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Dear Readers,

With so much sincere happiness, I welcome you to the September – 2017 edition of our magazine.

The food packaging market worldwide is driven by the trend of consumers shifting towards specialty & processed food, advancement in food packaging material, marketing strategies of companies, increase in the demand for food packaging material products, and consumer awareness in developing economies. Besides, the different technologies used to manufacture processed food packaging products, and an introduction of a wide variety of food packaging types for developing materials of food packaging have further driven the market.

Well, if we will see the world food packaging market, it is projected to reach a value of \$305,955.1 million by 2019. Asia-Pacific is projected to be the largest market and is projected to grow at the highest CAGR during the forecasted period. In this region, the Indian market is estimated to be the second-fastest.

This growth in the Indian packaging industry is heavily influenced by changing demographics such as growing urbanization and the rising proportion of middle class consumers. These changes drive the need for new packaging formats, such as different sizes, materials, and strength. Reports say, Indian packaging industry will see notable growth over 2016-2021, growing at a CAGR of 9.2% as compared to 6.2% during 2011-2016.

During the period 2016-2021, the Soft Drinks and Food industries will be the highest packaging market share gainers (by units) with share growth of 3.4% and 1.3% respectively. The growing organized retail sector has been a significant driver of the growth of the Food & Beverage industries, which in turn drives the growth of Indian packaging industry. In addition, innovations in the packaging industry, such as the development of lighter packaging with better barrier properties, add to the growth of packaging industry. In terms of packaging material, Glass and Rigid Plastics will be among the major share gainers, with share growth of 0.7% and 0.6% respectively during 2016-2021.

Flexible Packaging is the leading pack type in the Indian packaging industry and will grow at a healthy CAGR of 8.9% during 2016-2021, with major contributions from the Food, Household Care, and Cosmetics & Toiletries industries. This growth is largely driven by its low cost and flexibility to suit multiple shapes and sizes, convenience (zip-locks, plastic closures), and low-carbon foot print on the environment as compared to Rigid Plastics. In addition, the increasing prominence of low-density flexible packs in high protein foods is expected to drive the growth in the future.

In this edition of magazine we have a special segment for packaging, where we have covered few interesting articles on packing technologies such as oxygen barrier coating, canned food packing, retail packaging of fresh fish etc.

Besides, you have many more to read in our processing, warehousing, ingredients, and corporate happening segments of magazine.

For more articles you may also log on to our website (www.foodnbeveragesprocessing.com).

Please keep sending us your valuable suggestions & feedback to (info@dvrpublication.com).

Wishing Food pro, Annapoorna – the world of food India, Best of luck!!!

Thank you
Kanika Banga



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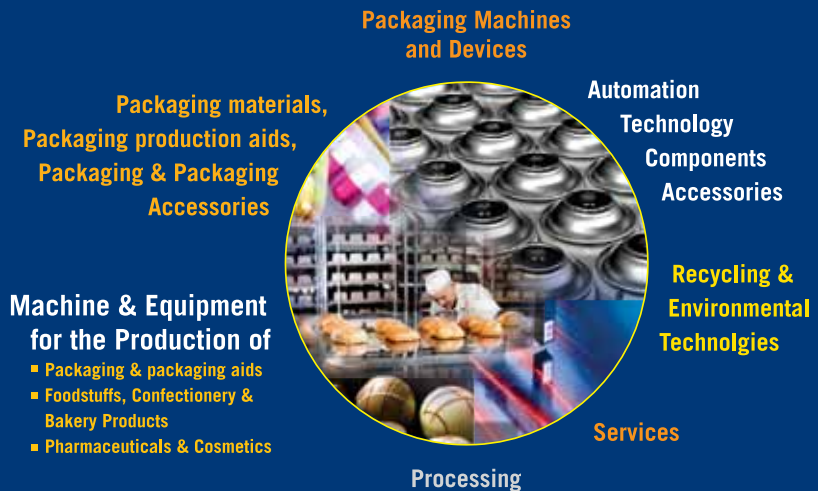
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Cavitation Technology: Revolutionizing Beer-Making

The formation and collapse of tiny bubbles dramatically changes the chemistry, engineering, and cost of beer-making

When it comes to beer, many readers will know what a magnificent product the amber nectar can be and why the forces of scientific progress should be focused on its constant improvement.

Over the years, there have been many advances in our understanding of the biochemistry of fermentation. But the basic beer-making process has not changed for hundreds, if not thousands, of years. Clearly, earth-shattering breakthroughs in brewery science are few and far between.

Which is why the work of Lorenzo Albanese at the Institute of Biometeorology in Florence, Italy, and a few pals, is so significant. These dedicated individuals have invented an entirely new beer-brewing process that dramatically changes the chemistry, the engineering, and the environmental footprint of the process that produces the heavenly brew.

So what have they done? The secret sauce in their new method is cavitation, the formation of small bubbles of vapor

within a liquid and their subsequent collapse. This is usually done by reducing the pressure within a liquid so that it boils and then increasing it again so that the vapor condenses.

Cavitation can be produced by a rotating impeller which generates low pressures at its fast-moving tips. Indeed, cavitation is often an unwanted by-product of ship and submarine propellers, not least because the bubble trail, and the noise it makes, can give away a submarine's position.

Cavitation is an extraordinary process. The rapid collapse of one of these tiny bubbles can create temperatures of more than 1,000 Kelvin and produce pressures some 5,000 times greater than atmospheric pressure. These conditions dramatically change the physical and chemical environment in water. Albanese and pals have conducted extensive experiments to find out how this influences the brewing process.

This process involves the basic ingredients of malt, hops, yeast, and water and has

always been relatively simple. It takes place in four steps. The first is to create a sugary liquid called wort in which the starch from malted barley is converted to simpler sugars that are fermentable.

In the second step, the wort is drained and the malted barley washed to extract as much of the fermentable sugars as possible, a process known as sparging.

The wort is then boiled for an hour or so to remove water and concentrate the sugars. The boiling also kills off any enzymes involved in converting starch to sugar and boils away volatile chemicals that can ruin the mix, particularly the unpleasant-tasting dimethyl sulphide. Adding the hops at this stage gives the mixture its characteristic flavors.

Finally, the mixture is cooled and the yeast added to start the fermentation process, which typically takes several days. This converts the sugars into alcohol, creating beer, which can then be bottled.

Of course, the devil is in the detail. The malted barley must be milled in advance to increase its surface area. The wort must be kept at a certain temperature—usually between 50 and 78 °C—to help the enzymes break down starch.

Combined with the boiling, this is an energy intensive process. It takes about 32 kilowatt-hours to make 100 liters of beer. (For comparison, a television rated at 100 watts left on for 10 hours uses a single kilowatt-hour.)

So how does cavitation change all this? To find out, Albanese and co have built an entirely new kind of brewing facility that produces cavitation within the wort. They then conducted a range of beer-making experiments under different conditions to explore the potential advantages and disadvantages that cavitation introduces.

The results make for the interesting reading. The first advantage is that cavitation pulps malted barley and so removes the necessity for it to be milled in advance. "Dry milling of malts becomes irrelevant with the new installation, since malts are pulverized by the cavitation

processes down to less than 100 μm in size within a few minutes," say Albanese and co. This also increases the biodegradability of the spent malt, which is a waste product of the beer-making process.

Cavitation also increases the rate at which starch passes from the pulverized malted barley into the wort. This process is so efficient that little if any starch is left in the malt at the end of the process.

That has significant implications. It means that the process of sparging—the washing of the malt to remove trapped sugar and starch—becomes entirely unnecessary.

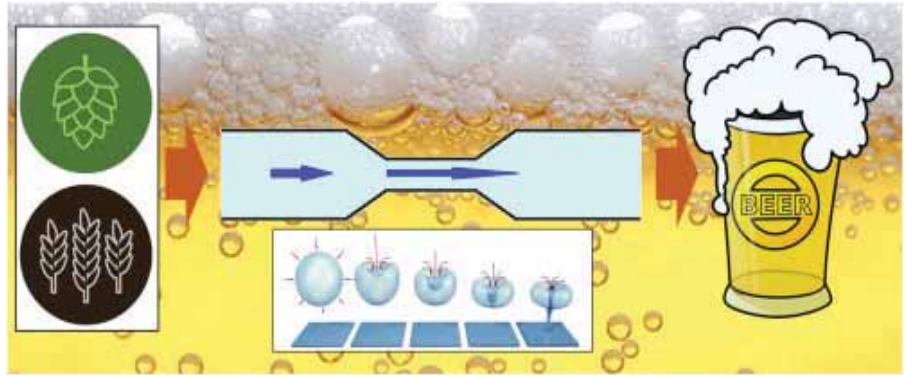
With starch released more efficiently, the transformation of starch into simpler sugars can take place at lower temperatures. "The activation temperature of enzymes aimed at transforming starch into simple sugars and amino acids drops by about 35 °C, shortening the time needed for saccharification," say the team.

Cavitation also helps improve the efficiency of the chemical processes that usually occur during the conventional boiling of the wort and hop mix. Cavitation causes unpleasant volatile gases to degas quickly, denatures the enzymes in the wort and allows hop flavors to mix in easily. That makes boiling entirely unnecessary. Indeed, this whole process can take place at around 78 °C say, Albanese and co.

All that translates into significant energy savings. The team says its new brewing process used just 24 kilowatt-hours per 100 liters, some 30 percent less than a control experiment they also ran. And that's before they optimize the process to prevent unnecessary heat dissipation.

One thing the team does not consider, however, is the cost of the equipment necessary to create cavitation and the maintenance associated with it. Cavitation is famously damaging. The pressures and temperatures it produces eat away at the hardest steel. Just how this would influence costs isn't clear but must surely be factored in somehow.

Of course, the ultimate test is the product itself. In a series of tests, this brave team



says that the resulting beer is just as good as the conventionally produced stuff. That's something that will have to be independently verified by selfless individuals willing to put their own interests aside in the name of science.

If objective observers agree that the

resulting beer is good, cavitation looks set to have a major impact on the brewing industry. Indeed, it may turn out to be one of the biggest changes in brewing technology in decades, if not centuries.

Ref: arxiv.org/abs/1609.06629: A Novel Brewing Process via Controlled Hydrodynamic Cavitation

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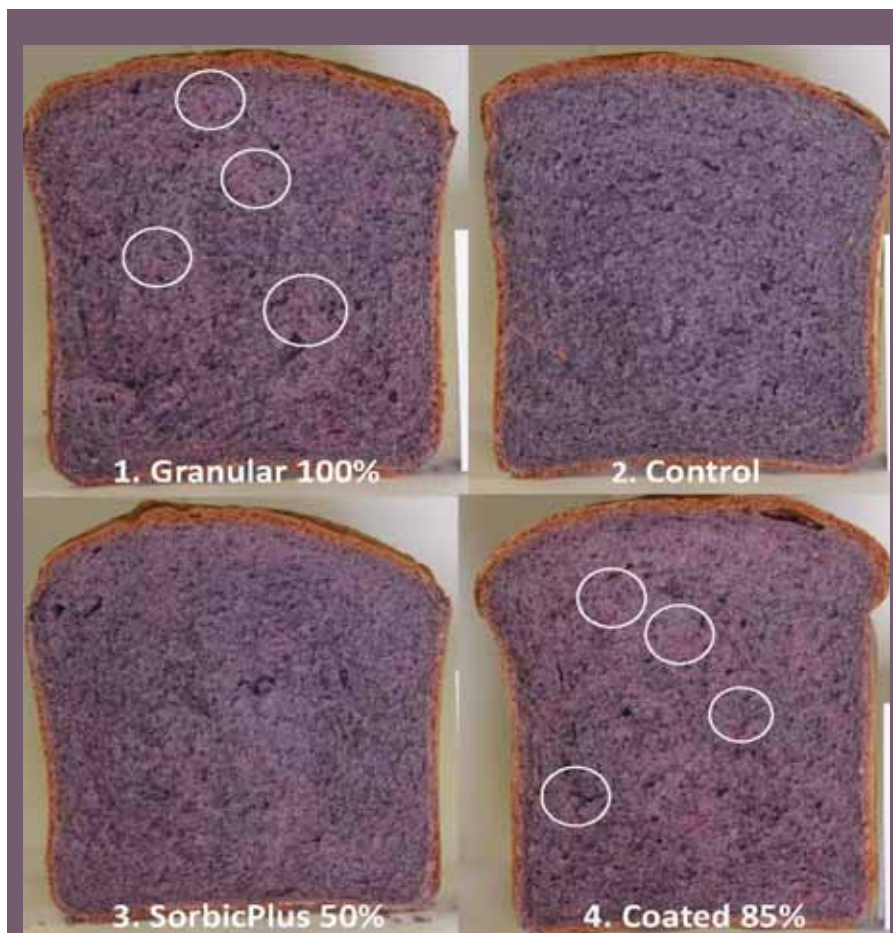
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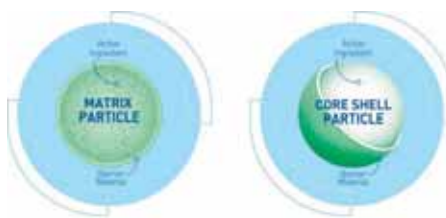

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Microencapsulated Sorbic Acid: The Winning Formula

With modern consumer demands for high quality, long-life bread and global pressure to reduce food wastage, controlling the unwanted growth of mold is an important factor when considering product formulation. The sorbic acid salts are one of the most widely used groups of preservatives in the world exhibiting highly effective anti-fungal properties. Despite sorbic acids potential in being a highly effective bakery preservative historically, it has not been used in yeast leavened products due to its efficacy against the leavening yeast itself, leading to a reduced proof and a product with an inadequate volume. This white paper explains how encapsulation

technology allows sorbic acid to reach its full potential as a preservative for the bakery industry. It also outlines the evaluation of three commercially available sorbic acid products determining whether their production process and specifications have an impact on their efficacy as a mold inhibitor in bread.



Matrix and Core-Shell encapsulation

Sorbic acid & encapsulation technology

Sorbic acid, an organic acid first isolated from rowan berries, is the most effective anti-fungal compound within the sorbic acid salts group. The acid shows efficacy against a broad range of spoilage microorganisms; molds, spoilage yeasts, and microorganisms such as *Bacillus subtilis*, which is the main cause of rope in bread, are all effectively inhibited by this compound.

As mentioned, the main problem in relation to yeast-raised bakery products is that sorbic acid has such a profound negative effect on yeast activity that it cannot be used directly.

Encapsulation solves this problem. Sorbic acid crystals are surrounded by a lipid barrier material, separating the sorbic acid from the yeast and allowing it to function with minimal inhibition. The encapsulation process provides a method for delivering the sorbic acid which maintains the proving times and the volumes expected from the modern bread maker. During the baking phase, when the yeast has performed its function, the lipid encapsulating material melts, releasing the sorbic acid to perform its function as an effective mold inhibitor.

Encapsulation technology can be applied in various ways, two examples being a "core-shell" and a "matrix". The core-shell approach covers the sorbic acid with a layer of encapsulating material. The core shell particles can be manufactured by processes such as fluidized bed, granulation, or pan coating. The matrix particles can be manufactured with processes such as spray drying, spray chilling, rotating disk atomization, or prilling.

There are several approaches to encapsulation therefore there are a number of sorbic acid products currently available on the market. These products vary significantly in terms of their size, granulation and level of encapsulation.

Mould free shelf life trials

Three commercially available sorbic acid products were chosen for the trial, each exhibiting different structural properties:

1. SorbicPlus, a matrix of microencapsulated 50% sorbic acid (50:50, sorbic acid:fat)



2. A core-shell coated granular 85% sorbic acid (85:15, sorbic acid:fat)
3. An uncoated granular 100% sorbic acid.

The level of sorbic acid was adjusted for each sample to ensure that all products had an equal level of preservative, and an intermediate dose of 0.1% flour weight (f/w) was chosen. This translated to 0.1% (f/w) of uncoated granular 100% sorbic acid, 0.118% (f/w) of coated granular 85% sorbic acid and 0.2% (f/w) SorbicPlus. A control was also produced without the addition of sorbic acid. All preservatives were added to a typical UK white pan bread formulation.

