



Jaco de Bruin from Dairysmid shows that the horizontal system ensures more comfort for the cow and hoofsmith (Photo: Dairysmid)

# Keep your cows on their feet

by Liza Burger

*Heel erosion, sores, abscesses, foot warts, infections and physical injuries to the hoofs can have a profound influence on milk production as well as cows' quality of life. This is also one of the main reasons for culling animals, as it influences both reproduction tempo and success.*

Dairy Mail Africa talked to Jaco de Bruin from Dairysmid and Rykie Visser, export and regional sales manager of DeLaval, about how to control and manage diseases that influence hoof health.

A cow with a sore foot that remains untreated “wilts away”, says De Bruin. “She loses condition, produces less and eventually becomes reluctant to stand up. Bear in mind that the value of a

replacement heifer, as well as the potential income one can generate from milk and genetics are lost when a cow is slaughtered.”

## Manage cow comfort

De Bruin is of the opinion that cows that are kept in housing, are more prone to hoof problems, unless cow comfort is managed strictly. A cow must lie down for 12 to 14 hours a day, so that her

feet and legs can rest. When lying down, the cow ruminates, produces milk and there is maximum blood supply to the udder and hooves.

“Managerial practices and housing systems must be focused on getting conditions as comfortable as possible. Standing and walking surfaces must preferably be covered with rubber. This prevents the cow from slipping, makes heat detection easier and absorbs shock.”

### What is footrot?

Footrot is sometimes used as a generic term for sores and illnesses associated with hooves. However, this illness has its own unique characteristics, symptoms and treatment.

The first indication of the illness is a painful, warm foot. The animal becomes cripple overnight and is reluctant to step on her foot. Footrot influences an animal's ability to move around, which has a detrimental effect on feed and water intake, and also negatively influences milk production.

The bacteria *Fusobacterium necrophorum* causes footrot. Clean, dry conditions and footbaths can help prevent these illnesses. A range of autogenous inoculants are available in South Africa and in other African countries. Footrot can also be treated with antimicrobial treatments. A veterinarian should preferably administer these inoculants.

According to De Bruin, footrot is not as common as other hoof problems. However, it is a serious illness that develops in wet conditions. Some 50% of cripple animals De Bruin comes across, are due to sores and abscesses. Foot warts are almost just as common.

### A programme for healthy hooves

According to Visser, a good hoof health programme includes a balanced diet, regular hoof care, manure management, treatment protocol, a footbath programme, and keeping hoof treatment records. Take a thorough look at bought-in animals' hooves. This will prevent cross-contamination. Surfaces in your milking parlour and yard must contribute

towards keeping hooves as clean and dry as possible.

Passageways must have adequate drainage during wet weather and should be free of any large or sharp stones, and must be maintained in such a way that animals who walk long distances, are kept as comfortable as possible. Passageways must be between 4-6 metres wide, so that cows can walk in a group. Cows must have proper footing in wet conditions.

Injured hooves with abscesses, warts and sores must be treated as soon as possible. An artificial hoof made of rubber or wood, is glued to a healthy hoof to keep the cow's weight off the injured hoof. “A contorted back and cripple movements are clear indications that the cow is uncomfortable when she walks around,” says Visser. Keep a record of these cases.

Feed plays an important role in good hoof health. Rations must include a healthy combination of calcium, phosphorous, Vitamins A, D and E, and biotin trace elements of zinc, copper and manganese. This ensures good bone and tissue health.

### Inflammation

Laminitis (inflammation of the sensitive laminae in the claws) can lead to the dying of cells, bleeding and swelling. Laminitis is often caused by factors such as metabolic and digestive problems, which is directly linked to diet. Hard resting places, inadequate bedding, stress caused by mastitis and other diseases, too little exercise and overweight, can make cows more susceptible to laminitis.

De Bruin explains that a cow's claw growth is very similar to human nail growth (some 5 mm every month). Cows with too long claws have difficulty walking and experience pain. “When the cow's claws become too long and unbalanced, it can lead to sores in the claws. It is necessary to look after these cripple cows, as they lose weight very quickly, milk production and fertility drops, and it can lead to the animal's death.”

