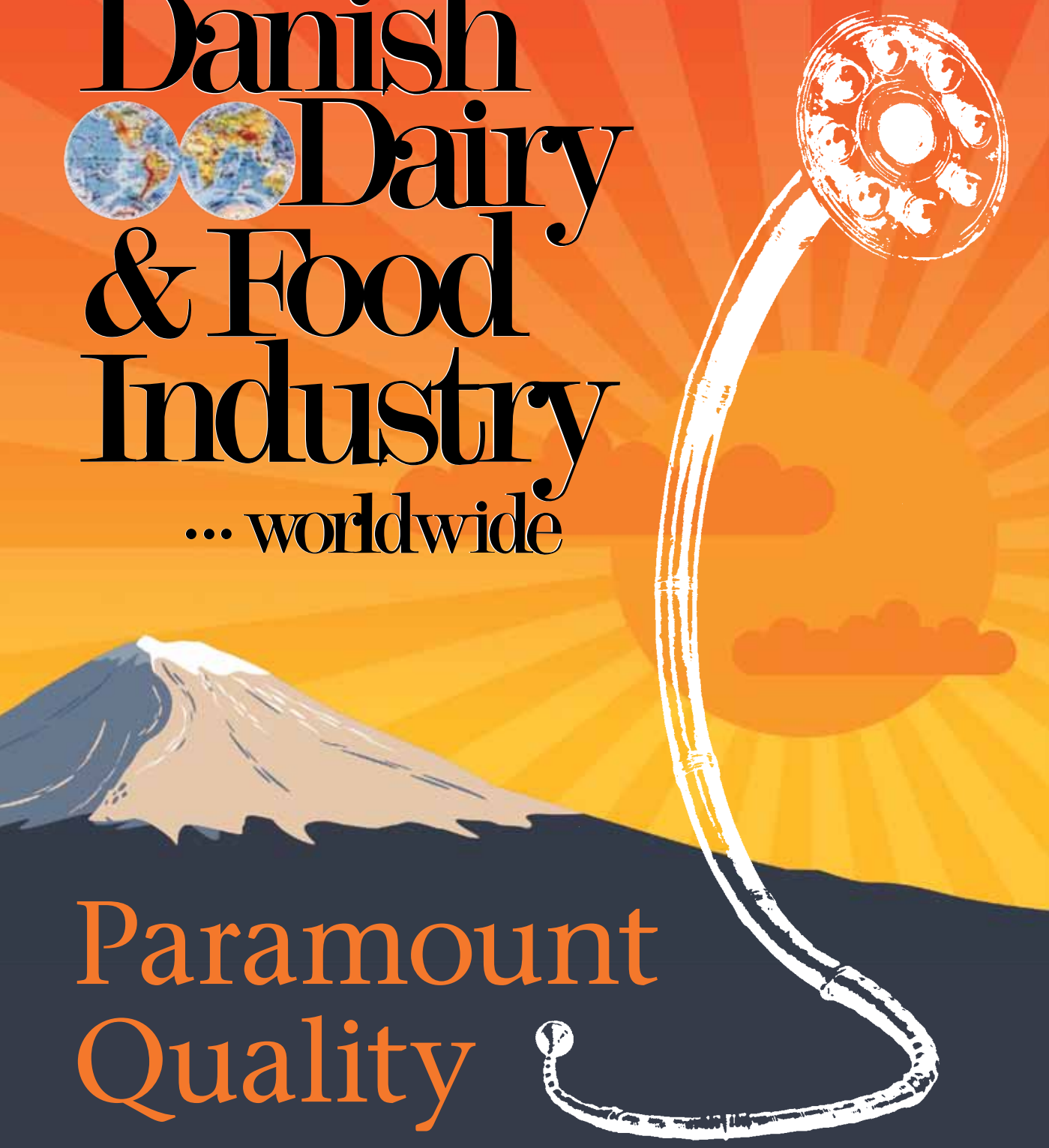
Danish Dairy & Food Industry

... worldwide



Paramount Quality

Dairy & Food Production

Processing • Hygiene • Analysis • Ingredients
Packaging • Transportation

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Trepko's Ultra Clean Cup Filling solutions are certified under the sanitary 3A-standard, ensuring that the cleaning of the machine is performed fast and efficiently. The 3-A standard defines not not only the design-standards, but also the adopted manufacturing standards.

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Worldwide supplier of filling/packaging machines

Danish Dairy & Food Industry ... worldwide

24
August 2014

Denmark - August 2014

Paramount Quality

The major theme of this year's Danish Dairy & Food Industry ... worldwide is: "Paramount Quality". This focus is essential, as the number of global middle-class consumers will increase rapidly in the years to come, and precisely these consumers demand high quality foods.

The Danish Food Minister, Dan Jørgensen introduces the magazine, and he highlights the Governments initiatives to ensure the Danish Food sectors continued top ranking on the global quality list.

Further, you will find an editorial about the international dairy company, Arla Foods constant focus on ensuring high quality from cow to consumer. Amongst other topics, you will find articles about top-hygienic design and high efficiency focus on how to build plants and machinery for manufacturing quality foods. In addition, suppliers of various cultures, fruit-compounds and other natural ingredients, enlighten you about maximizing benefits of raw milk and providing dairy products with extra functionalities. Each year companies manufacture and launch food packaging news that add more protection to dairy goods in environmentally friendly packaging. Not least, optimum hygiene and analytical concepts are crucial parameters to secure improved food quality, minimize the risk of errors/waste productions and to produce food regarding safe and hygienic conditions.

Excellences in these processes and functions are only possible when based on well-educated and trained staffs. In Denmark, we strive to maintain high levels within both dairy education and research. Thus, Danish Dairy & Food Industry 2014 includes editorials with various perspectives on paramount quality regarding governmental as well as education levels, dairy production, process equipment, hygiene and analysis, ingredients and packaging. All these elements are vital in order to meet the requirements for high quality foods from the global middle class consumer.

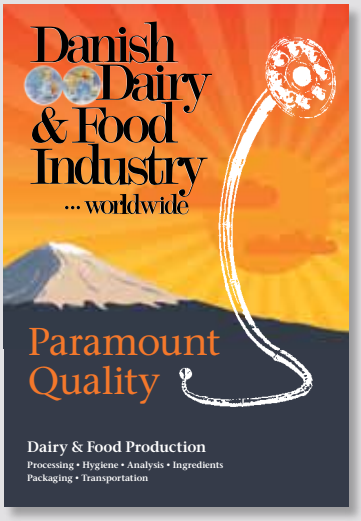
Besides studying this magazine our readers have the opportunity to meet representatives from the Danish dairy and food industry at large international exhibitions in 2014 as for example: World Food, Istanbul (4-7 September), World Food, Moscow (15-18 September), InterMopro, Düsseldorf (21-22 September), World Dairy Expo, Madison (30 September - 4 October), Fi Asia, Indonesia (15-17 October), SIAL, Paris (19-23 October), IDF World Dairy Summit, Israel (27-31 October), International Food Contest and FoodTech '14, both in Herning, Denmark (28-30 October) and in 2015 Anuga FoodTech (24-27 March).

The Danish Dairy Managers Association and the Danish Dairy Engineers Association own and publish Danish Dairy & Food Industry ... worldwide. We have published the magazine since 1976, and this issue is the 24th in succession informing you about Danish dairy and food industry.

Danish Dairy & Food Industry ... worldwide is distributed in more than 120 countries in 9.000 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: 9.000 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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AU2MATE PROCES AUTOMATION PARTNER

AUTOMATION AND INDUSTRIAL IT WORLDWIDE

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.

Au2mate develops and supplies automation solutions for the dairy and process industry world wide. These solutions are prepared through teamwork and close partnerships with our customers, and they cover the entire range from complete automation projects to consultancy services and advice.

We have many years of experience in the field of process automation. We have developed a structured work method, and with efficient tools for knowledge-sharing, we can guarantee rapid delivery of top-quality solutions at competitive prices.

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PROCESS AUTOMATION PARTNER

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QUICK FACTS ABOUT AU2MATE

- Au2mate was founded in Denmark in 2001.
- We have 69 employees at offices in DK, UK and Dubai, holding more than 500 man years of experience in dairy automation.
- Project-oriented, has delivered more than 1200 projects, PLC, SCADA, MIS/MES and ERP integration to dairies throughout the world including Nordic countries, Europe, America, Asia, Africa and Middle East.

Growth and Sustainability Must go Hand in Hand

In the future, Danish food must not only be known for its high quality and food safety, but also for sustainable and resource-efficient production systems.

By Danish Food Minister Dan Jørgensen

"The Danish food industry has shown that it can adapt its food production to the requirements and tastes of foreign buyers and are now selling e.g. pigs' ears and organic milk to China."

Exporting quality foods

In the middle of the last century, it could be difficult for Danes to buy the best Danish foods. Denmark's most succulent hams, best bacon and tastiest cheeses were sold to Britain and Germany. That shows how important food exports were for the Danish economy and in making Denmark known as a producer of high-quality foods.

Food exports remain very important, and today export from the Danish food cluster account for 24% of Denmark's total export earnings. We are the worlds leading exporter of e.g. ingredients for food products - a position we aim to uphold.

Controlled safety

The strength of Denmark's food export is not least due to our high food safety standards and internationally recognised, well-functioning control systems. Innovation also plays an important role: the Danish food industry has shown that it can adapt its food production to the requirements and tastes of foreign buyers and are now selling pigs' ears and organic milk to China.

Resource efficiency

We must continue to grow and renew sustainably - for example, by developing resource efficient machinery and other food processing equipment. Sustainability in the form of animal welfare, care of the climate and the environment, and effective use of every single resource must be the fundamental parameter in our food production, and to a greater extent than ever before.

Growing population

The world's population is growing quickly - from 7.2 billion people today to over 9 billion in 2050 - and the requirements for food production will rise even faster as an increasing global middle class will have the resources to demand food of higher quality and safety.

Since both land and water are scarce resources, it is absolutely necessary that the growing demand of food will be met through sustainable production.

This requires innovation. Danish farmers have shown that it is possible to intensify production while reducing emissions of greenhouse gases and nitrogen per unit produced.

Export strategy

In future, Danish food must not only be known for its high quality and food safety, but also for sustainable and resource efficient production systems. The Danish government will support this through research and intelligent controls, not restricted by the number of animals, for instance, but by the burden, it poses on the environment. Moreover, to further support export from Danish food - and food processing producers, we will in the near future launch an export strategy to ease export from the Danish food cluster. ■


We enrich people's
lives with more
natural goodness
every single day
Arla

Arla Foods

Quality around the Globe

Danish headquartered Arla Foods possess decades of experience within optimizing the company's quality work at all levels - from milk producers through production to consumers - and all around the Globe. Some of the comprehensive quality programs dates more than a hundred years back, others are established quit recently to cope with quality challenges far from Northern Europe.

By Anna Marie Thøgersen, Editor

Lurpak - Quality since 1901

Did you know that Arla in cooperation with other Danish dairies have refined the quality tests behind the world-famous butter brand Lurpak - for more than 110 years? Well, in October 1901, Danish dairymen create and implement the quality-system - Lure-brand. They did so to protect the Danish high-quality butter from fraud. Since 1911, only Danish dairies participating in the very strict quality programme are allowed to produce and sell the lure-branded butter named Lurpak.

Besides daily butter quality evaluations on-site, the dairy plants are once a week obliged to provide random samples for comprehensive analyzes regarding consistency, taste, texture and packing. These butter samples are chosen and collected on the dairy by the independent Eurofins Steins to be analyzed and graded at their laboratory by accredited judges to document and assure the Lurpak quality.

- The tests include meticulous assessments of the butter's sensory, microbiological, chemical, and organoleptic qualities. The butter is stored at recommended conditions through the whole shelf life period. The grading takes place twice: in the early stage of the shelf life and at the end of the guaranteed shelf life, informs Hans Henrik Lund, Vice President at Arla Foods. He adds that the samples must comply with the Lurpak standards at both grading. This ensures the needed robustness of Lurpak - exported to the entire world. - Buying Lurpak butter, new customers soon learn and well-established markets already know that the Danish butter is an all-natural product, and not least, they can always trust the paramount quality of Lurpak!

High quality milk from Arlagården

Other quality activities at Arla are of more recent date. In October 2003, Arla introduced the quality assurance programme; Arlagården at the company's dairy farms in Denmark and Sweden. Right now Arlagården are under implementation at Arla-farms in Germany, Belgium and Luxemburg, and it is further to be rolled out in UK in 2015.

Arlagården bases on four cornerstones, which the farms must fulfill: 1: Natural milk composition, 2: Excellent hygiene and safe milk without any undesirable substances, 3: High animal welfare with healthy milking cows, 4: Environmentally friendly farming respecting the surrounding environment.

Arla updates Arlagården on a regular basis in order to meet requirements from the company's customers and consumers on the global markets. - Arlagården is a global quality program and we execute uniform audit levels at our milk farms in all countries, underlines Helle Skjold, Director, Global Milk Production and Quality Assurance at Arla.

Helle Skjold stresses that on a more general level, Arla Foods constantly focus on improving sustainability at the farms concerning maximum animal welfare and minimum impact on the surrounding nature and climate.

Chinese demand for quality

Further and fairly recently, Arla Foods got involved in quality-testing raw milk in China in order to secure nervous consumers from illegal chemicals contaminating their milk and dairy products. As known, Arla Foods is very active on the Chinese market both as an exporter and as an important co-operator and co-owner of Chinas largest dairy company, Mengniu.

To secure consumers, Arla Foods, Fonterra and Danish FOSS has developed a screening method that can reveal possible adulteration - such as melamine - in the raw milk. This important quality project was one of the first tasks

Each week, Arla Foods and the other Danish Lurpak-dairies collect random butter samples for comprehensive quality-analyzes by accredited judges at the independent company, Eurofins Steins.

In 2012, a delegation signed one of the first Danish-Chinese quality-agreements. Arla Foods' CEO, Peder Tuborgh standing. (Photo: Rasmus Bluhme).

at the "China-Denmark Milk Technology Cooperation Centre", which was established in Beijing in 2012 in a joint venture between Arla Foods, Mengniu, Chinese COFCO, and Danish and Chinese authorities.

- The new method is unique, as it screens milk for adulteration on a very streamlined basis. The method is an important step towards further improvements of the milk quality and traceability from the Chinese milk farms, underlines Niels Juul Mortensen, Head of Technology China at Arla Foods.

During the development of the screening method, the project team, headed by Marlene Ransborg Pedersen, collected milk samples from more than 10.000 cattle around the world to establish the new method called the Milk Fingerprint. By now, the project in China deals with testing and implementing the method at Mengniu dairies. - It sounds like a detectives work, and it has almost been too, Niels Juul Mortensen smiles: - But once we have identified the correct Milk Fingerprint, we can soon reveal tampered milk from the Chinese farms.

Amongst other projects in the "China-Denmark Milk Technology Cooperation Centre", it is worth mentioning: Implementation of quality management system at the milk farms, Optimized milk production, Training of Chinese food inspectors, and Optimized employee cooperation China-Denmark.

Facts about Arla

Arla Foods is a global dairy cooperative and ranks no. 7 on the Worlds Dairy Top-10. More than 13.500 farmers in Sweden, Denmark, Germany, the UK, Belgium, Holland and Luxembourg own Arla Foods. Arla markets products in more than 100 countries under well-known brands such as Arla®, Lurpak® and Castello®. Arla operates dairy plants in eleven countries, and has sales branches in 34 countries.

The Arla farmers will this year deliver approx. 13.3 billion kilograms of milk. In 2013, Arla's total revenue rose by over 10 billion DKK to 73.6 billion DKK. ■

Tailor-made Dairy Courses at KOLD College

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

By
Hans Skjerning, Principal, and Bjarne Vagn Larsen, Vice-Principal, KOLD College

Global outlook

For years, 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 department teachers visit European dairy companies to catch up on new trends and tendencies within dairy production.

International Dairy Courses

Every year KOLD College arranges a number of tailor-made courses for Danida and international companies and partners.

Join the next international Dairy Course

A detailed program for the up-coming November 2014, 3 days CIP-Course is available at www.koldcollege.dk – You can also contact educational coordinator Sten Holmgaard Sørensen on E-mail: STEN@koldcollege.dk

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.

KOLD College
Landbrugsvej 55
DK-5260 Odense S
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www.koldcollege.dk

Join the November 2014 CIP Course!

In November 2014, KOLD College arrange a 3 days Theoretical & Practical CIP (Cleaning-In-Place) Course.

The course will be conducted in English and the main focus will be on the following subjects: Cleaning and disinfection, Plant understanding, Control of the plant, Hygienic design, Biofilm, Case Story, Safety and Knowledge sharing.

More information about this dairy course is available at www.koldcollege.dk

Department of Food Science
FACULTY OF SCIENCE
UNIVERSITY OF COPENHAGEN

Dairy Technology - in an Online Classroom

Take a course that will provide you with all the basic knowledge on dairy technology - and take it anywhere in the world!
University of Copenhagen offers the e-learning course **"Introduction to Dairy Technology"** and all you need to attend is access to the internet and a webcam.

Content
The course will cover:
- Basic dairy chemistry
- Microbiology of raw milk and dairy products
- Quality assurance of raw material and product
- Processing of dairy products: Fluid milk products, Fermented milks, Cheese, Butter and Powder
- Cleaning and hygiene

The course is based on a series of e-learning modules integrating literature studies, exercises relating to theory and case studies. More information about the course at: http://kurser.ku.dk/course/llek10256u/2013-2014

Requirements?
We have designed the course to fit students with a background equivalent to a B. Sc. in Food Science.
The course equals 7.5 ECTS credits and it is possible to attend as an exchange student, credit student or as part of a continuing education plan.
Successful completion of the course is based on a final written exam as well as on finishing each e-learning module, i.e. participation in online discussions, questionnaires, fulfillment of individual assignments and group work.

