



WHITE PAPER

CODING AND MARKING SOLUTIONS FOR CONFECTIONERY AND SNACKS

1 Introduction	2.1 Reliability	2.2 Quality coding	2.3 Productivity	3 Printer selection – factors to consider	4.1 Continuous Ink Jet (CIJ)	4.2 Laser 4.3 Large Character Marking/ Piezo Inkjet	4.4 Thermal Ink Jet Printers 4.5 Thermal Transfer Overprinters	5 Conclusion
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1 Introduction

The confectionery and snacks markets are both growing. In the UK, revenues in the confectionery industry are anticipated to increase by 1.4% in 2018 after several years of decline, while the UK snacks market remains the largest in Europe, with the highest growth rate in all Western European countries^{1, 2}.

These markets may be long established but they continue to evolve to meet changing trends and developments. The confectionery sector has seen the introduction of many artisan brands and 2017 saw a move towards more experimental, personalised and texture-oriented products³. The growing problem of obesity and the link to products with high sugar content are leading to the introduction of smaller pack sizes.

For savoury snacks, the crisp might still be king but there are now many pretenders to the throne. Popcorn is the latest star performer with sales almost trebling over the past five years. Health-conscious consumers are driving demand for more nutritious options, and on-the-go lifestyles mean packs that are portable and convenient are in high demand^{4, 5}.

All such developments offer great opportunities to manufacturers but competition remains intense. Other factors that may impact on a business's bottom line include fluctuations in raw material prices, for example cocoa, which can then impact on the size of packs.

To meet these challenges, an effective coding solution can play an important role in helping companies get the best out of their packaging, and their packing lines.



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2 How effective coding supports confectionery and snacks production

2.1 Reliability

For any confectionery or snack manufacturer seeking to maximise opportunities in their sector, a reliable coding solution is essential to enable them to meet their production targets and avoid unnecessary, unplanned and expensive downtime. Certainly reliability was the number one priority among respondents in Linx's Voice of Customer research into these sectors.

High quality printers will deliver consistent coding, with longer service intervals and low-cost maintenance that maximise performance while minimising operating costs.

A robust construction will be able to deal with any production environment or 24/7 operation. Features such as an IP55 (washdown) or IP65 (dust proof) stainless steel enclosure, and a sealed and self-cleaning printhead offer additional protection in wet or dusty environments.

The self-servicing option on some **Continuous Ink Jet (CIJ) printers**, with no need for an engineer to attend, will also be a major benefit in production planning, providing the flexibility for maintenance to be scheduled at a suitable time.

Longer intervals between services will contribute to a reliable and efficient operation. Some laser coders, for example, offer a tube life of around 45,000 hours.

Ongoing new product development and different requirements for different retailers are contributing to shorter production runs, so another important feature of a machine's reliability is its flexibility to cope with varied coding requirements. This could include: the ability to store settings for multiple SKUs or production lines, which enables fast changeovers; a truly portable printer which can be quickly moved between lines; or the ability to code both primary and secondary packaging with the same printer.



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2 How effective coding supports confectionery and snacks production

2.2 Quality coding

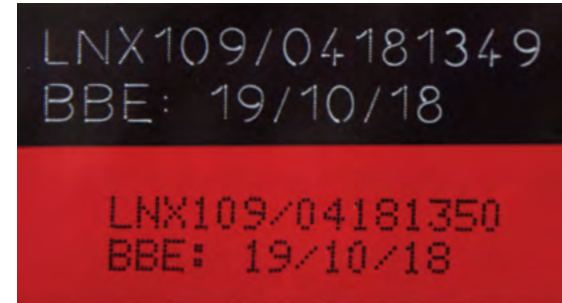
The quality of a code will not encourage consumers to select a brand of confectionery in preference to another – but it may be the reason that they put it back down again.

Linx’s snapshot consumer research found that nearly three quarters of respondents look at best before dates on food. For well over a third of them, a smudged or illegible code would be enough to stop them buying the product, and nearly half would probably select an alternative.

