

Danish Dairy & Food Industry

... worldwide



Our Global Village • Our Common Environment
Dairy & Food Production: Hygiene • Analysis • Processing • Ingredients • Packaging



CHR HANSEN

Dairy products mean healthy business



Health and Wellness is the strongest trend in the food industry today – and nowhere is it stronger than in dairy. From low fat to probiotics to heart health, the healthy dairy products lead the way. Consumers recognize yoghurt, milk drinks and cheese as safe and natural products, and they are hungry for more.

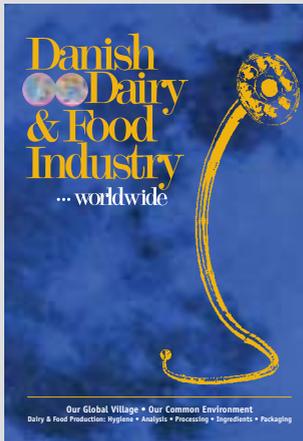
Chr. Hansen is the world's leading supplier of healthy ingredients for the dairy industry. We believe that a close partnership with our customers is the natural forum for creating new and innovative solutions. Let's meet, discuss recipes and inspire each other on how to create tasty, healthy and safe dairy products for today's and tomorrow's consumers.



17
SEPTEMBER 2007

Danish Dairy & Food Industry ... worldwide

OUR GLOBAL VILLAGE • OUR COMMON ENVIRONMENT



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: 12.000 copies

Readership: Leading personnel in the dairy and food industry in more than 120 countries together with all the Danish embassies and consulate-generals, Government advisers and representations of marketing councils.

The editorial staff of Danish Dairy & Food Industry ... worldwide:
Chief editor, M.Sc.
 K. Mark Christensen
Editor, M.A.
 Anna Marie Thøgersen

Litographed by:
 Grafisk Data Center
 Odense, Denmark

Printed by:
 Helmer Larsen Aps,
 Odense, Denmark

Editorial office and distribution:
 Danish Dairy & Food Industry ... worldwide
 "The old Dairy"
 Landbrugsvej 65
 5260 Odense S
 Denmark
 Tel.: +45 66 12 40 25
 Fax: +45 66 14 40 26
 www.maelkeritidende.dk
 info@maelkeritidende.dk

ISSN 0904-4310

Reprint permission to interest publications providing their credit and tear sheets to the publisher.

Denmark - September 2007

The major theme for Danish Dairy & Food Industry ... worldwide this year is: Our Global Village - Our Common Environment. The issues are: Animal welfare, organic foods and healthy ingredients, environmental-friendly food packaging and hygiene systems, optimized analyzing and sustainable production under minimized impact on soil, air and water - our common environment.

The industry is aware of using clean technology when producing dairy and food products. The buzz words are knowledge-based production and service that improve operational performance, productivity, and efficiency while reducing costs, inputs, energy consumption, waste and pollution.

Danish companies within the fields of food products and food machinery, processing and analyzing equipment, advanced hygiene concepts, ingredients and packaging have a leading international position in the field of environmental friendly and sustainable food production. Therefore, it is only natural to promote Danish dairy and food industry as being at the forefront of new developments.

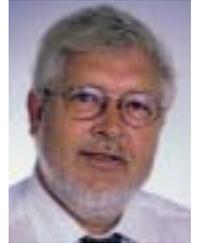
Besides studying this magazine our readers are offered the opportunity to meet representatives from the Danish dairy and food industry at large international exhibitions as for example: WorldFood in Moscow, 18-21 September, Fi Asia in Bangkok 26-28 September, China Foodtech in Beijing October, World Dairy Expo in Madison 2-6 October, Anuga & Anuga Organic in Cologne 13-17 October, Worldwide Food Expo in Chicago 24-27 October, Fi Europe in London 30 October - 1 November as well as Food-PharmaTech in Denmark 13-15 November 2007.

Furthermore, a larger number of this issue of the magazine will be available at The 41st Nordic Dairy Congress to be held in Aarhus, Denmark November 10th - 12th 2007.

The Danish Dairy Managers Association and the Danish Dairy Engineers Association own and publish Danish Dairy & Food Industry ... worldwide. It has been published since 1976 and this issue is the 17th in succession informing you about Danish dairy and food industry.

Danish Dairy & Food Industry ... worldwide is distributed in more than 120 countries in 12.000 copies. Our experience tells us that about 100.000 dairy, food and marketing specialist worldwide study this journal every year.

You are always welcome to contact us for further information.



K. Mark Christensen

K. Mark Christensen
 Chief Editor

Anna Marie Thøgersen
 Editor

Contents

APV Invensys: Health, Safety and the Environment - A Driving Force at APV, by Pia S. Jessen 44	FH Scandinox: Innovative Food Processing Plants ... worldwide, by Torben From 24	Primodan: Primoreels® The Win/Win Solution for all Dairies, by Lars Henriksen 52
Arla Foods: Environment from Farm to Consumer, by Jan Dalsgaard Johannesen 6	FOSS: Analytical Solutions for Optimal Resource Utilisation, by Henrik Boisen 26	Scanima: New Beverages - New Technology, by Erik Petersen 47
Carl J. Nielsen & Søn: ISO 22000 International Safety Approval, by Henrik Kurth 32	Gerstenberg Schröder: Continuous Production of Analogue Cheese, by Klaus Funch Høyer and Pernille Kirkeby 12	Scan-Vibro: Environmental Friendly Technology, by Steen Brogaard Larsen 30
Chr. Hansen: Chr. Hansen Cares, by Helle Rexen 28	Keofitt: Sterile Yoghurt Samples add a Fresh Note to the Breakfast Table, by Steen Sørensen 18	Siemens Flow Instruments: Micro Dosage Precision Minimizes Waste while Optimizing Quality, by Jens Gøbel 10
Centre for Advanced Food Studies: Emerging Topics in Food Research and Education, by Birthe Jessen 22	LOGSTOR Industry: Gourmet Pipes for the Food and Drink Industry, by Christian Schröder 16	Superfos: Green Innovations in Plastic Packaging, by Annette Göttsche 34
Dalum College of Food and Technology: Food Technology and Dairy Education, by Paul Stein Jensen and Pia Agger 50	MA Project: Environmentally Correct Projecting of Dairy and Food Plants, by Jesper Pauli 40	Tetra Pak Processing North Europe: A Safe Journey with Lowered Energy Consumption, by Frederik W. Petersen 20
DSS Silkeborg: The Environment in Focus, by Orla Nissen 8	Niro: Save Energy - Help the Environment, by Niels Krogh Andersen 14	The Danish Ministry of Food, Agriculture and Fisheries, Denmark: Sustainable Food Production in a Global World, by Hans Chr. Schmidt 4
Einar Willumsen, Development of Trendy Flavours, by Helena Jönsson 54	Omy.dk, Olssons Machinery: Solutions on Demand, by Svend-Aage Nielsen 42	Trepko: Package is the Product - Packaging is the Production, by Tekin Özçay 38
Eurofins Steins Laboratorium: The Natural Choice for the Dairy and Food Industry Worldwide, by Jesper Bagge 36	Orana: Denmark's No. 1 Global Supplier of Fruit Based Semi-Manufactures, by Niels Østerberg 48	

Index to Advertisers

APV Invensys 45	FH Scandinox 25	Orana 49
Baumer 9	FOSS 46	Primodan inside back cover
Carl J. Nielsen & Søn 35	GEA Liquid 29	Scanima 47
Chr. Hansen inside front cover	GEA Niro 37	Scan-Vibro 31
Dalum College of Food and Technology 51	Gerstenberg Schröder 5	Siemens 17
DSS Silkeborg 33	Keofitt 15	Superfos 21
Einar Willumsen 55	LOGSTOR 39	Tetra Pak Processing North Europe 23
Elopak 27	MA Project 41	Trepko back cover
Eurofins Steins Laboratorium 11	MesseCenter Herning 3	
	omy.dk Olssons Machinery 43	



NORTHERN EUROPE'S
LARGEST TRADE FAIR FOR
FOOD AND PHARMA
TECHNOLOGY



Print your free entry badge at www.foodpharmatech.dk

JOIN THE WORLD OF CLEAN TECHNOLOGY

13-15
NOV. 2007

Five good reasons for visiting FoodPharmaTech

- The trade's largest fair in Northern Europe
- A trade fair concentrating on quality
- Solutions from the dairy industry's leading suppliers
- The world's largest dairy exhibition
- The fair that creates increased value for you and your customers



MESSECENTERHERNING • DENMARK

Sustainable Food Production in a Global World



*By Hans Chr. Schmidt,
Danish Minister
of Food,
Agriculture
and Fisheries*

Globalization

The future will include a lot of different challenges for the Danish food sector as well as Danish society in general. Globalization is perhaps the most important of these challenges.

One of the main features of globalization is the increasing trade among countries all over the world. Furthermore the international competition will increase. These two factors will lead to an estimated rise in global production and income.

Increasing global income is expected to lead to a higher income for consumers, not least in regions like Asia and Latin America. Increasing income is expected to lead to an increasing demand for food products, and in particular for the more processed types of food products.

Environmental concerns

Increasing global income, more global trade and the derived higher demand for consumer goods - incl. processed foods - could pose a threat to the environment in many parts of the world.

This combined with anticipated climate changes means that we could - and probably will - face a situation in the future, where the need for new and creative solutions for sustainable production becomes even more essential, if we want to improve the environmental "state-of-play".

During the last decades, demands from governments as well as consumers have led the food sector to incorporate environmental concerns into more and more phases of the production process.

This increased focus on the environmental challenges is especially evident in Denmark and the other parts of the EU and has led to further environmental regulation, also in the food sector.



Photo Colourbox.

I feel certain that these trends will develop further and that the food sector in general should keep a strong focus on the environmental aspects of all phases of production and processing.

The Danish food sector is very efficient and is a world leader in developing and using new technologies that are environmentally compatible. The food sector - from farmer to researcher - has shown great skills in developing and sharing such technology and know-how across

the food chain. This is a very important value-adding element.

In this respect, it is my opinion that the Danish food sector has the right "tools" to become a world leader, when it comes to developing and exporting abroad such future-oriented solutions that are invented and tested at home.

Sustainable production

But the competition is tough and to become a winner in the race we continuously need to focus on creating and improving business opportunities and assuring the best possible regulatory framework for the sector.

In terms of regulatory framework, some of the underlying issues are addressed in the "Multi-Annual Plan for a Sustainable Danish Livestock Production". One of the focuses of this report is on technology in the Danish livestock production. The report identifies some of the issues and paths within research, innovation and demonstration that we should concentrate on in the future with the aim of a sustainable Danish livestock production. With this aim, the report can be an inspiration also for other parts of the Danish food sector.

It is in any case true that sustainable forms of production represents a major opportunity for the Danish food sector and I think we should welcome the challenge, if we want to prepare for the future.

It is my hope that by putting further emphasis on the development and use of sustainable technologies and solutions, the Danish food sector will strengthen its role at the cutting edge of sustainable production. ■

The
NON trans fatty acid
solution

Your government is about to ban trans fatty acids. The consumer is ready to dump it. Are you ready to produce without it?

Trans fatty acids threaten the health by increasing the risk of heart diseases and type II diabetes. Europe has taken legislative measures to ban trans fats and the US FDA* recommends reducing them to less than 1% of energy.

To solve the problem you not only have to change raw materials, you also have to alter the manufacturing process for many products e.g. cookies, cream fillings, puff pastry and most importantly margarine and shortening.



Perhaps it might be just a small detail in the production that brings your product ahead in the competition.



At Gerstenberg Schröder extensive trials have led to the development of processing lines based on our core products, scraped surface heat exchangers and emulsification equipment, that will meet the new challenges. It's at your disposal – cost-efficient and easy to implement.

*For further information please visit US Food and Drug Administration, www.fda.gov

Even though it looks and tastes beautifully – if it contains *trans* fatty acids it might be harmful to the health.

Gerstenberg
Schröder

Environment

- From Farm to Consumer



By Jan Dalsgaard
Johannesen,
Corporate
Environmental
Manager,
Arla Foods

Arla Foods has for many years been taking a systematic approach to environmental improvements. Our environmental work started at the sites where routines were incorporated for minimizing the consumption of resources and discharges to the external environment.

Later, elements such as transport, packaging and the environment at the individual farms have been included, so that our environmental work today comprises the entire chain from farm to shop.

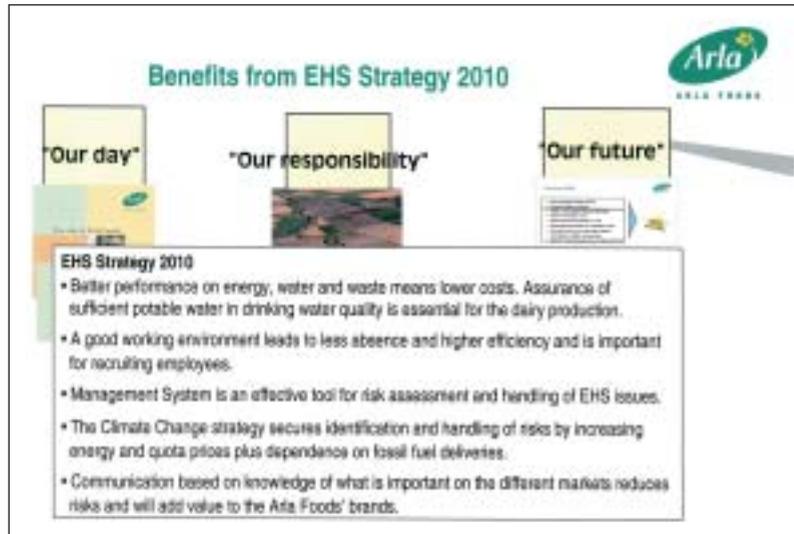
Arla Foods' environmental policy is an integrated part of the company's overall policies; *"Our responsibility"* which is managed by the Executive Management Group.

In 2006, a new strategy was prepared for the area: Arla Foods Environment, Health & Safety Strategy 2010, which is based on the company's policies, values and strategies.

The environmental strategy includes a number of specific objectives that are to ensure that the environmental work is both proactive and efficient - for the benefit of the environment and Arla Foods, both in the short and long term.

Arlagården

The environmental work begins at the farm where the milk is produced. The quality programme Arlagården



(the Arla Farm), which, among other things, sets up environmental and animal welfare requirements, applies to all Arla Foods milk suppliers in Denmark and Sweden. Requirements and recommendations in terms of nature and diversity, the use of waste-water sludge, the preparation of nutrient balances contribute to ensuring a clean environment.

Organics

Arla Foods is the world's largest producer of organic food products. In Denmark alone, consumers can choose from 50 different organic products in the Harmonie range. The basic principle behind organic farming is that it should be as sustainable and environmentally friendly as possible. For that reason, no chemical pesticides or artificial fertilizers are used.

Dairy cows at organic farms are only fed organic feed. During the

summer months, they graze and in the winter they have access to exercise.

Water

In the food industry, large quantities of clean water are used, primarily for cleaning purposes. Arla Foods has an annual consumption of approx. 14 million cubic meters of clean water, corresponding to the consumption of 80,000 households. One of our main focus areas is to optimize the water consumption as well as cleaning the process waste water so that it does not impact the environment.

Climate change

Global warming is high on the agenda, and Arla Foods has taken many initiatives to reduce the emission of CO₂ and NO_x to the atmosphere.

When extending or building new plants, environmental aspects are

included already in the projecting phase. Environmental impact assessments are prepared which, among other things, show the consumption of energy and water as well as the impact on the environment. By subsequently setting up environmental requirements for purchasing and by using the best available techniques at the dairies, Arla Foods contributes to ensuring more efficient use of resources as well as optimizing the cleaning processes so that the discharge to the environment is in compliance with applicable standards.

The environmental improvements gained are not only a result of environmentally conscious behaviour and investments in environmentally friendly technologies. In recent years, Arla Foods has focused on the use of environmentally friendly types of energy, and in this connection it is worth noting that 30 per cent of the energy consumption in Sweden for

Arla Foods' production is based on wood chips.

Transport

Transport has been a major contributing factor to reducing NOx emissions for several reasons: ongoing investments in modern vehicles which generate less pollution, planning of routes to avoid unnecessary driving, training of drivers to make them drive more economically and installation of computers in many vehicles to monitor the consumption of diesel.

Packaging

When developing new packaging, we take into consideration what we can do to minimize the environmental impact. We have for several years used LCAs (life-cycle analyses) to assess the environmental impact of the individual packaging materials. The knowledge obtained from

these analyses has enabled us to choose the packaging types with the least environmental impact.

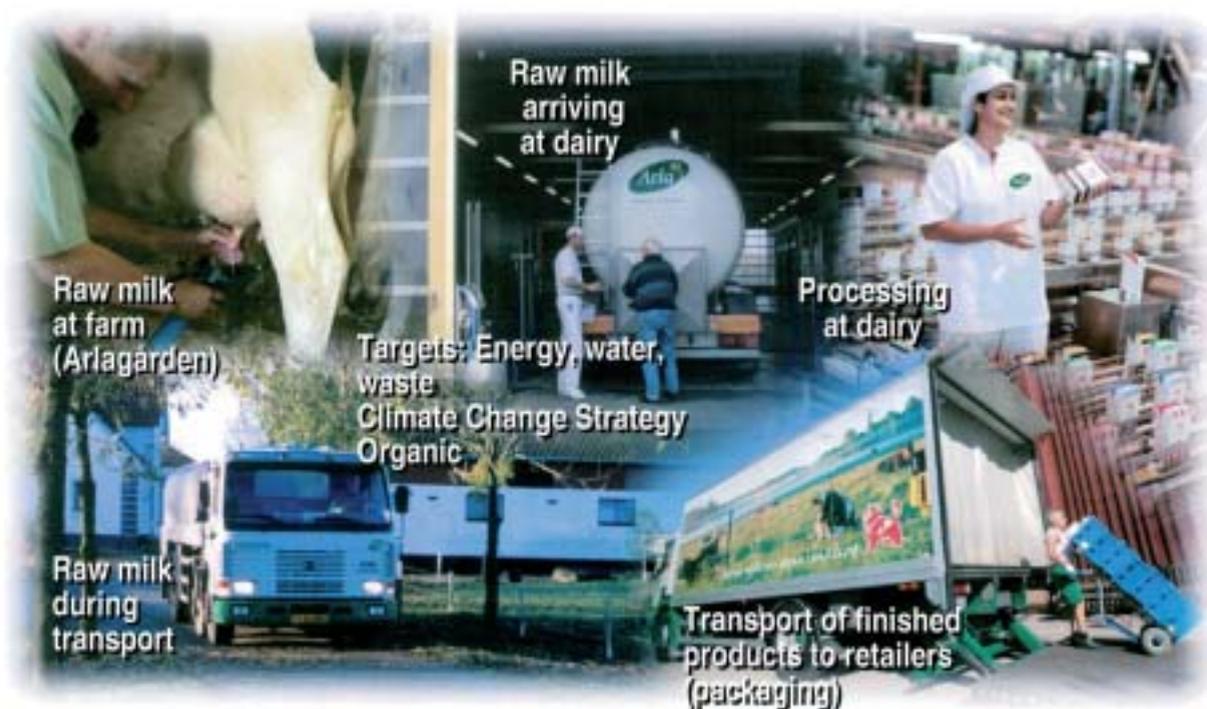
It should be mentioned, however, that the choice of packaging types to a very large extent is based on tradition. A good example of this is the fact that milk is typically sold in cartons in the Scandinavian countries whereas it is mainly sold in plastic containers in the UK.

