

# AUTHENTICATION NEWS®

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## CONTENTS

|                                                                                      |    |
|--------------------------------------------------------------------------------------|----|
| Appleton Explores Sale of BemroseBooth                                               | 1  |
| Bilcare Acquires Singular ID                                                         | 1  |
| Editorial: Two Roads to Travel – Which One to Choose?                                | 2  |
| Payne Security Introduces New Taggant System                                         | 3  |
| Secure RFID from Mikoh and 3M                                                        | 4  |
| BP Labels Offer Security                                                             | 4  |
| Company and Market Round-Up                                                          | 5  |
| Company Profile: Total Brand Security – a Complete Solution for Brand Authentication | 6  |
| Canadian Bank Note and SICPA Seal Tax Stamp Contract                                 | 7  |
| Technology Profile: EDXRD System Provides True Authentication                        | 8  |
| Secure Concept for Cigarettes                                                        | 9  |
| New Security Closure for Medical Vials                                               | 9  |
| Winners in PISEC 07 Awards                                                           | 10 |
| Global Forum 2008: Systems for Safety in a Global Arena                              | 11 |
| 10 Years Ago                                                                         | 11 |
| Conference Diary                                                                     | 11 |
| JTI and EU Sign AntiCounterfeiting Agreement                                         | 12 |

## Appleton Explores Sale of BemroseBooth

US paper and packaging company Appleton is putting its subsidiary BemroseBooth up for sale, just four years after buying the UK-based security printer and print services supplier. According to the company, which acquired BemroseBooth in December 2003 for \$62m (see AN Vol 9, Nos 9/10), it 'no longer complements Appleton's long-term strategic direction'.

BemroseBooth generated sales of around \$113m in 2006, 10% of Appleton's revenues, and represents around 20% of its workforce with more than 600 staff. These are based at the head offices and production facilities in Derby, as well as Hull and Teesside.

Appleton produces carbonless, thermal, inkjet and security papers, along with performance packaging products. BemroseBooth supplies security print, prepayment cards, vari-

able data labelling, RFID solutions and print management services to the financial, mass-transit, secure logistics, sports, retail and telecoms sectors.

At the time of the acquisition, Appleton noted that BemroseBooth's access to security markets in the UK and Western Europe made a strong platform from which to grow its business. RFID development was one particular area of synergy, and it was assumed the combined companies would create a new force in brand protection.

According to Appleton's chief executive officer, Mark Richards, the company now intends to focus on its core businesses of paper and coatings.

International financial advisers William Blair & Company have been retained to handle the sale.

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## Bilcare Acquires Singular ID

Bilcare Singapore, the wholly-owned subsidiary of Bilcare Ltd, which is listed on the Mumbai Stock Exchange in India and is a provider of pharmaceutical packaging and research services, has announced the purchase of Singular ID for S\$19.58m (US\$13.7m)

Singular ID specialises in magnetic tagging technology. It was spun off from the Institute of Materials Research and Engineering, Singapore,

in June 2005 and currently operates out of the Far East and Italy, where it has a subsidiary.

In 2006 the company launched its *ensure* enterprise brand security system, which comprises a package of magnetic tags containing unique random arrangements of magnetic features in the micrometer to nanometer range, readers, database hosting and an authentication management ser-

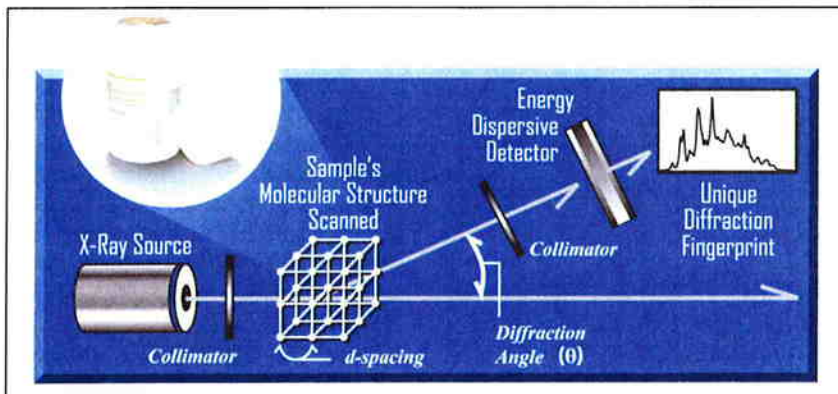
Continued on page 4

## TECHNOLOGY PROFILE

# EDXRD System Provides True Authentication

By Alan Clock, XStream Systems

*The article 'Test the Product, Not the Packaging' in the November 2007 issue of Authentication News examined the new breed of technologies that enable products to be tested by analyzing their characteristics without removing or displacing the packaging. One such technology is Energy Dispersive X-Ray Diffraction, which XStream Systems is developing for authentication purposes. In this article, the company's VP of Sales and Marketing, Alan Clock, explains more.*



An illustration of EDXRD technology

If there was ever a time for counterfeiters to think about another business, that time may be now. Even the sharpest criminal minds may be challenged when facing a new unit which analyzes the internal crystalline structure of a sample through opaque packaging, metal, wood and/or sealed containers.

This next-generation materials analytical system is based on Energy Dispersive X-Ray Diffraction (EDXRD) and is quickly being adopted by companies concerned about public safety, brand protection and limiting product liability.

The origin of one particular system is based on the development of American national security solutions. The first of a new era of EDXRD units was designed for placement in locations such as airports and embassy checkpoints.

