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.

**Inline fillers**
Up to **40,000 cups/hour**

**Roundtable fillers**
Up to **18,000 cups/hour**

**UF feta cheese filling plants**
Up to **10,000 cups/hour**
Denmark - September 2009

The major theme of Danish Dairy & Food Industry ... worldwide is: Green Recovery • Local & Global. This year, we proudly announce that the Danish Minister for Climate and Energy, Connie Hedegaard introduces Danish Dairy & Food Industry. The topic of Connie Hedegaards article is the up-coming UN Climate Change Conference, COP15 to be held in Copenhagen, Denmark 17-18 December 2009.

In the introduction the Danish Climate Minister points out that: Green growth is the way of the future! The exact same strategy is established by numerous companies within the dairy industry. Last year the Danish based international dairy company Arla Foods launched an ambitious climate strategy focusing on environmental improvements. Also suppliers of equipment and services for dairy production have sustainability on the agenda. Thus expert companies within dairy processing equipment, ingredient, packaging, hygiene and analysing concepts as well as transportation focus on developing optimized and efficient technologies which minimize the environmental impact during dairy and food processing. In the midst of the macroeconomic crisis it is urgent to focus on green technology. To quote the Danish Climate Minister: Sustainable growth is the only growth we can afford!

Besides studying this magazine our readers are offered the opportunity to meet representatives from the Danish dairy and food industry at large international exhibitions in 2009 as for example: DrinkTec in Munich 14-19 September, IDF World Dairy Summit 20-24 September in Berlin, BioFach America in Boston 24-26 September, World Dairy Expo & Summit in China September, World Dairy Expo in Madison 29 September - 3 October, Food Ingredients India in Mumbai October, Anuga in Cologne 10-14 October and China FoodTech in Beijing 27-29 October.

The Danish Dairy Managers Association and the Danish Dairy Engineers Association own and publish Danish Dairy & Food Industry ... worldwide. We have published the magazine since 1976 and this issue is the 19th in succession informing you about Danish dairy and food industry.

Danish Dairy & Food Industry ... worldwide is distributed in more than 120 countries in 10.000 copies. Furthermore, the magazine is available at our homepage: www.maelkeritidende.dk. 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.

Anne-Sofi Christiansen
Chief Editor

Anna Marie Thøgersen
Editor
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THIS DOOR IS GREEN
Welcome at COP15
On December 7-18 2009, Denmark will host COP15, the 15th Conference of the Parties to UNFCCC. We welcome negotiators, civil society, business and many more to our capital and are looking forward to two weeks of constructive negotiations.

Global climate deal
The goal of this conference is to reach an agreement on an ambitious, global climate deal that can put us on a path towards a low-carbon future. We need to act now or climate change will wreak havoc at a scale we can hardly imagine. The cost of inaction is far greater than the price of taking action now.

Joined efforts
A new climate deal needs to be guided by science. The Intergovernmental Panel of Climate Change (IPCC) has set a yardstick for us all to measure our efforts against: To stay below the two degrees centigrade threshold that science tells us is necessary, the global emissions will have to peak within 10-15 years and be reduced by 50% in 2050. Therefore it is crucial that the developed countries show true leadership in taking on ambitious reduction targets. True commitments by the developed countries will inspire confidence in the developing world that the rich world seriously will live up to its responsibilities. However, recent population projections predict we will be 9 billion people on the planet by 2050 - and the majority will live in what we now term the developing world.

Developing countries can contribute with a nationally appropriate mitigation action supported and enabled by technology, financing and capacity-building taking into account the principle of common but differentiated responsibilities. The developed and developing countries need to join efforts if we wish to make a successful transition to a low carbon future.

Green opportunities
Business also has a role to play in contributing to a low carbon society. Green will be the colour of the future and this should be reflected in business models and plans. Sustainable growth is the only growth we can afford. If businesses play their cards right, this development will create plenty of opportunities. As president Obama’s climate envoy Todd Stern has said: “How good will the business judgement of companies that make high-carbon choices now, look in five, 10 or 20 years, when it becomes clear that heavily polluting infrastructures has become deadly and must be phased out before the end of its useful life?”.

A new global climate deal is not an easy task to achieve. But we hope that the negotiations will be fruitful and prove that the international society has the will and the courage to take action.
Door System is offering the quickest operating doors in industry!

When you open any door, hot air is expelled with colder air. And you pay for both the hot and the cold! Consequently reducing opening and closing time of a door has become an important factor – providing a double loss - or gain, corresponding to the speed of the door! Door System doors are with an opening speed of 2 metres per second regardless of the width (your choice from 1 metre to 7 metres) up to the desired height.

New:
Thermally insulated doors – also operating with the same high speed.
Door System model DS 800 is the latest development in Door System’s range of quick and effective industrial door solutions.

With only 43 mms of thickness the door still maintains a realistic balance between the inside/outside temperatures due to a special highly effective insulation material. Ideal for chill/freezer environments with heavy volume high speed traffic movement. Installed with the appropriate activators necessary for the safe operation of the door and appropriate for the needs of modern industry. And built to last.

All Door Systems doors are easily maintained and repaired, done mostly by the in-house workers involved, when the traffic tends to have been a bit too close” to the door.

Call director of sales
Mads Borne on +45 42 14 52 02

- and ask him to explain, how your company could recover all their new factory door investment in less than 36 months from installation.

Mads will furthermore explain why your next door will arrive “green” – no matter which colour you order us to manufacture it with!

Speed it up! – your savings with Door System.
The faster the better!
Global roll-out Climate Planning
Arla Foods’ strategy on environment and climate focuses on saving water, energy and waste and also on reducing the emissions of CO₂ by 25% before 2020 in the production of foods, transportation and in packaging.

Which part of the world do you think will be the easiest, when it comes to reaching these goals? In China, Canada, the United Kingdom, Poland or Denmark...?

We are ahead with our environmentally friendly plans on our domestic markets Denmark, Sweden and the UK. Generally speaking, we focus on initiating and using experiences related to environmental savings in one country and hereafter transfer - or roll-out the specific environmental plans and goals in the remaining department dairies, says Peder Tuborgh. He emphasizes that it is about locating environmental activities that will function and which are financially fertile.

Peder Tuborgh has many examples of environmental improvements at Arla’s dairies around the world; a reduction of packaging in the UK, route planning in Canada, eco-driving and use of bio-fuel in Denmark and a reduction of waste in Poland.

Climate Strategy 2020
Arla Foods future Climate Strategy is a part of an overall Environmental Strategy, which again is part of Arla’s CSR report. The Environmental Strategy focuses on areas as water, energy and waste.

The separate Climate Strategy will contribute to a reduction by 25% before year 2020 in CO₂ emissions within the following specific areas:

Transport
• Use of bio-fuel
• Training in environmental-friendly driving
• Greater efficiency/better route planning

Food production
• Use of new technologies
• Use of CO₂ neutral fuels to replace fossil fuel
• Greater efficiency

Packaging
• Minimising the amount of packaging
• Use of low-impact materials
• Increased use of recyclable materials

The Climate Strategy also encloses cattle farming practices, and on this subject Arla Foods work with the co-operative members, insurance companies and industry associations to reduce the climate impact from cattle farming as much as possible. Focus are on feed composition, use of high value fertiliser and biogas production from waste.

Reduction of packaging in the UK
At Arla’s largest dairy in UK, Stourton, extensive savings have been realized when it comes to packaging. The specific gravity of the plastic milk bottles has been reduced from 27 to 25, the 5 grams, screwcaps weigh half of what they used to, and the stickers...
showing product information have been made thinner and smaller. All in all 313 tons of plastic are saved each year. Both the environment and the economy benefit from this.

Similar initiatives with environmentally friendly packaging takes place in Denmark. Here the formerly used aluminium caps on crème fraîche cups, which have a heavy impact on the environment, are replaced with plastic caps.

Route planning in Canada
In Canada, Arla’s distributing trucks travel over enormous distances. Here the international dairy company has invested in a new IT system intended for route planning. By sticking to the route plans, the Canadian drivers will now reach the stores faster. At the same time, the trucks use less fuel than before. This more environmentally friendly form of driving has reduced the CO₂ emissions with 10%.

Eco-driving in Denmark
In 2009 Arla’s production department in Holstebro will take part in a test in which 17 trucks will drive on a diesel-blend consisting of 15 % biodiesel. Furthermore, several Danish as well as Swedish Arla-drivers have taken courses on eco-driving, which simply means stepping less on the accelerator and to avoid accelerating and run idle. Moreover, an electronic system has been installed in all trucks - a system that enables the drivers to read their daily use of diesel. With the on-going initiatives, Arla expects to save 15 % annually on the distributing expenses of the Danish fleet of trucks - a fleet that employs 1000 drivers.

Less waste in Poland
At Arla’s dairy in Poland, investments have been made when it comes to better treatment of discharge water. Furthermore, the 200 employees all participate in a common project to minimize the use of energy and waste in the production.

The course focuses on an optimized use of the raw material from the moment the milk enters the dairy till the finished products enters the market. Moreover, the Polish employees are made aware of better handling of the different ingredients, cleaning chemicals and packaging etc. The goal is to reduce waste with 15%.

The environment is a good investment
Due to the global financial crisis, Arla Foods initiated an economy programme in spring 2009. In which areas will this influence the planned environmental improvements?

It will by no means influence these! There is good money in considering the environment: Use less water - and you will save money.

Our overriding Environmental Strategy is one long take, which also concerns making the employees aware of their individual responsibility towards the environment, Peder Tuborgh emphasize. He adds that the present environmental concerns are an important factor in the company’s annual budget planning. - When we wish to make new investments at the international dairy departments within the company, we estimate the specific environmental impact in each single case.
LOWER COSTS – AND ENVIRONMENTAL IMPACT

Tetra Pak delivers food processing solutions that enable you to reduce costs, boost profitability and lower environmental impact – all in one go.

With our Design for Environment approach we focus on efficient use of energy, water and raw material, reducing impact on climate and fresh water resources.

Because we believe that economy and ecology can and should go hand in hand. It’s really all about helping our customers achieve more sustainable business with unbeatable efficiency. And we guarantee what we deliver.

You’re welcome to visit us at www.tetrapak.com/environmentalsolutions

Tetra Pak, Δ: and PROTECTS WHAT’S GOOD are trademarks belonging to the Tetra Pak Group.
A sustainable Europe
Protection of the environment is crucial for the present and future generation’s quality of life. The challenge is to combine it with a sustained economic growth in a way which in the long term is sustainable. The food industry, being the largest production industry in Europe, will be more and more focused on the impact on the environment, leading to the development of better methods for e.g. utilisation of raw materials and by-products, increased process control and life cycle analyses. For instance, in England several companies have taken the initiative to CO₂ label some of their products - ranging from milk to cars - showing the consumers how much CO₂ is released when manufacturing the products.

This approach is consistent with the consumers’ wishes. They want measurable quality and concrete information about food safety and hygiene, and at the same time they call for other forms of quality such as animal and environmental friendly production methods.

A sustainable Denmark
Also Denmark is heading towards better solutions for environmental food production. Centre for Advanced Food Studies (LMC) has released a strategy for 2009-2013 to the benefit of a competitive food production supplying the consumers with healthy, safe and tasty food of high quality. The strategy also involves challenges within efficient, sustainable and ethic production, safe food supply, transport and environmental considerations and climate.

Two projects within LMC dealing with the issues above are described below.

Milk Genomics
In January 2009 a project called Milk Genomics started at the Faculty of Agricultural Sciences (DJF), Aarhus University (AU) in collaboration with three Swedish partners. Lotte Bach Larsen from the Department of Food Science, AU, is leading the project, which is supported by the Danish Cattle Federation, Arla Foods and the Programme Commission on Health, Food and Welfare.

The aim of the project is to identify genetic contingent differences in the nutritional, health, and technological properties of milk. By combining new “omics” techniques, scientists will link the differences in the genetic back ground of the cow with differences in the composition and qualities of the milk. The long range goal is to identify marker genes and new genetic variants of significance for the milk properties. With such tools in hand it should be possible to breed for differentiated milk and it will be easier for the farmer to identify the cows producing milk which is specifically suited for e.g. cheese production or with a particularly healthy fatty acid composition.

The approach could also be used in future investigations by linking genome markers to genetically contingent differences in e.g. feed utilisation and/or in the cows’ methane emission. Thereby the emission could potentially be decreased not just by a special feed intake but also through exploitation of genetic differences through breeding. This way it will be possible to produce high quality milk and at the same time reduce the emission of greenhouse gases.
Organic milk of high quality

Scientists from the Department of Food Science, AU, and from the Faculty of Life Sciences, University of Copenhagen (UC), are studying how the integrity of the Danish organic milk production can be improved and if it would be possible to reduce the purchase of feed and instead base the production on the application of home-produced feed. The project is supported by the Ministry of Food, Agriculture and Fisheries and Jacob Holm Nielsen, AU, is heading the project.

One main objective is to establish a basic understanding of how feeding with high levels of grass and legumes influences the overall quality of organic milk and dairy products. The project will also document how a sustainable, intensive and economic sound dairy production can be obtained together with high quality organic milk with a composition and flavour different from conventionally produced milk. The project also investigates how novel and gentle pasteurisation processes can improve the milk flavour, retain the native enzymes and milk proteins and improve the functionality of the milk for processing. This should give the necessary knowledge to set up different production concepts covering the chain from production of pasture to consumer perception and willingness to pay for differentiated and high quality products, which can ensure the production of economically sustainable organic milk.

LMC has the following university partners:

University of Copenhagen - Faculty of Life Sciences: www.life.ku.dk
University of Copenhagen - Faculty of Science: www.science.ku.dk
Aarhus University - Faculty of Agricultural Sciences: www.agrsci.org
Aarhus University - MAPP-centre, Aarhus School of Business: www.asb.dk
University of Southern Denmark: www.sdu.dk

LMC coordinates the public research and higher educations within the food area in Denmark. Four universities participate in the virtual centre, which was established in 1992. Within LMC particularly the Milk and Egg Science group at Department of Food Science at AU and Department of Food Science at UC perform research on dairy products, milk based ingredients and dairy processes.
Consumers are ready for more

But are you ready with the right packaging solutions?

Yes, consumers love milk. They always have! They love it with their tea & coffee, on their cereals, and to drink it with delicious flavours, or as it is.

But now consumers are ready for more – more natural taste, more convenience, and more environmental concern.

So when you choose your packaging partner, think like your consumers and choose a packaging solution with optimal light protection avoiding treatments that impair milk’s original fresh taste. Elopak’s innovative paper-based packaging solutions, now in more shapes and sizes and with more closure options.

Elopak – Offering You More Premium Possibilities!
The evidence for climate change can be seen globally and is increasingly registering in the consciousness of people and politicians. Regulatory pressures are also rising, as policy makers seek stronger instruments to drive down emissions. Moreover, a rethink is taking place even among consumers, as they increasingly choose products that are manufactured in a more environmentally-sound manner.

Many companies within the food industry have global targets and programs to reduce their CO₂ emissions. To achieve their targets, highly efficient production solutions with low use of utilities are of vital importance.

Ecology is connected to economy in a number of ways. Energy reductions result in reduced CO₂ emissions and lower operating costs. Decreased water consumption saves money and reduces the strain on fresh water resources. Lower product losses lessen effluent load and lower both raw materials costs and the cost of sewage treatment.