Environmental management

Management systems within the environment and energy have contributed to making the environmental work in all business processes more systematic. Targets are set up, audits are performed and followed up on, which help creating continuous improvements for the benefit of both the company and the environment.

Sound environmental efforts always have a positive effect on the company's bottom line. ■

Environment from farm to consumer



The Environment in Focus



By Orla Nissen,
Sales Director,
DSS Silkeborg

DSS Silkeborg is an engineering company focussing on membrane filtration for the dairy industry. We have only one product line serving only one industry and, therefore, we must be very specialised in all aspects of what we do.

To maintain the competitive edge, DSS must keep the environment very much in focus. With no in-house production, the responsibility for the environmentally friendly manufacture of our products to a large degree lies with our sub suppliers. The essential DSS contribution in this respect lies in the design, specifications and manufacturing instructions, where we must have clear focus on minimising any impact on the environment.

The manufacture of our products is one thing, but we see a much more long-term global environmental effect in developing systems and process solutions with focus on our customers' energy and effluent efficiency. This is where we see innovative thinking making a huge impact on the bottom line.

Minimisation of the power consumption

A pressure and cross-flow driven process like membrane filtration requires a relatively high input of electrical power. To produce this, it is necessary to burn fossil fuel as other sources like wind, wave and solar energy still counts for only a small part of the total electrical power required for private and business use.

About 73 million hits appear when searching Google for "global war-

ming" on the Internet. Many articles deal with the "Kyoto Protocol" which is The United Nations Framework Convention for climatic changes. The essence of the Kyoto Protocol is a legally binding agreement between the industrialised countries committing them to a collective reduction in greenhouse gas emissions. The overall reduction is 5,2%, based on 1990 levels, but when projections for the activity-based increase until year 2010 is taken into account, the reduction required is almost 30%. So far, more than 200 countries have ratified the agreement.

Only by introducing new technology can such targets be met. Within the field of membrane filtration DSS has introduced a device that reduces the power consumption by up to 30% maintaining the plant output. A typical large-scale plant can use 250 kWh/h, equal to 6,000 kWh/day. 325 production days gives 1,950,000 kWh/year, and a 30% reduction equals 585,000 kWh/year. Recalculated into carbon dioxide this is just over 250 tons CO₂ emission per year. Furthermore, savings in the power uptake also means less generation of heat and the subsequent saving in cooling equals about 60 tons CO₂ per year ~ totally > 300 t/year.

Minimisation of the effluent impact

Effluent impact on the environment from dairy processes is inevitable - in many cases, however, it can be reduced significantly by applying membrane filtration.

Effluent is product or product components deemed non-recoverable and, therefore, discharged to effluent treatment. If this product or these product components can be recovered in primary or secondary products, significant savings in total effluent impacts can be achieved.

On top there is an economic incentive in reducing effluent charges and at the same time recovering product or product components in sel-

lable products - this could be existing or new products.

Recently, DSS has supplied a number of membrane filtration systems where the principle of eliminating effluent from secondary streams was successfully implemented.

It is not possible to apply general figures as the financial benefit very much depends on local conditions. One recent example shows that where a traditional set up would give an effluent discharge in terms of a by-stream and thereby a loss of 210 kg dry solids per day, a slight modification of the plant configuration could save product components amounting to about 68 tonnes of dry-basis sellable primary product per year. The producer did not only gain valuable product, he also saved the cost of effluent treatment of the equivalent tonnage. The above was achieved simply by setting up the plant configuration slightly differently, while still maintaining the final product.

DSS strategy

In the coming years it is the strategy of DSS to maintain the current status of being totally focussed on membrane filtration for the dairy industry - thus maintaining our status as a specialist company within our field.

Our business platform allows for expansion into other separation technologies and/or other industries. This could typically be done by strategic corporation with other companies specialised within a relating field of expertise.

DSS Facts & Figures

Product line: Membrane filtration systems and replacement membranes.

Market segment: Global dairy industry.

Turnover: EUR 10-15 millions.

Growth projections: 10-15% p.a.

Type of business: Engineering company.

No. of employees: 34. ■

Hygienic Precision

Process Instrumentation



Baumer supplies a wide range of hygienic, stainless steel instruments for the dairy industry:

- Pressure gauges, -transmitters and -switches
- Thermometers, temperature transmitters and -sensors
- Level transmitters and -switches
- Conductivity transmitters

 **Baumer**

Baumer A/S · Jacob Knudsens Vej 14 · 8230 Aabyhøj · Denmark
Tel: (+45) 8931 7611 · Fax: (+45) 8625 6577
info.dk@baumerprocess.com · www.baumerprocess.com

Micro Dosage Precision

Minimizes Waste while Optimizing Quality



By Jens Gøbel,
Business Manager,
Siemens Flow
Instruments

By means of a coriolis flow meter installed in a micro dosage (MD system) astonishing precision can be obtained when mixing and dosing ingredients in the food and dairy industry. The main advantages of such a feature include minimized production waste, optimization of product quality and improved efficiency by means of a better integration between the mass flow meter and the automation system controlling the process.

When dosing ingredients for products within the food and dairy industry it is extremely important to make sure that the ratio of the different ingredients always remains the same. This ensures a consistent quality while minimizing the amount of production waste that has to be discarded for quality reasons. Results

like these can be obtained by incorporating a MD system in the production line.

High precision MD Systems

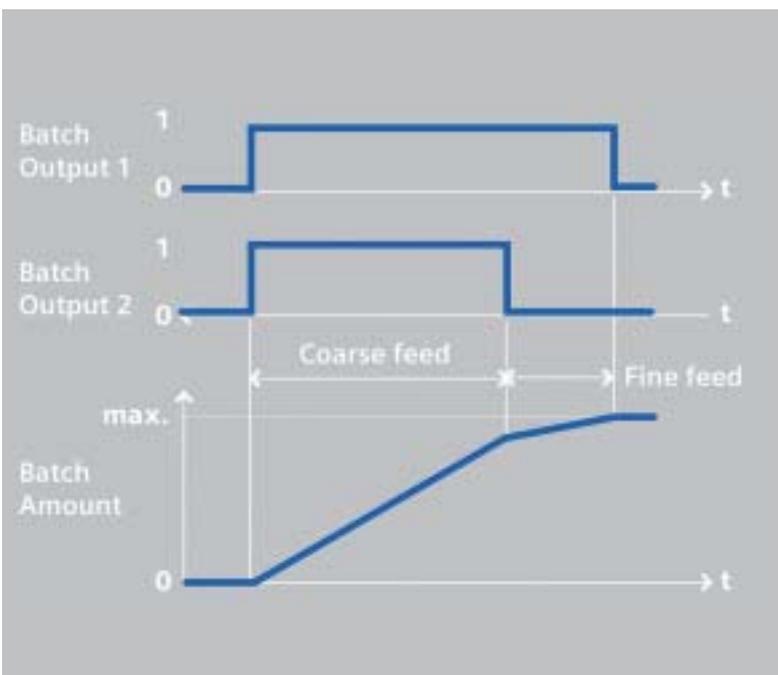
A MD system consists of a complete flow meter comprising a transmitter and a sensor. The major strength of the MD system is its ability to meas-

ure and control the flow of even very small quantities down to two grams/sec. This feature makes it an invaluable tool for producing e.g. additives and ingredients where only a minimal variance in the ingredient amount can make a big difference or when making ingredients that are particularly costly.

In order for MD systems to achieve their astounding precision it is crucial that they are equipped with fast and reliable flow measurement devices. They have to live up to requirements such as high accuracy, versatility and communication compatibility if they are to guarantee that a MD system performs at its best and that manufacturers can fully reap the benefits of their investment.

Coriolis flow meters

A solution that fits these prerequisites perfectly is the coriolis mass flow technology and specifically the SIFLOW FC070 flow transmitter from Siemens. As with other coriolis flow meters, it is extremely accurate with values of $\pm 0.1\%$ of the flow rate. In addition, the accuracy is not affected by changes in media temperature, density or viscosity, which normally pose problems for other flow measurement technologies. Last-



The two-stage batch of the MD system equipped with a FC070 coriolis transmitter makes it possible to perform high speed dosing with high accuracy.

ly, the coriolis technology makes it possible to measure a variety of process parameters simultaneously.

Apart from these characteristics shared by most coriolis flowmeters, the FC070 has some additional features that further enhance the performance of a micro dosage system. The main element is the batch system, which consists of a fully autonomous 2-stage batch controller with adaptive compensation for fine and coarse dosing. This feature makes it possible to perform very accurate dosing at very high speeds with batch cycle times as short as 220 mSec and a batch start delay at only 50 mSec. So in highly dynamic batch applications such as those used in the dairy and food industry, a MD system equipped with a FC070 will make it possible to measure even the smallest amounts ensuring a consistent food quality.

Hygiene

A factor that has a decisive impact

on the product quality and the minimization of waste is the hygiene. Since hygiene is such a critical issue within the food and dairy industry, MD systems that consist of a FC070 transmitter and a coriolis sensor have a one-pipe design that is easy to clean. The result is a cost efficient maintenance and a very high degree of product safety and quality. If this is combined with the compact transmitter design of only 40mm, the MD system is so small that it can fit virtually anywhere; even away from the processes it controls. This way, possible decontamination issues can be avoided.

Control unit

Further contributing positively to the food quality is that a FC070 equipped MD system keeps control of the entire ingredient mixing process in the event of a fault in other systems. In addition, it can communicate readily with Siemens Simatic automation systems by help of

standardized and efficient user interfaces based upon Simatic Manager, PCS7 or Simatic PDM. This enables the MD system to act as a control unit freeing valuable human and technological resources to perform other tasks.

So incorporating MD systems in the production line has several benefits within the dairy and food industry: an extremely high dosage precision, superior and consistent product quality, great flexibility in that it is possible to make minimal adjustments to the dosage ratio and lastly, the ability to gain optimal production benefit.

Future-proof

The name behind FC 070 is Siemens. Siemens has a history of more than 30 years' innovation in flow metering, providing not only stand-alone components but total solutions for a broad range of industries and applications. ■



eurofins | Steins Laboratorium

Dairy farming partner

- Milk analyses
- Product analyses
- Water analyses
- Certification
- Consultancy
- Hygiene
- Environment

Tel. +45 76 60 40 00
www.eurofins.dk

The advertisement features a central image of a woman in a white lab coat working in a laboratory. To the right, there is a vertical strip of three smaller images: a pig, a cow in a field, and a close-up of a cow's face.

Continuous Production of



By Klaus Funch Høyer, M.Sc. Dairy Science & Technology,



and Pernille Kirkeby, M.Sc. Food Science & Technology, Manager of Marketing & Technology, Gerstenberg Schröder A/S



Gerstenberg Schröder Consistator®.

Recipe

The recipes below for cream cheese and pizza cheese have been tested in our pilot facilities with success.

At first, the dry ingredients are mixed with water and the required quantity of melted fat and oil is subsequently dosed into a preparation tank at approx. 50°C. Hereafter, pH is adjusted to approx. 4.5 for cream cheese and approx. 6 for pizza cheese with lactic or citric acid. Finally salt is added.

Emulsifying salt is typically sodium phosphate and trisodium citrate, and both ingredients offer good melting down properties and stability of the final product. During cooking, the emulsifying salts help to change some of the proteins from an insoluble form to a soluble form, and hereby these proteins can emulsify the fat. It is well known that soluble proteins such as sodium caseinate are excellent emulsifiers because of their separate hydrophobic and hydrophilic regions in the protein molecules. The amount of melting salt added varies from 2.5 to 4.5%, depending on the type of melting salt being used and the desired consistency of the final product.

Introduction

Cream cheese and pizza cheese are traditionally based on milk components but these can be substituted by other less expensive raw materials. Substitute and imitation cheese is commonly called “analogue” cheese. These cheese types use casein which is a milk by-product and vegetable oil in place of the expensive milk fat offering not only cost savings but also functional advantages. Today, many producers of analogue cheeses use a batch system which has certain disadvantages such as higher risk of post contamination of the final product. Trials on pilot scale show that it is an advantage to produce analogue cheese continuously on a Consistator® plant from Gerstenberg Schröder (GS) and that the system offers flexibility as it is possible to produce various kinds of analogue cheese on the same line.

Consistator®

The Consistator® unit can be described as a specialised type of scraped surface heat exchanger or indirect heat exchanger. The design is more complex and sophisticated

when compared to other heat exchangers. Due to the design advantages, the Consistator® units are often used for the continuous production of high viscous products.

A typical recipe for analogue cream cheese	
Emulsifier and stabiliser:	3.1%
Skim milk powder:	7.0%
Na-Caseinates:	1.5%
Modified starch:	2.5%
Salt:	0.5%
Hardened fat (MP approx. 40-42°C):	11.0%
Liquid oil:	11.0%
Water:	63.4%
A typical recipe for analogue pizza cheese ⁽¹⁾	
Hamulsion® NSN containing melting salts:	3.5%
Rennet casein:	17.0%
Vegetable fat (MP approx. 40°C):	30.0%
Cheese flavour:	1.0%
Salt:	1.0%
Water:	47.5%

Reference (1): http://www.gchahn.com/frameset_en.html (Hahn & Co., Lübeck).

Analogue Cheese

Process description

Analogue cream cheese: The mixture is supplied from the preparation area at approx. 50°C to the SSHE in which it is pasteurised at 85°C, held at the temperature and subsequently transferred to the homogeniser in which it is homogenised at 200 bars. If needed, the product can be cooled to approx. 67°C and diverted to the buffer tank for filling. If different kinds of species or fruit (e.g. pineapple) are part of the product specification, these can be added here or in a separate tank after homogenisation.

The objective of the thermal treatment is to prolong the shelf life of the product and by the swelling of the starch to give the desired consistency of the final product.



Quality requirements for cream cheese are a good spreadability and a creamy texture.

The heat treatment up to 85°C for a certain time reduces the number of undesired micro-organisms.

The homogenising pressure is important for the final texture of cream cheese. If it is too high the texture gets to firm, while too low pressure results in an open texture.

Analogue pizza cheese: The production of analogue pizza cheese is almost identical to the process for cream cheese except that the homogenisation process is avoided.

However, it is a more sophisticated process because the final texture of the product is highly affected by the temperature, time and shear. It is important to find the right balance between these parameters to get a product with the desired texture. Typically, the product is heated from approx. 30 to 85°C and held at this temperature for a certain time. During this period, the gelatinisation of the protein occurs and a network is created. The melting salt creates a stable emulsion and improves the melting down properties of



Quality requirements for pizza cheese are good shred properties, a good stringiness and good melting down properties.

the final product. The shear in the SSHE is also essential for the final texture of the product, because it affects the final stringiness of the product. After heating the product goes to a buffer tank for hot filling. As the cheese firms up at lower temperature, hot filling is required in order for the product to be workable when packed in sausage-shaped bags or bag-in-box.

To avoid colour change from white to reddish due to maillard reaction or browning fast cooling to approx. 10°C is required after filling.

Process flow

A PI sheet (Figure 1) for production of cream cheese and pizza cheese is shown in the flow diagram below.

For more information on Gerstenberg Schröder A/S please visit our homepage www.gs-as.com. ■

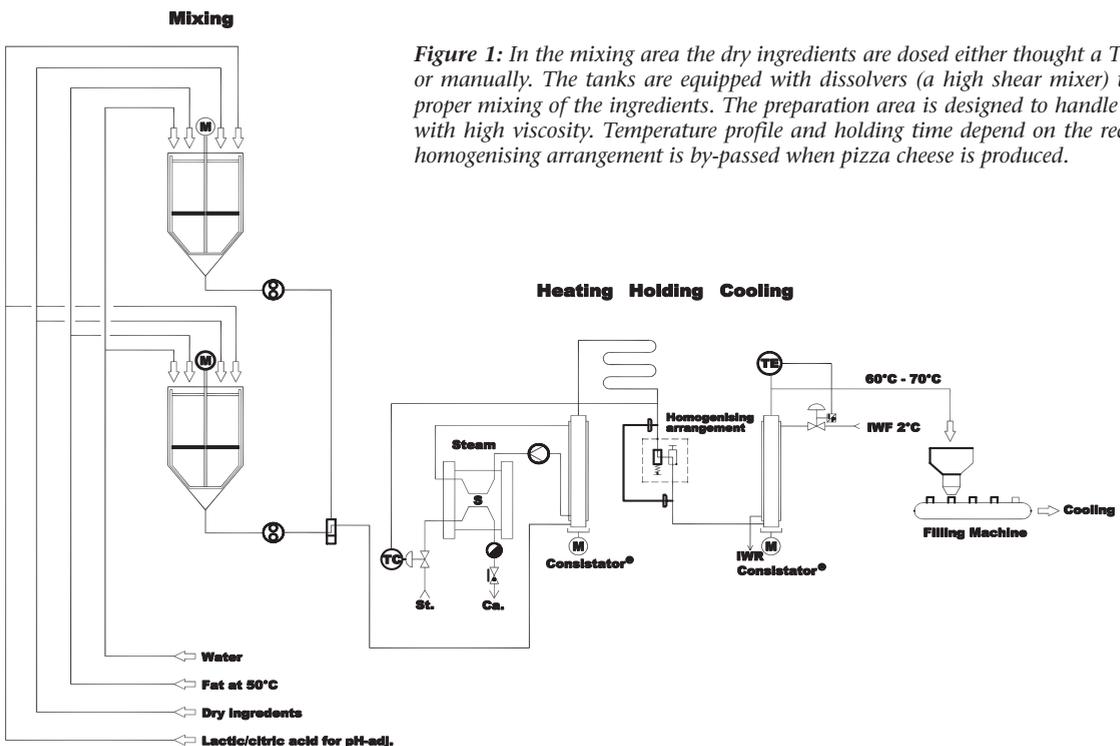


Figure 1: In the mixing area the dry ingredients are dosed either through a Triblender or manually. The tanks are equipped with dissolvers (a high shear mixer) to ensure proper mixing of the ingredients. The preparation area is designed to handle products with high viscosity. Temperature profile and holding time depend on the recipe. The homogenising arrangement is by-passed when pizza cheese is produced.

