

INSPECTION

INCREASING POTENTIAL FOR COLOURED 2D CODES IN PHARMACEUTICAL PACKAGING SECURITY, NETWORKED SET-UP FOR CODING MACHINERY, AND ON-LINE ANALYTICAL TESTS ARE AMONG THE LATEST DEVELOPMENTS IN QUALITY CONTROL INSPECTION.

Laboratory checks move onto the line

ANALYTICAL TESTS ONCE CARRIED OUT IN THE LABORATORY CAN NOW BECOME PART OF THE ON-LINE INSPECTION PROCESS, REDUCING RISK OF REJECT MATERIAL BUILDING UP.

In just the same way that feedback from **checkweighing** is used to adjust fillers automatically – reducing risk of rejects or downtime for adjustment – so more and more analytical tests, traditionally performed in the laboratory, can now be moved out onto the process line. Here they become automatic quality control checks and also, in some cases, an intrinsic part of the process control regime itself.

The benefits are numerous, but eliminating the risk of reject material building up between periodic lab tests is probably the most compelling, as John Craig, global marketing manager in Thermo Electron's process instruments division, points out.

"Laboratory testing is all about batch testing. So if a formulation is discovered to be wrong, you can make adjustments to the process and bring it back to standard, but potentially you have maybe 30 minutes or an hour's production that is sub-standard. Alternatively, you may have been adding too much of an expensive ingredient, driving up costs."

Most serious, of course, is discovery of contamination which means that all production since the last test becomes suspect and, inevitably, production has to stop while the source of the contamination is established.

"Whenever a test can be taken out of the laboratory and placed on the line there are immediate improvements in process efficiency and quality control," says John Craig. "For example, feedback control can be used to maintain a consistent product and contamination can be traced quickly and accurately."

Indeed, eliminating risk of contaminated



Fat and moisture monitoring: Spectra Quad system operates with near infra-red technology

CO₂ finding its way into beverages was among the first on-line process quality control projects carried out by Thermo Electron. The customer, a major beverage producer, now has better control in monitoring CO₂ levels throughout its process. John Craig takes up the story:

On-line system developed

"The issue was: In what ways could CO₂ get contaminated? Could it get contaminated when it was delivered? Could it get contaminated in the plant? And if so, where? So the company approached Thermo Electron because it knew we had laboratory equipment capable of detecting substances such as benzene and sulphur within CO₂, and asked us to develop an on-line system."

The beverage producer and Thermo struck up a partnership and Thermo developed what is now known as Pulsar, an on-line CO₂ quality assurance system.

Pulsar takes samples automatically from

four points: at the road tanker before the driver hooks up to the storage tanks for delivery, at the infeed to the evaporator where the liquid CO₂ is turned to gas, immediately after the evaporator, and then at the filler head itself, the last possible point for control.

The central Pulsar system is cabled up to the sampling devices and constantly sweeps all four points in turn, to provide continuous sampling and an immediate alarm should contaminant be discovered in the CO₂.

Other on-line systems now available from Thermo Electron are geared more towards process control, such as the Spectra Quad fat and moisture monitoring system, which is based on near infra-red (NIR) technology and employs various NIR filters to measure different substances on the product surface.

In potato crisp manufacture the system is used to monitor the amount of residual fat in the crisps, as well as the moisture, while in the bakery industry it can measure the moisture



Checking carbon dioxide: Central Pulsar unit scans sampling points, looking for contaminants

content of the flour, feeding the information forward to the PLC controlling the addition of water. All of this takes place continuously.

"Very often in a number of processes it is possible to establish what is happening by analysing the product surface," explains John Craig. "The various filters give data that can be interpreted in a number of ways."

But surface analysis does not, for example, help with establishing total content of products, such as the fat/protein ratio of a meat slurry.

Microwave absorption rate

Here Thermo Electron employs its Guided Microwave Spectrometer, which operates via a manifold in a pipeline, firing in microwave energy and scanning the absorption rate at various frequencies.

"This tells us a lot about the constituents of the product and their proportions," explains John Craig. "In the meat industry it can be used to monitor for total fat within minced meat or a meat slurry destined for pie filling or similar products. In the soft drinks industry it will monitor the Brix index, ensuring that the sugar syrup is correct."

Thermo Electron is also now working on a system to provide on-line analysis of additives within food products, allowing the incorporation rate and quantity to be constantly controlled via a feedback loop.

