

## bakery &amp; snacks



# Bakers use their loaf

**M**uch of the technology used by the bakery and snacks sectors has been tried and tested over many years, so machinery suppliers are having to 'think smart' to provide improvements to existing processes as well as meeting the demands of the environmental lobby.

Most advances are geared towards greater process control and the cost reductions generated by energy and material savings. One industry commentator speculated about the 'globalisation' of some products and the need for longer shelf life and more robust packaging. Currently bread exports from the UK are tiny at less than 2 per cent. But for snacks recent figures from the Food and Drink Federation (FDF) suggest something of a boom in exports of cakes, biscuits and cereals, some of which are classified as snacks. For example, biscuits up 15.3 per cent; cakes – 12 per cent (*full story MU July/August p7*).

The UK markets for both bread and bagged snacks still appear to be growing, despite rises in the cost of raw materials (up 100 per cent in some cases) and a severe economic downturn.

Estimates based on the latest figures from The Federation of Bakers suggest the bread market is worth over £3bn/year, with nine million loaves bought each week. Seventy per cent of this is white and 80 per cent is made by the big three, Allied Bakeries, Warburtons and British Bakeries.

Snacks are a more diverse marketplace. Figures for bagged snack consumption suggest the 2008 market was above £2.5bn, a growth approaching 30 per cent since 2003, and there are few signs of a slowdown.

In related areas such as pizzas, Mintel

says this market was worth £721m in 2008 and is set to grow by 5 per cent this year, with chilled and frozen products bought from the supermarket accounting for much of this growth.

## Lower heat

Baking is an energy intensive business, so the machine suppliers are looking to introduce shorter baking cycles, better process control and other features to reduce consumption between bakes. These include when the machine is at rest, and quicker and more efficient reheating to bring ovens up to the correct temperature. All this on a smaller footprint too!

An example of a recent baking process development is the use of an ultrasonic coating system for de-panning which uses a patented nozzle with high frequency sound to create atomised spray patterns with droplets as small as 18 microns. This reduces the amount of oil used in the process by as much as 45 per cent. The same system can be used to coat products to improve moisture barrier, shelf life and provide an antimicrobial coating, says the makers Sono-Tek

## More control

For wrappers, baggers, weighers and inspection equipment it is all about control. This is likely to be a continuing theme for the foreseeable future as the spotlight comes to rest on snack portion sizes, which need to be reduced according to a recent pronouncement from the FSA. Additionally end users are demanding better quality control at all stages and a greener approach to material use and product waste.

As the round-up on the following pages demonstrates machinery manufacturers are responding on all fronts. As well as improving accuracy, speed and material use (both ingredients and packaging) many are looking further ahead to provide innovative alternatives for the sector.

This may be a 'credit card' shaped, fruit filled snack extruder; a barcode on snacks which can be 'read' by a mobile phone to provide information about offers and product data; or a 'gentle' MAP flusher such as the Shelf Life Booster™ from manufacturers Hefestus, of Israel. The Booster is claimed to create gas savings, use 90 per cent less power and reduces oxygen residue to just 0.5 per cent.

New product development and formulation, and the continuing demands for smaller machines, better efficiencies and improved environmental impact will ensure machinery designers and makers are kept on their toes!



### FURTHER INFORMATION

[www.sono-tek.com](http://www.sono-tek.com)  
[www.hefestus-slb.com](http://www.hefestus-slb.com)

bakery & snacks - round-up



## Salty snacks

New research shows that people in some countries are being fed over twice as much salt in popular global brands as their counterparts elsewhere in the world.

World Action on Salt and Health (WASH) has surveyed over 260 food products available around the world from food manufacturers such as KFC, McDonalds, Kellogg's, Nestlé, Burger King and Subway. Not one product surveyed had the same salt content and some displayed huge differences from one country to another.

Kellogg's All Bran contains 2.15g of salt per 100g in Canada, but only 0.65g of salt per 100g just over the border in the US. All Bran for sale in the UK contains 1.13g of salt per 100g.

A Burger King Bacon Double Cheeseburger bought in Brazil contains 3.2g of salt, while one bought in the UK contains much less at 2.1g of salt per burger.

The UK generally has salt levels in the bottom half of the table for most products, reflecting the fact that salt has been a focus for public health in this country for several years. But despite this, the UK does not have the lowest salt content across the board, a Subway Club 6 inch sandwich contains 3.7g of salt, compared with just 2.0g of salt in the same product in Finland. [www.worldactiononsalt.com](http://www.worldactiononsalt.com)

# Intelligent lock-out

Guarding and safety panel manufacturer Troax (UK) has introduced an intelligent locking system designed to create a safe working environment by providing controlled access to automated machinery, such as packaging equipment in the food, bakery and snacks sectors.