Environment

In order to ensure the optimal design it is required that the supplier is fully acquainted with the plant performance, in particular in case of retrofitting of older plants.

There is a possibility of obtaining an energy saving (steam, electricity, oil, gas) of up to 20% of the total energy demand required for the spray drying.

With the today's prevailing energy prices, a pay back time of merely 2-3 years is not unrealistic.

It should also be mentioned that an investment of this kind is in compliance with the stringent regulations for reduction of CO2 emission within the dairy industry.



Niro produces various purpose-designed heat exchangers including some designed for cleaning in place (CIP).

About Niro A/S

Niro is a world leader in industrial drying, with spray drying, spray cooling, flash drying, freeze drying, granulation and fluid bed processing as core technologies.

Plants are supplied to the dairy, food, coffee, chemical and pharmaceutical industries.

The Niro companies are part of the Process Engineering Division of the GEA Group. ■

w w w . k e o f i t t . d k



NEED MORE PROOF?

When it comes to sterile sampling processors need to be absolutely sure. Keofitt® never compromise on approvals and validation. More than 50.000 valves in operation.



keofitt[®]
WORLD LEADERS IN STERILE SAMPLING™

Keofitt a/s · Hans Egedes Vej 19 · DK-5210 Odense · Tel. +45 6316 7080 · Fax +45 6316 7081 · keofitt@keofitt.dk
Distributører: DK: Gustaf Fagerberg A/S · +45 4329 0200 · www.fagerberg.dk SE: EGTE-Teknik AB · +46 155 26 85 20 · www.egte.se

Gourmet Pipes

- for the Food and Drink Industry



By Christian Schröder,
Export Manager,
LOGSTOR
Industry

Traditional piping

When using traditionally applied insulation in cooling pipe systems, there is a great risk of developing condensed water in the insulation. This leads to increased energy consumption since the water reduces the properties of the insulation. Furthermore, it can lead to corrosive problems in the carrier pipe such as outside rust and galvanized corrosion. The pipe supports may also be a potential risk factor because they may cause cold bridges leading to energy loss.

Pre-insulated piping

The solution to these problems is pre-insulated piping. LOGSTOR's pre-insulated pipe solutions feature polyurethane foam with an exceptionally fine cell structure. It provides a consistently dense layer of thermal protection around the carrier/service pipe. Outside there is a black or white polyethylene (HDPE) plastic jacket. The traditional risks of condensed water in the insulation are eliminated with watertight HDPE jackets.

Obvious benefits

The benefits are obvious. The pipe systems can be high- or low-pressure cleaned to avoid bacteria, since the jackets resist everyday high- or low-pressure chemical cleaning and are



No build-up of bacteria, since the jackets resist everyday high- or low-pressure chemical cleaning and are also resistant to salt water, UV-retardant additives and different chemicals.

also resistant to salt water, UV-retardant additives and different chemicals. Furthermore, the pre-insulated pipes are supported directly on the jacket surface. Problems such as condensed penetration, unsealed connections between support and jacket and destroyed mastic are there-

fore eliminated, and arising of traditional cold bridges and icing around the supports is avoided.

The LOGSTOR pipe system thus stands out as a simple, clean and nice-looking solution. For further information contact the author of this article, tel. +45 20 88 35 69. ■

SIFLOW FC070

Coriolis mass flow transmitter
As easy to install as playing a CD



Capable of measuring all liquids and gases, SIFLOW FC070 masters the full repertoire of flow applications and industries.

SIFLOW FC070 is an ultra-compact, space-saving and versatile coriolis mass flow transmitter with seamless integration ability: the self-configuration and communication functionality for quick and total integration into all SIMATIC automation systems. Install effortlessly, empowered by ...

- Direct integration into SIMATIC S7 automation system
- User interface standardized with SIMATIC Manager, PCS7 and SIMATIC PDM
- Compatibility with the entire range of SITRANS F C coriolis sensors
- Ultra-compact size: encapsulated in a 40 mm S7-300 housing

... as easy as playing a CD.

Lose Less. Keep More.

www.siemens.com/flow • www.siemens.com/processinstrumentation

SIEMENS

E20001-F190-P730-X7600

Sterile Yoghurt Samples

add a Fresh Note to the Breakfast Table



By Steen Sørensen,
Sales Manager,
Keofitt A/S

Arla Foods is one of the world's leading producers of dairy products such as cheese, milk and yoghurt. At Denmark's largest yoghurt dairy, in Brabrand, Arla produces a large volume of soured milk products that are fresh and ready every day in shop refrigerators and on consumers' breakfast tables in Denmark, Scandinavia and the EU.

Sterile samples

Brabrand Dairy products include junket, yoghurt and various desserts. These are poured into tubs and cartons on an aseptic bottling line supplied by Kronos AG, based in Germany, and specially designed for long-life dairy products.

Michael Wadsager, Head of Production at Brabrand Dairy, considers the importance of sterile quality control: "Today yoghurt is made with many different fruit flavours, therefore demands on the microbiological quality of the fruit added are also increasing. Overripe berries can quickly ruin a whole yoghurt production."

Therefore, the aseptic bottling line has three sterile sampling valves installed for checking the flow of ingredients into the bottling machine (H₂O₂, water and the finished dairy product). The valves are used to take microbiologically safe samples to control the micro organisms in the flows of ingredients.

A Keofitt valve in the process line itself assures that the fruit is pure in terms of bacteria before the yoghurt is mixed with the berries. As the production involves pieces of berries and fruit, the valve used must have an opening large enough for taking samples that include particles and have the correct viscosity.

The valve also prevents cross-contamination, i.e. stops the product and sample from becoming mixed because the valve is sterilised before the sample is removed. The method is safer than using a micro port, which involves a needle stuck through a membrane, as this risks inserting micro organisms from a previous sample into the product.

The most important valve

A special valve is installed between the process line itself and the aseptic section of the dairy. If a problem arises in the finished and packed product, this valve can help trace where the problem arose. A sample from the valve can detect whether the product was infected in the process line itself or whether the problem originated in the aseptic bottling section.

"The valve that separates production from bottling is, in theory, the most important valve in the whole dairy because it detects whether any unwanted bacteria are present in the process line or in the aseptic bottling line," says Michael Wadsager.

Increased competitiveness

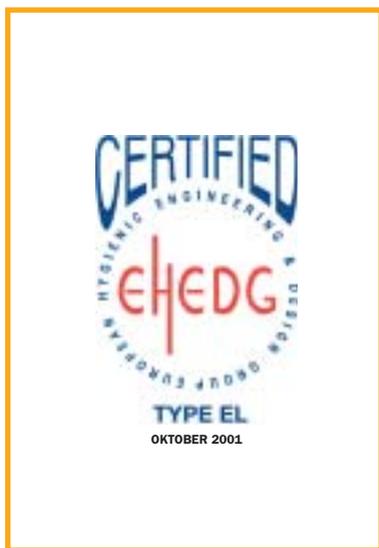
Thanks to safe bacteriological controls, Brabrand Dairy can run 48-hour production cycles. The uptime for the bottling line has been increased from 36 hours to 48 hours for each batch.

The valves save time e.g.: The longer uptime means eight hours' less downtime a week for cleaning. Every hour, 15,000 cartons pass through the bottling line. Eight hours' more uptime multiplied by 15,000 yoghurt cartons equals 120,000 more cartons a week.

For Arla Foods Brabrand Dairy, sterile sampling is a profitable investment in long-term quality improvement.



A total of 14 Keofitt valves are placed at strategic points in the process line, from berry delivery, through production, to bottling of the finished products. The valves are an important supplement to the dairy's own comprehensive controls which include bacteriological, chemical, physical and flavour-related sampling of each batch produced.



The valves have been awarded a number of approvals and certificates, including 3A approval and EHEDG type EL certification and full traceability with 3.1 certificates.

Save on drilling and welding

Brabrand Dairy's 300-m-long advanced Krones bottling line is Denmark's only - and longest - of its kind. Sterile quality control is a particular challenge in long pipe systems, where the only alternative for sterile testing of the product is through invasive measures.

Without the sterile valves at each section of the process line, if the need arose to localise contamination, the dairy would have to drill holes in the pipes, manually remove samples and then subsequently weld up the holes. This would be a relatively expensive and complicated solution because the production would have to stop or continue with a new flow - which would then constitute a contamination risk as it would also have to be cleaned. As each measure taken comprises a potential contamination risk, the correctly position-

ed valves are the best way of eliminating external contamination.

"With Krones bottling line and Keofitt's valves, we have efficiency and quality control in one and the same solution," explains Wadsager.

Improved traceability

Localising possible sources of contamination is vital in yoghurt production, which must fulfil increasingly strict demands from the authorities and consumers regarding food health and safety.

The key to efficient traceability is to isolate the critical factors. Krones' bottling line can be divided into 12 sections, each with its own critical factor. At each intersection or point in the bottling line where e.g. water, steam or the product is added, the machine is equipped with sterile sampling valves. Every production variable is therefore isolated and tested.

The dairy can trace any unwanted bacteria early in the production process, mainly by sterile testing of the fruit before it is mixed with the yoghurt, and then testing the products just before they pass into the bottling line. Early tracing prevents the problems from spreading, ruining large quantities and causing long production stops.

If the dairy's own laboratory or finished sample tests indicate possible contamination, e.g. unwanted bacteria, the fault can be traced back in the process by testing at each valve/intersection. "Aseptic valves at critical points in the bottling process ensure full traceability of contamination," explains Michael Wadsager.

The fastest route to the shelves

A shorter route to market and longer shelf-lives are two vital parameters for success in a competitive global food market. And once again, sterile valves play an important role by speeding up the manufacturing process and thereby ensuring longer shelf-lives for the fresh products.

As production of soured milk products takes place using controlled bacteria growth, the manufacturing process must be as short as possible without impairing the natural - and

necessary - timeframe. The closer the dairy can monitor the quality of the organic development during the manufacturing process, the faster the process.

"Microbiological tests shorten lead times in production and increase flexibility. With aseptic quality control, we offer our customers shorter times to market and consumers get fresher dairy products in their refrigerators," explains Michael Wadsager.

Keofitt A/S

In just 20 years, Keofitt, located in Odense, Denmark, has created a solid name within safe process hygiene by developing the world's best valves for all kinds of sampling. Keofitt valves are the established standard in the brewing industry, with breweries all over the world using Keofitt valves to monitor beer fermentation. Today, Keofitt valves are used by leading companies in industries such as breweries, dairies, pharmaceutical and biotechnological manufacturing. Read more on safe sampling at www.keofitt.dk . ■



Facts on the Keofitt solution

- 13 W9 valves, pneumatic, with optional manual operation.
- 1 W15 valve, manually operated.
- The valves can be sterilised with steam before and after sampling.

Keofitt offers a complete programme of valves of various sizes, connections and operating options for sterile sampling. The programme therefore covers sampling of products with viscosities from 0 up to 250,000 cP and with particles of up to 17 mm in diameter.

A Safe Journey with Lowered Energy Consumption



By Frederik
Wellendorph,
Key Account
Manager DK,
Tetra Pak
Processing North
Europe

The Tetra Therm® Lacta milk pasteuriser introduces 12% lowered energy consumption and innovative safety functions.

The Tetra Therm Lacta pasteuriser is a platform based unit for pasteurisation of low acid liquid dairy products such as market milk, cheese milk, yoghurt milk, cream and ice cream mix.

Energy savings - better profit

In dairy production, hot water circulation with sterile water is an energy-consuming procedure. With the Tetra Therm Lacta pasteuriser, the new energy hibernation function allows an 85 percent decrease by reducing power, steam and water consumption during this operation. This means that an overall energy reduc-

tion on the pasteuriser by up to 12% can be achieved. Part of the cost efficiency is the optimised processing and CIP sequences which has a positive effect on the overall up-time.

New levels of safety

Being prepared for the unexpected is vital for achieving optimised productivity. As standard, the Tetra Therm Lacta pasteuriser has a built-in safety device providing higher pressure on the pasteurised side. Furthermore, we have also minimised the pressure drop gap that occurred during partial discharge of the separator this is of course good news for

the safety-conscious.

With the Tetra Therm Lacta pasteuriser every step of the production is registered in the data log. The data log developed by Tetra Pak keeps track of times, processed volumes, temperature differences and CIP data. Being able to pinpoint the exact time and place of an eventual disturbance means that even the smallest volume can now be isolated and closely reviewed - meeting higher demands for tracking and traceability.

Design for future-proofing

Combining uniform design with modularity, the Tetra Therm Lacta pasteuriser provides rapid installation and commissioning of factory pre-tested units. The modularity also enables a high degree of customisation and units with perfect compatibility allow new configurations when new production requirements arise. Added to that is the aspect of ergonomic design which means short downtimes and easy access to all vital service points.

The Tetra Therm Lacta pasteuriser provides flexible solutions with standardised, well-proven options. It can also include stand-alone units for deaeration, separation, standardisation and homogenisation. Behind the Tetra Therm Lacta pasteuriser is the expertise and knowledge of complete milk processing solutions from Tetra Pak. ■

Innovative, advanced functions for energy savings together with new levels of safety makes the Tetra Therm Lacta unit a state of the art pasteurizer.



Superfos – part of your day



You probably know our customers better than you know us! But our products are everywhere, and their content is being used everyday at home and at work...

Whether it is hot or cold food, paint, cosmetic or pharmaceutical products – Superfos deliver high quality, easy-to-use packaging for the products that matter to you most.

We strive to add value for our customers and to create preference for their products.

www.superfos.com





Sustainability and Emerging Topics in Food Research and Education



By Birthe Jessen,
Consultant,
LMC,
Centre for
Advanced Food
Studies

Sustainable production and management of biological resources are highly ranked on the food policy agenda in EU. The present EU seventh framework programme thus finances research in utilisation of micro-organisms, plants and animals for the development of sustainable, eco-efficient and competitive products.

This focus is mirrored in the Danish government's objectives for future research at the universities. The Danish Council for Strategic Research not only supports these research themes, they also encourage and co-finance Danish participation in international research cooperation. We can therefore expect more projects on sustainable food production where environmental-friendly and natural resource-saving technologies are used.

Food research

Several food research projects within LMC have already had sustainability and environmental concern in food processing as important objectives. Project examples are:

- Gentle processing with the aim to enhance eating quality, ensure food safety and save energy.
- Microbiological quality of re-used processed water for the food industry.
- Food safety in organically produced raw milk cheese.

- Process optimisation by introducing online/adline sensor technology to use raw materials optimally and avoid product waste.

In the development of sustainable, safe, healthy and convenient products it is important to exploit technologies that are more environmental-friendly than current alternatives. This implies novel processing technologies and products that are less polluting and less resource intensive as well as ways to manage the resources more efficiently. Two examples are described to illustrate future options.

I: Biodegradable packing materials

Biopolymers that after usage as packing material for food products are biologically degradable are extensively studied these years. One of the few studies on products has been carried out at the Faculty of Life Sciences, University of Copenhagen.

Semi-hard cheeses were packaged in PLA (polylactate) and compared to the conventional material PET (polyethylene terephthalate). PLA is comparable to PET in mechanical properties but inferior in barrier properties and thereby protection against moisture loss and lipid oxidation. Shelf-life of PLA-packaged semi-hard cheese is 56 days compared to 84 days for conventional packaging. However, estimates of moisture loss indicate that more cheese in proportion to packing material surface provide adequate protection in PLA for 84 days. For products such as yoghurt and sour cream without barrier demands, PLA has proven fully applicable as packing material.

Biodegradable packing materials

are still too costly to produce. However, large-scale production of PLA will expectedly reduce the costs and make the price competitive to conventional packing materials.

II: Hygienic design reduces costs and environmental load

Research at the Technical University of Denmark has demonstrated that increased knowledge on important aspects of hygienic designed processing equipment and facilities results in equipment less prone to soiling and easier to clean.

A consequent use of hygienic design leads to a reduced consumption of chemicals and water for removal of the soil and a shorter cleaning time. Hereby the energy loss from the production line is lowered and as the running time of the pumps is shorter, also the energy consumption is lowered. All in all, hygienic design results in less environmental pollution.

Moreover, as the cleaning time is shortened, the production capacity is increased resulting in a better production economy.

MSc programmes

Education at the universities is research based and scientific results are obvious elements in the teaching of food science students. Therefore, sustainability and environmental concern, being emerging research topics, will undoubtedly be ranked higher on the future teaching agenda.

The importance of the issues is already reflected in one of the new master programmes: "Food production, innovation and management" that particularly integrate environ-

Environment



Yoghurt cups made of PLA for the German market.

ment technology and environment management. Examples of courses offered are: "Sustainable food production", "Sustainability and traceability systems", "Life cycle assessment" and "Organic production".

This master programme has shortly attracted students from other countries. It is expected that the programme will play a significant role in bridging the Danish master programmes on modern food production to the international arena.

Centre for Advanced Food Studies

LMC, the Centre for Advanced Food Studies, coordinates scientific activities and higher educations within

the food area at the Danish universities. It also serves as a unique partner for the private-public food sector.

The centre was established in 1992, highly encouraged by the private Danish food sector. In 2006 the universities and research institutions underwent a reform that left public food research to be carried out at four universities, see box.

At present students can graduate in food science from Faculty of Life Sciences, University of Copenhagen and from the Technical University of Denmark. Food research is additionally carried out at University of Aarhus and University of Southern Denmark. ■

Food Research

LMC is an interdisciplinary collaboration of research and education within food science and technology. The following universities take part in LMC.

Primary members: University of Copenhagen: Faculty of Life Sciences - www.life.ku.dk and Technical University of Denmark: FoodDTU - www.dtu.dk/centre/FoodDTU.aspx

Associated members: University of Aarhus: Faculty of Agricultural Sciences & MAPP-centre, Aarhus School of Business - www.au.dk and University of Southern Denmark: Faculty of Health Science, Faculty of Science - www.sdu.dk

Using Tetra Therm[®] Lacta Energy Consumption can be Reduced by up to 85%



 **Tetra Pak**
protects what's good™

Tetra Pak Processing North Europe
Søren Nymarks vej 13, DK-8270 Højbjerg
Phone:+45 89393939 Fax:+45 86295311

Tetra Pak's motto 'protects what's good' reflects the philosophy upon which we conduct our business in order to make food safe and available, everywhere.

Operating in more than 165 markets with 20,900 employees, Tetra Pak believes in responsible industry leadership, creating profitable growth in harmony with good corporate citizenship and a sustainable approach to business.

