

# CODING AND MARKING

REPORTS ON DEVELOPMENTS IN PRINT-APPLY LABELLING, INK JET PRINTING, LASER MARKING AND ON-LINE CODING SYSTEMS.

LASER AND INK JET CODING

## Laser costs come down as ink jet finds its level

When laser coders first came on the scene, some pundits predicted that they would eventually supersede ink jet coders in most applications.

In the event, while laser technology has not exactly dealt a fatal blow to ink jet printing, it has become a serious challenger to ink jet in applications such as glass and PET bottling where a permanent, indelible mark is required.

"Laser is the number one method of anyone who uses a bottler, on the grounds that it is hugely reliable, doesn't use any consumables and requires very little maintenance – plus it is better suited to difficult production conditions," says Nick Horne, UK sales manager with Domino UK.

Cartonboard is another substrate that lends itself to laser coding. UK bakery Warburtons has purchased a SmartLase 100i laser coder from Markem Systems for applying variable date codes to boxes of All in One Riddlers pre-filled bread rolls.

"In the past we would probably have used a continuous ink jet printer for such an application, but a laser coder has proved far more reliable as well as more cost-effective in terms of lifetime costs," says Chris Beer, engineering manager at Warburtons' Blackpool bakery.

And Taylors of Harrogate – manufacturer of the Yorkshire Tea brand – has been using laser coders from Linx for over a decade and today has eight machines on site, including two new Linx 500SL scribing lasers, for coding the board cartons used for Yorkshire Tea.

The 500SL coders are devoted to printing



**Multi-lingual codes:** Taylors of Harrogate is using scribing lasers from Linx to code its tea cartons

multi-lingual codes for export. "Each country has different legislative needs, so to streamline our logistics we use a generic box design worldwide which the Linx machines code directly onto," says David Lamb, group head of engineering at Taylors.

### Printing complex characters

Sometimes this involves printing a large number of complex characters onto each carton. For example, Mandarin symbols are required for packs destined for the Chinese market.

Information to be printed is downloaded directly to the Linx lasers from Taylors' server, ensuring the accuracy of unfamiliar languages that operators would find hard to replicate.

According to Domino's Nick Horne, a lot of companies in other industries would like to switch from ink jet to laser, but the problem is that CO<sub>2</sub> lasers can't cope with all substrates, such as hdpe and reflective metal surfaces.

Price is also a major factor influencing the

uptake of laser coders. Although prices have fallen significantly in the last few years, lasers are still typically two or three times more expensive than ink jet printers, which makes them price prohibitive for many manufacturers.

Mindful of this, laser equipment manufacturers have been concentrating on developing lower cost offerings.

"There is continued demand for lower cost, lower powered lasers for coding a wide range of materials, including cardboard and PET," says Mike Utley, senior product manager (laser and thermal transfer overprinting) with Linx. "This is a demand Linx already serves with its 30W laser and will continue to do with new product innovations."

Similarly, The Needham Group says Macsa CO<sub>2</sub> lasers, which it distributes in the UK, are priced comparatively to many continuous ink jet systems, particularly when the cost of ink jet consumables and maintenance is considered.

Allen Coding is marketing its new generation

of laser coders as a cost-effective range for the food, beverage, personal care, pharmaceutical and household chemical industries.

There are two models in the LaserSystem Plus series – the K-1010 10W and K-1030 30W. Both are said to be compact and easy to install into primary packaging lines for producing static or dynamic codes on a range of substrates, including plastics, varnished and anodised metal, glass, paper and coated and printed cardboard. In addition, the units incorporate a high speed marking head, Ethernet interface and integrated air cooling system.

### High speed applications

Imaje says it has addressed the need for speed with its 7031S scribing laser, which was specifically developed for marking on PET. It is said to provide outstanding contrast, quality print and long-lasting readability at high production speeds.

Macsa has extended its K-1000 range with the launch of a model aimed at high-speed bottling lines. The Macsa K-1000 SHS (Super High Speed) is capable of coding at speeds of 500 metres a minute which, according to Needham, makes it 60 per cent faster than the current industry standard.

