

Danish Dairy & Food Industry ... worldwide



More Milk - More Consumers - More Innovations

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Denmark - September 2015

More Milk - More Consumers - More Innovations

The major theme of this year's Danish Dairy & Food Industry ... worldwide is "More Milk - More Consumers - More Innovations". Based on the EU's abolition of the milk quotas, the topic is relevant for both dairies and supplier companies. More milk on the markets challenge the dairies and supplier companies to focus on innovating dairy goods as well as developing improved, sustainable and high-quality-solutions within projecting, proses-technology, ingredients, packaging, analyzing and hygiene.

CEO of the Danish Agriculture & Food Council, Karen Hækkerup introduces the magazine, and she highlights the Danish Dairy Sector's strong position based on more than 100 years old traditions for innovations according to markets trends.

Further, you will find an editorial about the international dairy company, Arla Foods' increased focus on developing differentiated and innovative products for specific consumer segments on different markets worldwide.

However, it is not possible to produce improved dairy products if the supplier sector cannot deliver the necessary and constantly up-dated process equipment, projecting, ingredients, and packaging, hygiene- and analysis concepts. Thus, the magazine includes editorials from a large number of companies presenting their impressive commitment always to be in front when it comes to inventing new features allowing global dairies to produce innovative foods for the world market.

Excellences in the dairy sector are only possible when based on well-educated and trained staffs, and Denmark ranks high within both dairy education and research. The magazine includes editorials about these topics too.

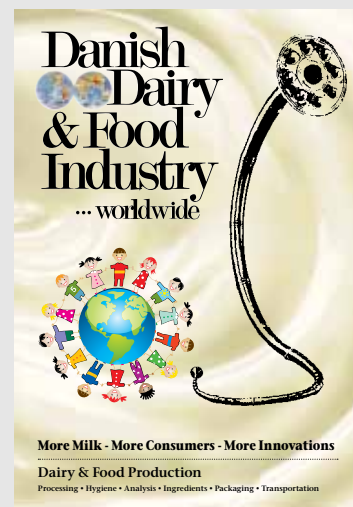
Besides studying this magazine, our readers have the opportunity to meet representatives from the Danish dairy and supplier industry at large international exhibitions and events in 2015. E.g. IDF World Dairy Summit in Vilnius - 20-24 September, World Dairy Expo in Madison - 29 September - 3 October, ANUGA in Cologne - 10-14 October, International Food Contest in MCH Herning - 3-4 November, FIE Food Ingredients Europe in Frankfurt - 19-21 November. Moreover, in 2016: Fi Asia-China, Shanghai - 21-23 June, FoodTech and International Food Contest in MCH Herning, Denmark - 1-3 November.

The Danish Dairy Managers Association and the Danish Dairy Science and Technology Association own Danish Dairy & Food Industry ... worldwide. We have published the magazine since 1976, and this issue is the 25th in succession informing you about Danish dairy and food industry.

Danish Dairy & Food Industry ... worldwide is distributed in more than 120 countries in 10.000 copies. Further, the magazine is available at our homepage: www.ddfi.dk. Our experience tells us that about 100.000 dairy, food and marketing specialist worldwide study this journal every year. ■

Anne-Sofi Christiansen
Chief Editor

Anna Marie Thøgersen
Editor



The cover shows a lure. This instrument dates from the Danish Bronze Age (about 600 B. C.). It has only been found in Denmark and the former Danish territories. Today it forms part of the Danish Quality sign known as the "Lure-brand", used on dairy products. Background picture by Colourbox.

Circulation: 10.000 copies

Readership: Leading personnel in the dairy and food industry in more than 120 countries as well as employees at Danish embassies and consulate-generals, Government advisers and representatives of marketing councils.

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Au2mates's know-how covers every dairy process

Au2mate's know-how covers every dairy process from raw material reception to packaging including high valueadded processes, OEE and MES solutions. Please refer to our web page for further contact information in Denmark, UK and Dubai.



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QUICK FACTS ABOUT AU2MATE

- Au2mate was founded in Denmark in 2001.
- 74 employees at offices in Denmark, UK and Dubai, holding more than 600 man years of experience in dairy automation.
- Project-oriented, has delivered more than 1600 projects, PLC, SCADA, MES and ERP integration to dairies worldwide.

The Danish Dairy Sector is in a Strong Position

- when on a Level Playing Field

Danish dairy production and farming have always based their success on the ability to innovate according to market trends, and be the leader when it comes to developing new technologies and processes.

By Karen Hækkerup, CEO, Danish Agriculture & Food Council

Potential increase

This focus on innovation and optimisation will continue to be the parameter that ensures milk producers and food companies a continued position in the world elite and a status as one of the country's main export industries. An



analysis shows that cattle farming has the potential to increase Denmark's export earnings by 4.5 billion DKK and to secure 5,500 jobs towards 2020.

In the Danish Agriculture and Food Council, we focus our efforts on taking care of the dairy sector's interests in relation to maintaining conditions that make it possible to sustain a globally competitive production. One of our main focus areas is to achieve the same terms of competition as the other EU countries. By way of example this will be ensured through a more focused and flexible regulation of the profession in a number of areas. We are currently striving to have milk producers' stable systems assessed from the documented animal welfare and antibiotics consumption - and not based on rigid rules resulting in high costs for the arrangement of stables.

Another focal area for us is the work to ensure fair competition in all EU member states and an effective enforcement of competition rules, which are a matter of great benefit to the Danish dairy industry.

Dairy research projects

The necessary innovation and research to maintain the Danish dairy sector's position is partly done under the auspices of the Danish Dairy Research Foundation. It initiates and coordinates dairy

research projects in close interaction between the dairy companies and the academic world. Every year, more than 25 million DKK are spent on this purpose.

The projects support a framework for the research-based innovation, taking place in the dairy business, primarily within technology, microbiology, health and nutrition.

A good example of innovation in the dairy sector is the ongoing project "Water Efficient Dairies".

The project aims to find ways of reducing the water consumption within the dairy industry. A report made by the Nature Agency about the possibilities of developing an arid dairy shows that dairies have the potential to save between 20 and 30 percent of their water consumption with an associated financial saving.

The prospect of an increased milk production and identification of significant potentials for water savings has been the motivation to start up the project. The aim is to ensure maximum water savings for Danish dairies. The goal is to be achieved, taking into account the dairies' economy, food safety, working environment and environmental issues.

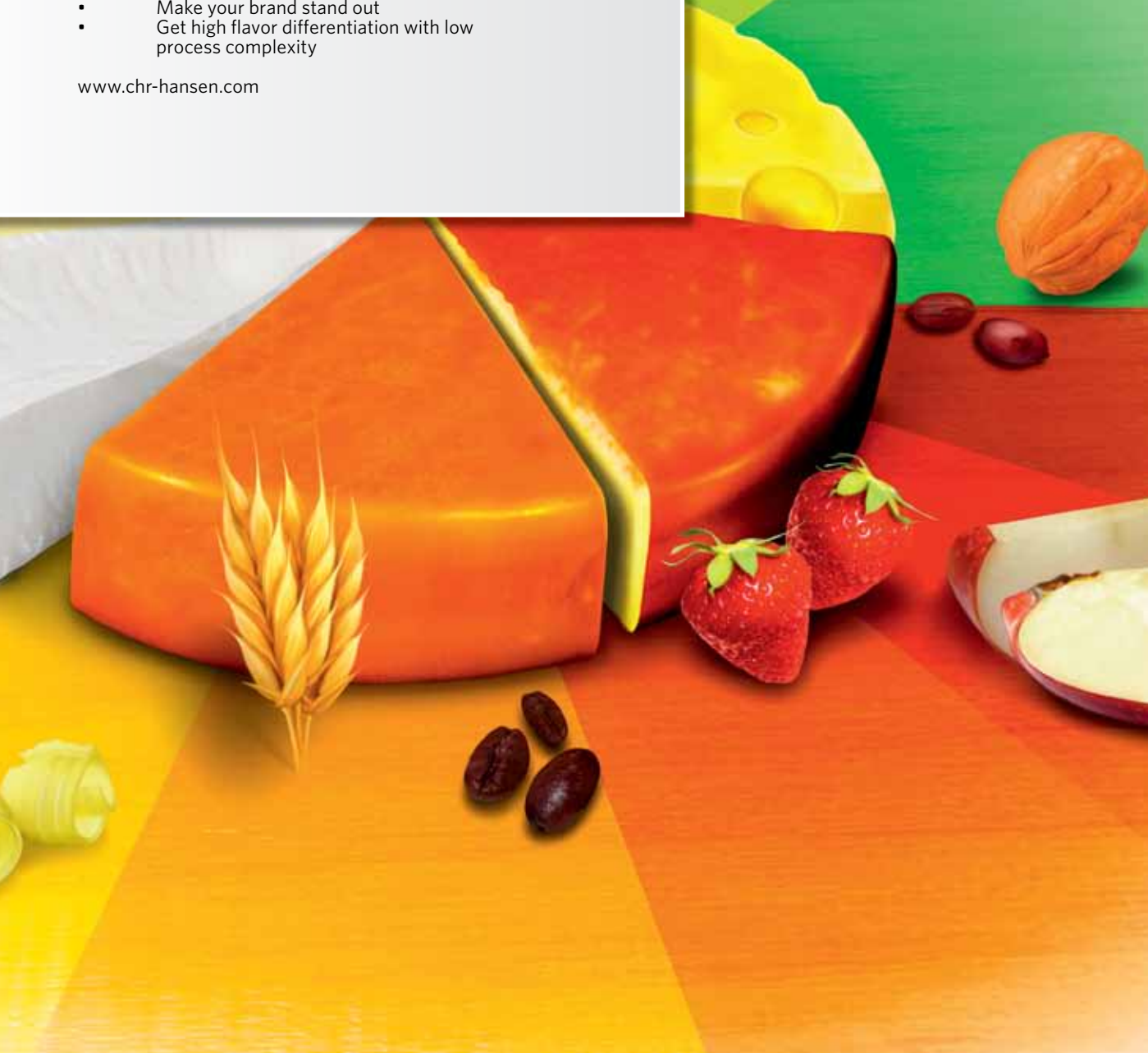
One of the milestones is to strengthen Danish export of system solutions and related dairy and water technology. ■

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New Dairy Goods for More Consumers

The Danish headquartered international Arla Foods is the world's no. 7 on the global Top-10 dairy-list. In 2014, Arla's milk volume was 13.4 billion liter milk, however the recent EU milk quota abolition implies more Arla milk, and consequently, the Group is speeding up innovation and looking for new markets and consumer segments. Below three key personnel tells about Arla's focus on product innovations, gaining new emerging markets - and not least continuously up-dating the required technology enabling Arla's ongoing growth.

By Anna Marie Thøgersen, Editor

More milk for Arla Brands

The 13+ billion litres of Arla milk processed on almost 100 dairy plants scattered throughout Northern Europe is refined into various types of dairy products and milk ingredients for global consumers. Arla's three main brands: Arla®, Castello®, and Lurpak® covers all kinds of dairy products - well-known and popular amongst quality-conscious consumers in most of the World. In addition, Arla is the world's largest organic dairy company, and the increased volumes of organic products are marketed under the three main brands, which also cover e.g. Arla Lactofree® intended for consumers suffering from lactose intolerance.

Further, also the Groups subsidiary, Arla Foods Ingredients (AFI) operates at the emerging markets offering highly refined lactose, milk and whey powders. AFI often develops these products in cooperation with Third Part Manufacturers, and they are typically used in e.g. dairy- or other refined foods for babies, sportspeople, health & nutrition products, sick people with poor appetite and for active seniors.

Growth at emerging markets

Of Arla's total turnover, approx. 20% derives from the Groups growth mar-

kets, which are e.g. The Middle East, Africa, Russia and China/The Far East. Some of the export goods in these regions are high-quality UHT-products.

- However, we must strengthen our innovation of products tailored to local tastes and cultures on new markets, stresses Executive Vice President of Consumer International, Finn Hansen. - We hold a strong position in China, and we are certain, that our UHT premium and conventional products launched in China could be of interest at the markets in Indonesia and the Philippines. Consequently, we increase our focus on more countries in the Far East, and we opened a new sales-office in Kuala Lumpur this summer. In the long term, Arla wants to expand sales of butter and cheese in the Far East, initially for the food service sector. Further, Arla has formed a joint venture with the Australian F. Mayer Import as a bridgehead for launching more Castello and Lurpak premium products, but also a wider range of foods, thus becoming an attractive partner for the Australian retailers.

- Moreover, back in 2013, we established a mobile milk-powder packaging-plant in the Ivory Coast, and the sales are beyond all expectations. Consequently, we are opening a local di-



Arla® Big Milk for toddlers in the UK.

vision in Nigeria. However, we enter these West African markets very carefully not to destroy the local milk and dairy production, stresses Finn Hansen. He adds that the latest May-agreement with the Egyptian dairy company Juhayna about forming a joint venture will strengthen Arla position in the Middle East significantly. Juhayna is Egypt's leading manufacturer of UHT-milk, yoghurt and juice. However, the company has a very limited production of butter, cheese and cream, which Arla

has specialized in across the Middle East and Africa.

Together Arla and Juhayna get a broader product portfolio, which strengthens the business of both parties.

Speeding-up innovation

When Arla's new global Innovation Center will be ready in the autumn 2016, millions of Asian, African, American and European consumers get to taste dairy products, developed at this center. Head of the center, Senior Vice President R&D, Paul Cornillon explains: - We are in dialogue with consumers worldwide to sense which new and exciting dairy goods they want in their refrigerators.

Paul Cornillon continues: - At our existing innovation centers in Denmark and Sweden, we combine several major research areas such as developing new health/nutrition-beneficial natural dairy foods, as well as energy-optimized and efficient manufacturing, sustainable packaging, and microbiology to maximize our usage of strains and cultures across categories. All these competences will be transferred to the new Innovation Center in 2016.

- But ongoing we co-operate with our satellite innovations centers located on our markets in Europe and Overseas. Thus, we recently launched Big Milk for young children and protein-enriched yoghurts for active, health-conscious adults and seniors in the UK. In co-operation with our Cheese Laboratory in China, we found the right recipe for the children snack-cheese Lillebror with two new flavours; banana and strawberry. They gain increasing popularity, as they fit the local and sweeter taste preferences.

Advanced technology - New products

Behind Arla's global success lies decades of hard work within developing and implementing quality-programs

on the milk farms. Besides, Arla constantly up-date or build new and technology-advanced processing plants such as the German Pronsfeld, the Swedish and Danish milk-powder refineries in Vimmerby and Videbæk, and latest the state-of-the-art fresh milk plant Aylesbury in UK.

In the UK, we find another Arla key-person, Senior Vice President Dan Kolding, head of the UK Supply Chain. He points out, that product development is a major task within Arla's domestic markets, of which UK is the largest. -

is exactly to develop more yogurts and fresh milk with nutrient profiles to suit different consumer segments' needs - for instance young teens, athletes, young mothers, active seniors, etc. Dan Kolding stresses, that these segmented dairy goods are excellent examples of Arla's strategy to develop new premium products with special value for consumers on the Groups home markets!