According to De Bruin, who studied in the Netherlands and the USA, hoof health is a new



- 1** Footrot is a serious condition that can spread through the herd. Treat infected cows and separate them from healthy animals (Photo: Dairyamid)
- 2** Foot warts are responsible for many paw problems. Treatment is necessary (Photo: Dairyamid)

- 3 and 4** This abscess has just been treated. The improvement is visible after four weeks (Photo: Dairyamid)
- 5 and 6** Claws grow 5 mm a month and can cause discomfort. Claws that are too long should be cut off and filed correctly (Photo: Dairyamid)

occurrence. Crippleness is the third largest reason for culling in the USA. Fertility and mastitis are the two main culprits. Bear in mind that crippleness can lead to poor conception and mastitis.

### Cut claws every year

Claws must be cut at least once a year. This is mainly influenced by environmental factors. Farms with soft, sandy soil would have to cut their animals' hooves more often, while cement surfaces' finishes and angle also play a role. Cement should not be too coarse or slippery. One of the biggest disadvantages of cement is that it does not absorb any shock.

"In most cases cows experience problems with their hind legs. In only 20% of the cases they experience problems with their front legs," says De Bruin. A cow has a much better frontal shock absorbing system, as strong muscles attach the animals' front legs to its skeleton. The hind legs are attached with joints.

### Tilt tables and vertical systems

"In the old days farmers used ropes to lower the animals to the ground, so that they could work on their hooves. In later years, mechanical tilt tables were developed to immobilise the cow. Hydraulic tilt tables have been used for the last 20 years.

"The disadvantage of tilt tables is that the cow lies in an unnatural position. Misplaced abdomens and damaged scapular nerves are a common occurrence in countries where tilt tables are used.

"The biggest disadvantage of using a tilt table to treat claws, is the position and free movement of the legs. But this makes thorough, accurate cutting work very difficult. Moreover, the hoofsmith is under pressure to get the animal in a standing position as soon as possible."

"The more expensive vertical system is more comfortable for the cow. With this system the paw and leg is clamped securely, and the cow stands comfortably."

"The firm leg support also calms the animals down during handling. The hoofsmith can also

pay attention to correct balancing. The design has also enabled the use of power tools, as the foot is firmly kept in place and receives adequate support."

### Help them to walk correctly

Pregnant heifers should receive hoof care if they are kept in areas with inadequate footing. Heifers who enter the stable with long claws and a poor hoof gradient, stretch their ligaments and tendons and teach themselves to walk on their heels.

Cattle on pasture are less susceptible to hoof problems, compared to cows in housing, as there are enough soft spots to lie down. However, these animals do have more problems associated with wear and tear. When cows are part of a big herd, they walk long distances on gravel roads on their way to the milking parlour.

De Bruin says that farmers must be wary of administering antibiotics for footrot, as the problem could be something completely different. So-called "hospital milk" (milk containing antibiotics due to antibiotic usage) must be discarded. In many cases a hoofsmith can solve the problem without using antibiotics.

"In the past, many cows were wrongly slaughtered due to a hip or back problem. When an animal has problems with the outside claw of her hind leg, she will walk wide-legged and put her foot down in such a way, that the inside claw carries more weight."

"When there is something wrong with the cow's rear inside claw she can do absolutely nothing to alleviate the pain. She has a funny walk, which could then wrongly be diagnosed as a 'hop' problem."

"A very practical way of determining where the injury might be, is to make her walk over an obstruction (such as a pole). If she drags her leg over the obstruction, the animal is most likely cripple in the hind quarter, hip or back. However, if she is able to lift her leg over the obstruction, the problem might lie in her foot." **DMA**



The Ugandan President, Yoweri Museveni, inspecting the quality products on display inside the factory as company executives of Sameer, Naushad Merali (left) and Ravi Jaipuria (right), look on

# Uganda on the rise

by Fidelis Zvomuya

*Ugandan president, Yoweri Museveni, has called for the removal of taxes on milk production related operations.*

"We are going to remove all these obstacles. The tax on processed milk must be removed. Taxes on aluminium cans used for transportation and taxes on bulk carriers, like tankers, must be removed," Museveni said.

