

active & intelligent pack news

Heinz ditches microwave susceptor technology

Food brand owner Heinz has dropped a unique retortable packaging featuring susceptor film technology developed by Alert Packaging.

Until two months ago Heinz had sole rights to use Alert's Micro-Crisp film, a specialty substrate for retortable packaging applications. But Heinz recently made the decision to de-list the product range that used the film, opening up a raft of opportunities for other brand owners.

The film works with bakery items to give products a crisp and golden finish and could be used with burgers, pizzas, paninis and pies. Alert Packaging works with customers to develop the film for each type of product.

Alert Packaging sales account manager Craig Shakespeare describes the film as an oven within an oven. The Micro-Crisp film is a self-venting flexible material and the susceptor technology absorbs some of the microwave energy during cooking and converts

it to heat within the pack.

Heinz packaged its Bite Me filled pizza tubes in the film but claims the range was discontinued because it did not meet sales expectations.

The Bite Me range was sold in the frozen-food section of supermarkets in the UK and was sandwiched between the low-cost own-brand ready meals.

A source reveals the product failed because it was too expensive but says once the price was dropped to clear the stock 'It flew out the doors'.

Alert Packaging is headquartered in County Wicklow, Ireland and provides susceptor packaging for many food products, from burger buns to bacon.

Multisorb's oxygen scavenger hits UK and Europe

The UK and European markets should brace themselves for the arrival of an oxygen scavenger that will rival Amcor and Constar's technologies, claims its supplier,

US company, Multisorb.

Multisorb is launching its FreshBlend technology, in the UK and Europe and hopes to work with several major beverage companies to commercialise the product. The scavenger can be used in the packaging of moist products, in films or with polyethylene terephthalate (PET).

FreshBlend will compete with oxygen scavenging technologies such as Constar's Oxbar and Amcor's Bind-Ox, targeted at PET applications for beers, fruit juices and other sensitive drinks.

FreshBlend scavenges the oxygen in the gap between the beverage and the lid and curtails the off-flavours that can occur from oxygen being present in the beverage bottle.

Multisorb UK general manager Graham Ashton says the FreshBlend product should be commercialised in the UK within six months.

FreshBlend is used by converter in Italy for beer sold in eastern Europe.

Ashton says once Multisorb has broken into the PET market it will look to become active in other plastics, such as polypropylene and ethylene vinyl alcohol (EVOH).

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Welcome to the racy world of self-heating packaging

Intelligent packaging

VTT rallies industry support for sensory packaging project

A Finnish research project, to develop disposable printable sensors for food packaging, will get underway as soon as industry partners are on board.

VTT Technical Research Centre of Finland is in negotiations with a number of companies based in Finland, some with global operations. Between them the companies represent all the parties in the supply-chain.

The Disposable Sensors for Packaging project needs to get industry partners on board in order to be eligible for national public funding.

The initiative should be ready to start in September 2004 and will run for 18 months.

VTT and its partners will develop and test a range of diagnostic sensors. The first phase of the initiative will look at how to develop a printable ink that indicates to either the retailer or the customer the quality of the product.

VTT senior research scientist Markku Kansakoski says one

option could be a type of diagnostic sensor that is printed directly onto packages for food safety and changes colour to indicate when raw meat is unsafe to eat.

Initially the device will be a simple label that changes colour to indicate any impact on the integrity of the product. One technology, which has been used in other projects run by the research centre, could be an additive in packaging material that changes colour when hydrogen sulphate gas is released from decomposing chicken.

Kansakoski explains that the colour change can be minor and difficult for the naked eye to see, so an instrument that measures the colour accurately needs to be developed.

He believes an indicator that is only visible to those authorised with the measuring instruments is preferable as some companies do not want this type of information readily available to their customers.

‘We are trying to bring

a number of principles together and put them into a printable form,’ he says.

The quality indicator be applied to the package during printing and will therefore minimise costs. It could be printed by gravure and inkjet.