Arla Foods

Arla Foods is a Danish registered company owned by 13,415 dairy farmers in



The African mobile milk-powder packaging-plant in the Ivory Coast.

Some years ago we launched our filtered premium-milk Cravendale®. By now, we produce this brand at Aylesbury under the optimum conditions - and the sale of Cravendale® is constantly growing.

- Recently, we launched another innovation, Arla® Big Milk, made from British raw milk. This is a fortified milk aimed at 1-4 year toddlers and their nutritional needs. One of our strategies

Denmark, Sweden, Germany, United Kingdom, Belgium, Luxembourg and the Netherlands. Revenue in 2014: 10.6 billion EUR. ■



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Enter a high-level M.Sc. program that will provide you with a unique in-depth knowledge on dairy products and dairy technology - and become part of a truly international environment.

University of Copenhagen offers a 2-year M.Sc. program in Dairy Science and Technology as part of our Food Science program. Prior to the program, you will have the unrivalled opportunity of 6 months organized industrial internship within the dairy industry in Denmark or elsewhere.

The program focuses on providing in-depth insight into the formulation and production of dairy products, including use of ingredients to achieve the right quality.

About 50% of the students in the program have an international background and the teaching maintains a global outlook on dairy science and technology.

You will:

- Learn about process technologies that convert raw milk into nutritious products
- Understand how the individual processes affect the product
- Become knowledgeable about the whole production chain
- Achieve in-depth understanding of the effect of the processes on quality.
- Gain insight into the underlying dairy chemistry
- Obtain a deep understanding of microbiology, starter cultures and enzymes

A 2-year M.Sc. program in Dairy Science and Technology - with Internship and a Global Outlook

Structure

The structure of the program is shown in Figure 1. The following courses form the core part of the program:

- Food process equipment
- Dairy processes and equipment
- Milk processing
- Integrated thematic course
- Dairy product technology 1 and 2
- Food quality management and control
- Microbiology of fermented food and beverages
- Dairy microbiology

Requirements?

The program will fit students with a background equivalent to a B. Sc. in Food Science.

The 6 months dairy internship should be completed prior to initiating the M.Sc. program at University of Copenhagen. All teaching is conducted in English.

Teaching

The teachers are all experienced researchers with a comprehensive knowledge of the science and practice of dairy technology. In addition, numerous guest lectures will be given by representatives from industry.

Lectures and laboratory work are supplemented by pilot-scale practical experiments and visits to production sites. Your M.Sc. thesis will invariably involve close collaboration with a company.

About the Department of Food Science

The Department of Food Science, Faculty of Science, University of Copenhagen performs research and conducts teaching at the highest academic level in the area of food science.

More at <http://food.ku.dk/english/>

Schedule

The program starts in September each year.

How to attend?

For more information on the program: http://studies.ku.dk/masters/food-science-and-technology/programme-structure/specialisations/dairy_technology/

Please also take a look on the faculty homepage under education: <http://www.science.ku.dk/english/>

Other questions, please contact, Professor Richard Ipsen at ri@food.ku.dk

Year 1	Block 1	Internship	
	Block 2		
	Block 3	Milk Processing	Food Process Equipment
	Block 4	Dairy Processes and Equipment	Elective
Year 2	Block 1	Quality Management and Process Control	Elective
	Block 2	Integrated thematic course for all PST-students	
	Block 3	Dairy Product Technology I	Microbiology of Fermented Food and Beverages
	Block 4	Dairy Product Technology II	Dairy Microbiology
Year 3	Block 1	Thesis (30-45 credits)	
	Block 2		

Compulsory courses and thesis
Elective courses

OUR VISION

Creating the future of dairy to bring health and inspiration to the world, naturally.



Arla is owned by European dairy farmers. They deliver the high quality milk and we ensure that its natural health benefits and great taste is delivered all over the world.

Together with our farmer owners, we envision a future in which the full potential of dairy is realised. Where natural dairy products outcompete less healthy alternatives. Where the taste of pure dairy is celebrated in homes and professional kitchens around the world. Where food manufacturers turn to high quality dairy-based ingredients to improve their products. It is a future in which safe dairy nutrition is affordable and accessible to everyone.

Our belief in this future of dairy drives us and we all work hard to create it. Tough choices, significant investments and doing things differently will bring health and inspiration to more people across the world – every single day.

Arla Foods amba - www.arla.com

Global Outlook at KOLD College

KOLD College is an expert within tailor-made courses for the international dairy and food industries.



By
Hans Skjerning,
Principal, KOLD
College

Each year, we arrange a number of tailor-made courses for DANIDA and international companies and partners. In addition and during recent years, KOLD has established partnerships with other international dairy schools, as for example Karacabey Vocational School in Turkey and Escuela Superior Integral de Lecheria in Argentina.

Global outlook

For decades, the international aspect has been integrated and played a major role at KOLD College's Dairy Training Centre. Numerous courses and contacts worldwide bring inspiration to the College, and in addition demand high standards of flexibility and quality.

Our staff successively participates in international activities, and each year the dairy teachers visit European dairy companies to catch up on new trends and tendencies within dairy production.

International dairy courses

Each year, we organize various courses for international dairy people within the following training areas: Basic, Maintenance, Technology, and Laboratory Training. The courses encompass subjects within; Milk treatment, production of fermented milk products, special products, cheese, and ice cream as well as laboratory control of milk and dairy products. ■

Join the next international Dairy Course



At the picture, you see a group of European dairymen participating in an AEDIL-course held at KOLD College, Dairy Training Centre. The next international Dairy Course takes place in 2016, and will be announced in due time on www.koldcollege.dk.



During decades, numerous international course has been held at KOLD College, Dairy Training Centre, and several times for Nicaraguan dairymen. In this context and on the school's behalf, the then Nicaraguan Agricultural Minister Mario Salvo (left) some years ago honoured the author and Principal Hans Skjerning. Mario Salvo participated in a dairy course at KOLD back in 1965.

Facts about KOLD College

- All educations and courses linked by the concept "From Soil to Table".
- Staff 165 employees, of which 100 lecturers with vocational or academic backgrounds.
- 1,300 full time equivalent students and course participants.
- 7,000 students attend educations or courses each year.
- Buildings covering 34,000 square meters.

Areas of education at KOLD College:

- Agriculture, horticulture, animal keeper, forestry
- Catering (Chef, Waiter, Baker)
- Dairy technology (Dairyman, Dairy Operator)
- Technical gymnasium (3-year pre-university study course)
- In-service tailor made training and courses.
- More information on www.koldcollege.dk



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Cheese makers' key challenge to ensure growth in the competitive market is to differentiate their products through consistent flavor excellence, appealing texture and appearance. DVS® FullFlavor from Chr. Hansen is an efficient tool to take up this challenge.

FullFlavor Cultures – Signature to your Cheese!



By
**Anne-Claire
Bauquis, Global
Marketing
Manager, Cultures
& Enzymes
Division,
Chr. Hansen**

Flavor, no matter the occasion

The introduction of new eating occasions for cheese in mature markets is changing the way we eat cheese, and to a greater extent than before, consumers are eating cheese throughout the entire day (Euromonitor, Cheese Analysis, 2014). According to Mintel, a majority of global consumers eat cheese

as a snack, and in the US, 91% of adult consumers state, they eat cheese as a snack between meals.

However, no matter the occasion, flavor is still the driving factor when buying cheese, as many consumers are unwilling to sacrifice the indulgent experience associated with it (Mintel, 2014). Therefore, a key challenge to ensure growth in today's competitive market is for cheese makers to differentiate their products through consistent flavor excellence along with appealing texture and appearance.

DVS® FullFlavor from Chr. Hansen is an efficient tool to take up this challenge. This new range of ripening cultures has unique characteristics that facilitate the development of indulgent flavors in cheese allowing for the

opportunity to inject new life into existing product lines.

Widening the palette of flavors

For decades, most ripening cultures devoted to continental and cheddar type cheeses have been based on a certain kind of lactic acid bacteria (*Lactobacillus helveticus*) which is a strong tool to enhance sweet flavor notes. Additionally, most ripening cultures consist of a single strain developing flavors that rarely compares to the aroma complexity and balance found in aged cheese.

With FullFlavor, Chr. Hansen has widened the palette of flavors with a range of ripening cultures, bringing savory notes to the cheese. This provides the cheese maker with the opportunity

to create a customized sensory signature to the cheese, deciding between different flavor aromas such as butyry, fruity, farmhouse, nutty or malty - depending on the culture.

Additionally, FullFlavor is based on a combination of bacterial strains specifically selected for their flavor note production, which ensures the overall balanced cheese flavor. "Looking through our collection of more than 20,000 bacterial strains, we selected rare and original types such as *Lactobacillus plantarum*, *Lactobacillus curvatus*, *Pediococcus acidilactici* or *Lactobacillus johnsonii* with different enzymatic activity providing different properties in the cheese," says Birgitte Vedel Thage, Research Scientist, responsible for the development of FullFlavor.

A DVS® flavor solution

Flavor development in the cheese making process can be a challenge, when op-

timization measures are taken with e.g. high levels of pasteurization, whey recycling and foiled ripening, as this can lead to cheese products lacking character in flavor. With DVS® FullFlavor, Chr. Hansen offers an ingredient solution for safe and robust production, while bringing a natural indulgent flavor to the cheese without extra ripening time. Additionally, it enables the restoration of traditional cheese features in application of vacuum ripened techniques.

Endless opportunities

By widening the flavor palette, FullFlavor addresses the industry challenges as well as consumer demands for flavor. Therefore, whether there is a need to differentiate a branded cheese or create a signature flavor to a new cheese occasion, FullFlavor brings new savory flavors to your everyday cheese. ■

Flavor across the board

The unique design of the FullFlavor range also allows for improvement of taste and flavor in cheese with reduced fat or salt as well as in vegetable fat assortments.

DVS® Full Flavor

Chr. Hansen DVS® cultures offer a number of advantages in terms of flexibility of use, consistent performance and possibility of culture blends customized to your need.



The high standard of Danish dairy and food technology is recognised and appreciated worldwide. Kold College has played an important part in developing and maintaining this excellence. Our international activities focus on the integration of food education and are based on our fundamental concept "from soil to table" .

Kold College offers tailor-made courses for the global dairy sector and food industry.

We houses the only dairy college in Scandinavia: The Dairy Training Centre of Denmark, which specialises in courses in dairy technology • laboratory techniques • maintenance of dairy equipment • environmental engineering • energy saving • quality control management • the operation of dairy plants.

Our mission is to continue the to expand our international courses and contacts. Please contact os for futher information.

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Automation and Continuous Learning

Agile dairy plants powered by customer owned automation framework, OEE implementation and continuous learning!



By
Klaus Dam,
Managing Director,
Au2mate A/S

The intensified global competition means increase in the demands for development and fast transition to new products, with minimized resource use and request for highly skilled employees, quality, traceability and measurement.

This article deals with 3 prevailing factors for agile and effective dairy automation: The Au2mate customer owned dairy library and its application in green field projects as well as in upgrade projects, OEE MES application techniques and introduction to Au2mate Academy; a knowledge centre for Dairy Automation, supporting continuous learning of dairy staff.

The Au2mate customer owned framework and the dairy software library

The customer owned framework and the dairy software library are designed as a

plant wide automation solution based upon open systems, a future-proof investment and encapsulating the knowledge and best practise applied in the dairy industry. Furthermore, it is designed in accordance with Standards ISA S88/ISA S95, and built for data collection, traceability and OEE through integration to the IT reporting system & ERP. Please refer to the below figure 1.

The Au2mate customer owned framework and dairy software library includes all major dairy processes; e.g. CIP, pasteurization, mixing, tank control, transfer lines as well as associated traceability, operator dialogue and reporting. The customer owned framework and the dairy software library are suitable for green field plants as well as for project upgrades featuring:

- A significant reduction of control software cost and delivery time in connection with software development.
- A significant reduction of time and cost spent in connection with software commissioning.
- A significant increase of plant functionality and performance.
- No monopoly - independent choice of vendors.

MES OEE - Overall Equipment Effectiveness

If you cannot measure it, you cannot control it - Au2mate supply complete OEE solutions for discrete manufacturing & unit processes. The solutions are based on proven standardized software and open platforms that are easy to service and develop. Please refer to the below figure 2.

OEE is a recognised tool for monitoring and improving the effectiveness of production plants, and OEE is traditionally used widely in the industry. The first version of OEE Industry Standard was introduced in 2001, and in 2010, OEE Foundation was established with the purpose to maintain and further develop the standard. In recent years, OEE has increasingly gained acceptance in the dairy industry. This trend is expected to continue.

OEE solutions provided by Au2mate are standardised and flexible. The OEE solutions are scalable and can be used both in connection with existing plants as well as with new installations.

Visualisation and reporting are integrated into the infrastructure of existing production IT systems.

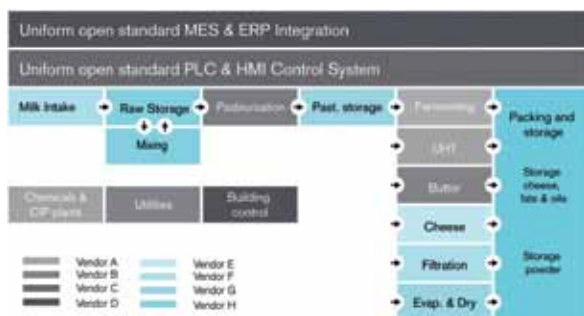


Figure 1: Au2mate customer owned framework and dairy software library.



Figure 2: OEE - Overall Equipment Effectiveness.



Photo 1: Au2mate Academy live CIP plant.

Au2mate Academy, a knowledge centre for dairy automation!

To support the increased demand for development of highly automation skilled employees in the dairy industry Au2mate is introducing "Au2mate Academy", a knowledge centre for dairy automation.

Au2mate Academy offer dairy specific automation courses. The training is intended for management, plant operators

4 quick facts about Au2mate A/S

- Founded in 2001 by Carsten G. Jensen and Klaus Dam.
- Have 75 employees at offices in Silkeborg, Dubai and in the UK, holding more than 600 man-years of experience in dairy automation.
- Project-oriented, has delivered more than 1600 projects; PLC, SCADA, MIS/MES and ERP integration to dairies throughout the world, including Nordic countries, Europe, Middle East and Africa, America and Asia.
- Supply solutions based on open standard platforms and internationally recognised methods for software development and project management.

as well as technical staff and includes: automation concepts, instrumentation, PLC, SCADA and MES, structured according to prevailing industrial standards and best practices, i.e. S88 & S95. Disciplines, where training can be offered are among other: Operation, hardware, software, instrumentation, OEE, traceability, reporting and documentation.

Additionally, Au2mate Academy can tailor customized education and training by agreement!

Please refer to the above photo 1 of live plant.