“Design for Environment” (DfE) Tetra Pak has made a substantial contribution for many years to reducing CO₂ emissions within its own production. Tetra Pak is now increasingly focusing on environmentally efficient production solutions, in order to support customer needs. “Design for Environment” (DfE) is the practice of integrating environmental aspects into product design and development. DfE is applied in the design of components and modules - as well as complete production lines and plants, to minimise product losses and the use of water, energy and detergent. DfE also ensures that our equipment and production units do not contain or use any hazardous matter, diminishing the environmental impact of decommissioning.

Environmentally efficient production
As a leading provider of processing solutions for the food industry, it is important to Tetra Pak to provide its customers with comprehensive advice and that we develop tailor-made and future-proof concepts that offer optimum performance as well as ensuring the lowest possible environmental impact.

Even for existing production plants, Tetra Pak offers solutions which optimise utilities consumption and minimise product waste. Tetra Pak has developed special service products, with which customers’ processes can be analysed, to facilitate implementation of efficiency improvements.

Tetra Lactenso Aseptic UHT
With its new generation of UHT milk processing solutions Tetra Lactenso Aseptic, Tetra Pak is setting new performance standards:

Up to 40 percent less product losses is achieved compared to current industry standards. For example, Tetra Therm Aseptic Flex and the Tetra Therm Aseptic VTIS, are able to greatly reduce product losses because of their, double balance tank system, which minimises the mixing phases of product and water and thus significantly reduces product waste.

Water, steam and energy consumption are reduced by up to 75 percent, through Aseptic Energy Hibernation. This function is automatically activated when the UHT system is “water stand-by mode” (e.g. while waiting for the filler to be available for operation).

Tetra Alex Homogenisers
Tetra Alex homogenisers are known for their high efficiency, product quality and low operating costs. The special design of the HD 100 homogenisation device makes homogenisation particularly effective. The required homogenisation results can be achieved at lower pressure than
with conventional plants (up to 30 percent lower). This not only reduces energy consumption, it also reduces wear. This high level of efficiency is achieved in both full-stream and partial homogenisation for pasteurized consumption milk.

Another important advantage is low water consumption. The design of the cooling water system, together with an automatic thermostat control, keeps the cooling water consumption low. Furthermore, your consumption of steam in aseptic machines will be reduced thanks to the water flushing of the piston seals during CIP (Cleaning in Place).

**Product & Water Saving**

To increase uptime and reduce customers’ operational costs, Tetra Pak has developed a new intelligent service product, Product & Water Saving, for determining product, water and cleaning solution losses in dairy plants during CIP.

The system measures the efficiency of the cleaning process and identifies, based on trend curves, improvement possibilities that could be used to minimise losses of product, water and cleaning solution.

The Product & Water Saving service can identity large savings of up to €140,000 per year while reducing the environmental impact.

**Optimisations and upgrades**

Optimisations and improvements are available from Tetra Pak for many key components and modules, in the form of upgrades. Thus, existing plant installations can also benefit from new developments - resource consumption can be reduced and operating efficiency increased.

For example, upgrading older homogenisers by installing the new HD 100 homogenisation device can result in significant reduction in energy consumption. Also, the Aseptic Energy Hibernation, Low-loss Balance Tanks and IntelliCIP functions used in Tetra Lactenso Aseptic UHT solutions are available as upgrades.

Luxlait Association Agricole selected Tetra Pak Processing Systems as a key partner in the development of its newly built, ultra-modern dairy close to Bissen in Luxemburg. Waste, energy and water management are given high priority at the new production site.

“Environmental issues are very important,” says Industrial Director Gerard Reslinger at Luxlait. “They are so today, and will be even more so tomorrow. The impact of environmentally values on costs is becoming ever greater, because the cost of energy is increasing, as is the price tag on waste processing and disposal. It is absolutely necessary to take this into account when calculating of the cost of our products.”

---

Tetra Lactenso Aseptic UHT production solutions.
New packaging solution
Europe’s leading dairy producer Arla Foods has chosen Superfos to supply the new packaging solution for the popular Lurpak® Spreadable and Lurpak® Lighter Spreadable. Each year, more than 100 million tubs will leave Superfos to the delight of consumers all over the world.

Until now the Lurpak® Spreadable products have been packed in a thermoformed packaging, but now a PP solution with paper labeling will be used instead. The new tub will provide a much better silvery look than the thermoformed packaging.

There are several reasons why Arla Foods has chosen paper labeling. The new solution with paper labeling makes it more difficult for light to shine through the packaging on the shelves in the supermarkets. The tub gives a very good protection against UV-light and this is very important for us. Furthermore, the quality of the print and the paper labeling is of a premium product.

Made in Denmark
The Lurpak® Spreadable and Lurpak® Lighter Spreadable products are filled at the Holstebro dairy in western Jutland. The products will mainly be exported to the British market, but the products are also sold at 20 markets all over the world. All Lurpak products are required to be produced in Denmark using Danish cream to ensure the highest possible product quality.

Sustainable packaging
Being one of the leading dairy producers places great packaging demands on Arla Foods’ shoulders. Product safety, shelf life and packaging quality has always been an area of interest for the company, but the environment is increasingly important too.

For Arla Foods the key issue is identifying the right type of packaging to protect the product, but Arla Foods is also meeting more challenges in terms of preventing climate change and using sustainable materials. The packaging solution is a sustainable choice that lives up to Arla Foods’ environmental considerations.
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.
Environmental Friendly Packaging Solutions

By Lars Henriksen, Project Manager, Primodan

Dairies worldwide are facing increasing demands from both consumers and governments to improve the environmental profile of their companies.

The increasing eco consciousness is not only a head argue for the dairies but also a challenge to the machinery producers to invent new and better processes and machines which are more efficient, sanitary and less power consuming.

In Primodan we take the challenge very seriously and within the last years we have invented new solutions for our machines to meet today's and the coming requirements of the Dairies.

Improved power efficiency
All our machines are under constant development to be increasingly efficient measured by power consumed/produced cup. One of our main focus areas has been to reduce the air consumption of our machines since compressed air is very power costly for the dairies.

The ratio power consumed/produced cup has been significantly improved on Primodan's machines since we have changed a lot of the pneumatic functions to electro-mechanical.

We have likewise developed a new double stroke sealing cylinder which reduces the air consumption by 50%.

Lidding system with great benefits
Primodan has within the last five years developed and patented a new system - Primoreels® - with multiple benefits for the dairies, consumers and most but not least 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 machine. The lids are automatically led to the dispenser passing through a UV-C sterilization unit. In the packing machine the lids are automatically separated generating absolutely no grid waste and dispensed in the cups. Because the lids are coming from a reel and not in a stack it is possible to run lid materials with a lower thickness compared to traditional die-cut lidding systems which naturally has an influence on lowering the lid-prices and not least significantly minimizing the carbon footprint on the environment.
Investing in green technology

Finally to cope with the demands Primodan has invested in a company producing a new type of plastic cups and containers that offers “food and beverage” producers:
- Packages with carbon footprint reduction of up to 70% compared with traditional packages.
- Improved barrier protection.
- Free choice of print quality e.g. high quality rotogravure technology, 3D, holograms etc.
- At significant lower purchasing prices.

As a future option, the cup making machine can be designed inline with Primodan’s filling machine and thereby offer great advantages to the dairies and the environment.

Today the cups are usually transported by truck from various producers to the dairies. Each pallet only contains a few thousand cups (and a lot of air) and takes up a lot of storage place in the dairy.

With the inline system we can significantly reduce the storage place necessary at the same time as the cups used in the production are more environmental friendly. Naturally the cups can also be supplied in conventional boxes.

The cups will be launched second half of 2009.

This briefly sums up the steps Primodan is taking in order to take our share of the responsibility with the rising problems concerning the environment.

For more information please contact Primodan or visit our website www.primodan.dk
The Directive

GEA Liquid Processing actively participates in EHEDG to comply with EU Directive EN 1935/2004 among other things. This Directive provides guidelines for all materials and articles intended to come into contact with food. When you read it for the first time, you might be misled to believe that it only deals with the quality of primary construction materials, eg. stainless steel of some kind or another or various plastic materials, etc.

However, this Directive concerns all materials coming into contact with food, also referred to as “active” materials. But what does that include?

Lack of knowledge

Below, I will focus on the active materials most commonly used in the food industry, namely detergents. Detergents, and especially functional detergents, are increasingly used in the daily food production. Some might say this is to increase food safety and product shelf-life.

My claim is that there is a lack of knowledge of Hygienic Design among decision makers when it comes to the purchase of new production equipment. Furthermore, there is insufficient focus on the total costs, ie. the investment as well as the operating costs, also referred to as Total Cost of Ownership (TCO). The purchasers’ focus is primarily on the price of investment - and when, at the same time, many machinery manufacturers and plant constructors fail in demonstrating the obvious advantages of running a plant built in line with the existing Hygienic Design Guideli-

Cleaning problems

Non-hygienic plant design not only leads to increased consumption of chemicals, water and energy. It also gives rise to cleaning problems. If a plant is difficult to clean after production, one will also have difficulties in getting all the detergents out of the plant before starting up production again. And this takes us back to the EU Directive prescribing that we must secure our food against contact with “active” materials in the process plant.

Self-reinforcing vicious circle

Bacteria have the particular ability of adjusting themselves to the environment they are exposed to - and of developing resistance to the products formulated to remove them. The examples of still more complex detergents are numberless, just like we often see that chemical concentration is increased to ensure proper cleaning of the process equipment. This development results in more resistant bacteria and, in consequence, a more difficult cleaning, in other words a self-reinforcing vicious circle. Bacteria need only little space to build a nest in a process plant. A small crevice will do, and therefore it is of vital importance that the components built into a process plant - such as valves, pumps and pipe connections - are certified and easy to clean.

EHEDG Certification

The certification can be performed by EHEDG (European Hygienic Engineering & Design Group) established by a group of international food manufactures and process equipment manufacturers in Germany. EHEDG has a Danish chapter, too, functioning under the auspices of the
Danish interest group Stålcentrum (Steel Centre).

Hygienic plant design
GEA Liquid Processing in Skanderborg, Denmark, employs components produced by GEA Tuchenhagen in Germany. All of these components are EHEDG certified and also comply with EN 1935/2004. However, the right choice of components for a process plant does not imply that the total plant is hygienically designed and installed. For more than 30 years GEA Liquid Processing has dealt with hygienic plant design, installation and process integration, and therefore we are an experienced partner for the performance of such tasks. Moreover, GEA Liquid Processing actively participates in the first steps made to develop a cleaning test and certification scheme for complete process plants and machinery.

Environmental benefit
The advantages of designing and installing production plants in line with the Hygienic Guidelines issued by EHEDG and by the Competence Centre of the Danish Stainless Steel Industry, Stålcentrum, are obvious. Hygienic Design not only reduces the consumption of detergents and the cleaning time, and consequently the company’s expenses for chemicals, water and energy. Hygienic Design also provides a considerable environmental benefit, which, with the increasingly high focus put on the consumption of our valuable groundwater, energy and discharge of CO₂ and other substances into nature, will be to the company’s benefit, too. And last but not least, the company will comply with the demands made in EU Directive EN 1935/2004.

For further information about EHEDG please go to www.ehedg.org or visit www.gea-liquid.dk.
Health benefit
Global consumers expect food producers to provide products that contribute to both health and indulgence. Product development with respect to major food market trends such as health, convenience and indulgence is therefore an ongoing and important task for large players.

Consumers tend to look for lighter versions of traditional foods or for functional foods for preventing or reducing risk of diseases and promoting general well-being. Or for both at the same time in shape of e.g. a traditional product like yoghurt but in a probiotic version for included health benefits. The market for functional foods in general and foods with probiotics in particular, is surging.

Probiotics are live microorganisms, which when administered in adequate amounts confer a health benefit on the host (FAO/WHO, October 2001), and the most commonly used micro-organisms are lactic acid bacteria. Over the years the following health benefits have been established or indicated in laboratory investigations, animal trials or human clinical trials:
- Restoring gastro-intestinal balance
- Improving digestion
- Improving immune function
- Reducing inflammation.

Low in fat and costs
Men as well as women more and more seek for low and light versions of yoghurts and desserts based on fermented milks. And at the same time, neither they nor food producers accept any compromises on appearance, taste or mouth-feel. This had led to the fermenting culture becoming an even more vital ingredient in the manufacturing of yoghurts and other fermented milks.

“We have developed a series of DVS® cultures with specific focus on texture and will be ready to launch the third generation of this range, called Yo-Flex®, later this year. The higher texture in this type of cultures make them ideal for developing low fat/no fat products with high and smooth texture,” explains Morten Boesen, Marketing Manager, Marketing Manager, Fermented Milk Cultures, from global food ingredients supplier Chr. Hansen.

“In this way our Yo-Flex® cultures also serve as a tool to control costs, as the higher texture makes it possible to cut back on stabilizers and solids, and at a time when everybody is looking to reduce costs, this attribute can prove very valuable to the dairies,” he points out.

Improving taste and production
The food industry is extremely cost-conscious right now focusing on not wasting precious product due to unforeseen trouble in the production process. Using high quality cultures the producer can rely on high production yield and the advantage of a good market position, because consumers are likely to choose a first-rate product that tastes good.

An example of that is Chr. Hansen’s newly launched series of cultures for the traditional East European Twarog cheese. An innovative rotation system, alternating between three new cultures (XTT-601, XTT-602 and XTT-603) ensures fast acidification, extra high fermentation activity with good flavor and CO2 formation - and less waste in production.

“At the same time the recommended rotation cycle ensures a robust and consistent manufacturing process less vulnerable to phage, which in turn results in reduced risk of contamination and higher safety in production,” Boesen concludes.

As a basic, traditional food product in East European households, Twarog makes up five percent of the world’s cheese production. This is likely to increase because consumers tend to stick to basic products in times of economic challenges, not least in a region that is as severely hit by the crisis as Eastern Europe.
Choosing the most competent partner to engineer and implement your fully automated process plant is a matter of trust.

GEA Liquid Processing offers unmatched process solutions focusing on product safety, low maintenance costs, minimum product waste and maximum flexibility.
Couple that with the professional skills of our engineers, and your project will be in safe hands.
Process engineering at its best.
Last year VM Tarm sold two milk tankers to Arla UK. The British employees and the press were impressed by the high quality and high-tech outfits of the tankers. Especially the stainless steel cabinet enclosing milk handling and measuring, and the double system for gentle pumping were news of interest.

VM Tankers to UK
Last year and for the first time ever, our company penetrated the British market for milk tankers. The local press was invited at the day of delivery, and our tankers were photographed like celebrities. The press and Arla UK employees noticed several new options compared to British tanker standards: The milk tanker itself as well as the equipment cabinet are made of high quality and easy cleanable stainless steel. Moreover, the compact, voluminous 20,500 litre aerodynamic tanker and the double pumping system were of great interest.

Efficient hygienic tankers
The tank type equipped on the UK milk-collecting vehicle is coffer shaped. Thus, the tank height levels the drivers cab and minimizes the air resistance of the vehicle. Furthermore, this shape allows us to build a more compact, shorter and yet voluminous tank containing more milk than traditional tankers.