Commissioning Uganda's first US\$15 million powdered milk manufacturing plant in Kamala, built by Kenya's Sameer Agriculture and Livestock Limited, Museveni said that waiving taxes on milk production activities, solves one problem – more people could be attracted to process milk and will have spare funds to invest in new milk processing technologies. They will be able to compete favourably with other processors in the region.

This move by the Ugandan government should benefit farmers by establishing a growing,

ready market for the country's huge supply of milk. Uganda increased its milk output from 700 million litres in 2000 to over 1,4 billion litres six years later. This has contributed towards a 20% increase in farmers' incomes.

"This is an encouraging development that has seen the country's milk industry growing, resulting in greater benefits to milk farmers and the whole chain of dairy production," the president says.

## Powder for export

The new Sameer milk plant is an expansion of Dairy Corporation's existing milk processing capacity and will see Uganda starting to export powdered milk to fairly large markets such as Comesa and the Middle East.

Dairy Corporation was bought by Sameer Agriculture and Livestock Limited (SALL) in 2006 after the corporation was privatised by the Ugandan government. According to Anand Gaggar, the company's managing director, the new plant will be processing 200 000 litres of milk per day, earning Uganda US\$30 million annually in export revenue.

The plant is a joint venture between the Sameer Group of Kenya and the India-based Jaipuriya Group. Dairy Corporation's processing capacity has now been boosted to about 400 000 litres daily. Sameer Group chairman, Naushad Merali, says that since they took over Dairy Corporation, they had turned it around and improved the scale and speed of milk collection in the country. Merali says they invested US\$15 million, with more planned.

"Raw milk collection has increased from 40 000 litres per day to 140 000 litres. This will go up to 400 000 per day. It is up to farmers to ensure that more milk is produced," he says.

In the 1960s, the little factory was processing 35 000 litres of milk. Now the new plant will process 73 million litres per year for the local and international market. Milk production will now fetch US\$36 to US\$40 million per year.

"Unfortunately only 20% of the milk produced is processed by the formal sector. Because of a lack of processing capacity, Uganda imports milk to fill the gap," the president remarked. At 50 litres per person per year, milk consumption *per capita* is still low in Uganda, Museveni noted. The World Health Organisation recommends a consumption of 200 litres per person per year.

"In Africa, the average *per capita* consumption is 33 litres. Africa has a huge market potential for Uganda's milk," Museveni says.

Ravi Jaipuriya, the chairman of the Jaipuriya Group, announced that the new plant would export milk powder to Sudan, Kenya, South Africa, Ethiopia, the Middle East and India.

Bad roads in the country are hampering milk collection, especially during the rainy season. There is also a need for improvement of farming methods to increase milk production



Anand Gaggar, managing director of Sameer Agriculture and Livestock Limited

and lower the cost of production.

