

COMPANY PROFILE

U-Nica Focus on New AntiCounterfeiting Techniques

U-nica was established in 2004 to bring the approaches, concepts and disciplines of the high security area to the product protection field by Alfred Rutz, now CEO, and Matti Laakso, now chief sales officer. Both were formerly with Landqart Paper in Switzerland, a well-established banknote and high security paper maker. Their aim was to create a company which could develop and offer technologies covering the different requirements of authentication and track and trace, so that a customer seeking to protect their products or brand name could find the necessary technologies and support from one company, in the same way that a central bank sources banknotes from one printer, even though they have protective features from several suppliers.

According to CEO Alfred Rutz, the initial investment in U-nica was used as seed funding and the development of technologies by various partnering organisations. Although he was not willing to name all the development partners, they include national and independent research organisations such as the Swiss Federal Institute of Technology (ETH) and the Max Planck Institute (Germany). The result is that U-nica now has a portfolio of advanced and complementary technologies for product marking, identification and tracking to which it has exclusive global rights. It is also the majority shareholder in commercial development companies.

U-nica is currently headquartered in Liechtenstein, where it handles sales and solutions engineering. It now has a German sales office, and has grown to around 20 specialists in marketing and technology development. It has invested 'millions of euros' in technologies, funded by a 'strong investment group' in Switzerland which has recently committed significant new funds.

A common element of U-nica's technologies is that they are incorporated into the product or its packaging, rather than added on as labels. However, Rutz stresses that while the company has some proprietary technologies, they will provide a total security solution which may incorporate third-party products, as identified in the risk analysis and the devising of the security concept required for each customer.

IntraGram

The *IntraGram*™ (or *intraGRAM* in U-nica's typography) is a nano-engineered interference pattern incorporated into

plastic components, packaging or closures in the injection moulding manufacturing process. This produces a rainbow-coloured pattern or image, similar to a hologram effect.

This is placed in the moulding tool in the form of a metal insert which carries the nano-sized surface-relief structure that is then imparted to the moulded part. Unlike a hologram the image is seen only in 2D, which can be a generic spectral coloured design or a customised image such as a logo. It can be incorporated into any shape or form, whether flat, convex or concave, and is therefore suitable for use on, for example, medicinal closures, as illustrated.



IntraGram on an injection moulded cup seal

nhMark

NhMark™ (nhMARK) is a method of marking glass so that a glass container can be scanned by a handheld reader to authenticate the product through detection, or not, of the nhMark. This is achieved through the addition of nanoparticles to the glass matrix, which diffuse towards the surface where they form an invisible but detectable layer.

ScriptoTrace and Print

Everything has a unique surface structure at microscopic level, and *ScriptoTrace*™ creates a unique 'fingerprint' of the surface characteristics of objects. An area of this surface around

5mm square is scanned by standard imaging equipment - anything from a mobile phone camera to high speed cameras on a production line - then converted to a unique digital 'descriptor' and stored on a central database.

In the field, to authenticate the object a digital picture is taken - using a scanner, camera or camera-equipped phone - and this picture is transmitted via the internet or mobile communications to the database to verify the product. Verification can therefore be carried out by the manufacturer's own staff, retailers or consumers, as decided by the user of the tracing technology.

No special lighting or apparatus is required, and a particular feature of the system is that on a photo of the complete item it identifies the 5 mm square that was originally scanned, so that the person checking does not need to know that location.

The central database can be maintained and hosted by U-nica or the customer whose product is being scanned, with requests for verification submitted via the internet or SMS from a mobile phone.

ScriptoPrint™ uses the same verification architecture to record and transmit a photo of a visual design - a picture or graphic - to a database to verify the hidden watermark in that graphic. Proprietary software adds this watermark, not visible to the naked eye, to the digital artwork of the graphic. U-nica is targeting packaging and printed items such as tickets and vouchers.

Active Colour

U-nica's newest product, which is

Continued on page 6

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U-Nica Focus... cont'd

still under development with a launch planned in 2009, is organic printing inks which create a distinct colour change. These can be reversible or the colour change can be fixed by exposing the ink to a laser, thus allowing a specific code or other design to be written to the colour-shift patch. The purple-to-yellow colour change is stimulated by exposure to

light, so a pack can be checked when it is taken out of its shipping case, for example. It reverts to purple once the light source is removed.

Using a coherent light source (laser) the colour change can be made irreversible. Utilising this property, *Active Colour* can be used as printable data storage for either digital (ones and zeroes) or analogue (a picture) data. Depending on the properties of the print carrier, up

to 1 MB data can be stored in an area of 1 square centimetre.

The organic inks used for this colour change have been developed by Actilor GmbH, a nano-bio security development company based at the Chemical Research Park in Leuna, Germany, which is majority-owned by U-nica.

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