The samples were observed daily for signs of mold growth. Samples were deemed to have expired when $\geq 2 \times 2 \text{ mm}$ mold colonies were visible. Any samples which had not expired after 30 days were categorized into a "30+ days" category. This procedure was carried out in triplicate for all sorbic acid samples. The results of all three batches were compiled (n=45) to produce the data used for each sorbic acid sample in this study. For the purpose of this trial, the point at

which the first individual loaf expires (n=1) marks the sample's expiry, measured in P+ days. The mold free shelf life (MFSL) for the product is the sample expiry minus 1 day.

MFSL trial results

As illustrated, there is a high degree of variance between the performances of the three sorbic acid products:

- Samples expired from P+4 to P+10 days.
- The control had the shortest MFSL of 3 days.
- Granular 100% sorbic acid gave a MFSL of 7 days; this sample was the poorest performing sample of sorbic acid within the group.
- The coated granular 85% sorbic had a MFSL of 8 days.
- The preservative showing the highest performance was SorbicPlus, with a MFSL of 9 days.

It should be noted that there were a considerable number (10 out of 45) of the SorbicPlus samples which achieved a MFSL of ≥ 30 days, indicating that the samples showed an extremely high resistance to

the stresses of microbial growth. Achieving a guaranteed MFSL of ≥ 30 days in white pan bread could be of considerable benefit to the bakery industry, therefore further investigating this potential of SorbicPlus to give a guaranteed 30 day MFSL may be the focus of future work. This could involve the use of higher levels of SorbicPlus, or a combination of SorbicPlus and another preservative for a potential synergistic effect.

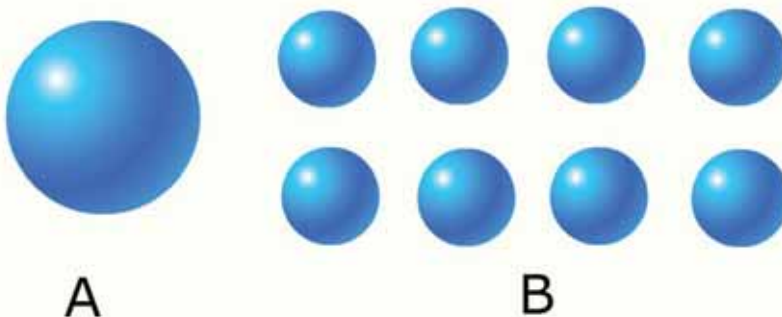
The impact of particle size on preservative coverage

Considering the preservative used in all sorbic acid samples was chemically identical, and at the same % level, the results indicate that there may be another factor influencing the performance of sorbic acid products as mold inhibitors. As previously mentioned, the sorbic acid samples differed in size and granulation; it is likely that the size and granulation of particles may have an impact on the dispersion of particles in the end application. To investigate whether this is true in pan bread, a testing process was devised to illustrate the distribution of sorbic acid within the crumb structure of the bread.

MFSL trials highlighted how different methods of encapsulation resulted in varied expiry times; coarser products had a shorter MFSL than the finer products, despite the same level of sorbic acid being used. This has been thought to be due to coarser microsphere distributions having less microspheres per unit of mass.

The spheres labelled "B" have a diameter which is half that of the sphere labelled "A", yet 8 of the "B" spheres have the same amount of material as 1 of the "A" spheres. This means fewer microspheres in each loaf of bread when using more granular products, which is believed to cause zones in which no sorbic acid is present.

The theory behind these "sorbic zones" is that as the loaves are baked, the high temperature causes the sorbic acid to migrate out of the spheres and deposit throughout the loaf, expanding from each microsphere to ideally form a network of spherical zones of influence which overlap to provide continuous coverage of preservative throughout the loaf. With a coarser distribution of particle sizes, a lower number of particles are present in each loaf in



Visual depiction of how a change in granularity of sphere can affect the number of spheres per unit mass. Sphere A is twice the diameter and 8 times the volume of a B sphere

comparison to a finer grade of microspheres.

This means that there are fewer, but larger spheres of preservative coverage, which causes gaps in the loaf where there is no preservative coverage. The basis of the testing was to somehow show the difference in distribution based on three different delivery methods.

'Hot-Spots' caused by granular particles

To be able to visualize these sorbic zones, pH sensitive dyes were used to illustrate how acidic or alkaline a product was, i.e. the dye changed color depending on whether or not there was sorbic acid present. If there is a lone zone of sorbic acid influence, it shows up as a red spot in an otherwise purple loaf of bread. The aforementioned "spots" are clearly visible.

From the results of this study, it can be concluded that the size of sorbic acid particles in a sample affects both the number and distribution of particles in white pan bread. Larger particles give fewer particles per loaf and reduced distribution; finer



Beakers containing anthocyanin solution of differing pH; the left is at pH 4.01, the right at pH 7.00.

particles give more particles per loaf and improved distribution.

SorbicPlus gave the best performance as a preservative when dosed at equal levels with granular 100%, and 85% coated granular sorbic acids. Given that sorbic acid particles may have a specific sphere of influence, it is likely that the increase in number and distribution of SorbicPlus microspheres throughout the samples contributes to its superior performance as a mould inhibitor.

Founded in 1992 in Bristol, UK, TasteTech continue to be a creative pioneer in the field of microencapsulation providing solutions to manufacturers worldwide. TasteTech's encapsulated ingredients are used to improve quality, reduce cost and add value to their customer's products. For more information on TasteTech visit tastetech.com/sorbicplus.

TasteTech

Web: www.tastetech.com

Detector for Wine Aroma

A fine wine has an ideal balance of ingredients. Too much or too little of a component could mean the difference between a wine with a sweet and fruity aroma and one that smells like wet newspaper.

To help wineries avoid off-aromas, a team reports in ACS Sensors a sensitive device for detecting a compound that can affect the beverage's fragrance.

Acetaldehyde is frequently found in a lot of places and foods, such as fruits, vegetables and human saliva. When present in high amounts in wine, it produces an unpleasant odor and affects the fermentation process.

Therefore, winemakers should monitor the acetaldehyde levels, which can vary with temperature, pH and oxygen concentrations.



Current methods involve trained experts, long processing times and complex equipment.

Kohji Mitsubayashi and colleagues propose a sensitive, versatile detector that is more selective than its predecessors, reports the American Chemical Society. The team tested for acetaldehyde in nine wines, both red and white.

The new detector produced results comparable to those obtained with traditional methods, but was simpler to operate and produced real-time results. The researchers say that the device could provide wineries with a more practical method for monitoring this make-or-break ingredient.

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Automation's Role in Advancing Today's Dairy Processing Sector

From sourcing to filling and packing, dairy requires some of the most demanding hygienic motion control applications. The dairy processing sector has come a far way since the days of 'farm to table' – gone are the traditional days of milking cows by hand or churning butter, today automation is responsible for most processes in the industry.

Today's dairy industry generates billions of dollars in manufacturing and export. The dairy processing industry presents its own set of unique challenges in terms of automation because of the high demand and the need for freshness and stringent food safety requirements.

At SMC, we understand that corrosion resistance, hygienic design, heat resistance and fluid compatibility are all critical

The SMC CG ranges of cylinders are made from stainless steel and are particularly geared towards the food industry to ensure a much longer working life and fewer breakdowns

factors and by combining pneumatics, robotics and other advanced automation technologies we enable customers to deliver quickly and efficiently products that are safe and fresh. SMC Australia's Dairy Business Manager, Paul Grantham, has extensive experience in the dairy industry working with customers to understand their needs, identify gaps and provide solutions.

We work with all links in the dairy chain from farm where the need for wireless communication and real-time feedback has become more apparent, to the plant where we focus on improving efficiency and machine uptime while meeting all food safety and quality standards. Any efficiency improvement needs to be sustainable and becomes critical particularly in the peak of season.

To adhere to strict food safety standards, CIP and harsh environmental cleaning regimes can wreak havoc on automation equipment so the need for corrosion resistant, hard-wearing automation solutions is important."

To deal with issues such as this, SMC has developed stainless steel components built to withstand these harsh environments; an example of this is SMC's CG range of cylinders.

The SMC CG ranges of cylinders are made from stainless steel and are particularly geared towards the food industry to ensure a much longer working life and fewer breakdowns.

Thanks to their compact, clean and round design the CG range of cylinders meet stringent FDA standards and have been designed to withstand CIP and environmental cleaning environments. "With its smooth, hygienic design the CG range of cylinders offers special scrapers to prevent build-up as well as replaceable seals. What's more, these cylinders are cost effective and we have a large stock holding so companies can rely on us for quick turnarounds and speedy delivery."

Another alternative for dairy installations is the complete HY range of hygienic cylinders consisting of four model options which all feature the same smooth, easy to clean, exterior surfaces. Now with HACCP endorsement the HY range is particularly suitable for applications in food and beverage production and handling. High quality construction, special cylinder food grease and internal lubrication ensures a lifecycle performance to the high standards required of process environments.

In addition, the IP69K solenoid valve bank

has been designed to meet the demands of the industry and is used to drive CG cylinders. These valve banks are enclosed in a protective, light weight box and are available with the options of rubber or metal seal valves while still offering the same performance and flow rates that you have come to expect. "Both products have been developed to withstand high-pressure wash downs with a longer service life for less breakdowns and improved efficiencies.

To compliment this product range we offer clean compatible tubing and stainless steel fittings in a range of sizes to meet your plant's requirements.

Filtration of compressed air at point of use is a critical issue in some plants depending of quality of compressed air. We look at these area's with you to assess the risk and assist with solutions such as our FAP package to assist you to meet required standards of filtration and testing.

Another trend is that of a shift to lightweight products in manufacturing. "SMC has developed smaller, more lightweight cylinders which are able to



offer the same force and are suited to electric robot applications." concludes Paul.

About SMC: SMC Corporation are the world leaders in pneumatic technology and are experts in automation control. Formed in Japan in 1959, the company now offers over 12,000 basic products with 700,000 variants. The company employs over 22 000 people worldwide and is situated in

more than 80 countries. SMC is the world's leading pneumatics provider and has been voted for three consecutive years as one of the most innovative global companies by leading business magazine, Forbes.

<http://www.appma.com.au/automations-role-advancing-todays-dairy-processing-sector/> For sales enquiries please contact AUsales@smcanz.com or NZsales@smcanz.com

Events & Conferences Update - 2017

Foodpro 2017
7th - 9th Sept., Chennai Trade Centre, Chennai

Annapoorna World of Food India - 2017
14th - 17th Sept.- 2017, Bombay Exhibition Centre, Mumbai

SEAFEX, Yummex and the Speciality Food Festival - 2017
18th - 20th Sept.- 2017, Dubai World Trade Centre

Pacprocess Indiapack - 2017
26th - 28th Oct.- 2017, New Delhi

Fi & Hi India - 2017
9th - 11th Nov.- 2017, Bombay Exhibition Centre, Mumbai

GULFOOD MANUFACTURING - 2017
31st - 2nd Nov.- 2017, Dubai World Trade Centre

BAKERS TECHNOLOGY FAIR - 2017
16th - 18th Nov - 2017, Hyderabad, India

India Cold Chain Show - 2017
12th - 14th Dec - 2017, Bombay Exhibition Centre, Mumbai

46th Dairy Industry Conference 2018
8th - 10th FEB - 2018, Adlux International Convention & Exhibition Centre, Angamaly, Kochi, Kerala

Water Expo - 2018
8th - 10th FEB - 2018, Chennai Trade Centre

FLAVOURS & FRAGRANCE EXPO 2018
16th - 17th FEB - 2018, Bombay Exhibition Centre, Mumbai



Saniprocare – Hard Surface Disinfectant

Most viruses and bacteria that cause colds, flu, and foodborne illnesses are spread by hand-to-hand or hand-to-food contact. People with hepatitis A, Norwalk-like viruses (noroviruses), or the bacteria staphylococcus and streptococcus can pass these illnesses on to others by handling food. Also, a person who is ill from a foodborne illness, like hepatitis A, can pass that illness on to others by handling food.

Raw meats, poultry, and fish carry a large variety of harmful bacteria. One of the most serious is *Escherichia coli* 0157:H7. This is the organism found mostly in undercooked hamburger. It is one of the most common causes of foodborne illness, according to the CDC. This bacterium causes hemolytic uremic syndrome, an often-deadly disease that strikes mostly children. Older adults are also at high risk.

Contaminated chicken is associated with shigella, salmonella, and campylobacter. These are bacteria that cause diarrhea, cramping, and fever. Most meat can be

contaminated with toxoplasmosis. This is a parasitic disease dangerous to both pregnant women and fetuses.

Seafood, particularly oysters, clams, and other shellfish, can be contaminated with the vibrio species of bacteria that causes diarrhea, or with hepatitis A virus.

Unpasteurized cheese and some meat can be contaminated with *Listeria monocytogenes*, a strain of bacteria that can cause disease in people and miscarriage or damage to the fetus in pregnant women. *Listeria* is often found in soft cheeses, such as brie, and more often in imported cheeses than in domestic cheeses. *Listeria* is one of the few bacteria that grow well in the 40°F (4°C) temperature of the refrigerator.

Contaminated vegetables and fruits can carry a variety of organisms and parasites, depending on where they were grown and how they were processed, the CDC says.

Items in the kitchen become contaminated by contact with contaminated people,

foods, pets, or other environmental sources.

The first and foremost suspect “gadget” in the kitchen is the human hand. Too often, people don’t wash their hands before preparing food. More often, people don’t wash their hands between handling possibly contaminated foods like meat and other foods that are less likely to be contaminated like vegetables. This “cross-contamination” is a leading cause of foodborne disease.

Kitchen items that often become contaminated include:

- Can openers
- Cutting boards
- Countertops. Most people use their countertops not only for food preparation, but also for possibly contaminated items like grocery bags, mail, or household objects
- Dishrags, towels, sponges, and scrubbers
- Garbage disposals
- Sink drains and P-trap. This is the J-shaped pipe under the sink that retains a quantity of water to block sewer gas from seeping back up through the sink
- Refrigerators
- Complex appliances like food processors, blenders, and eggbeaters

While bathrooms get a bad rap when it comes to germs, it’s the kitchen that actually harbors more bacteria than any other room. And these germs -- the same ones that can cause a cold or flu to spread through a household like wildfire - lurk everywhere from the sponges you use to clean your countertop to your cutting board and the drain in your sink.

Still not concerned? Consider this: One single bacteria cell can become more than 8 million cells in less than 24 hours! The number of bacteria it takes to make people sick can range from as few as 10 up to millions. And infections spread when germs are transferred from a contaminated item (say, your cutting board) to your hands to your body. Many people believe that if it appears clean, it’s safe. A kitchen can look perfectly

clean, yet be contaminated with a lot of organisms that cause diseases. Cleaning and disinfecting are 2 different processes. Cleaning removes grease, food residues, and dirt, as well as a large number of bacteria. But cleaning may also spread other bacteria around. Disinfecting kills organisms (bacteria, virus, and parasites).

Our life today is full of chemicals, pollutants, dust, grime, smoke and all types of foreign elements in air which are not only making us sick but also working as a catalyst to our body's degeneration cycle. While controlling all the aspects seems difficult, there is one major change which can be easily attained and this is reducing the use of harmful chemicals. The solutions available today for disinfection and kitchen cleaning are full of harsh chemicals like bleach, caustic and even alcohol-based products. Not only these products are harmful to the user & environment but also the germs quickly find a way to get immune against such disinfectants.

At Saniprocure, we are trying to replace harmful, hazardous and unsafe sanitation/disinfection chemical with our safe & friendly water based sterilants. At first, it seems like an easy motto; a chemical-free sanitising and disinfecting solution but what we aim to do is much more than that! By providing easy to use, eco-friendly, and 100 X times more effective & safe disinfectants, we not only strive to improve the quality of life of people but also help save our planet for a better tomorrow by reducing huge load of chemical dump which our Nature is not designed to engulf. The toxic waste, chemical waste and by-products of harmful disinfectant chemical available in the market today has a huge impact on the complete eco-system.