In the early 1990s, a professor at Rutgers University in New Jersey developed a type of EDXRD system which could be used to scan large baggage items for explosive materials. These systems differ from the traditional X-ray in that they collect diffracted information and discard the normal imaging data.

The undertaking proved to be a success; EDXRD demonstrated proven accuracy rates previously unseen in commercial airport screening machines.

With further development and market research, a corporation was formed around the new EDXRD systems and XStream Systems Inc was born. The company, based in Sebastian, Florida, has effectively scaled down the large prototype units into a single enclosure weighing around 180kg which can rest on a countertop. Its *XT250™ Material Identification System* has the same accuracy rate as the checkpoint machines, with the added bonus of being accessible to almost any business in almost any setting, and is currently being marketed primarily towards pharmaceutical applications in manufacturing, distribution and dispensing.

As for the technology itself, EDXRD has been around for some time, but before the Rutgers work it was mainly used within extremely large synchrotrons (cyclic particle accelerators in which the particle is confined to its orbit by a magnetic field. The strength of the magnetic field increases as the particle's momentum increases. An alternating electric field

in synchrony with the orbital frequency of the particle produces acceleration). These devices can be larger than a football field and the use of the equipment is out of reach for the average company.

The new EDXRD systems work on the same principles as their much larger predecessors by diffracting X-rays off atoms within a sample. A detector within the unit then transmits its findings to a computer which runs the results through a set of algorithms. However, at the user interface level, the new systems are unique by translating the results to the operator in the form of a simple answer; such as 'test passed' or 'verification failed.'

The speed of testing/verification depends on the complexity of the molecular structure. It can take from as little as 5-10 seconds to up to five minutes. The average is between 30 and 60 seconds.

A primary benefit of using EDXRD systems to authenticate materials is



The countertop XT250

the superior penetration depth this method allows. Because an X-ray source is used and a sample is not touched in any way, when the test is conducted, the material beneath its surface layer is identified. In this way, it is very difficult to fool or inadvertently contaminate the system – a true

Continued on page 9

## TECHNOLOGY NEWS

# Secure Concept for Cigarettes



Premium folding carton manufacturer Edelman has developed a new security solution for cigarette packaging in conjunction with Giesecke & Devrient

(G&D), Focke & Co, and the Taylorbrands design agency, which it showcased at the recent Tabexpo tobacco trade fair in Paris.

The pack comprises two different technologies. First is *PEAK*® (Printed and Embossed Anticopy Key) from G&D – a three-dimensional optically variable feature in which selected elements of a gravure-printed fine line image structure are blind embossed to create different effects at different viewing angles (from above, the motif or image appears two dimensional with a distinct raised feel, whereas when the pack is tilted, the raised embossing and the information it contains become visible. If the item is tilted further, the background displays variable two dimensional information). According to G&D, which originally developed

the feature for banknotes, the combination of visual and tactile security also enables the feature to be easily verified by consumers.

Second is a data matrix code developed with Nokia. A unique random number is generated and laser printed on the side of the pack. This code can be checked by consumers using a mobile phone, which reads the image, connects to a secure central internet service, verifies the code and then sends back confirmation of authenticity.

Taylorbrands developed the pack concept, and it was produced by Focke & Co, specialists in packaging technology for the tobacco industry, to demonstrate that the security devices can be incorporated on a commercial scale.

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## EDXRD Authentication... cont'd

advantage over authentication equipment which offer surface analysis only, or which require destructive testing.

A second benefit is the ability to validate or authenticate materials while still in original containers. In pharmaceutical applications, a bottle of pills can be checked in their manufacturer's opaque, sealed packaging, and when found to be legitimate can continue on their path through the supply chain network.

XStream Systems has many features planned for future EDXRD product releases within the XT250 line, as well as continuing with plans to build a unit called the XT840. The XT840 will revisit the corporation's history and provide baggage screening capabilities, as well as complete case-goods inspection for a variety of applications.

An interesting point to note with energy dispersive X-ray diffraction is the scalability of the technology. If EDXRD exists in massive synchrotrons, can be shrunk to fit into a countertop unit, and also enlarged to inspect whole cases of products, the possibilities are almost limitless.

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# New Security Closure for Medical Vials

The Californian pharmaceutical packaging company Secure Packaging Systems has developed a new tamper-proof security device for pharmaceutical vials. The high density polyethylene (HDPE) closure can be applied to either glass or polymer vials. The very high heat tolerance of the material allows it to be exposed to temperatures above melting point. Radiation is used to create a memory effect on the caps, which takes place when the polyethylene is first heated by radiation, then stretched and cooled.

The unique method of production involves electron beam radiation which creates a very tight seal round the vial opening, so the seal cannot be removed by application of heat. The company claim that any attempt to open the cap will also cause it to break or to change shape into a non-reusable form.

In tests carried out to demonstrate the efficacy of the product, non-irradiated caps that were reheated lost their

shape, while the radiated ones that were reheated retained their original shape and form.

An additional benefit of the caps, however, is that by using HDPE and avoiding aluminium seals, capping and filling of the vials can take place in the same clean room environment without any risk of aluminium contamination.

According to the company, not only does the process render the caps highly tamper-resistant, but also enables them to serve as a vehicle for its anti-counterfeit products, including RFID inserts, in-mould laser-read holograms and thermochromic inks.

They also bring to reality a polymer alternative to aluminium vial seals, which is a breakthrough the industry has been seeking for some time.

Testing and FDA trial programmes are being trialled by various pharmaceutical companies.

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