

## Original or fake?

Safer packaging for medicines with manroland technology

**Knock-offs of coveted brand-name articles aren't the only thing consumers are getting via the Internet – more and more counterfeit medicines are finding their way to the market. How does a patient know whether a drug is the real thing? Working with partners in the O-PUR project, manroland has developed a simple and economical process to determine, using a mobile phone camera, whether a given drug is genuine.**

Running your fingers across the paper, it's not as smooth as it appears. You can clearly see its rough surface under the microscope. Wood fibers criss-cross each other, creating a random, unique microstructure. Add color to the printing process, and you create the perfect "fingerprint" for this piece of paper, since each fiber absorbs ink in a different way. This is invisible to the naked eye, and no two pieces of paper run or dry the same. O-PUR, the concept sponsored by the German Federal Ministry of Research and Technology to assure the safety and traceability of original products, builds on this principle. The results of the project are almost ready for the market. Together with the Hochschule Mannheim, Fraunhofer-Institut für Physikalische Messtechnik IPM, EINS GmbH, epyx GmbH, Pepperl+Fuchs, and other partners, manroland has been developing this process, which promises wide industrial application. It is designed to be economical to implement by manufacturers, but extremely difficult to reproduce for counterfeiters. In addition, the product protection it offers to consumers should be easy to recognize and verify.

### Is what's inside what it says on the outside?

Consumer safety makes things safe for consumers only when counterfeiting products is no longer a lucrative business for criminals. In truth, the supply chain as we know it is a time-tested method of delivering medicines: pharmaceutical companies deliver their products to established wholesalers, which is where our friendly neighborhood pharmacy gets its products. But given the amount of questionable drugs available by e-mail, it's not surprising that counterfeit drugs find their way to the market, too. Whether it's poor copies, imitation labels, packages or user instructions, used packages with a brand-name label refilled with inferior or stolen drugs, counterfeiting takes many forms and in the worst cases can have disastrous consequences for patients.

How do you distinguish an original drug from a counterfeit? Until now, manufacturers have relied on the variety of available refining and finishing printing options to set their packages apart. Embossing, colors, coatings, glosses and glitter help consumers to spot the difference between the original and obvious

**manroland AG** is the world's second largest printing systems manufacturer and the world's market leader in web offset. manroland employs almost 8,000 people. The company has annual sales of some 1.7 billion euros with an export share of approximately 80% (2008). Webfed and sheetfed presses provide solutions for publishing, commercial, and packaging printing.

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fakes. But now O-PUR, an association where manroland is, promises to go much farther to foil product pirates.

Thanks to a 2D code no larger than three millimeters, each sheet of paper becomes distinctly identifiable, making each package unique. And creating this safety feature adds absolutely no cost, as the code is simply printed in a single printing unit. Codes are then documented with a camera or scanner, with an integrated high-speed digital camera planned for future press versions. With the “fingerprints” thus recorded and stored in central databases, each and every package in a given production batch can be identified by means of its code and traced back to its origin. For this decoding step, researchers looked for established and widely-used technologies. What could be better than a mobile phone? The latest devices have integrated digital cameras as standard and so the camera function combined with special software is ideal for the purposes of O-PUR. The consumer photographs the code, the data is compared with the registered fingerprints via the Internet, and the consumer receives a confirmation “Original” or a warning “Stop”.

Not only paper has a clearly identifiable surface structure. Metals, plastics and high-grade natural products such as wood or leather also have structures that enable the product with the code to be traced. Good news for manufacturers and consumers, bad news for product pirates.

#### **Captions:**

At the point of sale, consumers can verify whether a product is genuine using a camera in their mobile phone. In the O-PUR project, an individual fingerprint code on every package exposes counterfeit products. | © manroland, photo: Herbert Gairhos.

In the O-PUR project, manroland, the Hochschule Mannheim, the Fraunhofer-Institut für Physikalische Messtechnik IPM and other partners are conducting research into safe packaging. | © manroland, photo: Herbert Gairhos.

Microstructures in paper ensure that every package is unique. | © manroland, photo: Herbert Gairhos.