We work closely with our suppliers and customers on preferred processing and packaging solutions to provide convenient, innovative and environmentally sound products to millions of people worldwide.

Innovative Food Processing Plants - worldwide



By
Torben From,
Managing
Director,
FH Scandinox

High quality

FH Scandinox A/S has more than twenty-five years of experience and know-how within sale, engineering, production, installation and implementation of complete processing plants and equipment worldwide. We meet the requirements and needs of each individual customer within the liquid and semi-liquid food and pharmaceutical industry: Dairy, ice cream, food, margarine, soft drink and brewery are among the main sectors.

The hallmark of our products is quality. Quality before low-price has often proved to be the optimum solution, both regarding environmental considerations as well as low production costs - in the long term. Thus potential customers will find some of our earliest production plants still in full operation all over the world.

Engineering and testing

At FH Scandinox we have our own engineering department. Our skilled technicians always strive to provide a satisfactory solution in terms of clean technology, quality, hygiene, function and economy. In a plant solution it is possible to choose new and/or used - but fully renovated equipment.

Our workforce of committed, and highly experienced and flexible fitters, all experts in stainless steel, has completed many installations and

Clean technology is in focus at FH Scandinox as we develop knowledge-based dairy and food equipment that improves operational performance and efficiency while reducing costs and energy consumption.



commissions all over the world. All our field engineers have certificates in stainless steel TIG welding.

Our employees are highly educated with wide technical knowledge and "hands-on" experience, and our engineering department is equipped with high-technology AutoCad and 3-D working stations. At our two premises - both located in Jutland - we have projecting as well as testing facilities.

By the years we have also grown to be experts within building pilot plants for several kinds of food production. For safety reasons more and more producers prefer to do their own small-scale tests of the constantly growing

new types of foods available for the demanding consumers worldwide. As the correct technical criteria are crucial for our customers, we always perform thorough tests of the pilot plants.

Giant and micro plants

During the years we have achieved great experience in projecting and installing giant margarine as well as ice cream plants, the latest especially in the Middle East. Thus we have just finished Zarin Gahzal Co., one of Iran's largest ice cream factories.

This task included projecting, building and implementation of a complete plant for the ice cream pro-

duction based on 200.000 liters of milk per day. The facility consists of 2 x 10.000 liters mixing plants - running continuously for 20 hours - each day, 32 x 10.000 liters of ripening stations, and CIP-cleaning on 3 x 25.000 l/h production lines, including 22 freezers. Automatic Siemens PLC/PC process control is performed on Colour-Touch-Screens including operational panels, strategically placed throughout the production.

FH Scandinox has been a reliable supplier to the brewing industry for more than 20 years. Lately, we have achieved customers within the relatively new segment of micro-breweries. Modern consumers find the small scale trend interesting, and at FH Scandinox we believe that this kind of small scale local food and drink production will grow in the years to come. We are ready to meet this challenge and can offer our expertise already gained by the micro-breweries projects - but not least by our great experience within pilot plant projecting.

Environmental-friendly CIP

We strive to build food plants with optimized production capacity and a minimum of energy consumption. Thorough cleaning within production plants is necessary due to high quality demands of safe food production. But the cleaning process can be a heavy environmental task.

Cleaning-In-Place - CIP has been used for many years due to the decrease of hazardous waste water. CIP has lower energy costs and material usage, is efficient and thus more environmental friendly than conventional manual cleaning methods.

Correct projecting of both food plant and CIP are of great importance to achieve the utmost energy saving cleaning method. Our CIP systems are designed for automatic cleaning and disinfecting without major disassembly and assembly work. Depending on requirements, central or decentralized systems or a combination of the two can be installed. We are also able to pre-manufacture complete CIP units in our

workshop. The units will be delivered skid-mounted and ready to be incorporated on site.

One of our targeted action areas is development of individual environmental-friendly CIP systems which do not only meet today's demands but which are also designed to face the challenges of tomorrow.

FH Scandinox A/S

FH Scandinox has been in operation for more than 25 years. The company has 45 highly skilled employees working at the headquarter situated in Tarm and the department in Galten, Denmark.

FH Scandinox A/S is an international production, engineering and trading company that meets the requirements and needs of the following industries: Dairy, ice cream, food, margarine, soft drink, brewing, abattoir, agricultural, pharmaceutical, and technochemical. Please visit www.fhscandinox.com for more information. ■

Giving you the whole package





World-wide supplier
The partner in food process engineering



Kærhusvej 4, Hoven · DK-6880 Tarm · tlf.: +45 7534 3434 · www.fhscandinox.com

Analytical Solutions for Optimal Resource Utilisation



By Henrik Boisen,
Product Manager,
FOSS A/S

Rational use

Analytical procedures in the food industry have changed and the industry has a different approach to control and supervision today compared to one or two decades ago. Earlier, analyses were widely performed as chemical analyses or as indirect rapid methods. Now more manufacturers are focusing on at-line or even continuous, on-line analyses to optimise the product quality and to reduce waste.

On the subject of waste, the process control trend indicated above provides the practical explanation for one of the more altruistic lines in the FOSS vision: To contribute to the rational use of our planet's natural

resources and thus to the nutrition and health of the world.

At the same time, new regulations and directives often have to be dealt with for existing solutions and FOSS strives to adapt these new regulations soonest possible. The directives can be related to chemicals, instrument design or environmental considerations. One recent example is the lead directive.

Another, ongoing theme of the FOSS solution strategy has been to look at the need for analysis at critical control points throughout the supply chain - a demand that FOSS COO, Torben Ladegaard is keenly aware of today. "The challenges are coming faster than ever," he says, speaking at a conference held last year to celebrate the fifty year anniversary of the company.

Critical control points

The majority of the analyses performed in the dairy industry are on liquid products and final products in the state of powder or solid/semi solid products. Earlier, instrument technologies covered fewer components to be analysed, but with today's technology such as Fourier Transform Infrared (FTIR) and near infrared (NIR), a wider range of components are measured and more products are applicable.

The opportunity to take advantage of available process control concepts will develop further 'like flowing the production under a microscope'. Dairy companies are increasingly using continuous process analysers to improve production efficiency and quality in the growing and competitive global market. A few companies have already today taken

the next step where the process sensors are integrated in an automatic surveillance program making it as reliable as the best operator.

New analytical solutions

As the complexity of the production environment increases the need for process control (analyses) becomes evident. FOSS focuses on new solutions and particularly on process applications for future automation. One recent development is the NIR based XDS Process Analytics® (the successor for Process Analytics® System II) where the research effort was aimed at improved prediction performance and stability and not least calibration transferability/maintenance (Fig. 1).

Calibrations for some of our NIR bench instruments such as the FoodScan are available as Artificial Neural Network (ANN) for several applications. These ANN calibrations are in progress for XDS Process Analytics for some dairy applications to the advantage of food manufacturers. Similar, ready-to-use calibrations have already been available for FTIR solutions for a while. Instead of spending months for the development of individual instrument calibrations, the instruments of the new XDS generation can be standardised (makes them exactly alike) and be part of the control loop from the very first day of installation (Fig. 2). XDS is widely applicable on, for example, butter, cream cheese, quark, powder etc. in the dairy industry and chocolate, oil, sugar, flour, meat and other food products will also benefit from this technology in the future.

The development of calibration spectra, particularly the reference

Figure 1: XDS analyser.





Figure 2: XDS on work.

FOSS in brief

- World's leading provider of analytical instruments for the food, agricultural, chemical and pharmaceutical industries.
- Helps customers to improve profit, product quality and food safety.
- Products are not just instruments, but Dedicated Analytical Solutions. Solutions encompass indirect and reference methods are used from routine laboratory analysis to at-line and in-line process control.
- Founded in 1956 by Nils Foss.
- 1100 dedicated employees world-wide.
- Stable family-owned business with continuous investment in R&D in Sweden and Denmark.
- Strong global organization with focus on growth.
- Own sales and service companies in 22 countries.
- Represented in 97 countries.
- Turnover 2006 DKK 1.37 billion (approx. USD 245 million).

analyses have a high cost and in the past they have been well protected and considered as customer property. Nowadays, most customers see the advantages in contributing with a limited number of calibration

samples in return for a ready-to-use calibration that sets them up immediately with their new investment on the process floor. By reducing the number of reference analyses required, the world is saved for the disposal of the used chemical components used for some of the same reference analyses.

The process concepts must be designed as simply and reliably as possible and they must be easy-to-use for the operator. By removing the complexity, more process solutions will see the daylight to the benefit of the manufacturers business and the consumers' safety. ■

High-quality packages and complete packaging systems for dairies and food producers

Elopak Denmark • Tlf. 87 43 51 00 • www.elopak.dk

Chr. Hansen Cares



By Helle Rexen,
Journalist,
Communications
& PR, Chr. Hansen

As a responsible and value-based company, environment, occupational health and safety and working conditions are on the top of the agenda at Chr. Hansen, world leading food ingredients supplier.

“We want to contribute to a sustainable development, and therefore we are constantly strengthening our efforts within the environment and health and safety,” says Lars Frederiksen, President & CEO of Chr. Hansen.

A global producer with facilities at 40 locations all over the world, Chr. Hansen applies the latest knowledge and technology to develop, produce and market a large number of natural ingredients for a rich variety of foods.

Improving food and health

Based on Chr. Hansen’s vision to improve the quality of food and health for people all over the world, 2,500 employees are striving every day, everywhere, to pursue the goal through the company’s five values: Ambition - Performance - Accountability - Teamwork and Honesty.

“We set high, ambitious goals for everything we do, also in the environmental and health and safety field,” continues Lars Frederiksen. Until recently, he was also chairman of Chr. Hansen’s Environmental

Council. Now this position has been taken over by another Corporate Leadership Team member (Jesper Allentoft, Vice President of Global People & Organization) to signal the importance that top management attaches to this area.

“Last year, we established a new Corporate Compliance Function by a merger of legal and regulatory experts with specialists in implementing our policies and standards. This has created an even stronger platform for sound business practices. At the same time, we established The Global Environmental Council, which is working for a more efficient resource utilization on a global scale,” explains Lars Frederiksen.

Consisting of Vice Presidents of production from each production site worldwide, the global Council is the anchor point for driving the continuous improvement of the company’s environmental performance. The global Environmental Council oversees that the goals are fulfilled, providing the necessary resources and tools to do so.

More than just pretty words

Overall, the area is governed by Chr. Hansen’s global Quality and Environmental Strategy together with the global Environment, Occupational Health and Safety Policy. Two key sentences pretty much say it all:

- We want to ensure compliance with the highest standards in food safety and food security.
- We want to ensure that protection of the environment and of the



The first probiotic mozzarella cheese with Chr. Hansen’s BB-12® has just been launched on the Italian market. BB-12® is one of the world’s best documented probiotic cultures with beneficial effects on the gastrointestinal and immune system.

employees is incorporated in our daily activities, design and planning through employee involvement, commitment and training.

When Chr. Hansen's new culture plant presently under construction at Avedoere, DK, was projected, it was only natural that the "Global Regulations, Environment and Quality" department took part in the pre-project.

From day one, the environmental experts were included in the planning to ensure that these aspects were thoroughly considered, going to show that the policy is more than just pretty words.

Just like any other user requirement specification presented in connection with the construction of a brand new production facility, important environmental and health/safety elements were taken into account. Special focus is being put on establishing alarms preventing spill and surveillance equipment th-

roughly monitoring the consumption of water, electricity etc.

And once the plant comes into operation in 2008, it will be with number of health and safety advantages in the daily processes, among other things improved ergonomics at bag handling and reduced risk of accidents related to manual handling/cleaning.

Solid platform within the health trend

Just as Chr. Hansen assumes responsibility for the environment, the 133-year-old company with a turnover of more than EUR 500 million assumes responsibility for developing natural ingredients for healthy foods, in a close working partnership with its customers.

"The most important element in our strategy is to develop products with health functionalities that can reduce the risk of cardiovascular diseases and can help stimulate the

immune system in order to avoid other diseases," says Peter Olesen, Executive Vice President of Corporate Research in Chr. Hansen.

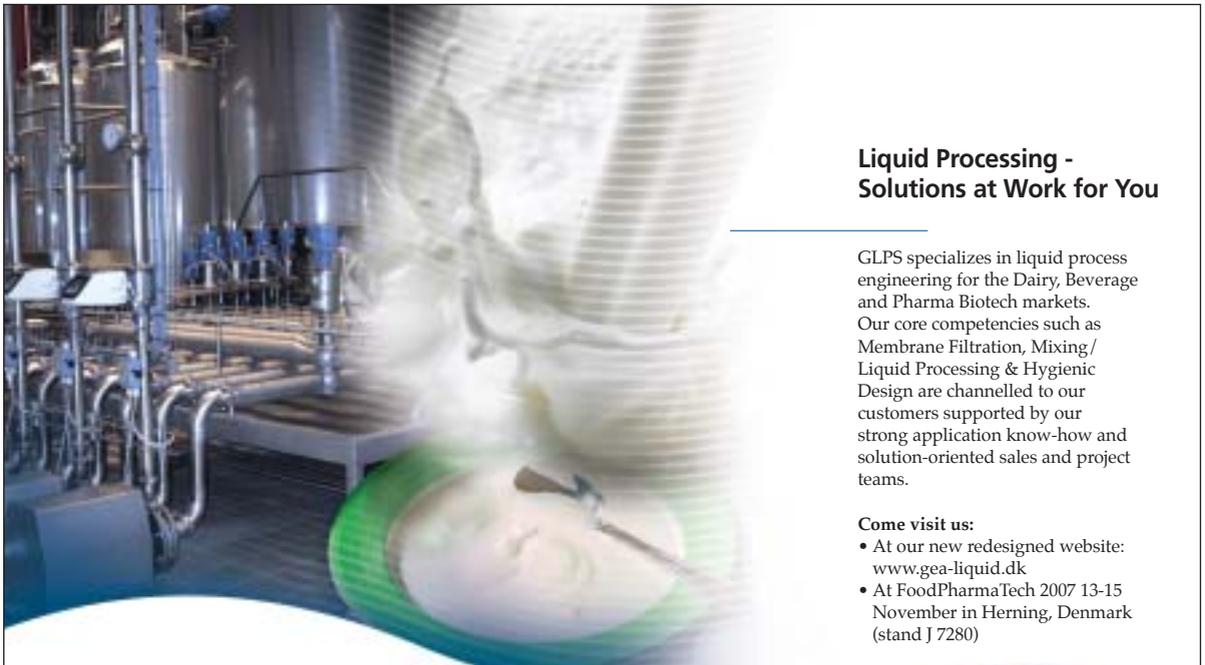
"We have to realize that people do not just follow the official dietary recommendations and stick to a healthy diet. The industry has an obligation to offer good, nutritious and non-fattening products to the consumers."

Chr. Hansen

Chr. Hansen is a global biotech company that provides ingredients to the food, dairy, human health and nutrition, and animal health industries.

The company is a leading supplier of cultures, probiotics, enzymes, colors, flavors, and excipients, which are applied in foods and beverages, pharmaceuticals, dietary supplements, and agricultural products.

For more information, please visit www.chr-hansen.com. ■



Liquid Processing - Solutions at Work for You

GLPS specializes in liquid process engineering for the Dairy, Beverage and Pharma Biotech markets. Our core competencies such as Membrane Filtration, Mixing/ Liquid Processing & Hygienic Design are channelled to our customers supported by our strong application know-how and solution-oriented sales and project teams.

Come visit us:

- At our new redesigned website: www.gea-liquid.dk
- At FoodPharmaTech 2007 13-15 November in Herning, Denmark (stand J 7280)



GEA GEA Liquid Processing Scandinavia A/S

GEA Liquid Processing Scandinavia A/S • Nørskovvej 1B • DK-8660 Skanderborg • Denmark
Tel: +45 70 15 22 00 • Fax: +45 70 15 22 44 • post@gea-liquid.dk • www.gea-liquid.dk

Environmental Friendly Technology



By Steen Brogaard
Larsen,
Managing
Director,
Scan-Vibro A/S

These years there is a steady production of milk powder and baby foods all over the world and not least in industrializing countries in the Far East and Latin America. As a consequence we observe a steady demand of our vibration technology for milk powder production plants.

Milk powder

These years, milk powder production is growing steadily all over the world due to many reasons. Among others the products are used in more and more processed premium goods as functional, convenience, and baby food products.

Furthermore, milk powder/recombined milk products are easy to handle without refrigeration and as such, the products are also part of Governmental health programs in many countries in the Far East, Latin America and at the African continent.

Environmental friendly

The distribution of milk powder either for recombination or directly to the end-users in remote areas is environmental friendly compared to many other ways of food distribution. Powder production often means reduction of product waste. Milk powder products need no cooling, are compact, easy to storage and distribute, and as such have low environmental impact.

Moreover, the vibration technology - as an important part of milk powder production - is also environmentally friendly.

Vibration technology

Scan-Vibro has more than 50 years of experience within design and construction of processing and handling equipment based on vibration tech-

nology. We supply single machines as well as entire processing plants within a wide range of conveyors, sifters, feeders, spiral elevators and other equipment driven by vibration motors or electromagnetic vibrators.

While running, vibration technology is characterized by low energy consumption. Furthermore, at the design stage our engineers pay attention to process optimization, energy efficiency and reduction of waste - whatever product it may be, i.e. milk powder, vegetables, fruit, meat, fish, cereals, snacks, fast food, coffee, tee,

etc. Innovative solutions save resources and increases efficiency.

Milk powder equipment

Scan-Vibro is experienced in working with milk powder in any possible forms. High sanitary equipment is always used for these applications and we supply equipment that meets all of the relevant standards, such as USDA 3A and NZFSA (NZCP6). Equipment is made of a range of stainless steel qualities, e.g. AISI 304 or 430 (magnetic) or 316.

The primary equipment build for the milk powder production is high

Scan-Vibro sifters type SRS are designed for use in the areas of the dairy and food industries where demands are high on premium quality and sanitary standards.



Vibration

capacity sifters, type SRS, and conveyors, type TRS and TRS-R. Furthermore Scan-Vibro is able to combine the primary process with an additional process such as cooling/drying with conveyor type TRK. Visit www.scan-vibro.com for further information.

Within the last 12 months Scan-Vibro has been involved in designing and building huge sifters and conveyors for milk powder plants - both in Denmark and abroad e.g. in Singapore.

Sifters and conveyors

Scan-Vibro's vibration sifter type SRS is designed for use in the areas of the dairy and food industries where sanitary demands are high. Vibration sifters within this range are built in closed and high-sanitary designs and for continuous operation. They

the exact measurements and specifications of the customers needs.