At Saniprocure, we are committed to bring a revolution in the field of sanitation, hygiene & public health by introducing ECA (Electro-Chemical Activation) Technology for the first time in Indian subcontinent. ECA is a green technology which uses pure water & salt (Brine Solution) to produce nature's most potent disinfectant, biocide

& wound-care agent. Being completely 100% Natural; with no chemical added to it, this technology ensures that we live a life free from bacteria & diseases.

Saniprocure is a 100% all natural biocide disinfectant which is proven to kill a wide array of pathogens including bacteria, virus, fungus, mould & mildew under 30-60 seconds of cleaning protocol. The applicable areas include professional kitchens, dairy & poultry processing units, warehouse & cold-storage, medical & pharma facilities and many more places where critical cleaning & hygiene requirement holds utmost importance. The usage protocol of Saniprocure is equally easy with simple spray & wipe protocol as well as the concentrated version available with us.

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Automated Food Sorting Machines to Grow at Seven Per cent CAGR by 2021

Technavio market research analysts forecast the global automated food sorting machines market to grow at a Compound Annual Growth Rate (CAGR) of close to seven per cent during the forecast period, according to their latest report.

The research company's analysts highlight the following three market drivers that are contributing to the growth of the global automated food sorting machines market:

- Retrofit activities carried out in aging food processing facilities
- Rising demand for food products and shorter delivery cycle
- Implementation of standards applicable to food processing

The food industry is the oldest industry that has gone through several revolutions such as Green Revolution, White Revolution, and Pink Revolution. Depending on the type of food products manufactured, there have been several changes in the methods of food processing witnessed in the industry. However, the introduction of automation in the industry is transforming the aging industry by integrating new methods and technique, according to Technavio.

"Automation has allowed the industry to reduce the manual work, improve hygiene, and speed-up the process. Also, realising the cost benefits achieved in terms of return-on-investment in the long run, small and medium-sized enterprises too have switched to automated machines to optimise industry operations," says Sushmit



Chakraborty, a lead analyst at Technavio for automation research.

Rising demand for food products and shorter delivery cycle

The improving economy of developing nations has witnessed a rise in the demand for different food products and changes in eating habits. To serve the growing need for food, the food industry is required to reduce the process time and delivery time. This can be achieved by reducing the process cycle time and implementation of automated machines.

Implementation of automated machines has drastically reduced the process time and increased the quality of food products manufactured. The demand for various food products such as dairy, fruits and vegetables, oils and fats, and meat and seafood can be fulfilled by integrating the processes that require minimum process and cycle time.

"Automated food sorting machines are used for different food items, thus making the processes faster and more hygienic. Industrial automation and information analytics allow the user to extract the data and perform the activities more accurately and fast, thereby reducing the delivery cycle," says Sushmit.

Implementation of standards applicable to food processing

The food industry must adhere to food and safety standards that regulate and monitor the food quality. For every food product manufactured, there are a set of quality standards that are to be maintained during the manufacturing process. Traditionally, food industry involved manual efforts during the manufacturing processes. However, to achieve the quality standards decided by food safety and standard authority, it is necessary for food manufacturing companies to rely on food processing equipment.

Automated food sorting machines provide speed and allow the industry to optimise the quality standards. The improved quality achieved by implementing automated machines and integrating methods with artificial intelligence will result in the further growth of the market.

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Challenge

Scenario: There are primarily four stages in making the biscuit – mixing, forming, baking and cooling. Mixing is crucial in biscuit production and being the first of the four major production steps where all the ingredients are perfectly blended to allow the manufacturers to produce the perfect biscuit.

Correct Proportions. Before mixing flour, fat, sugar, salt, additives and other important ingredients in right proportions to for dough mixing, all the ingredients have to be precisely sized to achieve perfect biscuit quality.

Challenge: The respective production team at different biscuit

manufacturers were not satisfied with the sizing quality of final biscuit ingredients before mixing. After learning about their concerns and requirement of precise sizing of raw materials, we proposed one of the best performing solution the SIVTEK Vibrating Sieve to overcome quality challenges.

Similarly, the cream biscuit manufacturers were too not happy with liquid chocolate or other flavored biscuits such as mango, strawberry, vanilla or more.

Concerns: Sizing Quality of Biscuit & Cookie Ingredients and Cream Quality.

SIVTEK Solution

SIVTEK Solution: National Sales Manager, Galaxy Sivtek India, shares that "After meeting fortune 500 biscuit & cookie manufacturers and visiting their respective production units, the production heads cited that, before mixing the quality sizing of biscuit ingredients is the major concern for low quality biscuits OR rejection of batches of biscuits, which eventually leads to increase in the production cost. Also, the biscuit manufacturers faced a concern of the low quality chocolate, mango, vanilla, strawberry

or any other flavored cream used in manufacturing various cream biscuits, concludes, NSM, Galaxy Sivtek India.

SIVTEK solution namely SIVTEK Vibrating Sieve series and SIVTEK Self Cleaning Filter is especially engineered to precisely size raw materials and improve quality of extremely viscous liquid/cream used by major biscuit & cookie brands.



The Result

Result:

The engineering team were completely satisfied with the technical details of SIVTEK Vibro Separator, SIVTEK Inline Sifter and SIVTEK Self Cleaning Filter, combining together, assisted leading biscuit manufacturing brands to achieve perfect quality of ingredients and cream quality.

The SIVTEK Solution-The SIVTEK Vibro Separator and SIVTEK Inline Sifter were deployed to improve sizing of various biscuit ingredients such as flour, fat, salt, milk powder, sugar, additives and more used further to mix in right proportions before building consistent batch of biscuit dough.

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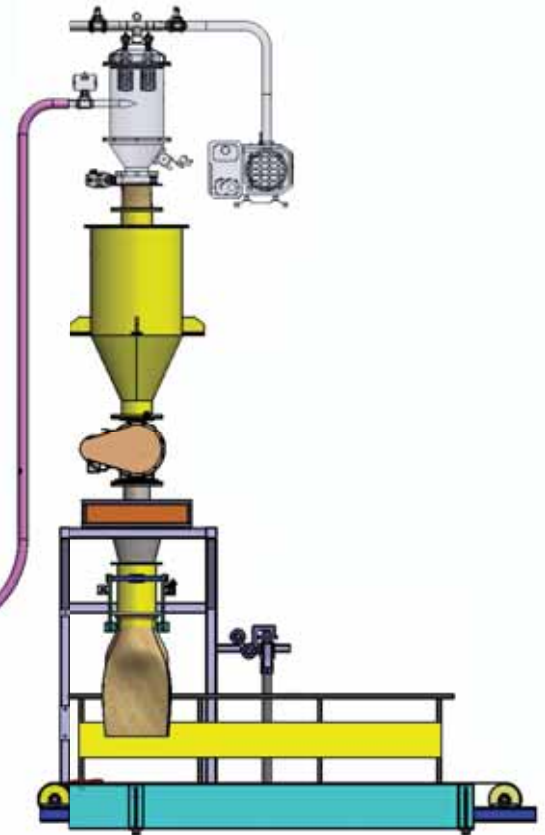
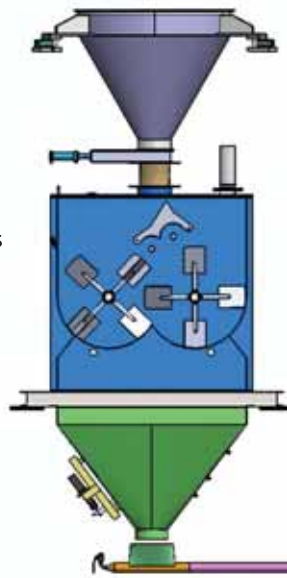
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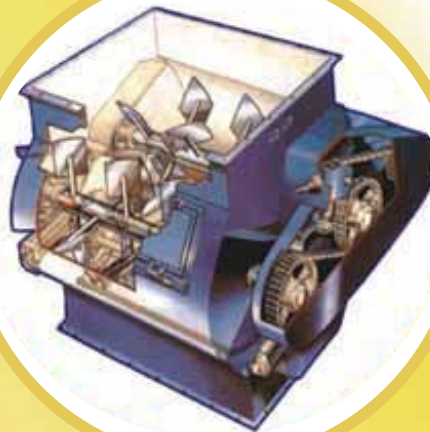
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Ultimate in Mixing Technology

Canned Food:

The Perfect Way to Reduce Food Waste

By Kanika Banga



Packaging today responds to consumer's demands for choice and convenience as well as changed production and distribution conditions and systems. By safeguarding product quality, packaging allows products to be transported and distributed locally, regionally and even globally, thereby making valuable food resources available to a wider population. Thanks to packaging almost every type of fruit and vegetable is available all year around. In modern households, people increasingly turn to the use of fully prepared meals, canned and frozen foods, in a wide variety of portion sizes, to save time in cooking and preparing meals. And packaging makes all this possible. If we took a look into the recent trends in beverages industry, the popularity of can packed beverages is gaining a huge attention by the consumers.

Crushing a can to toss in the recycling may give you a quick rush of green pride — cans are one of the most sustainable forms of

packaging, after all. But recycling isn't the only way cans help out the environment. They can also reduce food waste everywhere from the factories of big-time producers to your own kitchen.

In a world of over seven billion people, set to grow to nine billion by 2050, about one-third of all food produced, worth around 1 trillion USD, gets lost or wasted in food production and consumption systems, according to data released by the Food and Agriculture Organization (FAO) of the United Nations.

Food waste is a worldwide problem. Some believe that innovative packaging is the key in the fight against food loss and wastage. But the problem, and thus the solution, is more complicated.

In industrialized countries, Food Waste is caused by processors, retailers as well as consumers throwing perfectly edible foodstuffs into the trash. At food manufacturing and retail levels, large quantities of food are wasted due to inefficient practices, quality standards that over-emphasize appearance, confusion over date labels, and consumers being quick to throw away edible food due to over-buying, inappropriate storage and preparing meals that are too large.

The dominating "use before" labels on perishable packaged food are used as a law in itself to determine when to throw out the food product. However the sell-by or use-before date is a cautious estimate at best and just defines the last date recommended for the use of the product while at peak quality.

However, according to UK's Waste and Resources Action Program (WRAP), approximately 60% of household food waste arises from products "not used in time".

At the other side of the coin, in developing countries, roughly 95% of food loss and waste are unintentional losses at the early stages of the food supply. When we look

at food loss, one of the big problems in developing countries is the lack of a modern packaging system.

Actual market position

Despite losing some market share to new packaging formats, such as stand-up pouches, aseptic cartons, plastic tubs and other non-metal containers, metal food cans hold a place in the hearts of consumers around the world.

Canning technology keeps food fresh and flavorful, naturally. When foods go through the canning process, nutrients are locked in so the amount of vitamins and nutrients in the food is the same on the day it was canned as it is a year from the canning date. According to a 2012 University of California-Davis study, many canned fruits and vegetables have equal or more nutrients than their fresh or frozen counterparts, as canned fruits and vegetables are picked at the peak of ripeness and canned, often just hours after harvest, at facilities just a few miles away from the farms.

However, a 2012 survey showed that consumers were less aware that the canning process itself seals in freshness, flavour, nutrition and the process keeps it that way.

And when we look at the many recalls in the food arena, we only can conclude that canned foods are safe. It has been three-decades since the last foodborne illness linked to a failure of cans or other metal packaging was reported.

"The latest advances in materials and coatings, as well as state-of-the-art visual and mechanical inspection of every single can that is manufactured, are integral to a food safety record for metal packaging that is without parallel today", states the North American Metal Packaging Alliance.

And although metal food cans are considered a packaging format from a bygone era, rejected by younger generations as dated, filled with old-fashioned-type foods, and according to Euromonitor notoriously difficult to open, heavy and looking identical on supermarket shelves, the metal can has a brilliant future and not only in the battle against Food Waste.

The switch to alternative packaging formats

Food cans have in the eye of the consumer some disadvantages, because they not always correspond with reality. Here are some:

Topping the list of consumer demands for foods and packaging are freshness, ingredients of superior quality, convenience and eco-friendliness. Although a can is able to provide all of these, consumer perception is very low. A survey found that consumers hold a number of misconceptions about canned food and its nutritional benefits. Only 27% believe that canned food is as nutritious as frozen; only 18% agree that canned food measures up to fresh, while research indicates that canned food can be nutritionally on a par with both fresh and frozen food.

Over the last decennia, food packaging companies switched from preserving individual meal components to presenting fresh complete meals. As this trend advances, the can continues to be challenged by lighter, more distinctive packaging that entices consumers to consume their contents directly from the containers.

The universal quest for sustainable packaging options has packagers looking for lightweight containers. Only glass containers are heavier than cans for an equivalent product volume.

- **The most sustainable beverage container:**
As the most valuable package in the bin, cans are, by far, the most recycled beverage container. The average can contain 68 percent recycled metal.
- **Shipping efficiency: the weight Advantage:**
Aluminium cans are lightweight and easily stacked. This provides storage and shipping efficiencies and limits overall transportation carbon emissions through logistics and supply chains.
- **Recycling at record speeds:**
On average, a recycled can becomes a new can in less than 60 days. Beverage containers can be infinitely recycled in a continuous closed loop.
- **New markets continue to develop:**
Nearly 400 craft beer brewers use aluminium to can more than 1,300 different beers. Protection from light and oxygen are two key benefits in addition to the unparalleled sustainability of aluminium packaging.

And last but not least. Worrysome questions continue to be asked about the chemical component, bisphenol A, in the epoxy linings used in most food and beverage cans. While industry and government scientists generally agree that bisphenol A is safe, the consuming public harbours a healthy scepticism about what corporations and governments fail to say about what's good for consumers.

And all these disadvantages (and probably some more) indeed are a challenge for cans, and without further innovations (about those in a minute), leaving an unhealthy opening for alternative packaging formats to enter the "canned food" arena.

The alternatives battling for a share in the canned food market segment consist

mainly of three formats. The carton pack, the stand-up pouch and the rigid plastic container. To make things more serious for the metal can is the fact that all three alternatives also are retortable, long a unique feature of the metal food can.

Let's have a look at these alternatives in our next article and conclude with an overview of the new developments and what is to be expected in food canning in the near future that not only secures the position of canned food, but also will enhance the consumer perception.

Canned is well positioned for the future!

Sources for further reading

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Flexible Plastic Packaging Market to Grow 5%

Market growth in flexible plastic packaging is due to an increase in manufacturing activities and rising demand for conveniently packaged products.

The flexible packaging market is projected to expand from \$102.19 billion in 2017 to \$131.65 billion by 2022, growing at a compound annual growth rate (CAGR) of 5.2%, according to a recent report from MarketsandMarkets™. Demand is

growing for the global flexible plastic packaging market due to an increase in manufacturing activities and rising demand for conveniently packaged products. The growth in demand from the food and beverage industry also provides an opportunity for market growth, especially in the emerging Asia-Pacific and South American regions.

The stand-up pouches segment is estimated to account for the largest share

in 2022, mainly because of the growing consumption of food and beverage, dairy, and cosmetics products. Stand-up pouches are appealing as well as functional; as they offer various features such as zipper re-seal, slider closure, and release valves. In addition, the growing healthcare industry also provides an opportunity to the market to grow further due to the rising consumption of over-the-counter products for which stand-up pouches are used, especially in the emerging markets of Asia-Pacific and South America.

On the basis of key regions, the flexible plastic packaging market is segmented into North America, Europe, Asia-Pacific, South America, and Middle East and Africa. The Asia-Pacific region accounted for the largest share among all the regions in 2016, and is projected to grow in value at the highest rate from 2017 to 2022. This is mainly due to increasing demand for flexible packaging in China and India, coupled with the growing food and beverage industry in these countries. Due to increasing disposable incomes, the urbanized population is shifting toward healthy and safe packaged foods. Therefore, rising income and consumption level are also expected to lead to the growth of the flexible packaging market in this region.