Videojet Technologies, meanwhile, has just launched a new system called the 3430, which is said to combine high speed coding with 50W of laser power. Capable of coding up to 1500 characters a second, the Videojet 3430 is said to be ideally suited to beverage, brewing, food, packaging and extrusion applications. Moderate speed lines, such as those in the personal care, pharmaceutical and industrial component industries, will also benefit from its high speeds and resolution, says Videojet.

An integrated user interface, small marking head and flexible, articulated arm mean the laser is easily integrated into any line. The IP65 rated housing and self-contained cooling system are said to ensure high uptime, even in dirty, dusty or wet environments.

Despite such developments, where speed is a key priority, in the majority of cases ink jet remains king.

Kimberley Clarke, for example, is a loyal user of Hitachi CIJ printers – distributed in the UK by Euromark – because it finds they operate well in a high volume production environment where speed, marking clarity and reliability are vital.

The Hitachi PXR can code at rates of 700 metres a minute. Automatic cleaning heads are



**High speed, high power:** Videojet has launched the new 3430 laser coder in an IP65 housing

said to ensure high reliability and uptime, long service intervals, and low solvent use while a high proportion of in-house engineered components contribute to lower running costs.

Similarly, Ivor Shaw – a manufacturer of single use medical devices and customer procedure packs – relies on multi-head, multi-jet equipment from Imaje to print millions of characters at speed every day.

### Large amount of text

Plant and development manager Darryl Orridge says: "The twin jet option on the 9030 gives us the ability to print a large amount of text at speed and, with the Imaje Message Centre, operators can download messages simply and quickly – imperative when there are 25-30 messages a day."

Even though the uptake of laser machines is growing, they still only represent a fraction of coder sales, with ink jet being the most commonly used coding technology.

"Where people have got a limited budget and both an ink jet coder and a laser coder can do the job, 95 per cent of the time they will go for the ink jet," says Domino's Nick Horne.

One reason for this is the higher price tag of laser coders, but it is also because for all their benefits, laser coders still have their faults and limitations, as Sunala's Harry Thomason points out.

"True, there are no consumables, but the laser tubes have a limited life, and the materials

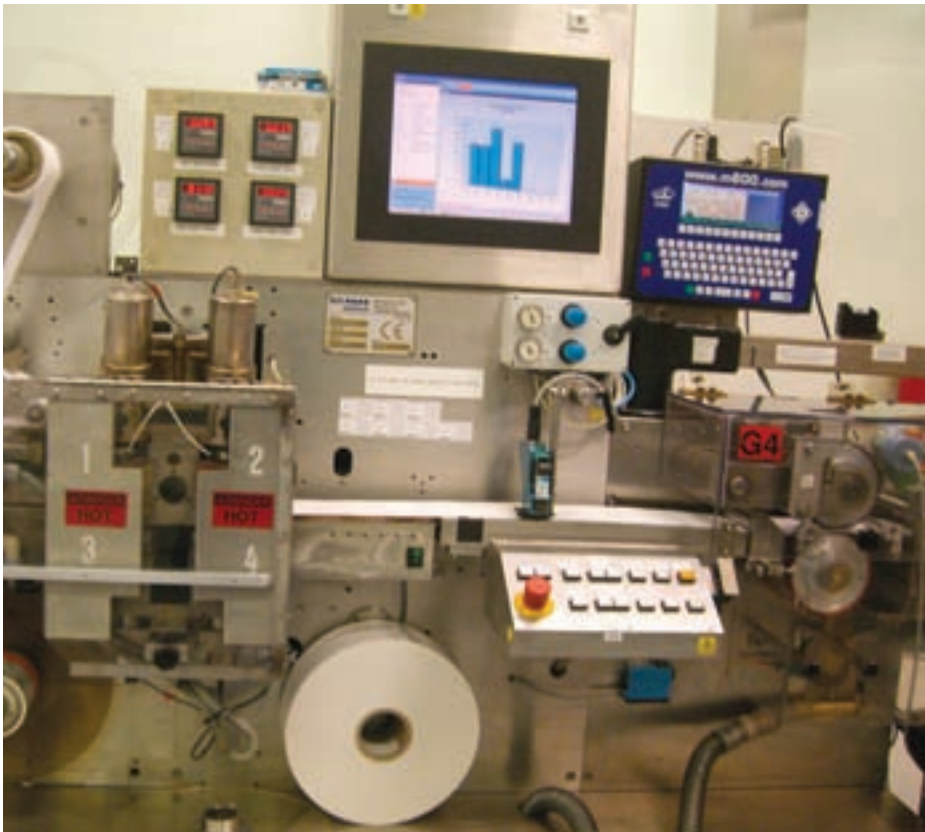


**Faster coding:** Macsa K-1000 SHS is capable of speeds up to 500 metres a minute

the laser burns off can be carcinogenic, so you need sophisticated extraction systems to get rid of them."