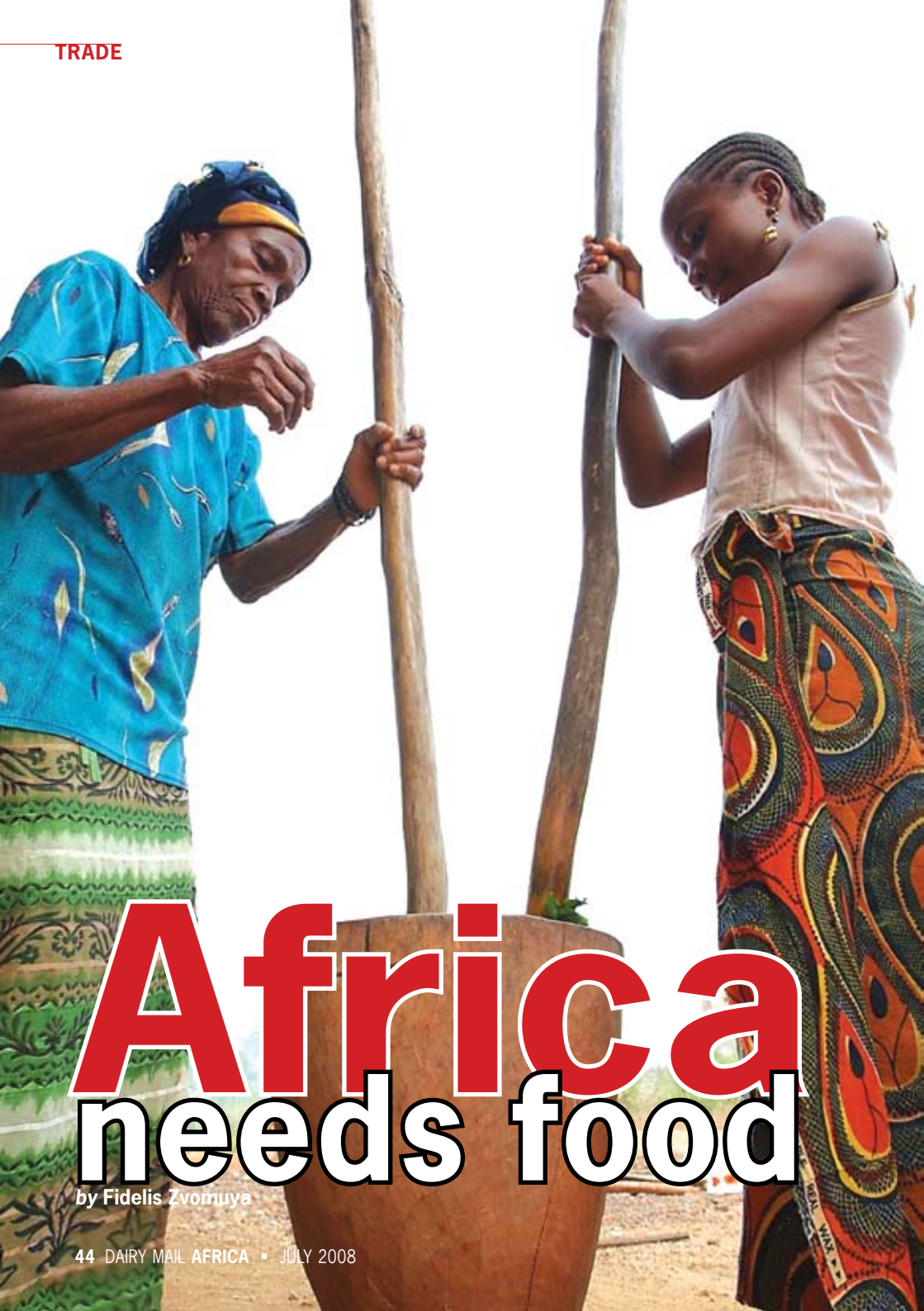
"Sameer will establish a model dairy farm to provide free training to farmers. We need land in the milk catchments areas to establish this institute," he says.

The company also intends increasing its number of milk collection centres from 100 to 130 in the next six months. When SALL took over the Dairy Corporation Limited, there were only nine operating raw milk tankers. Since then, the fleet has increased to 21 tankers and SALL is committed to procuring more vehicles, as the milk collection network expands.

The company also has a fully automated manual yoghurt production system which has boosted its capacity. SALL now has 6 500 litres per day of yoghurt line as against 1 000 litre/hour of manually operated line.

A completely new laboratory has been established to handle a wide range of both analytical and microbiological tests. It has established a complete captive power generation capacity of 3 250 kVA, along with new transformers and capacitor bank.

By installing a large new boiler of 8 000 kg/hour, steam generation capacity has increased to 14 000 kg/hour. Butter packaging capacity has been doubled by the installation of a new butter packing machine. **DMA**



# Africa needs food

by Fidelis Zvomuya

**R**ocketing global food prices are causing acute problems in poor countries and have brought back the fight against poverty with a bang. This comes as the world is running out of food with the developed world, especially Europe's, grain and butter stocks having almost been denuded, and its milk lakes drained. The era of over-production is history.