European-consortium-set-up-for-flexible-packaging-recycling



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Oxygen Barrier Coatings Overcoming the Deficiencies of Barrier Technologies in Packaging

The packaging marketplace has a clear need for more functionality in barrier technologies that can provide varying degrees of preservation and protection for many substrates used in food and other packaging. Packaging products need to deliver enhanced shelf life, as well as sustainable, recyclable, metal-free and waste-reducing solutions. Traditional structures of glass, tin and foil are often seen as formidable barriers but, like all barrier technologies, have their disadvantages. Weight is considered a limiting factor for many of these substrates. A new approach replaces current barrier technology with printable barrier coatings.

While coated plastics offer barrier improvements, downsides include the generation of chlorine from polyvinylidene chloride (PVdC), the presence of metal in

metalized film, the thickness of extruded laminates, and the fragile nature of aluminum oxide (AlOx)- and silicon oxide (SiOx)-coated films. New technologies such as nanocomposites can now be used to offset such deficiencies. In addition, these technologies can be formulated into functional coatings suitable for printing on packaging. Printers engaged in the oxygen barrier coatings market need options that are chlorine-free, enable light weighting, improve sustainability and the ability to recycle, remove metal, are transparent, and offer an alternative to expensive barrier films.

The Value of Nanoparticles

Since the 1990s, nanoparticles have shown promise in coating formulations; most recently, they have shown exciting properties when made into oxygen barrier

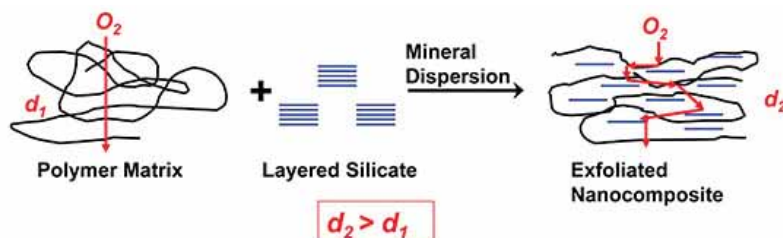


fig 1 : Nanoparticles move from agglomerated clay to nanocomposite coatings.

formulations. In packaging applications, they improve barriers to gases, aroma and UV light, among other features. Early problems with instabilities and poor coverage have been nearly eliminated with improved formulations and press techniques. Functional oxygen barriers of less than 0.06 cm³/100 in.² over 24 hours at 23°C and 50% relative humidity on polyester are now routine.

Nanoparticles are a finely dispersed (intercalated/exfoliated) silicate mineral in a polymer solution/dispersion. As the nanoparticles stack and arrange themselves on a flexible film substrate, they provide an obstacle to gases through the formation of a "tortuous path." As shown in Figure 1, nanoparticles move from agglomerated clay to nanocomposite (exfoliated) coatings. As long as the distance d_2 is greater than d_1 , a tortuous path exists and oxygen barrier performance is improved over an unmodified polymer matrix.

Understanding Oxygen Barrier Coatings

Oxygen barrier coatings are used in the packaging industry for both economic and performance reasons. The barrier performance of these nanocomposite materials is much improved over typical PVdC and ethylene vinyl alcohol (EVOH) barrier resins typically used in packaging films. While most commercial activity today is in the area of dry foods, prototypes have been made for liquid packaging and chilled packaging as well. Application methods have varied widely, with gravure, flexo and roller coatings all being successful.

In a typical example, a familiar three-ply laminate composed of PET/mPET/PE can be replaced with a barrier-coated PET/PE structure. In addition to the obvious reduction of the one film layer, economic benefits result from using less adhesive and improving the visibility of the product. Barrier coatings of this type also offer an advantage in flex cracking, as they often are more flexible than mPET and oxide-treated films. In fact, the flex cracking improvement can be dramatic. In Figure 2, various coatings on typical packaging films show they were subjected to a Gelbo flex tester to measure oxygen barrier before and after flexing.

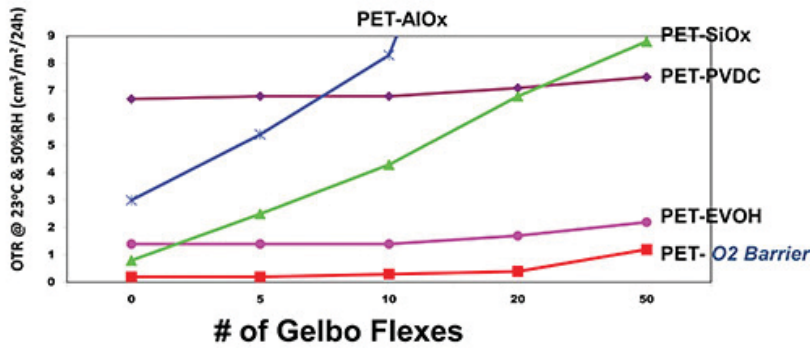
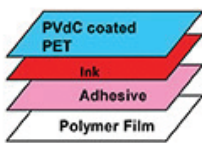


Fig 2: Various coatings subjected to a flex tester to measure oxygen barrier before and after flexing.

Another common example involves moving from commercial two-ply laminate to a new two-ply laminate plus printable barrier coating. In Figure 3, a coated film, PVdC-coated PET, is replaced with a barrier-coated corona-treated PET. The film is then laminated in the usual way to a sealant web of polyethylene. The benefits of this new structure are an improved oxygen barrier of up to 10 times the previous structure without chlorine and longer shelf life.

Figure 4 shows an example of oxygen barrier enhancement of a commercial three-ply laminate to a new three-ply laminate plus printable barrier coating. The barrier provided a lower cost advantage over alternative high-performance barriers.

Commercial 2-Ply Laminate



New 2-Ply Laminate plus printable barrier coating

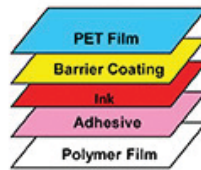
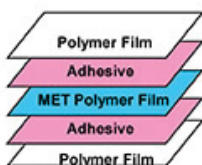


Fig 3: PVdC – coated PET is replaced with a barrier coated, corona-treated PET

Commercial 3-Ply Laminate



New 3-Ply Laminate plus printable barrier coating

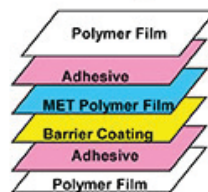


Fig 4: Oxygen barrier enhancement of a commercial three – ply laminates to a new three – ply laminate plus printable



Practical Concerns

Application weight of barrier coatings is critical to obtaining high barrier numbers. Depending on the substrate, application weights need to be adjusted to attain the barriers desired.

Anilox and gravure suppliers can offer advice on the best screen and line combinations for the desired deposition weights. The nanoclay coatings are often supplied in two or more parts that need to be mixed together before use. An air-powered mixer press-side is usually adequate to mix the components before use.

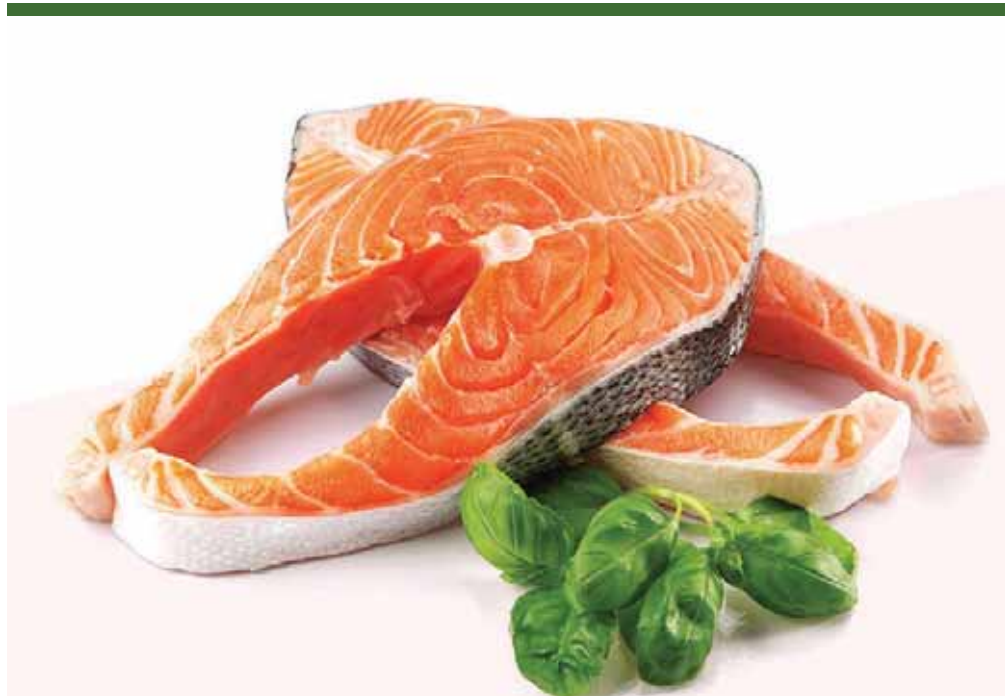
Newer versions are available as a one-part system and should be kept from freezing. Films should be corona treated before coating, as it will enhance adhesion and improve lamination bond strength. Substrates should be free of dirt and dust as much as possible and should be applied as the first down with inks and other materials applied as a second down.

Multiple Benefits

The oxygen transmission rates of typical flexible packaging materials can be drastically improved by printed oxygen barrier coatings and provide a viable alternative to existing film options.

The nanocomposite coatings provide excellent barrier performance on both PET and OPP, with dry film weights as low as 0.2 g/m² (dry). Gas barrier coatings also provide improvements in flexibility and lamination integrity. Benefits of oxygen barrier coatings include: excellent oxygen and aroma barrier, the replacement of PVdC and EVOH coatings, improved flex crack resistance of oxide/metallized films, and extended shelf life.

Source - www.sunchemical.com



Retail Packing of Fresh Fish in India-an Overview

Introduction

Fisheries and aquaculture areas are becoming important sector for food production and providing nutritional security to the millions of people. Fishery production in India increased ten times since we got independence. India contributes about 5% of total world production with worth of 1.1% of total GDP. Fishes are harvested in long coastal lines (over 8000 kms) and several inland water-bodies (over 70 lakh ha) like reservoirs, lakes, ponds and brackish waters. The harvested fishes are brought to the landing centre in a well preserved condition fetch a higher market price. Around 70% of total production is consumed as fresh and it emphasizes the importance of packaging during retailing. The packaging is employed to transport fresh fish along with ice for maintain the fish quality. Several packaging techniques have

been adapted to match the requirements of the processors, distributors and retailers. The main objective of this paper is to explore the types of packaging materials exclusively used in fisheries.

Need of retail packaging

Fish is a highly perishable material and deteriorates very rapidly in normal conditions. The shelf life of fish is prolonged by keeping them in a chilled environment and it helps to reduce the rate of deterioration. The objective of chilling is to slow down the action of enzymes, microbes, physical and chemical process that affect fish quality. The harvested fishes are brought to the landing centre in big storage containers and then sorted on the basis of size and species. Based on the processor and retailer requirements, fishes need to be packed and transported to different places. The type and method

of packaging depends on the distance to be transported and the cost of packaging material. For instance, harvested fishes are transported in insulated boxes along with lids for shorter distances; whereas fishes are aerated and kept cool for longer distances.

Functions and requirements of packaging

The main functions of the packaging include: protection of the product from the outside environment, containing the product and its information, and maintaining the quality of the product. The requirements of the fish packaging are as follows.

- Provides sufficient insulation to maintain the low temperature created during transportation of fish
- Strong and durable
- Properly designed to prevent pilferage
- Convenient for labeling purposes
- Commercially viable
- Available in appropriate sizes for variety of fishes to be transported
- Enable convenient handling, transportation and storage
- Stackable and can able to withstand the weight of the containers

Types of Packaging materials

1. Wooden boxes

The wooden boxes need to be made from dry materials which should have a plain and smoother surface for effective cleaning. They are generally made from soft-wood however hard wood can also be used although this tends to make it heavier. Wooden box is assembled by nailing the boards together (sides, bottom and top portion). In the bottom of the wooden box, opening (not greater than 10 mm) between each piece of material is provided to enable the water to drain from the box. Stiffening boards are mostly used in the wooden box for effective reuse and to obtain more strength. Big headed nails are generally used in the wooden box for nailing purpose and the size of the nail depends on the material thickness. Wooden boxes are long enough to withstand normal loads without permanent deformation. It can withstand a 2.6m high pile of boxes with 80% volume filled fish and three times the load of the pile.

2. Plastic boxes

Plastic box must have a shape for good



strength and proper stacking. Surface of the plastic box is generally smooth, plain and rounded corners without significant damage. The plastic boxes are equipped with holes (in the bottom or in the walls as near the bottom) for better drainage. Strength of these boxes can withstand normal daily loads without permanent deformation for a period of 8 hours with a load corresponding to the 3m high pile of boxes with 80% volume filled fish and additional 1.5 times (short time test) and 0.75 times (long time test) respectively, to the load of the pile. These plastic boxes show excellent durability against cracking. Even it can withstand the hotter temperature up to 100°C for seven days.

Types of Plastic boxes

2.1 Corrugated Plastic Boxes

These boxes are made from extruded corrugated plastic (polypropylene) sheet and is made of thin skins over a central corrugate with a thickness of 3 mm. Sheets are cut into desired shapes and fold lines are made. These boxes are available as a flat pack/ erected one. These boxes exhibit poor insulation, but can carry more weight. Advanced version of this type boxes are made of walls of about 7 mm total thickness and has sealed edges to the corrugate.

2.2 Returnable Plastic Boxes

These are returnable or re-usable plastic (High Density Polyethylene) containers, available in sizes of 5, 10 and 25 kg of fish with ice and they can be re-used 50 times or more. These boxes can be folded flat for volume reduction during storage or transportation and it could be assembled when in-need of rigid container. The initial investment is little high but good cleaning gives longer life.

3. Aluminium alloy boxes

Aluminium alloy boxes are made up of Al/Mg2 alloy or aluminium material with similar property. In general, these aluminium boxes are made from the one piece of metal into solid construction with the bottom, sides, and supporting flanges. Ends of the aluminum boxes need to be solidly jointed in the bottom and sides of the wall by smooth welding. The surface of the box must be smooth and plain. These boxes are also equipped with drain holes for water and slime removal from the box. The strength of the boxes can withstand normal daily loads without permanent deformation and can stand an equally shared pressure with respect to 3m high pile of boxes with 80 % volume filled with fish and additional twice the amount of weight of pile.

4. Fiberboard boxes

These boxes are mostly used for fresh fish or iced fish retailing. The surface of the materials should be smooth, free from cracks and dents, humidity resistant on both sides. These properties are obtained by the treatment consisting of polyethylene coating (10-20 g/m²), high gloss waxing (10-25 g/m²) and wax coating (20-30 g/m²). Water proof adhesive materials are used for glue purpose and humidity control. Wax coating is mostly done in the inner side of the box for effective humidity resistance. Make sure the materials contained in the box are not dangerous chemical or bacteriological substances, as they can be dissolved into the contents and cause adverse effect. In general, boxes are delivered flat from the factory, however it's easy to put together by either nailing or gluing. Drainage holes are provided in the bottom of the box for effective drain.

Types of fiberboard box

4.1 Solid fiberboard boxes

In general, import and export industries mostly use this packaging material since it can withstand harsh environment (extreme temperatures and weather conditions with excessive moisture). The material used for this packaging material is water resistant boards; achieved by laminating both sides and centre with polythene. Also, it is lined with a low density poly ethylene film. Another advantage is having a 4 point glued base of varying sizes, that depends on the weight of the fish to be stored in the box. The strength of the solid fiberboard is good

impact strength and leak proof. These boxes are available as a solid material or as fold flat box for volume reduction during storage and transportation.

4.2 Corrugated fiberboard boxes

These boxes are manufactured as similar to the solid fiberboard boxes but are made of a corrugated fiberboard sandwiched between thin layers of solid fiberboard. These boxes provide good impact strength and poor insulation property. Advanced version of coated corrugated box without drain holes was developed with a pad in the bottom of the box to absorb the melt water. These boxes can be delivered as a flat pack to reduce storage space and it can be manually erected to produce a sealed box.