"Apart from the quality control issue of what the food tastes like, there is the question of cost," explains John Craig. "The financial consequences of overdosing additives can be severe, since fairly often they represent 80-90 per cent of the total cost of ingredients. So a 1 per cent error in the additive can represent an 8-9 per cent error in the total product cost." ■

More information - enter 114

How inspection may give a false sense of security

HUMAN ERROR CAN STILL CREEP INTO QUALITY INSPECTION SYSTEMS, COMPROMISING THE SECURITY OF BOTH THE PACKAGING AND ITS CODING.

The role of quality inspection in safeguarding against damaging and costly packaging line errors is necessary but not, it seems, without its dangers. The sense of security it provides is not absolute, yet many manufacturers assume that as long as an inspection system is in place, there is no need to worry about the potential risk of "bad" packs escaping undetected.

Even taking into account the fact that no inspection system is foolproof, assumptions of this nature are dangerous on two counts, according to James Butcher, managing director of Claricom, the coding management systems specialist.

"First, in packaging as in other disciplines, prevention is clearly better than cure," he says. "It is puzzling that manufacturers are prepared to wait until the inspection stage to discover errors, when they can be easily reduced at source. Second, the most common inspection methods in use on production lines are inherently flawed, providing a false sense of security."

The common factor is, of course, human error, the reason why Claricom developed its Package Coding Management System (PCMS), which replaces the need for manual input on a day-to-day basis with an automated rule-based approach. Once the validity and accuracy of all variable coding data is approved, it can be transmitted across the network, which means that data need no longer be keyed in separately to each machine.

Principle of prevention

"Since a misplaced word or a transposed digit can cause endless headaches on a production run, the principle of prevention is at the heart of the PCMS," explains James Butcher.

A reduction in coding errors is all very well, but the potential for serious mistakes is still there if, for example, the packaging does not match the product. The most robust and cost effective solution to this is barcode validation and many manufacturers have barcode readers in place. So is it as effective as it could be?

"That is doubtful, not because the technology



Checking the pack: Portable barcode reader confirms the correct packaging to the system

is suspect, but again because of human error," says James Butcher. "The most popular inspection systems in use today leave the door wide open for mistakes to be made by unskilled or temporary workers."

Teaching the system

He cites, for example, the so-called 'show and go' method, where the user teaches the barcode reader what a correct pack should look like.

"Fair enough in principle, but the system relies on the correct pack being selected in the first place. With strong family branding now prevalent, the difference between two products may simply be one or two words, for example 'Cream Doughnuts' rather than 'Jam Doughnuts'. A 'show and go' system will allow someone to put Cream Doughnuts in a Jam Doughnut box all day."

In another example, a line is set correctly for a pack containing five slices of cooked ham. Halfway through production all packs are suddenly rejected. The natural reaction of the operator is to assume something is wrong with the system, so it is swiftly re-trained and everything is soon back up and running. However the problem is that the system rejected the packs because the new reel of labels, although identical in every other respect, was for ten slices, rather than five.

"The operator did not notice the one difference on the label and re-trained the system to

accept the incorrect packs," James Butcher points out. "The result is, at best, lost production and wasted product/packaging or, if not detected before shipment, a product withdrawal or problems with trading standards."

The solution advocated by Claricom is to use the Package Coding Management System at the inspection stage. With centralised network control of the barcode validation equipment, the set up of each job is barcode specific and is combined with correct set up of the package coding equipment, rather than 'show and go'.

Portable hand-held barcode reading equipment is used to confirm the correct use of packaging and materials for the selected job before the on-line inspection equipment is set up to inspect every item throughout the production run. These hand-held readers can also be used at any point during production to allow periodic quality inspection.

In addition, the use of the PCMS also provides scope for establishing the reading criteria, for example where in the field of view the barcode should be. This reduces the need for manual adjustment and can help to eliminate risk of a single rogue product being accepted. ■

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Why bother with service?

CHECKWEIGHER, METAL DETECTOR AND X-RAY MACHINE MANUFACTURER LOMA SYSTEMS RECENTLY ASKED FOOD MANUFACTURERS ACROSS EUROPE WHAT THEY WANTED FROM THEIR EQUIPMENT SUPPLIERS.

In recent years, the increasing stringency of European food laws has put the spotlight firmly on quality control and fuelled a steady demand from manufacturers for end-of-line inspection solutions.

