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Improvement of Process Flow Operations in a Continuous Processing Plant using simulation

(Zimbabwe Sugar Refinery Harare)

By

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Abstract

Since a continuous processing plant produces high volume and low range of products, the costs of stopping the system and experimenting with it are very high. The costs of starting up the plant are also high. A simulation model of a continuous processing plant (ZSR) was developed with the aim of improving its processing flow operations by eliminating bottlenecks and aligning the equipment effectively. Data such as processing times, capacity, repair times and flow rates was collected through company auditing. WITNESS was used as the simulating software package since it has the ability to simulate continuous process systems. Results from the model indicated that the Affinaton Station, Recovery House and White House were the bottleneck stations. Eliminating these bottlenecks proved that throughput would increase. The model also revealed that with the correct performance measures such as MTTF, MTBF, processing times and flow rates the output on any given period could be determined.

KEY WORDS

Simulation Modelling, Manufacturing Systems, Continuous Processing, Manufacturing Resource Planning.