Teachers
The teachers are from the Department of Food Science, Faculty of Science, University of Copenhagen.
They are all experienced researchers with a comprehensive knowledge of the science and practice of dairy technology.

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/

(Photo: Anders Clausen)

Schedule
The course is offered once a year and next time will be in September 2014. The course will start on Monday 1st September and end on Friday 7th November 2014.

How to attend?
For information on how you become an e-learning student, tuition fee, and the possibilities for continuing education please take a look on the faculty homepage under education: http://www.science.ku.dk/english/

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

Advanced Process Control

- Increases Capacity Utilization, Improves Yield and Saves Energy

By
Anders Sehested,
Product Manager,
GEA Process
Engineering A/S

Sophisticated process analytical technology and control systems are in demand throughout the dairy industry to facilitate the improvement of the overall equipment efficiency, to lower energy and resource consumption and to meet strict requirements to product quality. GEA Process Engineering has developed a new system, GEA Niro DRYCONTROL™, which allows for better process control of powder production as compared with conventional measures.

As the average capacity of new dairy powder plants increase and product quality requirements become more stringent, the gains from advanced process control have a significant impact on profitability. An important element is to optimize the residual moisture content of the final product. To conserve milk powder its moisture content must not exceed a threshold value of 2-4% (depending on the exact type and specification). To meet the threshold value with a high degree of precision is a key factor for profitability, as that means a higher yield of the raw material, less water to be evaporated and thereby better capacity utilization.

In milk powder production, the composition of the milk concentrate (the dryer feed) and the humidity of the process air vary over time. If the dryer feed was always the same and the air humidity constant, the process parameters could be fine-tuned and set once and for all, but because there is a significant variation in both over time, there is much to gain by monitoring the variation and adjusting the drying process accordingly.

GEA Niro DRYCONTROL™

GEA Process Engineering's new advanced process control system GEA Niro DRYCONTROL™ allows for an unsurpassed process control and optimization based on real-time measurements. It is a system combining GEA's expertise in spray drying processes with model predictive control (MPC) technology. Real-time input to the control system is provided by the new in-line GEA Niro POWDEREYE™ platform for standard powder quality tests - including the moisture content of the final powder - and a GEA Niro in-line instrument for measuring air humidity in the drying chamber.

Large-scale dairy powder plants can benefit significantly from GEA Process Engineering's new Advanced Process Control system, GEA Niro DRYCONTROL™. By improved control of the drying process, the system allows producers to gain an additional capacity of 3-5%.

The software - based on model predictive control technology - continuously assesses and compares current and predicted operational data with the desired results whilst setting new control targets to reduce in-process variability and improve process performance. The mathematical model behind has been developed in cooperation with the Danish Technical University (DTU) and is built on GEA's vast knowledge on spray drying processes. The result is considerably reduced process variation, and thus set points can be more precisely adjusted to any quality or process limits.

The GEA Niro DRYCONTROL™ system controls the residual moisture in the final powder, drying chamber humidity and temperature - the parameters defining the drying process. The systems provide the spray dryer with an optimal combination of multiple process control actions based on the in-line process measurements, the specific powders drying properties and the simulation of the drying. Thereby the influence of process disturbances on the quality of the final powder is minimised, and

the reduced variation provides a more uniform product. At the same time, the capacity utilization exploitation of the dryer is optimised, and through optimised set points the advanced control system ensures a maximum yield and reduces energy consumption.

Improved operation

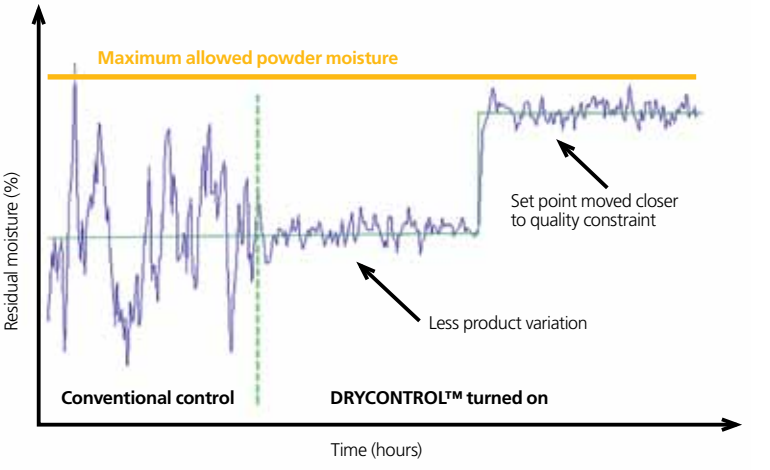
In-plant testing of the GEA Niro DRYCONTROL™ system has proved the system's value. Data from an installation in Germany show a consistent pattern with several benefits in terms of a reduction in variation and subsequently improved capacity utilization and lower energy consumption:

- 0.1-0.5% additional residual moisture (extra yield)
- 30-60% reduction in variation
- 3-5% increased capacity in utilization
- 3-5% reduced energy consumption/kg powder

The value of the GEA Niro DRYCONTROL™ system lies in "squeeze and shift": The variation is squeezed and set points can be shifted closer to the maximum value.

In the current market with increasing milk volumes, the opportunity for gaining 3-5% additional capacity from an existing installation is highly valued by most milk processors. Moreover, a reduced variation in moisture content will also facilitate energy savings and additional yield. For a milk powder plant with a capacity to produce 7.5 tons whole milk powder/hour, the value of the additional yield with a typical 0.35 % moisture increase will alone total more than EUR 500,000.

The GEA Niro DRYCONTROL™ system can be supplied with new plants or easily retrofitted to existing plants. The system has already been sold to several plants in Europe. ■



Better Insulated Pipes

Improve the Energy Efficiency of pipe systems.

By
Lars Petersen,
Sales Manager,
Industry,
LOGSTOR A/S

There are several good reasons for using pre-insulated pipe systems within the food and chemical industries. Given the current heightened political focus on energy efficiency and reductions in CO_2 emissions, we are seeing greater interest in environmental and economic factors in addition to the practical and hygienic benefits.

The environment and economics

LOGSTOR's technology for the production of pre-insulated pipe systems - straight pipe and joint systems - is constantly being refined to reduce energy losses to an absolute minimum, and thereby minimise operating expenses for companies and environmental impacts from their systems. The result is a very efficient pipe system with a high insulation property throughout the system's entire service life.

Optimal insulation plays a vital role in avoiding energy losses during production processes. LOGSTOR supplies pipe systems with various insulation thicknesses, so service pipe dimensions match to any given requirements. The energy loss from a pre-insulated pipe system from LOGSTOR is over 40% lower than for an equivalent system using traditional insulation.

Condensation and hygiene

The primary reason why the food industry originally began to use pre-insulated pipes was to prevent condensation and improve hygiene. These are both still important advantages. By choosing an insulation thickness, which ensures the air temperature remains above the dew point temperature, condensation and dripping from pipes is prevented, and the risk of bacteria accumulation is minimal.

The pre-insulated pipes are supplied with white or black polyethylene (HDPE) casing. They are 100% waterproof, and can therefore handle high or low-pressure cleaning without moisture impregnation. The insulation remains intact and dry, and does not provide a breeding ground for bacteria. It also protects the service pipe, avoiding corrosion. A report from the Danish Technological Institute has shown that the smooth surfaces on LOGSTOR's pipe system are just as easy to clean as stainless steel surfaces.

Maintenance costs

Pre-insulated pipe systems are maintenance free. The outer casing and insulation have a high combined mechanical strength, making them resistant to impacts from the physical environment. They can even be used as a gangway, without damage to either the casing or insulation. The HDPE casings do not deform like metal casings, and therefore remain sealed, keeping the insulation intact throughout the lifetime of the system.

Pre-insulated pipes provide the following advantages in dairy applications:

- Constant, high insulation capacity
- High energy efficiency in the pipe system
- Sturdy pipes which do not deform
- Plastic (HDPE) casing: shock-resistant, waterproof, salt and chemical resistant, hygienic, protects against corrosion
- Easy to clean
- No condensation
- Pipe supports directly on the plastic casing prevent thermal bridges.

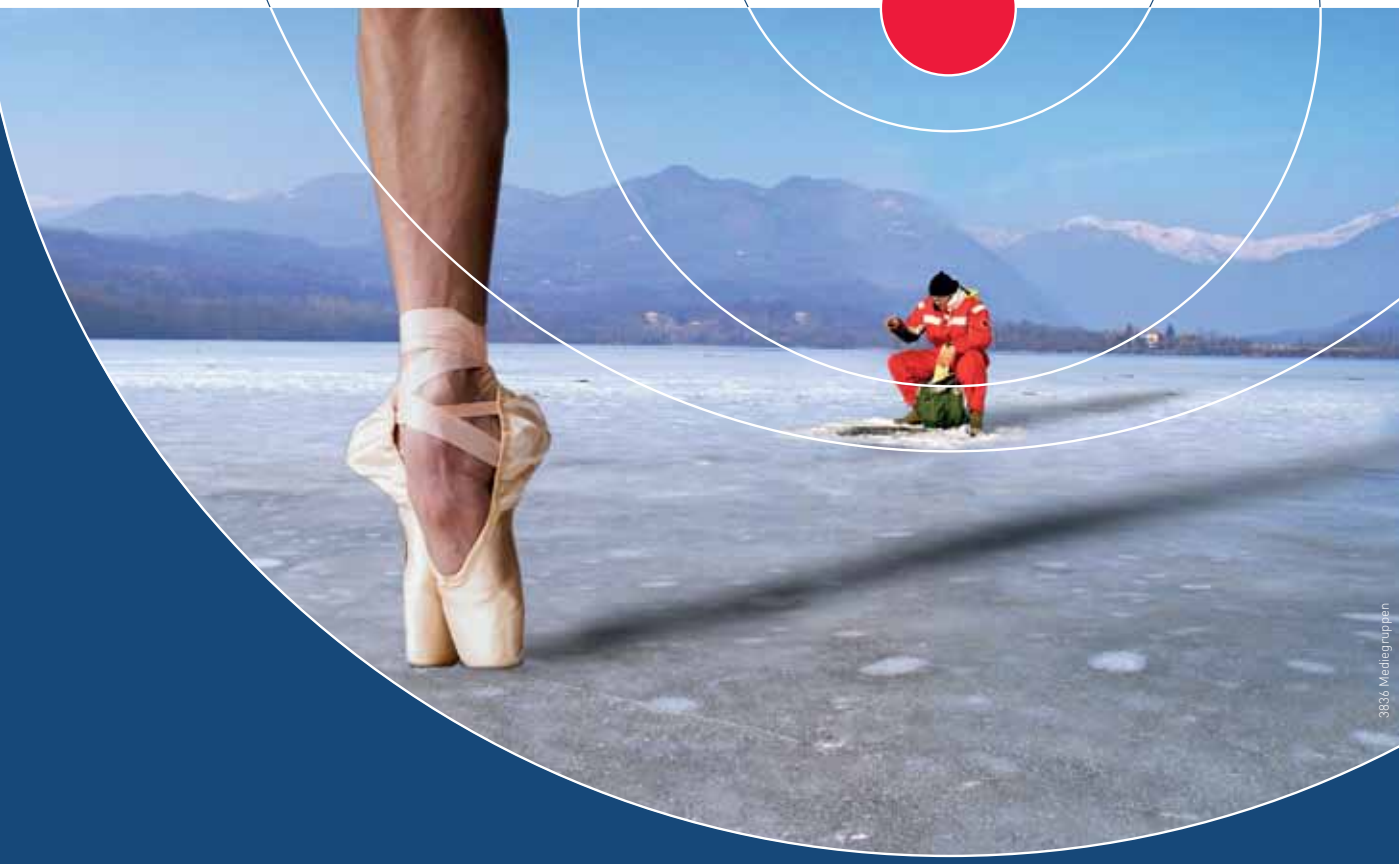
Pre-insulated pipes from LOGSTOR are manufactured in a controlled factory environment, and the system encompasses all necessary fittings and joints, making the pipes easy and safe to install - indoors, outdoors or underground. The system is very flexible, accommodating the best pipe routing for any given project. ■

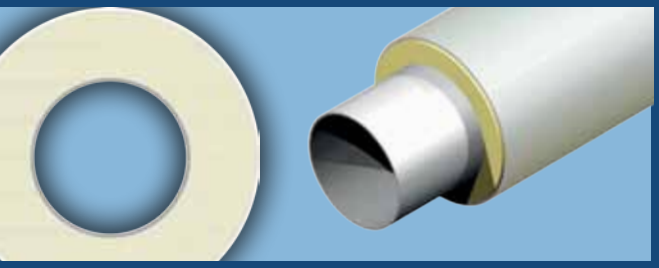
The organisation behind LOGSTOR pre-insulated pipe systems

LOGSTOR is the world's leading producer of pre-insulated pipe systems for the transportation of all types of liquids and gases, at temperatures ranging from -200°C to +250°C. The most common applications are in areas of district heating, district cooling, the food industry and other industries, and oil and gas.

LOGSTOR has it's headquarter in Løgstør, Denmark, and has around 1300 employees in nine production companies and 13 sales companies throughout Europe. Dealers around the globe also represent the company.

The right gear for the job ...





Clear advantages of using LOGSTOR pre-insulated pipes

- *Consistently effective thermal protection that ensures high energy efficiency in your pipe systems*
- *Prevent condensation forming on cold surfaces, protecting service pipes against corrosion*
- *Robust HDPE casings do not deform and are shock-resistant and waterproof, as well as salt and chemical resistant*
- *Casings are easy to clean, and comply with hygienic requirements.*

The better the insulation, the lower the energy consumption

LOGSTOR pre-insulated pipe systems are the ideal way to equip your refrigeration set-up with exactly the right insulation thickness to get the job done effectively.

Dry, energy-efficient insulation means

- reduced energy consumption
- lower operating costs
- fewer CO_2 emissions

LOGSTOR pre-insulated pipe systems are designed for strength and durability that ensure they remain completely intact and 100% energy efficient.
LOGSTOR pipe systems are easy to install, and maintenance free once in place.

● distributing energy efficiency

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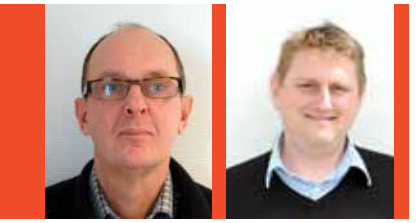
LOGSTOR

Avoid Antibiotic Residues

Verification and specific determination of antibiotic residues found by microbiological inhibitor tests.



By
Carsten Theisen Pedersen, QA Manager and Peter Pedersen, Key Account Manager, Eurofins Steins A/S

Focus on antibiotic residues

The dairy industry has a very high focus on avoiding that antibiotic residues enter the dairy products. This is driven by the overall focus of the authorities to reduce the risk of developing further multi-resistant microorganism that can challenge the health of the population. The customers and consumers are also very aware of the subject and there is an increasing demand for milk and milk products free of antibiotic residues.

Different methods

The dairy industry implements the control differently, but control at the reception and control at the farm level using microbiological inhibitor test is the normal procedure.

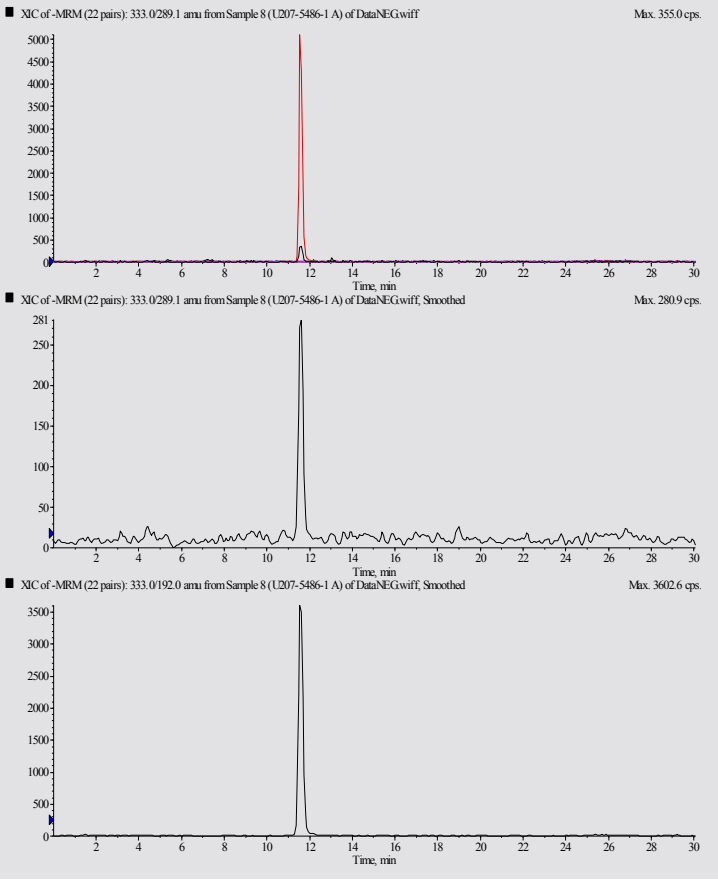
With these tests two different approaches are used depending on the country, region and dairy company. Some test to the Maximum Residue Level (MRL) and others to the detection limit of the methods. The detection limit for most methods is 2-4 times lower than the MRL. The settlement system is likewise arranged to support one of the two strategies.

Testing to the detection limit and supporting this in the settlement system is obviously the most efficient system to keep the antibiotic residues out of the dairy products.

The microbiological methods are constantly being improved; they get more sensitive and can detect more and more compounds. However the screening methods are unspecific, meaning that having a positive result does not tell which substance was used.

