



DECEMBER 2006

RFID SUPPLEMENT

hazardous cargo bulletin

covering the transport and handling of oils, gases and chemicals



WHERE'S MY STUFF?

STANDARDISATION, TECHNICAL DEVELOPMENTS HELP PUSH RFID APPLICATION

PLUS: PLANNING FOR RFID IMPLEMENTATION ☆ TRACKING CONTAINERS IN THE TERMINAL
APPLICATIONS FOR METAL PACKAGINGS ☆ THE PASSIVE VERSUS ACTIVE DEBATE

Drumming up intelligence

IMPLEMENTATION Last January, the Bulletin explored SULO's RFID project. This initiative now goes by a different name and design. Project manager Wolfram Kneist explains how the project has evolved

SULO Emballagen branched into the RFID market in 2005 with its Chip 50 project. Times have changed, however, and the product is now called Listopac, soon to be a registered trade name in 27 EU countries. The first 216-litre steel drum with integrated RFID transponder received its initial public viewing at the Interpack trade fair in Düsseldorf in 2005. Recently shown at Macropak, Listopac is clearly not just a new name for the product but also a new and improved system.

Wolfram Kneist, project manager for SULO special projects and innovations, has witnessed the RFID development from prototype: "After Interpack, SULO decided to investigate the possibility of equipping all its steel barrels with RFID transponders. Partnerships were established to gain greater know-how and extensive testing was accomplished in the months thereafter," he says.

SULO was convinced, and still is, that RFID will soon be as common as the barcode is today. RFID has many benefits for end users, including a reduction in handling costs, simplified data acquisition, improved transparency of the supply chain and competitive advantage. In addition, EU legislation and increasingly strict national legal requirements require the explicit and unequivocal identification of packaging for foodstuffs.

"SULO UN-approved packaging products are predominantly used to carry hazardous goods in both the chemical and mineral oil industries," says Kneist. "Therefore, management feels that it is SULO's obligation to deploy modern identification technology that helps to save society from harm caused by any sort of accident involving drums," he explains.

In practical terms each individual RFID chip has a unique number code and is attached to the seal cap of the steel drum. In this way the contents of a filled drum can be clearly identified. The chip, a passive transponder with a 125 kHz frequency, transmits its unique number once it is activated by means of a nearby antenna. The chip's information is then stored in a separate database (in-house or web-based) and can easily be linked to all further data. Information can be transmitted using wireless local area network (WLAN) or Bluetooth technology.

Why buy wifi?

There are specific strategic aims for Listopac, Kneist says. "Listopac is a common basis for the implementation and usage of already existing

RFID systems to identify steel packaging without additional development costs for Listopac members." Listopac is obviously useful for the security of goods in transit and warehoused in steel drums, but it is also a key component for other applications, which include: minimising development costs, assuring technical aspects of packaging are considered and correct, lowering implementation costs and minimising marketing costs.

As much as Listopac is about achieving reachable security goals and setting standards in protective packaging, both in the physical and the intelligent, Kneist stresses that there are other goals Listopac should aim for. "It should be open for a wide range of packaging manufacturers, suppliers of hard- and software, managers of peripheral systems and parts around the packaging," he says. "It should not be based on patented solutions of single parties and must be open for new developments. It should also be useful for all members and customers in the same way and give a certain protection against strange or unwanted developments."

Trouble shooting

Back in 2005 SULO made its drums RFID-friendly by attaching a chip with a distinctive number code and attached this to the top end of the drum, sealed by welding. However, if tags are placed directly onto metal it can be difficult to receive secure readings as metal can distort the radio frequency signal, Kneist says: "We found out that this mounting method was not optimal, as the area under the ring was prone to rusting and oxidation, and drum manufacture and handling got a little bit complicated. Additionally, the chip-in-ring-solution did not always withstand extreme shocks.

"Hence, SULO designed a particular chip nest where the tag is now stuck in and sealed by a specially developed label. This label has many positive characteristics, for example, it is flexible, UV-, acid- and water-resistant, and self-destructive when removed. Now, the tag is protected by the nest and stick-on label," explains Kneist.

The chip is activated by means of an antenna to transmit information to the separate database where specified information about the steel drum is stored. However, as with all hi-tech equipment, no system is flawless. "Reading distances vary depending on the choice of reader/antenna in operation and the diameter of the RFID chip cop-

per coil, which is usually 20 or 30 mm," says Kneist.

"Using a simple, small, short range reader, reading distances of at least a few centimetres are possible. By extending the chip diameter to 30 mm, reading distances usually increase by approximately one-third," he explains. In addition to stationary reader/antenna units, it is also possible to use hand-held PDA sets with integrated RFID reader, WLAN and Bluetooth.

Not just bin and gone

Envicomp is the system provider for this technology but the relationship between it and SULO emerged from much humbler beginnings. SULO introduced RFID technology in waste disposal bins ranging in size from 80 to 360 litres and large 1,100 litre containers in 1991, and Envicomp was established by the SULO Group two years later. To date Envicomp has provided approximately 5.2 million transponders and has equipped roughly 1,100 refuse collection vehicles with RFID technology.

In addition, a partnership with Tectus Transponder Technology has been established. Tectus specialises in RFID equipment for use in ATEX-rated potentially explosive atmospheres and supplies transponders, in the form of space and easy tags, RFID reading stations, reader and antenna units, and mobile hand-held PDA readers.

The new nesting system in the drums is producing some encouraging feedback from those trialling the identification scheme, says Kneist. "Interested parties appreciate SULO's efforts to provide an automated traceability system that is reliable and works well on metal. The newly designed chip nest has gained much positive attention."

Today many companies are testing SULO's chipped drums. The trials are getting up to full speed in the UK, Germany, the Netherlands and hopefully soon in France. Kneist is confident that trials will demonstrate the suitability of RFID tags attached to metal drums.

"To keep the RFID system open for new ideas and for everyone who wants to adopt SULO's unique solution, partnerships with a wide range of packaging manufacturers, suppliers of hardware, manufacturers of peripheral systems and parts around the packaging are being established," says Kneist.

☎ (+49 5221) 598 03 ☎ 598 580

www.sulo-emballagen.de