Kansakoski says the next phase in the project could be a radio frequency identification (RFID) sensor printed on the package to record changes that may impair the product's quality.

The technology should be commercialised at the end of 2006.

New packaging heats up chilled ready meals

A self-heating container aimed at the corporate market is under development and could be launched with chilled ready meal products in a year.

A UK manufacturer of chilled ready ranges, which does not want to be named at this stage, plans to use the technology to package high quality meals.

Thermotic Development's direct steam heating bowl

is the spin-off technology from a self-heating coffee can, which the company designed for Nestlé.

Thermotic Developments is working with Robinsons Plastics, which is designing several variations of the bowls using injection-moulded polymers.

A series of prototypes are being developed but all use Thermotic's fundamental self-heating technology.

The bowl is activated in one simple movement and will heat a meal from a chilled temperature of 5°C to 70°C within two minutes. The heating component is calcium oxide.

Thermotic Developments business development director Matthew Searle believes there is massive potential as the technology can heat up any food, any size, that is any shape.

Searle says the bowl is more exotic than others on the market: ‘It is like comparing a Jaguar to a Mini.’

In the future Thermotic Developments plans to apply the same technology to flexible packaging.

The direct steam heating technology could be used to

Funding from the EU will IMEC to develop prototypes of sensors complete with polymer electronics and solar cells.

IMEC begins pioneering work on diagnostic packaging

Intelligent packaging

heat a variety of foods including wraps, pies, tacos, and dim sums, and a light-weight cup with a removable heat engine is being developed to heat beverages.

IMEC to develop polymer electronic sensors in PolyApply project

Belgium research organisation IMEC will develop processes for making sensory packaging, employing polymer electronics, as part of the pan-European PolyApply project.

According to Chris Van Hoof, a researcher at IMEC working on the project, the organisation has been researching polymer electronics for sensory applications for about two years. The organisation has also been developing miniaturised sensor devices using silicon in another project which has been running for about the same length of time.

IMEC is one of the 20 partners in the €24 million PolyApply project. Funding from the EU will help IMEC to develop prototypes of sensors complete with

polymer electronics and solar cells.

These sensors and their electronics can be printed onto a carton of milk. Sensors will be developed to measure changes in temperature, shock and other conditions. The sensor itself can be a biosensor or a MEMS device.

Van Hoof's team has carried out some interesting work in developing means to power the sensors. 'In one approach we could add solar power or harness power from the sensor's immediate environment', says Van Hoof. Only a small amount of energy would be required to generate the sensors and this could be achieved through harnessing energy produced by vibration or movement. Similar technology is used to power some watches.

IMEC is also developing health monitoring devices, using polymer light emitting diodes (LED) and is exploring the possibility of dressings and bandages integrated with sensors and polymer electronics. The flexible characteristics of organic electronics enables them to be integrated into fabric and

textiles, such as dressing gauze. The sensors could detect infection in wounds dressed by these 'smart' bandages, or perhaps extreme changes in the patient's temperature.

Visy pushes on with RFID installation

Leading Australian plastic packaging supplier Visy is planning to extend the use of radio frequency identification (RFID) in its supply chain, following a successful internal pilot of the technology.

Within six months Visy intends to apply RFID tags to pallets and extend load tracking to some customers.

Within the next two years the company will probably apply the tags at carton level and may even integrate them into its plastic products.

Visy IT manager Peter Hood says the company has the technology in place, has proved that it works and is now meeting with customers, which are unfamiliar with RFID, to encourage them to participate.

At present Visy is the only

company in Australia to be a member of EPCglobal, the organisation which distributes electronic product codes (EPC) and is driving the adoption of RFID technology in supply chains.

Visy's pilot, which began in October 2003 was only meant to run for two months, but is now ongoing. The RFID system has been designed to track loads between the company's two manufacturing/sending plants in Koolaroo and Dandenong and its receiving site in Reservoir, Australia.