5. Expanded polystyrene foam (EPF) boxes

EPF is a kind of plastic material that is composed of individual cells of low density polystyrene. EPF boxes are produced from moulded polystyrene beads and it contains 98% air on volume basis. Though it is lighter in weight, these boxes are able to withstand greater load. The lid and box are manufactured in the same manner and are designed to interlock by creating a firm seal. Material should be homogeneous without any dirty particles and discolouring. Drained holes (15 mm diameter) should be provided in the bottom of the EPF boxes for complete removal of water and slime. During transportation, these boxes should be watertight or equipped with water absorbent material. EPF box acts as a great insulator since the heat cannot travel through it, but the major disadvantage is that it exhibits poor impact strength. The boxes can withstand normal daily loads without showing permanent deformation; and can stand an equally shared load with respect to 3 m high pile of boxes with 80% volume of fish and addition to the weight of the pile. The load on the wall must not exceed 2 kg/cm².

Recycling and disposal possibilities

Technically, not all the packaging materials used in the fish industry are to be recycled. The collection, sorting and transportation of the packaging materials to the recycling plant involves higher operational cost unless there is huge availability of one material in one location. Reduction in size or compaction

makes the process complex. For example, fiberboard and corrugated plastic boxes can be easily compacted however expanded polystyrene requires special compaction equipment and also the contaminated polystyrene material is very difficult to remove and process it.

Conclusion

Single box is not ideally suited in entire fish retailing process. Various packaging materials are available depending on the product and its market requirements. The choice of the packaging material is based on

the packaging property such as insulation, strength, cost, weight. Make sure the drained water does not cause adverse effect on the stored food material. If cost of the packaging material is concerned, expanded polystyrene box can be used. However it is recommended for shorter distance and proper ice ratio with respect to the fish. For long distance transport and improved shelf life, fiberboard and corrugated plastic boxes are highly recommended.

Dr. P. Karthickumar, Dr. N. Manimehalai and Dr. S. Balasubramanian



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Scientists Develop Clay-based Antimicrobial Packaging



Control tomatoes (left) rotted after six days while those wrapped in a new clay-based film (right) stayed fresh. Photo: Hayriye Ünal

Scientists have developed a packaging film coated with clay nanotubes packed with an antibacterial essential oil. The film provides a one-two punch, preventing over-ripening and microbial growth, which could help improve the shelf life of perishables.

The researchers present their results at the 254th National Meeting & Exposition of the American Chemical Society (ACS) in Washington, D.C. The meeting features nearly 9,400 presentations on a wide range of science topics.

“Food packaging that is capable of

interacting with food can contribute to safety and prevent economic losses from spoilage,” Hayriye Ünal, Ph.D., said. “Specialized films that can preserve a wide array of foods are highly sought after.”

Over the past two decades, scientists have been developing alternative ways to preserve food, with an extensive focus on packaging. Numerous issues, primarily the versatility of the materials, have hindered progress. “While companies can already make many films that prevent fruit and vegetables from drying out, incorporating additional properties in the same film is a challenge,” said Ünal, who is at Sabanci University in Turkey.

Bacterial contamination and permeability to both oxygen and water vapor are major issues that scientists are addressing. Another challenge is to prevent too much ethylene from building up around foods. Ethylene is a compound naturally released by fruits and vegetables that aids in the ripening process. But an excess of ethylene trapped underneath the packaging film can cause food to over ripen and rot.

To meet the demand for multi-functional packaging, Ünal’s team started with a polyethylene film. To scavenge for ethylene and provide a gas barrier the

group incorporated clay “halloysite nanotubes,” which are small, hollow cylinders. The nanotubes prevent oxygen from entering the film, and prevent water vapor and other gases from escaping. In addition they keep ethylene from building up by absorbing it. The researchers loaded these nanotubes with a natural antibacterial essential oil found in thyme and oregano called carvacrol and coated the inner surface of the packaging film with the loaded nanotubes to kill microbes.

The team wrapped tomatoes, bananas and chicken in the film to test its effectiveness over varying amounts of time compared to foods wrapped in plain polyethylene. After 10 days, tomatoes wrapped with the new film were better preserved than the control vegetables. In addition, the new film helped bananas stay more firm and keep their vibrant yellow color after six days compared to the control fruit. And chicken enveloped with the experimental film and refrigerated for 24 hours showed significantly less bacterial growth than chicken in plain polyethylene.

But moving this technology to industry will require some additional work, Ünal said. As a next step toward that, her team will test the new film to make sure it is safe and nontoxic.

Ünal’s work was funded by the Scientific and Technological Research Council of Turkey.

Source: American Chemical Society

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Sensor Monitors Fruit Cargo

Fruits can quickly perish on their journey from the farm to the store, and current methods for measuring the temperature inside cargo containers are not always sufficiently reliable. A new artificial fruit sensor developed by Empa aims to help solve this problem. The sensor looks like a piece of fruit and acts like one – but it is actually a spy.

(The sensor) is the same shape and size as the relevant fruit and also simulates its composition, and can be packed in with the real fruit and travel with it. On arrival at the destination, the data from the sensor can be analysed relatively quickly and easily. From this, the researchers hope to gain information about the temperature during transportation.

“The sensor can be used to establish the point in the storage and transport chain at which something went wrong.

“There are currently separate sensors for the Braeburn and Jonagold apple varieties, the Kent mango, oranges and the classic Cavendish banana. In order to simulate the characteristics of the individual types of fruit, the fruit is X-rayed and a computer algorithm creates the average shape and texture of the fruit.

“The researchers then determine the exact composition of the fruit’s flesh (usually a combination of water, air and sugar) and simulate this in exactly the same ratio in the laboratory, although not with the original



ingredients, instead using a mixture of water, carbohydrates and polystyrene.

“This mixture is used to fill the fruit-shaped sensor mould. The mould is produced on a 3-D printer. The researchers place the actual sensor inside the artificial fruit, where it records the data, including the core temperature of the fruit.”

Field tests are currently under way at Agroscope in Wädenswil (Switzerland).

Read more from Phys.org.



New Technology to Keep Fruit, Vegetables Fresh for 1,000 Days

When efforts are being made to reduce wastage of perishable commodities by boosting cold chain system, an Indian company has introduced ‘Black Box’ technology, which can ensure preservation of any agriculture commodity for 1,000 days.

Saahil Peerzada and Sachin Adhikari of Viztar Agritech have tied up with Spain-based Nice Fruits to offer new technology in cold storage plants in the Indian subcontinent, with the first two to become operational in Hyderabad in the next seven months.

“The Black Box is a unique technology and is developed by scientists in Spain. It can be easily set up in any factory or plant. In normal cold storage, nitrogen is used. However, in ‘Black Box’ system there will be neither nitrogen nor any preservative. The stored commodities will have their natural

content, nutrition value intact for 1,000 days,” Peerzada told IANS.

“Be it fruits, vegetables or meat, anything can be kept fresh for 1,000 days using ‘Black Box.’”

Peerzada said the technology was tried and tested worldwide and it was patented in the US. Peerzada’s company will be technology and well as equity partners in these cold storage plants to be set up in the Indian Subcontinent.

“We have tied up with Hindustan LNG to set up two such storage plants in Hyderabad,” he said.

Subsequently, similar plants will be set up in Maharashtra for mangoes and in Uttar Pradesh. Talking about the benefits of the technology, Peerzada claimed that returns to farmers will increase four-fold.

“Farmers are forced to throw their produce on the road after prices go down. They cannot store it due lack of proper preservation and storage facilities. With our technology, farmers will not be required to go to markets and sell their produce at modest price. They can come to us and get four times the price,” Peerzada said.

He said that cold storage factories will store agriculture produces from farmers and export them “on their own terms”.

“It will be win-win situation for both farmers and traders. Also, it will help the country in getting more foreign exchange,” Peerzada said.

Initially, the capacity of these storage will be 30 tonnes per day, which will be increased to 1,000 tonnes per day later, he said.



Clean Room High Speed Doors a Necessity

Does your business plan include the development of an area in your plant for clean manufacturing?

Better quality or better yield is the primary reason for investing in a cleanroom space. It goes straight to your bottom line. Numerous manufacturing facilities now require a controlled environment in which you limit the amount of dust and dirt in the area of the manufacturing. Medical instrument manufacturing and packaging, electronics and computer manufacturing, food preparation and some military applications are but a few of the instances that have strict requirements for maintaining a clean environment. You need to know the requirement for your specific product or process. Clean rooms have become integral part of pharma manufacturing facilities.

One of the most important aspects of cleanrooms is the Doors you choose for cleanroom facility. Time for which door is open will play a critical factor in avoiding dust, outside temperature, humidity etc. Opening and closure of door has to quick enough to isolate the outside environment and internal facility.

At Gandhi Automations Pvt Ltd we provide Clean Room High Speed Doors specifically

designed for above purpose. Our Clean Room High Speed Doors are best suited for facilities where you need controlled environment. The opening and closing of door is quick enough to separate outside environment and internal facility.

High Speed Clean Room Doors designed by Gandhi automation are engineered carefully with feature below:-

- Concept of low air permeability in pressurized rooms with positive and negative air pressure
- Designed to fit inside the columns
- Self-supporting construction
- Minimizes air leakage
- Can be equipped with transparent PVC

horizontal sections or vision windows

- Special side guides to tightly integrate the curtain
- High leak tightness due to the close filling curtain in the guide rails
- High door efficiency with and low permeability values, EN 12426 EN 12427: < 12 m³/m²h Δ 50 PA .
- Control device enclosure in Stainless Steel SS 316

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Measuring instrument with fixed probe

99% Certainty is not Enough, Entire Cold Chain Under Control

The most elementary and necessary part of our daily routine is the food we eat. Our health and wellbeing depends on every edible item that we consume. Be it vegetables, meat, fruits, beverages or any other stuff, quality and fitness of these consumables have far reaching consequences in our life. Thus, storage of food items is of highest priority. On the way from the raw material to the sales-ready goods, foods pass through different processing levels and processes. This results in a chain of producers, processors and dealers. No foods may ever be brought into circulation which are damaging to health or unsuitable for consumption.

Importance of Cold chains

When customers buy food, they expect that the products are of impeccable quality, and safe. In order that this really is the case, the cold chain is crucial for refrigeration-mandatory foods such as meat and sausage or dairy products. It ensures the quality and safety of foods: Legally prescribed temperature limit values may not be exceeded on the way from the producer to the consumer. As the safety and quality of foods can be negatively influenced by the wrong temperature, the monitoring of the temperature of cold chain-mandatory products is a central building block in the assurance of the desired quality and marketability.

Precise measurement process for superior quality

In the monitoring of temperatures, two types of techniques are used:

- Spot check measurement with portable temperature measuring instruments. These can be with permanently fixed probes or with exchangeable probes, mostly when varying measurement tasks are required. This can also be conducted by using non-contact measurements using infrared thermometer.
- Continuous data recording in which a measuring instrument with a memory remains with the goods (or in their proximity, e.g. in a refrigerated room), and records values at regular measurement intervals. Data loggers are used for continuous data monitoring.

A very precise measurement is a core temperature measurement, i.e. a penetration probe measures the temperature in the interior of the refrigerated goods. However, for many products, this means destroying the packaging and the product. To avoid this, a 3-level process has proven its worth in practice:

1. First, an infrared measuring instrument is used to scan the surface, e.g. of yoghurt pots. Infrared measuring instruments are

suitable for obtaining a rapid overview of the temperature of the products. If the temperature is clearly within an acceptable range, the test is finished.

2. If the temperature of some products is outside the prescribed range, then a contact probe is inserted between two products, and the temperature is measured there. If the temperature is now within the limit values, then the previous infrared measurement showed merely a warming of the outside.
3. If the temperature is still outside the prescribed range, then for verification purposes, a penetration measurement is carried out on one or more pots. The probe is inserted into the foodstuff, and measures the core temperature.

Measurement necessary at every step

Product processing and storage

Fresh and frozen goods whose preservation and quality are dependent on permanent refrigeration require an uninterrupted cold chain to protect them from spoiling for as long as possible.

For refrigeration-mandatory foods, legal stipulations regulate the temperature zones which must be adhered to during the cold chain.

- Deep-frozen meat and fish need to be continuously chilled through to -18°C .
- Max temperature required for fresh meat is $+4^{\circ}\text{C}$, for milk and dairy products is $+8^{\circ}\text{C}$.
- For fruits and vegetables, a temperature range of $+1$ to $+12^{\circ}\text{C}$ is applicable.

Food transport

Here the focus is on the transfer of liability. For the purposes of traceability, the freight forwarder must be able to prove that the cold chain was not interrupted during transport.

Measurements carried out during transportation call for special data logger requirements:

- Limited package space necessitates a flat design
- Easy to use
- The logger should only record transport-relevant data
- Alarms must be easy to recognize, to initiate control measures in time.



Measuring transport conditions with testo 184

Recommended instrument: Transport data logger **testo 184**

Incoming Goods

Incoming Goods is the location at which foods are delivered. In the context of food safety, fresh food and frozen goods deserve special attention here, because adherence to the cold chain is prescribed for them. Different temperature ranges apply for each of these product groups (according to DIN 10508):

- Deep-frozen foods: -18°C
- Minced meat: $+2^{\circ}\text{C}$
- Fresh fish (in ice): $+2^{\circ}\text{C}$
- Fresh poultry: $+4^{\circ}\text{C}$
- Processed fish (marinated, soured and smoked): $+7^{\circ}\text{C}$
- Other perishable foods, including e.g. baked goods with incompletely baked filling or covering, freshly cut salads and delicatessen salads: $+7^{\circ}\text{C}$
- Pasteurized milk: $+8^{\circ}\text{C}$

- Butter, cream cheese, soft cheese: $+10^{\circ}\text{C}$

The handover of goods generally takes place in the loading bay. Immediately after the supplier's arrival, the temperature is measured here either on the loading platform or directly in the truck.

Recommended instrument: Non-contact infrared thermometer **testo 831** & data loggers



Measurement in refrigerated shelving with testo 831



Checking temperature in Incoming Goods with testo 831



Measurement in refrigerated display with testo 174

Refrigerated counters, shelves etc.

In sales outlets, products in need of cooling are stored either in refrigerated units (shelving, displays, counters) or in deep-freezers.

Refrigerated products: The temperature of sealed products is usually measured without contact. For meat, sausage and cheese, a penetration measurement is normally carried out. The permitted temperature range here is typically between $+2$ and $+10^{\circ}\text{C}$.

Deep-frozen products: Non-contact measurement or measurement "between packages". The permitted temperature range here is typically between -20 and -18°C .

Refrigerated shelving, counters: Data loggers are installed in refrigerated shelves or counters close to the air intake, as the air temperature is warmest there (should still be under $+10^{\circ}\text{C}$). In deep-freeze units, a measurement is taken ideally between the packaging (e.g. spinach, pizza, ice cream).

Refrigeration and deep-freeze rooms are usually monitored using the "semi-stationary" method, i.e. a data logger is fixed to a wall of the refrigerated room, where it measures and records the air temperature.

Recommended instrument: Non-contact infrared thermometer **testo 831** & data loggers

Safe food safer you

Refrigeration prolongs the lifetime of foods and hinders germ growth. The adherence to the cold chain serves the quality and safety of foods. There are various ordinances, norms and standards about the cold chain. They stipulate, among other things, that proof of temperature compliance is a mandatory requirement. HACCP describes the implementation of process-oriented hazard analyses. Where risks occur, control points must be set-up and correction measures must be taken. Testo India provides the best solutions and precise instruments that comply to several necessary norms and ensure the safety of the society.

For more info: Write to info@testoindia.com or visit www.testo.in

Bradman Lake to Exhibit Vision Guided Robotics with Integrated Flow Wrapper at PPMA 2017

To witness the latest development in Vision Guided Robotics and Flow Wrapping technology visit Bradman Lake Group's stand B50 at the PPMA Show being held on 26-28 September 2017 at NEC Birmingham.