The tank rooms and man- lids are constructed for optimized hygienic CIP-cleaning. Moreover, we have designed the new tank type with man- lids placed on the side of the tank to provide a more convenient access for the driver. In the rear cabin, a monitor controls and shows the CIP-cleaning process and ventilation of the tank.

In case of a Foot and Mouth Disease outbreak, we have designed an option for the dairies and milk farmers to comply the health authority demands. Thus, it is possible to install small water/disinfection nozzles above the wheels for easy cleaning when leaving a milk farm and before entering the next - preventing the disease to spread.

Since delivering the two UK milk tankers, their popularity has grown, as the compact vehicles are easier for the driver to manoeuvre on the narrow roads and gateways leading to the individual farmer’s milk tank.

Stainless steel cabinet
At VM Tarm we have designed our own milk pumping and metering equipment. The equipment is hygienically build, easy cleanable and placed in the stainless steel rear-mounted cabinet. All the “dirty” parts, such as electrical- and hydraulically installations, are by now placed in a separate cabin located on the side of the milk tanker.

The stainless steel rear-mounted cabinet contains the sanitary pipe and valve arrangement, flow meter/ weighing equipment, air separator, and enclosed printer for farmers receipt.

The modern tanker is also equipped with a GPS system that shows the position of the tanker and the number of the customer. At the same time it is always possible to trace the vehicles exact route position. Data are collected by the controller and transmitted via GPRS/3G back to the dairy, where all the information are downloaded for follow up on the milk collection. This satellite system is also used by the dairy and the truck driver when communicating and planning the milk-collecting route.

Tripled pump capacity
One of the big news on the UK market is the special milk pumping facilities developed by VM Tarm. Our owner and specialist Knud Lauritsen explains: “Our double system for gentle pumping consists of two pump techniques. One small pump gently draws the first portion of milk from the farmer’s tank. As soon as this milk pours into the collecting tank, our second system takes over and pumps 900 litres of milk pr. minute! Most UK collecting tanks are equipped to pump

It is easy for the driver to manoeuvre the compact vehicles on the narrow roads and gateways leading to the individual farmer’s milk tank.
300 litres each minute. Therefore, this is a timesaving factor of interest”.

**VM service and visit**

At VM Tarm Service Department we are ready to help our customers around the clock. Via the GPRS/3G satellite system we can easily connect to the data systems of the vehicles which enables us to detect, guide/solve the customers technical problems of various kinds.

By request we have also established a so-called “one-week-service-visit” in each country on our export-markets. This has been greatly welcomed by our customers, and our “one-week-service-technicians” have been busy.

**VM Tarm A/S**

- VM Tarm A/S was founded in the 1950s by the present owner, Knud Lauritsen’s father.
- The company has 140 highly skilled employees; engineers, constructors, stainless steel smiths, IT specialists and electricians. Owner and Diploma Engineer, Knud Lauritsen is one of the top-experts within transportation solutions.
- The factory facility includes the Construction Department for engineer designing and displaying transportation tankers in 3D, and 12 production halls with close-knit teams specialized within the specific tanker types.
- The facility also includes Sales & Administration Department and IT & Electrical Department for development and costumer support.
- We design and construct stainless steel and aluminium tankers for transportation of milk, beer, fodder, liquid manure, explosives, chemicals, sludge, oil & petrol.
- VM Tarm A/S is situated close to the Esbjerg Harbour gateway to Europe.

Special Milk Tanker Solutions tailored to your needs ...

Tværvej 25 • 6880 Tarm • Denmark • Phone + 45 97 37 16 44 • Fax +45 97 37 12 04
Feel free to contact us info@vmtarm.dk or visit www.vmtarm.dk for more information!
Flexible packaging

Danapak Flexibles A/S is a manufacturer of flexible packaging materials primarily for the food industry, but also the pharmacy industry is being served. The company has two manufacturing sites in Denmark, and it was founded more than 50 years ago by the Danish dairies. Danapak holds vast experience in packaging solutions for cheese. A key success criterion for Danapak is its own Product Technology Center, where the company has facilities covering all production processes. This means that the daily production is not disturbed by test runs, and this enables Danapak to go from idea to final result saving time and money. Danapak is working together with a number of the largest dairies in Europe.

The product range includes specifications for soft cheese as well as block, sliced, and shredded cheese.

Minimising packaging

Recent developments have been focusing around minimising the weight of the packaging materials, but still ensuring optimal barrier properties and consumer convenience. Also utmost consideration to the ripening process of the cheese has been taken into consideration through close interaction between the packaging and the cheese.

Optimised ripening

Recent developments includes the DanaKeep® range especially developed for soft cheese like brie and camembert, blue/white mould, and red cultured types of cheese. A number of specifications are included. One specification is developed for ensuring an optimal humidity around the cheese during ripening, which allows mould formation within the cheese, and at the same time limiting the mould growth on the surface of the cheese. Another specification is developed to provide the cheese with ideal conditions for developing a splendid surface mould. With this specification, the shelf life of the cheese has been considerably extended.

DanaKeep® also includes specifications where the cheese can breathe through perforation of the packaging, which ensures ideal conditions to create white surface mould, avoiding wet cheese and browning of the surface. This specification is also available in a biodegradable version.

Optimal barrier properties

DanaMap®+ is another novelty aimed at block, sliced and shredded cheese packed in MAP (modified atmosphere) conditions. The MAP market is developing rapidly due to consumer demand to freshness and safety of the cheese. However, most importantly costs can be minimised for both the cheese producer and the supermarkets due to longer shelf life of the cheese.

The focus of Danapak during the development process has been on giving the product the optimal barrier properties as well as reducing the packaging material, since both the consumers as well as the manufacturer have high demands of the packaging industry in this area. In spite of the material reduction, it has been possible to maintain optimal barriers and often even improve the seal properties against themselves.

In order to comply with another consumer demand, DanaMAP®+ can also be delivered with easy-opening peel-properties as well as anti-fog surface.
Easy opening
The latest development is aimed at sliced cheese, where the focus has been on easy opening when developing a peelable topweb laminate, called DanaPeel® Top Web.
DanaPeel® Top Web is a product programme of top web laminates, which contains material combinations, easy to peel against bottom webs like APET, APET/PE, PP and PS.
The most revolutionary development by Danapak within the field of Dana-Peel® Top Web is a top web, which is sealable directly to a bottom web/tray of pure APET and simultaneously provides a packaging unit which can be easily peel-opened. By changing top/bottom web to DanaPeel® Top Web for sealing against pure APET you gain:
• A less complex bottom web since APET/PE is avoided
• A sealing against a wide spectrum of APET and RPET bottom web and trays
• A much better possibility for reusing the thick bottom-packaging.
Furthermore DanaPeel® Top Web can be combined with DanaMAP®, where it is used for MAP packaging or for other similar purposes, where demands are made for barrier against oxygen and carbon dioxide.
All Danapak’s specifications can be delivered unprinted, or printed in up to 9 colours in flexo or rotogravure.

Technical guidance
Danapak also offers technical guidance to customers when it comes to packaging machines, where experienced personnel can give objective guidance in terms of which packaging material and packaging machine is best suited for a specific product.

Danapak’s Product Technology Center possesses a well equipped pilot plant.

Good food products deserve good packaging
Danapak Flexibles A/S has been supplying the Food and Dairy industries with flexible packaging materials for more than 50 years.

Our range of products for the dairy industry covers a wide spectrum including butter/margarine wrappers and cover leaves.

Are you looking for a competent partner to supply cheese packaging, Danapak Flexibles A/S can cover just about every need.

Your flexible packaging partner for Food and Dairy products.

Strudsbergsvej 3, DK-4200 Slagelse, Tel. +45 65 48 00 00, info@danapakflex.com, www.danapakflexibles.com
New name - Kold college
All educations and courses at Kold college are linked by the concept “from soil to table”.

Kold college was founded in 1889 as part of Dalum Agricultural College. In 1979 the college was separated from the Agricultural College and established as an independent dairy college, named Dalum Technical College. At that time the college got its own board and principal, and an objective of covering all educations from soil to table.

In January 2004 Dalum Technical College merged with the horticulture college Soehus. The merged colleges were named Dalum Education Centre. At the 1st of December 2008, the name was changed to Kold college.

The international aspect
At the dairy training centre the international aspect has played a major role for many years and is an integrated part of the daily work. Numerous courses and contacts worldwide as well as demands of flexibility and quality bring inspiration to the college.

Each year Kold college arranges a number of tailor-made courses for Danida and international companies. During the years Kold college has participated in a number of international training activities for lecturers teaching dairymen, processing technologists and in-service courses. Lecturers have been stationed at educational institutions abroad for periods of a few days to several weeks.

International cooperation
Kold college has participated in a transverse development project from the period of January 2007 to April 2009. In this project also various dairy companies, dairy organizations and several education centers have been involved. On behalf of the project new and flexible courses are created. At e.g. flexible split courses, the participants have assignments at their working places. The results from the assignments will then be presented at the following course.
The new courses can consist of:
- Process/Energy optimization (water, waste water, energy, CIP-cleaning)
- Specific Process Control
- Work environment optimization
- CO2 results
- Focus on the participants understanding of these optimizations.

International activities
To keep the teachers up to date, it is vital to give them possibilities to participate in international activities. This spring, eight of the dairy teachers have visited dairy companies in Norway, Sweden, Finland, Holland and the United Kingdom. The activity was part of the Leonardo program, and the teachers achieved knowledge about new dairy trends in the countries mentioned.

In cooperation with the European organisation, AEDIL we also arrange dairy courses at Kold college. The latest, “Cheese making by Ultra Filtra-
tion” took place at Kold in the autumn 2008 and was repeated this spring. The headlines were: Filtration technology, Acidification and Syneresis, Starter cultures, practical training and a field trip. These courses are attended by dairy people from several European as well as overseas countries.

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

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

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

Kold college is the new name of Dalum UddannelsesCenter

At Kold colleges Dairy Training Centre the international aspect plays a major role.

Also, the social aspects are of great importance when participating in international courses. In the evenings and the time between lessons the participants have opportunities to talk unofficial, and thus obtain more knowledge about international trends in the global dairy industry.

Kold college

- Employs approximately 170 staff members, of which 110 are lecturers with vocational or academic backgrounds.
- Approximately 1,100 full time equivalent students and course participants.
- Each year more than 4,500 students attend an education or a course.
- Buildings covering more than 38,000 square meters.
Healthier alternatives

Ice cream is traditionally produced with 8-10% of fat and approximately 15% of sugar. Lowering the level of fat has until now caused decreased eating quality expressed as less creaminess, body and smoothness. This is not accepted by today’s consumers. For healthier alternatives to become successful the eating quality should be at least at same level as standard products.

It is now possible to make ice cream with low fat content and still maintaining pleasure of eating the ice cream. The high quality is kept throughout the whole shelf life of the ice cream. No need to compromise as Palsgaard has developed Palsgaard® IceTriple, a series of integrated emulsifiers and stabilizers especially suited for low fat and even also low sugar ice cream still leaving the sensory properties, melting resistance and storage stability at the same level as premium ice cream.

Tailor-made solutions

Palsgaard is a Danish based company manufacturing a wide range of emulsifiers as well as blends of emulsifiers and stabilizers for use in the food industry. These ingredients are used for adjusting texture, mouth feel and stability of the product in which they are applied. Production takes place in Denmark, in The Netherlands, in Mexico and in China. The productions are kosher as well as halal certified. Palsgaard has world wide representation, either by own subsidiary or through agents and distributors. With state of the art application facilities located in Denmark, Singapore, China and Mexico, Palsgaard offers tailor-made solutions for customers around the world. Furthermore, full application support in development of new products, recipe optimisation or cost savings of existing formulations is offered.

Creaminess

A very important property in ice cream is creaminess. Creaminess is the result of a complex interaction between the composition of raw materials and the production process. Quality as well as quantity of the raw materials plays an important role. Creaminess in ice cream is mainly defined by the distribution and size of air bubbles in the end product together with the size of ice crystals - a phenomenon in which the right choice of emulsifiers, in particular, becomes important.

Palsgaard® IceTriple

Traditionally, a certain fat content has been required in order to create a fat globule network surrounding and stabilising the air cells. Palsgaard® IceTriple adds an extremely smooth and creamy sensation to ice cream and allows for significant fat reductions without compromising on neither the sensory characteristics nor the melting profiles and heat shock stability. Please refer to fig. 1 and 2 for a graphic illustration of the sensory profiles comparing Palsgaard® IceTriple with standard emulsifiers/stabilizers.

More uniform air cell distribution is also related to better melting resistance. The melting profile of a particular ice cream is strongly influenced.

One can hardly open a newspaper without coming across stories describing the global epidemic - obesity. Sugar and fat - together with over consumption, are often mentioned as the two most important factors causing overweight and the intake hereof should be controlled. Together with cakes and confectionary products ice cream is included in the food category of which nutritionists recommend a decreased intake.

Figure 1: Comparison of ice cream with different fat content and emulsifier/stabilizer systems.
by the choice of emulsifiers in the recipe: emulsifiers control the degree of protein desorption and affect fat crystallisation during ageing of the emulsion. Consequently they improve the whippability of the ice cream mix and the stability of the air cell walls. The improved melting profile is ensured primarily through the presence of the mono- and diglyceride fraction of the compounds.

**Heat shock stability**
Palsgaard® IceTriple offers excellent heat shock stability to ice cream. This ensures a pleasant texture and mouth feel even after repeated exposure to fluctuating temperatures. In most parts of the world, ice cream is exposed to fluctuating temperatures before consumption, which in most cases will damage its texture, mouth feel and appearance. The risk of damage to the ice cream is enhanced when the recipe is reduced in fat. When standard emulsifier systems are used, it is well known that shrinkage may appear as a consequence of severe structure collapse. With Palsgaard® IceTriple the heat shock sensitivity even in low fat formulations is reduced to a minimum.

The conclusion is that the ice cream manufactures by using Palsgaard® IceTriple can meet the requirements from the consumers concerning healthier food without compromising the quality.

![Figure 2: Comparison of heat shock stability of 5% fat ice cream with different emulsifier/stabilizer systems.](image)

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**Emulsifiers and stabilizers for low fat ice cream**

Palsgaard® is specialized in development, production and application of emulsifiers, stabilizers and other special ingredients. Visit [www.palsgaard.com](http://www.palsgaard.com) to locate the office closest to you.

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Want to make low fat ice cream without compromising on quality?

Palsgaard® IceTriple (patent pending) gives you a creamier, more stable and melt-resistant ice cream - a breakthrough in ice cream technology. Palsgaard® IceTriple is available in trans free versions.
Gerstenberg Schröder A/S (GS) develop, manufacture and install modern, high-efficient and reliable processing lines for the food industry, especially for the production of crystallised fat products like margarine, butter, spreads and shortenings. GS also deliver process lines for emulsified food products such as mayonnaise, sauces and dressings. We have been in business for more than 100 years and have installations in more than 110 countries around the world.

The preferred partner
The main focus of GS is to be the preferred partner when the food industry demands scraped surface heat exchangers (SSHEs) for the manufacturing of food products, e.g. for the crystallisation process of margarine or for starch cooking of mayonnaise. The SSHEs manufactured by GS are known on the market under the names Consistator®, Kombinator and Perfector.