A positive reaction could be caused by the presence of veterinary medical substances, but other inhibitors (natural or foreign) may give a similar effect. For the identification and quantification of unknown substances, a method based on liquid chromatographic separation followed by tandem mass-spectrometric detection (LC-MS/MS) is the most obvious technique for a confirmatory method that for the specific compounds are at least as sensitive as the screening methods.

Figure 1: Mass chromatograms of raw milk containing 2 µg/kg of penicillin G (benzylpenicillin). The established EU MRL is 4 µg/kg. Two different fragment ions of penicillin G are monitored and the sizes of the peaks (peak heights or peak areas) are directly proportional to the concentration of the substance.



Advanced generic method

Eurofins Steins Laboratory offers an advanced generic method based on LC-MS/MS for identification and quantification of several groups of veterinary substances in milk including beta-lactams, cephalosporins, sulphonamides, macrolides, tetracyclines and aminoglycosides (Table 1). By this analytical pro-

Eurofins Steins LC MSMS.

cedure, the veterinary substances are extracted and isolated from the main milk matrix. Thus, the substances are separated from other substances by chromatography before a final mass-selective isolation is performed in a mass-spectrometer. The isolated molecules are fragmented to smaller units and from the fragmentation pattern, the substances are identified in a unique way.

The applicability of the method has been proven through extensive use in the Danish and Swedish milk quality-monitoring programs since 2006. All samples tested positive for inhibitory substances by the screening methods are re-analyzed by the LC-MS/MS method to confirm presence of veterinary residues. More than 99% of the positive samples can be verified and one or more specific compounds can be quantified. An example of analysis is shown in Figure 1.

By using LC-MS/MS the presence of veterinary residues in suspect samples can be confirmed. Furthermore, the substances can be identified and quantified accurately. That provides detailed and valuable information for practical and judicial decisions.

Handling samples in practice

When a lab finds positive samples these are frozen, and can be collected for e.g. 2 week periods and then send to Eurofins Steins in dedicated cooling containers provided by Eurofins Steins. The transport should be kept below 36 hours. ■

Table 1: Substances covered by the standard LC-MS/MS procedure.
Other substances are easily included in the generic analytical method.

Beta-Lactams	Cephalosporins	Sulphonamides	Macrolides	Tetracyclines	Aminoglycosides	Miscellaneous
Penicillin G	Cefazoline	Sulfamerazine	Spiramycine	Tetracycline	Neomycine B	Trimethoprim
Penicillin V	Cefquinome	Sulfadoxine	Tylosine	Chlortetracycline	Gentamicine	Dapsone
Ampicillin	Ceftiofur	Sulfamethoxazole	Erythromycine	Oxytetracycline	Streptomycine	Meloxicam
Amoxicillin	Cefoperazone	Sulfadiazine	Tilmicosine		Dihydrostrepto-mycine	Prednisolone
Oxacillin	Cefalexine	Sulfamethazine			Kanamycine A	Chloramphenicol
Cloxacillin	Cefapirine	Sulfathiazole			Kanamycine B	
Dicloxacillin	Cefalonium	Sulfamethizole				
Nafcillin						

OEE - Overall Equipment Effectiveness

By
Klaus Dam,
Managing Director,
Au2mate A/S

OEE is a recognized tool for monitoring and improving the effectiveness of production plants.

Traditionally, OEE is used widely in the industry, originally on mechanic individual machines. 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 distribution in the dairy industry, not only on individual machines, but also on complete process plants. This trend is expected to continue.

Flexible solutions

OEE solutions provided by Au2mate are standardized and flexible. The OEE solutions are scalable and can be used both in connection with existing plants as well as with new installations. The solutions may be applied for overall production planning, functioning as support for detailed planning and measuring the effectiveness of the daily production. The dairies object to reduce manual, paper-based routines can also be supported by integration with overall ERP systems.

Our solutions are based on open standards that can be customized to the current requirements. The data is organized in databases in accordance with S95 structure, facilitating integration with other systems. Visualization and reporting will be integrated into the infrastructure of the existing production IT, such as operator stations and reports, so that the distribution of information is simple and user-friendly in addition to being economical.

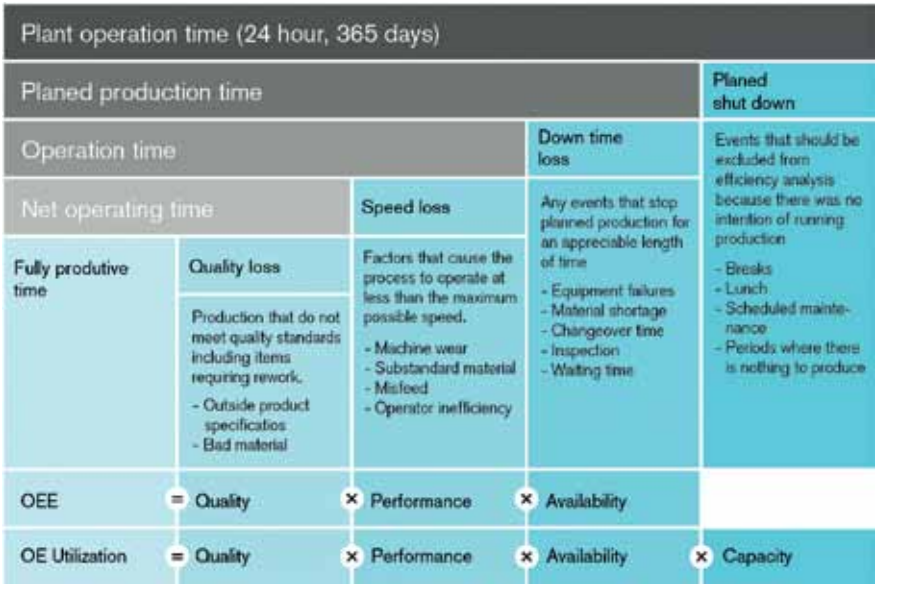
Au2mate's automation engineers have many years of experience in supplying process control systems for the dairy industry. We can offer the full package, an OEE solution where the entire system and process are analysed and optimised on the basis of total accumulated knowledge in the dairy and at Au2mate. The outcome is that "best practice" will be implemented throughout the whole dairy. ■

Four quick facts about Au2mate A/S

- Founded in 2001 by Carsten G. Jensen and Klaus Dam.
- Has 69 employees at offices in Silkeborg, Dubai and in the UK, holding more than 500 man-years of experience in dairy automation.
- Project-oriented, has delivered more than 1500 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 recognized methods for software development and project management.

Dairy Automation, OEE - the full package

Au2mate supply complete solutions from data capturing sources of error in machinery and process equipment to IT integration and reporting. The solutions are based on proven standardized software and open platforms that are easy to service and further develop.



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DSM
BRIGHT SCIENCE. BRIGHTER LIVING.

By
Cécile Aubert,
Product Application Expert, DSM

Greek-style Yogurt

How cultures and lactases can help retain authenticity and taste

Yogurt is and remains a popular and highly versatile dairy product with sales increasing significantly over the past few years, reaching a total value of € 53.3 billion[1]. Yogurt's healthy positioning based on a combination of probiotics, calcium, low fat and high protein content has fueled this growth. In particular, protein has become a key factor driving this growth, resulting in an influx of Greek style products entering the market. This article will focus on this trend, the formulation challenges involved and the solutions available to Greek-style yogurt manufacturers.

The Greek yogurt revolution

Sales of Greek and Greek-style dairy products have risen rapidly over the past five years. Between 2012 and 2013, Greek yogurt sales in the US doubled from US$ 0.8 bn to US$ 1.6 bn[2]. Although growth in this segment is still primarily focused on North America, Europe has also experienced a renewed interest in Greek-style products. One of the reasons behind the Greek yogurt craze is the desire to increase protein consumption to maintain a feeling of fullness for longer.

Greek or Greek-style?

Historically, Greek yogurt was made by using ewe's milk, which was strained through a cloth after fermentation to remove the whey. As demand increased, this traditional method was replicated by a more industrial process, in which cow's milk is fermented and then concentrated through centrifugation. The result is a creamy yogurt that is high in protein (> 8 percent), high in fat (8-9 percent) and carries a distinctive acidic taste and intense yogurt flavor.

While traditional Greek yogurt remains popular, the trend towards health and wellness has seen the introduction of more Greek-style yogurts. These products are often milder in taste compared to traditional Greek yogurt and contain less fat (0 to 2 percent). To achieve the same structure typical in high fat Greek yogurt it is necessary to increase the whey protein matter to more than 7 percent. Furthermore, it is important that the pH decrease is slowly during the separation process to ensure that the product will have the mild flavor and clean mouth-feel consumers expect.

Cultures and lactases

One of the solutions to overcome the different process challenges and develop Greek-style yogurts with high and smooth textures and a clean fresh fla-

Cultures and lactases - a perfect combination for high quality Greek-style yogurts.

vor is to combine specific cultures and lactase. Selected cultures are able to mimic fat to increase the smoothness of low fat products, while the combination of freshness from the culture and natural sweetness from the lactase can help improve the flavor.

DSM has been at the forefront of developing unique solutions for dairy products. Its Delvo® Fresh Pure range of cultures can help producers develop different variations of Greek style yogurts by providing a very mild yogurt flavor even when long cooling times after fermentation or long storage times are required. These cultures can also avoid further pH decrease during centrifugation. For Greek-style products with lower fat levels, cultures can provide a smooth, thick and creamy texture even under process stresses such as stirring and pumping. In addition, DSM's cultures contain probiotic strains to allow a healthy positioning.

The company's latest innovation, Maxilact® LGi, can further aid the production of Greek-style yogurt by naturally enhancing the yogurt's sweetness and providing it with an improved texture and appearance. Based on propriety technology, Maxilact® LGi is an invertase-free lactase, making it ideal for sugared dairy products as it ensures that the sucrose remains intact in the final product. It has demonstrated benefits in plain yogurts, enhancing the natural sweetness and limiting the development of the bitter taste and dry flavor normally found in 0 percent and low fat yogurts.

Conclusion

The trend towards Greek-style yogurts shows no signs of abating. To benefit from this trend, manufactures need high quality ingredients that allow them to create unique dairy innovations with consumer appeal. Working in close partnership with yogurt manufactures, DSM's broad range of enzymes and cultures can help deliver healthy, naturally sweet Greek-style yogurts with the smooth textures and mild flavors consumers are looking for.

DSM - Bright Science. Brighter Living™

Royal DSM is a global science-based company active in health, nutrition and materials. By connecting its unique competences in Life Sciences and Materials Sciences DSM is driving economic prosperity, environmental progress and social advances to create sustainable value for all stakeholders simultaneously. DSM delivers innovative solutions that nourish, protect and improve performance in global markets such as food and dietary supplements, personal care, feed, medical devices, automotive, paints, electrical and electronics, life protection, alternative energy and bio-based materials. DSM's 24,500 employees deliver annual net sales of around € 10 billion. The company is listed on NYSE Euronext. More information can be found at www.dsm.com. ■

1: Datamonitor: Consumer and Innovation Trends Yogurt - November 2013
2: Statista: http://www.statista.com/statistics/279827/us-market-greek-yogurt-sales/

Paramount Quality

By
Mogens Andreasen, Managing Director, LP Kolding

LP Kolding features 50 years of experience in design and construction of stainless steel tanks and processing plants. When designing new or upgrading existing facilities for optimized production, LP Kolding focuses on hygienic designs. Recently we have delivered units completely ready for powder processing, and another delivery was two buffer tanks for melted cheese with agitators.

Customer dialogues

LP Kolding is a specialist within designing, planning, construction, documentation and installation of stainless steel tanks and process equipment. We always cooperate with customers, from concept to the desired installation is completed, installed and ready for production.

Based on positive dialogues to provide optimal design, our business concept is custom-tailored solutions. LP Kolding's expertise bases on the company's employees who possess the necessary high skills ranking from design knowledge to technical handling of materials during construction and assembly.

Tanks and complete plants

LP Kolding has decades of experience within designing and constructing steel tanks without pressure, as well as pressure tanks in stainless steel. We custom-design PED approved pressure tanks, thus fulfilling current EU standards for safety in operation, material design, manufacturing process and continuous tests.

LP Kolding possess special expertise in manufacturing pressure vessels and various process equipment for the following purposes: Drying chambers, cyclones, fluid beds, fermenters, mixing tanks, inoculum tanks, process tanks, tube heat exchangers, sterile tanks, air tanks, vacuum tanks, and pressure cookers.

We clarify the required needs for the processing tanks regarding e.g. design, pipe work, heating/cooling jacket, various applications, and measuring equipment. Further, we ensure all requirements regarding strength, insulation and cladding depending on tank location. Moreover, we are experts within final assembly and subsequent documentation.

During the years, LP Kolding has constructed units for: Fermentation, evaporation, powder, drying chambers, butter churns, pressure filters, and complete units - ready to install in the dairy plant.

Optimized hygienic design

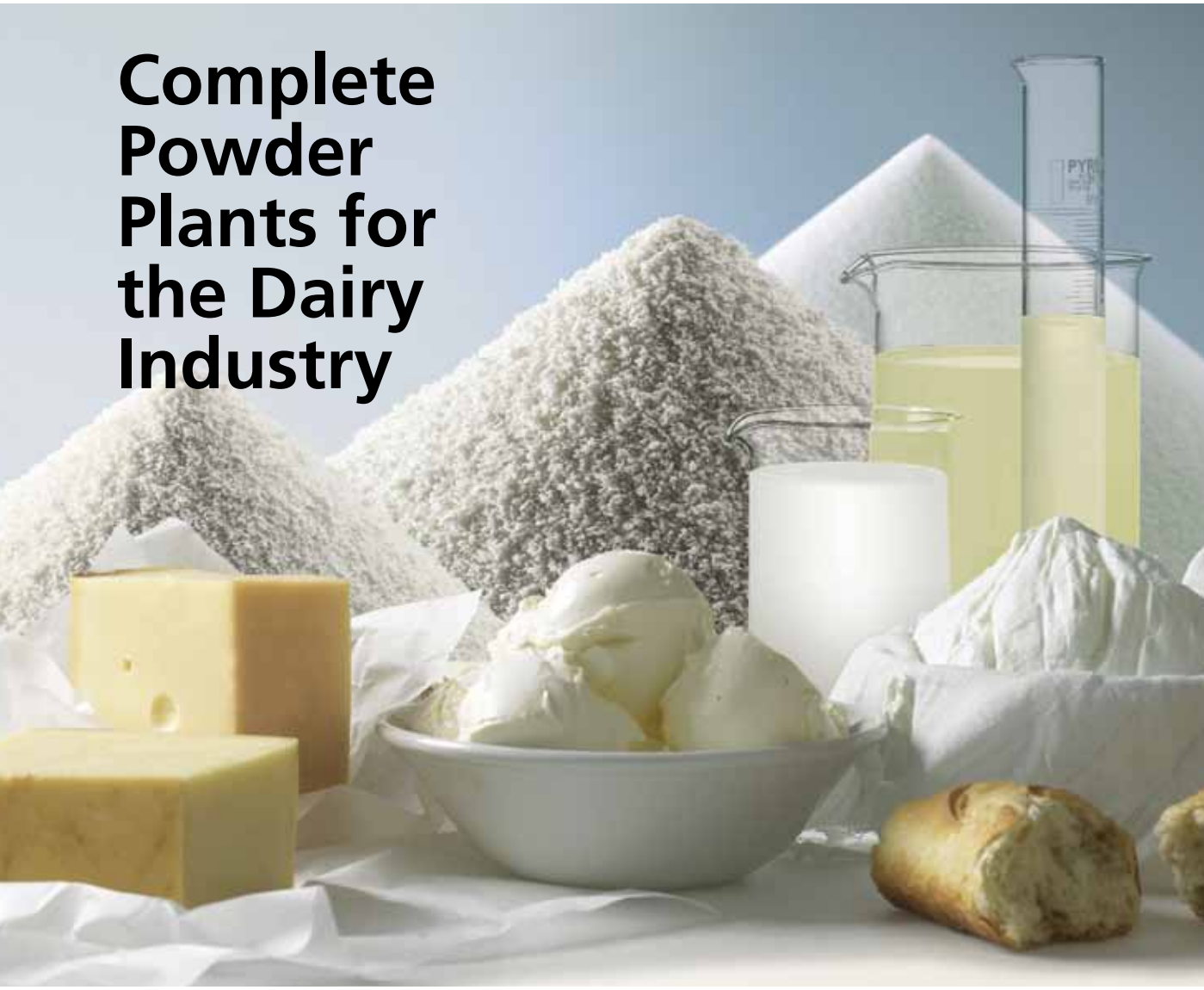
Recently, we have constructed several buffer tanks with agitators for melted cheese. In this case, optimizing the hygienic design is the keyword. Thus, we e.g. focused on optimizing optimum CIP cleaning, which is very difficult with these kinds of products. In addition, continuous quality control of surface roughness and the welding quality must always be in focus.

When designing the pipelines for the powder units and other food processing equipment we always use the EHEDG-guidelines, which ensures the customers good and safe engineering and hygienic design as a paramount factor.

Global Company

The LP Kolding staff count 26 highly competent employees, and the company contributes as subcontractor as well as independent business partner within our field of expertise: Designing and building hygienic process equipment and tanks for customers - around the world. ■

Complete Powder Plants for the Dairy Industry



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

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Screening can Spot the Needle in the Haystack

By
Richard Mills,
Journalist, FOSS

Screening raw milk for adulteration with infrared testing equipment can boost existing quality controls with an extra line of defense against accidental or deliberate adulteration, but to date, it has involved quite a lot of data collection by the user to get up and running. Now, new developments with the technology can make adoption of raw milk screening considerably easier for a broader group of users.