The Au2mate Academy is featuring new modern training facilities at our headquarters in Silkeborg DK. The facilities include a classroom and a live process plant with line control, consisting of: reception, raw material storage, pasteurization, buffer tanks, dispensing/filling as well as CIP plant. The plant is built in mini-scale to run on water. The plant is built according to industrial standard with regard to instrumentation, PLC, SCADA & MES in order that theory and practice may be trained in correlation! ■



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Improving the Value of Milk by Membrane Filtration



By
Karsten Lauritzen,
Manager,
Development
& Technology,
DSS - A Tetra Pak
Company

Over the last year and especially with the end of the EU milk quota, the production of milk has been growing worldwide. For dairy companies this growth has posed a challenge to add value to the milk in order to remain profitable. The added value can come from a growing demand in the market, meaning more consumers, which for some dairies is the way. Another way of increasing the profitability of milk production is to innovate the product portfolio and expand to new markets for milk-based consumer and B2B products. In this process of product innovation, membrane filtration has proven to be a key technology.

Membrane filtration solutions

DSS, A Tetra Pak Company offers cutting-edge membrane filtration solutions to the global dairy industry. We provide an unmatched range of membrane filtration processing solutions for selecting and tailoring valuable milk and whey components, which add value to dairy products and optimize processing economy.

The membrane technology most often applied to milk-based products to-

day is pressure-driven cross-flow filtration by polymer or ceramic membranes. The membranes used are categorized by their ability to reject different molecular sizes:

- Microfiltration (MF)
- Ultrafiltration (UF)
- Nanofiltration (NF)
- Reverse osmosis (RO)

- where RO rejects almost all molecule sizes except water.

Some of the new fast growing products in the dairy industry are based on changing the composition of existing dairy product to obtain new functionality or nutritional values.

Dairy product innovation

One of the new products available today is lactose-free milk, with a taste similar to milk. The possibility to produce lactose-free milk with good taste opens up to new consumer segments, where lactose intolerance is an issue or where consumers by choice avoid lactose. In the production of lactose-free milk membrane filtration has proven to be a very efficient technology in combination with the traditional way of producing lactose-free milk (hydrolyzation). By combining ultrafiltration and enzyme technology, it is possible to produce lactose-free milk with a taste similar to milk and with a reduced carbohydrate content. This product fits consumers who are lactose intolerant and/or who wish to cut down on carbohydrates.

Nutritional improvement of dairy products has been in focus over the

last years and in this connection, high protein content is a key word. Products like Greek style yogurt and Skyr as well as protein enriched drinks are growing worldwide. In the production of such high protein products, membrane filtration plays a significant role due to its ability to remove lactose and concentrate protein; it makes it possible to produce a variety of recipes from the same fermented or fresh milk base product. In addition, by using membrane filtration, the adding of dry ingredients can be avoided.

Milk ingredients

In B2B, milk-based ingredients are growing. Again, membrane filtration is an efficient technology to produce milk protein concentrates and isolates for use in food or nutritional applications. Because of the ability of membrane filtration to change the composition of milk, it is becoming more and more popular in the production of specialized ingredients for infant and sports nutrition, where the ratio and composition of specific proteins or hydrolyzed protein is essential. One example is the growing demand of microfiltration for the separation of casein and serum protein in milk. This separation facilitates the production of casein ingredients that differentiate from traditional acidified caseinate and whey-based ingredients, creating new functionalities with regard to food structure and nutritional profile. ■

FLEXIBLE PRODUCTION OF FERMENTED PRODUCTS

Membrane filtration technology makes production of fermented products with different recipes and varying fat content extremely flexible. Change of recipe is smooth and requires no switch-over.

Contact DSS, A Tetra Pak Company. We have the competence and the experience.

DSS, A Tetra Pak Company
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SPX Cavitation Technology in Dairy Powder Nutrition



By
Bent Oestergaard,
Director Global
Marketing, Food
& Beverage, SPX
Flow Technology,
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spx.com

With the rising global demand for high quality milk and whey based powder ingredients for a wide range of applications across dairy, food and beverage industries, nutritional dairy powder are a quickly growing segment. A growing population and increased spending power in emerging markets, as well as health and wellness are driving market trends.

There is an increasing consumer demand for more nutritional products that are natural, functional, healthy, tasty and convenient products, which is leading to expanding diversification. Combined with highly competitive market places, new resource efficient processing technologies are needed.

Nutritional Dairy Powder Processing

SPX is a leading provider of innovative process equipment for the production of infant formulas, milk derivative powder products and whey derivative powder from whey powders to high grade WPC, or WPI and permeate powder and lactose.

SPX's solution portfolio includes all process line equipment from milk and whey intake through liquid membrane and thermal processing to evaporation and spray drying. Supported by leading Innovation Centres, SPX has proven ability in helping customers develop and produce a wide range of high quality and safe nutritional dairy powder ingredients.

Hydrodynamic Cavitation Technology

Hydrodynamic cavitation technology uses a rotor with precisely machined cavities spinning in a liquid chamber that generates controlled cavitation. The process generates and collapses bubbles due to the decrease and then

increase in pressure produced. As the bubbles collapse, a very powerful energy wave (shockwave) is released into the surrounding liquid. This cavitation shockwave creates a very efficient, microscopic mixing effect and the rotor / liquid friction generates controllable, scale-free heating.

The APV Cavitator™, shown in Figure 1, has multiple applications including pre-treatment and structural conditioning of milk and whey to enhance process efficiency, powder hydration and functionalization, scale free heating, emulsification and gas dispersion. The applications are represented in Table 1 and two of these applications will be further reviewed here.

Viscosity reduction & structural conditioning

Viscosity and other factors like the microstructural condition in whey and milk concentrates sets the limit for solids levels and efficiency in performance of spray drying, as well as other core processing applications such as membrane filtration, thermal treatment and evaporation.

The Cavitator has proven its excellence in combined viscosity reduction and microstructural conditioning. The viscosity reduction of the concentrate enables an increase in the solid level prior spray drying, thereby, significantly reducing the operational cost and improving sustainability. Figure 2 show a viscosity reduction of 20% in WPC 80 and even with a very high viscosity caseinate product, the Cavitator has demonstrated its capability in increasing the solids level by more than 15% prior to drying.

The particle structure, size and distribution of the solid components also affect the drying efficiency and performance. Further, the Cavitator has proven its excellence in de-agglomer-



Figure 1: APV Cavitator.

ation and formation of smaller and homogenous particles size and distribution. Gas injection is known to have a positive impact on the drying performance and the Cavitator has demonstrated an efficient gas dispersion in e.g. coffee extract with a positive effect on the drying performance and functional properties of the end-product.

Micro-particulation & functionalization of WPC

The well-known APV LeanCreme™ technology for Microparticulation (MP) of WPC provides functional ingredients for low fat cheese, yoghurt, ice cream and nutritional beverage and other food products.

Compared to the Lean Cream System the multi-purpose CaviMaster™ technology enables higher denaturation temperature and very long run time without fouling. It produces very narrow particle sizes of 1-1,5 micron ideal for many products.

The CaviMaster can improve existing processes and end-products as well as facilitate innovation and production of new added-value dairy, food and beverage products with low fat and high nutritional whey proteins. Sweet whey and lactic acid whey, or ideal whey from milk fractionation, can be used. The MP process can take place prior to spray drying or after reconstitution of powder WPC. ■

Table 1:
Applications and benefits of APV Cavitator Technology

Key applications	Key process / product benefits
Scale-free heating	Thermal processing of WPC and other sensible products without fouling for enhanced run time and reduced operation cost.
Viscosity reduction & structural conditioning	Enhanced processing efficiency and drying performance of milk and whey based concentrates for increased solids and capacity and reduced OpEx.
Powder Mixing and Hydration	Fast dissolving of dairy powder ingredients and gums at decreased temperature and increased solids.
WPC functionalization	Microparticulation of WPC to enhance functional properties in low fat and or protein enriched nutritional products.
Dispersion & emulsification	Improved emulsion quality with small and narrow particle distribution possibly in combination with homogenisation.
Intensive gas dispersion and liquid contact	Very fine gas distribution and high gas / liquid mass transfer rate for enhanced process performance, functionality, stability and quality.

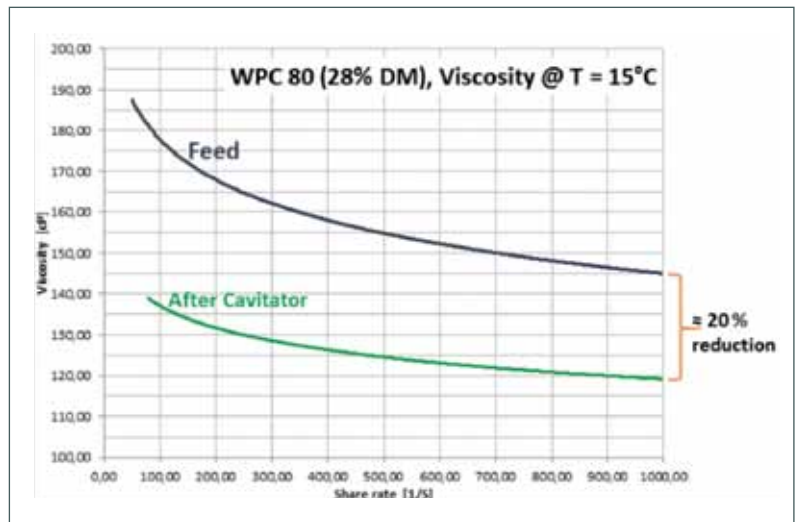


Figure 2: Viscosity reduction of WPC 80 by controlled hydrodynamic cavitation.

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Prepared for the Future?

GEA delivers the next generation dairy and nutritional Powder Processing Plants



By Carsten Juhl Jessen, M.Sc. Dairy Science & Technology, Deputy Division Manager, GEA Process Engineering Soeborg, Denmark

Worldwide, the dairy and nutritional industry is gearing up - increasing capacity and upgrading facilities to meet the growing demand for high quality and safe products from a rising global population. The EU milk quota abolition continues to fuel this process with significant increasing milk production in different regions of EU during the coming years. Serving the industry for decades with a full line of leading technologies for dairy and nutritional powder production, GEA is at the forefront. The portfolio ranges from the raw material reception through mixing and

formulation, membrane filtration, advanced heat treatment to evaporation, spray drying and powder handling and packaging. It positions GEA in a unique position for delivering complete plants - fully integrated and meeting all standards - on time.

Efficiency and profitability

Everywhere, dairy and nutritional producers seek to optimize the value generated. The quest for improved operational efficiency continues to drive the demand for larger and more efficient plants. Food safety meeting the strictest regulations is paramount and an ever-increasing parameter in competition. Significant economies of scale clearly stimulate this development. Continuous operation 24/7 has gained stronghold in new production facilities and thereby plant OEE is maximized. An example: By adding additional evaporation and feed system in a powder

plant, the spray dryer continues 24/7 for weeks while the wet process sections are cleaned daily without interrupting the production. It improves the output of the plant by 15-20% at relatively modest investment.

Top-notch innovative GEA design is a major driver for plant efficiency and product quality. As an example, the GEA Air Dispersers set the standard and are unrivalled. They facilitate fully interlocked, safe and ergonomically optimized spray nozzle handling while operation is supervised by advanced visual and infrared active camera systems. Advanced process control systems - in particular the new GEA DRYCONTROL™ system - incorporate decades of product application know-how and integrate new PAT technologies. Conclusion: DRYCONTROL™ improves plant performance and product quality while minimizing resource and energy consumption.



Facts about GEA Group

GEA Group Aktiengesellschaft is one of the largest suppliers of technology for the dairy and food processing industry and for a wide range of other process industries. As an international technology group, the Company focuses on world-leading process technology and components for sophisticated production processes.

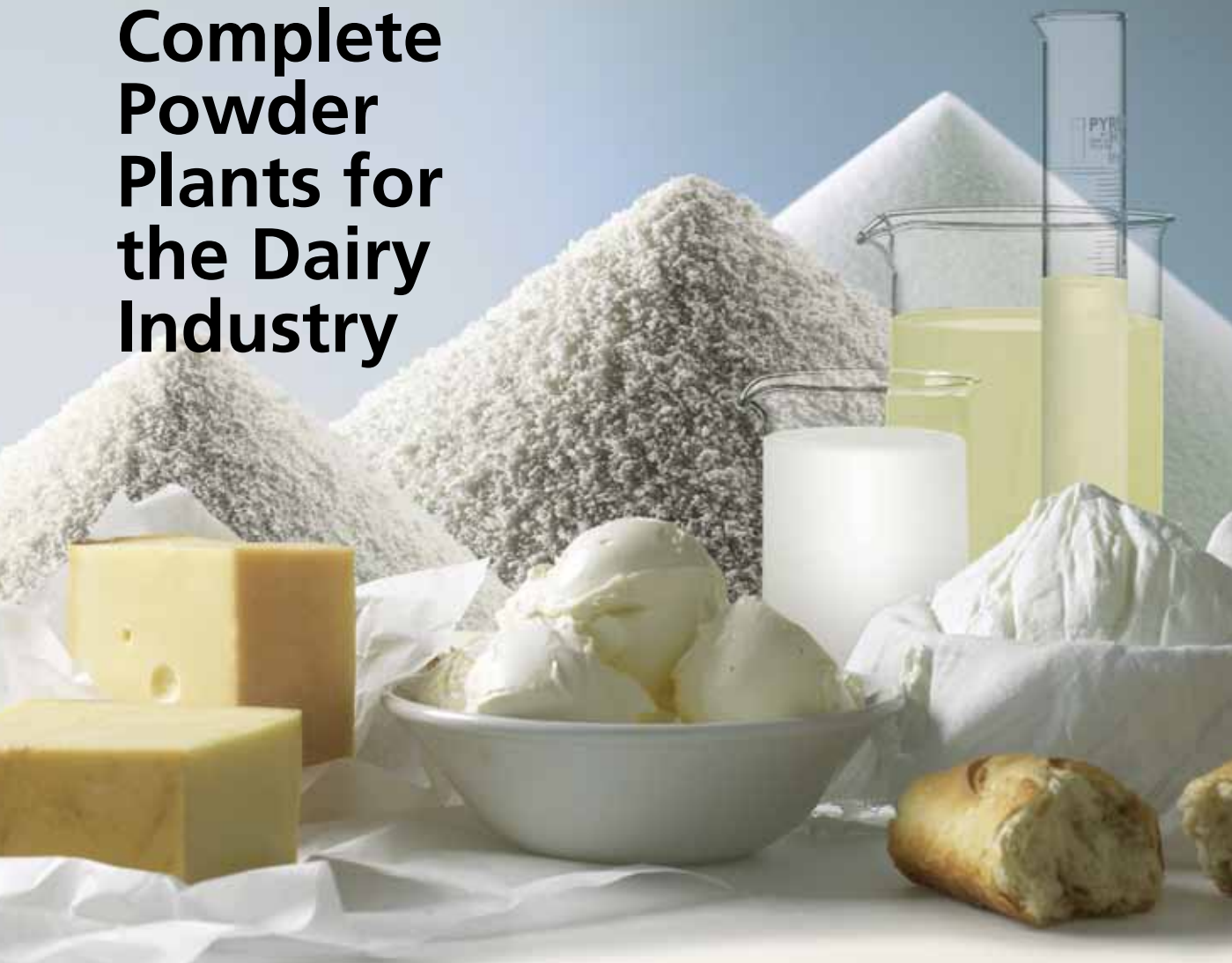
GEA Dairy spray drying plant, drying chamber.