Process knowledge and process expertise exist in all departments of GS, even in the top management. By spreading expertise concerning the business of GS customers throughout the organisation, every enquiry will be met with an understanding of the customer’s business, needs and challenges. The process knowledge, the understanding of the needs of the food industry and the technical expertise are the major drives of the development work in GS.

Energy saving by SSHE technology
Increasing energy and raw material prices, increasing demand to the efficiency of the machinery and processing as well as intense competition among the food companies are challenges which the industry is experiencing today. Various processes continue to use designs which in energy terms are inefficient as the heating or cooling process occurs e.g. in relatively open systems and thus high amounts of energy are lost to the environment. Optimisation of energy consumption per kg produced prod-
Nexus is designed to use CO₂ as refrigerant compared to the traditional SSHE which uses Ammonia or Freon. CO₂ as cooling medium has in pilot scale proved up to 20% more efficient, which results in less consumption of energy per kg product produced.

The low temperature extrusion of ice cream down to -15°C gives energy saving because it is possible to produce directly to cold storage avoiding the hardening tunnel. Using SSHE for cooling the ice cream from -6°C to -15°C is a much faster cooling process compared to the hardening tunnel. Furthermore, the quality is improved as the process enhances the creaminess of the final ice cream due to the mechanical treatment of the ice cream during this further cooling process. With the Kombinator X250 technology ice cream with lower fat and protein content can be developed with the same mouth feel as premium traditional high fat ice cream.

**Focus on energy consumption**

GS are spending approximately 10% of EBIT every year on development of completely new machines, main components used in the machines which GS manufacture or various food processes covering our core business. In 2008, two new machines were launched: A new high pressure SSHE and a low temperature SSHE ice extruder marketed under the names Nexus and Kombinator X250, respectively. During the development of these machines, apart from functionality and hygienic design, environmental aspects have been in focus. It has resulted in energy-efficient processing lines to the fat crystallisation industry and ice cream industry.

GS offer expert assistance in product development and process optimisation. The service can take place in our pilot plant in Copenhagen, Denmark, or at the customer's site. The pilot plant is well equipped with not only SSHE or related equipment but also a laboratory where raw materials or final products can be analysed and evaluated. Often trials initially take place in the pilot plant and the best process and parameters are being assessed before the final optimisation trial takes place at the customer's site.

During the past years, numerous trials have been conducted in the pilot plant where the main focus has been to save energy per kg product produced. One trial involved meat and was especially interesting as the calculation of the energy consumption showed more that 25% energy saving if the current process was replaced by SSHE technology. Another interesting investigation showed a significant waste reduction only by changing the start-up procedure for production of mayonnaise.

If you are wondering what GS can do for your process or product please take contact to Gerstenberg Schröder at www.gs-as.com
It’s fine to follow trends. It’s better to set them.

Going in the right direction isn’t enough. If you don’t go fast enough, you’ll inevitably be overtaken. That’s the strenuous challenge all businesses have to live with. Therefore it’s important that your R&D department always has the best testing facilities available.

At GS we have fully equipped pilot plants. They are available for you to do test runs at a reasonable cost. Alternatively, you can purchase a system for installation in-house. Whatever you choose, our highly qualified staff will assist you – regardless your project. So when it comes to pilot projects there’s only one question – your place or ours?

The consumer expects the same high quality in taste and consistency. Over and over.

GS offers pilot plants for margarine, shortening, butter, ghee, caramel, mayonnaise, marinades, sauces, cream cheese, etc.
Regarding process units and equipment, our staff possess complete production knowhow to carry out the specific requirements demanded by our customers. We have broad experience within various sections of equipment for producing dairy goods.

We often visualize the construction of units with carefully executed 3D drawings. Furthermore, sub-components are prefabricated and ready for delivery, assembly and installation on site - anywhere in the world. LP Kolding has supplied unit constructions for e.g.: CIP-cleaning, dosing, flash-cooling, hot-filling, pasteurizing and spray-drying.

Construction of tanks and processing plants in special stainless alloys is one of LP Kolding’s core competences. LP Kolding’s knowledge and experience include acid-resistant, corrosion-resistant and heat-resistant steel alloys.

Cooperation worldwide
LP Kolding also cooperates with major engineering firms within the dairy and food sectors worldwide. As such we have recently built a complete CIP-unit now installed at a large dairy plant in Norway. In cooperation with another international player at the milk market, we have manufactured flash cooling units which produce sweet condensed milk in Asia.

Field of expertise
Our business relationship with our customers always begins with a good dialogue. Typically, our customers present an idea or a rough layout drawing of the new plant, they wish to build. After the first meeting our highly skilled 3D-technicians and engineers make sure, that every single detail of the plant is drawn, registered and described. The engineering and manufacturing process - from original drawing to realization of the project - is our field of expertise.
Mixing
The key process, which is crucial for all producers of processed cheese - is mixing. The mixing can be anything from butter, cheese, water and powders in a traditional process, to a 100% recombined product based purely on powders, liquid fat and water, or to a complex setup with a UF concentration of milk, fermentation, melting salts, UHT treatment and complex packing solutions. The only measure of the process/product being successful is the rate at which the product is picked from the shelves in the supermarkets by the consumers. The key word to this is flexibility and the ability to adapt to new trends, ingredients and changes in the process. Tetra Pak Scanima A/S is here to assist producers with the optimal process.

Tetra Pak Scanima A/S is manufacturing one of the most effective and multipurpose turbo mixers on the market today. The unit is recognized for its high degree of flexibility.

The plant is built around the efficient turbo unit. The ingredients are added directly into the turbo mixer either using the bin-lifter or by means of vacuum - all in closed systems. The Tetra Pak Scanima patented Dynamic Stator allows an unsurpassed control of the shear forces and allows the producer to control smoothness and emulsion of the final product.

Optimized use
Over the last 15 years, Tetra Pak Scanima A/S has supplied Arla Foods with an increasing number of mixers for various applications. Recently, six units were supplied to Arla Foods Holstebro Flødeost to upgrade and increase their cream cheese production capacity.

For Arla Foods Holstebro Flødeost it was important to be able to load the mixers with a bin-lifter and to maintain a high hygiene standard. A bin-lifting operation with automatic unloading of ingredients through a specially designed manhole has been developed for Arla as an integrated solution to the Tetra Pak Scanima Turbo Mixer. The lid is automatically operated and the design allows full integration in the CIP cleaning of the tank, reducing the need for manually performed cleaning. The system is of course capable of handling the vacuum used in the Tetra Pak Scanima Turbo Mixer. With an addition of six
Tetra Pak Scanima A/S

Tetra Pak Scanima A/S is located in Aalborg, Denmark, as centre for mixing technology within the Tetra Pak organization and part of the business unit Dairy, Beverage & Prepared Food.

Scanima was acquired by Tetra Pak on July 1st 2009. Tetra Pak Scanima A/S will continue to service all new as well as old customers globally. Tetra Pak Scanima A/S employs approximately 60 people.

Please visit www.Scanima.com for further information.

Environmental savings
The Tetra Pak Scanima vacuum plant has recently been redesigned. Previously, the vacuum was 100% available at all times, and false air was used to regulate the vacuum level in the tank. In the new system the vacuum is on standby until required, and only then the exact amount of vacuum for the process is generated. Consequently, the use of energy has been reduced by 75% (average system savings of up to 20,000 kWh annually). Furthermore, the new system offers a reduction in water consumption (average system savings of up to 1,800 cubic meter annually) and a reduction in noise emission.

This features a great possibility to increase your green image and at the same time obtain a cost reduction. Though the installed power seems high on the machines, the actual power consumption per produced unit remains low due to a higher efficiency and a reduced process time.

For a US based customer, a system capable of handling cheddar blocks and bulk butter was needed. Tetra Pak Scanima A/S has supplied a system where a shredder - capable of handling 20 kg blocks - was integrated into the Tetra Pak Scanima Turbo Mixer. The same system can be used for high-capacity butter melting with a melting capacity of over 100 kg/min. Moreover, the whole system is designed for CIP cleaning (in-line with the main equipment) reducing the total number of CIP cleanings required. That way savings in energy, chemicals and water are obtained.

Multipurpose mixer
The availability of highly developed turbo mixers that are able to heat, emulsify, homogenize and mix under vacuum - all in one process - means that producers with a single piece of equipment have a unique flexibility in capacity as well as products. The Tetra Pak Scanima Turbo Mixer solution is the cost-effective way to obtain a simpler process with a higher degree of flexibility.
Competence centres
Eurofins in Holstebro, Denmark and Eurofins in Jönköping, Sweden are the Eurofins competence centres for milk analysis. The two laboratories have many years of experience of milk analysis for farmers and the dairy industry. Together they analyse more than 10 million samples of raw milk per year, leading to more than 50 million results.

This high throughput is only possible using equipment with large capacity. The main production is therefore based on, for example, CombiFoss4000, CombiFoss FT+, BactoScan and BactoCount IBC.

The use of these instruments makes it possible to characterize the chemical composition, as well as the cell and bacterial composition of the milk samples.

Quality assurance
Quality assurance of the analysis is a special challenge for the laboratory. The result should be comparable and traceable to those obtained by classical chemical and microbiological methods, as described in international standards from, for example, IDF and ISO.

The high capacity instruments are calibrated using a large number of samples analysed by reference methods. The composition of the calibration samples used covers all possible variations of samples to be analysed afterwards.

When the instruments are taken into production, a quality system has to be set up, that assures the calibration is always in control.

Eurofins controls the calibration using control samples with different
levels of the analytes (e.g. low, medium and high content of fat, protein and cells). The samples are produced on a weekly basis in the laboratory, in combination with certified reference samples.

The control samples are analysed in the chemical and microbiological laboratories in Holstebro using accredited reference methods.

Validation
An accredited method is validated according to written protocols. The validation includes precision, accuracy, detection limit, measuring range, robustness, and the validation covers all relevant milk matrices.

An accredited reference method is under constant statistical control using in house control material and control charts. The control charts and working procedures ensure corrective actions are taken if the analysis is out of control limits.

An accredited reference method is checked on a regular basis by participation in external proficiency tests, arranged by professional organisations like BIPEA, FAPAS, Ceca Lait and others.

The control samples, with an accredited certificate, go to the two milk laboratories used for the ongoing control of the production instruments.

Calibration
On a daily basis the calibration (slope and accuracy) is controlled. During the daily production, control samples are analysed with short intervals. The results from these analyses are evaluated and have to be within very narrow limits. If the limits are exceeded the production is stopped and the problem is corrected.

The set up with control samples and analytical results produced by recognised reference methods, assures a very high traceability of the milk testing results.

The automated production methods are tested exactly as reference methods by proficiency testing, so there is both an indirect and a direct traceability of the results. Between the two laboratories the traceability is tested on a regular basis by parallel analysis of batches of 100 samples.

Accreditation
The milk laboratories, as well as the chemical and microbiological laboratories, are accredited and inspected by the Danish and the Swedish Accreditation Board (Danak / Swedac) according to DS/EN ISO/IEC 17025: 2005: “General requirements for the competence of testing and calibration laboratories”.

The quality of the final analytical result is not only related to the quality control in the laboratory but also the sampling procedure and the transport conditions. These can have a major influence on the results. Therefore Eurofins has established a very close collaboration with our milk customers, to assure that sampling is integrated into the overall quality control of milk analysis.
Merger
In September 2009, G. Salicath & Co. I/S merged with Hammerum Stainless A/S in a generational take-over. The name of the company is by now Salicath ApS.

The daily activities will still be taken care of by the articles author, Arne Brink Jepsen and our new colleague, Michael Jul Pedersen. At the beginning, Michael Jul Pedersen will focus on the Swedish market.

Promoting Alpma
Salicath’s core business is to promote the Alpma brand. The Alpma Group is a world leader within cheese processing machines, cheese cutting equipment, and packaging solutions.

After the merger Salicath ApS will also market the Alpma solutions in Sweden, and thus we cover the Nordic countries; Denmark, Sweden, Iceland and Norway. In Norway however, only the cheese processing machines.

Complete lines
Our parent company Hammerum Stainless is a specialist within projecting and building hygienic tank solutions for the dairy and food sectors as well as the pharmaceutical industry which is known for continuously demands on optimized hygienic standards.

Thus, the merger implies excellent synergies, as Alpma and Hammerum Stainless offer complete solutions from one supplier. Hammerum Stainless is the expert within projecting and construction of tanks - and Alpma within dairy processing and packaging equipment.

In Scandinavia, the new Salicath offers total solutions of the Alpma machine range including assembly of various production lines.


Combining the new Alpma equipment enables you to produce yellow cheeses continuously. At the pre-pressing station Formatic the curd is pre-pressed continuously in the moulds.
Service team
Hammerum Stainless has just established a service department to the benefit of our Scandinavian customers. A group of trained Hammerum Stainless fitters are ready to take over the service of the production and the packaging lines, previously done by the Alpma Group.

Our highly skilled fitters can solve both mechanical as well as controlling system problems for our customers.

Waste water
One of our customers is the Danish Technology Center, Dantech, who is a recognized supplier of cleaning equipment for waste water treatment. This equipment is based on filtration and flotation and build in a compact and competitive plant constructed by Dantech. Hammerum Stainless is the producer of these plants as well as the representative of the Dantech equipment in several countries.

Alpma cheese equipment
Today, Alpma is able to supply complete lines for yellow cheese production. Various kinds of yellow cheeses are produced continuously on the Alpma Coagulator. After the Coagulator process the curd is led to the prepressing station Formatic. The curd is pre-pressed directly and continuously in the mould. After the Formatic handling the cheese will enter the final press - Pressmatic. This robotic handling pressing tower is compact and thus requires a minimum of floor space.

Agencies
Besides Alpma, Hammerum Stainless holds agencies for several European producers of efficient dairy equipment for filling of drinking products, yoghurt, butter, processed cheese etc.:
• Gasti filling machines for yoghurt and other acidified milk products in premade cups.
• Hassia filling machines for acidified milk, butter and cheese in cups, deep drawn in the machine.
• Miromatic filling of buckets from 1-10 liters offers complete solutions within aseptic and ultra clean fillings. The filling machines can be delivered as fully automatic lines as well as small manual lines.
• Albertina complete line systems for filling of bottles features the necessary downstream equipment, if so wished. Albertina also projects and built machines for can filling from 0.5-20 liters.

At your service
Hammerum Stainless A/S and Salicath ApS focus on offering the Dairy Industry a wide and efficient range of process equipment and solutions. We represent some of the leading companies within this market. In combination with our own product expertise, we have a strong set-up to offer you.

Continuous Cheese Production
By the World Leading Alpma Group

Combining the new Alpma equipment enables you to produce yellow cheeses continuously:
The Coagulator - The pre-pressing system Formatic - The after-pressing system Pressmatic

For further information in Scandinavia please contact
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Independent inspection

Bactoforce is an independent company specialized within inspections to prevent microbiological hazards. To the benefit of our customers, the company has since it was founded in 1993 continuously developed new test methods. To avoid recontaminations in food products, and to improve food safety, we have in the past years worked with hygiene optimization in the food industry. Especially, we focus on detecting residues and bio-film on surfaces getting in contact with the food products (see fig. 1). Typically it will be vessels, pipes, packaging machinery, etc. but, also manual cleaned production equipment.

