

[4] Ibatullin, I.D., (2008), -Kinetics of Resistivity and Degradation of Surface Layers, Samara: Samara State Technical University (in Russian).

[5] Burya, A.I. and Yeriomina, Ye.A., (2016), "Effect of the nature of metals on wear resistance of metallopolymers based on aromatic polyamide phenylene", J. Friction Wear, No. 2, Vol. 37, P. 197 - 201.

[6] Burya, A.I., Yeriomina, Ye.A. (2015), - Vlijanje sođeržanija bronzy na izostojnost 'aromatiĉeskogo polyamida fenilna', Visnik Ćerniŝiv's'koŝo deržavnoŝo

## THE USE OF RFID TECHNOLOGIES IN PRODUCTION OF POSTAL SERVICE

Almedina Hatarić, MA, email: almedina\_tr@hotmail.com  
 doc. dr. Jasmin Jusufrianić , email: j.jusufranic@gmail.com  
 doc. dr. sc Mirano Jupić , email: mirano@mail.com  
 Jasna Kuljanović, BA, email: jasna.kuljanovic@gmail.com

**Abstract:** *RFID is a technology that uses a technique of frequency radio waves to exchange data between the reader (eng. Reader) and a device called tag (eng. Transponder). Tag contains a silicon microchip and an antenna. The antenna emits radio waves and thus sends the data to the microchip that the reader through the entries in the computer. The transponder is on the production and the packaging contains a unique serial number. RFID - technology is mainly used for the identification of packaging products to be transported, stored or periodically enumerated and is a type of electronic 'smart packaging' (eng. Smart packaging). In order to approach the consideration of the application of RFID in traffic, it is necessary to first see how the system works, which are the basic elements of this technology, and the possibility of application in other systems. This paper presents the basics of RFID technology in terms of product identification in automated postal systems. These are the advantages of this technology as well as disadvantages, with particular emphasis on bar code technology that RFID system needs to succeed in the postal service.*

**Keywords:** *RFID, Technology, Post, Traffic, Shipment*

## 1. INTRODUCTION

The idea of introducing the postage stamp is attributed to Lovrenc Kosir, an Austrian clerk (of Slovenian origin) who in 1835 proposed to the Austrian Ministry of Trade the replacement of the postage payment system from the recipient of the shipment by collecting from the sender in order to spread the mail and the possibility of sending the shipment to a wider population.

The idea was also dealt with by James Chalmers, who three years later made the first draft of the postage stamp as we know it today. This proposal was rejected by the Austrian side for the idea to be supported by Sir Rowland Hill, in charge of England's postal reform, which issued the first postage stamp on May 1, 1840, called One Penny Black, which was released on May 6, 1840 (the curiosity is that there is a copy dated May 2, 1840). On the first postage stamp is a portrait of Queen Victoria on a black background and worth one pennies.

(The motto was selected from 1,100 proposals, and the graphic design was processed by Henry Corbald).

Today in BiH there are three post offices that issue stamps in the common currency of the Convertible Mark (KM) or BAM and which are valid throughout Bosnia and Herzegovina. In addition to BiH, there are several other countries in Europe and the world that have several post offices (Andorra, Australia, Cyprus, Great Britain, Denmark, Indonesia, China, France, Serbia, Croatia, Italy, etc.). The reasons for the issuance of different stamps and the existence of multiple post offices in these countries are multiple from geographic, political, historical, and many others. The reason for the existence of three post offices in B & H is the disintegration of Yugoslavia and the subsequent wars, which led to the need for contacts between the population, money transfer, etc., since postal items from Europe mostly came in private channels or through post offices of neighboring countries, with a mandatory indication of the entities. Another specific feature of postal traffic in some cities in BiH is the existence of two post offices less than a kilometer away in which two types of postage stamps can be purchased (Sarajevo, Vitez, Mostar, Novi Travnik, Gornji Vakuf, etc.). In the literature, such a case is mentioned in the United Arab Emirates and Oman in the border area. This specificity was reflected in the relatively high demand of Bosnian stamps in Europe, but also on the development of graphic design and original ideas that produced high quality stamps.

RFID technology is based on the transmission of data via radio frequency, that is, radio waves. RFID technology can be defined as a technology that combines the use of electromagnetic or electrostatic couplings in the radio frequency section of the electromagnetic spectrum to uniquely identify an object, an animal, or a person. The following definition states that RFID is a wireless data collection technology that uses electronic stickers to store data. RFID

technology is based on a system with three main components: RFID tag, reader, and RFID - a computer.