The VGR2000 Vision Guided Robotic System with the Bradman Lake FT120 Flow Wrapper

Bradman Lake will be showing the VGR2000 Vision Guided Robotic system connected to the FT120 Flow Wrapper. The system is built with an open architecture using 'off the shelf' components as with all Bradman Lake products. It is simple to operate and easy to set up on new product formats via the intuitive HMI screens.

Using delta robots with Rockwell Automation servo motion control, the products will be placed into the infeed of the FT120 Flow Wrapper, the products can also be placed into either a top or end load carton management system.

The VGR2000 Vision Guided Robotic system features a smart camera that integrates into the Rockwell Automation ControlLogix 'PAC' via add on instructions. This allows fast and simple teaching of the machine for new products, giving greater flexibility to the user. The same smart camera can also be used to recognise out of specification product that can be rejected. The single 'PAC' unit controls

robot movement and pick strategy, product tracking and placement.

The FT120 Flow Wrapper is well established and fully automatic machine, equipped with Servo driven paper feed, Automatic reel to reel splicing, Pack tucking, End crimp carry over and includes the following features; No Product/No Bag, No Gap/No Crimp and Softjaws. The unique non-sprung end crimp ensures high integrity repeatable sealing even on difficult applications.

The VGR2000 and FT120 Flow Wrapper can be integrated with secondary and tertiary packaging equipment to provide a complete packaging solution similar to the recent display at Interpack.

The system has the capability to be set-up with a single point of access with remote connectivity for online fault diagnostics and Rockwell Automation's 'FactoryTalk Analytics' for system data collection.

FactoryTalk® ViewPoint is utilised for the local connectivity to link each machine,

providing system control and performance data locally at each of the machines HMI's.

FactoryTalk® Analytics is utilised for the remote connectivity to transmit real time data remotely to a secure machine cloud. This provides real time machine and system data that can be viewed remotely from anywhere around the globe.

Bradman Lake packaging machines incorporate the latest integrated connectivity Industry 4.0 technology to communicate seamlessly over a common network and protocol. This enables the installation of customised systems that deliver enhanced productivity, rock solid security and operational intelligence with live data output to drive smarter management decisions. This flexible, intelligent system allows for an exhaustive range of possible system configurations to meet every conceivable packaging need.

Some of the system benefits;

- Increases customer profitability
- Increases efficiency
- Increases flexibility and rapidly meet the current market demands
- Reduces labour costs
- Intuitive to use
- Ergonomically friendly
- Open control architecture
- Elimination of Black Box technology
- Safe work environment

The Bradman Lake team looks forward to meeting you at the event!

To find out more email:
sales@bradmanlake.com

About Bradman Lake

Established in 1948, the Bradman Lake Group Ltd is a leader in integrated packaging technology. From distribution and feeding systems, flow wrapping, cartoning, loading and closing to case packing, shrink wrapping and roll wrapping, Bradman Lake's solution based approach is gained from thousands of installations around the world. Bradman Lake is located in the UK and USA with regional offices in Russia and India, and is a wholly owned subsidiary of the multi-disciplined UK engineering group, Langley Holdings plc.

Highly Flexible Production Lines for Processed and Cream Cheese

KARL SCHNELL, based in Germany, is a world leading supplier of automated production systems for various food applications.

Due to the variety of products and the necessity for innovation in a market that becomes more and more competitive, the demand of the processed and cream cheese suppliers for highly flexible and automated production lines is enormous. **KARL SCHNELL**, with over 68 years of experience in this segment, is the right partner for an extensive solution – all from a single source.

Experienced project engineers develop in close cooperation lines on which all of the customer's products can be produced efficiently and hygienically. **KARL SCHNELL** offers the right solution for every demand and every budget.

A variety of product flows can be implemented to produce spreadable or sliceable products on the same system. This is due to the comprehensive **KARL SCHNELL** machine range which covers all production steps from raw material preparation to filling.

The production recipes are composed, starting with a modern and future-oriented recipe control with a possible connection to superior planning systems.

Cheese breakers and grinders, being able to gently process both frozen and fresh goods, are used to make a pre-

standardization before the mixing process. Afterwards the material will be transported via a hygienic design and easy cleanable belt conveyor, optionally with metal detection.

In the sophisticated **KS Mixers**, equipped with the most diverse mixing tools and numerous options, the recipe is completed - homogenous and with consistent quality.

Caseinates and other powdered milk components can be added automatically with metering systems or **KS Process Automats** in which liquid suspensions are homogenized. This type of admixture has the great advantage that the mixture is better moistened

by the slurry and is better taken up. Furthermore the blending of the additives takes less time.

After the mixing process all possibilities of the further processing are open.

The batch production of various cream cheese as well as spreadable processed cheese formulations is made by

KS Process Automats. They realize an hourly capacity up to 5000 l depending on the application. Steam injection allows the heating up to 125°C.

KS Mixers with vacuum device are also batch machinery. Their operating range is mainly the production of

Pizza Cheese, Mozzarella or similar products. Capacity reaches up to 6000 l/h.

The **KS Heating System UHT** is working continuous with different capacities starting from 50 l/h up to 6000 l/h.

Provided with two heating circuits the system is able to pasteurize or sterilize the cheese products from 75°C up to 145°C.

The peculiar effective intermixture and the ingenious expansion cooling extend shelf life.

To complete the automated line **KS** offers advanced filling machines with innovative control technology, user friendly

operating convenience and portioning accuracy. Their proven pumping system is the guarantee for an efficient and high-grade continuous working process.

To clean a modern flexible line solution economically and to meet the hygiene standards of today, **KS** supplies also the respective cleaning ball and CIP systems. Pipelines and machines are incorporated in cleaning circuits.

Above and beyond a complete line structure is a state-of-the-art control and sensor technology which makes such a solution possible. Via touch panels with visualization of the system parts the operator always maintains the survey for every production process.

Monitoring the overall production data acquisition and the communication with superior administrative systems rounds out the system control.





Secure Performance: Prevent Problems before they Occur

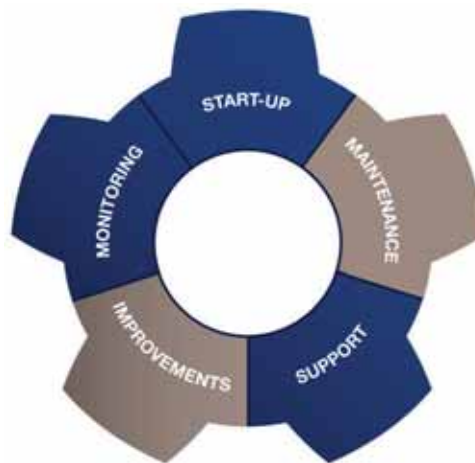
Service tips for your hygienic equipment

Wear and tear is natural, but servicing your equipment regularly can ensure operational reliability and helps maintain performance. Preventive Maintenance reduces unplanned stops, increases equipment lifetime and reduces workplace accidents.

For your valves, make regular service and maintenance on your valves for them to be able to perform optimally. The most cost-effective approach is following a simple preventive maintenance program which will prolong the lifespan of your valves.

For your rotary lobe pumps check the oil level in the gearbox should be checked regularly and re-filled when necessary. Check the manual for re-lubrication schedule.

Regularly maintain your tank equipment



following scheduled service intervals. This will always keep your tank equipment in good condition.

For your centrifugal pumps, check to make sure water has been connected so that the shaft seal does not run dry. Dry running will damage the shaft seal and could lead to a damaged pump.

Remember if you have Alfa Laval equipment installed, using Alfa Laval genuine spare parts will protect your Alfa Laval equipment because they are designed and manufactured for durability, productivity, and Less environmental impact.

About Alfa Laval

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

The company's equipment, systems and services are dedicated to assisting customers in optimizing the performance of their processes. The solutions help them to heat, cool, separate and transport products in industries that produce food and beverages, chemicals and petrochemicals, pharmaceuticals, starch, sugar and ethanol.

Alfa Laval's products are also used in power plants, aboard ships, oil and gas exploration, in the mechanical engineering industry, in the mining industry and for wastewater treatment, as well as for comfort climate and refrigeration applications.

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

Alfa Laval is listed on Nasdaq OMX, and, in 2016, posted annual sales of about SEK 35.6 billion approx. 3.72 billion Euros. The company has about 17 300 employees.

www.alfalaval.com

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HANTEMP Controls CBV Controlled Ball Valves

WESTMONT, IL – The Stainless Steel CBV Controlled Ball Valves are for many industrial refrigeration applications. The companion electronic actuators provide precise modulation of the refrigerant flow, as well as slow opening and closing to reduce line shock. Straight-through flow, compared to globe-style valves, minimizes liquid puddling, and debris collection on the

inlet of the valve, while delivering maximum flow. The patented COBRA-NECK® design locates the ISO 5211 F05 standard actuator mount above the potentially ice-encrusted body for easy servicing and viewing of the valve position. CBV's are rated up to 800 psig SWP @ -70°F and are available in pipe connection sizes from 3/4" up to 3" for industrial refrigeration systems

utilizing ammonia, CO₂, and other approved refrigerants.

HANTEMP Controls is an established manufacturer of Stainless Steel controlled ball valves, float switches, solenoid valves, pressure regulators and flange unions for industrial refrigeration systems including ammonia, CO₂, and others. For more information, please visit www.hantempcontrols.com.

Contact: Bill Banks, Marketing Director,
bbanks@hantempcontrols.com

Long-life, Wash-down Drive Technology for the Beverage Industry

NORD DRIVESYSTEMS will showcase industry-specific drive solutions at the drinktec exhibition in Munich, Germany.

The German manufacturer draws on an extensive range of standard products with an unmatched variety of drive systems featuring aluminum cast housings optimized for wash-down. These lightweight, corrosion-proofed gearboxes, smooth-surface motors, frequency inverters, and motor starters are particularly easy to clean. NORD offers the supremely effective nsd tupH anti-corrosion surface treatment for aluminum drives, which is approved for food and drink applications in accordance with FDA title 21 CFR 175.300. nsd tupH drives are a durable, low-maintenance alternative to stainless steel or coated systems with lower total costs over the long term. Instead of applying a coating, the nsd tupH treatment hardens and penetrates deep into the alloy surface. Consequently, there is no applied material that could flake off. These drives can even be cleaned with high-pressure steam jets and can be regularly exposed to liquid media without any problems. nsd tupH drives are fitted with stainless steel standard parts as well as stainless steel output shafts by default. The non-ventilated smooth-surface motors run very quietly and do not actively contribute to spreading germs. They meet current international efficiency levels. Induction motors are available with IE2/high efficiency and IE3/premium efficiency and synchronous motors with IE4/super premium efficiency.



Illustration: Light-alloy nsd tupH drives optimized for wash-down enable efficient cleaning of plants in the beverage industry

AT A GLANCE: NORD at drinktec

- 11 - 15 Sep. 2017, Munich, Germany
- Hall A3, Stand 242
- Anti-corrosion treatment nsd tupH for aluminum drives:
- longer-lasting than anti-corrosion coatings
- less expensive than stainless steel drives
- suitable for wash-down

Company background

NORD DRIVESYSTEMS develops, produces and sells drive technologies with around 3,400 employees, and is one of the international leaders in the industry. In addition to standard drives, NORD supplies application-specific concepts and solutions,

even for special applications, for example with energy-saving drives or explosion-protected systems. Gross sales amounted to approx. EUR 540 mn in the 2015 business year. The company founded in 1965 now has over 36 subsidiaries worldwide. The closely meshed sales and service network ensures optimum availability for short delivery times and customer-oriented services. NORD produces a wide variety of drive units for torques from 10 to 200,000 Nm, electric motors with powers from 0.12 kW to 1,000 kW as well as the necessary power electronics in the form of frequency inverters and servo controllers. Inverter solutions are available for classical installations in the switch cabinet and for decentralised and fully integrated drive units.

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Singapore Researchers Create Probiotic Beer



Researchers from the National University of Singapore (NUS) have created sour beer that incorporates the probiotic strain *Lactobacillus paracasei* L26.

The strain was first isolated from human intestines and has the ability to neutralise toxins and viruses, as well as regulate the immune system.

The idea of producing a probiotic beer was first mooted by Chan Mei Zhi Alcine, a fourth-year student from the Food Science and Technology Programme under the NUS Faculty of Science, who consumes dairy-based probiotic beverages daily.

“While good bacteria are often present in food that have been fermented, there are currently no beers in the market that contain probiotics,” said Chan.

“Developing sufficient counts of live probiotics in beer is a challenging feat as beers contain hop acids that prevent the growth and survival of probiotics.”

Studies have shown that consuming food and beverages with live counts of probiotics are more effective in delivering health effects than eating those with inactive probiotics. Currently, the recommendation by the International Scientific Association for Probiotics and Prebiotics is to have a minimum of 1 billion probiotics per serving in order to attain the maximum health benefits.

Under the supervision of Associate Professor Liu Shao Quan from the NUS Food Science and Technology Programme, Chan took about nine months to come up with an ideal recipe that achieves the optimal count of live probiotics in the beer.

By propagating the probiotic and yeast in pure cultures, and modifying conventional brewing and fermentation processes, she managed to increase and maintain the live counts of the strain of probiotic.

“For this beer, we used a lactic acid bacterium as a probiotic micro-organism,” said Chan.

“It will utilise sugars present in the wort to produce sour-tasting lactic acid, resulting in a beer with sharp and tart flavours.”

“The final product, which takes around a month to brew, has an alcohol content of about 3.5%.”

The NUS research team has filed a patent to protect the recipe for brewing the probiotic sour beer.

Looking ahead, Assoc Prof Liu and Miss Chan are keen to collaborate with industry partners to introduce the beer to consumers.

Hygienic Design for Standard Parts

Elesa+Ganter develops sealed standard stainless steel elements that meet stringent hygiene requirements.

Maximum hygiene is one of the absolutely basic prerequisites wherever food is produced. However, hygiene also plays a major role in other sectors — from medical technology and the pharmaceutical industry to manufacturers of dispersion paints. Today, it is all about producing products without preservative additives — and this is only possible in production environments which have high purity levels. Since even the tiniest weakpoints can cause entire production lines to be contaminated, Elesa+Ganter decided to develop a special series of standard parts that meet the very high EHEDG requirements and the 3-A Sanitary Standard.

Elesa+Ganter offers a variety of knobs, handles, clamping levers, leveling feet and

screws under the label “Hygienic Design”, all of which are optimized for minimal contamination and easy cleaning. Stainless steel — with either ground or polished surfaces — is the material used in all of these cases. The maximum surface roughness is kept below Ra 0.8 µm, so that dirt particles cannot adhere and can be reliably removed during cleaning.

Another key feature of the Elesa+Ganter standard parts is their freedom from “dead space”. There are no interior areas in which substances can accumulate. A hygienically safe sealing concept, verified by software simulation, guarantees that the FDA-compliant elastomer seals are all installed flush with the surface and fulfill their function in the long term. This prevents problems



from developing without being noticed. At first glance, most standard parts appear to be located far away from the actual work areas, but airborne spores from microorganisms can spread rapidly and widely.

To prevent damage to the surfaces during assembly, tools with special protective inserts must be used. Elesa+Ganter provide information regarding suitable cleaning procedures in the enclosed instructions. Standard parts in the “Hygienic Design” line of products reduce cleaning effort; they are easier, and most of all, faster to clean due to the “clean in place” concept, which allows a system to be operated more cost-effectively in the long term.