The vibration conveyor type TRS is constructed in high-sanitary CIP-able tubular designs to meet the current requirements for effective, hygienic and gentle transport. Type TRS comes in length from 0.5 to 10 meters in one unit. The tube diameter is from 200 to 600 mm. TRS operates on 2 vibration motors - mounted either below or above the tube. TRS is as all Scan-Vibro equipment designed for continuous operation, as no regular inspection or lubrication is necessary.

Scan-Vibro A/S

Scan-Vibro A/S is a privately owned Danish company, founded in 1949. We have our own production facilities and engineering department equipped with 2-D and 3-D CAD



TRS conveyors are built in high-sanitary CIP-able tubular designs to meet the current requirements for effective, hygienic and gentle transport from 0.5-10 meters in one unit.

are available with various screen types and cleaning system, and equipped with large top cover(s) for easy access at cleaning, inspection or changing of screen mesh as well as CIP on request. Sifters type SRS are equipped with 2 vibration motors.

Within sifter equipments our customers have access to a wide range of sifting screens, as Scan-Vibro last year was appointed Danish agent for Haver & Boecker, a leading manufacturer of wire cloth. The sifting screens can be manufactured with a short delivery time and in a high quality to

working stations. Scan-Vibro employs 62 highly skilled engineers, smiths, draughts-men and other technician and we are often involved in the early phases of developing new products or production lines. 60% of the production is exported.

Today we are one of the global leaders in our business sector. Scan-Vibro supplies and cooperates with other international plant constructors as well as the end-users within the dairy and food industry - worldwide. ■

Processing and Handling Vibration Equipment

For Dairies all over the World

Based on our experience and broad range of products we develop tailor-made solutions together with our customers.

Pictured below are examples of our equipment - for a general view please visit our website.



Sifters



Conveyors



Feeders

We view new projects as a welcome challenge

SCAN-VIBRO 

SCAN-VIBRO A/S

Sørup Kirkevej 74

5700 Svendborg

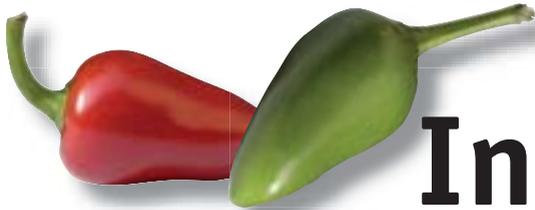
Denmark

Tlf.: +45 62 21 16 20

Fax: +45 62 22 37 30

vav@scan-vibro.com

www.scan-vibro.com



ISO 22000 International Safety Approval



By
Henrik Kurth,
Sales and
Marketing
Manager,
Carl J. Nielsen
& Søn A/S

Optimal hygiene and safety

Last year our company was approved by the international standard ISO 22000. As such, Carl J. Nielsen & Søn A/S was the first spice blender in Denmark and one of the first companies in the entire country to be able to hang the prestigious certificate on its wall.

The certification proves that Carl J. Nielsen & Søn A/S continuously is in front regarding systematic integration of optimal hygiene and food safety in all its processes and procedures.

We decided to take the lead and become certified to the new standard, because by doing so we could guarantee our customers the highest form of safety.

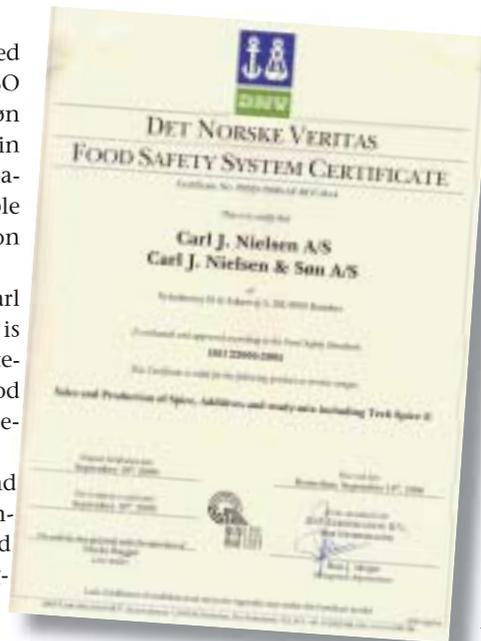
ISO 22000

ISO 22000 was defined by the international standardization organization ISO back in 2005. Still, only those companies well into the process of implementing safety and quality control into every activity - from procurement of raw materials to dispatch of the final produce - are capable of being awarded the certificate.

ISO 22000 determines what a food company must do within its procedures and management systems to comply with HACCP principles (Hazard Analysis and Critical Control Point) for food and food ingredients safety.

ISO 22000 means that every employee has to be aware of the cri-

teria to be fulfilled, and what they have to do, to ensure that they are. Even the best rules for quality control do not count much if



Carl J. Nielsen & Søn A/S was approved by the international standard ISO 22000 in 2006, and thus proves to be at the forefront regarding systematic integration of optimal hygiene and food safety.

the employees do not tell each other what they are doing. ISO 22000 includes a set of principles for effective communication inside the company - and communication out of the company with customers and vendors.

Approval and inspection

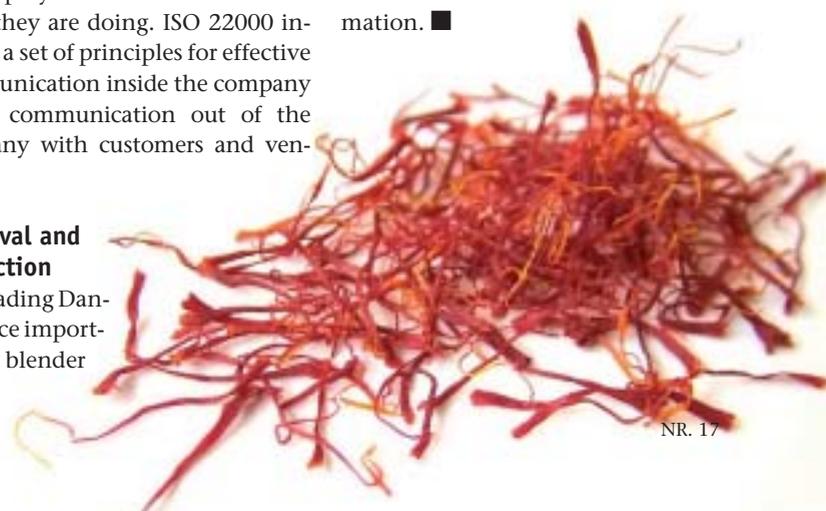
As a leading Danish spice importer and blender

our company received acknowledgement that our quality control procedures lived up to the tough HACCP DS 3027 standard back in 2003. Consequently, the company's management and personnel were trained in the systematic work of ensuring quality and food safety. The approval of Carl J. Nielsen & Søn A/S to ISO 22000 in 2006 was performed by the independent certification body DNV, who audited all procedures and management systems applied within the company.

To ensure that Carl J. Nielsen & Søn A/S continues to fulfill the criteria for ISO 22000 certification, DNV representatives inspect the company twice a year.

Carl J. Nielsen & Søn A/S

Carl J. Nielsen & Søn A/S is a leading spice wholesaler based in Randers, Denmark. The company processes and distributes all kinds of spices and spice mixes, along with ancillary products for the food industry. Typical customers are production and catering companies and other wholesalers. Please feel free to call +45 87 12 30 68 for more information. ■





Knowledge makes the difference

DSS is Europe's leading specialist in membrane filtration technology for the ultimate in high quality dairy processing.

Our experience in membrane filtration and dairy processes is unrivalled. Working closely with you, we integrate our systems seamlessly in your processing lines. More than 300 dairy companies have already optimised their plant with our technology.

Choose DSS for the best in membrane filtration technology. Innovative, flexible and reliable - we make the difference you need.



DSS



DSS Silkeborg AS
Bergsøesvej 17
DK-8600 Silkeborg
Denmark
Tel +45 87 200 840
Fax +45 87 200 890
info@dss.eu
www.dss.eu

Green Innovations in



By Annette Göttsche,
Communication
Manager,
Superfos

As a leading packaging manufacturer, environmental sustainability is an integral part of Superfos's values

Environmental sustainability and concern for the environment is integrated in both the everyday production and the new developments at Superfos.

and visions. Superfos has successfully reduced the consumption of both resources and energy in production and is constantly increasing recycling capabilities.

Superfos focus sharply on green innovations within weight reduction, new materials, and optimized use of packaging. As part of this innovative focus, Superfos has established a project group to investigate

the supply situation of biodegradable raw materials.

"We are investigating the consequences on product and packaging performances such as tightness, barriers, heat resistance etc. We have already done the first preliminary tests with biodegradable materials," says R&D Technology Director Benny Nielsen.

Weight reduction with green benefits

"In another field, we are committed to the continuous development of lighter and thinner packaging, which benefits the environment during production, transportation and disposal," Benny Nielsen explains with reference to a current case.

In the process of the volume reduction on a current 1200 ml pot, Superfos has achieved massive savings in raw materials and still meeting the customer needs.

"By reducing the weight on this specific pot using fewer raw materials in production, we will save almost 54 ton raw material per year," says Benny Nielsen. "Furthermore, as the modified pot has the same diameter as the old one, customers can use the same production equipment and filling lines.

Extended storage life

"Besides environmental issues, product safety and storage life has the highest priority in our product development," Benny Nielsen continues. "Previously, barrier properties in plastic packaging have limited the possibilities for products with minimum durability, but with our latest variant of SuperSeal® we have extended the shelf life."

Remia's exquisite line of ready season sauces. The packs are thinner and lighter and thus consume fewer raw materials in production and is less energy consuming during transportation.



Plastic Packaging

By reaching a very low oxygen transmission rate, Superfos is working on offering injection moulded plastic solutions for products formerly forced to use traditional packaging of glass and metal. The environmental advantages are clear, as Benny Nielsen points out:

"This creates new opportunities in relation to easy recycling, reuse and disposal combined with lower energy consumption during transport."

Functional and environmental friendly

Another solution that caters to the modern consumer is Remias exquisite line of ready season sauces.

"This solution is friendly to the eye, the touch and the environment. By creating a strong visual identity

and functional features, every piece of packaging has become a small piece of functional art. Moreover, the packs are thinner and lighter and thus consumes fewer raw materials in production and is less energy consuming during transportation," says Benny Nielsen.

Superfos only uses polypropylene (PP) plastics, which do not give off unwanted substances to content and ensure a high level of hygiene. After usage, PP can be reused, recycled or incinerated with energy recovery, or disposed of in an environmental responsible way.

About Superfos

Superfos is one of Europe's largest manufacturers of injection moulded plastic packaging supplying high-quality packaging for food and non-



food markets. Superfos is headquartered in Denmark and has 1,500 employees at 11 production facilities across Europe and one in the United States. The annual turnover is 342 million EUR.

As a market leader Superfos strive to deliver high quality products at all times, which consider these demands and add value to and contribute to create preference for customers' products. ■

Carl J. Nielsen & Søn A/S



From Nature - Through Technology - To You

In all parts of our working life we need to be one step ahead.

We have made a virtue of this.

Ahead means, to us, among other things to be ready with the solution when our customers ask for it.

So ask. Because we would very much like to show that we are ahead.

Tel: +45 86 42 06 88 · www.cj-nielsen.dk

The Natural Choice

for the Dairy and Food Industry Worldwide



*By Jesper Bagge,
Business Manager,
Eurofins Steins
Laboratorium*

Documented impact

Eurofins Steins Laboratorium offers a large number of services to the dairy and food industry worldwide. Among these services are sampling, chemical, sensoric and microbiological analyses, documentation, control, certification, advising and consulting. All services are designed to fit the need of the modern dairy and food industry.



Documentation of production and final products are constantly becoming more essential - in particular the production's impacts on the surrounding environment.

This is both from the authorities' and the ultimate consumer's point of view. Thus in order for dairy and food producers to make the right decisions it is of great importance to have the right partner on the analytical side. This means a partner that the producers can rely on and who will supply the correct results, information, and advice in time.

Surrounding environment

Eurofins is the perfect partner with the required technical and professional competences to supply different producers with the necessary material and service in a user-friendly way.

The basis of these services is state-of-the-art technology and know-how to enhance safety and quality of the processes and the products - but also for the surrounding environment.

On the environmental area Eurofins Denmark offers a wide variety of services that are based on collecting know-how from sampling to analysis and consulting. Below please see some of these services:

- Wastewater and wastewater plants, control of efficiency and output etc.
- Soil and ground water.
- Air - from power plant or production process.
- Noise - both internal and external noise.
- Working environment and indoor air, control of ventilation, humidity and moulds, gasses, etc.
- Control of technical equipment, control of process air, gasses, filters, clean room facilities, etc.
- Drinking water and process water.
- Materials and processes control of packing material etc.
- Products, total environmental evaluation and environmental branding.

Accredited sampling, analysis, and consultancy are offered in all areas.

It is Eurofins' own policy to strain the environment as little as possible.

Environmental policy

The production in the laboratories is planned using as little energy and raw material as possible. Simultaneously the physical and mental working environment provides the employees safety and job satisfaction.

To stress the importance of the environmental policy Eurofins has been certified according to both the external (ISO 14001) and internal environmental and safety area (OHSAS 18001).

The company strives to achieve the highest quality in testing services - being aware of the fact that analytical results may form the basis of major decisions. Thus Eurofins works according to a number of national and international standards. Furthermore, Eurofins in Denmark is accredited after ISO 17025 by DANAK.

Optimized methods

Eurofins is constantly developing and optimizing new methods and techniques based on the development in new standards and demands for customer and authorities.

One of the new offers from Eurofins in Denmark is a newly developed screening test for 59 volatile components in water as drinking water, ground water, process water, and wastewater. The analyses are made with a Purge and Trap technique on a MS detector securing sensitivity down to concentration on nanogramme level of even a very small sample volume. The analyses safeguard that the water used in the production is clean and that no unwanted chemicals will be added to the product even in minor quantities.

Eurofins Steins Laboratorium

Eurofins Steins Laboratorium is part of Eurofins Scientific, a leading international group of laboratories occupying more than 5,000 employees, across more than a hundred sites in 24 different countries. This means that Eurofins can exchange knowledge and capacity globally - and supply services locally - all over the world. ■

Complete Milk Powder Factories

Why risk working with several suppliers, when you can entrust your dairy factory to just one? Niro unites innovation with proven industry experience in dairy processing, including milk, whey, and formulated products. We bring superior and reliable quality to every part of a successful processing line, from reception and storage over pasteurisation, evaporation, and spray drying, to powder handling, storage, and bag filling systems. So stay away from unnecessary risks – choose one process supplier. Choose Niro.

Niro is a world leader in industrial drying, with spray drying, freeze drying, and fluid bed processing as core technologies. The Niro companies are part of the Process Engineering Division of the GEA Group.



GEA Niro A/S

A company of GEA Group

Niro A/S • Gladsaxevej 305 • PO Box 45 • DK-2860 Soeborg • Denmark
Tel: +45 39 54 54 54 • Fax: +45 39 54 58 00 • food.dairy@niro.dk • www.niro.com

Package is the Product Packaging is the Production



By Tekin Özçay,
Sales Manager,
TREPKO A/S

The food industry has moved from a mass-market to a segmented market, and today even further in to a fragmented market. Customer taste is changing not only in relation to the product itself, but also distribution channels and the way products are presented. The dairy industry has been closely watching the value and convenience trends. The most successful companies are adapting their strategy to meet changing customer needs while maximising their earnings. Innovation has played a crucial role in their strategy as well as cutting cost to meet the pressure from the distribution channels.

However too often companies focus entirely on innovation and growth or only cost cutting and increasing productivity. The interplay between these factors is often ignored. An or-

chestrated effort towards improving productivity, cost savings and innovation would prove very useful in improving the profitability of the food producers.

Efficiency

Since its establishment in 1947, TREPKO has assisted our customers with the most modern and reliable packaging technologies, because packaging is an important tool for improving bottom-line. It is the package that protects and presents the products. No chain is stronger than its weakest link and no production is complete without a reliable packaging solution. Trepko ensures that the packaging process is achieved in the most efficient and reliable way from the smallest to the largest capacities. Efficiency for TREPKO means:

- *Output enhancement* refers to the options offered by TREPKO, whose main goal is to reduce the machines' standstill. The buffer magazines for cups and snap-on lids, and the sledge system for the alu-foils, allow the machine to keep working without stops for re-filling of the packaging material. Special attention has been paid

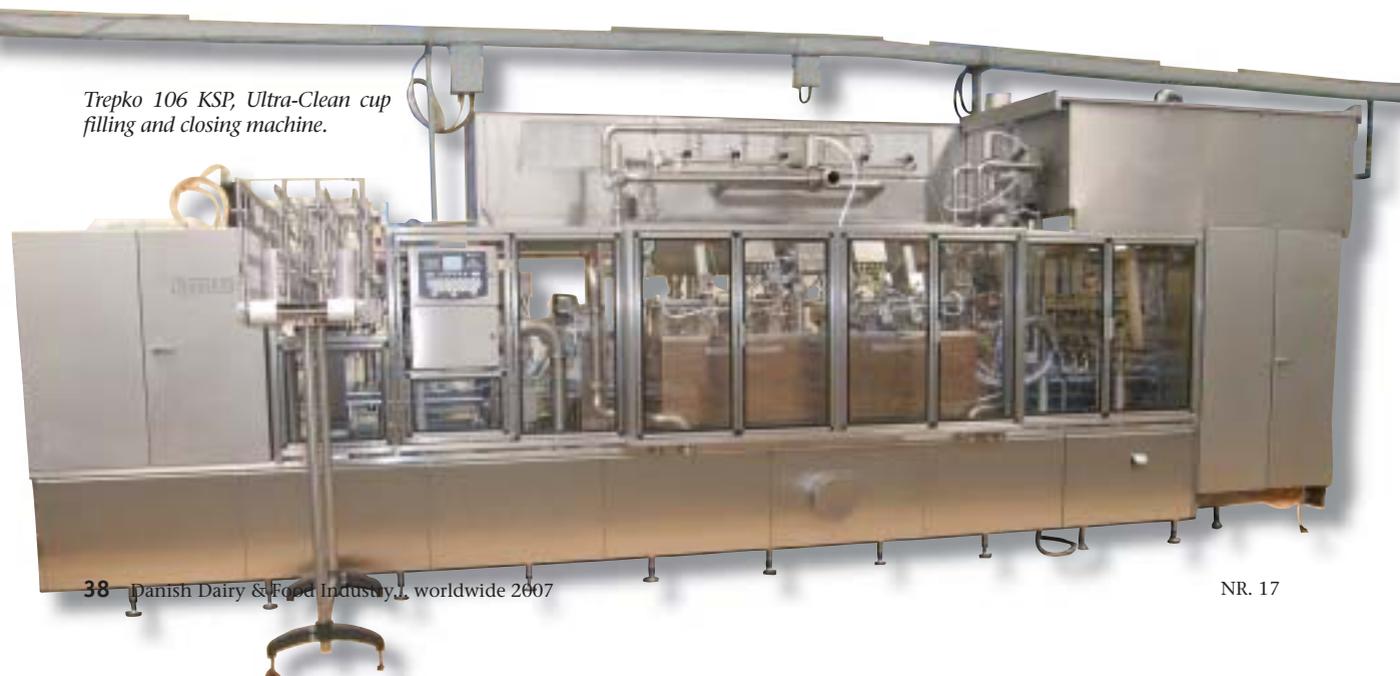
to the ergonomic aspect of these solutions thus reducing the number of operators and their effort needed for operating the machine. Finally the integrated pick & place unit developed by Trepko ensures excellent end-packing operation in plastic or carton trays. This unit eliminates the need for an extra machine, whereby the process is simplified, made more reliable and eventual incompatibility between filling and end-packing operations are eliminated.