Raw milk is the basis of most dairy products and controlling the quality from the incoming tankers is an essential part of process and quality control towards the final product. The value of the traditional compositional analysis is indisputable, but another quality aspect, which has been largely underestimated, is the ability to spot samples which in one way or another deviate from the norm. Such samples can be extremely harmful and costly in terms of food safety or wasted production.

The trouble can start from dilution or contamination from chemicals added either intentionally or accidentally, for example, resulting from animal feed or from contamination of the tanker. And, the impurities may be well masked. Everything else in the sample, even including taste, could be quite normal, but in the late production stages, the impurity shows up as a nasty surprise such as a chemical taint or even a serious food safety risk.

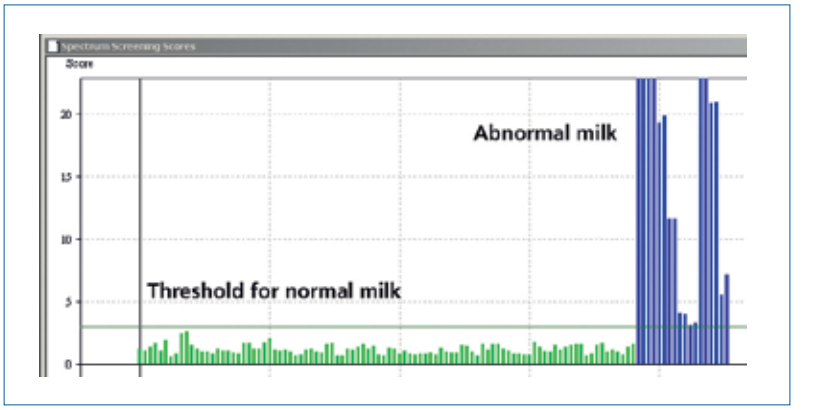
As experienced dairy producers know, the vast majority of incoming milk is quite normal, but even so, those few problematic samples still need to be caught. To be absolutely sure, it would be necessary to give each and every sample a comprehensive diagnostic investigation to catch the few really important ones - an impractical idea as this would be both costly and laborious. However, getting existing analytical equipment to do a bit more in terms of screening milk is a much more practical proposition, and increasingly, it is becoming more accessible to dairy producers.

Screening with infrared

Many analytical instruments used for testing liquid milk are based on Fourier Transform Infrared (FTIR). The technology has become well-accepted as a rapid way of measuring fat, moisture, total solids and much more and, fortunately, the technology also has other tricks up its sleeve.

Analysers based on Fourier Transform Infrared (FTIR) technology can also be programmed to screen for abnormalities in milk. The screening is done at the same time as the compositional measurements are performed and no extra equipment or time is required.

It works by testing a sample of milk against a profile for normal milk. Natural raw milk has a particular infrared spectrum - a unique fingerprint. Using FTIR analysis, it is possible to program an analyser to recognise the spectra (or fingerprint) representing pure raw milk. A warning is then given if there is a mismatch. This alerts the user to the need for further testing to determine the nature of the abnormality.
The screening concept introduces a new and convenient testing option for routine milk testing, for example, to screen milk samples for a broad variety of ab-



Milk analysers using Fourier Transform Infrared (FTIR) can be programmed to recognise a 'normal' milk sample and thereby also give a warning if something looks abnormal.

The FOSS MilkoScan FT1 analyser that now offers targeted and untargeted adulteration screening models.

normalities, to check whether different milk types are mixed up and to monitor milk for consistent quality of finished dairy products.

What is normal milk?

As described on page 8, the screening method has been adopted to test for possible adulteration of milk used in Chinese dairy production based on screening technology developed by FOSS in collaboration with Arla Foods and Fonterra. The project involved data on no less than 10.000 dairy cattle to identify the correct Milk profile or 'fingerprint' and the technology is now in active use at dairies.

Although not on such a grand scale, other users of the screening technology have also conducted milk sample data collection projects to establish the normal milk profile for a local collection area. Now, those wishing a shorter route to screening can avoid the majority of this work with ready-made models.

FOSS has been working on the development of screening with FTIR over many years and has acquired a vast amount of milk sample data. With the help of some smart footwork from chemometricians, mathematical models have been developed that make this treasure trove of data available for any user in the form of optional software modules for particular FTIR analysis equipment. The clever handling of data is helping to create global ready-to-use models offering a quick and practical solution based on a well-known hardware platform already in use around the world.

Untargeted and targeted screening models

Milk samples can be abnormal due to many different reasons, perhaps due to deliberate adulteration for financial gain or accidental adulteration where, for example, cleaning agent is mixed with the milk.

When screening for adulterants the challenge is of course that whilst adulterants already used are known to us, new ones may not be. This is where an untargeted model comes in. Its strength is that it will react to any spectral abnormalities, known or unknown, in a milk sample. A sample of milk is tested against a profile for normal milk. A warning is given if there is a mismatch, alerting the need for further investigations to determine the nature of the abnormality.

Targeted models can be used when the hunt is on for known adulterants, for example, to quantify the content of adulterants such as Hydroxyproline, Sodium Nitrite, Melamine, Maltodextrine and Cyanuric acid.

Due to the nature of a targeted model it can only predict the concentration of the adulterant for which it was developed and if there is a need to monitor for several adulterants, specific targeted models have to be used for each one.

Screening milk for abnormalities is by no means a fool-proof way to stop everything unwanted entering the dairy production chain, but it does offer an important way to boost existing quality control systems using existing infrastructure and equipment. Plus, the new availability of screening models looks as though it can really make the screening concept fly by making it more quickly accessible to dairy producers leading hopefully to more needles found in the haystack. In 30 seconds, users can screen for an array of specific well-known adulterants and in addition screen for any unknowns which appear as deviations from normal raw milk samples. ■

New Pack for Easy Snacking

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

An innovative and brand new packaging solution from RPC Superfos is now available for the dairy segment. The stylish pack includes a convenient spoon and is in tune with consumer demand for more easy meals on-the-go.

In recent years, global sales of spoonable yogurt and chilled desserts have been on the rise. More and more people crave an easy meal when they are on-the-go - including breakfast - and they want to be able to eat their food straight from the pack. Now, a newly developed, innovative and elegant EasySnacking™ solution from RPC Superfos accommodates the need for a handy pack for easy snacking.

Super spoon - easy to grab

The new pack comes with a spoon integrated into the lid of a square pot. It is very easy to get hold of the spoon; all you need to do is to tear off a self-adhesive peel-off label on top of the plastic pot.

At RPC Superfos, we are proud to introduce the well-designed and innovative packaging to food producers in the dairy segment. It is a very handy and practical solution: The spoon is ready to grab without any need for opening a smaller plastic bag. The key word is simplicity - there is all you need, but no more than that.

Soft look in two versions

Just like the injection moulded plastic pot as a whole, the spoon is beautifully designed and a delight to hold. The entire solution features attractive smooth lines and gives a soft impression - quite similar to the texture of any dairy content.

The design is available in two versions: one with the spoon in the lid and one with a higher lid with room for both a crunchy topping and the spoon. There are two sizes to choose from; a brimful of 210 ml or 300 ml.

Apart from outstanding convenience and functionality, the pot is re-closable, stable and optimised for stacking - filled or empty.

Ensures effective on-shelf presence

On shelf, the pot for dairy products looks enticing to end-users: With hi-tech in-mould labelling the brand identity is maximised. Colours, pictures, decorations and trademarks are rendered in premium image quality.

The new easy snacking pack has already attracted a good deal of attention and one of our customers is currently planning a dairy product launch later this year in the pot with the in-lid spoon. We trust consumers will receive both content and pack very well. ■

EasySnacking™ is a very handy and practical solution for dairy products on-the-go: The spoon is inserted in the lid.

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New Opportunities with Speciality Fats from AAK

By
Malin Thors Rosenquist, Commercial Product Manager, Dairy
Lena Ingvarsson, Marketing Director, Dairy, AAK

Food safety

AAK has a long experience in supplying tailor-made vegetable oil products to different parts of the food industry. Due to different factories around the world, the wide range of raw materials and processes used enables endless possibilities to produce tailor-made products. In order to do so food safety is a top priority in all we do. AAK is committed to delivering the safest possible products. Achieving such high food safety standards starts with an extensive knowledge of all the contaminants that can appear in oil or fat and where they come from. Then it is down to selective sourcing and optimal oil processing to keep the contaminants at bay. AAK food safety is built by the following building blocks: Raw materials, HACCP, Refining technology, Control programme. Through the defining and maintaining of a high level of food safety, we show that we are working in a secure and safe way and producing products fulfilling the highest demands.

Adding value into dairy products

Targeting dairy producers, AAK offers a wide variety of solutions for added value in dairy products. The segment has been developed to create products that make it possible to replace or complement milk fat while improving functionality, nutritional profile and cost structure.

Optimizing ingredients

Dairy Solution products have been developed to mimic the behaviour of milk fat in various applications. They have the ability to add value to the end products in terms of increased functionality, health and improved cost structure. Introducing a fat with the same or even improved properties enables optimization of the usage of various dairy components. The milk fat can be used in premium end products that can be priced at a higher level to consumers. The Dairy Solutions range can also complement other components of the milk to formulate cost effective consumer products.

High demands on properties

Successful milk fat replacement must be done with a fat that fulfils the high quality standards and the excellent functionality of the milk fat. The end products must perform in the way the consumer expects without compromise on taste, structure and mouth feel. The fat must not interfere with other taste development and it has to add desired texture and provide the correct melt off. The replacement must not demand investments in extra equipment but standard dairy production equipment must be used. By using a fat from the AAK Dairy Solutions range you will get all this and can further be sure that you have a fat with the highest quality standards with properties tailored for the specific application.

AAK Food Safety building blocks: Raw materials, HACCP, Refining technology, Control programme.

Healthier profile

With Dairy Solutions, the nutritional profile of the end product can also be improved. By replacing milk fat with a non-trans, non-hydro fat with lower levels of saturated fat, the end product will have a healthier composition. With the possible addition of omega-3 and vitamins, the product could be marketed as a healthier choice with maintained functionality.

Dairy Solutions concept

In addition to its products, Dairy Solutions also offers extensive technical support in implementation and new product development. AAK can provide assistance in recipe optimization and advice on process recommendations, as well as labelling suggestions and ideas of new products. As dairy products are often complex systems where different ingredients interact to create the full character of the final product, a deeper understanding of the ingredient matrix is usually needed to be successful in developing new products. With support from the AAK team, the route from the start of a project will be significantly shorter. ■

AAK in the world

AAK is the world's leading manufacturer of high value added specialty vegetable oils and fats. The many advantages of these natural and renewable raw materials create opportunities in the market segments of confectionery, food, infant nutrition and beauty and personal care. The advantage of AAK's product portfolio is that it consists of natural vegetable oils and fats that have a low saturated fat content and contain desired properties that promote healthier lifestyles. AAK offers total value added solutions. These are comprehensive packages of benefits like new product development, customization, market advice, delivery systems, technical support and AAK ACADEMY™.

AAK's head office is in Malmö, Sweden, and the production facilities are in Denmark, Mexico, the Netherlands, Great Britain, Sweden, Turkey, Uruguay, USA and soon also Brazil. AAK also have sales offices and agents/distributors all over the world. Therefore, no matter where you are, you are within reach of AAK, the first choice for value added vegetable oil solutions.

Keep Customer Attention on your Brand

By Per Sollenby, Regional Sales Director, Region Nordic, RPC Superfos

A renewed and improved packaging solution is part of the action plan for keeping your customers interested in your brand and product. To do just that, the Norwegian company Mills DA now re-launches two types of margarine in a sleek, updated bespoke pack from RPC Superfos.

Products from Norwegian Mills support a healthy lifestyle. An example is their margarine including Soft Flora - mainly containing Nordic canola oil - and Vita hjertego' - made from sunflower and canola oil. Both have very little saturated fat, a delicious flavour and are spreadable directly from the fridge.

Now the two sorts of margarine are re-launched in a bespoke packaging solution from RPC Superfos to retain customer loyalty and keep their interest in the brand.

Creates a family image

Ole Kristian Vestbekken, Senior Packaging Consultant at Mills, stresses that the margarine business is a competitive one and demands continuous development - also in terms of packaging. He says: "With the new packaging we have successfully created a strong family image on shelf for Vita hjertego' and Soft Flora - each in three sizes. All varieties have the same visual expression."

"We are very pleased with the result. The pack is easy to recognize, which strengthens the relation between our products and our customers. We have created a distinctive character for Soft Flora and Vita hjertego' margarine, leaving no doubt about, who the brand owner is."

Notice the lid

Mills has given the design of the lid a lot of consideration so that customers would get a perfect lid in terms of both looks and functionality. The artwork signals softness and natural ingredients. The decorations and graphic finish have been made possible thanks to in-mould labelling - even at the rim, leaving a room for a message to the customer on the indentation of the lid, for example choose heart-wise and spreadable.

"The quality of the lid is very important. We chose a tight and strong snap-on lid that will not crack even after frequent use," Ole Kristian Vestbekken stresses.

Cooperation by the book

A team from Mills and an external industrial designer have worked together with RPC Superfos to create the new packaging solution: "It has been a perfect development project run by the book. We have worked together very closely with RPC Superfos, shared ideas and executed the best of them," Ole Kristian Vestbekken concludes. ■

Norwegian Mills is pleased about cooperating with RPC Superfos regarding a new bespoke pack for healthy margarine.

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At KEOFITT we pride ourselves with the fact that "All we do is sampling!". This is still true now more than 40 years after the company was founded. Being the world market's only true specialist KEOFITT has developed the widest and deepest product range available for hygienic, sterile and aseptic sampling of liquids in all industries.

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Unique Water Savings

How to achieve up to 70% savings in water consumption in your dairy!

By
Allan Bruun,
Industry Manager,
Dairy, Market Unit
Food, Alfa Laval

Imagine saving a million litres of water or up to 70% of your annual water consumption by making minor adjustments to your dairy installation. That is what a major European dairy did by reprogramming their valve Cleaning-in-Place (CIP) program.

Using Alfa Laval Unique Mixproof valves (Image 1) lets you select between two cleaning operations:

1. **External cleaning,** which connects an external CIP line directly to the leakage chamber.
2. **Seat lift** (Image 2) and **seat push** (Image 3) **cleaning**, where the independent movement of the upper and lower plugs enables simultaneous cleaning of the leakage chamber, seal, and seat.

Alfa Laval recommends the seat lift and seat push method because it saves significant amounts of water and cleaning agent while providing superior cleaning results compared to the external cleaning method. Most residues, whether milk or quark, generally require between one and five seat lifts with each lift lasting about two to five seconds. By following the recommendations in the Alfa Laval Unique Mixproof valve manual, dairies are able to select the most efficient CIP program to remove various product residues.

Improved seat lift and seat push cleaning method

Now there is a better way to clean double-seat mixproof valves and reduce water and CIP liquid consumption even further. This involves quick and repetitive opening and closing of the seat, rather than exposing valve surfaces to CIP liquid flow for a given duration of time. This discovery was made at one of Alfa Laval's process facilities. Alfa Laval engineers observed that, during the first fractions of a second of a cleaning cycle, the flow of CIP liquid created a high level of shear stress on the valve surfaces used less water than traditional seat lift and seat push cleaning, and increased overall cleaning efficiency.

To substantiate this hypothesis, Alfa Laval worked with a major European dairy to verify whether the same would hold true under actual operating conditions in its raw milk reception. The results confirmed higher cleaning efficiency and a potential annual savings of one million litres of water. The dairy has therefore implemented this new seat lift and seat push cleaning method in its milk reception.

Requirements for improved CIP efficiency

Can you save more water during every cleaning cycle at your dairy? You can start saving immediately by making a few adjustments on the CIP program for your double-seat mixproof valves if your installation:

- **Uses double-seat mixproof valves** because single-plug, double-seal valves do not have a seat lift and seat push cleaning function and therefore require external cleaning.
- **Has a fixed kV value for the seat lift and seat push function that is known.** If the kV value is not known, ask your valve supplier. This value indicates the flow of water per second through the seat opening. Double-seat mixproof valves with fixed kV values and a defined metal-to-metal stop, such as Alfa Laval Unique Mixproof valves, make it possible to inspect only one valve after a given number of seat lifts to validate the cleaning program for the entire installation. Validating the cleaning program when the seat lift is adjustable, on the other hand, is a labour-intensive and time-consuming process because every valve requires adjustment and subsequent inspection.
- **Has a very fast-acting actuator** that requires a small air volume to perform seat lift and seat push cleaning operations and locally situated solenoid valves to optimize the cleaning process.

Image 1: **Alfa Laval Unique Mixproof SeatClean is the choice for standard installations that handle products with solids. Seat lift during normal cleaning procedures cleans the plugs and seats.**

Reprogram your PLC today

If your installation meets these requirements, then consider the savings that can be realized on a dairy installation with hundreds of valves that require frequent seat lift and seat push cleaning. Simply adjust the PLC cleaning program of your dairy's double-seat valves to lift and push the valve seats as quickly as possible. Why wait? Optimize today and start saving now.

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.