A quality code is equally essential to make sure companies are meeting the relevant regulations for product information and traceability, as well as the high standards required by the retail sector.

Latest coding technologies can be used for enhanced marketing purposes, such as QR codes that provide consumers with additional information or are part of a promotion or competition.

For many artisan producers looking to extend their supply of products to the larger retail chains, a move to digital coding techniques from manual methods will provide the step-up in quality necessary for this type of expansion, as well as producing a code more in keeping with the premium image of their products.



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2 How effective coding supports confectionery and snacks production

2.3 Productivity

Many companies are introducing lean manufacturing principles to help increase competitiveness and efficiency. Coding equipment can play a valuable role in achieving this. As well as the overall reliability of the machine, which avoids unplanned downtime, this includes maximising speeds, reducing waiting time, and minimising waste, all of which support increased manufacturing uptime.

Speed and flexibility

A printer that can handle a variety of requirements, including multiple lines of text and human- and machine-readable codes, provides the versatility to meet different standards and regulations. A printer with a traversing printhead feature, or the ability to code across a wide area, would be able to code across multiple lanes of products in one pass and at speed.

Reducing stoppages

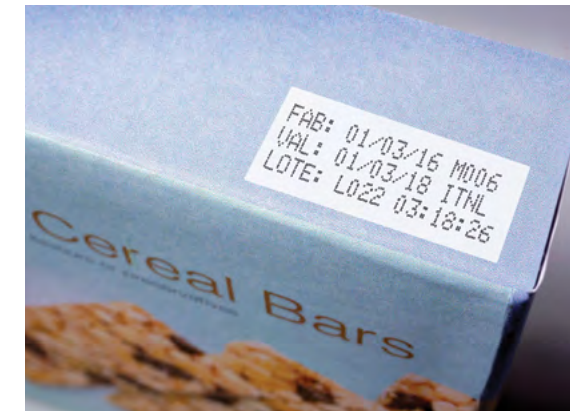
Features such as self-cleaning printheads will reduce blocked nozzles and maximise printer uptime, while timely and visible notifications of low fluid levels allow refills to be scheduled into planned production line stops. Planned stoppages can also be minimised through the use of printers with longer service intervals.

Minimising waste

Coding solutions help to minimise waste by ensuring the correct information is printed every time, that it is legible and in the right place on the pack. Simple message selection, intuitive user interfaces, and large message storage capacities, ensure the right code is inputted first time, every time. Automated message selection and remote monitoring further reduce the risk of code errors.

Reducing processes and over-production

Technology which requires minimal start-up procedures and where the first print is as good as the last means there is no need to leave machines switched on permanently, or to run them every day. Machine versatility enables manufacturers to use a single model for several applications, printing onto a range of substrates and packaging types. Having the smallest number of coder machine types on the line will also lead to fewer instructions to learn and a reduced inventory of consumables.



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3 Printer selection – factors to consider

Code content, substrate, line speeds and the factory environment are critical considerations in the selection of the most appropriate coding solution. It is important to have each pack material sample-printed, plus a trial of the printer on the production line is worthwhile, so that it is exposed to real-life production factors such as speed, sugar dust or moisture.

The overall Cost of Ownership of the proposed new machine should be investigated. This takes into account the initial price and factors such as reliability and the cost of consumables over its lifetime, along with the cost and frequency of servicing. Frequent breakdowns can negate any benefits of a lower purchase price.

Leasing and rental options may also be worth exploring. These are particularly useful solutions to meet urgent seasonal peaks in production without waiting for capex authorisation.



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4 The different coding technologies

4.1 Continuous Ink Jet (CIJ)

A non-contact printing technology, CIJ has the ability to print onto almost any substrate, such as flexible packaging, coated card, plastic boxes and metal tins. A wide range of inks is available, including:

- Different colours to complement pack designs and to ensure legibility on any colour substrate
- Food grade inks for applications where the code may come into contact with the product, for example a prize code on the inside of a wrapper
- Inks that adhere particularly well to flexible packaging
- Fast-drying varieties for high speed flow wrap lines.

