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CASE STUDY: RFID AT SAFE WAY, ITALY

Abstract

Safe Way Srl is a family-owned manufacturer of protective and safety shoes, located in the Marche Region, in central Italy an important shoe manufacturing district. This case study provides an interesting example of innovative technology applied to traditional products. Safe Way patented a system called "Microchip" for incorporating RFID tags into a particular kind of safety shoes with a specific ISO EN class.

Applications of this RFID-based system include: the recognition of the ISO EN class of the shoes and their suitability to be used in specific environments; and the recognition of operators wearing shoes. RFID equipped shoes are produced and marketed in small and customized quantities. Economic return has not been achieved yet, but it is expected in two years time. So far, the main benefits from this solution have been achieved for customers and include automatic access control, easier coupling after washing, as well as automatic monitoring of exit points for verifying the complete staff evacuation in case of emergency.

Case study fact sheet

■ Full name of the company:	Safe Way Srl
■ Location (HQ / main branches):	Ascoli Piceno, Italy
■ Sector (main business activity):	Manufacture of protective and safety footwear
■ Year of foundation:	2005
■ Turnover in last financial year:	5 million euros
■ Number of employees:	7
■ Primary customers:	Exports 70%
■ Most significant market area:	EU
■ Focus of case study:	RFID adoption
■ Key words:	Security shoes, patented innovation, RFID

Background and objectives

Safety and protective shoes represent in value less than 10% of the footwear market in Europe. This market, however, shows a strong growth pace as legislation in the field of safety is getting more and more stringent. It increasingly requires companies from various manufacturing, service and health sectors to equip workers with adequate protection. Success on this market is based on innovation and investments in technology, while compliance to regulation is, needless to say, a critical factor.

Safe Way Srl is a family-owned manufacturer of protective and safety shoes. It belongs to an entrepreneur who has been operating in this sector since 1998 through the company Siily Safety Srl, which is an importer of protective shoes with the brands *DeWalt* and *Work Land* and a manufacturer of the proprietary brands *Silli Safety* and *Safe way*. In 2005, the entrepreneur decided to establish a new company, Safe Way for all the manufacturing activities have been conveyed. Since last year, Safe Way is the production branch while Siily Safety Srl is the commercial one (4 employees and 1 m euros turnover in 2005). Both companies are located in Ascoli Piceno, a small town in the Marche Region, in central Italy, one of the most important shoe manufacturing districts. This case study provides an interesting example of innovative technology applied in the context of a very traditional know-how. According to the interviewee, a major point of strength of the company is the ability to develop shoes with high safety standards coupled with design and fashion.

The business idea

The present case study describes the experience of Safe Way which patented a system called "*Microchip*" for incorporating RFID tags in safety shoes. The idea of developing and patenting such a system started from the empirical observation of problems encountered by customers of safety shoes. Safety shoes – like other protective clothing and uniforms used in pharmaceutical industry, hospitals, agro industry, electronic companies and laboratories – require frequent washing for sanitary reasons. The cleaning services regularly encounter problem in pairing shoes after washing. This problem is more relevant for shoes than for other equipment, in relation to the "personal sensitiveness" of the item and because in adult population sizes tend to be quite uniform and make recognition more difficult.

The company patented the process through which RFID is incorporated in safety shoes. First tests started in 2003. This process is described below.

Activities

From a technical point of view, it was necessary to verify and solve the following **problems**:

- The **position** of the microchip within the shoe.
- The **resistance** to water and hot temperatures.

Initially the RFID tag was applied on the insole sewed to the vamp. As a second solution, tag and vamp were inserted into a mould where the stronger sole was injected. With this system, the tag and the shoes were indissolubly tied together.

This method grants strong resistance to hot temperatures and the maximum level of security, as tags cannot be damaged nor removed.

In 2003 this innovative system was protected by patent for a particular kind of safety shoes, corresponding to a specific ISO EN class.

Technical issues

Safe Way called its RFID system "*Microchip*". It allows monitoring the characteristics of safety shoes by means of a chip inside, a transceiver and a software application connected to it.

The system consists of three different **elements**:

- An innovative **tag** composed of a tape support of synthetic material, a printed microchip applied on the support and a printed copper antenna applied on the support;
- A **transceiver** composed of a tag reader connected to an antenna;
- A software **interface**, with an easy-to-use tool, customized according to customer needs.

The system works as follows. The antenna produces an electromagnetic field. The tag within the shoe is activated by waves and emits its own answer signal. The answer signal, carrying the code, is received by the antenna which routes it towards a server where a software translates it into specific actions (alarm, green light and other).

The RFID system is implemented and customised for:

- The **identification of the owner** and the automatic shoe re-coupling after industrial washing;
- The **recognition of the ISO EN class** of the shoes, and their suitability to be used in specific environments;
- The **recognition of operators** wearing shoes and, on the basis of these parameters, the assessment of their suitability to operate in specific zones;
- The automatic **monitoring of exit points** for verifying the complete staff evacuation in case of danger (contamination, fire) in specific risk sites.

The development cost has been about 100,000 euros “*and a lot of time*” said Giovanni Silvestri, the company owner. The investment has covered the project plan, the software and the cost of tags (0.50 cents each, 1 euro per pair of shoes).

Impact

From the company's business point of view, the **impact is still limited**. RFID equipped shoes are produced and marketed in small and customized quantities. Economic return is **expected** in two years time and should take different forms, such as:

- Control and **reduction of time and cost** of inventory;
- **Traceability** of delivery;
- **Contrasting counterfeit** from manufacturers in low-cost countries and improved automatic control of the raw material of the safety shoes which have a specific ISO EN class;
- Adoption of a system which allows **linking** internal procedures to the future request of large and specialised distribution.

Presently, the main benefits are for the customers using this solution and can be summarized as follows:

- Automatic access control
- Easier pair re-coupling after washing
- Automatic monitoring of exit points for verifying the complete staff evacuation in case of danger.

Lessons learned

The development of an innovative system allowed the company to address the needs of specific groups of customers. Although economic return has not been achieved yet, the company is very satisfied with the commercial results: demand is rapidly growing and the range of requests for customised solutions is boosting. The main points of strength of this initiative are the following:

- Innovation driven by customers' needs;
- Easy-to-use and low-cost solutions;
- Possibility to extend the scope of applications;
- Positive impact on internal organisation: real-time information regarding the product (raw materials), traceability, location of goods and possibility to integrate all relevant information collected with the company's information system.

References

This case study was conducted by Databank on behalf of e-Business W@tch. Sources and references used:

- *Interview with Giovanni Silvestri, owner, Safe Way Srl, April 2006,*
 - *Company Brochures (2006)*
 - *Company website: www.silli.it (visited in April 2006)*
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