Recently the world's attention was drawn to a fiery trail of food protests and riots, after prices have doubled or even tripled. Thousands of people took to the streets of Haiti in April, protesting, looting, and clashing with police, resulting in the death of several people.

Similar protests erupted all over Africa, with the trade union Cosatu in South Africa, taking part in protest marches organised throughout the country. In Burkina Faso, Cameroon, the Ivory Coast, Mauritania, Mozambique and Senegal, millions have since taken to the streets.

At least 20 people were killed in food riots in Cameroon. The Egyptian president ordered the army to start baking and distributing bread. A number of African states have banned the export of food.

Food price inflation combined with the credit squeeze and rising interest rates, is now emptying consumer wallets and driving down the demand for agricultural products. The result is that Africa, being a net importer of food, is finding itself in a very vulnerable position.

### Poorest of the poor

The price of basic foods such as maize, wheat and rice is increasing on a daily basis with most people in Africa facing a bleak future – the money they have is just not enough. The International Monetary Fund's (IMF) Africa chief says the shock of rocketing food prices should focus attention on improving farming on the world's poorest continent.

Benedicte Vibe Christensen, acting IMF director for Africa, says there is no reason for

Africa to be a food importer, but governments and donors have neglected the continent's agricultural sector. She recommends a broad-based approach, in addition to steps to help farmers boost production and to improve rural infrastructure.

"Banks and lenders need to extend more services outside the cities," she says. Christensen, who was recently in South Africa to present the IMF's regional economic outlook, predicts growth at about 6.5% this year, mostly fueled by oil exporting countries such as Nigeria and Angola.

"She calls for improved policies and assistance, such as fertiliser subsidies, to boost farming output.

*“The price of basic foods such as maize, wheat and rice are increasing on a daily basis with most people in Africa facing a bleak future – the money they have is just not enough”*

Almost half of Africa's 900 million people are living in poverty. Ajay Vashee, president of the Southern African Confederation of Agricultural Unions, says that the cause of the food crisis is not low production in itself but rather a lack of linkage between production and consumption centres.

### Too little, too much

Addressing the Agro Business 2008 conference in Dar es Salaam, Vashee says the other problem is the land tenure system which constrains the land market, hence complicating access and utilisation of land.

"There is evidence that while, for instance, there is widespread food shortage in some parts of the continent, there are also areas where bananas, oranges, beans and maize rot in gardens," he says.

The food crisis is more the result of failure to create marketing infrastructure and developing communication systems for the facilitation of produce transportation. The result is that some unscrupulous middlemen have exploited the situation by underpaying farmers and hiking consumer prices, usually in urban areas.

Vashee says Africa's agricultural exports are going to be hard hit as airlines jack up freight charges to absorb the spiralling cost of oil.

According to the United Nations' Food and Agriculture Organisation (FAO), enough food is being produced in the world to provide over 2 800 calories a day to every single person. This is substantially more than the minimum required for good health, and about 18% more calories per person than in the 1960s, despite a significant increase in total population.

### **A combination of issues**

The FAO says there are countless issues that have added to the current food crisis. Firstly, low world food stocks make for a smaller than normal cushion for fluctuations in the market. In a press release issued on 15 May this year, the FAO cited climate change as negatively affecting agricultural production through drought, floods, harsher winters, cyclones, hurricanes and earthquakes.

There is also growing demand from the densely populated developing world for all food products, but especially meat and dairy. The list also includes a weaker US dollar, rising unemployment, and food crops that are being diverted to biofuels. Investors and buyers have speculated about future food stocks and artificially driven prices.

The World Food Programme (WFP) and the FAO are working to provide emergency relief around the world, but their resources are stretched thin as exorbitant food prices and natural disasters make their job less feasible. They are also working with countries to come up with strategies to increase future food production such as investing in sustainable local agriculture and providing training and equipment to potential farmers as part of a long-term solution to the crisis.



### **What about price-fixing?**

Price-fixing has been cited as a possible contributor to the food crisis. In this context, price-fixing occurs when corporations artificially augment prices to increase their profits – an illegal practice in most countries.