As a result of this, says Loma Systems, a crop of new equipment suppliers have entered the marketplace at 'commodity' level, driving down prices and "making reputation alone a shaky differentiator for the more established players". At the same time, however, global business has woken up to the value of partnership and collaboration, placing the emphasis on

'softer' elements such as after-sales service rather than the product itself.

"The dominance of the major retailers has sent ripples of change through the European food industry. Rising consumer demand and extended trading hours, coupled with the drive for lower stocks and a 'leaner' supply chain have led to more intensive production practices," says Loma Systems.

As a result, factory equipment inevitably feels the strain. But when it breaks down and the operations staff cannot fix the problem, suppliers need to be on hand to react quickly. Even so, says Loma, inspection equipment

suppliers are responding to the change with varying levels of urgency.

"For food companies, it is still a buyer's market, so many purchasing decisions are still made on the price of the equipment alone," the company maintains. "Until recently, buyers have failed to recognise the importance of investing in after-sales service to maintain a constant supply of product to customers."

"In turn, inspection solutions suppliers often have an underdeveloped service offering, as a result of 'meeting customer demands', which exposes their equipment as the production line's weakest link if anything goes wrong."

However, although some food companies are now opting for service agreements as an insurance policy against downtime, there is still a wide variation in attitudes across Europe, as a recent survey of food companies across the UK, France, Germany and Holland by Loma revealed.

Speed of response most important

The sample of 50 operations managers included both Loma's customers and representatives of companies buying from other suppliers. British and Dutch respondents agreed that speed of response was the most important criteria of service and rated out-of-hours servicing as essential. German respondents were the only ones to mention price as important, while the French

were most receptive to new service ideas.

Commenting on the survey, David Grieve, Loma's group service development manager said:

"The common thread is that food companies are now starting to consider the 'cost of ownership' of the equipment rather than looking at the price in isolation. In other words, the actual cost of the machine is added to the potential

cost of maintenance. This means that buyers need to examine the servicing aspect of the contract closely to make sure they are getting the best overall deal."

Shopping for service

When considering a service package, says Loma, food companies should ask themselves the following

questions to avoid the pitfalls of inadequate service cover:

1. Geographical reach: Are there enough service engineers to provide a consistent service within my geographical area? Are all my sites covered under the agreement?
2. Response times: What is being promised? Is it achievable? And, most importantly, is it good enough?
3. Training: How thoroughly are the supplier's engineers trained? Are they also able to provide training for line operatives?
4. Fault diagnosis: Is there a helpdesk? Can some diagnosis be done over the phone? Or even on-line?
5. Cost: Is payment a fixed premium, or 'on the clock'?
6. Scope of agreement: Does the agreement cover planned preventive maintenance? Is the supplier able to service other makes of equipment apart from its own?
7. Spare parts: Are these covered by a warranty? Can new spares be purchased at a discount?
8. Software upgrades: Are these included in the price?
9. Traceability: Are servicing records for all customer sites stored centrally by the supplier to provide central reporting and improve troubleshooting capabilities? ■

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Maximising uptime

Bourne Salads, Lincolnshire, signed up for Loma's 'Premium' service package shortly after its launch in 2000, to guarantee minimum callout times and quarterly planned maintenance.

With a total of 15 combined metal detectors and checkweighers the package was considered essential to minimise disruption to production and, says Loma, costs the same as the estimated cost of one hour's production downtime on Bourne Salads' lines, which run 24 hours a day, 7 days a week.

In the first ten months of last year, Bourne Salads had only 7 hours of downtime, compared with 168 hours in the year before purchasing Loma Premium.

Coloured 2D code set to challenge Pharmacodes

A 2D CODE THAT INCORPORATES THE COLOURS OFTEN NECESSARY IN PHARMACEUTICAL PACKAGING SECURITY IS NOW SET TO CHALLENGE THE TRADITIONAL BARCODE FORMAT PHARMACODE. LEN HEYS HAS BEEN TALKING TO ON-LINE INSPECTION SPECIALIST LAETUS, PART OF THE ROMACO GROUP.

First seen in the 1970s, the Pharmacode rapidly became established as the most effective means of providing security for pharmaceutical packs. The simplest of codes, it was one of the first widely-used means of electronic verification in any industry, with the additional benefit that, through the incorporation of coloured bars, it serves as a check on the presence of essential print.