Unlike conventional locks, the Safe Lock 4 x 4i uses the latest technology to enable the lock to monitor itself constantly to provide the highest level of security, making incorrect or unauthorised usage virtually impossible.

Its components communicate using unique codes while the locking device is monitored using a coded transponder which monitors the position of the door and the locking device. The catch is guarded by a photocell.

The lock can also make other checks to ensure the locking pin's position is correct, before it

approves the machine inside the guarded area for start up. A simple push button provides access.

Safe Lock 4 x 4i can be fitted to both right and left-hand opening doors, as well as to poorly aligned doors. The inside of the door is fitted with an escape handle for use in an emergency.

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## Detection is a piece of cake!

Leading cake bakery, Devonvale has installed a bespoke metal detector from S+S Inspection to check each cake at the end of the packing line. This eliminates any risk of metal contamination being introduced after inspection, says S+S.

A problem was the restricted, metal free space available between the labelling station and the packing line where the metal detector had to be located. Conventional equipment was too big, but the S+S VARICON-D in-line metal detection system was engineered to fit.

Installed next to the labelling machine it halts

the conveyor if metal is detected in any cake, allowing its removal. Despite the tight space the length of the out feed conveyor was extended to facilitate removal of rejected product without loss of performance. The system can be moved to other locations within the production unit.

Keith Upham, director of Devonvale Bakery, commented, "Our products now meet the stringent quality assurance levels demanded by the major supermarkets."

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## Creating greener sandwich packs

Green Planet Carton Converting Company says more and more consumers are selecting sandwiches in packaging made from environmentally-friendly and sustainable materials.

The company has just delivered its 10 millionth fully biodegradable cartonboard sandwich pack with PLA window.

It uses special carton erectors with bespoke parts to manufacture the pack to suit the designs of individual customers. These are fitted with Robatech hot melt units for the adhesive application system to provide trouble free

application with long unit life, says Green Planet. BAMFutura 1, a non-tainting hot melt adhesive from Beardow Adams, is used to bond the flaps.

Neil Woodrow, sales director at Robatech, said "We needed to select an adhesive that would give clean machining and guaranteed bond performance. Once the sandwiches are inserted in the box and sealed, the sandwich has to remain fresh in chill store for up to three days. A 100 per cent bond is therefore crucial."

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# Eco-friendly oven

Oven manufacturer Tom Chandley has launched a more environmentally focused rack oven, which has been enhanced to help the user save energy, the company claims.

It has reduced the connected load compared with a conventional oven from 39kW to 33kW. The 'Eco' rack has also been modified to incorporate more insulation and a deeper door, both increased by 50mm, reducing heat loss dramatically, says Chandley.

Another feature of the new 'Eco' is a new colour turbo controller with a built in 24-hour clock. This has a sensor which puts the oven into a 'sleep mode' if it sees no action for a period of time. For

example, the user can set the sleep mode temperature to 50° below the bake temperature. This avoids wasting energy and means the oven is constantly on stand-by and can be brought back to bake temperature when required. The oven can also be switched off – an option favoured by supermarkets.

In addition the oven incorporates a steam system requiring no drainage. The steam system is balanced to ensure that no excess water is injected into it and, therefore, no waste water produced, says Chandley.

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## Scorpion provides vision

Scorpion Vision Systems, a BARA member and part of the Tordivel Group, based in Oslo, has developed an optical inspection system designed specifically for bakeries. Based on its Scorpion Vision Software, a series of cameras are used by the system to build a 3D profile of the product as it leaves the oven.

Paul Wilson, Scorpion's sales director, explains, "This new system builds a mathematical model of the baked product in real time. A product can be diverted off the production line if it does not meet certain tolerances such as colour, height, width or

shape." Designed initially for a pizza factory it can be retrofitted to bakery lines and can cater for most types of baked products, both large and small, says Wilson.

Rated to IP67, the system is economically priced as it uses standard 'off the shelf' components, says Scorpion. For example, the image acquisition is completed by Basler Gigabit Ethernet Linescan cameras, using industry standard GigE drivers and protocols.

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## Muffin man chooses Tekpak

Tekpak has designed and manufactured a complete packaging system for a supplier of cakes and muffins to some of the UK's major retailers. The customer wished to reduce labour, increase throughput and reduce packaging costs.

