

PROCESS AUTOMATION FOR RADIATION PROCESSING FACILITIES

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Rezumat. *IFIN-HH deține singurul iradiator industrial cu surse gamma din România. Acesta funcționează din anul 2000 și oferă servicii de sterilizare și scădere a încărcăturii microbiene în special pentru industria medicală și farmaceutică. Acest articol prezintă modul de funcționare al sistemului de comandă și control în vederea realizării tratamentului cu radiații ionizante. În anul 2013, sistemul de comandă și control a fost actualizat, trecând de la operarea pe PC la operarea pe PLC. În acest fel, s-au introdus elemente noi, care contribuie la o operare mai facilă și eficientă a iradiatorului. Obiectivul articolului este acela de a descrie particularitățile și noutățile automatizării procesului de tratament cu un sistem PLC.*

Abstract. *IFIN-HH holds the only industrial gamma irradiator in Romania. It has been functioning since 2000 and offers services of sterilization and bio-burden reduction especially for the medical and pharmaceutical industry. This paper presents the automation of the command and control system for the radiation treatment. The command and control system was up-graded in 2013, switching from PC operated to PLC operated. In this way, new elements were introduced and contribute to an easier and efficient functioning of the irradiator. The objective of this paper is to describe the particularities and novelties of the new PLC automation system.*

Keywords: industrial irradiator, process automation, PLC, efficiency.

1. Introduction

Radiation sterilization is very popular in the medical and pharmaceutical industries where approximately 40% of single-use medical products such as surgeon's gloves, syringes, sutures, catheters, etc. are sterilized [1]. Also, bio-burden reduction is used for biological raw materials (herbs, algae, starch), excipients and colorants, gelatine capsules, enzymes, plants extracts, etc. Medical and pharmaceutical industry plays a significant role in today's people health. New drugs, medical devices, treatment methods, etc. are developed constantly in order to save lives, increase the comfort of living and prolong life.

One real need for the medical and pharmaceutical industry is the safety of products from the sanitation point of view. There is a stringent requirement that the medical device that comes in contact with fluids be sterile and also that pharmaceuticals not to cause illnesses due to poor hygienic state. One option for mass sterilization of medical devices and raw materials is the use of commercial

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