- *Low operation cost* describes another quality of the TREPKO machines. TREPKO offers fully customised solutions for the machine's layout, thus reducing the labour needed to operate the machine. Moreover, the solutions adopted for maintenance of the machine help to limit the costs. Nevertheless, the most important feature is the reliability of the machine and that is assured by its rigid design and high quality parts and components.

Crucial filling process

A special attention has been paid to the quality of the filling process. If not done properly filling can cause serious loss in efficiency, waste of

Trepko 106 KSP, Ultra-Clean cup filling and closing machine.



products and even loss of product characteristics such as taste and texture. TREPKO's varieties of solutions are devoted to filling products of different characteristics. The dosing based on servo-motors allows smooth operation and the possibility to adjust the dosing profile, volume and speed in a simple way. The filling nozzles are carefully selected and designed according to the product density, homogeneity and the requested output.

Hygiene

Hygiene during the whole packaging process is also important. It not only has direct effect on the expected shelf-life of the product, but also influences preservation of product quality and taste within the shelf-life. Most of TREPKO machines are delivered in a CIP and SIP-cleanable version, a fully automated process, can be controlled from the PLC's panel, and materials used in the external surfaces are easily cleanable. On the request of the customer the

in-line machines can be equipped with a separate cleaning unit providing an automatic cleaning of the product zone and the cassettes. The whole machine can also be sterilised with hot steam before production.

Sterile-air-cabins, whose effectiveness meets the international standards, protect the packaging area. The product shelf-life can also be enhanced by using methods as gas-flush or vacuum heat-sealing.

TREPKO also offers a variety of solutions, such as UV-radiation or vacuum-cleaning, to prevent product contamination by the packaging material. The most effective solution is sterilisation of cups and lids by means of peroxide spraying or a combination of these methods.

Investing in the future

The TREPKO Group, founded in 1947, strives to establish itself as one of the world's leading suppliers of filling, sealing and closing machinery to the food industry. Our three major product groups are:

- In-line cup filling and closing machines (100 Series)
- Rotary cup filling and closing machines (200 Series)
- Brick forming and wrapping machines for butter and margarine (PMG)

TREPKO has customers in more than 90 countries worldwide and operates from 4 factories in Denmark, Poland, India and the UK with over 450 highly specialized personnel. The company's primary goal is to respond to the individual requirements of the customers.

TREPKO's fully customised solutions are created as a result of close cooperation and feedback with food-processing companies all over the world. None of the solutions would be possible without the customer's growing expectations and the desire to meet them. TREPKO aims at providing its business partners with modern machines whose flexibility corresponds to the rapidly changing market. Why not invest in the future development? ■

We make insulation problems history

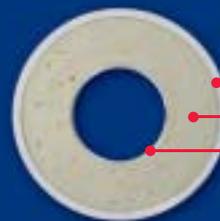
Five complete standard systems cover a temperature range from -200°C to $+250^{\circ}\text{C}$.

All systems are characterised by a waterproof plastic jacket surrounding an insulated carrier pipe – a design which guarantees a high hygienic standard with minimal risk of the formation of bacterial colonies.

- 100% watertight
- 100% corrosion protected
- UV-resistant
- easy to clean
- low maintenance costs
- energy-saving
- enhanced surface strength

[We document the difference]

LOGSTOR Industry
 Danmarksvej 11 · DK-9670 Løgstør
 Tel. +45 9966 1000 · Fax +45 9966 1548
 logstor@logstor.com · www.logstor.com

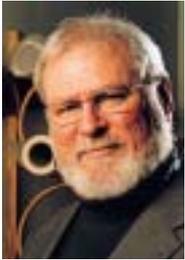


The pre-insulated pipe consists of three parts:

- HDPE jacket
- Insulation (PUR foam)
- Carrier pipe

LOGSTOR
 Industry

Environmentally of Dairy and Food Plants



By Jesper Pauli,
Managing
Director,
MA Project A/S

For more than a decade MA Project has been a pioneer within environmentally correct projecting of dairies and food processing plants worldwide.

Eco-consciousness

Environment and eco-consciousness are global buzzwords these years. However since the mid-90-ties MA Project has incorporated a policy of environmentally correct projecting of dairy and food plants.

This policy, off course, has been

adjusted and intensified according to national and international legislation within the matter of environmental impact such as reduction of waste water and air pollution and minimizing energy consumption in the food production.

MA Project offers comprehensive consulting within the dairy and food industry in the two main areas: Building & Construction and Technology & Environment.

Environmental projecting

Close and trustful cooperation with our customers is essential when projecting and building future proofed environmentally safe food processing plants. As a project organisation, our employees form a team suited for each task. The team consists of engineers, architects and skilled technicians, all experts in their specific fields and well-trained in team working of dimensioning, constructing, architect-designing, building and installations.

Correct projecting and building of dairies and food processing plants are of utmost importance to minimize environmental impact. Env-

ironmentally conscious food processing means establishing optimized transport lines for raw materials, products, packaging and people. Furthermore we can help the customer to establish an optimized hygiene policy, including determination of principles, zoning and correct handling of dangerous waste water. These examples are important elements in avoiding vast of raw materials and minimizing energy consumption and risks of production stops as well as various kinds of outlet of surplus waste water, and heat etc.

Technology and Environment

In our department for technology and environment, we value comprehensive consultancy services, future proofing and the interplay between technology and architecture. In close cooperation with our process suppliers, our knowledge of process technology is offered to achieve optimal complete solutions, where production security, hygiene and energy and environmentally conscious planning are an integrated part.

The consultancy includes entire projects of building new or renovating existing plants - from concept phase to test running and handing over. As above indicated we possess high expertise within building installations such as water, heating and sanitation, ventilation and electrical installations.

Furthermore our knowledge in service installations includes various plant systems for compressed-air, glycol, ice water, steam, cooling, low-pressure CIP, as well as vacuum systems and energy centres.

MA Project A/S

MA Project was founded more than 70 years ago. At the beginning, our



MA Project A/S is working worldwide. Lately, the company has been involved in the projecting of Arla Mengniu's milk powder plant in Hohhot, China.

Correct Projecting



main activities were planning projects within building and construction of the several hundreds Danish dairies at that time. During the last couple of decades we have continuously developed our competence, and nowadays we are offering our expertise to both the dairy and the food industry in Denmark and abroad. Thus, we provide assistance in all phases of each individual project, offering comprehensive con-

sulting to the food industry in the main areas: Building & Construction and Technology & Environment.

Our references include dairies, margarine plants, spray towers and condensation plants for milk and egg, slaughter houses, fish refinement, convenient food processing and other food plants, cold and freeze storage, laboratories, educational establishments and administration buildings. Our customers are situated

in Denmark, Europe, The Far and Middle East, Africa, South America - in other words - worldwide.

Our aim is to be the leading consulting company within planning, building, energy and environmental issues specializing in the food industry.

Our key words are: TRUST - EXPERTISE - FUTURE PROOFING. ■



New condensation plant, Vimmerby, Sweden

A STRONG BASIS FOR THE INTERNATIONAL DAIRY AND FOOD INDUSTRY

MA PROJECT A/S Architects and Engineers is a consulting company offering its expertise within the food industry in the following main fields: Building & construction - Energy & environment - Process & mechanical engineering. Please contact us for further information.



MA PROJECT A/S
ARCHITECTS AND ENGINEERS
Frederiks Allé 22
8000 Århus C
DENMARK
Tlf: +45 8731 2300
Fax: +45 8731 2301
E-mail: ma.project@mejeri.dk
www.maproject.dk

Solutions on Demand



By Svend-Aage Nielsen,
Marketing
Manager,
Omy.dk
Olssons Machinery

construct and manufacture; custom fitted pneumatic seat valves in stainless steel AISI 316, non-return valves to build in unions DIN, DS, SMS and build in valve for tanks.

Omy.dk products and solutions are based upon three characteristics: Quality, Flexibility and Efficiency. With more than fifty years of ex-

perience as supplier to a wide range of food industries, Omy.dk is well aware of, what fine craftsmanship supplemented with the latest technology and high level of quality mean to the modern and efficient company.

Cheese waxing machines

Our fully automatic wax coating machines for cheese employ the brand new technology that includes spraying, bottom waxing rollers, and brushes. The cheese is transported through the system on a specially designed wire mesh belt, which allows spraying from below. The system facilitates the use of different wax colours by having interchangeable wax tanks. These wax tanks are designed to prevent overheating and scorching of the wax and product.

The system is available in several widths and the machine inlet and outlet can be tailor-made to meet the dairy's requirements.

Cheese cutting equipment

Omy.dk provides the widest range of cutting and portioning equipment for any type of cheese. For hard cheese, our product range includes fully automatic cutting and semi automatic machines with up to three cutting stations. The machines are also offered in several different widths. Fantastic flexibility is achieved by including interchangeable cutting frames and cutting blocks. Changing the cutting equipment to a different size can be done in less than 60 seconds. Cutting can be done using the latest technology for any application, or just using wires or knives. The inlet and outlet can be adapted to suit your factory and full automation can be supplied to ensure that our machine suits your existing equipment.



New company name

Omy.dk, Olssons Machinery, founded in 1955, has focus on the latest technology and strives to establish the company as one of the worlds leading suppliers of machinery within the dairy and food industry.

Our founder named the Danish company Olssons Maskinfabrik in 1955. But, during the last decades we have obtained customers and contacts worldwide and thus we needed a more international name - Olssons Machinery. However, that was difficult to explain on the phone, so we shortened the company name even more into the easy say able name Omy. On info@omy.dk and www.omy.dk our customers can contact and read more about us.

Broad product line

Our major products are; cheese-cutting machines, cheese waxing machines, and aseptic "bag in box" filling machines. Furthermore, we also

Higher capacity demands and requirements for fast filling made the way for yet a new product - a twin head aseptic filling machine build to fill both 10-50 kg boxes and 200 l. drums. This photo is taken under construction of the machine.

Innovation

Through constant awareness of new emerging technology, Omy.dk thereby provides innovative ideas to its products and solutions. One example is the latest experiment conducted in omy.dk laboratory, where the

Aseptic "Bag-in-Box"

Our aseptic "Bag-in-Box" machine is designed for sterile filling into bags. The machine is equipped with a Danfoss mass flow meter, which gives a system accuracy (tolerance) less than 0,1% of the current flow. The filling amount and choice of program is performed on the front of the machine by a finger touch screen. As sterilization during the filling cycle, a barrier of sterile air and 4% hydrogen peroxide (H2O2) is sprayed over the filling head through stainless steel nozzles. A filter is installed to make the air sterile. This filter can be sterilized by using saturated steam. The aseptic "bag in box" filling machine from Omy.dk has an adjustable roller table, and is constructed with a connection unit for CIP-cleaning and water separator for steam sterilization. The machine is working semi automatic thus, the operator manually place the bag in the machine and pres the start bottom. The rest of the operation runs

automatically; cork of, filling, and cork on. The filling can be done either through a sterile pressure tank or through a mono pump and eventually a by-pass valve.

The capacity depends on the bag size and product viscosity from 1000-5000 l/h. When filling juice and milk products the capacity is approximately: 3 bags of 20 kg/min, 5 bags of 10 kg/min, and 7 bags of 5 kg/min.

For delivery of aseptic bags, we are cooperating with several leading companies in Europe.

Pneumatic seat valves

Omy.dk has launched a new generation of custom fitted stainless steel pneumatic seat valves. Our high quality seat valves are designed in stainless steel AISI 316. The valve head is supplied with a heat resistant seal ring and close against a stainless steel seat. The valve stem is sealed by viton rubber seals for using in many applications.

By Omy.dk you can get the design "tailor-made", in the exact configuration you want.

New solutions on demands

Higher capacity demands and requirement for fast filling, has made the way for yet another new product from omy.dk; a twin head filler. A customer in Vietnam needed a very fast and flexible filling machine. Thus, we constructed a machine build to fill both 10-50 kg boxes and 200 l drums.

Furthermore, Omy.dk recently expanded its program through a non-aseptic "Bag-in-Box" filling machine line. This line range from the smallest manually filling station to fully automatic lines with high capacity.

Omy.dk fully customised "tailor-made" solutions to the food industry are created as a result of very close cooperation with the food processing companies and customers all over the world. ■

Customized on Demands - Stainless Steel Machinery - Stainless Steel Heat Exchangers - Stainless Steel Tanks to the Food Industry

Agency vacant



Aseptic Bag-in-Box.
Size of bags: 1-1000 l.
Capacity: 1000-5000 l/h.
Filling: Mass flow or by weight.
Filling via 30 or 50 mm nozzle.



Automatic Cheese Waxing
Equipment.
Manual or semi-automatic vessels.
We meet your requirements.



Advanced multifunction or
small manual solutions.
Fully automatic lines.
We meet your requirements.



omy.dk
olssons machinery

Stationsvej 10 · DK-5464 Brenderup · Denmark · www.omy.dk · info@omy.dk · Phone +45 64 44 13 12 · Fax: +45 64 44 13 92

Health, Safety and The

- A Driving Force at APV



By Pia S. Jessen,
EHS Manager,
APV Invensys,
Denmark

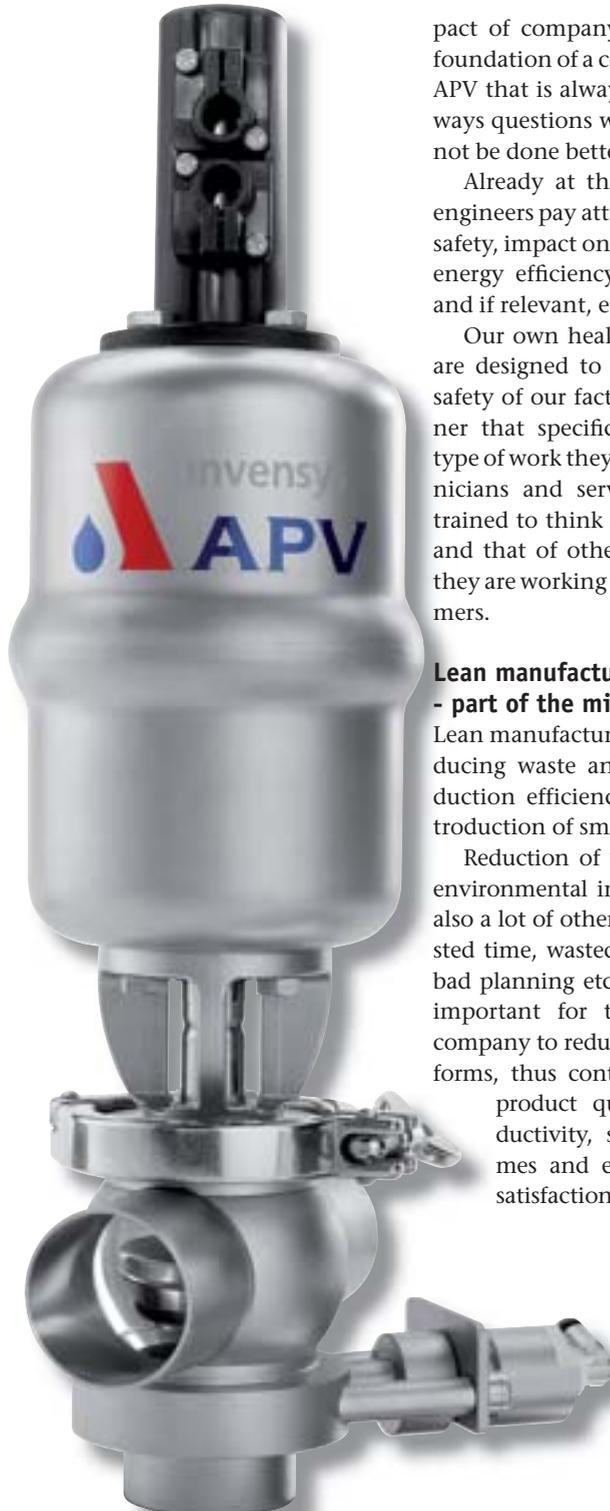
Constant awareness of the importance of the environment, health and safety adds to the value of the company's products and solutions and thus to the satisfaction of its customers.

Ultimately, successful products and solutions are those that provide most extra value for people and the world they live in. At APV, awareness of this fact extends beyond the confines of the company's manufacturing plants, reaching back to suppliers and forwards to customers and consumers.

All in the mind

The health and safety of our employees and the protection of all visitors is a priority on which there can be no compromise. Everyone at APV knows this and every work location has health and safety rules, which are an integral of documented quality standards, and which comply more than fully with current legislation.

Rules are never enough in themselves, however. Health, safety and awareness of the environmental im-



part of company activities are the foundation of a company mindset at APV that is always attentive and always questions whether things cannot be done better.

Already at the design stage our engineers pay attention to operating safety, impact on workplace climate, energy efficiency, waste reduction, and if relevant, emissions.

Our own health and safety rules are designed to protect the health safety of our factory staff in a manner that specifically addresses the type of work they perform. Our technicians and service personnel are trained to think of their own safety and that of others, not least when they are working on site at our customers.

Lean manufacturing - part of the mindset

Lean manufacturing is the key to reducing waste and developing production efficiency through the introduction of smooth processes.

Reduction of waste means lower environmental impact. But waste is also a lot of other things such as wasted time, wasted human resources, bad planning etc. Thus it is equally important for the health of the company to reduce waste in all of its forms, thus contributing to higher product quality, higher productivity, shorter delivery times and enhanced customer satisfaction.

APV DELTA SWcip4 double-seal valve takes the cost pain out of protecting the environment and employees from CIP liquid leakage, and even helps to reduce energy costs.

Environment

Production processes that run smoothly and efficiently are more reliable, more repeatable, more predictable, and thus less prone to risk. This applies to the health and safety of people as well as the health of the company in terms of customer satisfaction and profitability. It is also why APV attaches such importance to combining automation with human intelligence in order to deliver solutions that provide as smooth, repeatable and energy-efficient production processes as possible.