Ink jet coders have their drawbacks too. The main disadvantage has always been the level of maintenance required.

"Ink jet's reliance on solvents raises issues of materials storage, waste disposal and health and safety," says Mike Whiteoak, marketing manager at Markem Systems. In addition, it is



**Coding at Smith & Nephew:** Wolke m600 ink jets code primary and secondary packs as well as bandages

much 'messier' than laser, and despite advances in ink handling, spillages do occur.

Markem has addressed this issue with its Touch Dry technology, while at the same time improving print quality. With the Touch Dry jet, the ink is a thermoplastic block, solid and clean to handle in ambient temperatures. It is heated on demand to the viscosity needed for jetting, drying on contact with the substrate to form clear, crisp print.

Sunala markets the Wolke m600, a thermal transfer ink jet (TIJ) printer, as a clean, economical and easy to maintain alternative to CIJ printers.

"It uses disposable HP cartridges just like you use with a desktop printer," explains Harry Thomason. "And the cartridge isn't just an ink reservoir – it also contains all the mechanisms you find in a CIJ printer. It is also incredibly economical, especially in a small character application. In a typical pharmaceutical application with two lines of expiry and a lot number, you'll get up to 500,000 codes from a cartridge, which means the cost of ownership is around 12-15p per 1000 codes. Couple this with the fact that the only maintenance is changing the cartridge and it's a pretty economic option."

Mr Thomason says the Wolke m600 is particularly suitable for printing Data Matrix codes, a key requirement of animal health product customers, as the International Federation for Animal Health has recommended that ani-

mal health products should be coded with Data Matrix codes.

"If you take a typical ink jet printer, it will code at 60-80dpi. The m600 will go up to 600dpi, and because it prints alpha- numerics you get letter quality coding, which is crucial in the pharmaceutical and personal care industries as they use vision systems to check codes."

Fifteen Wolke m600s are in operation at Smith & Nephew's factory in Hull. The printers are being used to code a variety of information, including lot and date codes and machine/production line details onto both primary and secondary packs in a variety of materials, including directly onto bandages, at speeds up to 300 packs a minute.

### **Lower running costs**

Andrew Marris, asset care manager at Smith & Nephew, says the running costs of the m600 are far lower than the printer used previously. "Prior to the Wolke m600, we used thermal transfer printers but we found spares and maintenance costs very expensive," he says.

The Codajet 6000Plus introduced by Sauven Marking can be fitted with an optional automated print head said to be a cost effective replacement for CIF printers. It can provide up to eight lines of text while features include a Qwerty keypad, a colour screen and PC connectivity.

Connectivity and the ability to network together several coders are increasingly being

## YAG lasers use less power and last longer

The FAYb laser coder developed by Sunx uses less power than other YAG lasers and provides longer life by the use of new technology that excites and amplifies the laser inside a fibre-optic cable.

UK representative Panasonic Electric Works says that compared with previous generation YAG laser technology, the FAYb (fibre amplified ytterbium) laser beam quality is higher, giving extremely consistent marking quality yet without the need for periodic maintenance.

Sunx FAYb lasers are said to operate with an energy conversion efficiency of about 50



per cent. In addition to virtually tripling the laser diode's life cycle to some 30,000 hours marking time and also giving 70,000 or more hours

lifetime, the power consumption is reduced to one third that of typical YAG lasers.

Speed is over 700cps, making the air-cooled lasers suitable for high speed lines.

demand by large companies, says Domino. It has just launched the A Series of CIJ printers, which includes ethernet communications as standard, so printers can be networked locally or enterprise wide. The A Series also has the capability to send e-mail alerts to operators, for example, to notify them that a make-up cartridge needs replacing.