Find out more at www.elsa-ganter.com

PRESSBOX

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pH. Meter



Abbe Refractometer



Abbe Refractometer (with Imported Optics)



Butyro Refractometer



Infra Red Moisture Balance



Leak Test Apparatus To Check Leak in Pouches



Bulk Density Apparatus



Automatic Autoclave (Vertical)



Autoclave (Horizontal)



Automatic Bomb Calorimeter



Digital Bomb Calorimeter



High Speed Fumigator (Aerosol Disinfector)



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De-humidifier



Air Curtain



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Lab Incubator



Lab Oven



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Muffle Furnace



Bursting Strength Tester



Vacuum oven



Vacuum Pump



Lypholizer / Freeze Dryer



Karl Fischer Titrator



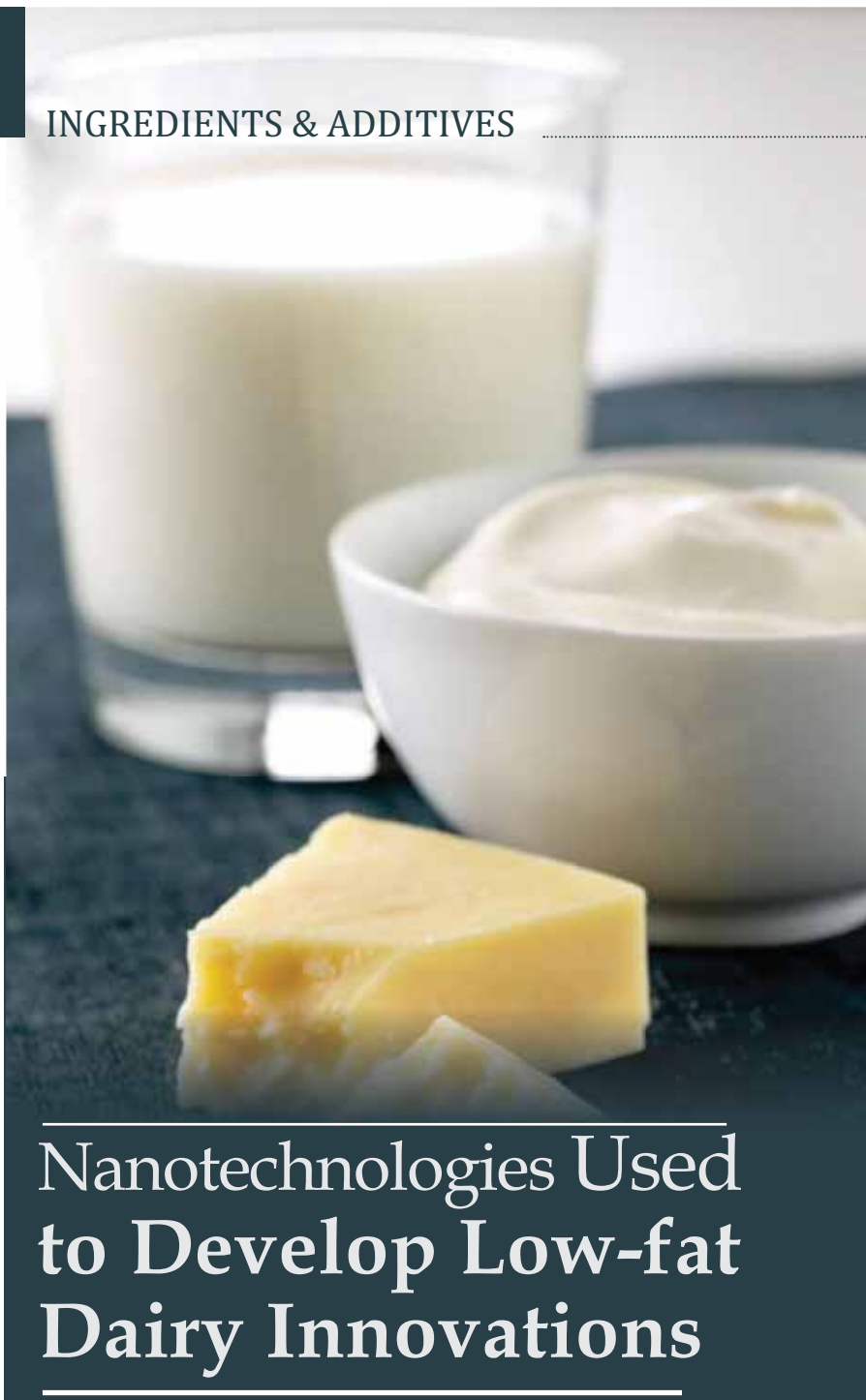
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Nanotechnologies Used to Develop Low-fat Dairy Innovations

Pioneering research into how small fat globule sizes affect the stability of cream and the spreadability of butter is being conducted in Australia where nanoemulsion technologies are being adapted for dairy innovations. And the results could lead to low-fat cream that is easier to whip and cold butter that is much easier to spread, as well as dairy cream powders that can be tailored for a range of products from milk to cheese to yogurts.

According to a research team led by Professor Bhesh Bhandari of the The University of Queensland's School of Agriculture and Food Sciences, the solution is all about fat globule sizes.

Professor Bhandari, also of the Australian Research Council (ARC) Dairy Innovation Hub, is pioneering techniques to create innovative dairy products with relatively small capital investment.

"Fat globules in milk came in various sizes, with each size class able to be used to improve specific dairy products," Professor Bhandari said.

"Our latest findings reveal that small fat globules impart an amazing stability to cream and give cold butter softer texture and improved spreadability."

Professor Bhandari and his team

are exploiting technologies such as nanoemulsions (emulsified oil and water systems with droplets ranging in the billionths of a meter), which are gaining popularity in the pharmaceutical industry.

"The benefit of using the existing dairy equipment is that it can be readily applied to the dairy industry with some modifications," he said.

"We expect this innovative approach can be used to increase the whippability of low-fat cream and to manufacture functional cream powder for use in recombined liquid milk, cheese, yogurt and butter making."

"This will help in introducing further desirable properties in low-fat butter or fat spreads," he added. "We can't wait to learn about consumer responses to the taste and flavor of nano-sized butter in the later stages of the project."

ARC Dairy Innovation Hub director Associate Professor Sally Gras said the capabilities developed by the nanoemulsions team had the potential to allow production of innovative dairy ingredients, providing the Australian industry with a competitive advantage.

"This is a great outcome for the dairy industry, as these innovations could boost the sale of dairy fat products, potentially increasing the return on investment to dairy manufacturers," she said.

The Nanoemulsion team at UQ includes Professor Bhandari, Dr. Nidhi Bansal, Dr. Sangeeta Prakash, Dr. Tuyen Truong, Mr Dhungana and Mr Panchal, in partnership with The University of Melbourne researchers and dairy manufacturing companies.

The studies are published in the Innovative Food Science and Emerging Technologies and Food Research International Journals.

The work builds on a previous UQ project funded by Dairy Innovation Australia Limited (DIAL), where dairy nanoemulsions were revealed to have unique physical characteristics.



Annapoorna World of Food India 2017: India's leading B2B trade fair for food & beverage trade

The Indian food and beverage market continues to grow, and the same can be said for the Annapoorna World of Food India trade fair, which will be held from 14th to 16th September 2017 in Mumbai. More than 180 Companies from across the globe, including pavilions from European Union, Korea, Poland, Turkey will be displaying their food and beverage products.

As a central business platform, the trade fair will promote contacts between future business partners and serve as a forum where participants can share information and know-how across food and beverage sectors. The annual trade fair Annapoorna World of Food India is organized jointly by Koelnmesse YA Tradefair Pvt Ltd., the Indian subsidiary of Koelnmesse GmbH, Germany, the organizers of ANUGA – the global platform for food & drink industry and the Federation of Indian Chambers of Commerce and Industry (FICCI).

In addition to country pavilions, few of the other major attraction in the current edition of the trade fair are:

- The European Pavilion being organized to promote their concept "Enjoy its from Europe", where European specialised food and drinks will be demonstrated by manufacturers from across Europe
- Korean Group participation where in food & beverage manufacturers from Korea will be displaying their products looking for trade partners
- Polish Group participation where in food & beverage manufacturers from Poland will be displaying their products looking for trade partners
- Turkish Group participation where in food & beverage manufacturers from Turkey will be displaying their products looking for trade partners
- From India, DIPP for the first time will organize a pavilion at Annapoorna
- State Pavilion from Chattisgarh, Jharkhand, Kerala, Odisha will also be an attraction at the current edition of the exhibition
- One Day conference and CEO Round Table

meeting conference being organized by RAI (Retailers Association of India)

- Seminar on Food Regulations and Growing Opportunities in Indian Food Processing Industry by FICCI on 14th September 2017
- Annapoorna Food Retail Awards – an attempt to recognize companies / individuals for their contribution to the Indian Retail Industry
- Live cooking sessions by reputed chefs
- Wine tasting sessions

The product spectrum at the fair ranges from basic foodstuffs, processed food and beverages, convenience products, meat and fish to frozen food products, alcoholic and non-alcoholic drinks, dairy products, bakery

goods, fruit and vegetables, and lots more.

On the one hand, this trade fair is interesting for purchasers from all sales channels, such as the wholesale and retail trade, importers and trading companies to directly interact with the manufacturers who are looking for trade partners and on the other hand, the fair also addresses the requirements for the catering companies, hotels, resorts, restaurants and QSR's.

For more information please visit: www.worldoffoodindia.com
Or Contact:

Mukhtar Pathan, m.pathan@koelnmesse-india.com
Sandeep Kumar, s.kumar@koelnmesse-india.com
Annapoorna – World of Food India will take place in Hall 5 of the Bombay Exhibition Center, Goregaon East, Mumbai, India and is open for trade visitors only.



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Fish Oils

Fish oil can be obtained from eating fish or by taking supplements. Fish that are especially rich in the beneficial oils known as omega-3 fatty acids include mackerel, herring, tuna, salmon, cod liver, whale blubber, and seal blubber. Two of the most important omega-3 fatty acids contained in fish oil are eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

EPA and DHA are often cited as being the beneficial components of fish oil. EPA and DHA actually originate in algae, which is the base of the food chain for fish. Fish consume these algae and thus concentrate high amounts of the beneficial fats.

Individuals who consume a high amount of fatty fish in their diet tend not to need to supplement with fish oil capsules as much or as often. However, you should remember that many fish varieties do contain higher levels of mercury, which also needs to be monitored in the human body. If these levels of mercury get too high, that can cause problems too, so it's vital that you keep a good balance. Fish oil capsules, along with fatty fish on occasion, will be the best way to meet your needs safely.

Fish oil supplements offer a wide variety of benefits. Here are few important ones you should know about.

- **Healthy Cholesterol Level Support**

Supplementing with fish oil may support a healthy blood cholesterol profile already within a normal range. Adding 3-6 grams of fish oil a day can help promote healthy ratios of HDL to LDL, as well as healthy levels of triacylglycerol concentrations in the body when they are already in healthy range.

If you can start using fish oil, as well as eating a diet that is rich in fresh fruits and vegetables, you will support overall health and well-being.

- **Heart benefits**

Omega-3 fatty acids found in fish oils may protect the heart from mental stress. A study published in the

American Journal of Physiology revealed that people who took fish oil supplements for longer than 1 month had improved cardiovascular function during mentally stressful tests.

- **Bone Health Support**

As you grow older, especially in the case of women who are entering the menopausal years and who no longer have the standard estrogen and progesterone hormone levels, the bones may begin to thin, which then sets you up to experience osteoporosis.

Studies have looked at the implications of long-chain polyunsaturated fatty acid intakes on the bone density and calcium balance in menopausal women, and have found that those who do take in higher levels of fatty acids may help support healthy bones.

The best way to support your overall bone health is to make sure you're getting enough calcium in your diet regularly. After that's been looked after, it would be a very smart move to start paying attention to your fish-oil consumption.

It's important to make sure you're getting a good ratio of omega-3 to omega-6 fatty acids, though. Consuming too much omega-6 and too little omega-3 can actually put you at a higher risk for a lower bone-mineral density.

- **Protection from vision loss**

Adequate dietary consumption of DHA protects people from age-related vision loss, Canadian researchers reported in the journal *Investigative Ophthalmology & Visual Science*.

- **Benefits for the fetus**

Omega-3 consumption may help boost fetal cognitive and motor development.

In a study published in 2008, scientists found that omega-3 consumption by the mother during the last 3 months of pregnancy improved the baby's sensory, cognitive, and motor development.

- **Mood Support**

Research has indicated that including fish oil in your diet on a regular basis may offer mood support.

The diets of many people are so filled with processed foods that there isn't enough quality nutrition coming in to support a healthy system. This only adds to the stress build-up that may exacerbate mood disorders such as depression and anxiety.

Fish oil consumption helps support the levels of serotonin in the body, which is often termed the "feel-good" hormone. You'll typically reap the benefits of serotonin after eating a carbohydrate-heavy meal, which is what puts you in a relaxed and peaceful state. For this reason, individuals typically crave high-carbohydrate foods when they are stressed.

By supplementing with fish oil, you will naturally support your own serotonin release in the body, which may help manage stress.

Possible Side Effects of Fish Oil

With any supplementation arise possible side effects. Fish oil side effects when taken in very high dosages have shown to cause bleeding because certain fishes are more environmentally contaminated than others; like tuna. Therefore epa dha side effects would also mean the same and can also cause inflammation in case of an overdose. Do remember to supplement within the correct dosages.

Conclusion

As you can see, fish oil supplements offer a variety of benefits. Fish oil isn't necessarily going to help you build muscle at an accelerated pace directly, but indirectly it will help support the quality of your workouts. Most importantly, supplementing with fish oil will enhance your overall health, which is key to pursuing workouts over a longer period of time.

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Expansion of Probiotics Facility Strengthens DuPont's Position as Leader in Probiotics Production

New enhancements increase capability for rapidly developing and commercializing new probiotics with decreased time to market

NEW CENTURY, Kan., August 17, 2017 –DuPont Nutrition & Health (DuPont) has announced a substantial upgrade to its probiotics pilot facility in Madison, Wisconsin. The \$10 million investment strengthens and emboldens DuPont's current impressive position as a leader in the probiotics industry, allowing for increased pace of new product development and significantly improved delivery times on pilot material for clinical trials and customer evaluations.

Construction on the Madison probiotics pilot area, completed in phases over the last six months, provides increased capacity and speed for new product development. This in

DuPont Nutrition & Health combines in-depth knowledge of food and nutrition with current research and expert science to deliver unmatched value to the food, beverage and dietary supplement industries

turn improves overall scale up capability and a more seamless transition to commercial scale production.

"Given the explosive rise in demand for probiotics products all around the globe, this project allows us to aggressively

pursue our goal to be the No. 1 probiotics supplier in the world," said DuPont Nutrition & Health President Matthias Heinzel. "These expansion efforts show our commitment to becoming bigger and stronger with our capability to meet demand, and our facilities, and qualified staff to handle the significant growth we foresee in this sector."

The pilot area features new, state-of-the-art equipment, data collection, laboratories, instrumentation and specialized work space for probiotic development and scale up. The upgrades that quadrupled the pilot area have already increased bandwidth to simultaneously run more development projects while improving scale up efficiency and time to market.

"With all the enhancements, we are better able to meet customer demand for new probiotics at a much faster pace," said Kurt Fenster, BioProcess Development group manager, Culture Manufacturing Technology at DuPont Nutrition & Health. "Moving forward, we expect to substantially increase our speed to deliver products to customers."

DuPont Nutrition & Health combines in-depth knowledge of food and nutrition with current research and expert science to deliver unmatched value to the food, beverage and dietary supplement industries. We are innovative solvers, drawing on deep consumer insights and a broad product portfolio to help our customers turn challenges into high-value business opportunities. More information is available at www.food.dupont.com.

DuPont (NYSE: DD) has been bringing world-class science and engineering to the global marketplace in the form of innovative products, materials and services since 1802. The company believes that by collaborating with customers, governments, NGOs, and thought leaders we can help find solutions to such global challenges as providing enough healthy food for people everywhere, decreasing dependence on fossil fuels, and protecting life and the environment. For additional information about DuPont and its commitment to inclusive innovation, please visit www.dupont.com.



WATER TODAY'S WATER EXPO 2018

12th Edition

8TH, 9TH & 10TH February 2018
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Toxins and Contaminants in Indian Food Products

The book, "Toxins and Contaminants in Indian Food Products" authored by Ramesh Kumar Sharma and Salvatore Parisi, is an excellent piece of work that stands apart from numerous books written on the subject. It is an exploratory description at how the wide usage of synthetic insecticides and pesticides is gradually eroding consumer market for Indian food products globally. The book authored by Ramesh Kumar Sharma, an eminent writer and outstanding researcher who has been associated with the food industry particularly edible oil industry as Quality Control Chemist for over three decades, and Salvatore Parisi, another illustrious researcher and Editor of Springer Briefs in Chemistry series, very aptly delineates various toxins prevailing in food products in India, including the aflatoxins, their consumption and suggests several measures through organic and herbal farming practices.