EPC tags are attached to delivery dockets, which are stuck into the plastic adhesive envelopes. The tags record if a load is at a plant or in transit and are scanned when the truck driver arrives or leaves any of the three plants. The tags, which can be re-written, are more expensive but enable the company to recycle the few thousand tags it has. They each cost around €1.00.

Hood says one of the big challenges with the system is that it relies on people to work properly. If the dockets are stacked on top of each other the tags cannot be read. People moving through the

TFE can be applied to cosmetics, food, pharmaceuticals and household cleaning products and packaging.

Disperse smells success with aroma-releasing technology

Intelligent packaging

scanners incorrectly can also impair the reading rate. Due to Australian regulations the tags can only be read from less than one metre away.

Hood points out that there will be a number of advantages by implementing the tags on pallet level, including inventory visibility and theft reduction.

Visy chose to adopt EPC tags because it allows the packaging company to build a system that fits in with its own specifications. Philips Semiconductors provided the silicon chip, Rafsec produced the tag, and Tagsys supplied the readers.

Intelligent package integrates child-safety measures

MeadWestvaco, a leading US healthcare packaging company, is integrating its child-safety and compliance packaging technologies into one offering.

The move comes after MeadWestvaco signed an agreement with Swedish technology innovator Cypak in January this year to license Cypak's

Intelligent Pharmaceutical Packaging (IPP) technology.

MeadWestvaco will apply Cypak's IPP to its Dosepak product, an advanced package that includes a unique locking mechanism and an open-close feature that allows patients to access medication, while protecting it from a probing child's fingers.

IPP will enable the company to monitor when tablets have been taken for clinical trials.

MeadWestvaco says the purpose of the move is to extend its portfolio of compliance packaging.

The Dosepak incorporates an easy-to-read, three-step dosing process on the inside of the package to help patients adhere to appropriate pill consumption. The Dosepak provides more copy area than a standard bottle label and allows for a larger font size for ease of reading for patients. In addition, the packaging allows patients to mark the day of the week they choose to take their medication. IPP will record when the medication is taken to ensure the trial is run successfully.

Cypak marketing director Stina Ehrensvar says, the technology also has the capability to have an electronic questionnaire on the pack, which could ask simple questions such as: Is the medication having any side effects?

Printable aromas employ unique controlled-release technique

A UK fragrance company is working with a printer to develop an aromatic paper substrate using a unique controlled-release technology.

If tests are successful the company plans to commercialise the technology for its scented products in 2005.

The fragrance house, which manufactures smells and aromas for companies, is interested in using Disperse Technologies' thin film encapsulating technology (TFE) and a new ultra-violet (UV)-curing technology with a number of products such as packages, magazines, greeting cards, and air fresheners.

Disperse Technologies, based in Guildford in south-

east England, provides film and coating technologies that control the release of substances or additives over time. The technology allows a scented film to last over several weeks and to give off its scent or smell consistently over a period of time.

The company has recently introduced a UV-curing process, which is an extension of its TFE film that entraps oil droplets in the UV cured film. The process is quick drying and suitable for board and paper.

Disperse Technologies scientist Dr Stephen Lenon says Disperse's technologies are unique as they allow smells to be released over a period of time, compared to the micro-encapsulation technology that uses a 'scratch and sniff' approach.

Dr Lenon says TFE is also faster, less expensive and easier to produce and opens possibilities for a wider variety of applications.

TFE can be applied to cosmetics, food, pharmaceutical and household cleaning products.

Because of its high level of expertise and degree of research into diagnostic packaging VTT is often recruited to work on EU-funded projects.

Technology spotlight

Perfect partner

Contract research firm VTT is involved in a number of diagnostic packaging projects

Diagnostic packaging for food is an increasingly important area of development in order to combat the steadily increasing occurrence of pathogenic bacteria contamination of food products, as well as reduce wastage of fresh produce in the supply chain. The global diagnostic packaging market for inks and laminates is expected to be worth around €20 million by 2007.