Our inspection system is preliminary to the benefit of proactive companies. However, due to the Bactoforce expertise we also offer your company our sparring partnership if you have acute microbiological problems. Among major customers having our proactive hygiene inspections executed you find dairies, breweries, fish and meat processing companies on our client list.

Validation of CIP cleaning

The high number of residues we detected in several vessels urged Bactoforce to develop a method to validate the efficiency of the CIP spray ball cleaning inside product tanks. Through our inspections we wanted to reveal, whether there were any areas inside the product vessels not rinsed by the cleaning solution.

Examples of the experiences we achieved by working with CIP validations are shown in figure 2. Some of the problems are:
- A high number of non-cleanable tanks have been found.
- In several cases we found areas where the cleaning solution was insufficient on the surface of the vessel.
- Most vessels can be cleaned if CIP turbines or spray balls are relocated.
- It is important to choose CIP turbines or spray balls designed to the specific pressure and flow available in the process plant.

Validation and the environment

CIP validations also have positive effects on the environmental impact. During Bactoforce’s comprehensive work within CIP validations, we have found a significant number of tanks where both rinsing and cleaning time could be minimised. For several of our clients a reduction up to 50% of the rinsing period has been achievable. This means a major reduction in water consumption, less use of energy for pumping and heating, and more production time.

Validation of new tanks

Our company’s comprehensive expertise within inspection and validation of CIP cleaning are by now acknowledged by our customers, and an increasing number of clients requires CIP validations of new purchased vessels as well. A Bactoforce CIP validation documents, that:
- The tank is cleanable.
- It is constructed without shadows.
- It can be cleaned in the utmost economic way.

One of our clients express why he is having CIP validations made: “If a CIP validation shows failures in a new tank, the tank supplier has to pay the necessary repairs. If hidden failures are not found, I will have to pay for these in the next 20 years.”

Figure 1: Examples of residues found in tanks.

Figure 2: Non-cleanable areas in product tanks.
“Danish Dairy & Food Industry ... worldwide” is distributed in the following countries:

**Africa:**
Algeria, Belize, Benin, Botswana, Burkina Faso, Cameroon, Congo, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Morocco, Mauritius, Mozambique, Niger, Nigeria, Senegal, Sierra Leone, Somalia, Sudan, Swaziland, South Africa, Togo, Tunisia, Tanzania, Uganda, Zambia and Zanzibar.

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

**Australasia:**
Australia, Fiji and New Zealand.

**Europe:**
Austria, Belarus, Belgium, Bosnia, Bulgaria, Croatia, Cyprus, Denmark, Eire, Estonia, Faeroe Islands, Finland, France, Germany, Greece, Greenland, Holland, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Malta, Macedonia, Norway, Poland, Portugal, Rumania, Russia, Serbia, Slovakia, Slovenia, Spain, States of CIS, Sweden, Switzerland, The Czech Republic, Ukraine and United Kingdom.

**North America:**
Bermuda, Canada, Mexico, Panama and USA.

**South America:**
Argentina, Barbados, Bermuda, Bolivia, Brazil, Chile, Columbia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Montserrat, Nicaragua, Paraguay, Peru, Puerto Rico, Tobago, Trinidad, Uruguay and Venezuela.

**The Middle East:**
Afghanistan, Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, Oman, Pakistan, Qatar, Saudi Arabia, Syria, Turkey and Yemen.
Commitment
An understanding of manufacturing issues is vital to ensure the delivery of relevant, effective and commercially viable ingredients to the dairy industry. With vast experience and long-standing customer relationships, DSM Food Specialties has gained unique insight and understanding. Whilst cost and efficiency remain key drivers, the need to offer ingredient quality and safety has become equally important to manufacturers.

DSM is committed to quality across its business. As the world’s only fully integrated supplier, the company can provide full quality assurance and traceability throughout the entire production chain. This commitment to quality led to the introduction of the Quality for Life™ seal of excellence, designed to give customers confidence in the quality, reliability, traceability and sustainability of DSM’s ingredients.

Food-saving4u
DSM Food Specialties’ commitment to quality and safety is equaled by its commitment to delivering added value solutions to customers. With the global economy in a state of flux, many dairy manufacturers are searching for a better way to improve the bottom line. In order to support manufacturers in these challenging times, DSM Food Specialties developed a number of innovative cost saving concepts and made this information available at our new online resource: www.dsm-food-saving4u.com

Visitors to the site can evaluate how these concepts can help maximize profitability by, for example, reducing formulation costs, prolonging shelf life or accelerating cheese ripening speed.

Cost saving concepts
*Increase yield* by up to 4%, improve curd strength and maintain product quality with MaxiCurd™, a granulated protein hydrolysate range; it enhances customer value by delivering a processing aid with an improved flavour profile. End product characteristics are not compromised as manufacturers can produce cheese with a good taste, texture, melt-ability and colour.

*Speed up cheese ripening times* while guaranteeing a stable and reliable maturation process. Accelerzyme® CPG accelerates the cheese ripening cycle by up to 50%; streamlining production process and improving cash flow. This thermo-labile enzyme eliminates common problems such as over-ripening and bitter off-flavour in cheeses. It is a pure and label-friendly cheese ripening enzyme.

*Reduce storage costs* by up to 30% with DELVO-ADD® cultures, which speed up the cheese ripening process easily and still ensure the same flavour notes of traditional cheese. Best flavours - at the end of a lactose-free product’s shelf life with revolutionary pure lactase enzyme, Maxi-lact® LGX. It guarantees clean flavour and high quality in the final product, which is maintained throughout its life span.

Innovative in tune
In today’s economic environment, dairy manufacturers are looking for ways to improve profitability without jeopardizing customer loyalty. Ingredient suppliers need to be in tune with these demands and provide effective solutions in response. DSM Food Specialties’ introduction of new initiatives, combined with its innovative range of high performance ingredients, delivers clear customer benefits and demonstrates the company’s commitment to providing added value solutions to the dairy industry.

For further information please visit: www.dsm-foodspecialties.com
Do you want a bigger slice?

DSM Food Specialties offers a select range of widely tested ingredients that help you improve product quality and reduce costs. Our Dairy Improvers add many processing benefits – including consistent quality, shorter production time and enhanced stability – for so little effort.

Make sure you get a bigger slice of the profit from your production – visit our dedicated cost saving website at www.dsm-food-savings4u.com or contact DSM today.
The Trepko perspective
Cost of the packaging material is a substantial amount in the cost and final product profitability calculations of every food producer. The importance of this factor results from three major categories:

- Prices of packaging materials.
- Environmental issues.
- Efficient use of packages.

Environmental perspective
From the environmental perspective food processing has recently undergone a real transition; however the industry still faces challenges in this field. Therefore, a number of different fiscal mechanisms support environmentally conscious decisions when choosing a new packaging material. Moreover, a biodegradable packaging helps winning more loyal consumers. This is why almost every day, the producers of packaging materials are ready to offer new, environmentally friendly packaging.

The financial decisions are not over when the purchase decisions are made. A cost-conscious attitude implies efficient use of the packages by correct storage and internal transport. Once the packages are delivered to a packaging machine, it must possess the right design and operating features in order to guarantee correct treatment of the packaging materials.

Trepko packaging equipment
The TREPKO Group is always ready to match the requirements connected with the use of packaging materials. The equipment offered by the TREPKO Group in more than 90 countries all around the world can be classified under the following categories:

100 series: in-line filling & sealing machines for pre-formed containers
200 series: Rotary filling & sealing machines for pre-formed containers
300 series: Filling & coagulation plants for UF white cheese
400 series: Modular in-line systems for pre-formed containers
500 series: Carousel filling & sealing machines for pre-formed containers
620 series: Dosing systems
700 series: End of line solutions
PMG series: Machines for brick forming and wrapping

All of the offered machines have a number of features that facilitate introduction of innovative materials and help to save packaging.

Flexibility
One of the most basic rules in design at Trepko is to guarantee many different applications for every machine. That means filling a variety of products but also using different packaging sizes and materials on the same machine. The changeover times in Trepko machines start from 10 minutes. A number of solutions facilitate changing the packaging material - a perfect example are the Duo-Cyl® sealing heads that allow for a safe use of the diaphragms made from aluminium foil, plastic, coated paper etc. Changing the heat-sealing parameters has never been so easy.

Similar options are available in the Trepko’s brick wrapper series. All the models offered here can handle different materials used for wrapping bricks, including: aluminium foil laminates, grease-proof paper or foils based on natural binding agents.

Ability to reduce the production costs is one of the key competences of every producer.
Savings
One of the key design features of the packaging machines is saving the packaging material. Every Trepko machine has a number of safety solutions that protect both the packaging material from being damaged or wasted, and the machine parts in case the packaging material is missing.

Savings of packaging material are guaranteed by built-in solutions, but also by using optional features such as e.g. seal check or detecting double cup intake.

Packaging material treatment
A critical point in packaging material management is the storage and internal transport. These two operations influence the hygienic standard and condition of materials delivered to the packaging machine. Contaminated or wasted material is not only waste, it can be dangerous when used for foodstuff. That is why, construction of the Trepko machines facilitate handling the material. Extensive buffer magazines with ergonomic options reduce the number of the in-feed operations that can possibly damage the cups or lids. Loading of these magazines is done without stopping the machine, so high output can still be maintained. The stack-feeding magazines are available both in the in-line or rotary cup filling & closing machines. The wrap-around machines for carton (710 Series) can also be equipped with additional magazines, so that blanks can be even loaded from a pallet.

Complete solutions
With a vast variety of the product categories offered, Trepko is one of the most versatile suppliers of packaging machines. Our experience from many different installations shows, that efficient use of the packaging material is subject to the level of automation of the packaging process. When the end-packing operations are performed automatically a unit packaging is less exposed to possible damage compared to manual operations.

Another advantage of fully automatic lines is cost reduction of end packaging. Manually folded trays or cartons require more material, are heavier and more expensive.

Expertise
Using packaging materials in an automatic process impose certain requirements on the quality of containers, foils, cartons etc. These requirements are crucial for keeping a desired production level of every packaging machine. Based on the world-wide experience the Trepko experts have prepared guidelines that help our customers to purchase good quality materials that guarantee an efficient and reliable operation of the machines. On request we are always ready to check or test a new material. For many years, Trepko has been cooperating with the packaging material producers.

Integrated packaging material management in food production is not only a part of the purchase strategy. This process should be perceived and implemented as a cross-functional operation that involves marketing, purchase, production and investment decisions. The benefits offered by this approach include improved company image, more loyal customers as well as cost reduction both now and for the future.
Bila A/S

Bila A/S is Denmark’s largest supplier of robot solutions with customers in ex. the metal, foodstuffs and manufacturing industries. Bila A/S always stays abreast of new technological developments in the field of streamlining work and production environments. We supply innovative robotic solutions with quick, efficient implementation, thus contributing to the production capabilities of the client. This is particularly the case in the foodstuffs and dairy industries where high efficiency and uncompromising requirements on cleanliness pose even more demands on the solutions offered by Bila A/S. We draw on many years of experience and have specialized in developing complete robot cells for dairy-plants throughout Northern Europe.

Initial analysis crucial

The initial analysis is the key for success. Based on our conception database, we can identify the optimum solution for the client. By reviewing the production process from start to finish and considering the various problems, we can gain insight into how we can contribute with efficiency and solve how workers can be spared from monotonous and repetitive work tasks. The end result is an improved work environment. Building on our conception database, already during the first visit we are able to draw up budgets for solutions. We know from experience that our customers favour this approach and value our high level of professionalism. When selecting a supplier, most put large emphasis on this concept.

High demands on robots

To enable robots to perform a task that has previously been performed manually requires robots with a high level of flexibility and precision - demands Bila A/S must meet as supplier. At the MS Akureyri dairy-plant in Iceland, the need was a solution that would optimize the production process and increase the number of milk cartons handled per hour. The requirement was 6,500 cartons/hour. The purpose of automating this process was also to free workers from tedious, repetitive tasks. Our conception database was reviewed and following a dialogue with the customer, the solution was two production cells with its own robot.

In one cell, filled milk cartons are transported on a conveyor one by one. At the end of the conveyor, the milk cartons are grouped and picked up by the robot’s clamping tool, then put in a container on rollers. The process is repeated until the desired number of milk cartons have been placed in the container. The container is then automatically rolled away, while a new container is prepared.

In the other cell, filled milk cartons are wrapped in plastic foil in groups, also using a conveyor belt. At the end of the conveyor, the robot...
picks up the milk cartons using a spade tool and places them on a plastic pallet. The process repeats until the pallet is full. The pallet is then removed by means of another conveyor, while the robot prepares a new pallet on the conveyor and starts the process again.

The cells were delivered with great success. Similar solutions have been introduced at the Arla Hobro and Thise dairy-plants in Denmark. Our latest order amounts several million Euros and involves a delivery to a large dairy in Sweden scheduled for completion by fall 2009.

**Progress through challenge**

Our Key Account Manager Per Lørup takes a positive outlook on future tasks: “We will continue to take on demanding assignments. It is thanks to these our enterprise can develop. We will of course still draw on our existing standard solutions. The overall objective should always be to find the most optimal solution - the customer must achieve a financial gain and should

profit - not only in the Scandinavian countries, but wherever they may be in Europe. At the same time we endeavour to offer competitive prices.”

Jan Bisgaard Sørensen, Managing Director, adds: “In the future, our strength in the dairy industry will lie in our competence, size and substantial industry experience. As always, we want to follow projects until the end to ensure that installations are not delivered until they have been thoroughly tested at our factory. We do not leave the customer until the customer is satisfied. This way, we make sure the customer has received a reliable and profitable solution from Bila A/S as supplier.”

For more information visit www.bila.dk

**Bila is a specialist within developing complete robot cells for dairy-plants throughout Northern Europe. The robotic solutions contribute with efficiency and solve problems concerning the employees monotonous and repetitive work tasks.**
A greener profile
During the past decades the global dairy industry has already taken many initiatives and made extensive efforts to reduce environmental footprints. Thus the industry has acknowledged its responsibility by setting ambitious targets to reduce fluid milk’s carbon footprint while increasing business value from farm to consumer. Increasing pressure from the surrounding society has also motivated the industry to strive harder for a more sustainable business with a greener profile.

Some of the large dairy companies have set targets of up to 25-30% reduction of CO₂ emissions to be implemented within the next 10-15 years. Some of the initiatives taken to support these goals focus on:

• Cows’ diets
• Renewable energy
• Transport efficiency
• Processing efficiency
• Water / effluent reduction

Only by introducing new technologies and solutions it will be possible to reach such targets. In the following we will illustrate how the industry can reduce its water consumption and effluent to the sewer by means of membrane filtration. Furthermore, you will find examples that show the improved energy and transportation efficiency and how this directly affects the environmental footprint. Within the field of membrane filtration DSS Silkeborg A/S has the proven knowhow and tools that can help the industry reach a greener profile.

In the years to come it is DSS´ strategic aim to maintain the position as a market leader within membrane filtration for the dairy industry.

Our business platform allows for expansion into other separation technologies and/or other industries. This could typically be done by a strategic corporation with other companies specialised within a relating field of expertise. Prospectively DSS will continue the effort of developing new environmental solutions for the dairy industry.

