

MACHINERY BITES

Copies of the papers from the seminars organised by the **UK Industrial Vision Association** (UKIVA) at the recent Photonex exhibition are now available for free download from UKIVA's website. The seminars include contributions from Alrad Imaging, Hamamatsu, Multipix Imaging and Stemmer Imaging, as well as a review of the trends and developments in the European machine vision industry.

Available for download, in addition to the market report, are: 'Benefits of correct lighting'; 'Digital X-ray imaging techniques'; 'Extended wavelength imaging'; 'Lenses for machine vision'; 'How to specify a vision system'; 'Time delay and integration'; 'Next generation smart camera technology'; 'vDisplay - new dimension in image connectivity' and 'Orion - the largest GigE vision system ever built'.
www.ukiva.org

Labelling and identification company **SATO UK** is now certificated by the Forestry Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC) as a manufacturer of labels and tags produced from materials originating from approved sustainable and audited recycled sources.

The company now offers a range of labelling solutions where the material is derived from a certified source, under a carefully monitored 'chain of custody' scheme. The raw materials are tracked through every stage in the supply chain, from the forest to the final user. FSC and PEFC logos carried on SATO packaging guarantee the integrity of the source materials.
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It's a gas for versatile nitrogen generators

The domnick hunter industrial division of Parker Hannifin, has improved its existing range of MIDIGAS nitrogen gas generators, to complement the existing MAXIGAS range. The company now has the capability to offer nitrogen generators for low to high volume requirements.

MIDIGAS generators offer a simple method of producing high purity nitrogen in-situ, from a supply of compressed air, says the company. This eliminates the need for storage cylinders, dewars or bulk storage.

In addition, by producing nitrogen on site the latest generators allow customers to overcome the environmental issues associated with road transport of bottled gas, and the unpredictability of fluctuating gas prices, it claims.

The fully automatic generator



is supplied as an integrated system, on a compact footprint, and requires only mains power and compressed air connections. Pressure swing adsorption technology, with pairs of extruded aluminium modular columns filled with high performance carbon molecular

sieves (CMS) adsorb oxygen preferentially from the compressed air supply.

The larger nitrogen molecules are allowed to pass through each sieve to a storage vessel, from where the gas can be fed directly to process applications.

During manufacture, the extruded columns are snowstorm filled via CMS. This provides a maximum packing density and uniform flows and is an efficient method of separation with a continuous nitrogen stream that delivers 5 per cent down to 10ppm oxygen content.

The snowstorm filling also improves backflushing to exhaust the adsorbed oxygen and other contaminants from each column.
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CO₂ alarm for food sector

Witt Gas has launched RLA 100 a low cost alarm measuring device to measure concentrations of carbon dioxide (CO₂) in ambient air from 0 up to 50,000ppm (5 per cent by volume).

It offers protection against the health hazards of the colourless and odourless gas for the food industry, chemical processing and waste management.

Supplied as two components, the small gas detector is placed within the hazard area and the signalling unit is located outside. If the adjustable CO₂ alarm limit is exceeded, the

device gives an audible and visual alarm.

Additional devices can be controlled so that extraction units can be started or machinery stopped by means of a potential-free contact.

Even small amounts of CO₂ can have an influence on human organisms; a concentration of 0.3 per cent in ambient air can be harmful to health. A ratio of 5 per cent can cause headaches and dizziness



and 8 per cent or more can lead to unconsciousness or even death.

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Roll out for low cost coders hit the mark

Open Date Equipment has introduced thermal ink jet printers to its range of coding and marking machines which, it says, makes ink jet technology affordable and practical for much wider end user markets.

It has already successfully installed six CleanCode EV I models at one of Europe's largest suppliers of till rolls and labels, Schades UK, of Ripley, to supply real time and date codes onto the more than 50 million till rolls, which the company produces each year.

The coders are significantly less expensive than continuous ink jet and offer much lower running costs than CIJ or drop on demand machines, claims Open Date. In fact the Schades' machines replaced a number of continuous ink jets which the customer found to be time consuming and expensive to run and maintain.

Driven by Lexmark™ printhead technology, the new CleanCode LX became available in December 2009

and adds to the current range of EV I and EV II machines.

LX models deliver greater print distance, up to 9.5mm and higher ink yield than the EV models, and give print resolutions of 300 or 600 dpi at line speeds of up to 61 metres/minute. Around 20 per cent more printable characters per cartridge are claimed.

The printhead is integral to the 42 cubic centimetre ink cartridge, so when the cartridge is replaced, so is the printhead. No make-up is required for the inks and virtually no maintenance is necessary. The coder is switched off when not in use and the cartridge stored; at start up the cartridge is simply reloaded. The units require little space.

Two versions of the LX are available:

- EVI-LX offers a basic system to print one line of 12.7mm text or two lines of 5.5mm text.

Additional software is available for the EVI-LX to increase functionality.

- EVII-LX can print three lines of



3.2mm or four lines of 2.4mm text.

Add-on print-heads can be fitted and a small RS485 data cable is used to connect the modules. This allows the hand held controller to network all the heads on the production line.

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Logopak extends warranty period

Following the launch last year of its new 400 series of print & apply machines, which are able to monitor their own performance, Logopak International is now extending the product warranty for this equipment.

"The new machines represent a major step forward in reliability for print & apply labelling," says general manager Wilson Clark. "As a result, the company will be offering a ten year warranty, which we believe is the longest in the industry and a quantum leap from the standard two years offered normally."

Overall UK installations of print and apply labelling machines by Logopak rose 11 per cent in 2009 compared with 2008, the company has announced.