If print from the red plate carries a warning, for example, the Pharmacode will check that the red plate image was printed.

The Pharmacode was conceived as an in-house code to identify individual components of a pack, such as label, carton and leaflet. It is a low density code designed to cope with the vagaries of the production environment and can be verified statically or dynamically, at high or low line speeds, and during rapid acceleration and deceleration. Standard, maxi or mini code formats are available, depending on the application.

Thirty years on, the Pharmacode remains ubiquitous but its supremacy looks set to be challenged. The convergence of factors such as new regulations, evolving pack formats and new technologies means that users now have a number of options for pack inspection.

There is doubtless a need for a new symbology for the pharmaceutical industry, which allows the incorporation of more information – text as well as numerical data – in less space. The number of available Pharmacodes is, after all, finite, with the highest number available from a combination of 16 bars being 131,070.

So why not use industrial, high density codes such as the Universal Product Code (UPC)? After all, these are used increasingly for data recording, and at the point of sale as more pharmaceutical products move from prescription only to over-the-counter status.

The answer is that since the high-density industrial code was not designed with security as its primary aim, there are a number of shortcomings in this application.

First, codes are allocated externally and the symbology cannot be adapted to interface with bespoke data capture systems, while they must also conform to certain guidelines on size. Second, the code allocated refers to the whole pack, rather than to individual components.

A product consisting of a carton containing a leaflet and a tube need only carry the code on the outer packaging, for scanning at the point of sale or use. How, then, does one identify the additional components? The application of a cumbersome code to a small tube may be at best impractical and at worst, impossible.

Thirdly, the specifications for industrial code symbologies are too tight to allow their reproduction in more than one colour, which means that the checks made by a Pharmacode on the presence of all colours is impossible.

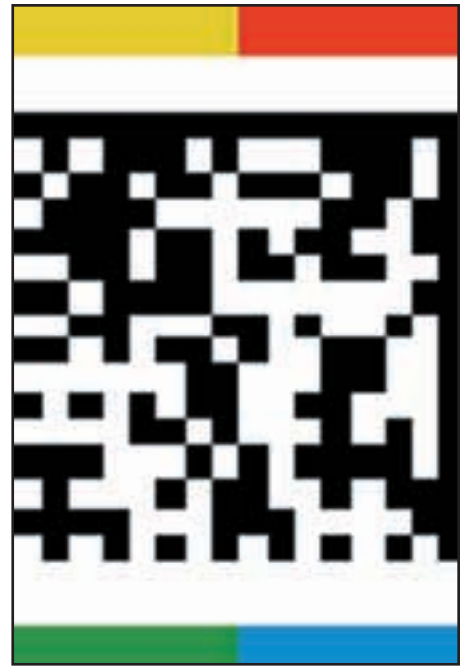
Single colour only

An industrial code can be used for in-line security applications, but only if circumstances allow the use of a single colour only, space on all packaging components is not an issue and the information required to be held by the code is limited. Increasingly, however, this is unlikely to be the case.

In reality, the requirement is for small, multi-coloured codes holding several pieces of information, which means that the emergence of high density two-dimensional matrix codes has now extended the choice of code symbologies.

Primary among these is the AIM-approved data matrix code, which is available in a range of formats and sizes, although in its basic form it remains a single colour code. The smallest configuration allows the representation of up to six alpha-numeric characters in an area of just 2.5 x 2.5mm, while the largest can accommodate up to 32 characters. Data is encoded in 7 or 8-bit ASCII format.

Like the Pharmacode, the data matrix code is designed for allocation in-house, allowing users to specify precisely the information they require. Code generation is straightforward,



Less space, more data: The new 2D-Pharmacode with colour bars launched by Laetus

with the customer simply entering the required data as a string of ASCII characters.

Any data relevant to the product can be incorporated, such as product name, product strength, or label reference code. Artwork is then generated by the packaging materials printer using AIM approved software.

The data incorporated in the code can be correlated with a unique product item number for ease of programming and storage in management information systems. In addition, the format incorporates a high degree of redundancy to ensure that damaged or partially obscured codes can still be verified successfully.

While code formats have been evolving, vision technology has seen a revolution. It is some 15 years since camera-based character verification systems for variable data were launched and there is no doubt that today's versions are vastly superior to their predecessors. It is this huge advance in capabilities which has prompted the question as to whether they can replace code systems for security altogether.