### Table 1: Transport savings through pre-concentration of whey at a cheese plant. The Calculation example is based on 250 tonnes of whey to be transported from a cheese plant to a whey processing plant. CO₂ emission calculated at 900 g/km. Transportation cost calculated at 1.25 EUR /km.

<table>
<thead>
<tr>
<th></th>
<th>Distance 100 km</th>
<th>Distance 400 km</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transport savings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Without pre-concentration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation costs (10 truckloads)</td>
<td>10x100x1.25 = 1,250 EUR</td>
<td>10x400x1.25 = 5,000 EUR</td>
</tr>
<tr>
<td><strong>Concentrated to 20% DM at plant</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost for concentration (plant operation)</td>
<td>340 EUR</td>
<td>340 EUR</td>
</tr>
<tr>
<td>Transportation costs (3 truckloads)</td>
<td>3x100x1.25 = 375 EUR</td>
<td>3x400x1.25 = 1,500 EUR</td>
</tr>
<tr>
<td><strong>Savings per day</strong></td>
<td>535 EUR</td>
<td>3,160 EUR</td>
</tr>
<tr>
<td><strong>CO₂ reduction per year</strong></td>
<td>189,000 kg</td>
<td>756,000 kg</td>
</tr>
</tbody>
</table>

The UN climate conference in Copenhagen in December offers a unique opportunity for the Danish Government to enter a binding global climate agreement that applies to the period after 2012. The 2009 meeting is the final opportunity, if the world’s nations are to decide upon a new agreement to take effect before the Kyoto Protocol expires.
Transport efficiency
Transportation of whey is inevitable in the dairy industry, and this activity contributes significantly to the CO\textsubscript{2} account and results in huge transportation costs. The example in table 1 shows the saved cost and the saved CO\textsubscript{2} emission by pre-concentration of cheese whey in a RO plant.

Apart from the reduced cost, there is a significant environmental advantage of concentrating the whey prior to transportation.

Energy efficiency
Recently, DSS has introduced a patented technology for membrane filtration plants that reduces the power consumption with up to 30%, while maintaining the output of the plant. A typical large-scale membrane plant uses 259 kWh/h equal to 6,000 kWh/day, 325 production days gives 1,925,000 kWh per year. And 30% reduction equals 585,000 kWh/year. Recalculated into carbon dioxide, this is just above 250,000 kg CO\textsubscript{2} emission per year. Furthermore, savings in the power uptake also means less generation of heat and the subsequent savings in cooling equals about 60 tons of CO\textsubscript{2} - totalling 300,000 kg/year. The above-mentioned technology has successfully been implemented in several of DSS’ membrane plants around the world.

Water and effluent
The general aim of the dairy industry is to minimise the overall water consumption and effluent discharged into the sewerage system, thereby reducing the environmental impact. The constantly increasing water prices and effluent charges have moved the focal point from end-of-pipe treatment to prevention of pollution. To stay competitive it is therefore essential to find sustainable solutions that enable the industry to recover the valuable milk product residues and recover process water, thereby reducing the effluent and intake water bill. With DSS’ White Water Recovery system (see table 2) this is now possible.

Environmental initiatives often come with an up-front investment presenting internal hurdles that, when overcome, are well worth the effort and expense. Without doubt, going green makes the dairy industry more efficient and generates goodwill from customers and the surrounding community. Those who are able to provide a product with a lower environmental impact than that of their competitors will find that they have an advantage in the market place.

DSS Facts & Figures
\begin{itemize}
\item Product line: Membrane filtration systems and replacement membranes
\item Market segment: Global dairy industry
\item Turnover: EUR 20 millions (2008)
\item Growth projections: 10-15% p.a.
\item Type of business: Solution provider
\item No. of employees: 37
\item Reference plants: > 400
\end{itemize}

<table>
<thead>
<tr>
<th>Daily amount of white water</th>
<th>35,000 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average milk solids</td>
<td>6.0%</td>
</tr>
<tr>
<td>Recovered milk solids</td>
<td>3,300 kg/day</td>
</tr>
<tr>
<td>Investment</td>
<td>400,000 EUR</td>
</tr>
<tr>
<td>Cost of operation and capital</td>
<td>200,000 EUR/year</td>
</tr>
<tr>
<td>Value of recovered product*</td>
<td>950,000 EUR/year</td>
</tr>
</tbody>
</table>

Table 2 White Water Recovery case story: Calculation example. Recovered milk solids can be used for e.g. yoghurt, cheese and ice cream. Recovered water can be used for e.g. process water, CIP and steam. Value* is based on 300 operating days and a price of 1,50 EUR/kg milk dry matter.
The global financial crisis puts the dairy industry under pressure: General reduction in demand, consumers substituting expensive products with discount products, and financing getting tougher affecting farmers and dairies.

In the broader perspective, the financial crisis is inferior compared to the scenario of climatic changes that can drive crises in the worldwide food supply.

The good news is that the sudden change from a fast to a slow-running economy puts the dairy equipment suppliers and civil construction companies under pressure - and the prices go down.

Prioritize your projects
In order to utilize this situation before the economy changes again, any dairy group or single dairy must have a prioritized portfolio of projects that can be validated against the market and be contracted when the prices are at the right level. The project portfolio has three levels:

• Supply chain level, that analyses the production and logistic structure, how many dairies are necessary, what are their optimal capacities and capabilities, how is the milk collected, and how are the finished products delivered to the market.
• Site level, where the master plan for a dairy describes how and in which steps a dairy can be expanded to its maximum capacity at the site.
• Department level, containing expansion, refurbishments and optimization projects within departments.

Environmental considerations
All of these projects can contain a significant environmental impact, savings in e.g. energy, water, and product loss; - the key issue is a structured approach that spans all three levels of projects making it possible to balance investments, savings, total cost of ownership and environmental impact.

Energy savings in optimization projects at department level are obvious, usually have a short payback time and go hand in hand with environmental consciousness.

At site level and supply chain level, projects are more complex: Can you merge three dairies into one - and should it be a green field dairy at a new location? If we simplify or speed up the process using enzymes, the site can be smaller, if we can reduce bulk transportation by taking water out of the milk, the supply grid can be larger.

Despite the complexity, these projects are attractive with larger savings and a broader environmental impact. The main drivers are utilization of capacity, efficient processes, utilities, and buildings with designed, efficient flows and a layout for expansion.

Sustainable solutions
ALECTIA is a leading consultancy and engineering company with a special expertise within the dairy industry. The company provides sustainable solutions to companies all over the world. In a current project, ALECTIA is providing consultancy to the UN in their ambitious project to become climate neutral. A committee of five consultants from different places in the world is advising UN in their wish to reduce carbon footprint and create sustainable buildings worldwide. Two out of the five consultants come from ALECTIA.

Within ALECTIA Group, ALECTIA Dairy offer a comprehensive range of services - from building projects, water supply and wastewater treatment to improvement of daily operation.

Green Lean Dairies - don’t miss the opportunity

By Jacob Christian Møller, Business Manager, ALECTIA Dairy

ALECTIA Dairy

ALECTIA Dairy is part of the ALECTIA Group and provides consulting services from the very first ideas through to operation, ensuring that today’s dairy plants are designed to meet tomorrow’s requirements.

Below are some of the company’s core competencies:

• Dairy buildings and civil works, incl. conceptual design, site search and construction management
• Supply chain consultancy
• Environmental management
• Sustainability strategy
• Responsible supplier management
• CSR strategy
• Carbon footprint
• Energy evaluation and savings potential
• Health and safety, risk management, corporate governance
• Water distribution management, water supply, wastewater treatment, water savings and water reuse.

www.alectiadairy.com
DSS is the world leading specialist in membrane filtration technology for dairy processing.

We have introduced a patented technology for membrane filtration plants that reduces the power consumption with up to 30%, while maintaining the output of the plant. For a typical large-scale membrane plant this equals 585,000 kwh/year less power consumed - and a reduction in CO₂ emissions of more than 250,000 kg/year.

The reduced power consumption in turn reduces the need for cooling, pushing the total reduction in CO₂ emissions above 300,000 kg/year.

The above-mentioned technology has successfully been implemented in several of the more than 400 dairy companies worldwide who benefit from our technology every single day.
Environmental Navigation

By Henrik JT Jensen,
Area Sales Manager,
GEA Niro Food & Dairy Division

At the beginning of 2007 the prices for food products were sky rocketing and both raw materials and final products were affected. Many industries wanted to benefit from the premium prices and a great demand for process equipment for processing of food raw materials was the result of this. Especially whey-based products were heavily in demand, as they can be used as an inexpensive substitute in products, where milk powders are traditionally used - i.e. within the bakery industry - and whey powder prices reached prices never seen before.

However, in 2007 the whole market turned before the benefits of the higher demand really came through, and market prices for milk and whey powders were in free fall. During 2008 milk and whey powder prices reached the lowest market price ever. While the financial crisis started to be recognized almost all over the world during 2008, it became a challenge to sell process equipment to the food industry.

Further, the environmental issues and the focus on CO₂ emission are affecting the food and dairy product producers today so that energy consumption is an important issue when looking for a new processing plant or when upgrading existing equipment is considered.

Due to GEA Niro's wide range of process equipment and involvement in many different market segments and a strong focus on process development and optimization, GEA Niro and the companies within GEA Process Engineering are well prepared to navigate through a market affected by the financial crisis and environmental focus. As a result, GEA Niro is still contacted by companies looking for food and dairy process equipment producing high quality products at optimized energy consumption.

GEA Niro is navigating through a market affected by the financial crisis and environmental focus.

About GEA Niro

GEA Niro is a world leader in industrial drying. The core technologies are spray drying, freeze drying, flash drying and fluid-bed processing, and GEA Niro supplies process units and complete process lines for powder production to the food, dairy, pharmaceutical and chemical industries.

GEA Niro also has special activities within environmental engineering where the core technologies of GEA Niro are applied in air pollution control, waste management and energy optimisation.

GEA Niro has the world's largest test centre of its kind for process equipment. The centre offers more than 40 different pilot plants and a variety of auxiliary equipment for feasibility and pilot-scale testing of various processes used in the manufacture of chemical, dairy, food and pharmaceutical products.

GEA Niro's headquarters are located in Denmark with approx. 500 employees. The company is part of GEA Process Engineering which has a turnover of more than EUR 1 billion and approximately 4,000 employees working in subsidiaries located in more than 40 countries.

MVR fan for the evaporator.
The Spray Dryer
For the spray dryers, the main energy consumption is used for heating of the process air to evaporate the water from the atomized liquid. GEA Niro has over the years developed spray dryers able to remove the water over a two stage or three stage drying process (MSD™) resulting in a lower heating energy consumption. Typically, 10-15% less energy is consumed when using the GEA Niro MSD™ spray dryer compared with a two stage dryer like i.e. the GEA Niro TALL FORM DRYER™. Today, these dryers can also be equipped with the new DDD™ air disperser having a much lower pressure drop resulting in less power needed for the main air supply fan.

Heat Recovery
Not all the heating energy is utilized in the spray drying process, and so a lot of energy is normally lost in the exhaust air. For new plants and for existing plants GEA Niro has the PROCESS THERM™ - a sanitary heat exchanger utilizing the exhaust air energy to preheat the inlet air for the drying. Further, a flue gas heat recovery system can be built into the system when using indirect air heating by gas or oil, as the high temperature combustion gas is still containing a lot of unutilized energy. Further, to this the steam condensate from the evaporator can be utilized to preheat the process air in the spray dryer. Typically, with a GEA Niro heat recovery system the energy consumption can be reduced by approx. 25%.
The Nordic Dairy Council welcomes you at the 42nd Nordic Dairy Congress to be held in Hämeenlinna, Finland 17-19 June 2010. The theme of the congress will be New Technologies and Innovations in Dairy Industry. All lectures will be given in English.

New Technologies and Innovations
Welcome to every 3rd year organized and in order the 42nd Nordic Dairy Congress to be held in Hämeenlinna at the Arts and Congress Center Verkatehdas from the 17th until 19th of June 2010.

The theme of the congress will be “New Technologies and Innovations in Dairy Industry”. The target is to offer an extensive view of the latest technology development and innovations within the dairy industry. The new technologies will concentrate on new more economic possibilities in process development offered by new membrane technologies, alternative heat treatments and on continuous production methods.

The second area in focus will be innovations at the sustainability and dairy quality control. At the difficult macro-economical situation these targets for development results are connected to each other by more economical processes and production in dairy industry and milk production.

Participants & Presentations
The Nordic Dairy Congress is targeted towards all dairy people working within the fields of process and product technology and development, quality, primary production, dairy production and marketing. Moreover, the Nordic congresses are attended by participants from the related areas; packaging, detergent and culture industries and as well as from dairy schools, research institutes and universities.

Approximately 200 Nordic dairy people attend the congresses each third year. But at the upcoming 42nd Nordic Dairy Congress we expect - and are looking forward to welcome new international visitors as the congress will be held in English!

The congress will include about 15-17 presentations, which will be held by the best specialists in their fields. Please visit our homepage for more information.

www.meijeri-kongressi.fi
www.nordismejerikongress.fi
www.nordicdairycongress.fi

Nordic Dairy Council
The Nordic Dairy Council (Nordisk Mejeriteknisk Råd - NMR) is responsible for the continuity, coordination, arrangement, quality and high expertise level of the congresses. The Nordic Dairy Congress takes place every third year and the practical arrangements alternate between each of the Nordic countries.

As president of NMR and the congress period 2008-2010 I am happy to warmly welcome you all at the 42nd Nordic Dairy Congress, June 2010 in Finland.

By Kari Toikkanen, President of the Nordic Dairy Council, MSc. Science Dairy Technology, Helsinki University, eMBA, Helsinki School of Economics Product Manager, Valio Ltd.

Members of the Nordic Dairy Council at the opening ceremony of the latest Nordic Dairy Congress held in Denmark 2007. From left to right: Peter Hedlin (Sweden), Jannie Tove Skavøy (Norway), Sævar Magnusson (Iceland), Kari Toikkanen (Finland) and Søren Jensen (Denmark). (Photo: Thomas Priskorn).
Why risk working with several suppliers, when you can entrust your dairy factory to just one? GEA 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 GEA Niro.
Environmental parameters

It is characteristic of Novadan to regard environmental concerns as decisive key parameters when developing new products. The below facts clearly demonstrate this:

- In 1990, Novadan was the initiator behind the implementation of the Swan Labelled Eco-label in Denmark and played a significant role in defining the requirements presented to European suppliers of chemical substances for environmentally friendly raw materials - a constant demand on Novadan's part.
- Novadan is a member of Green Network where private companies and

For many years, the Dairy Sector has centred different optimisations of CIP processes around financial issues - energy, water, chemical agents etc. All these parameters will influence the environment, but only rarely is the resulting reduced environmental impact mentioned in the company's green account.
public sector partners work together to achieve greater sustainability in the fields of environment, social commitment and occupational health and safety. Novadan was recently awarded the Green Network Diploma for environmental performance for the fifth time running.

- Energy, chemical waste and wastewater and possible optimisations of these parameters are constantly considered in connection with every aspect of Novadan’s production.