Delivering projects right

Recent years' quest for new production capacity in the dairy and nutritional industry has clearly shown that any delays during the setting up of a new facility means losing valuable production or even missing a commercial opportunity. The importance of experience, effective project governance, risk management and teamwork must not be underestimated. Setting up new efficient production facilities that meet the demands of the future requires skills that are only obtained by focused preparation, applying the best practice and experience.

GEA brings knowledge from multiple, significant dairy and nutritional powder projects and innovative solutions. By working close together with our customers, we deliver solutions that drive their business and provide the edge in a competitive world. ■

Complete Powder Plants for the Dairy Industry



GEA unites deep-rooted insight in food and dairy processing with technological edge to supply complete state-of-the-art process lines. A GEA powder plant fulfills the strictest demands for food safety, product quality, plant efficiency and sustainable production.

That is how we have become the leading supplier of process technology to the dairy industry worldwide.



GEA Process Engineering A/S

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gea-niro.food@gea.com, www.gea.com

engineering for a better world

Hygienic Tubes and Fittings

- reduce contamination risks as well as increase and improve yields



By
Jimmi Paulsen,
Portfolio Manager,
Tubes & Fittings,
Dairy, Market Unit
Food, Alfa Laval

Tubes and fittings are critical, but often overlooked equipment in most dairy processing lines. With an increased hygienic focus for dairy processing and product purity, dairy producers are now investing in premium-grade as well as pharma-grade equipment to reduce contamination risks and increase yields.

Tubes and fittings account for 90 percent of all the product contact surfaces in dairy processing lines and are therefore of paramount importance for hygiene. Consider that a typical installation has on average three welds per meter. These welds present the highest risk of contamination, and locating the sources of contamination is difficult. Despite this, dairy producers do not always devote as much attention to selecting tubes and fittings as they do to other dairy equipment. To keep processing lines clean, it is therefore important to choose high-quality hygienic tubes and fittings.

About Alfa Laval

Alfa Laval is a leading global provider of specialized products and engineering solutions based on its key technologies of heat transfer, separation and fluid handling.

Alfa Laval's worldwide organization works closely with customers in nearly 100 countries to help them stay ahead in the global arena.

Alfa Laval is listed on Nasdaq OMX. In 2014, posted annual sales of about SEK 35.1 billion (approx. 3.85 billion Euros). The company has about 18000 employees.

www.alfalaval.com

Premium grade: Lower contamination risks and total cost of ownership

Consider this: Installing tubes and fittings in dairy processing lines represents about 20% of the total plant installation costs. Of these costs, welding accounts for approximately 80% of the total. Choosing premium quality hygienic tubes and fittings is therefore key to lower contamination risks as well as the total cost of plant ownership.

Tight tolerances, smooth welds, uniform wall thickness, and highly polished surface finishes that meet or exceed dairy standards contribute to quality, safety and efficiency. To ensure trouble-free welding, Alfa Laval only uses certified raw materials from trusted suppliers for its tubes and fittings and ensures that there are no variations in production batches during manufacturing.

All Alfa Laval tubes and fittings undergo strict quality control procedures at every stage of manufacturing at Alfa

Laval facilities. Weld ends are a perfect match in terms of material, tolerance, surface finish and angle for all combinations of tube and fittings. This ensures durable, corrosion-resistant and dimensionally accurate hygienic equipment for your production lines.

Pharma-grade: An investment that gives dairy producers peace of mind

Increasingly, dairy producers are choosing pharma-grade tubes and fittings to minimize contamination risks and operating costs. In fact, Alfa Laval has seen a 25% increase in dairy plant orders for its range of tubes and fittings for the pharmaceutical industry, Alfa Laval Tri-Clover UltraPure. Aseptic unions, in particular, have been in demand. It seems that some dairy producers believe that the additional investment in pharma-grade tubes and fittings deliver good return on investment and peace of mind. ■



Alfa Laval hygienic tubes and fittings.



Alfa Laval Tri-Clover® UltraPure tubes and fittings.

Creating solid opportunities in liquid milk



The evolving market for liquid dairy products demands product innovation, combined with high quality and competitive pricing. Alfa Laval's complete range of hygienic equipment – pumps, valves, heat exchangers, installation material and tank equipment – gives greater flexibility to serve the market. Boosting efficiency in key processes. Minimizing energy costs. Saving precious resources. It all adds up to better margins.



Alfa Laval
LKH centrifugal pumps

Low shear rate ensures best-in-class efficiency and reduces both power consumption and possible fat globule damage.



Alfa Laval
ALS Agitator

Maintains milk homogeneity at the lowest possible power consumption. Serviceable from outside the tank.



Alfa Laval
Frontline

Whether used for cooling or pasteurization, this gasketed plate heat exchanger is designed to your specific process requirements.



Alfa Laval
tubes and fittings

Consistent quality from batch to batch, ensuring you don't need to readjust your welding process.



TREPKO

- Technology for your Ideas

The product development policy of the TREPKO Group is defined by the motto “technology for your ideas”. It describes both methods and sequence of how TREPKO introduces new solutions in the packaging process of dairy products.



By
Agnieszka Libner, M.Sc, MBA,
Managing Director,
and Paweł Łagoda, M.Sc Eng., Marketing
& Sales Director, TREPKO Poland

Customer-driven innovations

The TREPKO innovations are not always big and impressing. Sometimes they may look modest but bring a massive and positive effect. What is their common feature is the fact of being customer-driven. The customer is at the very starting point of the innovation process at TREPKO. First, the vision and specific goals must be set in the form of a new product, new packaging or a new process.

This vision is then translated into an engineering language by the R&D departments and realized at the TREPKO's own premises. Installation and commissioning lead to the final introduction of a new product to the market.

Process and product

The TREPKO's activity concentrates on two innovation types: process innovation and product innovation, which should be rather treated as a sequence within the same project. Thus, process innovations implemented by TREPKO at the customer's lead to product innovations. Very often, new market possibilities can even be multiplied thanks to one investment and this is due to a basic feature of the TREPKO equipment: flexibility.

New aseptic machine

A perfect example of innovative solutions by TREPKO is a new aseptic machine, type 106 KS, presented during the last ANUGA FoodTec show in Co-

logne. This machine is a result of an organisational innovation at the TREPKO Group itself. Thanks to an acquisition of a Polish supplier of packaging machines, which took place in July 2014, the group established an R&D and production division for hygienic and aseptic equipment. The solutions offered in the machine allow the product to remain completely safe and secured against any possible contamination by means of sterile air and packaging treatment prior to filling and closing. What is absolutely unique about this equipment is the fact, that the machine is compact and operator-friendly as well as fully flexible in terms of product and packaging changes. For the customer, it gives new possibilities to conquer new, more distant markets, with fresh and healthy dairy products.

Entire packaging process

The TREPKO Group is the only company that can really take responsibility for the entire packaging process. Among others it supplies complete and integrated packaging lines, including unit and end packaging. On the customer's request, it is also possible to include the existing equipment in the end-packaging system. Recently, such a project has been realized at one of TREPKO's customers. Apart from a new machine for filling multilayer deserts, the line included a special pick'n'place unit able to mix different flavours in the same tray. Such an innovation corresponds to new requirements from retailers and extends the dairy's competitiveness. Moreover, further downstream equipment allowed for a better presentation





TREPKO BRAZIL

From July 2015, the newest company in the Trepko Group is the Brazilian Cup Filling Producer Brasholanda, soon to be TREPKO BRAZIL.

Trepko always aim to be close to our customer, and to provide them with our unique quality designed with our international high standards, and the local produced advantages and understanding for each individual market. Trepko is very happy to welcome our newest Brazilian colleagues to our family.

of the product after opening. Finally, the end-packaging solutions was integrated with both the desert line as well as two other existing lines for bottles and cups. The TREPKO team has integrated all of this, including palletizers. The customer

benefits from new products, mixed-flavour trays and process innovations for cost optimization.

Integrating knowledge

The potential of the TREPKO Group as a partner in the innovation process results from the ability to integrate and use knowledge and experience from all the subsidiaries and partners. Therefore, the development of the group contin-

ues to build up this potential. Recently, FILMATIC - a recognised bottle fillers' producer - joined the group and extended the product range with new and interesting machines' portfolio. As every company in the group FILMATIC contributes with unique proposals, but it is the TREPKO spirit that allows to combine knowledge and ideas and implement innovations at every customer around the globe. ■

International Dairy Books

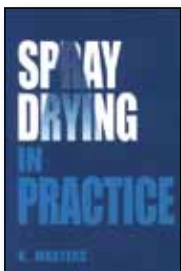
International Dairy Books (owned by Mælkeritidende I/S - Denmark) is a publishing house providing scientific literature and journals for professionals within the dairy industry. The web shop of the publishing house offers a broad range of dairy books within the subjects: Dairy Technology, Cheese, Juice, Functional Foods, Microbiology, Preserved Milk Products, Ultrafiltration and Membrane Processes etc.

Amongst the most popular books in the web-shop, you will find: Handbook of Milk Powder Manufacture, The Orange Book, Spray Drying in Practice - and Butter and Related Products.

Butter and Related Products

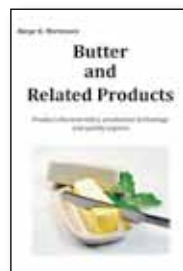
Adjunct Professor Børge K. Mortensen is the author of the high-rated book about: "Butter and Related Products".

The book is a necessity for students attending dairy technology courses at various levels of food science and technology education worldwide. In addition, practical butter makers and dairy managers will benefit greatly from reading the book.



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Primodan a Danish Producer of

Filling Machines for the Dairy Industry

Primodan is a Danish manufacturing company incorporating more than 60 years of experience within the dairy and food processing industry.



By
Frederik Klausen,
Sales Manager,
Primodan

Worldwide

Primodan is an order-producing company of cup and bucket filling and sealing machines as well as a supplier of complete white cheese (UF) plants for markets worldwide. Primodan produces several well-known ranges of filling and sealing machines for highly efficient lines at customers throughout the world.

During recent years, and as a responsible manufacturer of filling and sealing machines, Primodan's equipment has undergone a continuous development towards high flexibility and efficiency - while at the same time making our machines ever more environmental-friendly - consuming less energy

In early 2015, Primodan designed a brand new line, which is a full-servo-driven machine with automatic changeovers between cup heights from the panel. The customer is the well-known Dairy group; Irish Dairy Board - IDB, today called Ornu.

and reducing product wastages during product changeovers.

This is achieved by changing our machines working principles from pneumatic operation to mechanical solutions controlled by servo technology.

Ultra clean machines protects your business

As a flexible machine manufacturer, we always adapt to new trends in the market. Ultra clean machines has successively been part of our portfolio, however we have experienced a significant increase in the demand for these machines in the market within the last years. Thus, in 2014 approx. 90% of delivered machines have been our premium ultra clean lines with UV-C treatment on cups and sealable foils. Further, the lines are equipped with MAP-technology for reducing oxygen levels in the headspace before sealing. These features ensure food safety and extended shelf life for the products.

Ultra Clean filling at Irish Dairy Board

Another ULTRA-CLEAN machine left the Primodan factory in Denmark in 2015. The machine has been purchased by the well-known Dairy group "Irish Dairy Board - IDB" now called "Ornu". Ornu was looking for a new ULTRA-CLEAN filling machine for producing an especially sensitive product.

The line, which matched the requirements, was the Primodan Rotary Filling machine in ULTRA-CLEAN execution and equipped with features such as:

- MAP (Modified Atmosphere Packaging) technology
- UV-C sterilization of the lidding materials
- UV-C sterilization of the cups
- Vision control system for control of placing the sealable foil before being sealed
- HEPA sterile overpressure cabinet.

The brand new-designed line is a full-servo-driven machine with automatic changeovers between cup heights from the panel.

John Leahy, Business Development Director at Irish Dairy Board, tells that the business processes with Primodan has been very satisfactory. - From the very beginning Primodan has been a very flexible partner designing the filling machine to fit with our needs and requirements. Their expertise within the field is extensive, and we are very confident that we have chosen the right machine manufacturer for our project. When dealing with Primodan you are always treated with special attention. ■





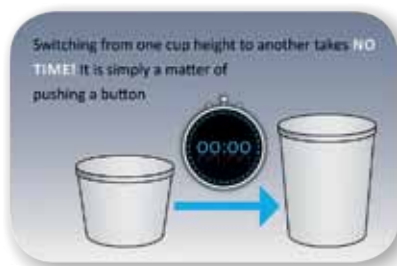
FILLING MACHINES BY PRIMODAN

WHEN FLEXIBILITY IS YOUR PRIORITY

We take hygiene to the next level!



Primodan is a Danish Manufacturer of filling machines for use in highly efficient production. Our solutions are custom-made with strong focus on flexibility.



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Perfectly Mixed

Tetra Pak® High Shear mixing systems provide first-class mixing results and optimize the process flow



By
**Frederik
Wellendorph,**
Marketing Director,
Europe & Central
Asia, Tetra Pak

The market for flavored milk drinks or fruit juice drinks with milk, whey, yogurt and soy is growing constantly and allows significantly improved margins for dairies. With these products, manufacturers meet the requirements of the market and consumers for healthier foods. In addition, the sport and energy drinks segment, which has already been introduced very successfully by the beverage industry, falls into the same category. For consumers the positive characteristics of natural fruit juice also applies to flavored milk and

yoghurt drinks with added value since the products are associated with health and natural goodness.

Flexibility is required!

An ever-changing product range with different viscosity products makes high demands on the production process and requires manufacturers to have a great deal of flexibility in their processing equipment.

The manufacture of the products normally involves dissolving powders and a range of other ingredients - from low to high viscosity liquids. Technology steps such as emulsification puts a high demand on the mixing equipment when creating the raw product mix.


Mixing of dry matter

The problems associated with the processing of ingredients such as starch and stabilizers in powder form, are the

transport of the powder, the potential for lumps in the product due to insufficient wetting during the mixing process, foaming and separation by floating on the surface of the liquid.

The Tetra Pak® High Shear Mixer uses vacuum to 'suck' the powder ingredients into the mixing vessel. The powder is sucked below the liquid surface directly into the bottom-mounted Turbo Mixer unit, which is the heart of Tetra Pak® High Shear Mixer, where it is immediately wetted and dispersed.

The Turbo Mixer unit consists of a high-speed rotor and perforated stator. The rotor draws the components directly through the perforated stator. The system is designed so that all ingredients have to pass through the rotor/stator. Powders can be supplied from bulk powder silos and are sucked in a hygienic, dust-free and fully automatic way using the vacuum in the mixer. The powder supply can be in a separate room in order to minimize dust in the wet mixing area. As an option, a special Big Bag powder handling system can be connected to the Tetra Pak® High Shear Mixer again, sucking the powder directly from the bag into the mixing unit using vacuum.