"If we can proactively email them, it prevents downtime and increases line efficiency," explains sales manager Nick Horne.

Aled Ellis, marketing manager with The Needham Group, agrees that this is a key trend for both laser and ink jet coding systems. Both the Macsa laser and Citronix continuous ink jet systems have Ethernet connection for networking printers. In fact, the newly launched Citronix ci2000 systems also feature ciLink software, which is an embedded full web browser interface to allow complete control locally or remotely.

"Anything accomplished at the system keyboard can be accomplished via the virtual web browser interface, and soon, the systems will be able to send e-mail notifications for routine maintenance and critical situations," he says.

Linx says ease of use and 'future proofing' to cope with changes in coding requirements are two of the key criteria buyers are seeking from CIJ printers, and says its Linx 6900 machine, launched in April, meets both demands.

The 6900 can print up to five lines of text, graphics and barcodes at line speeds of up to 8.4 metres per second. Key features include networking capabilities, a curved enclosure with minimal dirt traps and an IP65 rating. Low maintenance and trouble-free start-ups are said to be assured via a full print head autoflush on every shutdown.

### PRINT-APPLY LABELLING

## Challenge goes out on industrial build quality

Logopak is in the process of designing a new print-apply system which it says will be "extremely price competitive in a challenging market", and will be "much more industrial than competitive offerings and have recognisable Logopak industrial build quality and life expectancy."

Branded the 400 series, the systems are intended to complement the recently introduced 500 labellers and are scheduled for launch in early 2008. But where the 500 is a more sophisticated system for high speed lines, the 400 will be designed for slower speed applications such as mail order, kegging lines and carton lines.

New RFID controllers, a new drive system and new motors will be among the key features of the range. This will also be the first product to be available with Logopak's PLIII-X controller, which is said to have major benefits over the current generation of PLII controls.

Several Logopak case labelling machines have just been purchased by retail own brand soft drinks supplier Cott Beverages for its plant in Nelson, Lancashire.

The 515 labellers are being supplied for six production lines including carbonates and aseptic. Each will have an integrated bar code scanning system and Ethernet interface for later connection into a "Logosync" software solution which will provide data from a resident host software being sourced by Cott.

Logosync software will accept downloads of works order files into a PC which will then extract the label data to be printed and send an update to each labeller. Label data will then be recalled by the line operator from each machine's internal memory, which will have the full range of products loaded.

### Winning two awards

Meanwhile the Imaje 2000 series system has recently won two awards – the Red Dot Design Award and the IF Product Design Award.

Imaje says the features that earned the series these accolades include an easy to navigate operator keypad, a simple label thread path and a large capacity roll holder, which makes switching from one label size to another quick and uncomplicated. To keep downtime to a minimum, the ink ribbon and label roll have a synchronised service life, meaning only one stop for changing both.

Domino has made a late entry into the print-apply market, following the acquisition of Swedish firm Mectec Elektronik AB last year, and showed the M-Series of print-apply systems at the Total exhibition in May. The series includes thermal transfer and direct thermal printers for short life labelling, as well as a system with RFID programming and reading capabilities and a printer-applicator for pallet coding.

Domino says the series has been developed to maximise production output and minimise disruption. Features which assist with this include simple label selection, large label and ribbon capacity, optional sensors to alert operators

## Scanning and verification -

Many manufacturers fit their print-apply machines with a scanner that will read the bar code as the label is applied, establish that it is the right one and signal the machine to reprint if it cannot read the code.

However, this is sometimes confused with verification, which is another process altogether.

As *Bar coding - Getting it right* from GS1 UK points out: "Bar code scanning provides no indication of bar code quality as it gives no information about the symbol other than whether it can be scanned or not by that particular scanner."

The verification procedure however provides much more information about symbol quality, to help establish that bar codes are capable of



**Case-labelling:** *Cott Beverages has bought Logopak 515 print-apply machines for its Nelson plant*

when consumables are low, and straightforward label and ribbon paths.

Asked why Domino decided to join an already saturated marketplace, Nick Horne, UK sales manager with Domino says: "There are a lot of niche suppliers out there focusing on a specific type of print or a specific market, so I think there is room in the market for a good quality supplier who can cover a range of applications."

