

Shop-Floor Control For Batch Operations With Time Constraints In Wafer Fabrication

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Abstract

In wafer fabrications, engineers will set a queue time limit between particular operations to ensure the final product yield, which is named “time constraint.” Due to the dilemma of increasing machine efficiency or decreasing the queue time of WIP, the issues of time constraint become more complex in batch processing.

This work proposed a shop floor control policy in serial-batch-serial processes with time constraints. The concept of safety stock ($[S, s]$ policy) is introduced to control the WIP level for avoiding machines idle and wafers exceeding time constraints simultaneously. Length of time constraints, MTTR of machines and service rate of workstations are adopted to determine the batch size and boundaries of WIP level. The job hold/release policy is addressed to control the situations of excessively high WIP level. Furthermore, the performances of proposed model are compared with DJAH and MBSX rules. The results indicated that the proposed model could control the batch processing with time constraints more effectively.

Keyword : time constraints, wafer fabrications, batch processing, shop floor control, batch size