## 2.1. Elements of the RFID system

The basic element of the system is the RFID tag (label, label, pendant, metal tip) that can appear in the form of a label (whose size varies from the size of a miniature postmark to a large postcard) or some other object that is embedded in the product or fastens with it (the size also varies, and the smallest can be the size of the grain of the rice). In practice, the English name tag is retained for this device and will be used in this work as well. The tag consists of a silicon microchip (in which data memory is stored) and an antenna (which receives and transmits radio waves). These two basic elements are usually wrapped in an environmental impact resistant housing. Tag represents a technological innovation (unlike readers and computer systems that have already been used in other technologies - for example, a barcode, OCR, etc.) making it the most important element of the RFID system.

### 2.1.1. RFID tag

Each tag is primarily a bearer of information on which a whole set of information (related to the origin, composition, quantity of products, etc.) can be written that the same product uniquely identifies and differs from others. RFID tags or transponders allow "read" or "write" of data, so three types occur:

- Read Only (R) - allow only reading data from a tag that produces its unique serial number in the production process. Once stored information can not be changed;
- Write Once Read Many (WORM) - the user himself programs the transponder memory to his needs. The data can be written only for the first time, after which it remains stored permanently and can be read indefinitely;
- - Read / Write (R / W) - the user can write the information on the tag many times and also read. R / W tags are still much more

expensive than R tags.

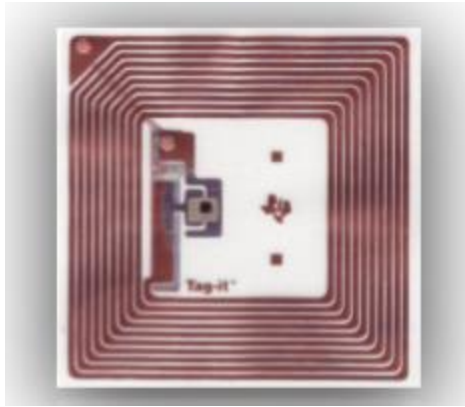


Figure 1. RFID tag

The most common division of tags is the one with regard to the independence of the power supply, because it is precisely this feature that most affects their ability to use on different products and in different conditions. There are three basic types of tags with regard to the type of power: - Passive tag - do not contain internal power supply, but the energy is received by the current electronic submersion in the antenna that arrives with the input radio frequency signal sent by the reader. They are smaller, lighter, cheaper than the active tag and have virtually unlimited life expectancy. The range of their communication ranges from a few millimeters up to 5 meters. Due to the relatively low price, they can be rejected together with the packaging after use (such as bar codes). The relatively small range and the possibility of storing smaller amounts of data are basic defects, which also include poorer resistance to electromagnetic noise in the environment; - Half-sized tag - contain a battery powered by a microchip, but for transmitting and receiving radio waves they use the energy sent by the reader;

- Active tag - contain a battery that serves for its own power supply (this results in a limited lifetime of up to a few years), which allows them to range up to several kilometers. The memory capacity is much higher, as is the frequency of the radio frequency

signal that provides improved performance in an environment of electromagnetic noise or other disturbing factors (humidity, metal). The disadvantages are primarily

related to the much higher price in relation to passive and semi-obscure tags (due to this fact, they are mostly used in marking and monitoring expensive products)

### 2.1.2. RFID reader

A device that is in the RFID system for communicating with tag transponders is called an RFID reader (reader, interrogator). After collecting data from one or more tags - this sends them to the computer, and in fact represents the connection between the tag and the information system. The readers contain an antenna for reading (a different form and function than tags) and a connection to a data processing system or a computer. Also, readers can also serve to write data to tags. Such a type of reader is most commonly used at the end of the conveyor belt at the factory or within a distribution center where initial or additional product data is recorded. Functions as well as reader techniques are evolving daily in the direction of faster and easier processing and data transfer.



Figure 2. RFID reader

### 2.1.3. RFID - computer

An indispensable part of every RFID system and an RFID computer, or more precisely a computer system. It consists of computer hardware and data processing software that connects the reader to the computer system. This software is also called RFID-middleware, which translated from English means a program or program

that works between the application and the network.

