Abstract

This paper focuses on an inventory model considering imperfect manufacturing and remanufacturing system under single management. In manufacturing system, the items are produced from original raw materials but in re-manufacturing process, returned and defective items produced in previous manufacturing process are the raw materials. Both the production system shift from ‘in control state’ to ‘out-control state’ at any random time and starts to produce imperfect items. Here the screening process of produced items in both production system (manufacturing and remanufacturing) has been considered during production period. Some portion of the defective items produced from manufacturing process are transformed as good as new after some rework and remaining portion are used as a raw materials in re-manufacturing process. Returned items are collected from the market continuously and stock them for use as raw-materials in re-manufacturing system. Inventory costs of produced items, return and defective items are calculated and total cost per unit time is minimized for optimal return lot. Finally some numerical example has been illustrated to study the practical feasibility of the model.


**Index Terms**

Computer Science

Information Sciences

**Keywords**

Imperfect Production, Manufacturing system, Returned- items, Remanufacturing system, Rework, Return lot.