The optional equipment for deaeration, heating and cooling makes the Tetra Pak® High Shear Mixer a multifunctional plant.

Improved process flow through homogeneous mixtures

The Tetra Pak® High Shear Mixer system creates stable dispersions and emulsions. A stable dispersion prevents the formation of clumps and sedimentation in the final product. The full dispersion of the components ensures effective heat transfer in the downstream heat treatment process. Due to the mixing under vacuum, running times of the heating systems are extended substantially because the product is absolutely free from

air, which avoids foaming on the hot surfaces and therefore reduces fouling in the heating sections. The performance of high-pressure homogenizers in the heating systems is also improved because there is no air in the mixture. Cavitation in the homogenizer is reduced which improves the homogeni-

ABOUT TETRA PAK

Tetra Pak is the world's leading food processing and packaging solutions company. Working closely with our customers and suppliers, we provide safe, innovative and environmentally sound products that each day meet the needs of hundreds of millions of people around the world. With over 20,000 employees and operations in more than 150 countries, we believe in responsible industry leadership and a sustainable approach to business. Our motto, "PROTECTS WHAT'S GOOD"TM, reflects our vision to make food safe and available, everywhere.

More information about Tetra Pak is available at www.tetrapak.com

zation effect and improves the lifetime of the homogenizer seals and pistons.

Oxygen in the product can have negative impact on the color of the final product and influences the product quality. The high shear mixing in the Turbo Mixer unit leads to stable emulsions with a long shelf-life without separation or coagulation of the various ingredients.

In-line, batch and multifunctional

The Tetra Pak[®] High Shear Mixer can be used as an in-line mixing plant. To do this, the system is connected to one or more tanks. The liquid components are added to the mixing vessel via flow meter systems. These are then circulated by the Tetra Pak[®] High Shear Mixer system. The introduction of the powder ingredients is carried out in-line using the vacuum generated by the mixer. This also ensures the product is de-aerated at the same time. The

in-line functionality can handle viscosities up to 500 cp and dry matter up to 50% with a very high performance of up to 40,000 l/h in the standard version. The system can incorporate up to 150 kg/min powder.

The Tetra Pak[®] High Shear Mixer is also available for batch mixing systems. All ingredients are dispensed or transferred by vacuum in a specified sequence into the mixing vessel where the batch is produced within a few seconds. This process can handle products with a higher viscosity of up to 100,000 cp and dry matter around 80%.

Optional equipment for heating and cooling makes the Tetra Pak[®] High Shear Mixer a multifunctional unit. In the past often such process steps had to be performed in different equipment. Today, these steps can all be carried out in the Tetra Pak[®] High Shear Mixer allowing producers to save production time and minimize product losses. ■



Tetra Pak[®] High Shear Mixer can be used as in-line mixing plant. The in-line functionality can handle viscosities up to 500 cp and dry matter up to 50% with a very high performance of up to 40,000 l/h in the standard version. The system draws up to 150 kg/min powder.

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Robotic milk powder handling: efficient, flexible and reliable scoop inserting.

JORGENSEN: Fully automated packaging lines for infant formulas

Quality Foods for Precious Babies!

Around the world, researchers and dairies constantly develop enhanced infant formulas with improved nutritional profile, so the products are as close to breast milk as possible. - This means that we too constantly improve all features and facilities on our packaging handling lines to match the high quality products designed for the global market, emphasizes Jesper Johansen, Marketing Manager at Jorgensen Engineering.

By Anna Marie Thøgersen, Editor

Safety and high quality

In co-operation with major infant formula players, Jorgensen has constructed several innovative packaging systems to optimize safety and hygiene in a very brand-conscious market, as high product quality is the most important issue facing dairies producing infant formulas. - Thus, our customers are looking for engineering houses, which are innovative in projecting and building machines. In addition, we must be - and are at the forefront within features for monitoring production data by means of optimized control on the packaging lines, explains Per Vedel Rasmussen, Sales Manager at Jorgensen. He adds: - As a leader within packaging handling, Jorgensen matches the strict requirements with appropriate machinery, monitoring and detective features

guaranteeing safe and traceable quality products.

Dynamic Line Control

All Jorgensen-lines feature specific customized solutions. However, a complete packaging handling system for infant formulas in general comprises: Automatic de-palletizing, jet air cleaning and feeding of empty cans, scoop inserting, filling, check weighing, clinching, end-handling, air evacuation and gas flushing, seaming, labeling, plastic lid over-capping, code reading, wrap-around case packaging, case coding, palletizing and line control with SCADA .

- During recent years, we have maximized the utilization of the line capacity. So tells Technical Sales Manager Henrik Storm Leth: - When projecting a new packaging line, we focus on Dy-

namical Line Control providing a far better performance. We design the packaging handling line the intelligent way with a dynamic flow to increase the overall efficiency. Our dynamic line control system monitors the units and automatically adjusts the line speed for smooth operation and maximum line performance.

One solution fits all

The global infant formula producers also demand more flexibility on the very same packaging line. These demands could be filling/packing and handling different milk powder products with e.g. differently shaped and colored scoops in different kinds of cans or cartons. On Jorgensen's flexible packaging lines, picture-monitors support each changeover, so the operator knows

exactly, which new product is next on line. Changeovers require from zero to an absolute minimum of time switching from one to another type of product, packaging, and/or volume. These multi-purpose packaging lines are controlled by a SCADA system, which communicates with the customer's management control system.

Walk the talk - international accreditations

Infant formula is an extremely sensitive consumer product demanding not only high manufacturing standards but also corporate social responsibility focus. In this context, Jorgensen is accredited in accordance to several guidelines, defined by international organisations as e.g. SEDEX (Supplier Ethical Data Exchange). Further, Jorgensen is audited according to the SMETA guidelines (Sedex Members Ethical Trade Audit) and recently obtained SHE accreditation (Safety - Health - Environment).



Inside the Jorgensen Engineering state-of-the-art 7,800-m2, domicile in Odense, Denmark. From left to right: Technical Sales Manager Henrik Storm Leth, Sales Manager Per Vedel Rasmussen, and Marketing Manager Jesper Johansen. Jorgensen Engineering develops and produces packaging handling systems for the food, pet food, health care/pharmaceutical and - not least the milk powder industries.

These accreditations point out that Jorgensen Engineering operates extremely seriously and holds high ethical behavior in the global supply chain. ■



Scan for a video of Jorgensen milk powder handling (jorgensen.dk/pwdr).



**With a little help...
...from Jorgensen**

Together with the market leaders in the food industry we continuously optimize and develop **packaging handling systems** for infant formula, baby food and milk powder. Our strengths are: **engineering, innovation and know-how.** And to keep promises.

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Contract Manufacturing Provides Unique Flexibility

FIPROS A/S is a contract manufacturer of foods and health care products offering contract production of both powdered and liquid products. During recent years, we have experienced an increased demand for our contract manufacturing services. This is among others due to expanding markets of new products, specialized ingredients, increased food regulations as well as the demands for control of allergens. The production set-up at FIPROS, designed for maximum flexibility, includes for instance the newest robot technology, complete equipment cleavability and disinfection.

Hosokawa Alpine
Sugarplex 315 SX tailored
to the needs of the sugar
industry, including the
milling of Lactose.



By
**Lars Valentin
Peters, Technical
Director, FIPROS
A/S**

Today, our customers include large food suppliers as well as medium and small sized producers, who are looking to expand into new markets or launch new products, where production can be set up without risking vast of financial investments in new plants and machinery.

As a contract manufacturer, it is our aim to be able to service our customers, with the newest process technology at the highest food safety. Below please find a brief description of the different services we can provide.

Milling and attrition drying

With our four different milling technologies, we can fulfil nearly every milling job request in the food industry. Our newest installation this year is a Hosokawa Alpine Sugarplex 315 SX, which is specially tailored to the needs of the sugar industry, including the milling of Lactose. The milling mechanism, consisting of two pin discs, is completely integrated into the mill door. The Sugarplex achieves throughputs of 3 t/hr at particle sizes of 97% < 250 µm, or 1.5 t/hr at particle sizes of 97% < 150 µm.

With our Attrition Dryer we can also offer contract manufacturing of pastes of solid products, for instance casein, plant protein, fruit fibre products, press cakes etc.

Spray drying

The demand for spray drying of food products has increased significantly

over the past years, especially due to increased production of specialized ingredients.

FIPROS A/S offers spray drying at our spray tower plant in Denmark or Sweden, including the possibility to use rotary or spray nozzle atomization.

Overview of FIPROS contract manufacturing services:

- Spray drying; 1 in SE and 1 in DK
- Powder blending; 6 blenders with different capacities
- Milling; 3 different milling technologies
- Drying and milling; 1 dry milling system for paste-like products
- Compacting; different sizes
- Powder packaging; from 1000 kg down to 1g in different packing systems
- Liquid mixing, vacuum system, heat treatment

- Liquid packaging; from 1.000 ltr. IBC down to 5 ml sachets or bottle packing system!
- All kinds of product re-inspection including sieving, metal- as well as X-ray-detection
- Storage for customers of raw materials, finished goods on dry storage or refrigerated.

Quality made in Denmark and Sweden

As we have a highly qualified quality set-up, incl. well documented production and cleaning processes, we are able to guarantee a high degree of food safety for all goods produced at our facilities. They are free from microorganisms, allergens and any contaminations caused for example by cross contamination. Naturally, we are certified according to ISO 22000, FSSC 22000, FDA, or-

ganic, IFS, kosher, halal etc.; we have passed all relevant certifications.

We offer competitive prices and confidential treatment of our customer's information and recipes.

About FIPROS A/S and FIPROS AB

FIPROS stands for "Food Industry Process Service" and was founded in 1992 under the name of DAN BLENDS A/S as contract manufacturer of foods and pharmaceutical products. In spring 2009, we expanded our production by buying a plant in Kågeröd, Sweden. "Exclusively Contract Work" we say, because we do not market any products and thus do not compete with our customers.

Today, after many years with a steady growth and technical development, FIPROS A/S concentrates on food and

ingredients for food made according to the specification of our customers.

FIPROS A/S has 70 experienced employees. We started as a "family business" and today the ownership is further extended to include seven leading employees. Thereby we also aim to maintain an eager engagement and a strong, positive attitude towards good service.

The factory is modern, automatic and mechanized with emphasis on food safety and high quality.

For information, please visit our Homepage on www.fipros.dk ■

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Contracting Arla Foods new Global Innovation Center

The Danish engineering company, FH Scandinox is busy working for dairy and food customers all over the world. Within the latest four years, the company has e.g. dismantled, shipped of and planned new food productions on nine of the Norwegian dairy company TINE's huge plants. Just recently, FH Scandinox won another major order - dismantling an existing Arla testing facility followed by engineering and installation of this plant plus additional equipment at Arla Foods new Innovation Center, which is planned to open in the fall 2016.

By Anna Marie Thøgersen, Editor

Arla Innovation Center

In late 2013, Arla Foods - the world's Top-7 dairy company - decided to invest 270 million DKK in building a new Global Innovation Center of 10,000 square meters. The center will include the newest technology to develop new cheeses, yogurts, milks and butter products for global markets.

The building is located next to the Agro Food Park in Skejby at Aarhus, and construction has begun. Arla's Global Innovation Center is expected to be ready in the third quarter of 2016 and will employ 120 people, of which 65 jobs are transferred from Arla's current center in Brabrand. - I am proud to tell that FH Scandinox won the challenging task to move all equipment from Brabrand in Aarhus to the new Innovation Center in Skejby, informs Sales Director at FH Scandinox, Torben From. He explains that the order includes several elements and steps. Right now, the engineering-team is doing a carefully drawing scope of work and also marking-up all equipment at the existing innovation center. Later follows dismantling and during the summer 2016, a much larger team of FH Scandinox' experts will set-up and install all machinery in Skejby.

Automation and CIP

The Arla order includes a total completion of the new Innovation Center. Besides the existing equipment, this implies all pipes, tube-transfers, pumps,



Sales Director at FH Scandinox Torben From is the person to contact, when a customer wants a calculation of a new dairy or food project.

valves etc., and not least automation of the complex systems.

- Automation is one of our core competences and performed by all applicable SCADA-standards, stresses Torben From. Further FH Scandinox is to project and build the central milk reception besides a new large central CIP-plant for cleaning all the different pilot plants and other equipment.

When it comes to completing Arla Foods' new Global Innovation Center in the fall 2016, approx. 20 highly skilled staffs, mostly from FH Scandinox supported with a few extern experts will work around the clock during the summer. Thus minimizing the downtime of the workflow amongst the Arla innova-

tion staff. - This too is one of our core competences - engineering, planning and hiring local experts when needed - and always focusing on minimizing production pauses or stops at our customers' plants, stresses Torben From.

Working all over the world

As mentioned, FH Scandinox recently completed a four-year long task for the Norwegian dairy giant TINE, dismantling nine of the group's dairy sites and hence selling/projection new functions for these plants at food customers around the world. Some of the dairies now work in different countries in South America - others in the Far East. When engaged in setting up the fully re-

The picture shows a pilot plant projected and build by FH Scandinox for Arla Foods Nr. Vium.



furbished plants - often supplied with new devices from FH Scandinox, the company always support finishing the specific project with a couple of their own experts, but supplied with local experts and manpower.

All kinds of foods

Milk and dairy is by far not the only business area for FH Scandinox. During recent years, the company has achieved excellent reputation amongst manufacturers of margarines and vegetable oils, and one of the large customers is the Irish based Kerry Group. Besides dairy production, Kerry is also a major player within e.g. margarine production, and FH Scandinox is once again the main engineering expert and partner at Kerry's huge expansion of the company's existing margarine plant in

Leeds. Amongst other ongoing projects, FH Scandinox is involved in projecting a dairy plant in Lithuania, a puff pastry margarine plant in Odessa, Ukraine as well as transferring a wine bottling plant from Denmark to Finland.

The highly competent staff at FH Scandinox has during the years been involved in a large number of projects. Just to mention a few, it has been: Cheese and other dairy projects in several Eu-

ropean countries as well as in Uruguay and Thailand, ice cream in Ireland and Nigeria, mayonnaise in Norway, vegetable oils in Ireland, UK, Haiti, Indonesia, and Malaysia.

Moreover, just very recently, FH Scandinox won an order of rebuilding and automation of the butter chamber at The Dairy Training Center at Kold College, the only Dairy College in Scandinavia. ■

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Packaging for European Foods

EHRNO FLEXIBLE A/S is a Danish producer of flexible packaging for the food industry in general and further specialized within dairy packaging. The family-owned company, founded in 1971, has produced flexible packaging for almost 45 years. High performance equipment are covering flexo print up to 8 colors, various lamination types, and slitting. Additional services such as micro-perforation, embossing etc. are available. EHRNO FLEXIBLE also supplies sheets and pouches, and here sub-contractors handle the production.



By
Ole Østergaard,
Managing Director,
Ehrno Flexible A/S



Since 1971, EHRNO FLEXIBLE A/S has produced flexible packaging primarily for the food industry. Today, the company has achieved good foothold among several European dairy and food producers.