One such niche system is Codeway's Green Machine, a horticultural print-apply machine which has halved the cost of labelling pot

plants for RA Meredith, which supplies the major multiples.

The company was labelling 90mm pots by hand, and achieving throughputs of 500 pots an hour per operator, excluding the time taken to print labels in advance. Based on this throughput, the cost to apply a label to a plant pot was about 1p.

Installing the Green Machine has increased potential throughput to 5000 pots an hour although this is limited by the speed at which a conveyor can be loaded and unloaded. Even so,

## ... an extremely important difference

being read by other scanners in the distribution chain.

Having checked that the bar codes are in the correct position and are not shortened in height (truncated), verification equipment can be used to obtain an overall grade for each symbol.

Verifiers that meet the international requirements will make measurements of and grade seven separate parameters of the code. All of these criteria are measured separately and the grade given to the bar code is the lowest score for any one of these measurements.

All of these characteristics can be measured by verification equipment which meets the requirements of ISO/IEC 15426-1, which incorporates the CEN standards. These standards are compatible with those from ANSI

(the American National Standards Institute) and the table below shows how they compare.

Range (CEN)	Alphabetic grade (ANSI)
3.5 to 4.0	A
2.5 to 3.5	B
1.5 to 2.5	C
0.5 to 1.5	D
0.5 and below	F

This standard applies to all the bar codes used by the EAN-UCC system, and provides a basis for agreeing the quality of symbols.

The aim is to produce bar codes with grades 4 or A, although this will be difficult with some printing processes and materials. All bar codes should be grade 1.5 or C or above, except for ITF-14 symbols printed on to fibre-board, when grade 0.5 or D is acceptable.



**Base labelling:** New AEW Delford 620 machine can label 160 trays a minute with variable information

three staff are able to handle some 2880 pots an hour, halving the cost per pot.

One virtually untapped area of opportunity in print-apply is linerless labellers. The benefits are clear: using a continuous reel of self adhesive label material means there is no backing paper waste, reels are lighter and yield up to double the number of labels per reel, and by running for longer between media changes there are fewer interruptions to production.

Linerless systems have been around for a while, but issues with feeding the media, adopting the technology using industry standard print engines, cutting or separating the media into desired lengths and achieving high quality print for barcoding have all presented hurdles in the past.

However, Cobalt IS now believes it has a system that addresses all these issues. "The linerless media has been devised by specialists in printed tape production, the application equipment has been developed using proven media handling and application techniques and the print quality has been verified to ISO and GS1 standards," explains Janet Thorpe, director at Cobalt IS.

The system uses established print engine technology, label designs and data connections and is capable of speeds of 80 packs a minute.

Dave Evans, sales director with AEW Delford, agrees that linerless systems are likely to play a more prominent role in the future.

"There aren't many good linerless systems around – we are well down the road towards a linerless system but it needs to have printing capabilities which isn't easy. It's a little way off but it will come because that's the way the market wants to go," he says.

But for now, the company is busy launching its new 620 base labeller.

"We introduced the base labeller because as traceability becomes more important and manufacturers have to include more information on-pack, there is increasing demand for base labels on trays," says Mr Evans. "Pre-printing different labels for each product is expensive."

The 620 can print and apply labels to food products at speeds up to 160 labels a minute. Label formats are selected via a simple user interface, and the 620 can be connected to AEW

Delford's proprietary networking system, allowing label formats, bitmaps and fonts to be transferred at high speeds via an Ethernet connection.

Making equipment RFID capable has been another focus area for many print-apply system manufacturers of late. Indeed Weber Marking Systems has just launched an RFID version of its 5200 printer-applicator.

The 5200rfid features a system that can print, encode, verify and apply pressure-sensitive RFID smart labels to cartons and pallet loads in a single operation.

As labels are printed, digital information is encoded onto thin, ultra high frequency tags that are embedded in the smart label material. The encoded information is verified immediately by the system and the smart label is then applied to the top or side of a carton or pallet load. Labels up to 125 x 150mm can be dispensed at up to 300mm a second.

If an embedded tag cannot be verified, it is rejected before it can be applied. A swing plate intercepts the smart label for subsequent collection and disposal, without affecting the running of the production line.