Traditionally the two technologies have been different in function and application, with code verification used for product identification, because of its robust nature, while character verification has been applied successfully to check the quality of print applied in an in-line process. Typically this would encompass variable data such as batch numbers or expiry dates.

When considering extending the role of character verification to include security, instead of

or as well as quality inspection, however, there are a number of factors to consider. Clear identification of packaging materials is a key aspect of quality assurance in the pharmaceutical industry.

Regulatory authorities, government bodies and the FDA need to be able to verify that packaging materials carry correct information relating to the product they contain and are printed with all information required by law.

The ability to identify codes or characters unequivocally is therefore a pre-requisite for any packaging control system claiming to be 100 per cent secure.

In the process of character verification via a camera system, the degree of differentiation between one alphanumeric character and another is crucial. This is the only basis for determining characters, and thus the identity of the pack, and it is variable depending on the typeface chosen.

With the Arial typeface, for example, the difference between character shapes can be as little as six per cent in terms of area, while with the optimised typeface OCR-A, the maximum difference is 30 per cent. This may not present a problem for the most part, but there are a number of cases where confusion between similar characters may arise. Examples include G/C, B/8 and E/F.

Print quality from on-line coding systems is improving all the time but variations can nonetheless occur, with potentially serious implications for the identification of similar characters.

This is not to say that it is impossible to identify products via character verification but guidelines relating to the minimum size of characters, the choice of typeface and the degree of separation must be observed if security is to be maximised.

With a bar or matrix code, identification of each component is a straightforward binary procedure: the bar or dot is either present or absent from each specified location. This ensures that the degree of differentiation is always 100 per cent. An inherent redundancy in the matrix code of up to 50 per cent – since information is stored several times over – ensures that even with damaged codes, the content can be reconstructed correctly to give accurate identification.

On small labels such as those seen on ampoules and vials, it can be a challenge to accommodate any code at all. With the available space being in some cases no more than 3 x

3mm, Pharmacodes are out of the question and the required density cannot be achieved by character verification because of limitations on the minimum readable character size, the font used and the degree of separation required between characters. Small two-dimensional codes are ideally suited for this application: in an area of 3 x 3mm they can represent up to ten digits.

Print registration accuracy

Coloured text is often used to highlight important warnings for the end-user. Camera systems can be used to verify colours but it is not possible to print basic data matrix codes in more than one colour because such a high degree of print registration accuracy is virtually impossible.

However, a variation of the data matrix code, known as the 2D-Pharmacode – launched by Laetus at Interpack in 1999 – is designed to overcome this problem. The code consists of a black and white matrix code around which coloured strips are printed. The matrix incorporates the data specified by the customer, while the inclusion of up to four additional colour elements ensures that all colours required in the artwork have in fact been printed. Because the colours are printed outside the main area of the matrix, print registration is not an issue.

Validation and qualification of inspection systems are key issues for pharmaceutical users and are addressed by the vast majority of suppliers in the design of the equipment and in the accompanying documentation. However, it is fair to say that the qualification of sensor-based code inspection equipment is generally less extensive than that for a camera character verification system, because there are fewer variable factors in the process.

Sensors for the two-dimensional code are inherently less demanding on external processors because they are application specific and largely self-sufficient. The advantages of code over character verification therefore become more compelling where multiple inspections on a single line are necessary.

Overall, it seems that two-dimensional codes verified via sensor should be the preferred option, particularly from the point of view of maximising security. But it would be wrong to generalise. In certain applications where a camera is required anyway – the inspection of variable data, for example – it is possible to use the camera for identification tasks also. ■

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CINTEX

Low cost X-ray challenges metal detection

A low cost X-ray contaminant detector has been launched by Cintex to compete with metal detectors, particularly where wet and conductive products need to be screened for stainless steel and foil packaging reduces metal detector sensitivity.

"Priced more in line with metal detectors, the system is set firmly to establish X-ray inspection as a cost effective alternative to other methods," says the company. "X-ray systems are unaffected by metallic packaging or product effects, with the additional benefit of finding glass, stone and other dense materials."

The new Sentry XR makes use of the computer electronics and control panel from the established Cintex Sentry range of metal detectors, but includes a new low power X-ray source and self-cooling electronics which require considerably less space than the traditional oil pumps and heat exchangers.