Reducing energy costs and environmental impact

New safety regulations over recent years have dictated the use of standard mixproof valves for CIP applications, albeit at a significantly higher cost for the customer.

The new and attractively priced APV DELTA SWcip4 double-seal valve takes the cost pain out of protecting the environment and employees from CIP liquid leakage. It also helps to reduce energy costs by eliminating the need for heating extra cleaning agent. This is achieved with a special leakage detection device that immediately indicates any leakage from gasket.

From waste to extra value

The APV White Water Recovery System minimises the amount of liquid waste passed on to water treatment plants by using reverse osmosis to extract valuable milk components from white water prior to discharge. The system can be integrated into the existing dairy either as part of a continuous process, or as a batch

system, which is often the most cost-effective option due to the relatively small quantities. While legal requirements can differ from country to country, the resultant retentate is generally suitable for processing a wide range of products, such as cheese and ice cream, etc.

The length of the value chain

APV's environmental, health and safety mindset extends along the length of the value chain starting with suppliers who are preferred because of their high health and safety standards. From our own factories and employees it extends to our customers and their employees and from them on to the consumers who purchase their products.

By thinking safety, health and the environment throughout the length of the value chain, APV contributes to a better environment as well as enhanced health and safety while helping to enhance quality and cut costs. ■



**We Listen. We Design.
We Engineer. We Deliver.**

At APV we have spent the last century engineering innovations to meet the exact specifications required by our customers to fulfill THEIR customers' needs. We believe in listening to our customers, being flexible and delivering the highest level of safety.

Head Office:
Invensys APV, 23 Gatwick Road
Crawley, West Sussex RH10 9JB
United Kingdom
Tel: +44 (0) 1293 527777 Fax: +44 (0) 1293 552640

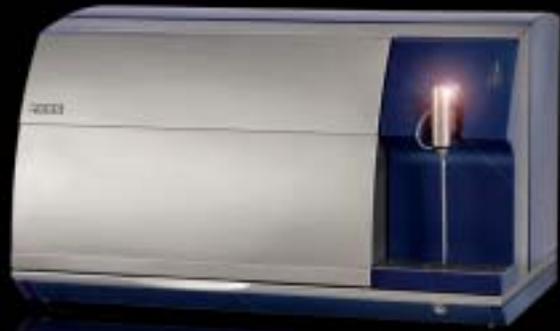
Invensys®
APV®
the people behind your performance

www.apv.com

MilkoScan™ FT2

- The Ultimate Milk and Dairy Analyser

- Reliable, fast and accurate analysis with minimum sample handling
- 20% improved accuracy with great savings on raw materials
- Splash & vibration proofed design for placing near production
- Future proofed analytical needs. Possibility to analyse saturated and un-saturated fatty acids



Dedicated Analytical Solutions
info@foss.dk www.foss.dk

FOSS

**Are you looking for new Markets for your Products?
- or Highly Skilled Dairy Employees?**

Mælkeritidende

- the only professional journal about the Danish dairy industry!

New markets or employees?

Are you looking for new markets to introduce your products, such as new dairy plants, ingredients, packaging, analysis or sanitary equipment? Or are you looking for highly skilled dairy employees with international experience such as dairymen, dairy technicians or M.Sc. in Dairy Technology? No matter what, you can always advertise in Mælkeritidende!

Mælkeritidende

"Mælkeritidende" as well as "Danish Dairy & Food Industry ... worldwide" is published by the Danish Dairy Managers Association and the Danish Dairy Engineers Association.

The scope of Mælkeritidende is scientific and technical issues within the dairy and related areas. Furthermore, subjects of dairy Research & Development, dairy product information's, company profiles and exhibition information's are accepted for the journal.

Subscribers of Mælkeritidende

The subscribers of Mælkeritidende are managers at Danish dairies and several Nordic dairies, employees at the Danish dairies, members of the two Associations in Denmark and other countries, dairy researchers, dairy advisers, personnel at dairy organisations and managers at other food companies.

Contact Mælkeritidende

If you want further information about the Danish dairy industry, please contact the editorial staff: Chief Editor, M.Sc. in Dairy Technology, K. Mark Christensen, sub-editor M.A., Anna Marie Thøgersen.

Mælkeritidende · The old Dairy · Landbrugsvej 65
5260 Odense S . Denmark · Tel.: +45 66 12 40 25
Fax: +45 66 14 40 26 · www.maelkeritidende.dk
info@maelkeritidende.dk

New Beverages - New Technology



By Erik Petersen,
Sales Manager,
Scanima A/S

Flexible Scanima Turbo Mixer

Over the years Scanima has delivered efficient mixers for the production of these new milk based beverages throughout the world. To stay ahead of the development of the increasingly complicated ingredients, Scanima has furthered the development of its well-known Turbo Mixer to an even more flexible model with a patented dynamic stator, allowing automatic change between "high shear" and "no shear" during mixing.

This allows both dairy and beverage producers to pre-homogenise a mix and add a shear-sensitive product in a gentle mixing process, both cold and warm, utilising the same

Left: Scanima Turbo Mixer with stator down, high shear. Right: Scanima Turbo Mixer with stator lifted, no shear.

process equipment. In short, only the imagination limits the diversity of the products.

Latest developments

A general surplus of whey protein/WPI (Whey Protein Isolate) in the food industry has led to the development of new ranges of soft drinks in the beverage industry, i.e. isotonic drinks. This adds yet another product to the increasing number of products perfectly suited for manufacturing on a versatile turbo mixer from Scanima. ■

Great success

More than six years ago - in the last century - a new range of beverages based on fruit juice mixed with milk products was introduced in Spain. It turned out to be a great success, which has spread to most of the world since then. New similar types of beverages with added cultures, different vitamins and not least minerals and salts have appeared since.



A Perfect Mix for the Food Industry

Scanima A/S · Gugvej 152 · DK-9210 Aalborg SØ
Tlf.: +45 96 33 10 00 · Fax +45 96 33 10 11
scanima@scanima.com · www.scanima.com



Denmark's No. 1

Global Supplier of Fruit Based Semi-Manufactures



By Niels Østerberg,
Director,
Orana A/S

Orana Worldwide

Orana A/S was established in 1984 as a division within the company Rynkeby Mosteri A/S (later Rynkeby Foods A/S, which today is Scandinavia's largest juice manufacturer). When Orana A/S in 1999 became an independent company, globalization and rapid growth quickly became a reality.

Today, Orana has own sales and R&D companies in: **Denmark** (Rynkeby on Funen), **Egypt** (Cairo), **India** (Delhi), and **Vietnam** (Ho Chi Minh City).



All Orana branches sell and develop a wide assortment of fruit based semi-manufactures for dairies, juice manufacturers and bakeries. Furthermore, Orana owns production companies in Denmark (Danish Fruit Production A/S), Vietnam (Orana Vietnam Ltd.) and Egypt (International Fruit Production Ltd. - under construction).

How has it been possible for a small company to grow this rapidly in such a

short period of time? Orana owes this rapid growth rate to a solid foundation in Danish characteristics and virtues such as:

- First-class Danish foodstuff production and quality
- Quality management systems through which foodstuff security becomes inevitable
- Environmentally correct production
- Pleasant working environment
- Recycling
- Energy-conserving and efficient production

All the above characteristics are a must for most Danish companies, but not necessarily for the countries in which Orana has chosen to expand.

Working abroad

It is not easy to transfer Danish virtues to developing countries. For instance, it has been a struggle to convince local partners:

- Not to use Freon in cold storage facilities.
- To carry through waste water treatment via solar power.
- That it can be more profitable to farm strawberries without a large over-consumption of chemicals.
- To carry through energy conserving investments which have long returns of investment.
- ISO, HACCP etc. are not systems you purchase but quality systems which you have to work hard to implement.
- Investments in working environment will ultimately be worthwhile.

Environmentally correct

So far, Orana has succeeded in establishing a factory in Vietnam, which is just as environmentally correct in its production and processes as the Danish factory in Rynkeby. Additionally, Orana is currently building another factory in Egypt, where an identical system will be implemented. A task which will not necessarily be easier than it was in Vietnam.



The result of a decentralised production strategy is that Orana manufactures its goods close to its customers and to the extent possible using local raw materials. In this way, production takes place at more competitive prices and at the same time transportation costs are reduced for raw materials (fruit) and finished products (fruit based semi-manufactures), reductions which are also energy-conserving.

Orana has succeeded in producing Danish quality at local prices with local raw materials!

Corporate social responsibility

Furthermore, Orana has implemented a CSR (Corporate Social Responsibility) policy which its own companies and its suppliers are expected to conform to. The implementation of the policy will help improve the working environment.



Product optimization

It is not merely within production that Orana acts with environmental

awareness. Orana has developed several series of fruit based **whey drinks**. For small and medium sized cheese producers, which do not have possibility of processing their whey into whey powder, Orana's whey drinks is an **environmentally friendly solution**. By using the whey in fruit beverages, pollution is reduced and at the same time a nutritious beverage is produced made from a waste product (the whey). Orana has supplied fruit concentrates to several successful whey drink manufacturers in for example Turkey, Jordan, South Korea and Zimbabwe.

Global supplier

Through its subsidiaries in Asia, Orana has received a large knowledge of many **functional ingredients** such as Aloe Vera, Ginseng, Wheat Grass, etc., which with great success have been used in both fruit preparations for yoghurts as well as in concen-



trates for juices and juice drinks. The company promotes and sells its products in more than 30 different markets, making Orana a global supplier of **innovative fruit based products**. Orana also supplies organic products and is currently in the process of obtaining the Max Havelaar quality label for fruit based semi-manufactures. ■



Fruit Based Raw Materials for

Orana supplies tailor made fruit based raw materials for the beverage industry, dairies and other food producers

Dairy Products

Stirred Yoghurt
Set Yoghurt
Layered Yoghurt
Fromage Frais
Drinking Yoghurt
Cultured Milk
Milk Drinks
Whey Drinks
Ice Cream
Ice Lollies

Beverages

Juices
Nectars
Juice Drinks
Ice Tea
Carbonated Drinks
Cordials

Bakery products

Baking Jam
Pie Fillings



ORANA

ORANA A/S · DK-5350 Rynkeby
Phone +45 6362 3575 · Fax +45 6539 1574
e-mail: orana@orana.dk · www.orana.dk

Food Technology and at Dalum Education Centre



By
Paul Stein
Jensen, Head of
Department



and

Pia Agger,
Teacher, M. Sc.,
Dalum Education
Centre,
College of Food
and Technology

Since 1889 education of skilled dairymen has taken place at Dalum Education Centre.

From the beginning and until 1955, theory was not necessary in order to become a skilled dairyman. The dairymen were learning entirely by practical training. In 1955, this educational program was changed.

Besides the practical training at dairy plants, the new program offered half a year of theory. Since then, the educational programs have been changed several times. The last alteration was made in 2006, which will be explained in this article.

Dairy education

Headlines of the dairy education are a total apprenticeship of 3 years, including 50 weeks of theoretical training. Normally the practical training takes place at two or three different dairy plants to assure the trainee learns more than one discipline. The theoretical training consists of basic, area, special, and optional subjects.

Basic subjects (12 weeks): Chemistry, physics, mathematics, and language (English).

Area subjects (23 weeks): Dairy production, production equipment, product quality, logistics, packing, and work organization.

Special subject (9 weeks): Dairy technology and manufacturing products.

Optional subjects (6 weeks): Individual options.

The students complete the theoretical education by describing a specific project in an assignment, which the students have to defend in a final exam.

At Dalum the special subject - dairy technology and manufacturing products - is very basic and general. This is opposite at a lot of other dairy colleges where the students are trained in disciplines of making special types of cheeses, for instance Emmenthaler.

At Dalum we find it more relevant to train the students in using different production technologies such as: manufacturing starter cultures, fermentation, and regulation of pH, syneresis, evaporation, spray drying and temperature treatment of cream for butter production. In this way the skilled dairymen are able to handle jobs in the dairy industry and make different kinds of dairy products, both traditional and organic products.

Since 2000, Dalum College of Food and Technology has run a 2 year education in food technology, where the students can specialize within; dairy, process, and food technologies. Dalum also run courses for foreign students.



Dairy Education

Food education

Since 2000, Dalum College of Food and Technology has run a 2 year education in food technology.

Before the students start at this education, they must have passed a previous skilled education as e.g. dairyman, butcher, baker etc. or a high school examination. The food technology education takes 2 years.

During the first year the basic subjects as: Microbiology, chemistry, economy, logistic, statistic, product development/process optimizing, technology (preservation, treatments), equipment, secondary systems, regulation, management, organization, Hygiene (HAACP) and TQM.

At the second year the students are able to choose between 3 different specialties: Dairy technology, Process technology, and Food technology.

In the following only Food technology will be described.

At the beginning of the second year the education is unified. E.g. in the autumn the students have the following subjects: Meat, fish, cereals, fruits, vegetables and egg.

Within each subject the students are trained and guided in production, the raw material, legislation and safety.

At springtime the subject is changed to: Product development and optimization. Now the students continue the work from the first year. During 10 weeks, the students work with a concrete subject, where they have to develop their specific skills.

Within all these subjects it is very important that the students learn to present their results both written and oral and that they master different kinds of presentation technique.

For more than a hundred years education of skilled dairymen has taken place at Dalum Education Centre.



To finish their education the students have to produce a project chosen individually and finally defend this project at an examination.

The Food technology education consists of approximately 60% theory and 40% practical training. The students have to work both in groups and independent with different problems. ■

Dalum College of Food and Technology

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

Dalum College of Food and Technology offers tailor-made courses for the global dairy sector and food industry.

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

Our mission is to continue to expand our international courses and contacts.

Please contact us for more information.



DALUM | UDDANNELSES
CENTER
COLLEGE OF FOOD AND TECHNOLOGY

Tel + 45 63 13 20 43

www.dalumuc.dk



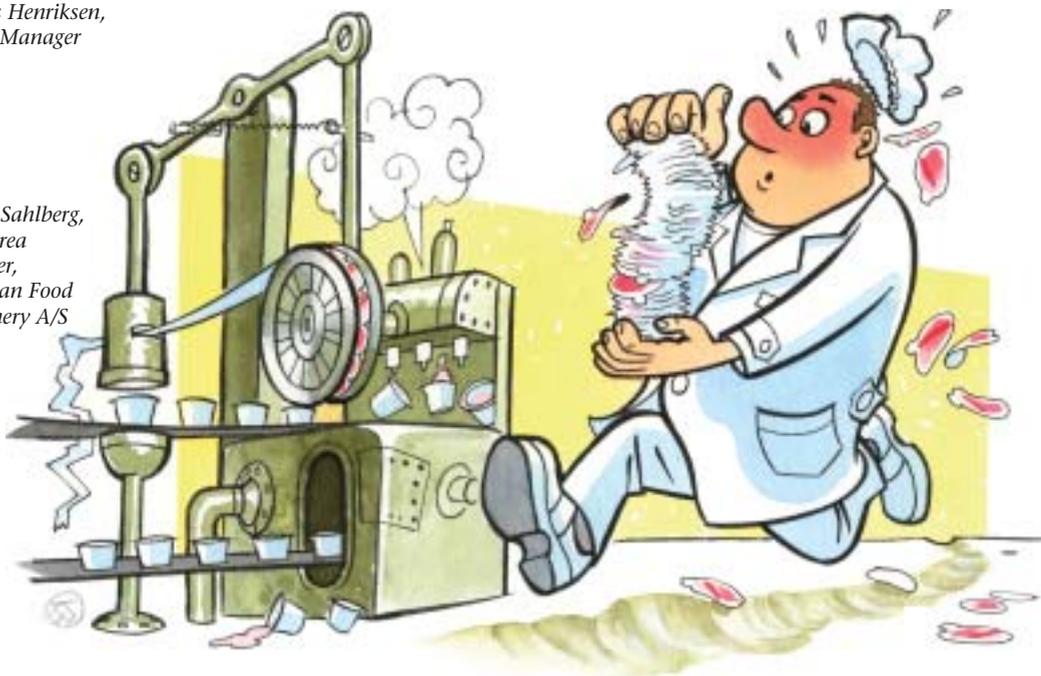
By Lars Henriksen,
Project Manager



and

Henrik Sahlberg,
Sales Area
Manager,
Primodan Food
Machinery A/S

High quality environmentally correct packaging combined with cost savings in man-power and packing materials.



Primodan Food Machinery A/S

Primodan Food Machinery A/S is a Danish manufacturing company incorporating more than 60 years of experience within the Dairy industry. Primodan is an order producing company of filling and sealing machines as well as complete UF Feta Cheese and Dairy plants for markets worldwide.

Continuous product development, high quality standards and customer support makes Primodan a reliable business partner when looking for new equipment.

Health and environment awareness

Today there is an increasing health and environmental awareness among the consumers, that increases the demand for healthy, organic and natural products which therefore put up new standards for the dairies. The main focus of the consumers has so far been concentrated on the product itself, however in the near future, it would be natural to believe that the trend and interest of the consumers, will not only involve the products, but also

which materials are used in the packaging process - and therefore consumers will prefer products packed in environmental friendly packages.

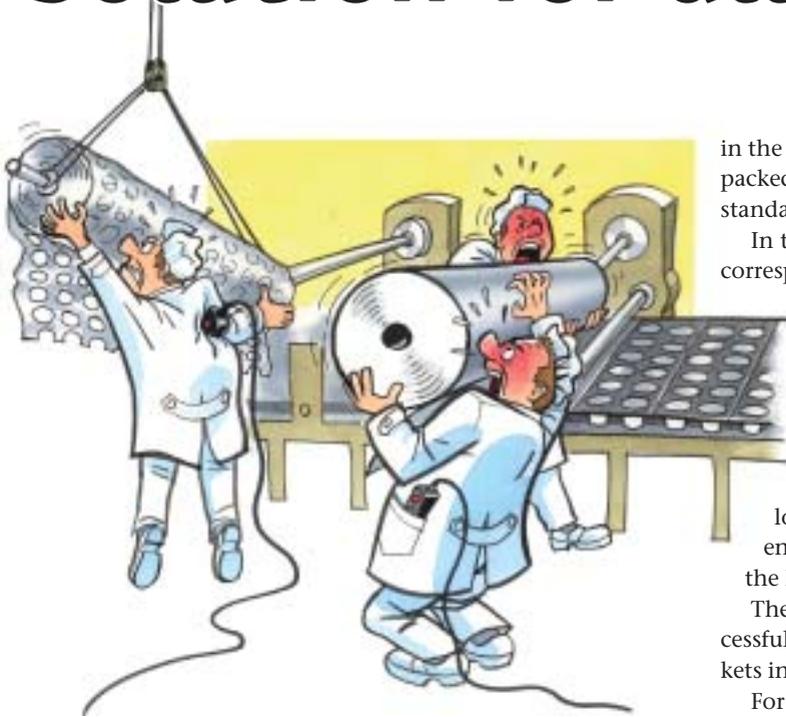
Traditional die-cut lid dispensing system

The best known method of dispensing lids in filling and sealing machines for preformed cups is the system where a stack of die-cut lids regularly is loaded in the machine by the operator. This method is first of all costly in regard to manpower, but most important the hygienic standard of the operator has a direct influence on the bacteria counts in the final packed product, since everything is handled manually.