Most of the increase came from the food and drink industry where, according to Mr Clark, major installations included 19 case labellers and six pallet labellers for a Scottish distiller and 13 custom-built machines for a cream and yoghurt processor in the north of England.

"Demand from food and drink manufacturers was particularly strong during 2009 although the paper tissue industry also recorded quite a surge in case and pallet labelling installations," he added, "There was increased demand also for custom-built machinery."

Examples of bespoke equipment it manufactured include a duplex gantry-mounted print & apply case labelling station for Cott Beverages; and special three-side pallet labellers for wine and spirit bottler Constellation Europe.

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'Virtual' modelling aid

CenFRA, the centre for food robotics and automation, has developed discrete event computer simulation technologies. They will enable businesses to evaluate and quantify the benefits and implications of integrating different automation techniques into new or existing production lines on a 'virtual' scale, without creating any disruption to current manufacturing operations.

One northern-based food company approached CenFRA

for advice on how to assimilate new automation and robotic solutions into existing production lines at one of its manufacturing sites.

The centre's engineers were able to create an interactive 3D computer model of the factory layout that included technical details on the existing production equipment.

Using this virtual representation it then advised on the best automation solutions, while simultaneously

identifying any unforeseen obstacles and highlighting potential areas for improvement.

This simulation technique helps to recognise how different process changes would affect particular factory areas and provides accurate and reliable virtual models for the food manufacturer's existing production set up or intended future arrangements.

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WHY USE VISION?

Machinery Update brings you just some of the reasons why investment in vision systems is a good idea.

- Labour savings and quality assurance – classifying or grading products by quality, size, shape or appearance.
- Save time used to identify products and components during processing.
- Permit full automation of processes including 'incidental' inspection.
- Avoid material scrap and hence costs - statistical process control contributes to scrap elimination.
- Better process understanding leads to improvements and cost savings.
- Increased return on investment (RoI) - better throughput of saleable product/factory hour.
- Avoid 'giving away' material - faster checking of 'first off' dimensions for better RoI on capital equipment; minimising raw material usage.
- Avoid adding value to already defective components e.g. not glazing defective tiles inspected at 'biscuit' stage.
- Optimise usage of irregularly shaped and sized materials.
- Optimise classification and grading to avoid 'downgrading for safety' syndrome.
- Save management time in disputes over grading and classification.
- Improve sales through quality perception of packaging by consumers and retailers.
- Reduce warranty costs.
- Reduced product recalls by tracking batch usage.
- Reduce product liability claims.
- Ability to sell in regulated markets - e.g. pharmaceutical.

To find out more visit:

www.ukiva.org

UKIVA is part of the PPMA

www.ppma.co.uk

Better biscuit imaging

A major European biscuit and chocolate maker, working with Bosch Packaging Technology, has improved efficiency in its factories with robotic systems and imaging software from Matrox Imaging.

One plant, producing 30 million packs/year containing over 80 different biscuits, needed to support the variety of products at a high throughput.

Bosch's robotics division specified its Astor robot line featuring a vision-guided delta robot that can pick & place 140 units/minute. Eight robot cells sort 1,120 biscuits/minute. Each cell sorts one or two varieties.

As the blister tray passes a cell, the robot stacks three or four biscuits in the appropriate section of the tray. The robot cell is powered by an in-house designed PC. Before a batch is packed, an operator specifies the products and tray type.



A Sony XC-HR50 grayscale camera is installed at the top of the machine, giving a bird's eye view of the conveyor. A Matrox 4Sight M embedded vision system signals the camera and a Matrox Meteor-II/Multi-Channel frame grabber acquires images of the biscuits.

Image acquisition and analysis is based on the Matrox Imaging Library. Geometric pattern matching algorithms determine the shape and locate the specific biscuit for the robot to pick. Grayscale analysis determines its quality. For

example it prevents placing broken or over-baked biscuits. Finally the robot places the top biscuit right-side up in the tray.

Good image results need proper illumination; chopped nuts and sugar sprinkles create shadows while shiny chocolate coatings reflect light and the vision system had to be adaptable. Additionally, the operator interface required flexibility and simplicity for easy set up by staff for a different product on the feed line.

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Visible partnership benefits

As signposted in *Machinery Update* January 2009 Gerhard Schubert, its subsidiary IPS International Packaging Systems and Fuji Packaging have joined forces to integrate a TLM Picker with a horizontal Fuji flow wrap machine to produce a high-end system that removes the need for conventional feed systems.

It means that processes are now synchronised in a single machine rather than being distributed over several different ones. "This opens up unimaginable flow wrapping advantage for the packaging industry," said chief executive Gerhard Schubert.

Particularly suited to the confectionery sector, the development offers the format

flexibility of Fuji flow-wrap machines married to direct loading at high speed in the patented counter-flow mode used by Schubert's flexible TLM picker lines.

Fuji Packaging's chief executive Kai Wintjen said: "As a global group we can always put in a bid for horizontal flow wrapping. But we were interested in finding a partner for completely re-engineered packaging lines, in markets such as confectionery."

For example, a Czech manufacturer required a line capable of packaging cookies on trays and individual cookies in to flow packs. The need for a fast and reliable line was answered by Schubert's counter-flow and a

simultaneous synchronous running process, plus Fuji's "packless function" which prevents the production of empty packs. A vision system for inline quality control ensures the precise positioning of the smallest product at the top of the pack. Claimed to be a 'one-off', it has an efficiency of 99 per cent with an output of 1,200 products/minute.

Gerhard Schubert estimates that even in medium and high-output packaging lines used in the confectionery industry only about five per cent of horizontal flow wrap machines are fitted with automatic flexible feed systems offering scope for whole new factory concepts.

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