Food safety, and quality indicators and sensors allows for continuous testing of the whole food product whether in the processing plant, supermarket or home. VTT Technical Research Centre of Finland is at the forefront of research into these technologies and is working on a number of projects to develop printable indicators and sensors that monitor the status and quality of food produce throughout the supply chain.

In a project that began in 2003 the centre developed a spoilage indicator for chicken. The device was trialled by a UK poultry supplier in 2003 and comprises of a piece of electrical conductive film, such as silver, which reacts with hydrogen sulfide, the gas given off by decaying chicken. The centre is also involved in the Safety and Information in Packaging project, launched in 2001 and running for five years, which aims to see how packaging using active and intelligent technologies provides all the necessary protection and information across the entire supply chain to the consumer.

In a recent development, VTT announced a new project due to begin in September that will develop a disposable printable food sensor for packaging. The goal is develop a range of sensors that can be printed directly on the pack using either a gravure and inkjet printer to reduce costs. The project will end in 2006.

VTT is a contract research organisation involved in many international assignments, such as technical and technoeconomic research and development work. With its 2,800 employees, VTT provides a wide range of technology and applied research services for its clients, private companies, institutions and the public sector. VTT serves annually over 5,000 domestic and foreign customers and has a turnover of about €210 million. The organisation is divided into six divisions and there are a number of on-going projects that are pioneering research into diagnostic packaging.

Because of its high level of expertise and degree of research into diagnostic packaging VTT is recognised globally and is often recruited to work on European funded projects. The Innovation and Sustainable Development in the Fibre-Based Packaging Value Chain project (Sustainpack) is due to start in April 2004 and VTT researchers are involved in managing some of the sub-projects. Sustainpack will run over four years and will involve the research and development of a fibre-based package that delivers product information such as its condition and history in every phase of the logistical chain. A unique feature to the pack will be the innovative way that communicates topical information about the characteristics, usage and state of the product to consumers and consignees. VTT also took part in the EU-funded Actipak project, which comprised of a team of European food and packaging research organisations and companies, and was set-up in 1999 to advise on Europe-wide legislation for active and intelligent packaging. The group spent two and half years assessing the safety, effectiveness, economic and environmental impact, as well as consumer acceptance of active and intelligent devices in food packaging.

Forecast demand for diagnostic packaging 2002-2007

	2003	2004	2005	2006	2007
Market value (€ million)	12.8	14.0	22.5	25.5	46.0
Growth (%)	21.9	9.4	60.7	13.3	80.4

Source: Pira International

‘The company is also looking at branching into diagnostic packaging and is working on a freshness indicator.’

Huhtamaki expands into active and intelligent packaging

Active packaging

Huhtamaki cracks on with active packaging products

Finnish packaging company Huhtamaki has begun developing a number of active packaging products in a bid to break into the glass and metal markets.

Huhtamaki is working to improve its oxygen scavenging packaging technologies. The company hopes to draw customers to plastic by adding active technologies to its polymers so that they perform as well as metal and glass packs and containers.

Huhtamaki is trying to improve its existing oxygen scavenging packaging by increasing its performance and shelf life capabilities, providing cheaper products and making its oxygen scavenging film clear.

Huhtamaki research and development manager Patrick Rolig, says the iron-based scavenger Huhtamaki uses turns ethylene vinyl alcohol (EVOH) packaging slightly grey. The company is looking at using alternative technologies, such as an oxygen scavenger triggered by ultra violet light, or

adapting its iron-based one.

The company is also looking at branching into diagnostic packaging and is working on a freshness indicator that will indicate the quality of a food product. Rolig says the research and development team is looking at integrating the device into both a package and a label.

Rolig says it is too early to say when the technologies will be commercialised as they are still very much a work in progress.

Trials of oxygen absorbing canister get underway

A number of large multinational pharmaceutical companies have wasted no time in trialling an oxygen absorbing canister, following its launch at the end of March.