Labels are formatted using Weber's proprietary Legitronic print-apply software, a PC based package that combines label design, editing and printing with RFID encoding to create readable smart labels.

## **ASDA suppliers take advice on coding**

UK multiple ASDA has identified pack coding and labelling accuracy as a key element in the company's drive to reduce costs.

"A large number of product withdrawals are down to coding errors," explains John Clague, head of technical, ASDA Brand.

"We recognised that improving coding accuracy and product traceability would not only further enhance our overall quality but also maximise the number of fresh product days available to customers in store, while improving product availability and reducing stock loss."

To this end, ASDA has employed Coding Management, the advisory division of packaging coding management systems (PCMS) specialist Claricom, to investigate and propose best practice operational procedures for on-pack coding and marking.

On behalf of ASDA, Coding Management has worked with several suppliers to review in-plant coding and labelling, and has identified a number of improvements that could be made

by manufacturers in the areas of demand planning, forecasting and order fulfilment.

"The first phase of our project has identified potential improvements in coding management, and significant reductions in product and packaging waste," says John Clague.

Coding Management says a typical manufacturing facility can build up annual savings between £50,000 and £500,000 by taking a best practice approach to managing its package coding operations.

This could include reducing human intervention when setting up coding equipment, to eliminate coding errors, the resulting cost of wasted packaging and product and reworks; optimising product life to increase sales and reduce stock loss; eliminating product withdrawals and establishing effective processes for storing and applying variable coding data, to eliminate inconsistencies and consequent avoidable costs.

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THERMAL TRANSFER

# Market entrants highlight ribbon saving systems

As part of its drive to make complete coding solutions available to customers, Domino has entered the thermal transfer market, following its acquisition last November of Danish thermal transfer overprint company Easyprint, and its more recent purchase of On-Line Coding, Easyprint's UK distributor.

Domino's thermal transfer overprinting offering is branded the V-Series plus, and the first system available in the UK is the V200+.

The V200+ is capable of applying variable data including text, real time clocks, bar codes, Data Matrix codes and logos onto flexible packaging materials at a print resolution of 300dpi.

Designed for use in both continuous and intermittent modes, the system can be mounted on a variety of packaging machines. It incorporates 'dancing arm' technology, which maintains ribbon tension between new and used ribbon spools, resulting in less maintenance and higher production speeds.

Domino claims the printer's patented Variable Ribbon Economy feature, which allows the imprint on the ribbon to be considerably less than the actual print size achieved on the product, offers ribbon savings up to 60 per cent. This, combined with the ribbon auto-retraction system, which ensures less than a 1mm gap exists between the prints on the ribbon roll, provides huge consumable cost-savings by minimising ribbon waste, according to Domino.

At the opposite end of the speed spectrum, the Imaje 5000 thermal transfer coder has been modified to meet the needs of the bakery industry where filling processes are high speed – commonly 40 metres a minute – and operate in continuous mode.

An enhancement to Markem's SmartDate 5 thermal transfer coder, meanwhile, is said to safeguard manufacturers against missing date and batch codes.

In continuous coding operations – particularly bagging and flow-wrapping – missed or incomplete codes can occur if the packaging film is stopped during the printing cycle. For instance, if the operator halts the line to make a machine adjustment, or to address a set-up error, the result could be a non-coded pack, and a potential product withdrawal. To prevent this,



**Missing codes avoided:** Markem SmartDate 5 thermal transfer coder

the SmartDate 5 coder automatically detects the slowing of the film and completes a readable code, even if the film comes to a stop halfway through the printing process.

### Three month trial

Markem says that during a three-month trial involving over 15 million prints, the SmartDate 5 eliminated all non-printed packs despite the normal incidence of line stoppages.

Indeed, at Thorntons' factory in Alfreton, Derbyshire, the installation of a Markem SmartDate 5 has reduced batch changeover times, cut ribbon costs and boosted output.

The chocolate producer purchased the Markem coder to replace an old rotary coder on

one of its packaging lines. It is being used to continuously print best before dates and traceability data on 25 different varieties of chocolate bar. The coder can also automatically calculate best before dates using preset formulae, to reduce human error caused by manual inputting.

