



RFID technology can make a significant contribution to the safeguarding of drugs against counterfeiting

RFID technology for drug packaging
in the pharmaceutical industry

Smart Packs

Pressure on the pharmaceutical industry is growing: billions are being lost each year due to counterfeit drugs, and the US Food and Drug Administration (FDA) is demanding greater safety for pharmaceutical products as of 2007. Radio frequency identification (RFID) technology, with transponders placed on the packaging, is one possible solution. A pilot project by Limmatdruck/Zeiler and Siemens demonstrates what the future of pharmaceutical packaging could look like.

Limmatdruck/Zeiler is a leading packaging supplier renowned for its innovative solutions. With Siemens as a technology partner, the Swiss company presented the first RFID technology for pharmaceutical products at the Interpack 2005 international packaging industry fair. "Many visitors were amazed that we were already able to present a close-to-series solution with an integrated RFID reader," recalls Stephan Ruske, project manager at Limmatdruck/Zeiler.

"In the pharmaceutical industry, RFID technology is generally seen as a very promising solution for safeguarding drugs against counterfeiting," says Ruske. However, there is still a great deal of hesitation concerning applying this brandnew technology. Nevertheless, it is clear that the pharmaceutical industry must take action to protect not only its revenues but also patients. The World Health Organization (WHO) estimates that around seven percent of all drugs marketed worldwide are now counterfeit. This is the equivalent of around 30 billion US dollars in lost revenue. However, an even greater concern is the potential hazard that these cheap counterfeit products pose for patients. This is the reason why, despite all reservations, Limmatdruck/Zeiler is already collaborating with customers on two projects.

To date, the FDA has merely recommended that drugs be made safer. However, more stringent legislation is expected to go into effect by the end of 2007 at the latest. Then, inadequate safety precautions could result in severe penalties, at least in the United States. "A class-action lawsuit can force even a large pharmaceutical com-

pany to its knees,” says Ruske. Some companies are now responding and taking concrete action. Pfizer, for example, wants to start tagging all Viagra bottles, starting in the United States, with RFID transponders as early as 2006.

Integration into existing technologies

To develop its RFID solution, Limmatdruck/Zeiler is using expertise from the Siemens RFID Solution Center in Switzerland. The prototype packaging machine with RFID technology presented by Limmatdruck/Zeiler is quite similar to a conventional machine for packing tablet blister packs in cardboard boxes. The crucial difference is that every box is labeled with an RFID transponder in the process. Once the mechanical packing process is complete, an electronic product code (EPC) is written on the chip, giving each individual pack a unique ID.

The packaging machine can be integrated into any existing production infrastructure. The built-in transmitter from Siemens operates at a frequency of 13.56 megahertz, a widely used standard that is characterized by low sensitivity to interference caused by metals and liquids. A PC controls the machine. The RFID transmitter

is connected to the clock of the PC to allow clear monitoring of every batch. Through an additional interface, the machine can be integrated into a master control system or an ERP system such as SAP.

Limmatdruck/Zeiler and Siemens have developed a close partnership to create a packaging solution that is specially tailored to the requirements of the pharmaceutical industry, including research on possible interactions between the radio tags and the drugs themselves and the production environment. Siemens expertise and technical resources were critical in this area. The ultimate aim was to ensure that neither metallic blisters nor liquid drugs and storage and transport systems would interfere with the packaging process.

Much more than track and trace

It is certainly true that drug safety could be increased using conventional methods such as bar codes or holograms. But only RFID technology allows genuine interaction between the manufacturer and the patient, making it the ideal solution for the future. In the future, for example, patients could inquire about the authenticity of the drugs via a PDA and contact the manufacturer directly to obtain additional information or

to find out about similar products. Particularly for nonprescription drugs, this opens up a wide variety of possibilities relating to safety, information, and marketing. The additional benefits go far beyond product safety. “It is incredible what using RFID can offer in terms of new options,” says Ruske.

Although it is still a relatively new technology, RFID has already reached a remarkable level of maturity. Siemens alone has delivered more than 300,000 read/write units to date. There is no doubt that the packaging industry will be one of the prime movers as RFID becomes increasingly widespread. This will have numerous clear benefits, and not only for the pharmaceutical industry: increased customer protection against counterfeiting, easier recall actions, clear detection of breaks in the cooling chain, prompt detection of use-by dates, and, in general, easier and more cost-effective logistics processes. ■

Find out more:

www.siemens.com/rfid

www.siemens.com/pharma

E-mail: olaf.sprich@siemens.com

The packaging machine allows fully automatic folding, bonding, and filling of the packaging



All pictures: Limmatdruck/Zeiler

The boxes are checked by an RFID read/write unit that is integrated into the machine controller