The company's equipment, systems and services are dedicated to assisting

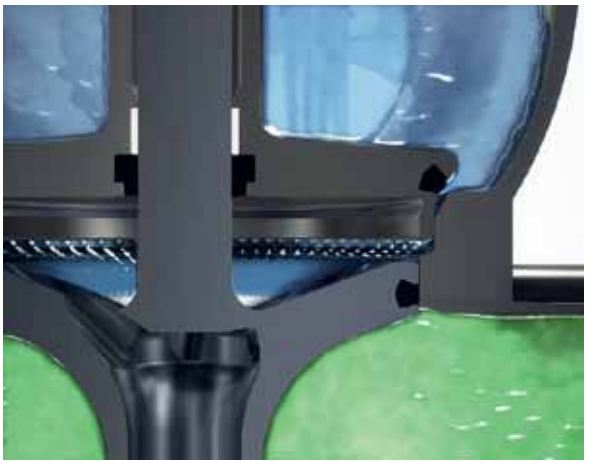

Image 2: **Seat lift: The upper valve plug is raised off the seat thus cleaning plug seal, seat and leakage chamber through CIP flow.**

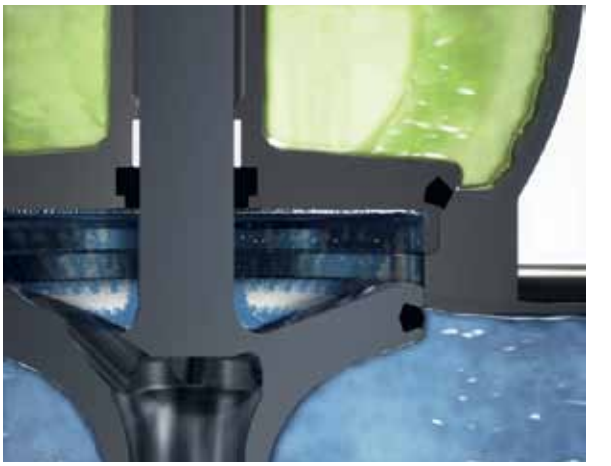

Image 3: **Seat push: The lower plug is pushed downwards thus cleaning the plug seal, seat and leakage chamber through CIP flow.**

customers in optimizing the performance of their processes. The solutions help them to heat, cool, separate and transport products in industries that produce food and beverages, chemicals and petrochemicals, pharmaceuticals, starch, sugar and ethanol.

Alfa Laval's products are also used in power plants, aboard ships, in the mechanical engineering industry, in the mining industry and for wastewater treatment, as well as for comfort climate and refrigeration applications. 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, and in 2013, posted annual sales of about SEK 29.8 billion (approx. 3.5 billion Euros). The company has today about 16 300 employees. ■

Do You Want to Join the International DAIRY Contest?

INTERNATIONAL FOOD CONTEST

The Danish Dairy Contest has taken place for decades, but no longer as a national fair! Nowadays it is international, and last year almost 1.200 different dairy products from 13 countries participated in the International Dairy Contest!
The fair takes place every autumn at the MCH Messecenter Herning in the city of Herning, Denmark, and it is the world's largest within rated dairy products! If you want to join the International Dairy Contest this year, we warmly welcome you!

You are welcome!
Dairies throughout the world are welcome to join the International DAIRY Contest. If you want any further details about the contest you can read more on www.foodcontest.dk or you can contact General Secretary Lars Johannes Nielsen, phone +45 30 83 10 81 and E-mail: ljn@lf.dk.
Notice deadline for registration is 3rd of October 2014!

In 2013 dairies from 13 different countries participated in the dairy competition about producing the very best rated dairy product in the world. Dairies from following countries participated: Brazil, Canada, Denmark, Faroe Islands, Holland, Iceland, Norway, Romania, Sweden, Germany, UK, USA and Austria. We hope to see you at the contest - 28-30 October 2014!

His Royal Highness Prince Joachim of Denmark (left, in gray suit) is protector of the FoodTech fair. Prince Joachim normally visits the International Food and Dairy Contest during the opening ceremony. To the right, Chairman of the International Food Contest, Søren Jensen.

Foods & Technology

The International Dairy Contest is part of the general International Food Contest, which takes place in MCH Messecenter Herning, Denmark each year - and this year during 28-30 October.

- In 2013, nearly 1,200 dairy products from 13 different countries participated. Professionals rated most of the products in advance. Later on these products joined in on the contest to be the best international dairy product! This year we expect to reach almost 1,700 food products from around 16 countries. So tells General Secretary and Senior Consultant Lars Johannes Nielsen, L&F.

Part of the FoodTech fair

International FOOD Contest and International DAIRY Contest are held along with Northern Europe's largest food technology fair: FoodTech. Read more about this trade fair at page 64!

Who is behind the contest?

Organizers of the International FOOD Contest and International DAIRY Contest are: Danish Dairy Board/Dairy Committee plus the Danish Dairy Managers Association, The Danish Federation of Private Dairies, the Danish Cheese and Butter Association, and Danish Agriculture & Food Council (L&F) ■

FOR SALE NOW!

TRADITIONAL SEMI-HARD CHEESE PLANT

Complete cheese production line. 3000 kg/h. Manufacturer: TEBEL.
10 Kilo Square and Round blocks. Fully Automatic.
The plant is still in full operation.

The Cheese Plant consists of:

- 4 x 15.000 liter cheese milk storage tanks
- 5 x 15.000 liter "OST 4" cheese tanks
- 2 x 12.000 liter buffer tanks
- 2 x Mould buffer storage column lines; square and round
- 2 x CASOMATIC. Model S6
- 1 x Pressing system - 360 cylinders
- 1 x Emptying and turning unit
- 1 x Washing machine
- 1 x Conveyer system
- 1 x Brine Rack basin system
- Belonging automation, pumps, valves, platforms, etc.

The plant will be sold in
"as it is working condition"
Ex works at:
"TINE Nærbø Dairy" Norway.
Inspection & Sale Now!
Take over 01.01.2015

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Beyond Protection of Your Business

By
Peter Thøysen, Global Marketing Manager, Cultures & Enzymes Division, Chr. Hansen

Reduce risk

Today a main challenge in dairy products is contamination by yeast and mold, which are naturally present everywhere and could lead to spoilage - especially if the products are exposed to heat during the value chain from production to the consumer's table.

At the same time, there is an increasing focus on food quality and safety from regulatory bodies and consumers across the globe. The number and magnitude of product recalls are increasing year by year. Even considering only the costs directly related to the recall incident, recalls are very costly and complex to manage. But the potential long term damage of a brand can be devastating. 55% of consumers reported in a survey from the USA that they would temporarily switch brand following a recall incident. Moreover, 21% would avoid purchasing any brand made by the same manufacturer. (Source: PRNewswire/Harris Interactive).

Part of the solution could be FreshQ® protective cultures from Chr. Hansen. FreshQ® is an all-natural way to reduce the risk of spoilage caused by yeast and mold contamination, thereby protecting brand value and lowering quality issue related costs for dairies.

Improve consumer quality experience

Dairy products with increased robustness against yeast and mold will not only ensure a high over-the-counter quality. It also helps to keep the product fresh for longer, even under challenging conditions. For example during the consumption period, where there is a high risk of yeast and mold exposure from a large variety of sources.

How many times does the dairy product move from fridge to the table? How long does it sit on the table? Does the consumer always remember to use a clean spoon or knife when taking out a little portion of the product?

Hence increasing the robustness even in a product, which initially left the dairy without significant yeast and mold contamination, can make a good business case. FreshQ® helps pave the way for successful premium brand positioning

Yogurt made with and without FreshQ®, held for 30 days at 7 degrees C/45 degrees F. Inoculated with common mold types.

Nature's own protection

Fermentation is one of the oldest techniques to extend storage time for food. The requirement to store and preserve milk is the reason products like yogurt and cheese were invented. With FreshQ® Chr. Hansen has developed this ancient technique further. The FreshQ® bio protective cultures are natural microorganisms inhibiting contaminants like yeast and mold through fermentation.

Clean label to Fresh Dairy and Cheese applications

The FreshQ® cultures have been developed as a natural 'clean label' alternative to chemical preservatives. They are based on unique strains of lactic acid bacteria in several versions specifically targeting fresh dairy and cheese applications.

or simply increasing the attractiveness of the product in consumer minds.

Extend shelf life

Dairy markets are growing more and more international and many large dairy players are looking to expand through greater international reach. A practical hurdle in expansion is often the short shelf life of products. With the right bio protection, there is a potential to increase shelf life and thereby not only reduce scrap at retailer level, but also increase market reach.

Extended shelf life has also been applied successfully for productivity and efficiency gains by allowing to operate with longer production runs and larger batch sizes throughout the logistic chain.

Addresses global challenge

With the ability to inhibit contamination and prolong shelf life, FreshQ® addresses the global concern relating to food waste. According to Innova Market Insights, food waste will be at the top of the trends list for the food and beverage industry in 2014, following a major shift towards greater awareness of food waste in 2013: "Food loss during production and food waste at the retailer and consumer end of the food-supply chain will be heavily scrutinized. Ingredients derived from the waste stream will also hold enormous potential." (Source: PRNewswire/Innova Market Insights). ■

What is NOT in the Package?

By Jesper Bjørn Hansen, CEO, Trepko A/S

Today's perception of food quality is largely defined by the standards within Organic/Ecological products. Even consumers not willing to pay for such products, will use these definitions for evaluating the declaration of the individual product. It is thereby safe to say that; "Excellence in food is today as much defined by what is NOT in the package as what IS."

While food consumers become more and more aware of the content of the package they are buying, the solution for a long shelf life is steadily moving from preservatives to hygiene in the packaging process. In reality this is nothing new, as a matter in-fact, it is a process, which has been going on for more than 15 years, but as the consumer awareness has been accumulating, it has caused hygiene to be the single most important feature for dairies, when they are to decide for the appropriate filling and packaging equipment.

Ultra-Clean-Standard

Today CIP/SIP for the internal parts of the filling system and clean atmosphere modules for the filling zone are considered the standard specification for a dairy machine, and the requirements often aim at an even higher hygiene level in the machine. This has led to the forming of the unofficial Ultra-Clean-Standard.

Especially peroxide spray- and activation-modules formerly reserved for aseptic machines are now adopted as a standard for disinfection of the packaging within the Ultra-Clean-Standard. Another major focus area is the cleanability of the machine itself. Typically, machines following this standard will thereby include an automatic cleaning system for the entire product zone.

Sanitary 3A-Standard

An even more important cleanability issue is the machine surfaces, which are a quality measure NOT covered by the Ultra-Clean-Standard. Especially the surfaces in the product zone are becoming a focus area for most food manufacturers aiming at increasing the hygiene level in the machine. Thus, all surfaces are targeted as self-draining and without any groves. Joints are to a great extent welded to make them as smooth as possible, and the welds are sought minimized through pipe-bending. In the filling system itself, product couplings are of clamp-type and seals are prepared in a way ensuring that adequate cleaning is done in the shortest possible time-frame.

In the most ultimate version, these qualities ensuring fast and efficient cleaning of the machine, are specified by the sanitary 3A-standard, under which Trepko is certified, as the only European cup-filling-machine manufacturer.

Trepko Aseptic

The trend is definitely moving towards higher and higher hygiene levels, and this is also the background for the Trepko group's acquisition earlier this year, where the company Hugart (now Trepko Aseptic) joined the Trepko group, now totaling 550 employees.

For many years, Trepko Aseptic has been refining the hygienic design of cup-filling machines, allowing a level exceeding the Ultra-Clean-Standard by far. The 100 employees of Hugart have thereby created the company's own near aseptic-standard. With the joint efforts in the Trepko Group, the developments in Trepko Aseptic are now carried forward, at an even faster pace, and the new TREPKO ASEPTIC in-line cup-filler will thereby be launched at the Anuga Food Tech in Cologne in April 2015.

The new Trepko Aseptic Cup-filler is based on the well-known compact and flexible standards of Trepko. The production-mode atmosphere and packaging sterilization relies solely on peroxide, and 16 servo-drives ensure an extremely high efficiency of the machine. ■

The Trepko Group

The Trepko Group is a Danish filling- and packaging-machine manufacturer with subsidiaries in England, Poland, Sweden and USA. Founded in 1947, the Group has 550 employees.

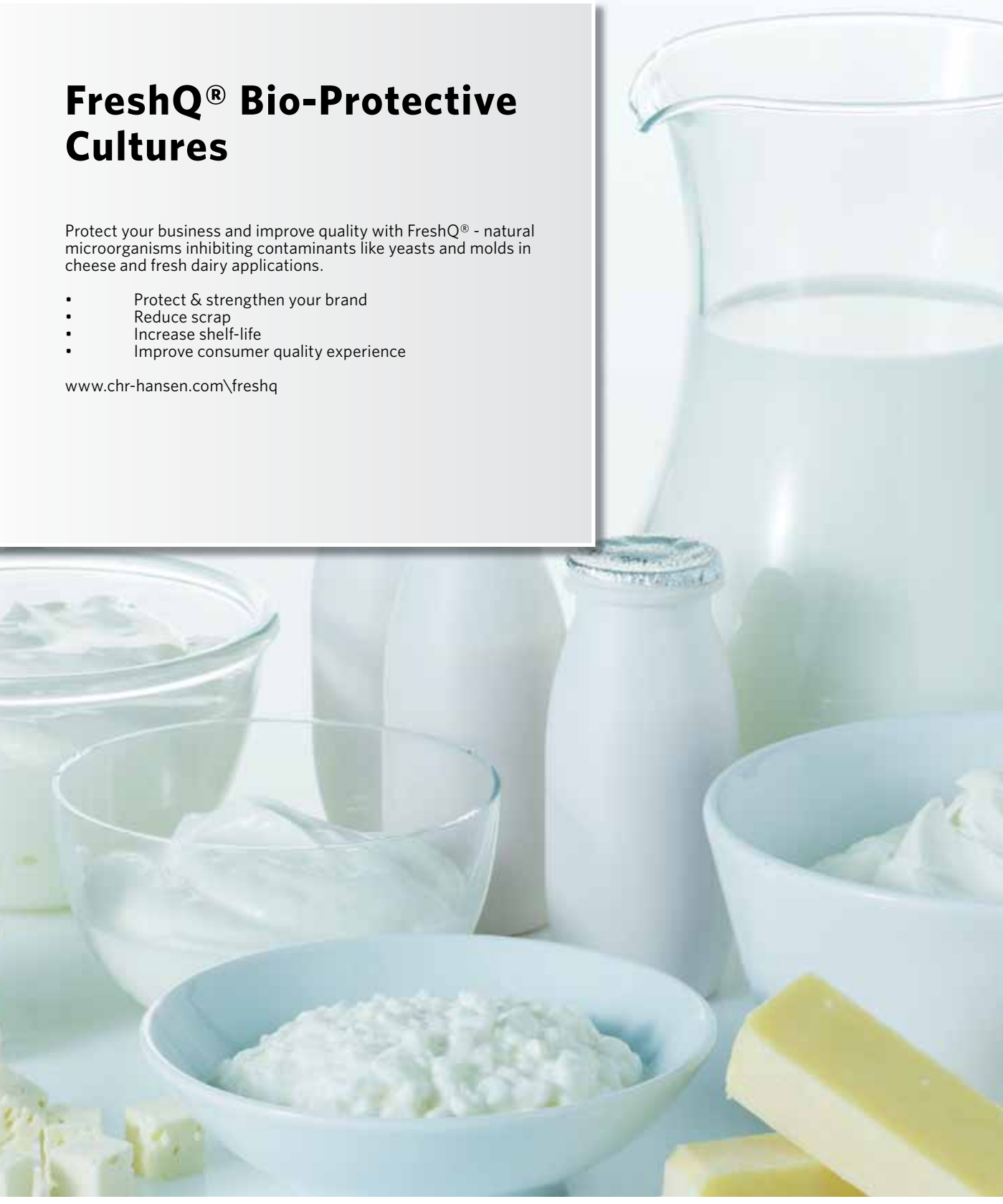
Trepko Ultra Clean.

FreshQ® Bio-Protective Cultures

Protect your business and improve quality with FreshQ® - natural microorganisms inhibiting contaminants like yeasts and molds in cheese and fresh dairy applications.

- Protect & strengthen your brand
- Reduce scrap
- Increase shelf-life
- Improve consumer quality experience

www.chr-hansen.com\freshq



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From Udder to Greek Yoghurt

By
Jens Ole Jensen, Business Development Manager, Novadan

In recent time, ever more TV-channels market shows about preparation of food - amongst minor manufacturers as well as at the major companies. TV-tasters act as experts and give their opinion about differences within production methods and the final results. It is an interesting development and it gives us an insight into what we as consultants and advisors experience within sale of cleaning detergents and disinfectants.

The milk farm

Novadan's focus within the dairy segment begins at the farm. The call for action starts before milking, as the udder-hygiene and the use of udder-care products are extremely important areas in order to prevent unwanted growth of bacteria after milking. After the milking, it is crucial to carry out a gentle after-care treatment, preferably with a disinfectant spray or dip. Today, cleaning of a milking plant is adjusted according to the individual robot installation.

This may be trivial reading, but is however an important task for achieving the desired high quality milk before delivering to the dairy for further processing.

Elevated hygiene level

Today, Novadan has an extensive network of dealers in both Eastern and Western Europe, and we hold numerous examples of how proper knowledge about hygiene, proper care, and cleaning solutions have lifted the milk quality amongst many farmers and thus increased their milk prices.

It is Novadan's experience that when we focus on quality and set new quality guidelines in cooperation with the client, we do achieve the objectives together.

Focus on high hygiene at the milk farm is of utmost importance, thus ensuring high quality milk delivered to the dairy for processing.

Helping new customers

Around the world, we get new customers, including recently build production plants, and they require a safe and good start-up. Typically, all our new customers are offered a start-up phase during a certain period and until all hygiene and cleaning quality parameters are met.

Membrane cleaning

Now let us get inside the dairy. In the dairy industry, Novadan largely experiences increasing demands for dairy products with low fat and high in protein - and thus the use of membranes.

Novadan has now more than 30 years of experience within membrane cleaning, and today holds the leading position in the knowledge-area of optimal membrane cleaning.