The die-cut lids used in filling machines all over the world normally have a minimum thickness of 50 microns. If the lid-thickness is less than 50 microns, it will not be possible to dispense the lids one at a time since vacuum will be created between the lids in the stacks.

By using the Primoreels® system described below thinner materials can be used, resulting in less harm to

Solution for all Dairies



the environment as well as lower lid prices; usually cost savings of up to 20% can be achieved by the Primoreels® system.

Traditional lid dispensing systems from rolls

In the traditional lid from roll dispensing system a roll of pre-printed foil is mounted in the machine. This roll is automatically unwound and fed to the cutting/sealing unit. In one continuous motion the lids will be cut to shape and sealed onto the cups. The waste material between the cut lids will then be rewound on a waste roll.

The waste quantity depends upon the shape of the lids and the design of the filling machine, but a waste percentage of up to 45% of the lid material is not unusual. This naturally both harms the environment and makes the lids more expensive.

Primoreels® lid dispensing system

Primodan has within the last years developed and patented a new system with multiple benefits for the dairies as well as the environment.

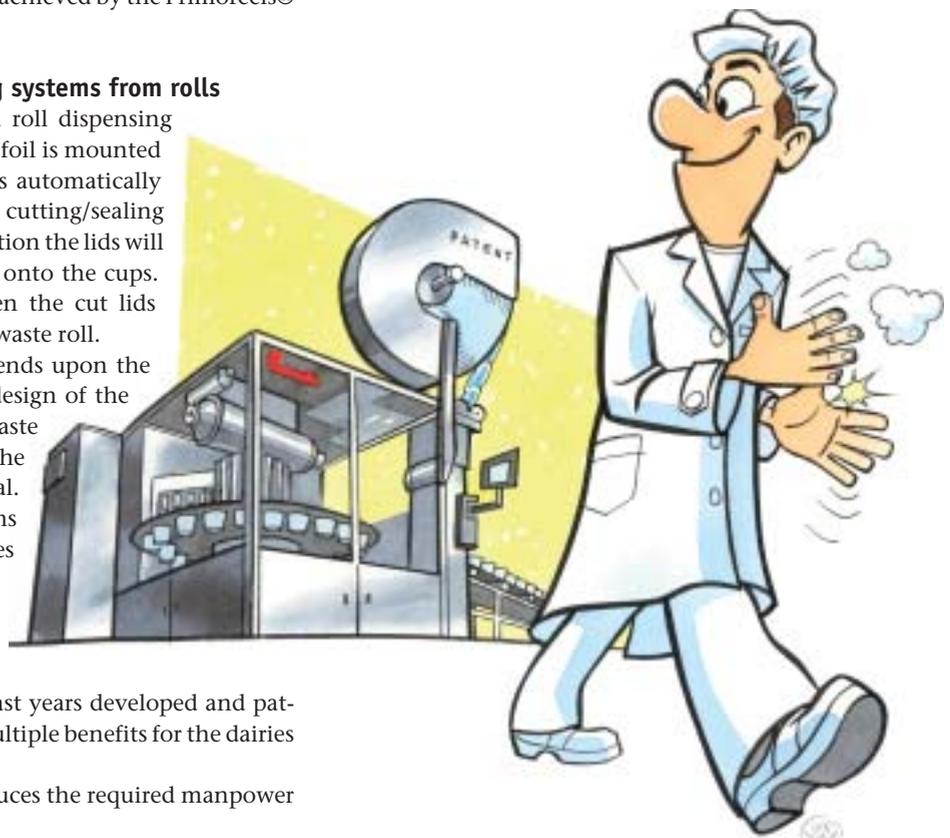
The system not only reduces the required manpower

in the production but it also improves the quality of the packed products by allowing sterilization of the lids as a standard feature.

In the system a reel with preformed and printed lids corresponding to one day's production is mounted in the filling/packing machine. The lids are automatically fed to the lid dispenser passing through an UV-C sterilizing unit. In the packing machine the lids are automatically separated and dispensed on the cups. Because the lids are coming from a roll and not in a stack it is possible to run lid materials with a thickness as low as 23 microns, which naturally has an influence on not only the lid-prices but also minimizes the harm inflicted on the environment.

The new system has within the last 3 years been successfully introduced and operated in dairies on the markets in Europe as well as in The Middle East.

For more information in regard to the Primoreels® system please visit our website at: www.primodan.dk ■



Development of Trendy Flavours



By
Helena Jönsson,
Product Developer,
EINAR
WILLUMSEN

When introducing new products to the market one of the key parameters for success is - **the flavour**. Often the flavour is built into the identity of the product, its name, the decoration of the packaging and key advertising parameters. This is vital for influencing the consumers' desire to pick the product off the shelf in the supermarket. After having consumed the product the flavour is probably the most important parameter in the consumer's decision to repurchase the product - it simply needs to be both appealing and taste well - the flavour has at least to be in line with or exceed the consumer's expectations.

In this article I will describe some major current consumer trends relating to flavour preferences and give examples of how we work in order to create new exciting flavours using the most modern methodology in analytical technology and sensoric evaluation.

Five consumer trends

Recently we described five major consumer trends relating to flavour preferences:

- **Exotic Fruits:** The trend to use exotic fruit flavours has been popular for a while and still is. The consumers are not familiar with the many different "new" exotic fruits and do not know many of the flavours. This means that the producer has a more free hand when choosing the taste profiles. Another advantage with the-

se fruit flavours are their beautiful and exotic names.

- **Nostalgic:** The nostalgic trend is mainly for people in their 20-ies and 30-ies who are leading a stressful life. They like to associate with well-known products from their childhood; which will lead to a re-launch of many flavours from the 80-ies.

- **Health:** The well-known health trend in Europe has for a while been associated with flavours like green tea, honey and Aloe Vera, but by far the most popular flavours within this area are now pomegranate and blueberry. It is believed that blueberry is good for your eyes and that pomegranate counteracts cancer. Many new products have the taste of blueberry or pomegranate and even if the product is just flavoured without any content of fruit - the name alone gives the consumer a positive association/image.

- **Desserts:** The taste of a well known dessert or a pastry is popular in other applications like yoghurts, ice creams, candy etc. An example from the Swedish market is an ice-cream called "Lussebulle" marketed by an international ice-cream company. The pastry which is a Swedish classical pastry with the same name was also pictured on the product label.

- **Special Products:** This trend indicates that the consumers "want more"; for instance the flavour of "yoghurt" is no longer sufficient, they want a taste of "Greek yoghurt" and not only potato chips with "cheese & onion" but "cheddar & red onion". This provides a more exclusive identity, for example "Norwegian blueberries".

Flavour development

The first example is developing a new range of flavours inspired by the world of international desserts. The flavours are intended for use in a

wide range of industrial food products including dairy products - but not necessarily desserts! The other example is Nordic berries and fruits which have become very trendy. In EINAR WILLUMSEN we have focused on this trend which is perfectly in harmony with our company position as the regional Nordic flavour house.

Dessert flavours

The development of flavours which match a trend like the above mentioned dessert trend requires a lot of creativity as well as technology and knowledge. First of all it is important to find the right target which gives the consumer a clear perception of the flavour. Apple pie is an obvious example. It comes in many different varieties and a lot of people prefer their own favorite recipe when making homemade apple pie. The "Apple Pie Flavour" which EINAR WILLUMSEN has just developed, is inspired by the apple pie dessert of a major burger chain. This product reaches many consumers why a lot of them also recognize this mild taste of apple and pie dough in combination with a very distinct taste of cinnamon.

Another example of finding the right target is EINAR WILLUMSEN's flavour "Red Berries Dessert". This flavour is inspired by a traditional Danish dessert called "Rødgrød med fløde". According to tradition the dessert is a jelly made of fruits and berries from the garden served with cream. Today people in Denmark still prepare the "Rødgrød" from their own recipe with fruits and berries from their garden. Our flavour is therefore built from a typical example of this classic recipe which among other things includes raspberry, rhubarb and red currant.

Other exciting flavours within the area of "desserts" are for example "Afternoon Tea Flavour", "Crème Brûlée Flavour" and "Banana Muffin Flavour".

Speciality flavours

The development process for flavours to match a trend like "special products" is slightly different. To de-

velop for example a “Norwegian Blueberry Flavour” the taste profile must be more specific. The nuances of a blueberry have to be detected and surveyed. Blueberries grown in Denmark or Canada differ in taste from blueberry grown in Norway. It has partly to do with the climatic conditions and partly with what kind of blueberry seedling the berry derives from.

The first step in the development process is to identify the sensoric descriptors of the berry (Figure 1). The descriptors can then be used to communicate differences between two blueberries or two blueberry products.

In order to identify the sensoric descriptors and for instance to verify to what extent a sample e.g. is “woody” - the taste panel has to be well trained and experienced. There are different kinds of sensoric methods available i.e. “sensoric profiling”, “paired comparison test” and “tri-angle test”.

The chemical analysis within fla-

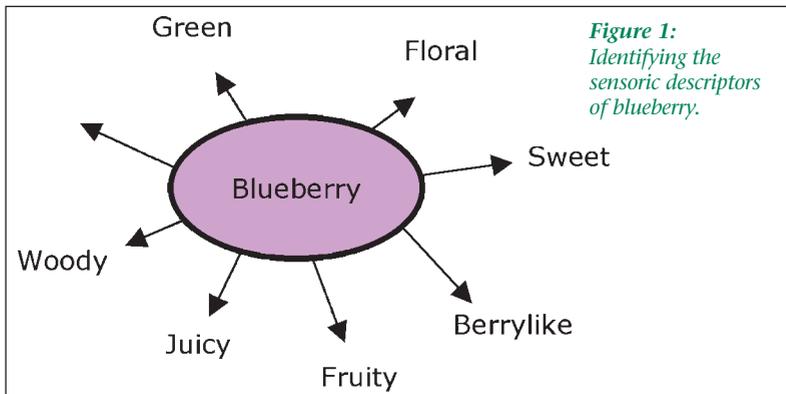


Figure 1:
Identifying the sensoric descriptors of blueberry.

avour development is important in order to detect the chemical nature of the substances providing the nuances which distinguish the different blueberries. A GC/MS determines the content and the concentration of aromatic substances. Other analytical methods useful to develop flavours are i.e. spectrophotometry, flash point analysis, dynamic light scattering (particle size) and gas chromatography-olfactometry (GCO).

The analytical data is hereafter used in a multivariate analysis and

gives the flavourist an idea of which substances and raw materials to use in order to create the flavour of the target.

In the actual project we chose to start with the so called “flavour blocs”, which - in combination - provide the flavour base. With blueberry the four blocs were named “fruity”, “sweet”, “green” and “woody”. The spider web diagram (Figure 2 - next page) shows how the bases from four different blueberry flavours have four different profiles.



The Flavour Specialists

Ready-to-use flavour and compound solutions for:

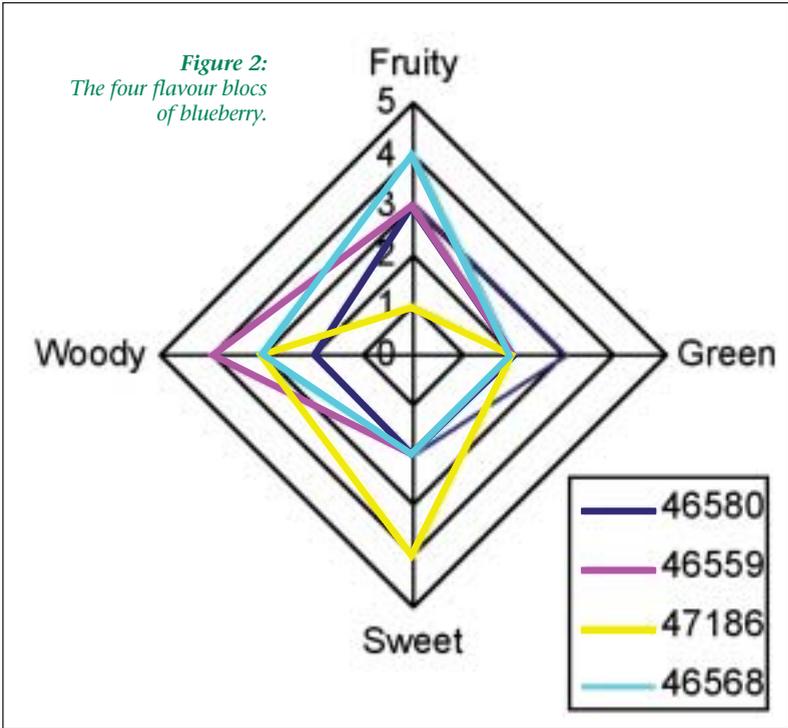
- * Beverages
- * Spirits
- * Confectionery
- * Bakery Products
- * Dairy Products
- * Convenience Foods
- * Processed Fish Products

EINAR WILLUMSEN
-partner with the food and beverage industry



A/S Einar Willumsen Abildager 23-25, DK-2605 Broendby, Denmark Phone: +45 4345 2244, Fax: +45 4345 9400
 AB Einar Willumsen Betselgatan 3, Box 9213, S-20039 Malmoe, Sweden Phone: +46 40670 1900, Fax: +46 4022 0401
 Einar Willumsens sales office, Norway Murgarden, Postboks 34, N-2688 Lom, Norway Phone: +47 6121 9110, Fax: +47 6121 9109
 Einar Willumsens sales office, Finland Aurakatu 1C, 3 Kerros, FI-20100, Turku, Finland Phone: +358 2251 6599, Fax: +358 2251 6598 E-mail: mail@einarwillumsen.com
www.einarwillumsen.com

Figure 2:
The four flavour blocs
of blueberry.



Creative flavourists possess unique skills: Through their experience and training they can use their senses to translate above data to smell and taste - they recognize the smell and flavour of the individual components and they are able to combine the information to create a balanced and rounded finished impression of the flavour.

When the flavour base has reached the right taste profile, the flavourist might work even further to affect the flavour in the other directions; astringent, floral, berrylike, juicy and finally EINAR WILLUMSEN is able to present a Norwegian blueberry flavour with a flavour profile which gives a dry/woody and berrylike character called Blueberry Flavour 46559, dosage 1-2 g/kg in yoghurts, flavoured milks, desserts or similar applications! ■

Danish Dairy & Food Industry
... worldwide

Please help us to keep up a complete mailing list!

We continuously update our mailing list. In order to receive the journal on a regular basis, we kindly ask you to inform us if you have changed your address or it is incomplete.

Identification No. _____

Title and Name _____

Company _____

Street _____

Postal code _____

City _____

Country _____

Danish Dairy & Food Industry ... worldwide
The old Dairy • Landbrugsvej 65 • 5260 Odense S • Denmark
Fax: +45 66 14 40 26 • E-mail: info@maelkeritidende.dk

60 years of experience



Primodan Food Machinery is a Danish manufacturing company incorporating more than 60 years of experience within the Dairy and Food processing industry. Primodan is an order producing company of filling and sealing machines as well as complete

UF feta cheese and dairy plants for markets worldwide.

Continuous product development, high quality standards and customer support make Primodan a reliable business partner when looking for new equipment.



Up to
40.000
cups/hour

Inline fillers



Up to
18.000
cups/hour

Roundtable fillers

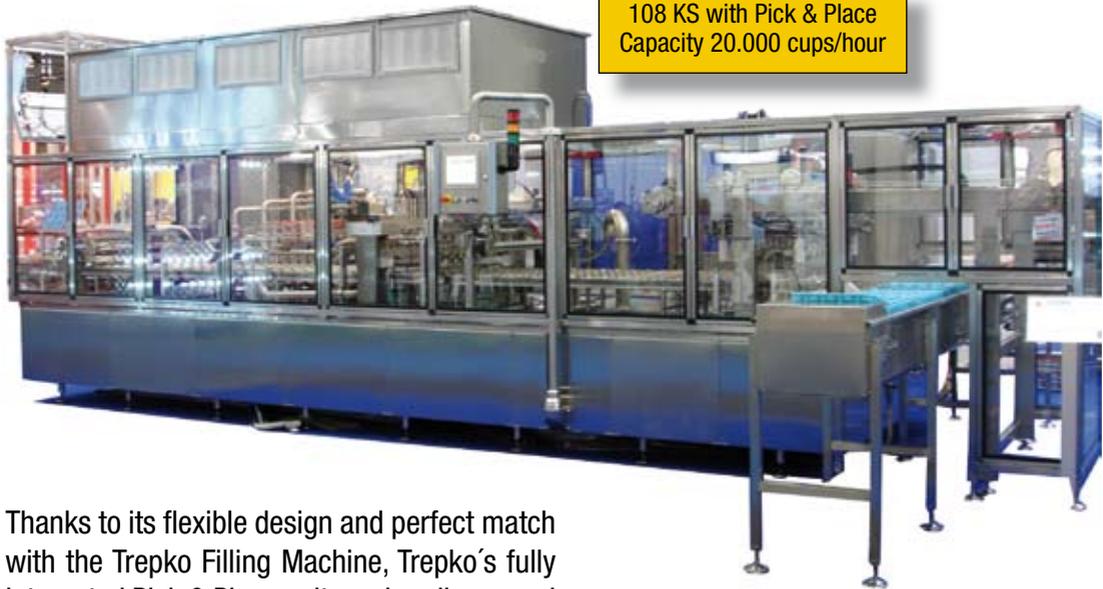


Up to
10.000
cups/hour

UF feta cheese filling plants

Trepko *60 years of experience*

100 Series In-Line Filling Machines



Thanks to its flexible design and perfect match with the Trepko Filling Machine, Trepko's fully integrated Pick & Place unit can handle several cup formats with simple adjustments from the touch-screen panel. A perfect centring of the cups in both the pick and the place function ensures an extremely reliable production.



Please contact our sales department to hear more about the solutions tailored to your needs.

TREPKO A/S • Kuldysen 15-17 • P.O. Box 128 • 2630 Taastrup • Denmark
Tel.: +45 43 99 22 44 • Fax: +45 43 99 26 55 • trepko@trepko.dk • www.trepko.com