The shuttle design of the Markem coder has enabled Thorntons to ramp up the speed of its coding process to around 300 packs a minute. In addition, Markem worked with Thorntons to reduce the length of the code being printed from 30mm to 20mm, thereby reducing the amount of ribbon used by a third.

Technical process manager Mark Champion says: "With the old rotary coder, it took about

## Contact ink marking offers cost-effective simplicity

Contact ink marking may not be hi-tech, but it is certainly well proven and cost-effective.

If the application is to print a batch number, a date or a price then, says Cap Coder, the simplicity of its Gentle Touch reciprocating coder can be particularly attractive.

The machine is able to run at speeds of 160 a minute without damage to packaging; a fact proven, says Cap Coder by its ability to code the surface of an egg yoke.

The small print heads are fitted with a type holder to carry the rubber type which can be quickly changed. Multi-coloured ink cartridges are also quickly replaced and last typically for over 50,000 sell-by date codes using 2.5mm high type.

The Gentle Touch can be supplied with control modules for installation on a production line, as part of a capping machine or as a benchtop unit for short runs.



**Cost-effective:** Gentle Touch ink coding head installed on a Top Coder benchtop system

## CODING AND MARKING

15 minutes to change over each batch, because we had to wait for the barrel to cool down for the brass lettering to be changed manually. With the SmartDate, 5 changeover is virtually automatic."

Codeway has carried out a number of thermal transfer installations recently, including supplying a printer for high quality art paper identification. Having used an Avery Dennison ribbon save printer for some time, Innova Art invested in the latest 125mm machine, which accepts labels up to 150mm wide for wrap-around labelling of fine paper cartons.

Mike Ramos-Gonzalez of Innova Art says: "It is almost impossible to see which section of the label has been overprinted and we are very pleased with the end result."

Wenlock Spring Water, having invested in a fully automated robotic system for loading water casks on the line, needed a means of identifying products with outer carton barcodes. Wenlock chose the Avery Dennison 5.4 dispense printer together with Nice Label software from Codeway.

The Nice Label software provides full database linking and the ability to create any barcode label design required by the major multiples and to meet GS1 guidelines. The 5.4 dispense printer provides the means to handle and rewind larger label runs.

Contract packer Country Products has ordered six Allen Coding Systems Jaguar II printers as part of a redesign of its packaging lines for bags of dried fruit, nuts and snacks.

The Jaguar II 52i and 106i models will be networked and installed on three vertical form-fill-seal machines where they will operate in tandem for high speed application of variable details directly onto the film, replacing traditional pressure-sensitive labels.

The coders will be mounted on 90deg swivel



**Off-line overprinting:** Unwins has chosen a system from Rotech Machines for seed envelopes

heads designed to ensure accurate positioning of information and will help boost output from 20 to about 40 bags a minute.

### Speed up to 350 a minute

Allen Coding's Jaguar II 52i coder reproduces bar and source codes, real time information, sell-by dates, batch numbers, graphics and prices. It offers a print area of 52mm x 80mm and speeds up to 250mm a second or 350 prints a minute. The Jaguar II 106i intermittent printer offers a print area of 106mm x 125mm and speeds up to 200mm a second or 300 prints a minute.

But on-line coding doesn't suit every business. As Richard Pether from Rotech Machines points out, where a large amount of high quality print needs to be added to a pack, off-line thermal transfer coding may be more suitable. It can also solve the problem of how to supply hand packing lines with coded components, be

they carton blanks, sleeves, envelopes or labels.

By combining the right thermal printer with a suitable feeding system, Mr Pether says just about any item can be printed off-line and at surprisingly high rates of throughput.

Unwins, the seed and bulb supplier, is a case in point. At Unwins' distribution centre near Huntingdon, a wide variety of different types of seeds are packed into envelopes which carry information on the type of seed, sowing instructions, and a 'sow by' date. Having these pre-printed would require holding a vast number of variants. For this reason, Unwins had always purchased plain envelopes for their mail order division which they would print on demand.

However, growth in the business demanded that a new off-line printing system be purchased to cope with increased throughput and Rotech's Feeder 250 was selected. By using a continuous motion thermal printer, the system is able to keep up with the higher demand. ■

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