TRACK AND TRACE

How does security printing affect packaging? John Corrall surveys the requirements for brand protection and meeting traceability regulations.

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UV-fluorescent print on tax stamps

Any discussion about security printing tends to concentrate on items such as passports, ID cards or government documents, the goal being to prevent forgery, tampering or counterfeiting. But similar requirements are increasingly applied to product packaging, usually to meet regulatory requirements or to provide brand protection.

Perhaps the earliest example of a regulatory requirement adding some variable data to packaging was the addition of the 'best before date'. However in reality this probably shouldn't count as 'security' since the information printed (the date code) is open to all. A more relevant example has been the requirement to add track and trace information to pharmaceutical products. Here the goal is to print a unique identifier to the primary packaging e.g. the blister foil or pill bottle, allowing it to be traceable at every step from the point of manufacture to the end customer. The regulations demand traceability not just of the individual item, but the outer packet, the bulk carton and the shipment pallet – each of these being printed with 'specific and secure' variable information. While the data being printed is normally visible rather than hidden, the data itself is designed to be hard to fake.

"Passport and ID card printers have a wide range of technologies already available to them"

Another regulatory requirement that impacts packaging is tax stamps for tobacco and alcohol. These now usually require an increase in the level of security of the print by the inclusion of a simple 'covert' code i.e. one printed with an 'invisible' ink such as a UV-fluorescent.

ADDING LAYERS

In general the 'regulatory' demands applied to packaging printing are still relatively easy to meet using inkjet technology, but this in turn means that they are not so difficult to copy. It is inevitable then that the regulations will gradually be tightened to demand more 'layers' of security. The good news is that passport and ID card printers have a wide range of technologies already available to them, and we can expect these to gradually be adopted for packaging. They include micro-text, tamper-proof inks, RGB UV fluorescent ink sets (for fluorescent colour 'pictures'), IR-readable inks or IR up-converting and down-converting inks.

One area of concern might be the difference in print speeds between the two markets though. For example, even a high-end passport printing machine might only handle 1200 passports per hour, whereas a drinks carton line might print that many per minute.

Perhaps an indication of things to come is Russia's new law that a 'unique' barcode must be added to every dairy product (milk, butter, cheese etc); the barcode data being purchased from the state. Whether there is really a black market in counterfeit cream is perhaps debatable but irrelevant now – suppliers have to comply if they wish to stay in the market. Adding such a requirement to everyday fast moving consumer goods items – rather than something like high value pharmaceuticals – is a major step, but one that is sure to be copied elsewhere if it is successful. So far there is no demand for covert inks for this application, but it may well come in time.

BRAND PROTECTION

When required by regulations, the packaging industry has no alternative other than to invest in new print technology – any economic concerns being a secondary issue. Brand

protection is an additional area that is bringing security printing into the packaging market, but here the economic case remains paramount.

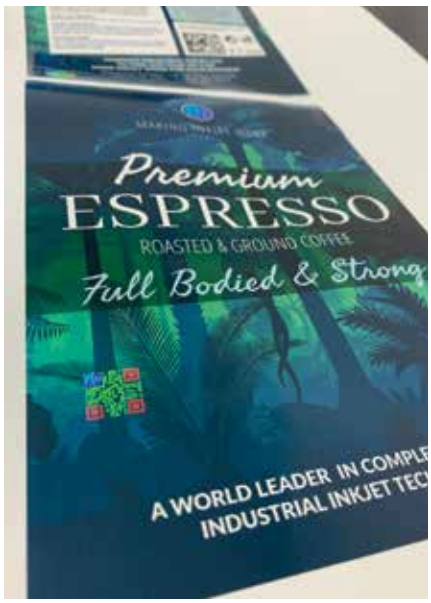
In brand protection, the goal of adding some security print to a product may not be the obvious one of making life difficult for 'fakes'. Instead it may be to ensure that the genuine item ends up in the right country. A unique covert or hidden code can be

"Adding security print to a product may ensure that the genuine item ends up in the right country"

added to a product that has a different price scheme for different countries. The goal is to ensure that distributors and dealers are not cheating by shipping products from their destination country to one where the product sells at a higher price.

In brand protection the cost of implementing any security system will need to be compared against the loss from the fraudulent behaviour. It is important to realise that the system cost is not just the new inkjet equipment, but the entire track and trace system that will be needed. While a spot-check of goods on the shelf in the store will show if they are counterfeit, or if they are in the wrong country, to fix the problem it will be necessary to know where the 'swap' was made. That means checking the product along every step of the distribution chain.

Until now these economics ensured that security printing has been added only to high value products such as computers, software, mobile phones or perfume. This is changing though, with the garment industry now beginning to adopt it. Worldwide 10% of such goods may be 'fake', with the cost of garment counterfeiting estimated at $1.2 trillion!



Covert fluorescent barcode on flexible packaging

Arguably the need for proof that a product is legitimate actually becomes stronger if the product itself is easily copied.

Our experience with brand protection is that currently many major brand owners are keen to evaluate the technology, and they sometimes get very excited by it. But as they start to realise the scope of the necessary track and trace system their enthusiasm soon wanes. Perhaps it would be better handled as a service provided by packaging producers in conjunction with logistics or shipment companies?

PROMOTION PACKAGING

Another use of security print on packaging is 'promotion'. A unique barcode on your milk carton can be scanned with your mobile phone and may win a prize. The cost to set up such a system is far less than needed for track and trace. In this case it is only the inkjet to print onto the packaging and a single web site to provide verification of the barcode data and issue the prize.

When introducing security print to packaging producers we often have to explain that a new mindset may be needed. As with the Russian dairy operation, the data being printed may have a value and it

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will be important that no one in the plant can get access to copy the print data. With promotional printing we need to consider whether waste or scrap packaging could still be carrying a winning barcode. Arguably the risk of external cyber-attacks will also increase. With a customer new to this kind of work a range of changes may be needed – from hardened jump servers and data encryption to physical segregation of sections of the plant.

For packaging producers the key point to consider is that adding such security features adds value for the customer – sometimes significant value.

At IIJ we have a great deal of experience in the security print market and we have been adapting the technology for packaging for a number of years. We will be more than happy to discuss new customer projects. ■

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