The software most commonly used in RFID systems is called Savant. Savant is a software developed by the Massachusetts Institute of Technology (MIT), with its Auto - ID Laboratory, covering many areas of application of RFID technology, especially in the supply chain management activities. The basic functions are the collection, storage and processing of information, and communication with other savants. It also corrects errors, eliminates double codes by two readers, and determines which information is preferred. It can also be programmed to achieve custom tasks for specific situations, for example, to automatically notify the warehouse that there is a minimum number of products on the shelf in the store as an alarm to supplement the shelf with new products.

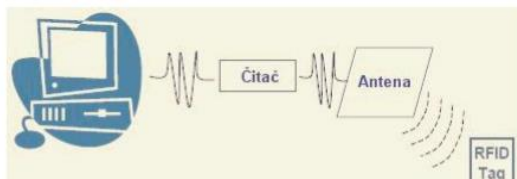


Figure 3. Simplified RFID model of functioning

The goal of each RFID system is to simplify and quickly translate information about a single unique product into a digital form that enables the fastest processing of the same. Figure 3 shows a simplified RFID model of functioning - its elements and relationships among them. The RFID tag, located on or in the product, is irradiated by radio waves emitted by the reader and its antenna. Using your own antenna, the tag receives the signal converted into an electrical energy that allows it to function. At the same time, it sends the contents of its memory to the reader (product information). The reader can simultaneously read a large number of tags, abrasion and reader rate depending on the reader's ability and type of tag, and of course the size of the reader field reader field - tags outside the reader's field of coverage They receive radio waves and can not be read. The received information is converted into a digital form by the reader

and forwarded to the computer, i.e. computer system.

## 2.2. Benefits and benefits of the RFID postage stamp

Realization of the RFID Project Stamps should provide unimaginable advantages over the traditional and up-to-date practice of garbage collection, postage and Trace & Tracking shipments, and thus provide a number of benefits for postal and courier companies, but also for participants in postal traffic (physical, legal entities and state institutions).

The benefits and benefits of introducing the RFID Postage System are as follows:

- Increase in quality in distribution and deliver shipments through faster automated delivery flows.
- Measuring the quality of delivery of shipments, not on individual samples, but on the entire sample (all consignments), and therefore obtaining absolutely accurate data on the quality of delivery (more reliable quality coefficient)
- Monitoring the quality of delivery to the final recipient of the shipment through the measurement of speed and delivery efficiency, as well as the satisfaction of the users of the service (possibility of electronic measurements of user satisfaction through, for example, simple digital surviving systems).
- Setting up the Data Warehouse concept in delivery of the shipment, which will allow for a more quality and comprehensive study of the behavior of users of delivery services in order to influence their behavior, change awareness and routine in the use of individual services and create new delivery services and the related delivery industry.
- Creation of new services in delivery of the shipment and creation of new profit centers.
- Starting direct (targeted) marketing in the promotion or sale of services to end-users, with the possibility of selling databases on service users to other industry.
- Increase the reliability of receiving the consignment by the recipient.
- Technical update of plain shipments to a higher

priority ranking (in the ranking of recommended shipments, etc.).

- Increase the privacy of the shipment, as it is not necessary for them to have visually visible information about the sender and even the recipient of the shipment.

- This delivery system of shipments is an important link in the security systems of the fight against terrorism.

- Enabling the Trace & Tracking system for all shipments (and for ordinary shipments).

- The system itself, the Trace & Tracking system itself, allows the delivery system to be tuned up in terms of better routing of the shipment and, therefore, the acceleration of delivery.
- Reducing the cost of transferring and delivering shipments through a better organization of transport and delivery.
- Increase the security of delivery by reducing the problem of physical loss of the shipment.

- Significant progress in the concept of consumer protection in the use of mail delivery services or courier services.

- Setting up a "Personal Hybrid Mail" concept - which allows an automated mail delivery system (for example, large companies) to be sent without a mail or courier service. Users will be able to authorize their RFID Stamps through personal applications (mobile phones, tablets, etc.) and hand over them to delivery at standalone postal terminals.

- Facilitating and increasing the security of customs procedures in international shipments.

- Increasing the legal safety of the sender and the recipient in the delivery of shipments.

- Rapid materialization of goods in the hands of users in the processes of Internet commerce.

- Enormous benefits for the national service market regulator, as it obtains precise transport data and delivers shipments, so it can, in a much simpler way, control the market and participants on it.

- Placing all participants in the delivery of shipments under equal market and technical conditions - making better regulation in one national market.