Several countries around the world are currently investigating the role that this form of price-fixing is playing in creating high food prices. These include South Africa, Spain and the United Kingdom.

The South African Finance Minister, Trevor Manuel, stressed that the ever-rising price of energy and Africa's dependence on oil are major factors contributing to the food crisis. He noted that the price of oil has risen 20% in the last year alone.

"Energy is used throughout the agricultural industry – from fertiliser and pesticide production to fueling equipment – and it is used to process crops and transport them to markets, and to heat or cool stores," Manuel says.

These higher energy costs are passed on to consumers as it is estimated that energy and transportation costs account for about 7,5% of the total average retail food dollar.

And so we look up to our governments and wait with bated breath – will Africa survive this one? How many people will pay with their lives, as the price wars continue? Will Africa's farmers save the day? **DMA**

# What's new in the dairy product market?

During the 20<sup>th</sup> century, peasants used calf stomachs to carry milk. This resulted in the first "accidental" curdling of milk, which was eventually transformed into cheese. The cheese was formed due to the presence of natural lactic acid bacteria from the milk and the presence of chymosin enzymes in the calf stomachs.

In following years, development used the best products from the previous day, after which whey-based cultures were used, and subsequently liquid mother cultures. The first commercial cultures were produced in 1960. Today cultures are manufactured on a large scale by commercial producers. The largest of these is CHR Hansen, who is represented in Southern and Western Africa by Lake International Technologies.

Due to (hard) competition in the market, continual development is necessary. Therefore strains are specifically screened for fermentation rate, flavour development, proteolysis characteristics, phage sensitivity and cell count survival.

## The use of bacterial cultures

In cultured buttermilk products, the CH-N range and Flora Danica is used. LD cultures have a moderate acidification activity and aroma with controlled CO<sub>2</sub> development.

For yoghurt there are ranges that vary from producing low viscosity and high acidity to very high viscosity and a very mild acidity profile. These cultures are available as part of the CHR Hansen Yo-flex portfolio. To complement the Yo-flex® range there is also the range of probiotic cultures called Probio-Tec®. *Figure 1* represents a processing suggestion for drinking yoghurt.

Cheese cultures have been designed to contain acidifiers as well as flavour producers. The flavour components are for example diacetyl producers in Gouda, Cottage Cheese and Camembert. Thermophiles are for stronger flavours in harder cheeses. Sweet nutty flavours are produced by *Lactobacillus helveticus* which changes to a profound peppery note in older cheeses.

## Added value

All producers are trying to maximise the value of their products as well as keeping costs to a minimum. Lake Foods offer a range of products that can differentiate your dairy products from a standard range:

- **Probiotics** can add a health benefit to yoghurt, buttermilk, ice cream and cheese. BB-12®, and LA-5® are registered organisms and two of the best documented probiotics in the world!
- **Conjugated linoleic acid (CLA)** is another valuable addition to dairy products. CLA's are known for their ability to change the body composition by decreasing the fat mass and increasing the lean body mass (supported clinical documentation available on request).
- **Vegapure:** Heart disease has been identified to become the no 1 killer in 2015. Plant sterol and sterol esters are known to reduce total cholesterol and low density lipoproteins (LDL) cholesterol up to 9,8% at a dosage of 1,6 g daily for three weeks.

Lake Foods as agent of Cognis can offer the Vegapure brand for application in a range of dairy products – butter, milk, ice cream, yoghurt, cheese, and chocolate.

**FIGURE 1: Drinking yoghurt flow diagram**

Milk is standardised, stabiliser as well as products to increase value can be added to the milk