The line comprises: a system to automatically distribute products from the discharge of the continuous oven; a servo-driven flow-wrapper adapted in stainless steel, which incorporates a twin head labeller for high speed requirements; a dispenser to automatically apply toppings to cakes; and an automatic lid closing device.

Previously the products were removed from the line and stored for cooling on wire trays then manually batch fed into the downstream packaging line and placed into acetate trays. A high speed



robotic loader capable of speeds up to 500 products/minute is planned, says Tekpak.

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## BAKERY & SNACK FACTS

- A consultation paper issued by the **Food Standards Agency** (FSA) says plain, sweet and savoury biscuits, and cakes and pasties should have saturated fat levels reduced by 10 per cent on 2008 levels by 2010; and non-plain biscuits by 5 per cent. Doughnuts and other fried buns should switch to non-saturated fat frying oils where possible.

Stakeholders have until November this year to comment on the proposals, which are due for publication shortly thereafter.

Recommendations are also planned for savoury snack products and will be published in 2010.

The FSA is also urging companies to make the size of snack and confectionery bars considerably smaller. Currently these are around 58g. The agency wants to see a reduction to at least 50g and 40g in some cases.

The Food & Drink Federation said they were disappointed by continued moves to set 'arbitrary targets'.

[www.food.gov.uk](http://www.food.gov.uk)  
[www.fdf.org.uk](http://www.fdf.org.uk)

- **The French** food agency AFSSA says that national bread consumption declined by 7 per cent between 2005 and 2007 and in the same period sales of croissant and pastries also fell by 13 per cent. This was offset by a rise in purchases of ice cream, 32 per cent and chocolate, 58 per cent.  
[www.afssa.fr](http://www.afssa.fr)

bakery & snacks - round-up

SIDELINES

UPM Conveyors has supplied 10 of its all plastic Ultra High Molecular Weight Polyethylene belt conveyors as part of a £150,000 order from a major multi-national snack manufacturer.

Conveyors have hinged polycarbonate covers mounted onto grade 304 stainless steel support frames to form part of a total system meeting IP65 washdown rating.

It incorporates barcode reading of boxed snacks which are then automatically assigned to designated areas within the factory, controlled from a Siemens PLC.

All software was written in-house by UPM to integrate with Datalinx Warehouse Management and SCADA Business Systems.

The conveyors, constructed in blue for side members and white for belts to match the customer's house colours, comply with the new Food Regulations and have FDA certificated approval for food contact.

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Cremer, of the Netherlands, says a recent UK application for one of its TQ range of counters, for flow-wrapped mini-cakes, has an infeed of 900 products/minute and a count of 15 giving a counted discharge output of 60/minute.

The product, like many snacks, has a variable bulk density so using weigh feeders as counters could not guarantee count accuracy.

The system has a low level bulk hopper with a reversing belt to ensure the flow-wrappers can continue running for a good period of time if there is a stoppage up-stream.

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# Wire Belt on the grid

Wire Belt Company has developed the Compact Grid™ conveyor belt designed specifically to handle smaller, more delicate products. And the lower mass, open-mesh belt is suitable for high speed processing operations.

To be given its debut at the bakery technology exhibition – IBA 2009 (Dusseldorf October 3-10 2009) – the conveyor is engineered with a 70 per cent open surface area. Its Compact Grid™ provides high performance for processes in which product coating, drainage, and liquid or air circulation are factors. In a recent test it had a five times greater flow through than the average plastic modular belt, claims the company.

The flow through capabilities will reduce the time required to heat or cool a product, therefore reducing energy costs, states Wire Belt. An increased open area combined with the improved

flow-through, will enable easier and more thorough cleaning and sanitation of the processor's conveyor systems.

Water resource management, and minimised use of cleaning agents entering and chemical waste streams will result it says.

In addition the company now offers new Slim-Profile Sprockets™, designed exclusively for Compact Grid™ conveyor belts. These sprockets are an alternative solution for driving the belts, offering less mass than standard drive components. Slim-Profile Sprockets have less material, which means the conveyor won't work as hard to keep the process moving, says Wire Belt. Available in stainless steel or polyacetal plastic, they are easy to install on the drive setup.

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# Slim detector for snacks

Fortress Technology has recently installed two of its compact VERTEX metal detectors at snack food maker Mana Y.A., of Israel, with orders for further units set to follow.