There is a tendency that dairies have low flux values, a lack of capacity of their membranes, and thus a frequent replacement of these. Novadan has several examples of how we have helped clients under such circumstances. Circumstances, with no standard-solution of the task. In such cases, Novadan always offer to conduct a survey of the matter at the plant, and hence a report with results and proposals for optimizing the cleaning efforts.

In most cases, we are - with our knowledge and quality products - able to provide the clients with a significant and remarkable quality-increase in terms of

improved production flow, additional operating hours of the plant, and an increase in life expectancy of the membranes.

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

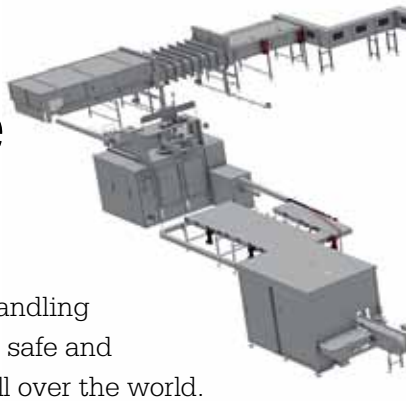
From farm to fork

These descriptions about milking-hygiene and membrane-filtration are only a few examples of how Novadan generally works in the dairy segment. We cover all processes from farm to fork where cleaning results are essential. When the result are achieved, we further focus on optimization - but never at the expense of quality.

Overall, Novadan offers dairies a clean exercise from farm to fork. Therefore, if milk quality and maximum production hygiene is crucial to you, contact us, and let us review your diary - too. ■

Modern consumer demands for low fat and high-protein products such as Greek Yoghurt calls for extra high hygiene levels of the plants membranes. Novadan has yearlong experiences within this cleaning area - too.

High-Quality Traceable Infant Formulas



Jorgensen Engineering is a leader within fully integrated packaging handling solutions equipped with all necessary detective features guaranteeing safe and traceable infant formulas to consumers - in this case small children - all over the world. Furthermore, the company is a distinguished member of SEDEX, and additionally audited according to their SMETA guidelines. In the latter case at the request of Nestlé.

By Anna Marie Thøgersen, Editor

Safe and traceable foods

National food authorities around the world increase demands on production and import of safe high-quality foods. Not least China, which has experienced repeatedly domestic food scandals, notably within infant formulas for babies and young children. Therefore, the country has increased the requirements on imports of these products, and this naturally reflects on the entire chain, including suppliers of equipment for the production and packaging of infant formulas.

As a leader within fully integrated packaging handling solutions for these products, Jorgensen Engineering meets the strict requirements, and the packaging lines are equipped with all necessary detective features guaranteeing safe and traceable foods. Just to mention a few features, the lines can be equipped with; Jet air and UV cleaning, Vision, Leak testing, X-ray, Case coding and Code reading. - For instance, the Jorgensen Inspection Scanner scans each can that passes through the system to check that these specific codes match the ones previously programmed in the system, explains Sales Manager Per Vedel Rasmussen. He adds that even at high capacity lines with high speeds, the reading is faultless. Thus, in consumer-end the inspection system prevents counterfeiting and fake products.

The Jorgensen Group

- The Group was founded 80 years ago and includes Jorgensen Engineering and brüel international in Denmark, and three brüel subsidiaries in other European countries as well as several agents/agencies around the world.
- Jorgensen Engineering is headquartered at a state-of-the-art 7,800 m² domicile in Odense, Denmark.
- Production facility at the new headquarter is 6,000 m2.
- The Group employs approx. 250 highly skilled staff, including more than 60 engineers and software specialists.

Integrated line management

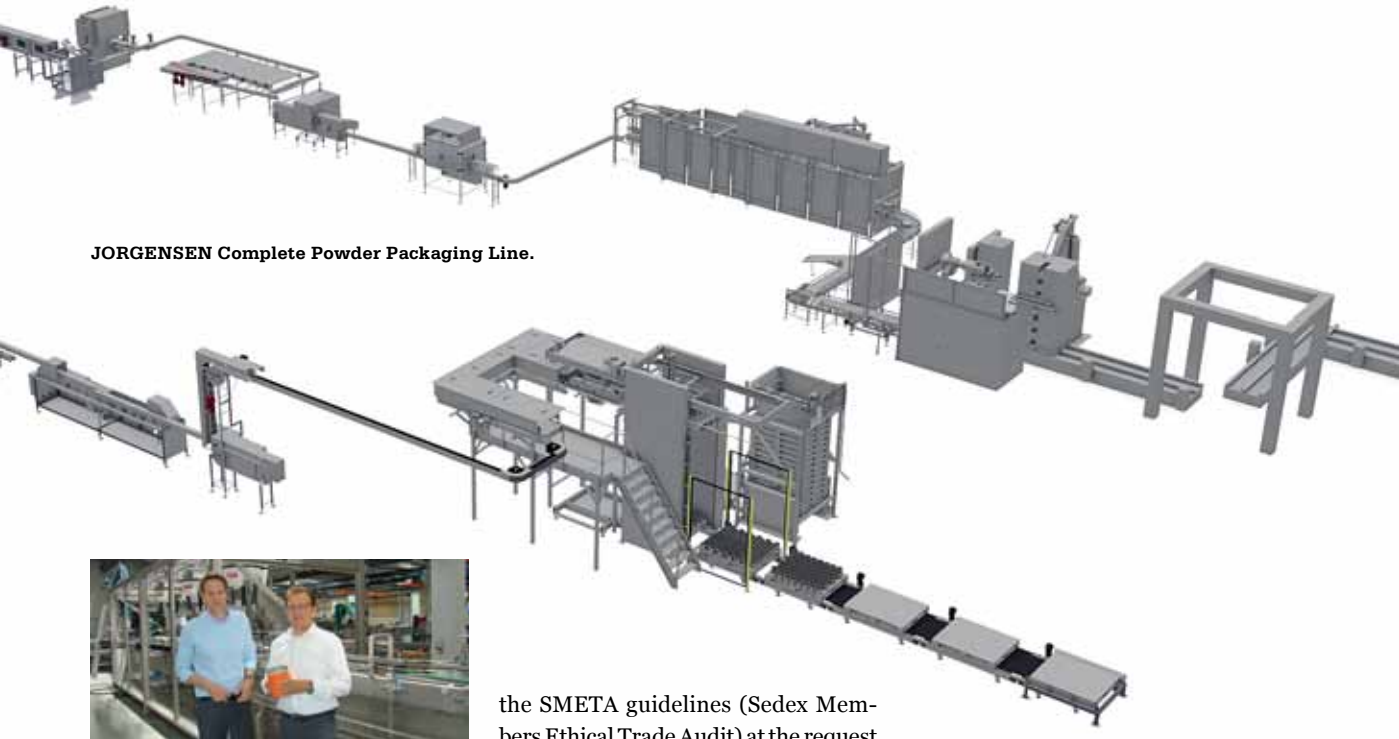
Jorgensen Engineering has constructed several complete lines including robotic technology and SCADA control systems for the world's leading producers of infant formulas. - In the case of control systems, Jorgensen's highly competent software technicians are experts within getting older as well as new production lines to "talk" together. This necessity is an ever-increasing imperative, as food production lines around the world become larger and larger. When totally new - or new parts of a huge production line - is constructed, it is of the utmost importance that all operations and workstations along the line operate within the Jorgensen concept control system, Per Vedel Rasmussen emphasizes.

Jorgensen Robotic Scope Inserting System (left) and Scanner for 360 Degree Label Inspection.

SEDEX and SMETA

For years, Jorgensen Engineering has been a member of SEDEX (Supplier Ethical Data Exchange), which is a non-profit audit dedicated to drive improvements in responsible and ethical business practices in global supply chains.

- Fairly recently, we also successfully passed the SEDEX audit according to



JORGENSEN Complete Powder Packaging Line.

Marketing Manager Jesper Johansen (left) and Sales Manager Per Vedel Rasmussen in front of a newly ordered Infant Formula line in the 6,000-m² production and assembly building at Jorgensen's domicile in Odense, Denmark.

the SMETA guidelines (Sedex Members Ethical Trade Audit) at the request of Nestlé, one of our large customers. SMETA is an audit procedure, which is a compilation of good practice in ethical and sustainable production, explains Jesper Johansen, Marketing Manager at Jorgensen Engineering.

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

Butter and Related Products

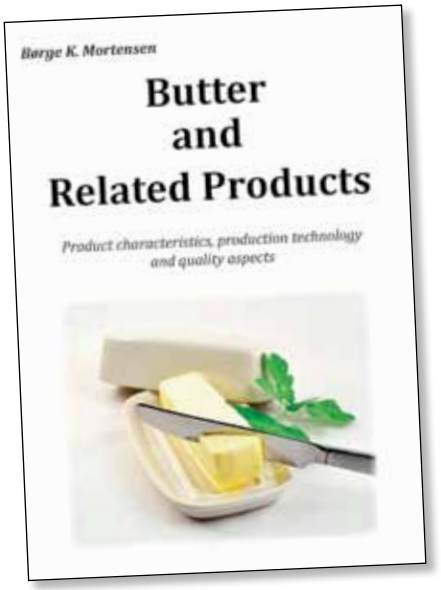
International Dairy Books is a publishing house providing a broad range of scientific dairy literature. Recently the affiliated web-shop www.dairybooks.dk launched the high-rated book about "Butter and Related Products" by Adjunct Professor Børge K. Mortensen.

International Dairy Books

The "Butter Book" is published by International Dairy Books, Odense, Denmark (info@dairybooks.dk)
Visit www.dairybooks.dk to order!

Finally a Butter Book!

At the release of the Butter Book, Professor in Dairy Science and Technology, Roger K. Abrahamsen, Norwegian University of Life Sciences was delighted by the initiative, and he wrote: It is highly appreciated that one of the world's leading dairy scientists and technologists, Børge K. Mortensen, Denmark, has taken the challenge to write a textbook on butter and related products. With his practical experience in butter production as well as outstanding scientific knowledge about the subject, he is probably the most competent professional to present the interesting story and information about butter.



The book may be considered 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.

Highly appreciated

Further, Professor Roger K. Abrahamsen stresses that the book is well written and illustrated with relevant photographs and figures. The author also presents a praiseworthy number of relevant references and a very useful subject index.

Mortensen has written a very reliable and useful book about butter and related products, which will be highly appreciated by both dairy professionals and dairy students.

International Dairy Books

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

Børge K. Mortensen: "Butter and Related Products - Product characteristics, production technology and quality aspects" (ISBN 978-87-995290-0-1). Published by International Dairy Books, Odense, Denmark.

ABOUT THE AUTHOR

Børge K. Mortensen, M.Sc. and Ph.D. in Dairy Science and Technology (Cand. Lact.), the Royal Veterinary and Agricultural University in Copenhagen. Børge K. Mortensen has worked as Research Dairy Scientist at the Governmental Research Institute for Dairy Industry and as Managing Director of this Research Institute from 1982-1990. Later he was Head of Research at Arla Foods until 2005.

Further, Børge K. Mortensen has e.g. been member of the Danish National Committee of the International Dairy Federation (IDF), member and later president of the Permanent IDF Commission B (Dairy Technology & Engineering). Since 1997, he has been Adjunct Professor in Dairy Technology at Copenhagen University.

Leading independent consultancy to companies dealing with processes involving raw milk - locally and globally!

RAW MILK CONNECT

- and Share Knowledge

Working +20 years within this business we combine in depth knowledge about milk production, logistics of the milk and milk analyses with solid skills within project and product management!

Our clients get a robust solution, benefitting from our knowledge of milk production and analyses, - combined with our extensive network within the business. Below are examples of our recent assignments.

International Dairy moves towards one uniform settlement model
When dairy cooperatives merge across borders there is a need to unify payment models. Due to differences in local procedures and national legislation this is a challenge. With our international experience within this field we are able to assist in uncovering differences and outlining a way to reach a common settlement scheme.

Demand for a new analytical solution?
Due to our deep knowledge of this very specific niche market, we have assisted several companies in evaluating a new potential game changer, a next generation solution or making marketing surveys to identify potential distributors for existing solutions.

Lift to Colombian milk payment analyses
Assuring trustworthy laboratory results is essential to improving raw milk hygiene. We have assisted the government in developing a national bacteria conversion equation meeting international standards.

New analytic parameters in milk offer crucial information for optimizing nutrition!
New parameters are routinely introduced in labs or on farm. Many ingredient companies realize that the effect of their products can now be monitored large scale via these analyses. Our knowledge of herd management, available analyses and our large network can assist you in developing strategies and carrying out large scale trials to verify effects of an ingredient.

To read more about us visit
www.rawmilkconnect.dk/consultancy

Kind regards

Birte Rasmussen Tax Olsen

When Machine Manufacturing is an Art!

By Lars Valentin Peters, Business Development Manager, M.Sc. Dairy Science, Scan-Vibro A/S

Scan-Vibro A/S is an expert and global partner within vibration technology. Custom-designed sifters, conveyors and feeders are built - and in operation at many food plants all over the world. Scan-Vibro offers multifunctional vibration equipment for sorting, spreading, draining, conveying, cooling, drying …

Food safety starts at the drawing board. Hygienic designs ensure that everything exposed to contact with food - from single components to connections and welds - is made from approved materials and build to enable correct and efficient cleaning. In this respect, Scan-Vibro is a trusted and well-recognized partner, when it comes to delivering vibration machines of superior functionality and quality for the food processing industry!

Equipment Design Details

The guidelines described by the European Hygienic Engineering & Design Group (EHEDG) are becoming ever more familiar and used by the machine end-users and machine manufacturers as their mutual approach.

EHEDG Document 8 describes the main criteria for Hygienic Equipment Design. The document includes a paragraph on "welding and surface finish", and some of the statements are:

- Metal surface in contact with product should have a "roughness" of $0.8 < R_a$.
- Corners should preferably have a radius equal to or larger than 6 mm; the minimum radius is 3 mm. Sharp corners (≤ 90°) must be avoided.
- Permanent metal-to-metal product contact must be continuously welded and free of imperfections.
- Welds on the non-product contact side must be continuous and smooth enough to allow proper cleaning.
- The exterior and interior of all equipment must be self-draining and easy cleanable.

Today, Scan-Vibro frequently cooperates with our customers when defining design-details of various machines. Recently, Scan-Vibro cooperated with one of the global babyfood ingredients manufacturers and developed a detailed hygienic standard for vibration sifters and conveyors - specifically for this company's production and cleaning demands. It is worth mentioning though, that most of our designs for vibration-equipment go further than legislation prescribes!

A key factor in high-standard vibration equipment is the welding of the machinery. Scan-Vibro's first class welders are at all times educated within the newest welding procedures and standards. Typically, our welders participate during final machine-inspections and testing of the equipment, thus ensuring that they understand our customers' needs and expectations! *Today's welding is in many ways becoming an art!*

SRS Vibration Sifter for baby food ingredients with new exterior and interior Scan Vibro Surface Finishing.

New Surface Finishing

The conventional treatment for machine exterior is glass-bead blasting which provides a visual nice surface. However, this treatment actually destroys the clean-ability of the surface when going from a R_a-value below 0.8 µm to a R_a-value of 1.5-2.5 µm. The machine interior is conventionally untreated surface or polished, with welding polish to a R_a-value < 0.8 µm.

As an answer to these problems, Scan-Vibro now offers an innovative *surface finishing* treatment, applied to both the exterior and interior of the machinery. This new method optimally influence the surface roughness, as all micro-peaks are removed, thus exposing the deeper valleys and making them more accessible for cleaning. The R_a-values always improves, but never gets below 0.35 µm, and in contra, the R_a of mirror-polished material increases from 0.001 to 0.35 µm. Thus, the surface gets a micro-scale structure that minimizes the adhesion tendency of undesirable components such as dirt and bacteria. This reduces the risk of deposit attack and bacteriological pollution considerably. Moreover, dirt and microorganisms are easily removed during cleaning. In addition, customers' will find improvements of food powders flowability through the machine.

Although the surface finishing is not a pickling process it removes the oxide film and simultaneously all unwanted contaminants, including the burned weld area. Immediately afterwards a new oxide layer arises by natural passivation.

A very pleasant side effect is that no chemicals are in need, so the use of surface finishing has no negative impact on the environment.

Scan-Vibro A/S

Scan-Vibro's technological superiority rests on knowledge and the employees' year-long high technical experience. The staffs count 67 highly skilled engineers, smiths, CAD draughts-men and other technicians.

The company is engaged in long lasting and innovative relationships with large international plant- and engineering companies. When it comes to collaboration with these companies, Scan-Vibro contributes as a subcontractor within the field of vibration technology expertise. However, Scan-Vibro also works alone, when customers worldwide learn about the company's expertise and want to either replace or expand their plants with new types of vibration equipment.

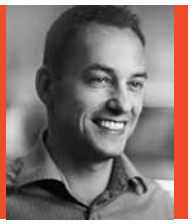
Scan-Vibro A/S was founded in 1949, operates two production facilities and serves customers worldwide. ■

SRS vibration sifter, interior polish surface R_a < 0.8.

SRS vibration sifter, interior with new developed Scan-Vibro Surface Finishing R_a > 0.35 µm and R_a < 0.80 µm.

High-Quality Food Production Requires:

High-Quality Water Treatment



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

The Danish dairy company Arla has recently taken a step closer to its ambition of becoming one of the leading producers of dairy products in Russia, specifically high-quality cheese products. Thanks to EUROWATER, Arla now has the necessary expertise in high-quality water treatment.

Reliable water treatment - Arla Russia

For the first time, Arla has established local production in Russia. More specifically in the city of Kalacheevsky in southwest Russia where Arla's Russian subsidiary together with the dairy company Molvest has converted an existing dairy in accordance with Danish standards.

EUROWATER has supplied water treatment plants for many of Arla's Danish dairies, so it was natural to continue the cooperation in Russia where EUROWATER already has many years of experience in sales and service.