Broad packaging range

EHRNO FLEXIBLE's product range covers several different materials such as PET, PA, PE, PP and Alu as well as different paper types. At our laboratory facilities, our company meets all quality demands needed for materials for primary packaging. To secure quality and food safety in all matters, we conduct a wide range of analysis and physical tests on analyzing equipment at our lab. These tests off course also fulfill all relevant regulations and laws.

Eye-catching prints

Eye-catching prints on packaging are vital properties to present the prod-

uct in the retail chain. In this matter, EHRNO FLEXIBLE uses different technologies, as for example HD Flexo and KODAKNX, which are some of the most advanced technologies within printing plates for flexo-print. We always fit the best solution to each specific job, to have the optimum result for our customers. In these matters, we cooperate closely with some of the finest repro-houses in Denmark; they are all on top regarding technology and equipment for repro and printing plates. In addition, we also work together with international design- and repro-houses. Often our customers are working on lines, developed by design-houses, and here it is

also important with a proper communication, to meet the best result.

Lamination

In regard of lamination, EHRNO FLEXIBLE uses a wide range of technologies like solvent-less, solvent-based and water-based adhesives. Lamination is carried out on modern machinery, which in addition can be used for coating different lacquers like sealing lacquers, barrier coating and other lacquers and coatings. Further, it is possible to do reverse coating and lacquering in register and patterns. Moreover, special laminations, for example paper laminates with a window are available.

Exact slitting

Finishing of the materials often includes slitting to the specific width, specified by the customer. For the slitting of the finished reels, different slitting technologies are used, for proper slitting of each material. Additional services like folding or micro perforation are also possible. The slitters in the slitting department are top modern machinery, to secure best quality, so that the customer has exactly the reels that fits into the packaging machines.

Moreover, finishing can include sheeting or welding of pouches, and here EHRNO FLEXIBLE cooperates closely with sub-contractors specialized in these matters.

Hygiene and environment

Focus areas as hygiene and environment have top priority at EHRNO. To

support that, the company maintains a management system that includes BRC-hygiene-certification and ISO14001 environment certification. This also secures several safety and quality issues, like full traceability, record keeping and many different controls needed for securing the finished products. In addition, technical maintenance of machinery and equipment are systematically executed.

Innovative company

Product development and customized products are an important part of our company's DNA. EHRNO FLEXIBLE always strive to meet our customers' wishes, also regarding new developments. We cooperate closely with our suppliers to find ways, including alternatives not used in general!

EHRNO holds a strong position at the Danish market, but over the last

decades, the export sales of our innovative packaging have grown, and we now supply our packaging solutions to a wide range of customers in Northern Europe including the UK and Ireland. Most markets we service directly, but EHRNO also cooperates with exclusive sales agencies in Germany, Austria, Switzerland and France. We have found that there is a market for a company like EHRNO FLEXIBLE offering creative packaging solutions combined with flexible service and consistent quality. EHRNO FLEXIBLE has implemented a strategy to secure growth, covering a strong focus on expanding export business, both in quantities, but also on new markets.

For more info: www.ehrno.com ■

FLEXIBLE PACKAGING

The flexible packaging supplier

EHRNO flexible a/s has more than 25 years of experience in the production of food packaging. We are focusing on what we do best: processing and converting.

Our mission is to add value to our customers, through our packaging materials.



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Massive Success for Skyr in Denmark

Selling a dairy product for eating on-the-go in a smart pack from RPC Superfos has been a huge success for Danish food company Løgismose.



By
Søren Marcussen,
Regional Director,
Region Nordic,
RPC Superfos

An increasing amount of people likes to have their breakfast on the go. When rushing from home to an early meeting, nothing is as quick and convenient as picking a dairy product from the cold counter and eating it straight from the pack. The Danish food producer Løgismose accommodates to this need and now offers Danish consumers a healthy and delicious low-fat organic Skyr in three different flavours: Pear, quince

and vanilla; mango, passion fruit and ginger; blackcurrant and beetroot.

In the customers shoes

The series was recently launched in the EasySnacking™ packaging solution from RPC Superfos with evident success. CEO Steen Olsen from Løgismose does not underestimate the role of the packaging:

“If you put yourself in the shoes of the customer that buys a cold dairy product to eat straight from the pack, then you will quickly come up with some demands to the packaging. It must be very easy to open to avoid any spills when the lid comes off. Further, there must be a spoon in the pack, which is hassle-free to grab and which feels good to hold

and eat from. We asked RPC Superfos to create a perfect solution for our new Skyr range and they did: With the packaging solution EasySnacking™, all our requirements have been fully met, including a stylish look.”

Simplicity and smooth lines

EasySnacking™ features attractive smooth lines and gives a soft impression, quite similar to the texture of any dairy content. The key word is simplicity, as the pack has all you need - but no more than that. The spoon is in one piece, integrated in the lid and placed under a self-adhesive peel-off label - a new and innovative solution.

“We have been working with RPC Superfos for 25 years and feel very secure



The EasySnacking™ solution is the perfect pack for on-the-go dairy products. A sleek spoon in the lid is part of the success for Skyr from Danish Løgismose.

with their packaging products and the entire setup. When we work together, we come up with some strong first mover solutions, and in fact, we consider RPC Superfos our packaging partner rather than a packaging supplier,” says Steen Olsen, who stresses that quality, logistics and pricing of course must be in order.

Sales surpass expectations

The development of the EasySnacking™ pot happened in less than a year, from the first sketches made at meeting between Løgismose and RPC Superfos to the launch. The distributor is the biggest Danish supermarket chain, Dansk Supermarked, from where the Skyr products have had a tremendous start: During the first months, sales have been rising far above the expected number of sold units.

Skyr is a yoghurt product rich in protein and based on Icelandic dairy tradition. Løgismose is currently preparing the launch of Skyr on-the-go in Sweden, and shortly an additional flavour will be launched in Denmark. ■



Camel Milk Ice Cream in RingLock Tub

Probably for the first time ever, camel milk ice cream enters the global market. As of the beginning of 2015, consumers in the Middle East can buy Camelait ice cream; a premium series of six different exotic flavours. Behind the remarkable novelties is Al Ain Dairy Company in the United Arab Emirates.

Camel milk contains a triple amount of vitamin C compared to cow milk and is naturally low in fat and cholesterol. It contains unsaturated fatty acids, higher anti-microbial proteins, boosts the immune system and is ideal for people with allergies or lactose intolerance. In addition, it has an anti-inflammatory effect.

Head of Plant Operations Sayyad Mohammed Ghouse from Al Ain Dairy Company explains that the Camelait ice cream is targeted at high-end customer. He says: “For our new, exclusive product we needed a packaging that could clearly communicate its distinction including the various exciting taste experiences of the Camelait ice cream. The solution was found together with RPC Superfos Balkan. They now provide us with glossy and highly functional RingLock tubs.”

Your pack is the first appetizer



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RPC - THE ESSENTIAL INGREDIENT

More Milk in Nigeria

Throughout the world, developing countries increasingly focus on establishing their own production of milk and dairy goods. In Nigeria, Africa's fastest growing economy, an influential Nigerian businessman has committed himself to establish his own state-of-the-art milk farm and dairy company. To realize the project, he asked for advices at the Danish consultancy company MyAdvisor.

MyAdvizors CEO and owner Søren Bollerup tells about the Nigerian connection and here presents the new milk farm & dairy project in Nigeria.

By Anna Marie Thøgersen, Editor

The Nigerian milk project

Nigeria is Africa's largest economy with a population of almost 180 million and an expected economic growth of 7% in 2015. Moreover, the entrepreneurship flourish amongst Nigerians wanting their own country to be on the forefront when creating more national economic growth.

These tendencies are well-known to the Danish Consulting & Engineering Company MyAdvisor who recently signed an agreement with an influential Nigerian customer on developing

a future milk farm and dairy on the outskirts of Abuja, capital of Nigeria.

- We have a sales agent with years of experience in Nigeria, and further, he is a great ambassador of Danish dairy technology. It was through him that our contact regarding the latest milk project was established. Our customer, who is a central figure in Nigeria, wants the planned dairy farm and dairy plant to appear as showcases for the Nigerian farmers as well as an inspiration to farmers throughout the western part of Africa, tells MyAdvizors CEO Søren

Bollerup. He adds that even two more dairy-projects are under way in Nigeria.

Building the farm and dairy

In the actual case, MyAdvisor is responsible for the entire project - from planning, construction consultancy and business development regarding both milk farm and dairy. - Thus, we have just completed the business case and started developing the Master Plan, and after this completion, the Conceptual Design and Tender Dossier follow. When the actual construction of the buildings starts, we will be supervisors and ensure commissioning of the plants. We have an additional agreement with the customer to train his organization subsequently, as this is an important success factor. Further, we will help finding a knowledge-partner, who ideally might be the co-owner too, Søren Bollerup stresses.

CEO of MyAdvisor Søren Bollerup and staff planning the future milk farm and dairy, which is to be built at the outskirts of Abuja, capital of Nigeria.



Farm & Dairy Showcases

MyAdvisor expect the dairy and milk farm to be on the run in late 2016, and by then with 250 dairy cows. Expectably, the dairy cows will be from Denmark in order to ensure sufficiently high milk yields. In the long term, the goal is a dairy herd of 1000 cows.

Søren Bollerup tells that the Nigerian business-partner is very keen to let the two projects serve as showcases. Thus, both Nigerian colleagues, consumers and not least schoolchildren will be allowed to visit the projects, as to learn

about dairy production - but not least to market the branded dairy products towards the consumers. - However, our client's primary purpose is to secure jobs and demonstrate that you can produce milk in Nigeria under the right conditions. Thus, we focus on the overall production designs, training of the management, and not least securing a high welfare level of the dairy cows. That is unprecedented in Nigeria!

Dairy goods for the local market

In the initial stage, the new Nigerian Dairy will focus on producing and market fresh whole milk, low fat milk and butter, as these products are not yet available in Nigeria. In the long-term however, the product portfolio will be developed and expectably include yoghurt and cheese as well. ■



About MyAdvizor

MyAdvizor is an independent Danish consultancy company, highly specialized within international, multidisciplinary advice for the global Dairy, Food and Beverage industries.
 The company provides business-focused consultancy services within Design, Management, and Business - from idea to fully commissioned plant, as well as consultancy concerning e.g. expanding, renewing and optimizing existing dairy plants. MyAdvizor, located in Copenhagen, Denmark, deliver state-of-the-art, independent advice based on the strong Danish tradition of food safety and high quality food.



Global Dairy projects

MyAdvizor possess a comprehensive understanding of what is required to build and optimize dairy plants according to international standards. - We offer independent and focused consultancy services within Design, Management and Business. This enables us to provide all intellectual dairy services from idea to a fully commissioned and operational dairy plant, focusing on efficient and sustainable dairy production, tells CEO Søren Bollerup. - We ensure that our customer makes the right investment - and business decisions. Our market is the whole world and our highly experienced employees have completed projects in more than 15 countries.



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**All you need to design, build or optimize your Dairy plant
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Planning for the Future

- how to react in a dynamic and changing business environment



By
**Jacob Christian Møller, Principal
Business Consultant and Rolf Pedersen,
Business Unit Manager, Dairy, ALECTIA**

Master planning

In any company, it is of outmost importance for the management to have an in-depth understanding of the current business operation and a plan for the future development of the business.

Master planning is one of ALECTIA's consultancy and engineering services, which serves as a decision support for the management. The master plan for a dairy factory site describes the future development of the site to its maximum planned capacity. The master plan covers milk intake, production forecast, plant capacities, equipment and areas needed, and the physical development of the site; securing efficient flows of product and staff, supported by the infrastructure while keeping the financial targets. Traditionally, a master plan has covered the anticipated development over 5-10 years.

Response to a dynamic future

One of the challenges in planning is the dynamic nature of the future: Milk volumes changes, the product portfolio is in constant development, mergers and production structure optimization of the company is ongoing as well as operational optimization, and the increased demands from hygiene standards makes existing facilities obsolete.

Dynamic Master Planning lets you manage long-term capacity planning within a changing environment.

ALECTIA's response to the dynamic future is to make the planning process dynamic by:

- Incorporate the master plan into a tool that supports easy evaluation of changes in planning parameters: Milk volume available, sales volume, product portfolio, solids usage, equipment, efficiencies, investment, cost of production etc. The tool will identify when a change in the planning parameters requires substantial changes to the physical development of the site.
- Having the ability to work with multiple planning scenarios for production and investments i.e. aggressive growth and moderate growth.
- Supporting evaluation of multiple sites as part of the plan for the individual site: what happens if production of specific products is moved to another site, how the different sites can support each other in peak season and off-peak season.

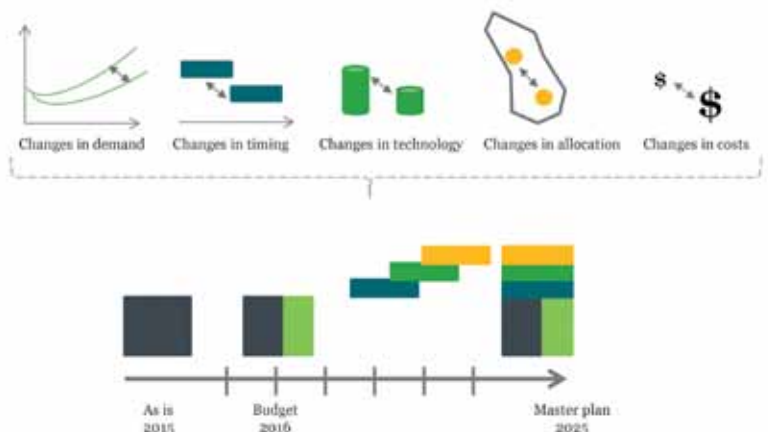
- Providing a tool in which the plant data is easily updated and transparent, securing that the plan is always up to date and that all stakeholders in the planning, sales, production, logistics and engineering departments knows the content.