Chosen for their ultra slim design both in line detectors have been installed within an extremely narrow space at Mana's production facility located in Beit Shemesh, where they are inspecting a variety of free flowing snack products prior to final packaging.

VERTEX was designed for production environments where space is restricted and standard conveyor-based systems would not fit. Despite its greatly reduced frame the unit achieves the same sensitivity levels as the company's other Phantom-branded models, says the company.

Typically located between a multihead weigher and a vertical form fill seal machine, product is gravity fed through the detector's aperture before being sealed in a pouch by a bagger.

The machine uses the latest digital signal processing technology to inspect freefalling product at high speeds and is capable of detecting small ferrous and non-ferrous metal contaminants including pieces of wire, shavings and swarf.

It is particularly suited for metallised film applications, as raw product inspection yields higher sensitivity levels than the limited

performance attainable when scanning the finished product within its metallic packaging, claims Fortress.

Constructed from aluminium, the VERTEX is available in standard sizes with the option of custom-designed support frames.

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SIDELINES

Yamato UK has recently supplied models from its multi-head weighing range to a Swedish cracker bread manufacturer which has installed several Alpha weighers equipped, as standard, with gentle handing features such as shallow angle chutes and single opening doors.

The latest version can be supplied with larger buckets to accommodate large volumes and piece sizes.

Also suitable for the snack market is the latest series of Frontier weighers which feature the Yamato developed BBH (Bottom Based Handling) system. This offers high speed weighing with a clear product window to minimise sealing failure, says the company.

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La Baguette Doree based in Barnsley, South Yorkshire, a leading supplier of fresh handcrafted breads to major retailers, including Marks & Spencer, has recently hired a self adhesive label applicator from Harland Machine Systems to handle short-term promotional labelling.

Simon Howarth, factory manager, explains: "We knew applying promotional labels would reduce the waste of materials, but we couldn't justify the expenditure of purchasing an applicator system."

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# Gentle mixing suits Avana

A mixer, featuring a combination of rapid, gentle mixing with a tipping action to provide complete discharge of the unit into mobile containers, has been supplied by John R Boone to Avana Bakeries, for its cakes, puddings and desserts site in Newport, South Wales.

Avana, part of Premier Foods, required a mixing system which could rapidly mix everything from wet cake mix to sugar-paste and give an even, homogenous blend, while at the same time providing a gentle mixing action.

Some of the mix materials are relatively fragile and must not be damaged by the mixer. Sugar paste on the other hand has to be produced in a wide range of viscosities to both cover cakes evenly and produce decorative figures.

Following extensive tests Boone provided a horizontal helical blade mixer (HHBM). The mixer

blade (agitator) consists of a double 'interrupted' helix designed to lift the product equally inwardly, outwardly and obliquely in a criss-cross flow within the mixing trough.

The HHBM design has a short aspect ratio which helps to provide a good end-to-end mixing action in a short time, explains Boone.

A patented feature of the HHBM is the way the agitator arms are connected to the shaft of the mixer, with blades then mounted on the ends of the arms. In this way, adherence of the mix to the blades and arms is minimised, aiding discharge and cleaning, says the company. The mixer also features a rotating trough discharge and can be supplied with a heating or cooling jacket and an agitator.

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# L Sealers offer flexibility

Yorkshire Packaging Systems (YPS) has recently supplied a number of its SLAU 50x50 fully automatic L sealers into the bakery industry.

Most bakeries utilise at least manual and semi automatic L sealers for bagging. But if the volumes are high then this can be slow and labour intensive, says YPS.

The SLAU 50x50 can accept 25 packs/minute, automatically wrapping them in high clarity polyolefin. It works on demand so the operator simply places the product on the machine's infeed conveyor to start the cycle, explains the company.

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# Cama links secondary packing

Cama has recently won an order from a major international bakery goods manufacturer to supply a turnkey line for picking and packing 'cracottes'.

The line comprises the latest generation Delta TRIAFLEX robot, an electronic continuous flow cartoning machine and a display-box case packer.

Products are discharged from a flow-wrapping machine at speeds up to 160 pieces/minute and are picked up two at a time and loaded with 'line tracking' into the infeed of the electronic cartoning machine. After being packed into the carton they

are inserted into a display-box in any one of several, programmable, configurations.

Cama claims the ability to manage three different secondary packaging technologies (robotics, cartoning and case packing) offers several advantages to the customer, notably uniformity of mechanical and electronic components, which optimises the costs of spare parts and training procedures.

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