Projecting

Mr. Palle Jellesmark of the consulting firm Dairy Tech Denmark was employed by Arla as project manager to tie the threads together for the craftsmen, suppliers and authorities involved. "The partnership with EUROWATER as supplier of water treatment plants has fully met the agreed objectives," says Palle Jellesmark.

In connection with commissioning, EUROWATER also had a technician at the dairy in Russia to ensure that everything was done by the book.

Water treatment

In the dairy and the waterworks belonging to it, water treatment plants from EUROWATER were applied for the following purposes:

- Process water for cheese production.
- Technical water in connection with milk separation and pasteurization.
- Water for CIP system (Cleaning In Place).

Water for cheese production

A waterworks owned by Molvest supplies the dairy with water. Among other substances, the water contains too much iron and manganese. Previously, the dairy used groundwater without treatment, but those days are gone. Now the water is filtered in two parallel pressure filters from EUROWATER - just as it is done in thousands of waterworks in Denmark. The treated water is collected in large stainless steel vessels and a pumping unit supplies clean drinking water to the-user points as required. The plant has a production capacity of up to 180 m^3/h and the water is primarily used as ingredient water for cheese production and as drinking water, secondarily for cleaning. Maintaining a constantly high cheese quality requires that the water have no bacterial activity, which is achieved with a UV disinfection system.

The complete solution consisting of pressure filters, pumps, UV system, PLC control, electrical connections and connecting pipe system of stainless steel was pre-installed in the factory in Denmark. Then the plant was quality assured, including functional test and pressure test. Before dispatch, all connections were labelled and documented, thus the plant is ready for quick and safe installation in the dairy.

Foreground: Frame-mounted pumping unit with the UV disinfection system. Background: Two pressure filters with a connecting pipe system of stainless steel.

Cooling water for milk separation

In connection with milk separation and heat treatment, it is important that the water is free of salts to avoid malfunctions and failures of technical equipment such as pumps and heat exchangers. To this end, a softening plant with subsequent reverse osmosis system was installed in the dairy, thereby removing 98% of the salts in the water.

Water for CIP system

CIP cleaning of membrane systems in connection with whey production requires access to demineralized water of high quality. For this purpose, a compact unit was chosen comprising a reverse osmosis system with pre-treatment built on the same stainless steel frame, ready for use. The concept offers many advantages, including:

- A complete and standardized solution that simplifies dimensioning and purchasing.
- Frame assembly with all internal piping and electrical connections made in our factory to ensure quick and safe installation.
- The entire system is pressure tested and function tested electrically before shipment.
- Compact and space-saving design.

Taken together, the solutions from EUROWATER mean that the dairy will have a better product optimization and processing as well as an optimized use of resources in terms of water and electricity. The water treatment solutions therefore contribute positively to the dairy's total operating costs and competitiveness.

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 330 highly qualified employees at 23 sales and service offices around Europe. ■

Compact reverse osmosis system with pre-treatment - ready for use.

SPX Flow Technology solutions for

Innovative Thermal Processing

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

Thermal processing equipment and technology is one of the corner stones of SPX's offerings to the global Dairy, Food & Beverage Industry. Some of the key trends in developed markets and in the rapidly growing emerging markets are:

- Increased productivity
- Increased food safety
- Protection of nutritional values
- Environmental-friendly processing

Our advanced Innovation Centers and dedicated dairy and food technologists help us to consistently deliver innovative, customer-centric solutions for processing and end product improvements.

In this article, examples of innovative Thermal Processing will be covered, including:

- One step UHT processing for increased productivity
- Sterile long life milk with fresh milk taste
- Spore free high solids Infant Formula and other nutritionals
- Scale free heating of egg and WPC products.

One-step UHT processing

The SPX Enhanced UHT Sterilizing System is a one-step tubular UHT solution that offers savings in energy and water compared with traditional plant configurations; producing high quality milk with minimized environmental impact. In line with its vision to be the leading, world class, environmentally friendly dairy company in South Africa, Coega Dairy selected this system for their drinking milk plant.

The system shown in Fig. 1 provides one-step processing of fresh milk from raw milk silos into an aseptic tank in one continuous flow with a capacity of up to 18.000 liters per hour. The process includes pre-heating, deaeration, fat separation and standardization, deaeration homogenization, sterilization and final cooling and transfer to an aseptic tank at filling temperature.

Victor Korsten, chief executive of Coega Dairy, commented, "We selected the SPX solution because of our previous experience with them and confidence in their dairy processing expertise. The technology offered in this UHT system fits with our drive to obtain and maintain best efficiency, provide competitive milk production and minimize our impact on the environment."

The increased running time of the plant not only extends production capability but also reduces the amount of clean in place (CIP) cycles required. This lowers production costs and reduces the amount of product lost during the cleaning process.

Fig 1 - SPX one-step Tubular UHT plant.

Sterile and Natural Fresh Milk

Realizing market trends in terms of long product lifetime, minimal product alterations for freshest tastes and high food safety, our R&D scientists have developed a new ground breaking thermal process known as APV InfusionPlus. This technology combines super high pasteurization at 150-160°C with an incredibly short holding time of 0.09 sec. The process has been proven to deliver an extremely high spore kill rate (B* value of 1.45) with low chemical effect (C* value of 0.04), ensuring a combination of high food safety and fresh milk taste while protecting the nutritional value and other desirable natural product characteristics.

The APV InfusionPlus technology not only enables the dairy industry and consumers to benefit from sterile ESL milk with fresh milk taste, it also has interesting potential in other applications:

In the treatment of cheese milk and powder milk it respectively eliminates clostridia spores and bacillus spores, resulting in improved cheese and powder quality.

Spore free high solids Infant Formulas

The challenge in the Infant Formula and other nutritional industries is to combine highest food safety, i.e. elimination of heat resistant spores, while protecting nutritional quality. A very gentle thermal treatment is therefore paramount to avoid damage of essential amino acids, proteins and vitamins, which can result in nutritional degradation, unacceptable flavor changes and the formation of burnt particles.

The APV Instant Infusion technology (Fig. 2) is specifically designed for combined high heat and gentle treatment of heat sensible products containing high solids and viscosity concentrates, ensuring uncompromised food safety and quality.

The Instant Infusion process involves preheating to 55-73°C followed by rapid heating to 133-148°C using steam infusion. The product is distributed in the form of thin strings into a chamber heated by direct steam. A patent holding cell (displacement pump) at the bottom cone of the infusion chamber ensures an accurate holding time in the range of 0.09-0.5 seconds and, after flash cooling to 55-70°C, the high solids nutrition (up to 58% total solids) is routed to a spray drier.

Data from this process confirms a combination of high spore kill rate (log reduction) of Bacillus Cereus, Z = 9.7°C, D = 2.3 sec. of >100 with a B* value (Thermophilic spores) of 0.6 and a very low C* value (Chemical effect) of 0.04, ensuring high safety and protected nutritional quality.

Fig 2 - APV Instant Infusion System.

Scale free pasteurization of egg and WPC

Using licensed and patent technology based on hydrodynamic cavitation, SPX has launched technology, known as the APV Cavitator, that delivers excellent microscopic mixing, hydration, emulsification and gas dispersion as well as superior scale free heating.

The Cavitator system (Fig. 3) is successfully implemented in egg pasteurization and, in combination with an ordinary plate heat exchanger, enables 4-5°C increased temperature without fouling and denaturation of the egg proteins. It also eliminates the need for a homogenizer and has been proven to produce high quality products while giving a run time that is 3-4 times longer than conventional pasteurization.

As the Cavitator has no heat transfer surfaces it is ideal for the pasteurization of a wide range of heat sensitive and high fouling products, including dairy nutritionals such as whey protein concentrate (WPC), acidified products, sauces, puddings and chocolate products. ■

Fig 3 - APV Cavitator.

The Best of Hygiene in the Drainage System

By
Søren Davidsen, Marketing Manager, Blücher A/S

- Unilever (Helados Holanda), Mexico City (Mexico)
- Valio Ice-Cream Factory, Turenki (Finland)
- United Dairies, Westbury (England)
- Several Arla dairies in Denmark and Sweden, among these Taulov Mejeri, Arinco and Rødkærsbro Mejeri.

Excellent hygiene properties

Compared to the materials traditionally used for drainage systems, stainless steel offers the advantages of ease and speed of installation, excellent hygienic properties, easy cleaning and maintenance, durability and favorable whole-life costs. Stainless steel has an extremely smooth surface providing fast flow, preventing deposits and minimizing bacterial growth. Inherent advantages, which in BLÜCHER® drainage products are enhanced by careful product design, making them particularly suitable for the dairy, beverage and food industry - and other applications requiring high levels of hygiene.

EU hygiene requirements state, among other things, that floor surfaces in food processing plants must be easy to clean and allow adequate surface drainage. Legislation on safety states that floors should be slip-resistant under normal conditions of service.

Drainage systems worldwide

BLÜCHER® drainage products have been installed in dairies and food-processing factories worldwide for nearly 50 years. Among the dairies, breweries and food processing factories fitted with a BLÜCHER® drainage system are:

- Almarai Dairy, Saudi Arabia
- Heineken, Sevilla (Spain)
- Danone, Valencia (Spain)

Highest quality standards

Food processing plants require equipment of the highest quality in terms of operational, hygienic and environmental standards. To minimize the risk of bacteriological contamination of the products, the equipment used must be easy to clean and keep clean.

All BLÜCHER® drainage products are made entirely from high-performance austenitic stainless steel grade 304 or, for the most demanding corrosive environments, grade 316L. All products are chemically descaled and passivated to enhance their natural corrosion resistance and to provide a uniform matt silver surface finish.

Being a modular system comprising floor drains, drainage channels and a pipework system - all combinable, the BLÜCHER® stainless steel drainage system offers numerous possible combinations and a solution to any drainage project.

For industrial applications, BLÜCHER offers heavy-duty floor drains and channels point and linear drainage. The hygienic design of drains and channels without corners or cavities inside the drain body prevents bacterial growth, and reinforcement of the underside of the frame edge with synthetic resin infill provides a hygienic structure also without any cavities.

Important features

One of the most important features is the removable water trap with its excellent self-cleansing properties and small water surface that minimizes bacterial growth. In addition, the water trap unit is easily removed for cleaning. Experience shows that this water trap facilitates cleaning because larger solids trapped in the water trap and grease deposits in the water trap can be removed by washing down. Being easily removed and refitted in the drain or channel, it also provides access to the drain bowl and the pipe underneath.

Floor drains and channels are fitted with a grating, the load capacity and slip resistance of which is suitable for the application in question. For the drains and channels BLÜCHER offers a range of gratings with one, or two-way non-slip surface, all designed with a view to obtaining excellent hygienic properties and facilitating cleaning.

The smooth surface of stainless steel also makes it the perfect material for drainage pipework systems in hygienically demanding applications. BLÜCHER EuroPipe® is a lightweight and versatile drainage pipework system featuring simple push-fit jointing, thus ensuring easy handling and rapid installation.

A further and important safety advantage is that BLÜCHER® products are

All development and manufacturing takes place at the BLÜCHER headquarter in Vildbjerg, Denmark.

non-combustible. In the event of fire, the high temperatures will not cause any toxic gases to be released from the drain and pipe material.

BLÜCHER®

BLÜCHER® is certified in accordance with ISO 9001 and ISO 14001 and all products are manufactured under this globally recognised quality assurance-system . BLÜCHER is an international group of companies with head offices and production facilities in Denmark, subsidiaries in Norway, Sweden, the UK, Germany, France and a worldwide network of sales representations and distributors. ■

New generation of heat exchanger improves

Versatility and Efficiency

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

With the new generation of the Tetra Vertico® heat exchanger, Tetra Pak® introduces an innovative coiled mono-tube design to improve upon the performance of traditional tubular and scraped surface heat exchangers. The equipment offers customers greater versatility and efficiency in heating and cooling a wide range of prepared food products.

The new generation Tetra Vertico is designed to meet food processing customers' needs for highly efficient and versatile heat treatment, especially for high and very high viscous products, while maintaining high standards of food safety and quality.

The unique design of the coiled mono-tube, compounded with higher pressure, enables Tetra Vertico to deliver a number of advantages compared to traditional heat exchangers including unmatched product versatility, higher production and operational efficiency, excellent product and particle integrity and uncompromising food safety.

Unmatched product versatility

The coiled mono-tube in the Tetra Vertico enables high capacity processing of high viscous products, such as creamy dairy desserts like chocolate pudding. It also supports food processors to innovate for the future by handling an unmatched range of foods, from low to high viscosities, and both smooth products and products with particles up to 25 millimetres in diameter.

The high-pressure rating, up to 300 bar, and the mechanical design of the unit are the keys to achieving high product versatility. Pumping a liquid through a pipe builds pressure in a system that is proportional to the viscosity of the product and the velocity of the liquid through the system. The pressure rating of the heat exchanger often sets the limit of what velocity is possible, and thus also at what capacity viscous products can be processed. The high-pressure rating of Tetra Vertico makes it possible to process viscous products at velocities above 4 m/s. Moreover, these higher velocities enable higher capacities, thus maximizing the viscosity range that a producer can run.

Tetra Therm Aseptic Visco.

Maximizes production and efficiency

The high-pressure rating, and resulting high product velocities through Tetra Vertico, improve heat transfer efficiency and thus production efficiency, cutting cost per litre and saving our customers money. For high viscous products, Tetra Vertico achieves an up to 40% or higher increase in heat transfer efficiency compared to tubular heat exchangers. This enables producers to achieve higher production capacity of high viscous products, which improves operational efficiency, thanks to higher product throughput, and better matches filling machine capacities.

Higher heat transfer efficiency minimizes heat surface area and system volumes, optimizing CIP and minimizing product losses. Compared to concentric heat exchangers, Tetra Vertico reduces both system volumes and holding times by up to 20%, and reduces product losses by up to 6%.

In addition to reducing product losses, the small system volumes also reduce operational costs thanks to shorter turnaround times between products and reduced detergent and water consumption - cutting both cleaning costs and environmental impact.

The high product velocities also minimize fouling, which extends running time between cleaning and increases operational efficiency.

Tetra Vertico also minimizes maintenance costs with, for example, fewer connections and gaskets and no moving parts or scraping blades.

Excellent product and particle integrity

Optimized and gentle processing in Tetra Vertico ensures high, consistent product quality. Small system volumes and short retention times in the heat exchanger minimizes time at high temperatures, preserving maximum quality texture, taste, colour and nutritional value.

In addition, the coiled mono-tube unit - between 30 and 100 meters long - has only one inlet and one outlet connection. This enables gentle mechanical treatment and ensures excellent particle integrity for particles of up to 25 millimetres in diameter, in products such as fruit preparations for yoghurt and ice cream with tasty fruit particles, as well as chunky soups and stews.

We are able to optimize the Tetra Vertico heat exchanger to meet each producer's needs with our advanced heat transfer calculations, either based on a producer's own product values or on our database of over 5000 products, integrated into a heat transfer calculation tool.

Ensures uncompromising food safety

The unit is designed with high hygiene standard and optimized CIP (cleaning-in-place) and maintenance processes. The hygienic heat exchanger design has floating ends to prevent cracking caused by thermal expansion. It is also designed with no moving parts and a minimal number of connections, which reduces the number of gaskets and welds.

The design of the unit employs production techniques for the highest hygiene demands, such as orbital welding and machine pipe bending. Furthermore, the unit is EHEDG approved.

Tetra Vertico.

The new generation Tetra Vertico heat exchanger is available in 15 different configurations and each unit is backed by performance guarantees.

Test the new technology

A new Tetra Vertico pilot plant is currently being installed at our Product Development Centre in Lund, Sweden. This gives producers the opportunity to come and test the new technology on their products. ■

Minor Company - Global Outlook

During the last three decades the Danish company, AC Dairy Machines has evolved from a local actor to a reseller of high quality used Scandinavian dairy equipment on the global market.

By Anna Marie Thøgersen, Editor

Unique concept

AC Dairy Machines differs quite significantly from comparable companies, which buy and sell used dairy equipment. Thus, AC Dairy Machines accepts large projects involving several of the staffs to disassemble dairy equipment from parts or even entire dairy plants in Scandinavia. Subsequently, the equipment is returned on own trucks to the company's headquarter in Northern Jutland. Back home, the employees clean, sort, and line up the dairy machines.

- This business concept has set the basis for several of our international clients visiting our premises to check the equipment in-person and identify exactly what they are looking for. Thus recently, a Polish dairy engineer dropped by, and he even brought a "shopping list". Before the visit was over, the customer had literally ordered equipment for a complete cheese plant in Poland. So tells Lars Christensen, owner and manager of AC Dairy Machines.

Scandinavian quality on global markets

AC Dairy Machines buys and sells quality equipment from Scandinavian dairies and amongst the main companies we find Norwegian TINE and Danish/International Arla Foods. Typically, AC Dairy Machines clean and re-sell the dairy equipment to various dairy and food companies throughout Northern Europe - and even further out on the global market.

- Fairly recently, we completed a dairy project in Thailand. As in the rest of Scandinavia, where we have partners at agent basis, it was also through our Danish network that we got the Thai project. The project included both supply and implementation of a complete pasteur-line with separator on Wangnamyen recombination dairy in Eastern Thailand, says Lars Christensen.

Several other highly regarded Danish dairy forces are familiar with the great expertise that AC Dairy Machines possess. Amongst others, we find "Mr. Cheese" alias Knud Kristensen, an expert within the dairy industry in e.g. Chile - as well as Jørgen Schmidt, former Technical Director of Lactosan, in Uruguay. Today, Mr. Schmidt runs his own consulting company in Uruguay, but when holidaying in Denmark he often visits AC Dairy Machines to spot the best equipment for a potential Uruguayan dairy customer.