CIJ can print from one to multiple lines of text and simple graphics on line speeds of over 7m/s for a single line of code. The compact printhead can be situated above, beside or beneath a production line or traverse from side to side across the line. With lighter models increasingly being produced, the CIJ printer is more capable of being quickly moved from line to line and is fast to install and setup.

The technology offers the ideal solution to enable start-up and growing businesses to move away from manual coding methods such as roller coders or waxjet, which are slow and can be difficult to change codes. The result would be higher quality and greater consistency of codes.



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4 The different coding technologies

4.2 Laser

Laser marking provides a permanent high-quality code, and is suitable for a wide range of substrates at any line speed, including coated foils, paper and plastic film packaging. There is no ink involved in the printing process and therefore no drying time or risk of smudging. This can be important where coded packs are in contact with other products soon after coding.

The technology's versatility provides clear, consistent and perfectly formed characters in a variety of fonts and message formats, including complex graphics, logos, QR and barcodes over relatively large print areas. The range of fonts means that laser marking can produce high quality print to match premium packaging.

Another use of the laser coder is to produce effective perforations in laminated packs for easy opening of sharing bags. The process is faster and more accurate than mechanical solutions such as hot needle perforation, and any barrier properties in the film are preserved as only a tiny amount of its outer layer is removed during the laser process.

As laser coders cover a large print area and on high line speeds, they are suitable for multi-lane printing onto multiple products in one pass, without the need for a mechanical moving printhead.

Advances in technology and efficiency have led to a significant reduction in the initial purchase price, and laser coders deliver low cost of ownership with no consumables and relatively low maintenance. Compact supply units and marking heads enable easy integration into existing production lines or static coding applications, with minimum disruption to workflows.

4.3 Large Character Marking (LCM)/ Piezo Inkjet

Case coders are particularly well-suited for printing variable information, including text and graphics, onto secondary packaging such as cardboard boxes. They are a cost-effective alternative to pre-printed boxes or labels.

Case coders can print to a high-resolution quality, and are versatile enough for use on a variety of surfaces and materials. Benefits include ease of setup and adjustment, reliability and predictable cost of ownership.



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4 The different coding technologies

4.4 Thermal Ink Jet Printers (TIJ)

TIJ printers provide a flexible printed coding solution for both outer cases and primary packaging. They have a smaller print area than case coders, and their high resolution offers superb print quality for premium packaging, making them a cost-effective solution for slower production lines or where production is not 24/7.

4.5 Thermal Transfer Overprinters (TTO)

Thermal transfer printing can be used for coding onto flat packaging film, labels and gloss card. It creates high-definition images by using a printhead to push a ribbon into direct contact with a substrate. As well as the high quality of the print, TTO can cover a large area, allowing ingredients and other product information to be printed onto generic film. Compared to hot stamp coding or roller coders the technology offers easier setup, electronic registration, faster changeovers and real time printing.



Coding Technologies Selection

	CIJ	LCM	Laser	TIJ	TTO
Line speed	✓✓	✓	✓✓✓	✓	✓✓✓
Print area	✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓
Multi-lane printing	✓	x	✓	x	x
Print quality	✓	✓✓	✓✓	✓✓	✓✓
Code permanence	✓	✓	✓✓	✓	✓
Ease of integration	✓✓✓	✓	✓	✓✓	✓

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5 Conclusion

There are clearly still opportunities to be explored in the confectionery and snacks markets, particularly for new product development. This means manufacturers must be as flexible as possible in order to respond effectively. Reliable printing will support an efficient production operation, while a quality code will enhance brand image. It is therefore important to invest time in exploring all the options in order to select the most appropriate solution.

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