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Dose Increase System in a Gamma Irradiator

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In China, many gamma irradiators' users encounter a problem, i.e. the product kinds are various, but each product quantity is small. The absorbed-dose for each kind of product is usually different. When processing these products, the user has to wait for completing one kind of product, empties the source pass mechanism, changes the master time, then start to irradiate another kind of product. This cause the throughput and source efficiency to be lower. To solve this problem, in the new type gamma irradiators (BFT type) in China, we have designed a dose increase system. This system includes joint roller, stopper, barcode reader etc., which is set inside the maze. Barcodes are attached on all totes. For different products, the master time is set according to the absorbed dose common divisor. For example, there are three kinds of product whose absorbed doses are 10kGy, 15kGy and 25kGy. In order to process them at the same time, the master time can be set to make one cycle of irradiation to reach 5kGy. So the totes loading these products should be irradiated for 2, 3 or 5 cycles, which are related to their barcodes. During the irradiation, when a tote is conveyed to the outlet of the maze, the barcode reader will send its barcode to the control system. The control system will decide the next motion by the tote's total cycles and its finished cycles: if the finished cycles are less than the total cycles, the tote will be moved to the joint roller and be conveyed back to the radiation room; if the finished cycles equal to the total cycles, the tote will be moved to the unloading station. The dose increase system has been applied in many BFT type gamma irradiators. The result shows that the system works out the problem of dealing with many kinds of small batch products. The system improves the throughput and source efficiency greatly.

Country/Organization invited to participate

China

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