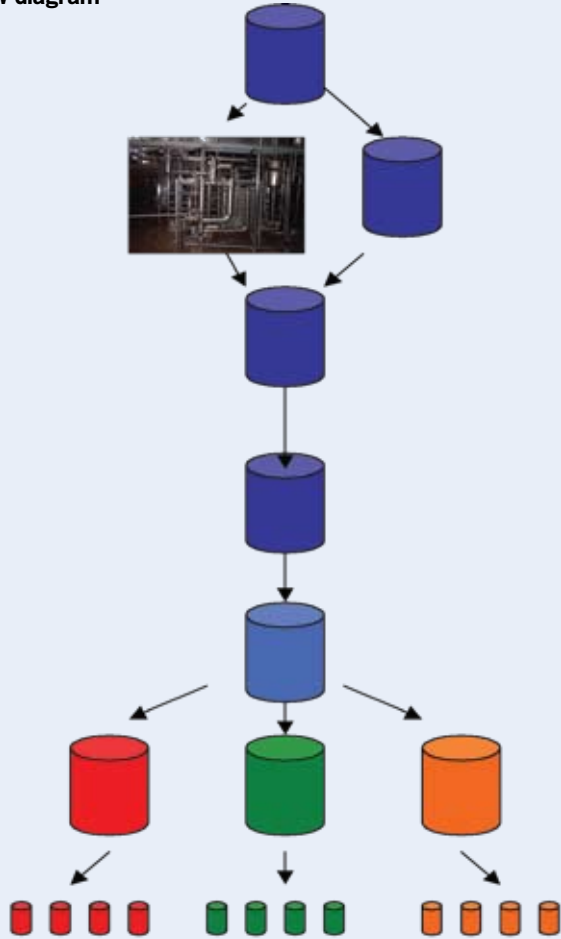
Plate pasteurisation 95°C to 97°C for 5 to 7 min  
Batch pasteurisation 80°C for 30 min

Cool to required temperature for specific culture used, followed by addition of culture

Incubation at constant temperature for required period

Start cooling down at pH 4,6 to below 20°C

Colours, flavours and products to increase health benefits, are added before packaging



After packing into the final containers, the yoghurt is cooled down to 4°C. To ensure a shelf life of 28 days, it is essential to keep a good cold chain at 4°C.

**Products available from Lake International Technologies**



ISP stabilisers



Cognis CLA and Vegapure



Yo-flex®, YFL Range, Probio-Tec®, ABT range of various natural colours for added health benefits

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# GEA Tuchenhagen SA **skills-up!**

GEA Tuchenhagen SA, to improve its service to customers and to accommodate its growing project order book, has made some key additional appointments.

Tuchenhagen SA, which takes care of the process engineering part of GEA (Global Engineering Alliance) business in the southern part of Africa, has divisionalised, with new employees appointed to support the four key areas:

- Projects - turnkey projects, technology and capacity upgrade projects, and projects with a focus on product losses and energy savings.
- Components - plate and tubular exchangers, pumps, valves, homogenisers, fittings, etc.
- Units - plug & play skid-mounted units: pasteurisers, CIP systems, carbonators, in-line blenders and de-aerators.
- After-sales service - planned maintenance control, spare part replacement, plant assessment, plate heat exchangers, lobe and centrifugal pumps.

Tuchenhagen SA says the re-skill will ensure focus on all the business units and will ensure that an engineer will be assigned to a project throughout its duration, from the initial discussions with the client, and be dedicated to the project.

Late last year, Tuchenhagen opened its service centre in Midrand. Tuchenhagen currently offers 24 hour service in automation; it is now implementing a new system to offer all mechanical aspects following the principle of a service plan.

## Key appointments

Key recent new appointments of importance to clients have been:

- **Ralph Wittkopp** qualified as a brewmaster in Munich in 1994. He joined GEA Huppmann in 2000, where he was project engineer and manager for several brewery projects internationally, mainly in countries of the former Soviet Union. He is currently project manager for a greenfield brewery for non-alcoholic beer in Iran. Before working for Huppmann, Ralph was production manager for several micro-



*The GEA Tuchenhagen SA team.*

breweries in Japan and the US. Ralph is now the overall responsible project manager for Tuchenhagen Brewery and Beverage projects.

- **Jan Reyneke** is a mechanical engineer who graduated in 1975. He worked initially for Kentron and joined NCD in Heilbron in 1982. Since then, he has been employed by NCD/Clover, inter alia on the Newcastle factory rebuild (1983/4), the boiler installation at Heilbron (1987), the dry mixing plant at Bethlehem (1994), the Clayville UHT plant (1996-1999), and finally the Port Elizabeth UHT plant (2006). Jan's focus is now on Tuchenhagen Dairy Projects with UHT processing as one of the specialities.

