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Abstract

Logistical Control for Automated Reticle Handling: From System Start Up to Optimization

IBM's 300mm B323 fab, located in East Fishkill, NY, runs a diverse product mix across multiple process nodes simultaneously. The fab produces wafers for IBM and external customers, and is also used for development of new process technologies for IBM and its development partners. These factors all contribute to a complex reticle management environment.

Automated reticle handling has proven to be a necessity for efficient photolithography tool utilization and control in B323. The fab uses an automated Reticle Handling System (ARHS), including overhead transport for reticle delivery and a combination of reticle pods and bare reticles for storage, to service the entire population of photo tools spread across five lithography bays.

An important and often overlooked challenge for an ARHS is the decision support tools required to manage the logistics of automated reticle handling. While much of the ARHS hardware may share similarities with the automated material handling system (AMHS) hardware, the logistics of reticle scheduling and dispatching are quite different from wafer lot scheduling and dispatching.

This article will outline the requirements and goals for reticle dispatching and scheduling, and the initial ARHS control scheme used in B323. The article will go on to describe several incremental improvements made to the system and the benefits they provided. These changes represent a transition in decision support tools from a single-tool centric, heuristic approach to an optimized tool-group approach.

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