolved spectroscopy can be used for online quality control of the cheeses, and the perspectives of setting new standards for reuse of quality water in the dairies will also be presented.

The Digital Twin

The Digital Twin Technology is a concept that can be used to identify and simulate optimizations of designs or efficiency etc. In this presentation, there will be an introduction to a tool, that can be used to build a "Digital twin" of a factory, where the functionality is detailed to individual machines, operators, conveyors, forklifts, buffers, stocks, raw materials, trucks, finished goods etc. When the model is configured, different scenarios for operations can be tested based on real data e.g., and as the model runs in real time, it is very visual showing not only bottlenecks but also when and why the bottlenecks arise. It enables a "bird's eye view" and also a zoom on even large factories with complex production lines.

Lars Christian Jakobsen
NIRAS

Adding value through Industry 4.0

Daily life optimization of new or existing production lines is a task for the staff in the diaries as well as the suppliers to the dairy industry. This presentation covers how digitalisation and Industry 4.0 can support the effort of doing better and optimizing production lines and processes. Digitalisation and Industry 4.0 are also extremely important when it comes to investment in new production lines. A lot of factors like training, service, quality, uptime, upgrades, maintenance etc. must be taken into consideration to ensure the best value out of future investments, looking at Total Cost of Ownership (TCO).

Claus Børresen
Bila

Industry 4.0 and use of online NIR sensors

NIR sensors are increasingly used for online process insight and production. Critical decisions are taken on the basis of NIR results every day. In the scope of industry 4.0 and BIG data, we will present our view on the use of online NIR solutions in the process industry. Where is NIR currently placed in the process towards reaching the goals of industry 4.0, what is possible today and what is coming next?

Per Sand
Q-Interline

Collection and use of data in Danish Dairies heards ... an option for the dairies

This presentation will introduce a commonly used management program in the Danish dairy herds called DMS Dyreregistrering. Together with the product Smartkoen and Bovisoft it is the most important tool for collecting data from the production and to enable the milk producer to make valuable decision. Data is stored in the Danish cattle database together with information from e.g. dairies, abattoirs, laboratories. These data give many indications and decision information about feeding, diseases, mortality, longevity, forecasted on milk production etc. The presentation shows examples of these data. Could they be valuable further in the chain from milk to milk products?

Lars Arne Hjort Nielsen
SEGES