It is, therefore, hardly surprising that Novadan is the leading manufacturer of Swan Labelled cleaning agents in the Nordic Countries and that the company’s main objective is to develop environmentally friendly products.

Swan Labelled cleaning
Standard requirements for Swan Labelled cleaning agents for the Food Industry already exist, but the Dairy Sector has displayed little interest in the matter. Nevertheless, Novadan has developed a range of CIP cleaning agents based on the philosophy that cleaning and disinfection in food processing industries should be performed without the use of A or B substances and that the users of the products should be able to obtain better documentation for their green accounts.

The fundamental basis of this new concept is a single step, alkaline CIP cleaning procedure focusing on the key performance indicators and the quality standards of the company in question. Continuous follow-up and focus on the customer’s wishes and requirements constitute important elements of a successful implementation.

The development of this innovative concept has prompted Novadan to unite all their core competences regarding science, environment, application, formulation etc. and combine them with the strong environmental focus of the company’s mission statement. With this new concept, Novadan can promise the following advantages of any CIP process:

- Improved green account
- Reduced water consumption
- Reduced energy consumption
- Reduced time consumption
- Create more production capacity
- CIP product developed with focus on our environment

Environmental optimisation
Novadan is prepared to examine your company and prepare a report on the environmental optimisation of your CIP unit to render the environmental effort visible.

Novadan has also developed new concepts for surface cleaning (OPC) and disinfection containing neither chlorine nor EDTA. The chlorine-free factory is now a reality and a step in the right direction for our mutual environment.
Cheese dairies using double membrane filtration of the whey end up with RO-water, which is a by-product with a minimal COD but often considerably microbial contaminated. Some dairies reuse the RO-water for cheese cooling water and the rest is discharged. Some dairies reuse the RO-water for cooling towers as well - in general there is always a surplus of RO-water, which is typically imposed with a levy when discharged.

When BacTerminator® treats/recirculates the RO-water it becomes almost sterile (Figure 1).

Table 1: BacTerminator® treatment/recirculation of RO-water. All water samples have been analyzed at Eurofins, an independent, certified laboratory.

<table>
<thead>
<tr>
<th>Laboratory</th>
<th>RO-WATER before BacTerminator®</th>
<th>RO-WATER after BacTerminator®</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVC CFU/ml at 22°C</td>
<td>13.857</td>
<td>1</td>
</tr>
<tr>
<td>TVC CFU/ml at 37°C</td>
<td>8.652</td>
<td>1</td>
</tr>
<tr>
<td>Coliform bacteria /100 ml</td>
<td>22</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Mould fungus /100 ml</td>
<td>197</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Yeast /100 ml</td>
<td>70</td>
<td>4</td>
</tr>
</tbody>
</table>

After BacTerminator® the RO-water can be used for:

- Water for cheese cooling before brining
- Feed water for cooling towers (anti-Legionella)
- Water for CIP filter system (flushing/pre rinse of UF)
- Water for cheese mould/form washer
- Water for shelf washer in the ripening room
- Water for shelf washer in the salt room
- Water for CIP system (intermediate/final rinse)
- Water for product flushing
- Brine water

3 months field test at Arla Foods Hjørring Dairy
Adept has performed a field test at Arla Foods Hjørring Dairy, a large cheese plant producing semi-hard pressed cheese. The RO-water was treated by running through BacTerminator® and daily microbial tests were conducted over a 3 month period. Based on the positive, documented outcome of this field test, Arla Foods Hjørring Dairy has ordered one BacTerminator® as the first dairy in the world for the RO-water.

DSS Silkeborg A/S
- worldwide distribution partner for BacTerminator®
DSS Silkeborg AS, Denmark, one of the largest suppliers for membrane solutions for the dairy industry worldwide - is co-operating with Adept to distribute and service BacTerminator® systems for the RO-water application in dairies. DSS has supplied more than 400 membrane filtration systems to dairies and has a strong and technology driven sales and service force around the world.

With the BacTerminator® system DSS can provide its customers with a new solution for effective killing of the microorganisms in the RO-water with large, potential savings from the reuse of RO-water. Besides selling BacTerminator® for treating water from membrane filtration, DSS also sells BacTerminator® for treating water from evaporators e.g. condensate water.

Jesper Færch,
Sales Manager, Adept
M. Sc.,
Dairy Technology & HD

Jan Wøidemann,
CEO, Adept
M.Sc.,
Business Administration
Are you looking for new Markets for your Products or Highly Skilled Dairy Employees? Contact:

Mælkeritidende
"Mælkeritidende” as well as “Danish Dairy & Food Industry ... worldwide” is owned and 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, company profiles and exhibition information’s are accepted for the journal.

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! For more information please visit www.maelkeritidende.dk

If you want further information about the Danish dairy industry, please contact the editorial staff: Chief Editor, M.Sc. in Dairy Technology, Anne-Sofi Christiansen or Editor M.A., Anna Marie Thøgersen.

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Contact

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Double O Vats

CHALON MEGARD double O vats are flat bottomed, equipped with two polyvalent cutting and stirring tools and can be tilted for discharge. One of the main characteristics of the CHALON MEGARD vats is the distance separating the axis of both tools: this reduced centre line distance compared to classic double O vats, ensures a good interpenetration of the tools, and therefore an optimal stirring and cutting of the curds in the vats.

Particular care is brought to the finishing of the tools, which are manufactured with thick sharpened stainless steel plates and removable blades with individually adjustable tension.

An innovative filter system using a double rotating filter ensures constant agitation during the phase of whey separation, for the curd to remain suspended in the whey. It prevents build-up of curd which generates irregularities in the moulding and allows the optimisation of the whey removing and water addition process while obtaining perfect conditions for production.

These innovations and characteristics make the CHALON MEGARD double O vat one of the most competitive on the market, with reduced loss of cheese particles and fat in the whey.

State-of-the-art Moulding

The CHALON MEGARD tubular moulding machines have been conceived for a wide variety of cheese types to satisfy demands of continuous high-rate production, in multiple formats, with unitary weight ranges from 500 grams to more than 15 kilograms.

These moulding machines permit a single-step process for pre-pressing, cut of the curd blocks and automatic placement in moulds with optimal uniformity in weight.

The curd is transferred directly from the vats to the moulding machines, using a curd pump, designed specifically for the curd type which needs to be transferred. Depending on production requirements, it may be necessary to add an intermediary buffer curd tank.

Curd filling is performed with or without whey separation from the curd for the production of cheese with or without mechanical holes. The possibility of cheese production without mechanical holes is one of the main characteristics of the CHALON MEGARD moulding machine: it is the fruit of over 30 years of research and development.

The whole cluster of moulding tubes is detachable for easy changing of the moulding format. This specific set-up allows adaptation to any grouping of tubes while maintaining the CHALON MEGARD specificity concerning cheese production with or without mechanical holes. As a consequence, the tubular moulding machines were designed to integrate the multi format lines, in particular for lines using block-moulds, no matter how the moulds are placed in the block-moulds.

The shape conformer for curd blocks cutting can be fixed on variable height with the help of telescopic tubes, to ensure a higher weight pre-
cision during the moulding process. Alternative dosing machines have been designed for moulding by transfer of a curd/whey mix into the mould. These dosing machine are specially adapted to soft varieties of curds.

**Complete turnkey lines**

Vats and tubular moulding machines are part of complete turnkey lines offered by CHALON MEGARD. The range of equipment includes extensive choice of moulding such as pre-pressing vat or vacuum transfer moulding adapted for hard cheese production, tunnel presses, open or closed, with individual cylinder or air cushion, acidification in tunnel, washing tunnel, automatic river type brine, piping and conveying line for a highly automated production.

**Complete follow up**

The adaptability to customer's requirement and hygiene constraints are systematically taken into account by the design and drawing office in the manufacturing of the CHALON MEGARD machinery.

Pilot plant and a team of experienced cheese technologists complete CHALON MEGARD's offer. Our cheese makers have strong experience on the ground to carry out a complete follow up of the making, including after the setting up of the line for a trusty and reliable relationship with customer.

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**Agency for Scandinavia**

**Troels C. Varming**

Vestergade 1 · 1456 Copenhagen · Denmark

Phone +45 3311 0100 · www.troelscvarming.dk

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**CHALON MEGARD**

CHALON MEGARD has been specializing in dairy industry equipment since 1920 and offers a complete range of cheese production lines specially designed for hard, semi-hard & speciality cheese.

We are able to supply you with equipments or complete turnkey lines and our range includes:

- cheese vats : high yield, with possibility of continuous stirring whey removal
- extensive choice of moulding systems :
  - vacuum transfer moulding, adapted for hard cheese production
  - pre-pressing vat
  - tubular moulding and dosing machine
- tunnel presses, open or closed, with individual cylinder or air cushion
- acidification in tunnel
- washing tunnel
- automatic river type brine
- piping and conveying line for a highly automated production

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**CHALON MEGARD, a company of the group BRETÊCHE INDUSTRIE**

http://www.breteche.com

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**Danish Dairy & Food Industry... worldwide 2009**

NR. 19
Dairy Fruit A/S focuses on producing natural ingredients as well as on creating good working conditions and environmental friendly production.

By Jens G. Møller,
Managing Director,
Dairy Fruit A/S

**Competence and quality**
Dairy Fruit A/S includes three business segments: Fruit Preps, Liquid Spice Mix (savoury preparations) and outsourced production. Competence and quality are keywords in the aseptic production, with the equivalent in innovation and creativity - our strength in product development. We produce both conventional and organic preparations within our product lines Fruit Preps and Spice Mix.

Dairy Fruit A/S is certified according to ISO 22000, BRC (Grade A), ISO 14001 and also approved for organic production. Furthermore, we are certified according to ISO 14001 as it is our policy that all activities regarding procurement, production, sale and supply of Fruit Prep, jam, porridge and Liquid Spice Mix must focus on environmental sustainable handling.

High quality raw materials, finished goods, GMP, a highly trained staff and their knowledge of niche aseptic production are all key cornerstones of Dairy Fruit's future.

Dairy Fruit A/S has chosen a very significant pay off line: *The natural ingredient*. We are not only natural in the choice of raw materials and ingredients; we are also the natural ingredient in the way we do business.

**Environmental focus**
Reduction of energy use, optimized labour and environmental solutions are part of being the "natural ingredient". For several years, we have optimized our supply of raw materials. Each year our company buys more than 100 40ft “freezer containers” of strawberries. Imagine what it would mean if they were supplied in 15 kg
cartons. Thus, in collaboration with our suppliers in Europe and the Far East we have solved this problem and they deliver in big boxes and big bags. This improves the working conditions of the employees and satisfies those authorities focusing on the working environment.

Each year our company sets up targets to improve logistics for at least five numbers of commodities for the benefit of the environment including the benefit of the internal working conditions.

Successfully, we have also worked with external advisers about electricity and compressed air savings, leading us to a better utilization and optimization of running the compressors in the correct (economic) time zones.

Eco-friendly
We supply our customers with natural ingredients in returnable stainless steel containers. The preparation of a container for an aseptic filling is; CIP, sterilization, cooling and pressure phase with nitrogen. All factors are essential to ensure that the product, after an aseptic processing, also maintains an aseptic shelf-life.

We have built a new and more eco-friendly center for washing, preparation, sterilization and nitrogen loading. Compared to the past, this benefits the environment - and the economy through optimized utilization of water and steam used for sterilization and cooling of containers. The working environment has simultaneously improved considerably, as humidity and the overall temperature in the production areas have dropped significantly.

The latest environmental improvement is our change from purchasing - to producing our own nitrogen. This is a project of great benefit to the reduction of road transport of an ambient gas. Furthermore, it is also very cost effective for Dairy Fruit A/S.

Informing employees
Furthermore, informing our employees is an important parameter of being the natural ingredient. As one of the very first companies, we introduced an open communication about e.g. absence and illness, but also regarding abnormalities of raw materials and the finished goods.

Moreover, it is important to inform employees about energy consumption (water, heat, gas, electricity) as well as internal and external hygiene audits, complaints, accidents, safety, company KPI’s, and much more.

We run daily information on monitors, and thus each employee can compare and improve the current figures; material is also shown on a big screen in the canteen. We intend to make it a sport to reduce unnecessary consumption of energy.

Your natural choice
Our vision is clear; we want to be our customers’ natural choice. We look forward to being your natural choice. Visit www.dairy-fruit.dk for more information.
Measuring at Arla
The brand Arla stands for highest quality in products and manufacturing procedures, and therefore, the process control measuring devices have to meet highest demands. For more than 15 years, Arla has been relying on Baumer devices for their pressure, temperature and level measuring.

Extension of Arla Slagelse
When expanding their manufacturing site in Slagelse in 2007, Arla installed a bigger and more modern CIP unit. Since the company had been working successfully with Baumer sensors before, Arla Foods decided to also apply these products for the level monitoring of their new cleaning facility. “We aim to establish a consistent standard throughout the whole factory. Since we had our best experiences regarding lifecycle and quality with Baumer sensors, we also decided to gradually replace previous measuring devices by other suppliers”, says Michael Olsen, Head of the Department Electrical Division.

Point Level Measurement
Point level measurement is one of the most common applications in the food and beverage industry. Regardless of tank size and type or the cleaning method, the equipment has to be designed for highest possible food safety standards (FDA-approved materials, easy to clean).

The hygienic FlexLevel Switch, installed in the new CIP unit in Slagelse, is also used in other processes like the filing unit. It is available with different 3A approved process connections and fulfils the FDA and EHEDG demands.

The FlexLevel Switch is especially suitable for CIP and SIP measurements. Thanks to integrated electronics and no moving parts, the switch is virtually maintenance-free. All wetted parts are made of acid-proof stainless steel or PEEK. It measures the level of liquids, viscous fluids and even some dry media regardless of its mounting position and without being influenced by foam or vibrations. The process temperature ranges from -20 to 85°C.

Inserted into a metal tank, the FlexLevel Switch sends out an electro-magnetic wave, and its reflection is measured through the tank wall. As soon as the media reaches the sensor tip, the reflection of the electromagnetic field changes depending on the...
dielectric value of the media. The FlexLevel Switch measures this change and opens or closes respectively.

**Continuous Level Measurement**

Some processes require the precise level measurement, for instance if liquids are to be dosed or mixed, or if adjustments, consumption or leakage are to be monitored. With a continuous measurement, the level is measured via an analogue output signal enabling an accurate monitoring of the tank content. In Arla’s factory, the level of the pasteurisation process is continuously measured with the LSP 050.1 in a 100-litre tank.

This level sensor can be applied with all media that have a minimum conductivity of 1μS/cm. A low resistive measuring rod dips into a conductive liquid and sends a high frequent current to the tank wall. The voltage drop between the rod and the tank wall is measured in proportion to the length of the wetted part of the rod and its total length. This output voltage is proportional to the tank level which is indicated precisely by the 4-20 mA output signal.

The sensor is also suitable for pasty or strong adhesive media such as yoghurt. Especially in pressurised tanks the LSP offers great advantages. On the media side, a maximum pressure of 16 bar and a permanent temperature from -20 up to 140°C are possible. Thus, the device is well suitable for CIP and SIP processes.