With a head width of 330mm and a 1300mm long conveyor, the new machine is also much smaller than most metal detectors, but can handle items up to 240mm wide and 75mm high, such as cakes, confectionery, foil trays of ready meals and frozen food.

Inspection for contamination and pack fill can be performed simultaneously, with separate reject arrangements for each.

Cintex has also announced new software for its Compact X-ray system, providing increased accuracy and extra features through the use of frame-based processing.

Instead of viewing each image line by line, the new XP program allows the Compact machine to operate with adaptive thresholding, automatic product masking and filtering over the entire image.

This means, for example, that using the automatic product masking facility, the system can be set up to locate and ignore an oxygen scavenger in a pack of fresh meat, regardless of its position, but reject the pack if the scavenger is not present.

Adaptive thresholding means that the software will consider the layout of each item individually and alter its inspection settings accordingly. So if fruit levels in a cereal are being checked, there is no difficulty with fruit spread



New software for the Cintex Compact X-ray machine: Compact XP inspecting garlic bread. The red bars on the right of the screen indicate a problem with the image. The Area 1 bar indicates that the system has detected missing butter. The Threshold bar indicates identification of a contaminant. The large red bar indicates that the product is to be rejected

randomly throughout the packet.

The new product counting capabilities are said to be well suited to jobs such as checking the presence of filling in doughnuts and looking for missing pats of butter in garlic baguettes.

Compact XP software is to be standard on all new Compact machines but, says Cintex, can be added to most existing systems as an upgrade.

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INEX INSPECTION SYSTEMS

Vision system is 'affordable' for range of jobs

The InSpect family of vision systems launched last year by beverage container inspection specialist Inex is said to provide 'affordable' inspection for a much wider range of general packaging applications.

"InSpect is capable of performing the simplest to the most comprehensive automated visual inspection process," says Inex sales director David Bragg. "Lighting, optics, image acquisition, product rejection and structural hardware are all part of the package."

Typical inspection tasks include: incomplete case packing, faulty printing, omission of batch number and/or sell-by date, wrinkled labels, and damaged cartons. The system accommo-

dates as many inspection cameras as required and will also shortly be available to detect out-of-specification colour variations.

The InSpect system employs the Cognex InSight camera, which is programmed through an intuitive, custom graphical user interface designed and developed by Inex itself.

"This eliminates the set-up complexity typical of other vision inspection systems," says Inex. "Through the flexibility of the Ethernet network feature, the system can be configured to address almost any inspection requirement. In addition, it is easy to switch from one inspection task to another: ideal for lines handling a number of different products and packaging."

The Ethernet capability also allows InSpect systems to be networked to each other as well as to factory-wide automation systems.

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THERMO ELECTRON

Metal detector checks its own calibration

The French Croissant Co has equipped its latest packing line with a Thermo Electron Goring Kerr DSP3 metal detector, selected on a number of grounds, but particularly for the machine's AuditCheck system.

"This is able to save valuable time because it eliminates the basic checks we needed to carry out in the past to ensure the detector is functioning correctly," explains Ian Ort, project engineer for The French Croissant Co. "The DSP3 unit checks itself."

The DSP3 detector, which will screen products in both metallised and non-metallised film, is the first of the Goring Kerr models to incorporate Thermo Electron's AuditCheck self-monitoring system.

By providing an alert when recalibration or maintenance is required, the system eliminates the need for manual performance checks using standard test pieces, says Thermo Electron.

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SESSIONS OF YORK

Bolt-on scanner checks bar codes on label printers

The Veriscan bar code verification system developed by Sessions can be bolted onto most label printers or print-apply machines, to ensure that bar codes can be read by customers' warehouse and point-of-sale scanners.

In the event of a bar code failing to read, the system will either alert the operator, via an audible or visual alarm, or bring the host machine automatically to a stop.

The unit is also able to download all scanned information to a database for validation.

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RADIX SYSTEMS

Mini-sorter suits smaller firms or QA laboratory

Radix has introduced a compact version of its electronic Autosort machine to provide smaller manufacturers with the means of automatically removing colour or size defects, but at much lower cost.

The Radix AS401 Mini-Autosort is also aimed at quality assurance laboratory work or goods-in inspection and, says Radix, is sufficiently versatile to allow ingredients such as 2-3mm potato flake or final product such as crisps to be sorted on the same machine.

Available as a bench-top version or for instal-

lation within a small production line, the machine is able to process 300-400kg/hour of dry products such as potato flake or dehydrated vegetables, up to 1000kg/hour of rice.