The Dynamic Master Plan

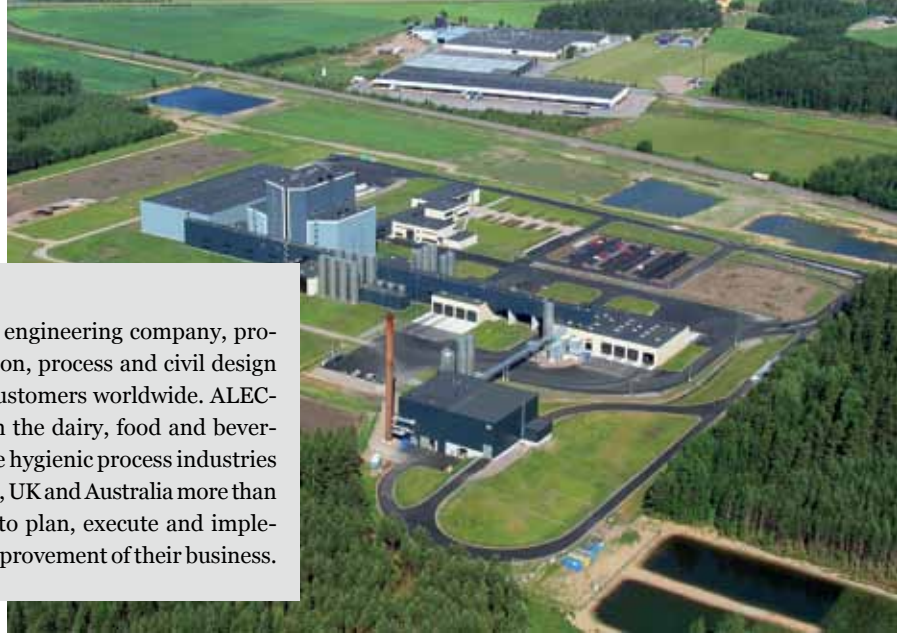
ALECTIA offers a Dynamic Master Plan methodology, which includes a supporting planning tool with the above functionality. Based on the forecast for milk inflow and planned production of the different dairy products, a milk solids balance can be created to validate that milk inflow match the planned production.

The capacities of the dairy factory are registered in a hieratical way, where the basic plant capacities: milk reception, milk treatment, production of cheese, fresh milk, butter, etc. can be detailed into the main processing equipment; i.e. a spray drying plant can be split into evaporation and dryer.

The output is presented in tables as well as graphs, and comparing capacities with demand using graphs makes it very intuitive to evaluate when investments are needed. Future investments are registered with the additional capacity they provide as well as the capital investment required, securing that



ALECTIA delivers all design and planning services for new dairy factories.



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ALECTIA is a Danish consultancy and engineering company, providing services within business operation, process and civil design services, and project management to customers worldwide. ALECTIA has a long list of references within the dairy, food and beverage industries - providing services to the hygienic process industries worldwide. From our offices in Denmark, UK and Australia more than 650 dedicated employees help clients to plan, execute and implement projects and secure continuous improvement of their business.

the capacity plan and the investment plan are always synchronized.

Operational consumption figures as well as the cost for main production categories like manning, maintenance are also included in the model, enabling overview of how the operational cost develops over time as production develops. Sales prices can be included

enabling NPV evaluation of alternative development scenarios.

A decision tool for the management

ALECTIA will setup the model based on information received from the client, including possible factory audits, as part of the dynamic master planning

process and provide the client with an operational tool. The client can then decide to manage the model in house or let Alectia update and run the scenarios on ad hoc basis or as part of annual investment reviews. In either case, the management will have an updated and clear overview of the future development of the company. ■

» Do you aspire to run the best and most profitable dairy business?

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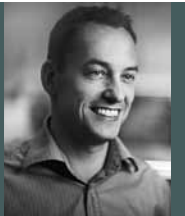
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High-Quality Food Production Requires

High-Quality Water Treatment

The Wimm-Bill-Dann dairy in Kiev, Ukraine - owned by PepsiCo - has recently updated and improved the water treatment plant supplying high-quality demineralized water for the production of dairy products. The state-of-the-art water treatment plant is supplied by EUROWATER.



By
Jens O. Gjerløff,
Marketing
Manager,
SILHORKO-
EUROWATER A/S

Reliable water treatment for PepsiCo in Ukraine

Construction of the new food production facilities in the city of Vyshneve, close to Kiev, is one of PepsiCo's largest investments in the Ukrainian dairy industry since the acquisition of Wimm-Bill-Dann in 2011. PepsiCo has converted an existing dairy in accordance with typi-

cal PepsiCo standards to increase the quality and the shelf life of the dairy products. A main goal has been to improve standards to meet the stringent regulations of the European market so that the company can increase its European exports. EUROWATER has supplied the water treatment plant ensuring the highest possible standards.

Complex water treatment project

The project did not only involve supply of three new reverse osmosis units for 3 x 35 m³/h demineralized water. The project was far more complex - mainly because that part of the existing water

treatment plant had to be reused and integrated in a new central PLC control panel together with the new units.

That meant that the existing water treatment plant consisting of sand filters, carbon filters, softeners, and RO units had to be partly dismantled and disposed. The existing filters were to a large extent reused, although an extensive modernization was required. New filter media for iron removal was supplied, and valves and pipe system were converted to match the operating mode based on the new backwash system, consisting of blower and rinse pump.

The project further consisted of:

1. Three RO-units, each with a flow rate of 35 m³/h, meaning high redundancy and reliable supply of demineralized water.
2. Proper pre-treatment of the inlet water in order to prevent clogging of the membranes.
3. Fully automatic CIP unit in order to perform regular cleaning of the membranes to remove precipitations caused by calcium salts or bio-fouling.
4. Reuse of the existing UV disinfection system to ensure a consistently high water quality with no bacteriological activity.
5. Central PLC control cabinet to monitor and control the complete water treatment plant - existing as well as new units. The central PLC control cabinet serves as the motor control centre and includes programmable controllers (SIEMENS S7), a touch screen operator interface, variable frequency converters and metering,



Fully automatic CIP (Cleaning-In-Place) unit in order to perform regular cleaning of the membranes to remove precipitations caused by calcium salts or bio-fouling.

- and includes communication through Profibus and GSM/SMS.
- 6. Installation; instruments and pipes in stainless steel AISI 316.
- 7. Start-up and commissioning.
- 8. Complete documentation.

Especially integrating the automation of the new units with the existing filters in a different design was a very demanding job, requiring close-cooperation between the engineers from the EUROWATER project department in Denmark and the local engineers from the EUROWATER office in Kiev. Mr Oleksandr Kursun, chief engineer at Wimm-Bill-Dann / PepsiCo has been in charge of the complete project to tie the threads together for the engineers, suppliers and authorities involved. "The cooperation with EUROWATER has fully met the agreed objectives," says Oleksandr Korsun.

Mr. Korsun continues: "Based on the good experience, we intend to further



Water treatment plant at PepsiCo / Wimm-Bill-Dann dairy in Kiev, Ukraine. Left: Multimedia filters. Middle: reverse osmosis units. Right: Automatic CIP unit. Projecting and installation done by EUROWATER in Ukraine.

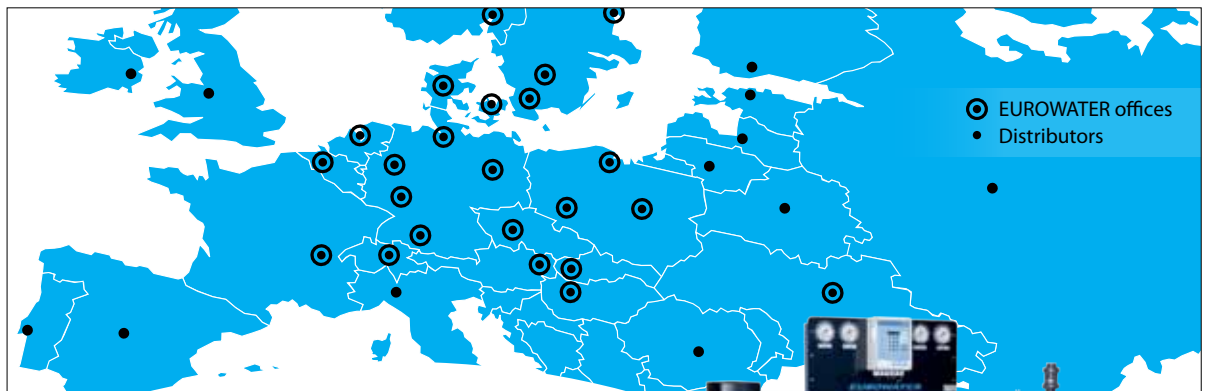
develop our cooperation with EUROWATER as a supplier of water treatment. Next step will be to fully implement water saving technology by EUROWATER in order to achieve maximum efficiency of water and energy in the production process".

Pure water treatment since 1936

EUROWATER has many years of experience within the fields of developing,

manufacturing, selling and servicing complete water treatment plants for waterworks, heat and power plants, hospitals and industrial companies. The main applications are boiler water, process water, cooling water, rinse water and drinking water. EUROWATER has more than 350 highly qualified employees at 23 sales and service offices around Europe.


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PURE WATER TREATMENT

Clean is Money!

It's an old saying that "Time is money". At Novadan, we say, "Clean is money" and both is true. However, in order to live up to our saying: "Clean is money", we build our cleaning concepts on optimization, efficiency and savings for our customers. Let us tell you about our views of the future, and how we deal with new issues in order to ensure the best production conditions for our many dairy customers.



By
Jens Ole Jensen,
Business
Development
Manager, Novadan

Challenges for the dairy industry

With the abolition of the milk quotas in EU in 2015, milk production is expected to increase in some countries and therefore many dairies will face capacity problems. We also see the dairy industry striving to utilize all milk components especially by using e.g. membrane processing technology.

Focus on optimization

We are prepared for these challenges and in recent years, Novadan has dedicatedly worked on developing new products and cleaning solutions with the aim to save: Time, energy and costs. After a thorough development phase with several laboratory tests, both small and full-scale, we launched our new and innovative products and revolutionary cleaning solutions at the beginning of 2015. Within the range of these solutions and most importantly, Novadan has made it possible to clean membranes at 30 °C instead of the commonly requested 50 °C for other products. This ability saves time, energy and costs at the dairy. As an additional benefit, this enables you to clean the membranes at 45 °C, as some membrane suppliers prescribe.

Yet another important development from Novadan is within the CIP area, as it by now is possible to make single step cleaning with disinfection, which give big savings in water, time and costs.

What's in it for you?

So, why should you choose Novadan solutions?

- Because a clean membrane plant perform better and ensure long production time.
- Cleaning at low temperature saves time and money and gives more production time.
- High efficiency products makes it possible to reduce the cleaning time.
- Novadan has the right experience and know-how.
- If you care for the environment.

When one of our dairy customers, Fonterra - a leading multinational dairy company, owned by 13000 New Zealand dairy farmers and the world's largest exporter of dairy products - were to build a large membrane plant in the Netherlands, they chose Novadan due to the capability of the technical team and the reduced overall cleaning cost, which would be realized. Furthermore, they believe that Novadan can make them ready to face future challenges in the area of cleaning aspects.

Novadan was on-site from the start to make sure all the cleaning procedures were performing optimally and to educate the operators in how to use our cleaning products. Thus, it is possible for them to ensure the best clean-



Utilizing milk components by membrane processing technology.

ing. Our contacts from Fonterra states: "The strong team of on-site knowledge from Novadan and other suppliers made the implementation of this plant smooth and the challenges were reduced to a minimum."

Optimized production plant?

Should you wish to optimize your production plant? Let us tell you, how we work!

Novadan has a team of specialists within membrane cleaning that travel all over the world, partly in order to start-up new membranes, optimize the cleaning on new and existing plants, and partly to educate our distributors around the world and our personnel in our sister companies in Poland, Spain and Egypt.

To ensure optimum solutions for the membrane cleaning, one of our consultants will visit you to carry out a survey. Based on this, our specialist suggests and carries out adjustments to increase performance of the cleaning procedures. When these are adjusted, they will be monitored during a period to ensure a

continuously high performance. Novadan knows that the production on a membrane can vary according to the production and feed quality. That is why it is crucial to follow the cleaning in a period. We always focus on ensuring our customers' membrane plants function and use the absolute minimum of time and energy to get there. That is why we constantly work on optimizing our products in our Product Development Department and on adjusting our solutions to our customers and future issues.

Improved cleaning processes

Due to the future issues within e.g. capacity problems, Novadan by now solved these challenges, and we are proud to present two of our well-known, very important, and highly demanded membrane cleaning products: Ro Dan 300 E



Novadan Dosing System.

and Ro Dan Acid, which are optimized to future requirements.

Characteristics of the alkaline enzyme membrane product: Ro Dan 300 E:

- High performance and flexible product.
- Useable from 30 °C to 50 °C in the cleaning process.
- Time and energy saving.

Characteristics of the acid membrane product: Ro Dan Acid:

- Contains less phosphate, still highly effective.
- Improved efficiency against lime and milk stone.
- Useable from 30 °C to 50 °C in the cleaning process.
- Time saving and environmentally sustainable. ■



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- Maximum production hygiene
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Where there is Milk, there is Water

By Søren Nøhr Bak, Segment Director, Grundfos BioBooster

Increasingly, dairies and related food and beverage industries are focusing on water reuse. This goes beyond concerns about keeping water supply and wastewater treatment effective, to considerations of how to reduce the amount of water entering and exiting their plants.

To a greater extent than previously, dairies and related industries are taking control of wastewater handling onsite to show their commitment to sustainability in water use and reuse, and at the same time creating value either in operations at the plant or in the immediate environment. The question is: can decentralized wastewater handling be done effectively, and can costs be kept down?

The answer is yes, it is possible for dairies and related industries to show they care for water without compromising their business model and profitability. And with a growing tendency for groups and individuals, often via social media, to name-and-shame companies perceived as having a negative water care profile, this can also improve companies' "social licence to operate".

Tough decisions made easy

For a decentralised wastewater treatment system to be an attractive proposition for a dairy, the system must be flexible and scalable, so that it can be adapted to changing wastewater treatment needs. Furthermore, the system must be easy to install and operate, without the need for additional specialist staff onsite, and it must be robust, without the risk of costly downtime.

To show how the dairy industry can benefit from on-site treatment, let's look at two examples where practical problems were solved, while at the same

time providing opportunities for creating value locally.

Enabling increase in production

Arla Foods, Vimmerby, Sweden is a large milk processing plant producing milk powder. Arla Foods needed a quick solution for the expansion of the dairy to meet requirements for treatment of an additional 400 m3 wastewater per day.

Grundfos BioBooster could deliver a solution quickly, due to the modular design and pre-tested equipment. From contract signature to operation took only seven months, and site work at the plant was less than two months, ensuring minimal disruption to operations at the plant.

Ceramic ultrafiltration membranes are used, which ensures that all particles and bacteria are removed before

discharge. Because of robust operation and intelligent process control of both biological and membrane operation, staffing requirements are significantly reduced. Removal efficiency is extremely high and the levels are well below the discharge limits set for wastewater by the authorities.

Since commissioning, Arla Foods and Grundfos BioBooster have continued their cooperation to optimize solutions further, also for testing a polishing module that meets Swedish drinking water standards.