Süd-Chemie Performance Packaging developed PharmaKeep in partnership with Mitsubishi Gas Chemical Company. PharmaKeep was launched at Interphex, a pharmaceutical conference held in the US recently, and several companies are already

evaluating the product and looking to incorporate it into packaging for drugs they are developing.

PharmaKeep contains one of Mitsubishi Gas Chemical's proprietary oxygen absorbing sachets that sits in the cylinder-shaped polypropylene canister, which is then crimped shut along with a breathable cardboard top.

The purpose of the canister is to extend the shelf life and efficiency of pharmaceutical products through the packaging, rather than in the drug itself.

Süd-Chemie says PharmaKeep's unique advantage is that it absorbs oxygen at a low relative humidity level and protects pharmaceutical products from both oxygen and moisture. This differs from other oxygen absorbers that need moisture to absorb oxygen.

The company claims PharmaKeep works on virtually any pharmaceutical product that is susceptible to oxygen dehydration. However, it is up to the pharmaceutical company to perform stability tests to determine the suitability.

Süd-Chemie says pharmaceutical companies are excited about the potential

return on investment that a product like this could mean to their bottom lines by extending the shelf life of some of their products.

The shelf life of the product can depend on many variables including the level of oxygen sensitivity of the drug, the size and type of packaging and closure systems.

PharmaKeep is designed for use with high gas barrier, non-oxygen permeable packaging.

Anti-microbial technology seeks packaging manufacturer

A US chemical company, which has the formula to terminate mould on food, is looking to team up with a packaging company to provide the ultimate antibacterial food packaging solution.

ICA Trinova, headquartered in Atlanta, has developed a technique for controlling the chemical release of chlorine dioxide and is now looking to integrate it within packaging.

ICA Trinova president Joel Tenney says, it is looking to work with packaging companies or with companies who also have

‘But when integrated into packaging, chlorine dioxide can be too abrasive and has been known to turn strawberries white.’

ICA's antibacterial film isn't quite there yet

Active packaging

the expertise develop the technology. He cites a large pharmaceutical company in the US, which has taken ICA Trinova's chlorine dioxide technology and packaged it into a sachet.

The antimicrobial technology can be used to inhibit mould growing in packaging of pharmaceutical and medical products, clothing, high-value goods and food.

However, Tenney explains using chlorine dioxide to inhibit mould growth in packaging is trickier than in other items. The transfer of the chlorine dioxide solution to the product must be carefully managed. Food packaging with chlorine dioxide can lengthen the shelf life of chicken, beef, pork, fresh-cut produce and berries but due to the complexity of the technology ICA Trinova will not commercialise it in a film for several years.

Chlorine dioxide is used to wash produce but when integrated into packaging the chemical can be too abrasive and has been known to turn chicken a green colour and strawberries white.

'All food items demand a different approach. We have

generally found that we start with a simple idea to begin with and then develop it from there.'

Chlorine dioxide does not need to be in direct contact with the food, which makes it advantageous over other mould-inhibit technologies such as nisin, a protein derived from harmless bacteria.

Tenney says the technology has the capabilities of being added to trays, wrap, liners, buckets and sachets. 'Our strength is to be able to design what the client wants.'

'Each type of product demands its own little bit of research and customisation to solve problems and challenges,' explains Tenney.

In the future ICA Trinova plans to integrate chlorine dioxide into consumer packaging, such as in tupperware bowls, to keep salads fresher.

MAP chicken pack takes off

KCC Packaging in the UK has developed an alternative packaging system for whole fresh chickens that prolongs shelf life and prevents leakage.

KCC has partnered with a UK machinery manufacturer to

develop a total concept for packaging, which has been 18 months in the making.

The result is a machine that drops the chicken into a container, pushes the container through a curtain opening and into a tunnel where the open container is injected with a gas mix, before the two edges are ultra-sonically welded together.