The book brings out valuable content on one of the most prominent crisis and health hazard adversely impacting the Indian food industry. The authors maintain an optimal balance of theoretical concepts with industrial practices relating to food contamination taking into consideration international market constraints in the food industry.

The book has an interesting framework consisting of five chapters dealing in areas like an in depth knowledge on toxins, a thorough understanding of aflatoxins, how spices and herbs can be treated as drugs in respect of toxin contamination cases existing in the food industry of India, the various scopes and advantages of organic and herbal farming practices that could help Indian food industry tackle the challenges set from food contamination and the legal frame work set by national and international bodies to provide healthy and safe food to human beings.

Authors begin with the fundamental on

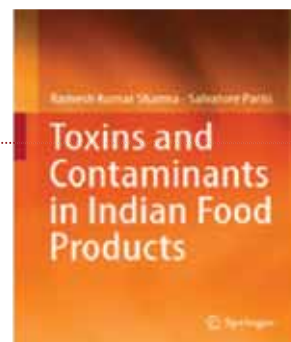
how insecticides and pesticides impact the human lifestyle. Various laws set for restricting pesticide usage however negatively impact the professionals working in this industry on the economic front. The book reflects upon the concept of aflatoxins, their chemical structures, toxicity extent and how they affect human life and environment.

India is traditionally known worldwide for its spices and herbs which are still facing a dilemma of whether these can be treated as a normal food or as a medicinal drug. Though known for their medicinal values, certain measures need to be adopted in their usage so as to get their permanent beneficial results.

A tried and tested formula for fighting contamination issues is depicted through increasing practice of herbal and organic farming. Various advantages of organic farming are clearly elaborated along with its contribution to maintain environmental balance including enriching soil fertility. However there are several issues particularly prolonged vast deforestation and disproportionately excessive land use in farming, which restrict India to undertake organic farming on large scale.

No matter how stringent laws are implemented in respect to Indian farming yet they often fail to meet the European standards due to presence of high intensity of chemicals found in Indian food products, which are considered as detrimental to health by quality assurance institutions abroad. The authors also highlighted ethical and moral values which are crucial to preserve the environment - forests, pastures, biodiversity - and humanity in a long run rather than saving mere farmers' harvest in the short run scenario leading to Indian food industry players losing out a majority of business overseas.

The book comes at a crucial juncture of crisis faced by Indian farmers. On one hand to sustain their own livelihood, Indian



Authors: Ramesh Kumar Sharma and Salvatore Parisi,
 Publisher: Springer Publications,
 Gewerbstrasse 11, 6330, Switzerland,
 2017. 65pp.
 ISBN 978-3-319-48047-3.



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farmers often indulge in usage of artificial pesticides and insecticides for protecting their harvest in a cost efficient manner and at the same time putting humanity to severe diseases.

The book is highly useful and would serve as a ready-reckoner for its readers about various chemicals and the toxicity extent of the most commonly found insecticides, how they cause various diseases in human beings and the cure by reverting back to age old Indian traditions of farming renamed nowadays as organic and bio-farming (Jaivik Krushi). Agriculturists and researchers can refer to this book for information on safe agricultural and food practices. This book provides highly valuable insights into an area that has been unexplored by most practitioners and academicians alike.

INTERNATIONAL EXHIBITION FOR THE FLAVOURS & FRAGRANCES INDUSTRY



MUMBAI
16 & 17 February, 2018

BOMBAY EXHIBITION CENTRE
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India Warehousing Show celebrated another successful year! Covering every facet of warehousing and supply chain industry, the 7th edition of India Warehousing Show welcomed over 8448 visitors, an unprecedented increase from 2016 and displayed over 200 exclusive exhibitors. The array of exhibitor brought the best of industry manufacturing & servicing within the warehousing, material handling and supply chain industry, all under one roof from 27-29 July 2017, Pragati Maidan, New Delhi. This dynamic fusion of participation was the perfect platform for invaluable exchanges of business and creative insights at the highest levels.

Officially inaugurated by eminent industry leaders, the 3-day event was jam packed with relevant and focused seminars, keynote speakers and access to some of today's most cutting-edge technologies. Its refined profile with six clearly defined dimensions Warehousing, Material Handling, Storage, Automation, Logistics and Supply Chain went down well with exhibitors and visitors alike – this meant exhibitors were positioned in their optimum segments while visitors conveniently found the suppliers they needed according to area of interest.

Impressions from the Show floor

Spread over an area of 7000 sqm. This year the show became even more international, with an increase of 20% in foreign visitors. 12 countries were represented on the visitor's side. These statistics set a new record, and testify to the growing interest that the show is generating among professionals directly involved in warehousing, logistics and supply chain industry.

Brands from around the world flocked to the show. With 200+ exhibitors, including 50 new exhibitors from 11 nations like Germany, UK, UAE, China & Italy etc. reported unanimously excellent contacts and business deals. This year, technology seemed to be in forefront for many exhibitors. Exhibitors presented exciting and progressive waves of innovation from robotics to Virtual Reality levels of the warehousing industry. Emerging trends were not only embracing newness but also focusing on future trends.

Investment Talk Workshop

The Investment Talk – an open workshop



India Warehousing Show 2017 Concludes with Resounding Success...



one-hour seminar on 28 July, gathered a big chunk of professionals looking for investment opportunities available in the industry. The theme of the event was - How are Investors get investments to expand their warehousing, logistics & supply business? The eminent speakers Mr. Sumit Dhanuka from Precog Innovations and Mr. Sanjay Bansal from Aurum Equity answered all the questions put by the attendees. It ended-up very well with question and answer sessions from the audience.

Informative Conference Programme

Warehousing Leadership Summit, 2-day conference programme, constituted as a true "show within the show", bringing together the full gamut of know-how and expertise with more than 150 delegates and 50 speakers from leading companies like TVS Logistics, Bharti Corporation, Asian Paints, Abbott India, Nippon Express, Adidas India, Ecom Express, Morgan Stanley and many more. The profile includes Country Head, Directors, CEOs, VPs & Senior Managers.

Business Matchmaking & VIP Buyers Programme

The new focused segments were business-match making and VIP buyer's programme, which was an added success in the show. It received more than 612 pre-schedule appointments

This edition also had three-featured zones –

Automation for Logistics, Supply Chain Zone and Packaging for Logistics.

The Key Sponsors and Supporting Associations

The key sponsors and supporters were Foundation Partner – IndoSpace; VIP Partner – Embassy Industrial Parks; Gold Partner – Gandhi Automations; MHE Partner – Nido Machineries; Silver Partner – Kelly and CRWC Logistics Solution; 3PL Partner – Aaj Enterprises; Supply Chain Partner – Safexpress; Technology Partner – Honeywell, Delegate Kit Partner – AurionPro; E-Comm Technology Partner – Anchanto along with various industry associations including National Small Industries Corporation Limited (NSIC); AIDC Technologies Association of India; Indian Private Ports & Terminals Association (IPPTA); Federation of Indian Export Organisations (Western Region) (FIEO); Association of Multimodal Transport Operators of India (AMTOI); Jalgaon Industries Association (JINDA); Supply Chain & Logistics Group (SCLG); The Chartered Institute of logistics & Transport.

It also hosted 40+ media partners, which covered the show in a very efficient way.

Look forward to see you in the next edition of India Warehousing Show 2018 on 21-22-23 June 2018, Pragati Maidan, New Delhi. Show Website www.indiawarehousingshow.com SEE YOU IN IWS2018!

**WATER TODAY'S
WATER EXPO 2018
REDEFINING WATER EXHIBITIONS IN SOUTH ASIA
8-10 February 2018,
Chennai Trade Centre, Nandambakkam, Chennai**



WATER EXPO 2018 is the industry event of the year to showcase the technologies that will address your most concerning challenges in the water & wastewater industry today.

Warm greetings from Water Today!

Water Today is delighted to announce the 12th Edition of WATER EXPO 2018 scheduled on 8th, 9th & 10th February 2018 at Chennai Trade Centre, Nandambakkam, Chennai. WATER EXPO 2018 is the Largest & Premium Annual WATER Exhibition of the year with the wide array of choices for networking with industry stalwarts and narrow the gap by providing a proactive platform for the Water industry to converge and work together in achieving solutions to global water problems.

The three-day event guarantees to get connected with engineers, scientists, managers, CEOs, COOs, MDs and government officials responsible for municipal and industrial wastewater collection and treatment systems, drinking water treatment, groundwater protection and remediation programs, storm water management, and surface water quality and ecology management.

The event promises non-stop activities and interactions with industry experts, extending business opportunities and the exchange of ideas among professionals in the field. WATER EXPO 2018 comprises of Conference, Workshop and Exhibition showcasing cutting-edge technologies and services available for managing water and wastewater. Participants will have exceptional opportunities to get a first-hand look at diverse technologies and solutions presented by a myriad of experts.

Concurrently, WATMAN 2018 - 12th Annual International Conference will be focused on "The Latest Technologies in the Water & Wastewater Management That Address Current Challenges in the Industry" on 9th & 10th February 2018."

SHOW INFORMATION

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| EDITION | 12TH EDITION |
| SPACE | 12,000* SQ. MT. |
| TOTAL ATTENDANCE* | 25,000* |
| NUMBER OF EXHIBITORS & CO-EXHIBITORS* | 425* |
| OPENING HOURS | DAY 1 ENTRY FREE 10.00 AM – 6.00 PM |
| DAY 2 & 3 BUSINESS HOUR | 10.00 AM – 6.00 PM |

CONCURRENT EVENTS

- RENEWABLE ENERGY EXPO 2018
- WATMAN 2018 International Conference
- Technical Workshops
- Business Networking Meetings
- Water Conclave – A Platform to deliver your commercial presentations

WATMAN 2018 INTERNATIONAL CONFERENCE

WATMAN International Conference Committee aims to address the latest trends & scenarios in the Water & Wastewater Industry. The 12th Edition will be focussing on "The Latest Technologies In The Water & Wastewater Management That Address Current Challenges In The Industry" on 9th & 10th February 2018.

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Nestlé India Introduces the New MAGGI NUTRI-LICIOUS Noodles Range

Nestlé India is delighted to introduce MAGGI NUTRI-LICIOUS noodles – a wholesome proposition targeted towards meal occasions with a focus on breakfast. The new range consists of four flavors – Atta Masala, Atta Mexicana, Oats Masala and Oats Herbs & Spices. All four variants offer wholesome nutrition and coupled with mouthwatering flavors, is in line with MAGGI ‘Simply Good’ initiative.

Talking about the launch, Mr. Maarten Geraets, General Manager, Foods, Nestlé India said, “We are building a new, a better, and an even stronger MAGGI brand driven by our purpose which is ‘enhancing quality of life and contributing

to a healthier future’. The launch of MAGGI NUTRI-LICIOUS noodles range is in continuation to our commitments towards MAGGI ‘Simply Good’ initiative. This range has nutrition at the heart of the product, offering consumers more of what they seek like Protein & Fibre. The Noodles are made with healthy grains like Oats & Atta.”

The iconic MAGGI brand is on a mission to support home cooking with healthier and tastier choices, by simplifying



ingredients, reducing sodium and increasing micronutrient fortification. The new NUTRI-LICIOUS range comes as a reaffirmation of our global commitments on nutrition, health and wellness as it is supplemented with the benefits of protein and fibre.

Safal launches India's First-ever Tender Jackfruit in Frozen Veg Format



Safal, the horticulture arm of Mother Dairy Fruit and Vegetable Pvt Ltd (MDFVPL) has launched tender jackfruit in the frozen vegetable format for consumers across Delhi and the National Capital Region (NCR). This is a first-of-its kind product in India.

The brand, credited with launching frozen peas for the first time in the country way back in 1991, is also expanding its convenient, ready-to-cook range with the introduction of Easy Onions (dehydrated onions) and besan.

The tender jackfruit is directly sourced from Jharkhand and is processed in Safal's recently-inaugurated unit in Ranchi, the capital of the eastern state, known for the cultivation of the fruit, which is of a superior quality and tasty. The frozen jackfruits are pre-cut, taking away the hassle of peeling and removing of latex, thus saving time.

While this ensures consistent quality and round-the-year availability of jackfruit for consumers, Safal also aims at providing access to new markets to its network of tribal farmers growing it.

Pradipta Kumar Sahoo, business head, Safal, Mother Dairy Fruit and Vegetable Pvt Ltd, said, Brand Safal has always endeavoured to offer products which are hygienic and nutritious and add convenience to cooking. In the space of fresh fruits and vegetables (F&V) in our country, there have been challenges of consistency in quality, availability, food safety and uniformity of pricing, he added.

Its newly-launched range will be available at all Safal F&V outlets, besides general retail and modern retail stores across Delhi and the NCR.

Hielo Beverages to Foray in Premium Water, Juice

Packaged water maker Hielo Beverages will foray in the mineral and sparkling water and nectar-based fruit juices under the brand name Peaur, company chief executive Piyush Mathur said. "There is high-potential demand for premium, specialised water. Sector growth is being fuelled by awareness, health consciousness and distribution penetration," Mathur said. The brand will seed the market in phases and compete with leading players in the premium specialised packaged water category such as Bisleri's Vedica and Tata's Himalayan, the company said.

Research Euromonitor has forecasted that

in the period between 2016-21, while bottled water will grow 19.8% by volume, it will grow 6.8% for carbonated drinks. In terms of value too, bottled water will grow 16.5%, which is more than three times that of carbonates which are estimated to grow 4.2% between 2016-21. Bottled water, however, is much smaller in absolute terms. "It is possible that more brands in still natural mineral drinking water will appear during the forecast period, with new launches expected in the fortified, functional bottled water space," Euromonitor said. The unavailability of clean drinking water, especially away from home, will continue to be a major growth driver during the forecast



period. Growing health awareness and the rising risk of waterborne diseases will also encourage growth in bottled water sales, the research firm added.

Innovative Foods Ltd Introduces Frozen Paratha Range Sumeru Classiques

Innovative Foods Ltd (IFL), a major player in the Indian food processing industry, which markets their frozen food range under the brand name Sumeru, has now unveiled Sumeru Classiques, a new line-up of frozen parathas. The new range of parathas includes Beetroot and Jeera Paratha, Turmeric and Ajwain Paratha, Methi and Spinach Paratha and Multigrain Paratha.

These parathas are easily available at grocery stores and are reasonably priced in the bracket of Rs 80-100 per pack of five. IFL has roped chef Ajay Chopra in as Sumeru's brand ambassador. He showcased the versatility of its frozen paratha range. Chopra also demonstrated a few tips and tricks for those looking to create quick homemade meals with frozen parathas.

"Parathas are a favourite across India, and with a little innovative thinking, they can easily be adapted to a variety of dishes," said the former MasterChef India judge.

"The growing acceptance of frozen food in India has pushed us out of our seats to think of new product solutions," said Saurabh Kumar, vice-president, sales and marketing, IFL.

"Providing convenience and versatility to consumers has been one of the core pillars on which our product portfolio stands, and our aim has been to enable consumers create restaurant-like meals at home," he added.

"Our new range of parathas are a delightful triangulated combination of taste, health and excitement," Kumar said.



"A lot of research has gone into making these new products," said Suraj Sharma, general manager, marketing, IFL.

"Be it the multigrain variant, or beetroot with jeera, or turmeric with ajwain, or methi with spinach, all these combinations have been developed keeping in mind the health factor along with the taste, which today's discerning consumer demands," he added.



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Mr. Mohammed Ather
(Managing Director)



ensure the processes are carried out in an organized manner. Quality controllers of our team conduct stringent checks on every product using advanced testing tools to ensure that it is free from all kinds of adulterants. By maintaining a level of transparency and following fair business policies, we have been able to strengthen our relations with our associated vendors.

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