Product is fed onto a 300mm wide vibratory conveyor, either in-line or into a hopper. There it is spread to an even layer and accelerated down a chute, allowing individual particles to be seen by the line-scan cameras.

Some 32 fast acting pneumatic ejectors are built into the chute to remove unwanted pieces from the product flow, such as discoloured or broken items.

"Due to the very short air pulse and the configuration of the ejectors, only a very small amount of good product is removed with the defects," says Radix.

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SKERMAN PROMAC

Anritsu moves into market for X-ray detectors

An X-ray contaminant detection system is now available from Anritsu, the Japanese weigher, checkweigher and metal detector manufacturer, represented in the UK by Skerman Promac.

Said to provide enhanced sensitivity as a result of new sensor and image processing technology, as well as a scan rate in excess of 1600 cycles a minute, the machine is able to detect glass, stone and bone as well as metal at line speeds up to 60 metres a minute.

The machine employs a smaller than usual diode array receiver, to provide a higher resolution image, and Windows-based software that allows the image to be examined as a three-dimensional object and compared with the standard correct product, as well as captured for off-line analysis.

As standard, products up to 240mm wide and 120mm high can be handled, although other aperture sizes are optionally available.

Software is also provided to detect missing products – even in multi-layer packs – and to find contamination of the same type as the packaging itself, such as foil. There is a 10.4in LCD touch screen display and automatic product learning and setting functions.

For cleaning, the machine incorporates a tool-free quick-release system for the belt, while motors are sealed to IP66 for hosedown.

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Bolt-on scanner: Veriscan from Sessions checks legibility of bar code print



Mini-sorter: Radix AS401 (top) and potato flake before and after processing by the machine

APV BAKER

Vision system keeps coating weight constant

A vision system to maintain consistent coating weight for enrobed products such as bars, biscuits and cookies, and improve product consis-



Monitoring coating weight: The Dipix 3D vision system has been introduced by APV Baker



Washdown protection: Fortress metal detectors are available to resist high pressure water

tency, has been introduced by APV Baker.

The Dipix 3D vision system can be used to estimate both the size of product, and the weight of coating applied, allowing these variables to be controlled in real time via on-line feedback control.

"Coating is the single most expensive ingredient, and even small changes in surface area and quantity of coating can cost thousands," says APV Baker. "Detecting trends before they are visible to the human eye, and correcting them automatically, produces a rapid payback on capital investment."

Seemingly minor increases in raw bar, biscuit or cookie size can have a major impact on enrobing cost, the company explains. However, Dipix sensors are able continuously to scan every product on a line individually, and detect variations in real time from pre-set parameters of surface area and thickness.

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FORTRESS TECHNOLOGY

Metal detectors have auto test and extra protection

An Auto Test system is now available on Fortress metal detectors for use in support of manual testing procedures or for process applications where access to the machine is limited.

It allows the type and size of test piece to be simulated via a metal disturbance signal which, says Fortress, would ideally be the most difficult contaminant such as stainless steel.

Further developments from the company include a single pass, but double check on packs such as sliced meat with oxygen scavengers.

In this, Fortress machines can be set to reject above a certain threshold, which indicates there is metal inside the pack as well as the ferrous oxygen scavenger, but also to reject the pack if a certain level is not reached, indicating that the scavenger is missing.

Improved sensitivity is also now available to tackle 'real world' contaminants such as wire and swarf, with recent units claimed to reach 30-50 per cent higher sensitivity than before in some applications. For cost reduction, Fortress is able to network up to 32 of its detectors from a single control panel.

In addition, a number of different construction styles have been introduced to cope with dry dusty environments, applications that require high pressure washdown and circum-

stances in which the machines are subject to rapid changes of temperature, for example from freezer tunnel to hot water cleaning.

More information - enter 125

SEPHA

Non-destructive leak test saves pharma blisters

The Sepha BlisterScan is a leak tester which uses sensor technology to identify individual leaking blister pockets, providing a clean, dry and non-destructive alternative to the traditional blue dye test.

With the traditional method, blisters which pass or fail the test cannot be re-used, but with BlisterScan wastage is reduced since passed packs can be reintroduced to the line, while failed packs can be deblistered and repacked.

The test cycle takes 2 minutes and identifies the precise pocket which leaks, facilitating diagnosis and preventing the production of a large number of rejects. It detects leaks and weak seals as small as 5 micron across a full cross-section of the blister web.