- **Charmaine Bates** has a BSc in Chemical Engineering. She worked for three years at African Products, becoming a process engineer. Then she joined APV as a senior process engineer in the brewery sector, followed by employment for Processed Plant Technology as a process engineer. Charmaine's key area is now on GEA Ecoflex tubular and plate heat exchangers and flow components.

- **Johan le Roux** passed his trade test as a mechanical fitter at Iscor in Pretoria West. He had 15 years' experience in brewing at SAB Rosslyn, and worked for himself for a few years doing sand works; thereafter he joined APV as the service engineer; he is now workshop service manager at Tuchenhagen

- **Charmaine Mohabir** has extensive experience in sales of components and spares, having worked for APV for the past 14 years; she has now joined Tuchenhagen as stores manager.

- **Jörg Böttcher** studied process engineering in Germany before he joined Tuchenhagen SA in 1995 as a junior

process engineer, where his responsibilities grew into Tuchenhagen project management for the Brewery & Beverage, Dairy, Food and Juice industries. In 1999 Jörg returned to Germany where he used his skills in the automotive industry until 2005, when he returned to GEA as project manager for Tuchenhagen Brewery Systems.

## Service and projects

Tuchenhagen's uniqueness lies in its ability to offer turnkey projects because of its extensive expertise, and its subsidiaries across the range of processing - for beer, beverages, dairy, food and juices.

Tuchenhagen SA is able to integrate systems from the worldwide GEA Technology Centres, such as: Niro, Wiegand, Colby Powder Systems, GEA Filtration, Huppmann, Tuchenhagen Dairy Systems, Tuchenhagen Brewery Systems, Ecoflex, Avalon and Diessel.

For instance:

- In brewing, Tuchenhagen provides all engineering, components and equipment - from milling to cellars, and volume control (before packaging). This includes, for instance, the installation of mashing, CIP stations, energy recovery, fermentation and conditioning, blending and carbonation, etc.
- In beverages, likewise complete turnkey plants are installed - from the sugar reception onwards, integrating in-line blenders, sugar dissolvers and syrup rooms.
- In dairy also, complete turnkey plants are installed, from raw milk reception to CIP, using the newest technology on, for instance, UHT products, milk powders, yoghurt production and filtration on whey etc.



# A 5-point hygiene plan for professional dairy farms

*Consistently healthy cows produce quality milk and show improved profits.*

It is agreed among mastitis experts that rigorous and continuous application of the Evans Vanodine 5-point plan, is essential to maintain low levels of mastitis and low somatic cell counts. In addition it is also essential to pay attention to the cow's environment to control environmental mastitis and to maintain low Bactoscan counts.

Evans Vanodine International has developed a dairy hygiene programme which details the steps needed to apply the 5-point plan and to:

- Maintain good teat condition
- Reduce bacterial challenge
- Thoroughly clean the dairy plant.

Farm assurance schemes and bonus targets for cell counts and Bactoscan counts, require the dairy farmer to pay attention to detail and to follow the best practice in all areas of dairy husbandry.

A range of Evans Vanodine products can be tailored to meet the specific requirements of individual farms. Advice on the most appropriate products and how to achieve the best results, is available from our experienced technical sales, chemistry and microbiology laboratory personnel.

The Evans Vanodine full product range covers veterinary medicinal authorised teat dips, pre-dip, udder treatments, liquid and powder circulation cleaners, bulk tank cleaners and MAFF (DEFRA) approved disinfectants.

Please contact us to obtain your copy of the 5-point dairy farm plan.

## **DISTRIBUTOR OPPORTUNITIES AVAILABLE IN AFRICA.**

Contact us by telephone +44 177 232 2200  
or e-mail [export@evansvanodine.co.uk](mailto:export@evansvanodine.co.uk) or  
see our web site [www.evansvanodine.co.uk](http://www.evansvanodine.co.uk)