Sustainable production

The Arla Foods dairy in Rødkærsbro, Denmark specializes in Mozzarella production. The challenge that Arla Foods faced was an increase in RO water from milk and whey concentration to reduce transport costs, which resulted in more

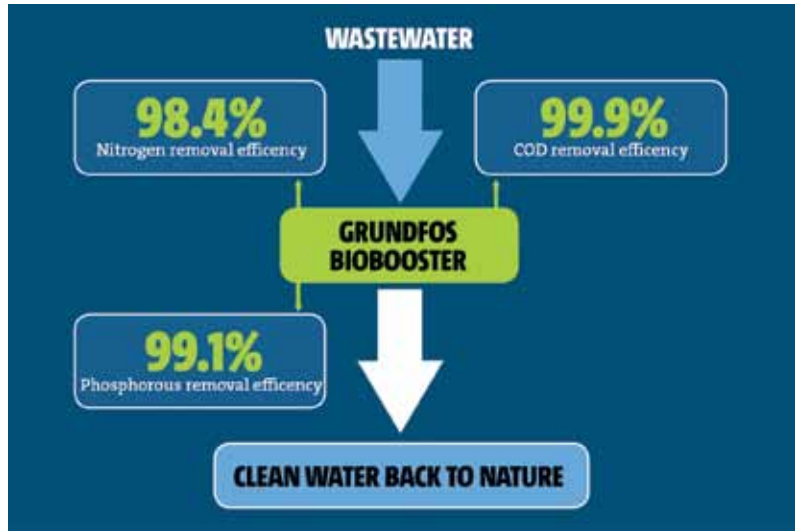


Global leaders in water care and energy efficiency

Grundfos BioBooster A/S is a 100% Grundfos-owned subsidiary developing and delivering solutions for wastewater treatment and water re-use for applications in the food & beverage industry and for treating municipal and hospital wastewater.

RO water than the dairy could use. The dairy's existing WWTP had reached capacity and needed to be extended, however at the same time, Arla Foods was interested in reusing more RO water.

The solution was to separate the RO water from the process wastewater. Grundfos BioBooster developed a unique biological process to remove urea from the RO water and treat the water to a concentration significantly below Danish standards for discharge to sensitive inland recipient waters. The full-scale platform is in operation, and now Arla Foods is gearing up for greater water reuse, which could lead to a 65% reduction in the dairy's water intake. Then we can truly say that the water for the dairy comes with the milk. ■



See the video about Grundfos BioBooster in action
 - search: Grundfos YouTube Arla Foods.

GRUNDFOS BIOBOOSTER Next Generation Wastewater Solutions

Arla Foods Vimmerby, Sweden

be
 think
 innovate

GRUNDFOS



A typical in-line NIR system. The main components of an in-line are a specially designed sample interface to intercept samples directly in the process flow, the NIR analysis unit housed in a sturdy metal box and a software interface.



Soft Quality, **Hard Profit**



By
Richard Mills,
Journalist, **FOSS**

How process analysis technology is improving quality and profit for producers of popular dairy products such as mascarpone cheese and Greek yoghurt.

As opposed to the benchtop NIR instruments, that most quality control people are familiar with, 'In-line NIR' is all about putting an analysis unit and sensor directly in the production process. The results, which are delivered every few seconds, can then be conveniently viewed on a computer screen in a control room. This gives a continuous picture of key measurement parameters and, in turn, allows operators to take better control of the process. Using an automatic control loop, the adjustments can even be done in real-time.

The development is going hand in hand with the popularity of fermented products such as soft cheese and Greek yoghurt. While many dairy products can be controlled with in-line NIR analysis, the production of these soft cheese and Greek yogurt style products are a par-

ticularly easy place for dairy producers to start their hunt for improved quality and profit.

Mascarpone quality

General Manager of Lake Country Dairy in the USA, John Peterson has learnt about the advantages first hand after such a system was installed at the company's soft cheese plant

Originally, it was installed to help operators get a better overview of the quite complex process involved in making the company's prize-winning Mascarpone cheese. However, it soon became apparent that there was much more to be gained by going in-line. "What happened was that it gave us so much more control over the process it actually had more benefit than we had originally thought," says Peterson. "We

were able to optimize our moisture level to really give customers the value that everybody is looking for."

Before the ProFoss system was installed, an operator would have to go out to a sample port in the process, take a sample and test it on a benchtop NIR analyser about every half hour. After doing that, they would adjust accordingly. But it was always hard for them to get tight control of the process.

The new in-line system has changed all that by giving the operator better visibility. "It takes moisture readings every 20 seconds and it graphs those readings so that the operator is able to tell the trends and make adjustments accordingly," says Peterson. "It gives the operator time and a better sense of what the process is doing to the product. An added bonus is that this improved vi-

sion gives the production team more confidence to really go after the optimal moisture in the product for our customers.”

Greek profit

The same principle of reducing variations in the Mascarpone process also applies to similar dairy products such as Greek yoghurt, as FOSS process key account manager, Michael Sievers explains using the regulation of protein just after the separator as a case in point.

The analyser is installed close to the separator and connected to the outlet via an optical fibre and a sample interface called a 'lateral transmission probe'

that is especially designed for the job. Notably, it is insensitive to bubbles in the collected sample and has the right type of near infrared wavelength required to penetrate the viscous nature of the material.

Based on many years experience of implementing process control systems for major dairy producers around the world, Sievers estimates that the variation in the process can be reduced by at least 50%. This is because with more precise information about what is going on in the process, operators can reduce the typical margin of error involved. “If you can get results every 30 seconds, you don't get the spikes you always get

if you regulate the separator based on a single results every hour or so,” he says. “You can then move your process closer to targets and reap the profits.”

Taking a Greek yoghurt production with a yearly output of 15 million kg's as an example, the rewards become quite obvious. With less variation in the process, the protein content can be set down by at least 0.1%. “That is about 680,000 kilograms less skimmed milk per year to make the same amount of Greek yoghurt,” says Sievers. “Based on current raw material costs, that is a saving of around 110,000 Euros per year.” ■



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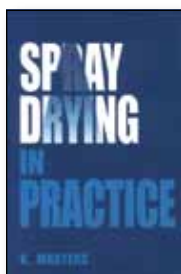
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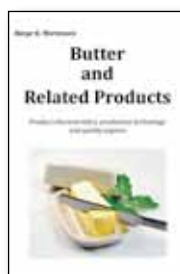
Adjunct Professor Børge K. Mortensen is the author of the high-rated book about: "Butter and Related Products".

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Eurofins Steins Analyzing High-Quality

Raw milk, Lurpak, infant formulas ...

... and thousands of other European food commodities and finished goods at the company's new state-of-the-art test facilities in Vejen. Eurofins Steins Laboratorium is a subsidiary in the global Eurofins, thus the Vejen-staff has almost 20,000 colleagues around the world.

By Anna Marie Thøgersen, Editor

Global expert knowledge

At the Vejen-premises Eurofins Steins conducts comprehensive analyzes within e.g. water, agriculture, soil, animal feed, vitamins, vegetables and other foods - for both farmers, various food companies, and large retailers.

- In 2014, we opened our new facilities here in Vejen, and thereby merging four Danish departments. This gives us several advantages, as we now analyze even more samples on one location, and further our staff have access to more shared expert knowledge. We conduct analyzes, prepare documentation, educate and advise our clients so they can optimize their production processes and ensure the quality of their services. So tells Svend Aage Linde, CEO at Eurofins Steins Laboratorium A/S in Denmark. He adds that thanks to the global network and shared database between all 200 Eurofins-laboratories, the Group offers their customers a total range of all conceivable analysis.

Stable infant formulas

During recent years, Eurofins has conducted quality analysis on raw milk for several large dairy companies in Northern Europe. Further, numerous dairies throughout Europe know who to turn to for complex analysis of the booming infant formulas. Exactly at Eurofins Steins, the staff knows of the broad varieties within Infant formula recipes, and that the products e.g. contain vita-



CEO Svend Aage Linde (right) and Key Account Manager Peter Pedersen in the Raw Milk Lab. Behind the two gentlemen, the company's new fully automatic analyzing line for raw milk.



Eurofins Steins' new fully automatic analyzing line for raw milk enables the company to lower answer of all test results to the milk farmer to 72 hours.



mins, which are important to keep stable all the way to the consumer. Eurofins Steins is Europe's number one in vitamin analysis!

As known too, China is the top-1 importer of infant formulas from all over the Western World. In order to meet the Chinese authority's requirements, Eurofins Steins has headed the compilation of necessary guidelines and declarations into specific Chinese GB methods. - We save these translations and millions of other analyzing elements in Eurofins' global database. This database also contains information about each of our lab-

oratories special competences. Thus, if a customer ask us in Denmark to conduct urgently special analysis within foods containing e.g. allergens or pesticides, we find the nearest Eurofins-expert lab, and simply send the samples by plane. The very next day we have the answers - and can pass them on to our customer. So tells Peter Pedersen, Key Account Manager at Eurofins Steins Laboratorium.

Lurpak® - Authenticity

A relatively large part of the activities at Eurofins Steins relates to analyzing raw milk and finished dairy goods, including the international known Danish brand; Lurpak®. - Actually, we can date our Danish subsidiary back to 1911, when the earliest small firm started analyzing the Danish Lurpak butter. You must not underestimate the importance of our 100-year-old roots on demands for top-quality foods ensuring the credibility of the producers. Today, this remains even more relevant in a globalized world where quality flaws could have devastating consequences for both consumers and food producers on the international markets, stresses Svend Aage Linde.

Eurofins 2020-strategy

The strategy of Eurofins is to continue its historically strong growth by providing excellent services to existing and new customers and by developing new services e.g. test that can reveal if a milking cow is in gestation. To do so, the Group have also expanded in acquisition of companies within pharmaceutical,

biotechnological and genomic solutions such as the Danish subsidiary, Aros Applied Biotechnology. This of course is of great importance for breeding programs within the dairy sector.

As to the question, why Eurofins invested so heavily in Southern Denmark, Svend Aage Linde explains: - Our new lab is located in an important agricultural country and close to highways, airports and large food producers in Europe. Further, by building new, we designed our test-facility to have an absolute stringent flow within the placement of the specific labs with associated analysis offices - from commodities to finished goods. Thus, we at Eurofins Steins Laboratorium is an important future-proved facility within the Eurofins Group.

About Eurofins

- Eurofins is a leading international Group of laboratories providing a unique range of analytical testing services to the pharmaceutical, food, environmental and consumer products industries and to governments.
- The Group founded in the late 1990ies is headquartered in France.
- Eurofins employs close to 20,000 highly skilled staff across more than 200 sites in 36 countries.
- Turnover in 2014 was 1,4 billion euros.
- The new 13,000-kvm Danish subsidiary Eurofins Steins Laboratorium in Southern Jutland is the largest food-analyzing center in Denmark, and no. 1 within vitamin-analyzes in Europe. ■

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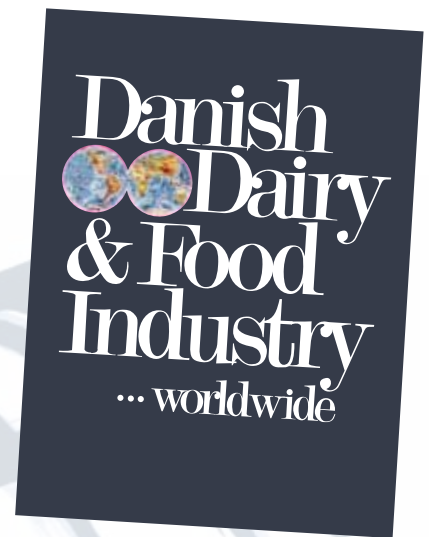
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The topics of Mælkeritidende are scientific, technical, and political information about the dairy industry and related areas. Furthermore, Dairy R&D, dairy product information, company profiles and exhibition information are accepted by the journal.

Further information

If you want further information about Mælkeritidende and Danish Dairy & Food Industry ... worldwide, please contact Chief Editor, M.Sc. in Dairy Science and Technology, Anne-Sofi Christiansen or Editor, M.A., Anna Marie Thøgersen.

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Exciting Program at FoodTech 2016

FOOD TECH

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1-3 November 2016

Once again, the FoodTech-staff at MCH Messecenter Herning will present you for a very exciting program at the food technology fair in November 2016. Expectedly, more than 300 exhibitors will join the fair, and further, FoodTech will host several events and activities as e.g. the EHEDG World Congress on Hygienic Engineering and Design.

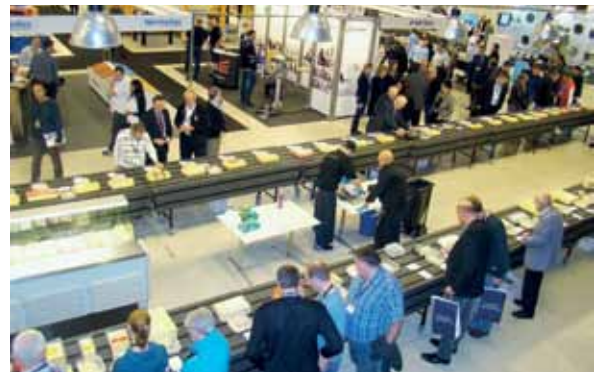
Book your stand now

There is great interest in exhibiting at FoodTech '16. You can learn more about the fair and book your company stand at www.foodtech.dk. The homepage is constantly updated - please visit the site for more information.

By Anna Marie Thøgersen, Editor



As an exhibitor at FoodTech 2016, you have an ideal opportunity to meet current and potential customers face-to-face in an inspiring and professional atmosphere. Visit www.foodtech.dk for more information. (Photo Tony Brøchner/MCH).



FoodTech also host the International Food-Dairy Contest. Thus, exhibitors and professional visitors can taste Danish food products and dairy goods from more than 15 different countries, in which Arla Foods and other Danish dairies are active.

FoodTech 2016

The next FoodTech takes place during the days 1-3 November 2016 in MCH Messecenter Herning, Denmark. The fair is Northern Europe's leading trade fair for the food industry and its suppliers of process technology, packaging and package solutions, equipment for traceability and analysis as well as ingredients and biotechnology.

Activities and events

- In cooperation with our collaborators, we are planning a broad program of activities with high professional levels, tells Project Manager, Klaus Erichsen. He stresses, that FoodTech will even be hosting the EHEDG World Congress. Amongst other events, FoodTech 2016 will be the place for following activities and events:

- FoodTech Challenge
- International DAIRY Contest
- International FOOD Contest
- Conferences and seminars
- Demonstration of production lines for small and medium-sized companies
- FoodTech Award
- EHEDG World Congress on Hygienic Engineering and Design.

Great exhibitor interest

During the last FoodTech in November 2014, approx. 10.000 professionals visited the almost 300 exhibitors at the fair. Amongst visitors represented by occupation was e.g. CEO's, other top-managers, engineers, technicians, sales, logistics, planning, and marketing professionals within e.g. dairy, meat and bread sectors.

By September 2015, no more than over 100 companies from Denmark and abroad already reserved a stand at the fair. ■



If you have any questions or need more information about the fair in general, please contact Project Manager Klaus Erichsen at ke@mch.dk. (Photo Tony Brøchner/MCH).

FOOD TECH

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Hosting EHEDG World
Congress and International
Dairy Contest



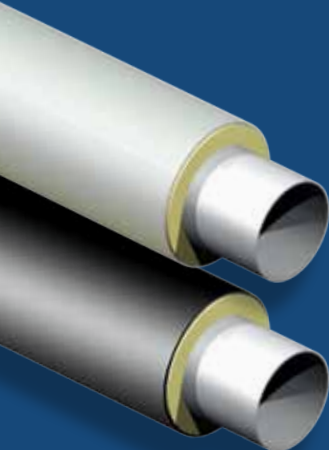
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