The concept is being trialled by one of the UK's largest chicken processors. The company is testing the package in its in-house laboratory to prove there is no chance that the chicken can turn green from the modified atmosphere packaging (MAP) process.

KCC technical development manager Ivan Watling claims the package is a revolutionary concept that will challenge the industry.

Watling says the package is advantageous over the other wraps, and wrap and tray solutions offered because the rigid container holds its shape, unlike the wraps that sag when the carcass shrinks.

The clear rigid container uses a clam design, made from amorphous polyethylene terephthalate (APET) which has two halves and is

shaped like a bird.

The package can hold 70% of the gas pumped into it due to being 600 microns thick.

The actual gas mix is yet to be decided but Watling estimates it could be around 80% nitrogen and 20% carbon dioxide.

The technology could be commercialised before the end of 2004.

Esorb to saturate desiccant market with new absorber

Newly formed desiccant company Esorb is tinkering with a fibre-based desiccant that it claims can absorb more than double the amount of moisture than other products available on the market.

The Swedish-based company, which is associated with the supplier of container desiccants Absortech, believes a new type of environmental desiccant made from organic fibres will take off once the price is lower, and the company has altered its design.

Moisture absorbing desiccants are used in a variety of products to either protect the contents from moisture or salt, or the package or label.

“A significant feature of the packaging is that it can be removed from the microwave or oven with bare hands.”

Wave goodbye to scalded hands with Hartmann's new tray

Active packaging

Esoorb business development manager Peter Klarin says the fibre-based desiccant is being used in China, but only by a few companies in the rest of the world. Esoorb hopes to design a version that is more suitable for the global market, by reducing the price and enhancing the benefits.

Klarin says the fibre-based desiccant has advantages over other desiccants available because if the sachet breaks during transportation it does not sprinkle over the food but remains in the cotton pad. It is also harmless, non-toxic and environmentally-friendly.

He compares it to other desiccants currently on the market saying the one made of silica gel is toxic, can look like broken glass if the package bursts and only absorbs 20% of moisture before it saturates and leaks onto the product. The other, which Esoorb also sells, contains dried clay with calcium chloride, can look unpleasant over food and absorbs only 50%. Esoorb's latest product can absorb 100-120% of the moisture in the atmosphere.

Klarin explains that creating a good desiccant can be challenging, as it must absorb

moisture quickly while not over-absorbing so that it leaks and it must endure high temperatures that do not alter its performance.

Esoorb plans to have the fibre desiccant re-designed and available from the beginning of 2005 and hopes it will be widely used in cargo products by 2007.

Cool new ovenable trays launch in UK

An oven tray with a handy advantage is now being pushed in the UK, after the manufacturer found frozen ready meals to be the niche market.

The Dualpack ovenware tray is manufactured by Danish company Hartmann and a significant feature is that it can be removed from the microwave or oven, after heating the food, with bare hands.

Hartmann's tray is made from a moulded fibre pulp with a thin polyethylene terephthalate (PET) inner coating, and it is more environmentally friendly than the trays that are used for similar applications and are made from crystallised PET (CPET) or aluminium.

Hartmann UK sales manager Josephine Morgan says the

company is concentrating on getting the trays used by large retailers primarily for frozen, and then chilled, ready meals.

The official launch follows a slow introduction of the trays into the UK, where Hartmann's established its market, which it found to be in frozen ready-meals packaging.

A few convenience meal companies already use the pack, and one co-packaging company that supplies caterers.

Morgan says there are number of possibilities for the tray once it has been accepted in the ready meal market. Susceptor technology could be added to the package, which features in some microwaveable packaging to brown and crisp up food and convenient snacks such as pasties, and chips. The packaging could also be adapted for catering applications.

Hartmann also intends to market Dualpack in Ireland, Europe and will expand to other markets such as Asia and the US if the pack proves successful.

The tray can withstand temperatures from -40°C to 220°C. It does not shatter when frozen and retains its shape and strength during cooking.



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