- Enabling legal logistics to come to all logistics companies that also deal with the

transport and delivery of goods (goods) to known customers in wholesale or distribution of goods to retail.

- Regulation of the market through better collection of postage, taxes, taxes, customs and other charges in the process of delivery of shipments.

- Monitoring the transport of goods and shipments from the aspect of local taxes, duties and taxes.

- Better control of courier organizations and bringing them under a single cap of the national market, in order to prevent illegal channels for distribution of shipments.
- Introduction of licensing of postal, courier, delivery and transport organizations through the acceptance of such a unique system.

- Prevention of unfair competition between postal / courier and logistics / transport companies.

### 3. CONCLUSION

Today, practically in all postal administrations and large global courier companies, projects are being developed to implement RFID technology in improving and improving delivery of shipments. Obviously, RFID technology will be the future standard in postal mailboxing, especially considering the fact that this technology has a growing price tag for chips and associated RFID infrastructure equipment, which removes the last the barrier of its massive application. The use of RFID in the function of a postage stamp gives unimaginable advantages and benefits in the exploitation of postal traffic, which are reflected in the setting up of viable, economical, cheaper and safe postal services.

RFID in the function of the postage stamp ensures that the continuous concept of quality monitoring in the provision of services not on the sample (as before) than on the overall traffic segment gets much more complete data not only on the overall quality of the service, but also on evaluating the service by monitoring the cost price in each segment delivery. Also, the reaction to the observed deviant phenomena or

omissions in the supply chain can be much faster and more comprehensive, which will lead not only to raising the quality of the service, but also to reducing the costs of exploitation.

#### 4. LITERATURE

[1] B. Stanivuković, A. Čupić; -New Perspectives of Implementation of Existing Systems for Automatic Processing of Postal Items|| XXVI Symposium on New Technologies in Postal and Telecommunication Transport - PosTel 2008, Belgrade, December 16 and 17, 2008;

[2] D. Hellström: The cost and process of implementing RFID technology to manage and control returnable transport items, International Journal of Explication: Research and Applications, Vol. 12, No. 1 1, p. 1-21, 2009;

[3] D. Spajić, K. Šapina; -AMQM System for Measuring the Quality of Postal Services||; Promet-Traffic & Transportation, Vol. 19, 2007, No.2, 129-137;

[4] UNI-Japan Post, UNI-Apro, ASPEK Indonesia and SPPI; -Postal news||; No. 33/2011;

[5] W. Rhea; -DHL Express Steps Back from Internal Use of RFID, RFID Journal, 2007;

[6] [http://www.dpdhl.com/en/logistics\\_around\\_us/from\\_our\\_divisions/rfid.html](http://www.dpdhl.com/en/logistics_around_us/from_our_divisions/rfid.html)

[7] <http://gaorfid.com/postal-services-rfid-systems/>

#### THE MISSION AND VISION AS THE BACKBONE OF STRATEGY DEVELOPMENT OF THE HIGHER EDUCATION INSTITUTIONS

Prof.dr.sc. Nikola Kuvačić, email: nikola.kuvacic@gmail.com

Alisa Salkić, MA email: alisa.salkic@gmail.com

Lejla Skopljak, MA, email: lejla.skopljak@iu-travnik.com

**Abstract:** *In short, the strategy is a way to achieve the objectives, so under the strategy it is usually considered long-term planning behaviour of some companies in order to achieve the set goals. It defines a way how to use individual resources to take advantage of creating desired effects. Otherwise, by strategic planning company tries to answer a five questions: where the company goes and what company wants to achieve, environment, how to get where company wants to go, what resources needs on this way and when you will achieve the desired goals? The strategy defines the area in which the company operates, the reasons for its existence, as well as sources of competitive advantage, distinctive abilities (competencies) arising from these advantages and the special position that the company will take. The term strategy is now used in various types of human activities and there are a number of different strategies, for example: entrepreneurial, marketing, business and other types of strategies of individual business functions and strategy development company in certain areas of activity (branches). In this paper we concentrated on some segments of the strategy of the university. Abstracting complex structure of such a strategy, the structure of this work, except the introduction, conclusion and references, includes general theoretical observation about the concept and character of the strategy and the elaboration of the concept and content of the mission and vision of higher education institutions as well as the underlying assumptions for the design of its development strategy.*

**Keywords:** *higher education institutions, strategy, mission, vision.*