Unlike the blue die test, says Sepha, in which operators need to make a pass/fail decision, the BlisterScan displays a pass or fail for each pocket shown on its screen and can also be fully validated.

Two low cost plates are required for each different blister format while changeover itself takes 30 seconds and requires no tools.

More information - enter 126

SAFELINE

Higher frequency lifts sensitivity for metal detector

The new Signature IS range of metal detectors from Safeline is designed to offer enhanced sensitivity by using an ultra high operating frequency – up to 850kHz – which, the company maintains, is three to eight times higher than most metal detectors in use today.

"This level of sensitivity to metal means that the Signature IS is able to distinguish tiny pieces of stainless steel, swarf and fine slivers of metal even in the most difficult applications where the product itself gives off an electro-

magnetic signal," says Safeline

Signature IS machines also have a new Faraday screen to protect the system from product effect and background signals, prior to amplification, so improving detection capabilities.

More information - enter 127

ROMACO UK

Auto inspection takes the data matrix route

Natural healthcare products manufacturer Bioforce is introducing automatic inspection of all packaging components at its plant in Irvine, Scotland, using data matrix and 2D-Pharmacodes and Laetus code reading equipment from Romaco UK.

Five Argus 6012 code readers complete with Cosi 820 scanning heads have been installed on various machines at Bioforce and its packaging suppliers Kennedy Smith Press and CV Labels, including a carton gluer, a label rewind unit, a cartoner, a labeller and a leaflet folder. These will ensure 100 per cent inspection of cartons, leaflets and labels carrying the 2D-Pharmacodes or data matrix codes.

Previously, Bioforce employed checks on incoming goods and regular visual verification of materials during the packaging operation to ensure quality. Now on-line inspection will be 100 per cent.

As quality assurance manager David Belshaw explains, "On-line inspection is the ultimate safeguard against product recalls due to packaging mix-ups and it will also be a great benefit in terms of compliance issues such as batch reconciliation."

The advantages of data matrix and 2D-Phar-

macodes rather than standard barcodes, were compelling from the outset says Mr Belshaw.

"The footprint of the code was a major consideration for us as the labels for some of our products are extremely small," he explains. "Second was the high number of possible permutations: we have over 100 products in our range and different packaging components for each, so the availability of code configurations is important."

Additionally, since matrix codes are designed for in-house allocation, Bioforce can tailor content to match its own management information requirements precisely, without reference to external bodies.

The Laetus 2D-Cosi scanners interfaced with the Argus 6012 control units incorporate CCD technology, which captures an image of the entire code. The system is said to have a high image capture and decode rate, making it suitable for the fastest line speeds.

More information - enter 128

FESTO

Fast acting valve allows higher line speeds

Pneumatic components from Festo for reject systems now include the new MHE-2 fast acting valve, which can be employed in new machinery, or retrofitted on existing installations to give a faster cycle time and so allow higher machine speeds and reduced product pitch on the outfeed conveyor.

The valves are said to be particularly compact and, for ease of installation, can be supplied with pre-assembled cables that connect directly to valve terminals. Up to ten valves,

pre-assembled and tested, are available as a sub-assembly on a valve manifold.

Also in the range are pusher rejects, air blast rejects, and soft rejects in which rotary actuators, giving 180deg of movement, are coupled up to a reject arm.

In particular, Festo has also developed a range of guided cylinders which eliminate the usual need for additional guides, such as bearings, within a pusher reject mechanism, reducing cost and assembly time.

More information - enter 129

LOCK INSPECTION SYSTEMS

Metal detectors handle fish with no false alarms

Youngs Bluecrest Seafoods has updated the metal detection facilities at its Marsden Road factory in Grimsby with five new Lock Met 30+ machines for retail pack inspection.

They run at 50 packs a minute, well inside their maximum speed, and employ a checking system in the reject station to ensure fail-safe transfer of contaminated product into the reject bin. This operates via a confirmation sensor which will stop the detector if rejected product fails to pass the photocell within the bin.

Lock points out that wet products such as fresh fish have traditionally presented metal detection problems, since moisture can be the cause of frequent false alarms.

"By recording the profile of conductive products, the Met 30+ automatically tunes the detector head to recognise the presence of metal contaminants, so countering this problem," says the company.

More information - enter 130