All parts in contact with the media are made of stainless steel or PEEK. The Teach-in procedure allows programming of the minimum and maximum level at any interval from 50 mm upwards. The measuring accuracy of ±0.1% of the respective rod length and the short response time of T_m=10ms enable a precise level control.

**Outlook**

Since Baumer's devices have proved regarding quality and lifecycle, Arla will proceed to standardise their level sensors with these products. The Danish dairy relies on the Swiss supplier - not only with level sensors, but also for pressure and temperature measuring. “All Baumer sensors are working precisely and are most reliable”, summarises Michael Olsen, who is also pleased about the little maintenance effort required. The supplier's support has been excellent as well - yet another reason why Arla is perfectly satisfied with their new solution.

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**Your Partner for Process Instrumentation**

Baumer manufactures mechanical and electronic measuring instruments and offers customers one-stop pressure, temperature, level and conductivity measurement. Our products are designed to provide precise measurement results whatever environment. Through our expertise and knowledge, we are able to meet your requirements worldwide from standard to customized solutions.

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Arla Foods in Slagelse has installed Baumer measuring devices for level control.
The dairy industry is very focused on cost effective and sustainable solutions to minimise waste and maximise utilisation of all product streams in the process. For dairy, these include recovery of all milk components and reclaiming and recycling water streams.

The key operational drivers for many businesses are usually based on cost/benefit considerations. Although as climate change becomes more urgent the need to fulfil the company’s strategy and commitment to managing their carbon footprint is an ever more critical driver. In other words having a “green profile” will be highly important in years to come.

With a very short ROI (Return on Investment) along with full recovery of milk components and water stream, the APV GoldStream process combines both financial savings with waste elimination.

**White water**

The first flush water in an in-line cleaning process (CIP) after production contains diluted milk components, which is called “white water”. The white water can be raw milk from road tankers, milk silos or pasteurised white water from pipes, pasteurisers, storage tanks and other processing equipment.

The total volume of white water varies from dairy to dairy depending on production as well as the number and efficiency of flush and production logistics, etc. However, a typical level is in the range of 3 to 4% of the milk intake. A dairy plant with a milk intake of 1 million litres per day will typically produce 30 - 40,000 litres of white water per day consisting of one third milk and two-thirds water. Annually this equates to 4.2 million litres of milk and 8.4 million litres of water.

Traditionally little could be done with the white water due to its high water content. Consequently the water was sent down the drain, which in many cases increased the chemical oxygen demand (COD) significantly. This is not a favourable option when taking into consideration the annual value of 4.2 million litres of milk and the cost of water and effluent treatment. Milk has a very high biochemical oxygen demand (BOD₅) load and converted into its population equivalent 30 m³ white water is equal to waste water from 15,000 people.

**The GoldStream solution**

A new environmentally friendly technology enables effective processing of the collected white water by concentrating the milk back to its original composition or higher depending on the use of the recovered milk. The APV GoldStream is a hygienic dairy process based on proven reverse osmosis (RO) technology enabling use of the recovered milk for cheese, yoghurt, ice cream and flavoured milk, but not for natural milk drink.

The RO permeate or water stream might be used directly for Cleaning In Place (CIP) purposes or be polished in the flexible Plug & Play GoldStream system to a COD level of approximately 10 ppm. This very high quality demineralised soft water might also be used as:

- Process water for cheese and lactose wash water as well as diafiltration
- Water for cheese cooling before brining and further brine water
- Water to supply boilers or cooling towers
- Water to supply CIP systems including the final rinses
- Seal water on pumps

Depending on the use of the water, a downstream treatment might be needed - e.g. pasteurisation or cold disinfection by Electrolysis for process water and UV light or preservation by Oxonia (H₂O₂) for other purposes.

**Highly profitable and a green image**

The GoldStream process is a highly profitable solution as the value of the recovered milk is equal to the price for raw milk. Additionally the savings of water and effluent cost add to the profitability. Taking into consideration the capital and operational cost the ROI is in most cases less than one year.

Figure 1 shows the waste solution scenario compared to the recovery scenario using the GoldStream technology based on a daily milk intake of 1 million litres. The figures are based on 360 days of production per year with an interest rate of 5% and three years depreciation.
Reclaiming milk based water

When processing milk or whey by membrane filtration for protein concentrates, and subsequent evaporation of a substantial amount of milk based water (Cow Water) is obtained as RO or NF (Nano Filtration) permeate or condensate respectively. Figure 2 shows the process of generating water from milk and whey.

In this respect the cow water becomes a new milk component of increased value and can be reclaimed by using the above mentioned RO polishing system. This adds a new dimension of value to the milk and cuts significantly the water and waste costs as well as adding value to the green profile too.

Conclusion

The GoldStream process is a proven, financially attractive and sustainable solution for:

- Recovery and use of all fluid milk components
- Recovery and recycling of water streams
- Reduced load on the effluent plants.

With a pay back time of less than one year as well as helping to contribute to a processors’ positive environmental image, GoldStream is a “gold-mine” of potential savings.

With the positive results obtained by using the new GoldStream process as well as the interest shown by the industry, we strongly believe that this technology will be a standard solution in all dairies in the future.

For further information on The GoldStream and SPX APV membrane technologies, please visit us at www.apv.com

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Figure 1: The waste solution (1 million ltrs milk intake/day) compared to the recovery solution by using the GoldStream technology.

Figure 2: Water reclaim from whey and milk membrane processing.

About APV & SPX

- APV, an SPX brand, is a prominent provider of high quality process technologies and engineering solutions for the food, pharmaceutical, healthcare, power generation, chemical and petrochemical industries. APV’s range of manufactured products includes heat exchangers, water desalination units, homogenisers, as well as pumps and valves for hygienic and non-hygienic applications. APV solutions are supplied through its global network of sales and service offices. www.apv.com
- SPX Corporation is a Fortune 500, global multi-industry manufacturing company, headquartered in Charlotte, North Carolina. SPX employs more than 17,000 people worldwide and has operations in over 35 countries. www.spx.com
Promoting the European Dairy Profession and Sector

Promotion and protection
The main task for the European dairy association AEDIL/EDTDHA is to promote and protect the dairy profession and the dairy sector in Europe by means of allying the national associations within the framework of the due European solidarity commitment.

Furthermore, AEDIL/EDTDA focuses on creating transparency within the European dairy education systems, and the association manages the European Vocational Education Passport which is confirmed by the EU authorities and issued by the national associations.

AEDIL/EDTDHA was founded in 1991/92. AEDIL stands for: Association Européenne des Diplômés de l’Industrie Laitière and EDTDHA is a contraction of: European Dairy Technology Diploma-Holders Association.

Vocational Education Passport
The holder of the “Vocational Education Passport” has performed training in a factory and/or in a school by AEDIL. Furthermore, he or she fulfills the requirements of the hygiene training program in accordance with EU directive of milk hygiene regulations 92/46/EEC. The person is also endeavoring to improve his/hers abilities and professional knowledge within the framework of the European labor mobility or professional activities abroad.

Members and education
The following countries are members of AEDIL/EDTDHA: Austria, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Norway, Poland, Sweden, Switzerland and United Kingdom.

The member countries run several dairy schools, training centers and Departments of Milk Sciences at their national universities established in each country.

For the up-coming season 2009/2010 AEDIL/EDTDHA is organizing specific courses to be held in different member countries within ice cream production as well as the making of processed, soft or fresh cheeses. Please visit www.aedil.org for more information.

"European Dairy Technologist" Courses

The AEDIL / EDTDHA - European Dairy Technology Diploma-Holders Association - represents the association of national, professional organizations, emanating from the dairy manufacturing industry, it was founded in 1991.

The main objectives are: to create transparency within European dairy education systems, manage the vocational education passport and develop an international record of further training including support for youth exchange in the dairy sector.

Currently AEDIL supports the following courses in its member states.

Ice Cream
KOLD college
Dk-5260 Odense S
Phone +45 6313 2043
www.koldcollege.dk

Processed and Spread Cheese
ENIL of Mamirolle
F-25620 Mamirolle
Phone +33 3 8155 9200
www.enil.fr

Soft Cheese
ENILBIO of Poligny
F-39801 Poligny
Phone +33 38473 7676
www.enil.fr

Fresh Cheese
University of Warmia and Mazury
PL-10957 Olsztyn
Phone +48 895 23 3277
www.uwm.edu.pl

Further information about AEDIL and the courses: www.aedil.org
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.

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**Turn white water into gold with the APV GoldStream process**

And improve your Return On Investment and green profile!

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Pipes Going Green

Pipes for the food and drink industry are going green. The Danish manufacturer of pre-insulated pipes for industry, LOGSTOR Industry, has identified two green areas in which they wish to play an active role: Reducing energy losses and reducing the CO₂ emission.

LOGSTOR Industry

LOGSTOR Industry is a member of the LOGSTOR group - an international organisation, which develops and manufactures complete pre-insulated pipe systems for many applications where media are to be transported at temperatures between -200° and +250°C. Over the last decade, LOGSTOR Industry has successfully entered new markets such as the chemical and the food industries. All products are manufactured in accordance with the regulations of the international quality and environmental standards ISO 9001 and ISO 14001.
Pre-insulated pipes

Obviously reducing energy losses and reducing the CO$_2$ emission are closely connected. With the political reaction and attention to the impact and problems of CO$_2$-emissions, it is only natural for manufacturers in the energy sector such as LOGSTOR to embrace this as part of their business, and in this context the very idea of pre-insulation contributes to an answer to environmental challenges and threats.

In other words, one way to save CO$_2$ is simply to use the right pipes! Pre-insulation equals greatly improved insulation quality. Since pipes and fittings have been insulated in a controlled factory environment, the insulation properties become uniform, and energy loss is kept at a minimum. Such green benefits are well documented by some of LOGSTOR Industry’s biggest customers, Arla Foods and Danish Crown.

Numerous advantages

LOGSTOR Industry’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 (See figure 1). Outside there is a black or white polyethylene (HDPE) plastic jacket, making the pipes fit into almost every environment - outdoor as well as indoor - and suited for the transport of all industrial media (typically applied in the food, chemical, pharmaceutical and petro-chemical industries within the temperature range of -200°C to +250°C).

The benefits are obvious. For instance, the traditional risks of condensed water in the insulation of cooling pipes are eliminated with watertight HDPE jackets. This also means that cleaning is no longer a problem. In fact, a recent test made by the Danish Technological Institute concludes that the smooth surfaces are easy to clean, even internally in elbows and T-pieces. They are just as easy to clean as the stainless steel reference sheet. In practice, 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 also resistant to salt water, UV-retardant additives and different chemicals.

Furthermore, the pre-insulated pipes are supported directly on the jacket surface since the pipe supports are fitted directly around the pipe casing - not on the carrier pipe.

Thus, problems such as condensed penetration, unsealed connections between support and jacket and destroyed mastic are eliminated, and traditional cold bridges and icing around the supports are completely avoided.

The polyurethane (PUR) foam used for pre-insulation ensures optimum insulation capacity with a Lambda value which is considerably lower (0.0275 W/mK) than those of alternative insulation materials. Pre-insulated pipes therefore not only contribute to a reduction of a system’s operating costs but also to lower CO$_2$ emission.

Maintenance free

Another advantage of pre-insulated pipes is that they are basically maintenance free. They offer such high mechanical strength that they can even withstand the pressure of being stepped on. The HDPE-jackets do not buckle like metal spiral jackets and are therefore tight. Furthermore, the insulation is kept intact throughout the service life.

Easy installation

Installation is no problem either. The pre-insulated pipe systems are assembled and installed quickly and efficiently with the aid of LOGSTOR Industry’s comprehensive range of standard joints, which consists of straight joints and bend joints, T-joints, end caps and other accessories. This guarantees durable and professional pipe layout for all projects. Naturally, the joints are just as well insulated and secure as the rest of the system. If necessary, a wide range of fittings are available, which permit a new installation to interface efficiently with existing installations and third-party equipment and plant, resulting in architecturally pleasing pipe systems with low energy loss, minimal downtime, and a long service life.

The pre-insulated pipe consists of three parts:

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

Figure 1: Construction of LOGSTOR Industry’s pre-insulated pipe.

1 Cleanability test of the surface of insulated pipes with joints (Aug 2004).
Green technology
Incidentally demands from veterinarians caused a “green” change within Tican, a renowned Danish slaughterhouse. Mr. Jørgen Gabel, head of maintenance at Tican, was presented to a demand to remove the thick layers of white frost at the inner roof, caused by the opening of doors and curtains throughout the day. This demand for quicker opening and closing of doors, combined with insulation inside the rolling gate elements resulted in the environmental friendly DS800 concept - and the first fast moving, thorough insulated door, ever, was installed at the Tican works for trial.

Jørgen Gabel: “After minor initial adjustments the DS800 has run without problems. We do not see any white frost anymore. It is quite encouraging, that DS800 solved our problem. The problem has gone!”

Don’t waste time!
Speed is essential in energy savings. There is actually too much time to waste!

When you open any door, hot air is expelled with colder air. And you pay for both sets of temperatures! Consequently saving time to open and close a gate has become an increasing important factor - providing a double loss - or gain - corresponding to the speed of the door! This is not only a matter of getting rid of white frost at the inside roof, it is merely a task to reduce the time for the air to expel!

Door System A/S provides payback to the environment, manifested in concrete, visible savings, noticeable directly at the bottom-line. The savings through green technology in Door Systems’ doors offers a pay back time of the total investment in less than 36 months!

Door System D800 doors are operating with a speed of 203 centimetres per second regardless of the width (of your choice between 1 through 7 metres) up to the desired height.

Door System A/S
Door System A/S is a quick-growing Danish company, specializing in the manufacturing of steel doors for the industry. Our range of products primarily targets industries emphasizing the matter of hygiene, such as the food industry and the pharmaceutical industry.

Our product range is developed and produced in Denmark. Through extraordinary tasks solved for numerous customers with special attention on operational effectiveness and hygiene, we have developed a full range of doors meeting all these requirements - at competitive prices, too!

We service primarily food industries in Europe, but also customers in Africa, the Far East and South America recognize our qualities, as well as our ability to create solutions to highly specific problems.

Prominent customers
Our most prominent customers include, among other companies:
• Arla Food, Scandinavia
• Novo Nordisk, Denmark
• Danish Crown, Denmark
• Carlsberg, Denmark
• Grundfoss, Denmark
• Rema 1000, Scandinavia
• Gilde Slakterierne, Norway
• Frigoscandia, Sweden
• Fan Milk, Ghana, Nigeria
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.

Five complete standard systems cover a temperature range from −200°C to +250°C.

Pre-insulated pipe technology is proven in practice in the course of almost 50 years. Originally developed for district heating, pre-insulated pipe systems today have become an interesting alternative for the industrial sector where it is now the preferred solution for the transport of liquid media for many applications.

All systems are characterised by a waterproof HDPE 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
Worldwide supplier of filling and packaging machines

100 Series - in-line filling & closing machines for pre-formed containers
200 Series - rotary filling & closing machines for pre-formed containers
300 Series - filling & coagulation plants for U.F. white cheese
400 Series - flexible container handling systems

500 Series - carousel filling & closing machines for pre-formed containers
620 Series - dosing system liquid and semi-liquid products
700 Series - end of line solution
PMG Series - brick forming & wrapping machines for pasty products

Full after-sales service (technical support, spare parts)

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