Want to know more?

For more than 30 years, AC Dairy Machines has gained expertise within trading used equipment for the dairy and food industries. The equipment includes entire production facilities as well as various stainless steel tanks, milk trucks, cooling tanks, etc. Further, the company offer rentals of various tank solutions and in numerous sizes, for shorter or longer periods.

If you want to be up-dated on the newest quality dairy equipment, you can sign-in for the company's weekly Newsletter on www.acmm.dk. ■

Owner and manager of AC Dairy Machines, Lars Christensen in front of the company's premises in Løkken, Northern Jutland.

SOUNDER THAN EVER

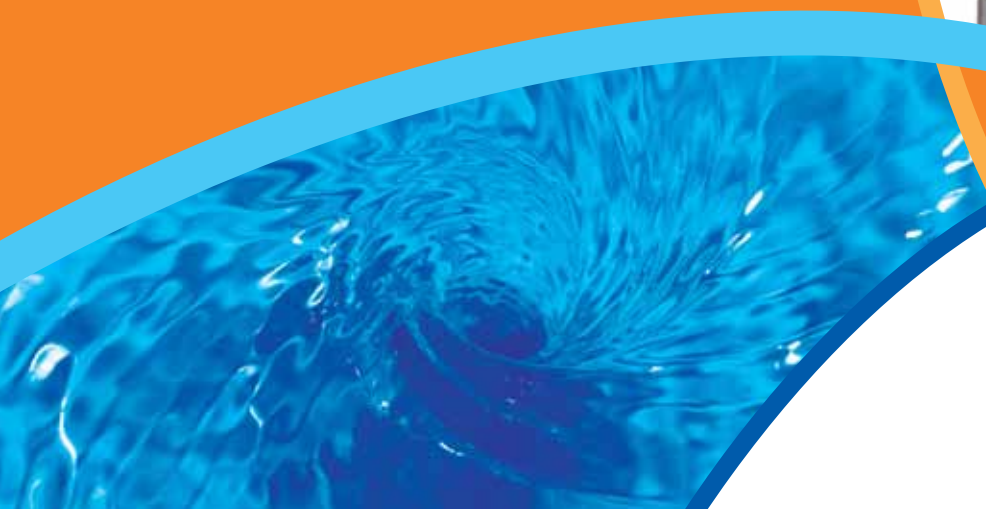
Our latest development – the new Tetra Centri AirTight Eco separator – takes sound performance to a new level. Offering reduced energy consumption in your overall separation system by up to 35%, a unique new feature enables you to save even more money, while also saving the environment.

Tetra Centri AirTight separators are already known for providing excellent product quality, superior separation efficiency and unmatched production flexibility.

The new Tetra Centri AirTight Eco separator also provides embedded separator controls that assure optimal performance. And a new direct drive that boosts efficiency even further, while lowering your costs.

There's more. It's designed for simplicity of installation, start-up, operation, cleaning and maintenance. Oh yes, it cuts noise levels too.

You're welcome to visit us at www.tetrapak.com – or get in touch directly: info.processing@tetrapak.com



PROTECTS WHAT'S GOOD™
Tetra Pak

(Photo: Colourbox)

The Prisoners Dilemma

The prisoner's dilemma is an example of a game analyzed in game theory that shows why two individuals might not cooperate, even if it appears that it is in their best interests to do so. Familiar with this situation?

By
Soren Bollerup Hansen, CEO and Owner, MyAdvizor A/S

The dilemma

The dilemma is the following: The police have arrested two members of a criminal gang. Each prisoner is in solitary confinement with no means of speaking to or exchanging messages with the other. The police do not have enough evidence to convict the pair on the principal charge. They plan to sentence both to six months in prison on a lesser charge.

Simultaneously, the police offer each prisoner a bargain:

- If A and B both confess to the principal crime, each of them will serve 2 years in prison
- If A confesses but B denies the crime, A will be set free whereas B will serve 3 years in prison (and vice versa).
- If A and B both deny the crime, both of them will serve 6 months in prison.

Betraying your partner?

Let's look at the expected behavior around this dilemma. Betraying your partner rewards better than cooper-

Collaboration is much better for both parties if it bases on trust and the desire to help the partners, as it in the end will benefit the project and other partners. (Photo: Colourbox).

ating with them. Your partner gets a three-year sentence, and you can leave the station. That is a super deal! All rational self-interested prisoners would betray the other, and so the only possible outcome for two purely rational prisoners is for them both to betray each other and both will serve a three-year sentence.

Play it safe

So why don't they both just deny any involvement and both serve the 6 months sentence? Let's test this question on you. Let's imagine that you for a moment trust your partner, and that you deny any wrongdoing. Feels good, but at the same time I assume that you would be wondering how you would feel if your partner blew the whistle, and he would get off and you would have to serve three years. Not something nice to think about. Better be on the safe side.

Therefore, we play it safe, it is better to betray your partner just to be on the safe side. At best, you can leave the station the same day, and should he have betrayed you as well, then that just proved that it was right of you not to trust him!

Client and a supplier

The label "prisoner's dilemma" may be applied to situations not strictly matching the formal criteria: for instance, those in which two entities could gain important benefits from cooperating or both suffer from the failure to do so. Is this not often the situation between a client and a supplier?

Through my many years of experience with projects, I get the feeling that clients are always thinking that the supplier is a non-reliable partner whose only role is to sell equipment as expensive as possible and if possible sell more than needed. On the other hand, the suppliers are always thinking that the clients are always trying to squeeze the price to a point where there is no longer a margin for profit and somewhere in the tender dossier there is for sure a catch.

Trusted relationship

A fantastic way to start a good long trusted relationship is getting the optimal solutions to both parties!

This collaboration would be much better for both parties if it was based on trust and the desire to help the partners, as it will benefit the project and other partners in the long run.

We can help you achieve this. - Just ask our customers! ■

Paramount Quality
Spices & Fruits

By Mogens Hede Jensen, QA & Lab. Manager, Dairy Fruit A/S

In the Dairy-Fruit-World, consistently high quality, excellent flavors and innovative solutions are key concepts for our customers' products. In order to deliver fruit preps and spices of high consistent quality, our Quality Department constantly focus on ensuring our customers' products. Thus, Dairy Fruit is approved according to ISO 22000, 14001 and TS 22002. Further, audits of our customers, and even audits of internal and external auditors ensure transparency and confidence in the system. Visit our new website www.dairy-fruits.com and discover the Dairy-Fruit-World!

Corporate Social Responsibility

Not only does Dairy Fruit A/S guarantee high quality products, and that the products are sound to consume, we have further implemented a comprehensive CSR-program (Corporate Social Responsibility).

Our CSR system ensures that there is track of subject areas such as Business Principles, Environment and Climate, Community Relations and especially protection of Human Rights. Regarding the subject of Community Relations, Dairy Fruit is e.g. involved in a Danida-supported fruit-project in Bolivia.

Dairy Fruit ensures these issues through supplier questionnaires and several visits to our suppliers around the world.

Commodity control

We source all our raw materials from exclusively approved suppliers, and the commodities are quality approved prior to application in various productions. The approval is amongst other important analyses based on microbiological and sensory evaluations.

In our Fruit-World, working with natural ingredients such as raspberries and blueberries, securing against foreign objects is a very important focal point. On receiving such raw materials, we always sort and repack these commodities to ensure paramount quality of the final products intended for end-consumers.

Gentle production

We choose the raw materials according to the criteria of best flavor characteristics, and further the commodities ability to retain their physical structure. That is why, the production equipment and the actual construction of this, is of extreme importance when preserving the natural structure of the spices, fruits and berries.

Besides a gentle production, our process equipment is designed in a way that it preserves the volatile aromas of the raw materials. This is particularly important in Denmark, where addition of flavorings only are allowed to a very limited degree in Fruit Preps and Liquid Spice.

For years, exactly conserving the original taste and physical structure of the fruit and berry commodities has been one of Dairy Fruits strongest characteristics. That is a significant reason why we are one of Europe's largest players

Dairy Fruit's Quality Department constantly focus on ensuring paramount quality in our fruit preps and spices.

Highly educated experts at Dairy Fruit's Departments for Product Development and Quality ensure innovative and safe fruit and spice ingredients.

within ecology, as sourcing and gentle production of organic goods are primary success factors.

Food safety

We keep strong focus on food safety, so that consumers can feel confident in eating dairy products with ingredients from Dairy Fruit. Thus, we analyze all our finished ingredients within fruits and spices according to internationally established microbiological methods.

To maintain the consistently high quality of the goods produced at Dairy Fruit, we exclusively employ highly trained staffs within both the dairy profession as well as professionals in the field of food safety.

In addition, we perform a comprehensive program for sensory education and evaluation of all our employees, in terms of our experts at the Product Development Department and the Quality Department as well as all staffs who have been involved in the production of goods, before we release the products for sale.

In addition, Dairy Fruit constantly meet all required quality demands through customer audits, inspection by the authorities, and various certification bodies.

Enterprising Dairy Fruit

However, top-class raw materials, gentle treatment, quality approvals, procedures, and good intentions are not the only qualifications at Dairy Fruit. The company possesses entrepreneurial spirit, and further the management makes sure to maintain the staff's skills and interests to produce food of paramount quality. This we achieve through the employees participating in frequent tests with multiple choice questions and answers. This helps to ensure that the correct information is in the right place.

In addition, we at Dairy Fruit have plenty of visions, and some are already on its way through projects, which we currently conduct in collaboration with various educational institutions such as Kold College, University SDU, and the University of Aarhus. ■

Quality by Design

By
Erik Dath Harbo,
Senior Consultant,
Alectia

The QbD-concept

ALECTIA is a leading Danish engineering and consulting company with roots in the process industry sectors dairy, food, beer & beverage and pharmaceutical industry. Our trademark is engineering and consulting services that combine a high degree of professionalism with a deep understanding of our clients' business. Alectia has profound knowledge and international experience in developing new dairy factories, food processing factories and breweries. We base our design of the hygienic production facilities on a high focus on productivity, functionality and high quality standards. Process design bases on profound insight in the process technology combined with logistic analysis and business understanding.

A recent trend in designing food and dairy processing facilities is to improve and control product quality by a more pharmaceutical approach to designing new installations, based on the concept Quality by Design (QbD).

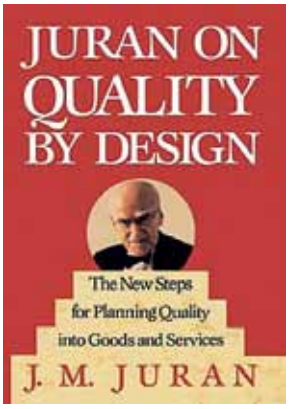
The idea behind the QbD-concept is to base quality of a product on design and process control, rather than testing of the final product. Quality problems and cost are minimized by planning and designing your products and process in a way where product quality is implemented in the design and to less degree is based on test and approvals after the product has been produced. The Quality by Design process allows for continuous improvement of the product quality and production method as described in Figure 1.

Avoidable extra costs

The definition of a dairy product is as minimum given by the legal regulations in markets where the product will be sold. The dairy industry has international definitions as in the Codex Alimentarius. Today's dairy processing companies are under constant pressure to perform as requested by their clients, as demands on the dairy product quality is defined by the customer, that being large retail chains, private label customers and big B2B customers. Often, the customers define requirements to the specific products and the production conditions, and in most cases, those requirements are more stringent than the legal requirements. Consequently, these market conditions has resulted in a new agenda where it is good practice to involve your key customers in the design work of the products and processing facilities.

A recent example of such a need for customer involvement we experienced from a new client, who years back invested in an extended production installation, designed for bulk production of standard milk powders. Basically, the plant was designed and installed on the above criteria, and the design turned

Figure 1: Quality by Design (QbD) is a concept first outlined by Joseph M. Juran in various publications. Juran believes that quality can be planned! The concept was introduced to the pharmaceutical industry in the mid-eighties, and today the FDA approach to quality bases on the QbD concept. The same approach is becoming standard within designing dairy processing lines for high quality products, e.g. child nutrition products. (Graph and source: GoogleBooks.com).



Joseph M. Juran is behind the concept Quality by Design, and he has written several publications of the matter, amongst other: "Juran on Quality by Design". (Picture and source: GoogleBooks.com).

out to be excellent for the bulk products. However, new product requests from several customers have resulted in a project defining a brand new spray dryer installation, not out of a requirement for higher capacity but due to the product specifications. Consequently, the dairy company needs a new spray dryer designed to another specification. Was this situation avoidable, if the customers had been involved during the design of the initial dryer installation, and could the business case have supported the extra initial investment?

A QbD approach

In cooperation with Alectia, yet another client is engaged in designing a new dairy factory. The company currently plans to screen the milk for penicillin residues on arrival and at the milk reception, thus we designed the pretreatment to handle two separate streams of milk.

It could be argued that the right approach from a QbD viewpoint would be to test the milk at the farms, and let the individual suppliers withhold the milk if any penicillin is present in the milk. However, due to the small sized farms and large numbers of milk farmers it is currently impossible to get the farms to guarantee delivery of good quality milk. Consequently, the design is capable of screening and handling the two mentioned milk streams.

Unique experience

Alectia holds a unique combination of experience from the dairy, food, beverage, and pharmaceutical industries, and we are experts within assisting our clients in designing new processing facilities, based on the approach Quality by Design. Currently, we are involved in design-projects of processing lines and facilities for dairy products, aimed at the nutritional markets, in which projects we implement the QbD-approach. ■

FOODTECH

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Northern Europe's Largest Trade Fair for Food Technology

Join & Visit - FoodTech 2014

FoodTech is Northern Europe's largest trade fair for food technology, and it presents lots of inspiration, new knowledge as well as the latest technologies. The fair takes place in MCH Messecenter Herning, Denmark from 28-30 October 2014.

250 companies - so far!

At the FoodTech trade-fair thousands of equal professionals meet to share their expert approach to their products, their companies and their ambitions to cooperate to develop the best products in the world.

By mid-summer 250 companies made reservations for stands, and thus the exhibition is heading towards a level before the 2008 financial crisis. It is still possible to book stands!

Activities & Events

Besides visiting the broad range of company stands, the visitors can join in on several activities and events at FoodTech '14. In cooperation with a wide range of partners, MCH Messecenter Herning arranges following activities:

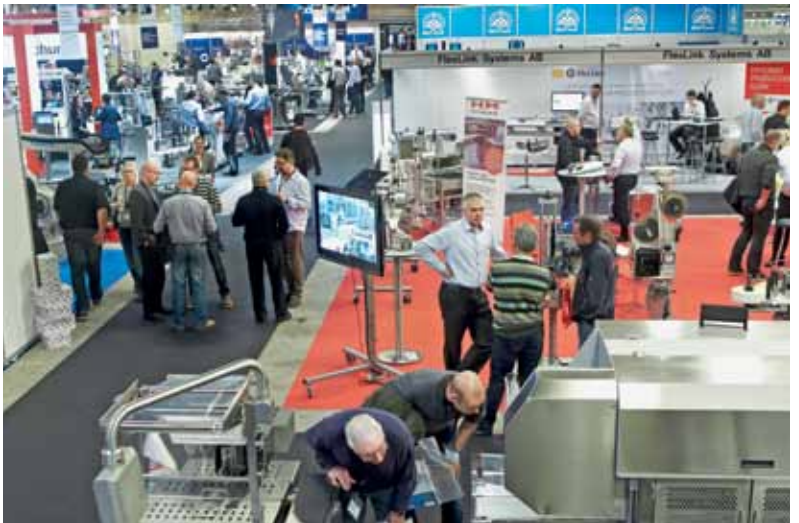
- International FOOD Contest - the world's largest dairy exhibition (*see page 44*)
- FoodTech Challenge
- Conference: Multi Business Model and Technology (international keynote speakers!)
- FoodTech Product News & Award
- Matchmaking
- Chinese delegation
- Networking
- Product presentations
- Science Street

Read more about some of the events below.

FoodTech Challenge

FoodTech Challenge is sponsored by Damstahl, and it is an open innovation competition running as a three-day workshop during FoodTech '14. The participants will be handpicked students - divided into five teams, and they will work with specific cases in a controlled process.

The aim of the FoodTech Challenge is to bring the corporate world and the knowledge communities together in a new way.



FoodTech takes place every second year, and in 2014 from 28-30 October. Thousands of professionals visit this trade fair for food technology. (Photo: MCH Messecenter Herning).

FoodTech Award

FoodTech '14 places extra focus on new products/innovations, as all exhibitors are welcome to submit new products for approval and rating.

Innovations can create increased value for the customer. Therefore, the FoodTech Innovation Award aims to promote creativity and ingenuity among food industry suppliers thus contributing to the development of new food products or to the improvement of existing production processes.

The Danish Dairy Board and the Danish Food and Drink Federation sponsor the FoodTech Award.

You can see all approved and rated products on foodtech.dk by the end of September.

Matchmaking

As part of FoodTech 2014, Enterprise Europe Network organizes a matchmaking event on 29 October. The European Commission support this event, thus it is free of charge for all participants.

At the matchmaking, companies have chances to meet other companies and discuss potential cooperation opportunities. Both a Chinese and a British business delegation will visit the matchmaking.

Please visit foodtech.dk, if your company consider participating in the matchmaking. ■

Questions about joining?

If you have any questions regarding stand booking or the fair in general, you are always welcome to contact Team FoodTech, Project Manager Klaus Erichsen, Tel. +45 99 26 99 37 - ke@mch.dk

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MCH

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Asia: *Bangladesh, Bhutan, Burma, China, Cyprus, Hong Kong, India, Indonesia, Japan, Laos, Malaysia, Mongolia, Nepal, North Korea, Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand and Vietnam.*

Australasia: *Australia, Fiji and New Zealand.*

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