# Coded holograms: keeping the supply chain secure

Ian Lancaster
IHMA

Everyone involved in the goods supply chain - manufacturers, distributors, consumers, taxation and government authorities- has learnt the value of security holograms and will be reassured by their presence on products and/or the packaging, recognising the benefits they provide. However, as coding and serialisation becomes mandated in various countries for products such as medicines and tobacco products, the ability to incorporate QR, data matrix and other types of code in to holograms further enhances the role they can play in supply chain control. Ian Lancaster, general secretary of the International Hologram Manufacturers Association, highlights the latest developments.

Companies have to contend with challenges stemming from supply chain security lapses (which can result in theft, diversions and product recalls), counterfeiting and regulations. In addition these factors can impair the health and reputation of companies by adversely impacting on profits, brand credibility and research initiatives. With industry, regulatory authorities, security agencies and governments around the world realising the significance of implementing product tracking and tracing systems which build on product serialisation, it becomes mandatory for those in the supply chain to comply with legislation pertaining to the locations in which they operate. Even where this is not mandated by law, tracking and tracing systems improve defences against counterfeiting and other infringements as well as improving distribution and inventory control.

Typically, distribution systems run the gamut of manufacturers, wholesalers, distributors, stockists and retail outlets before products reach the end user or customer.

Ensuring product protection, including authentication capabilities, across various touch points throughout the supply chain through track and trace implementation, is important to address the challenges industry faces. Apart from providing visibility and full traceability from manufacturer to consumer, successful serialisation programs can prove to be a key differentiator and a clear competitive advantage for companies.

Today, Quick Response (QR) codes, which use four standardised encoding modes (numeric, alphanumeric, byte/binary and kanji) to efficiently store data, are being linked with holograms to provide integrated track & trace and authentication solutions which, among other benefits, can help governments improve excise duty collection and minimize product counterfeit, contraband and illegal parallel trading by enabling tracking of each saleable item from its point of origin to the point of sale. Incorporating these codes in to a hologram delivers authentication of the product and the code in one feature, making this an efficient and effective method of product protection.

Systems like Andrews & Wykeham's THESEUS™ can also be applied as an anti-counterfeit solution not related to taxation for such market segments as pharmaceutical. Not only do systems like this one assist in maximising tax collection and reducing counterfeits, they are also tools the government can use to leverage public confidence. THESEUS™ for example includes an open Internet interface, which enables any member of the public

# Guest Column

to verify products are genuine and duty-paid, and uses high-security labels with holographic and security print features, carrying two-dimensional QR-format barcodes with item-specific information. These codes are protected from unauthorised access and reproduction by state-of-the-art electronic digital signature (EDS) technology.

Another technology finding its way to increased integration with holography is coding foil, which is used to stamp various markings onto product packaging by means of a coding device. These markings provide the consumer with important information such as a product's expiration date, production date, the weight, or the price, and are especially beneficial when it comes to the need to mark a product's quality or add high performance labelling. And in today's health and eco-conscious world, manufacturers ensure that these foils comply with all necessary regulations, including the strict limits in EN 71/Part 3, the EU packaging guidelines 94/62/EC, and the American CONEG specification for heavy metals and lead chromate. The Kurz Group, for example, is a market leader whose eco-friendly coding foils are enabling product manufacturers and others in the supply chain to choose from a diverse product line that includes a wide range of grades and colours to meet the demanding requirements of modern product packaging, labelling and retailing.

Coding foils are just one product that can be integrated with holograms to boost the role played in supply chain control. Kurz's TRUSTSEAL® range of difficult to

copy holographic authenticity features visually enhance the brand, build consumer confidence, and provide a high level of counterfeit protection. These optical security features can be combined with the web-based TRUSTCODE® identification system. The TRUSTCODE® system connects the real world to the virtual one: detailed product information can be accessed by buyers, retailers, customs officials and brand owners using different smart phone scanning processes. The company has also developed diffractive 2 D barcodes with an appealing aesthetic that enhances the value of the product. Rather than being printed, the barcode is applied as a silver colored stamping foil into which the actual code has been incorporated as a diffractive, holographic-like structure.

Elsewhere, companies like MTM Technologies Inc are pioneering other coded holography solutions such as the HoloTag to protect against brand piracy and product theft in the supply chain within the framework of its integrated security concept. Integrated with other technologies the MTM hologram linked with a taggant combines visible proof of any tampering with an individual security code for authentication.

The HoloTag 2D barcode system has applications in many areas: from government revenue collection to publishers and manufacturers of products. Checks can be carried out within the supply chain with a HoloTag track and trace mobile application that can be downloaded onto most smart phones, or accessed

from a browser, allowing the user to gather a lot of information in the field and track this in real time. The technology plays an important part in combating counterfeiting and piracy of taxable items, helping brand owners control their inventories and prevent them from producing excess items which can be targets for smuggling.

Unquestionably, one of the keys to the success of holograms since being adopted for authentication purposes in the early 1980s has been the ability to adapt and constantly find new roles. We will undoubtedly see more and more interesting developments for the technology that will offer far reaching benefits that develop and expand further the role of track and trace. So, with the seemingly remorseless march of technology and the resolve of governments, anti-counterfeiting agencies and companies around the world to stand firm in the face of international organised crime, as well as the casual opportunist, there's no reason why the hologram will not continue to evolve, becoming further enmeshed in global supply chains and continuing to add real value.

The International Hologram Manufacturers Association (IHMA) - www.ihma.org - is made up of nearly 90 of the world's leading hologram companies. IHMA members are the leading producers and converters of holograms for banknote security, anti-counterfeiting, brand protection, packaging, graphics and other commercial applications around the world. IHMA member companies actively cooperate to maintain the highest professional, security and quality standards.