

RUN-TO-RUN CONTROL OVER SEMICONDUCTOR PROCESSING TOOL BASED UPON MIRROR IMAGE TARGET

ABSTRACT OF THE DISCLOSURE

- Run-to-run variation of a semiconductor fabrication tool is minimized
- 5 utilizing a mirror image target. A goal represents a process result desired from operation of the tool. The mirror image target is generated by adding the goal to a difference between an output from a previous tool run and the goal. Prediction of tool performance is based upon a data-based modeling engine utilizing a reference library correlating operational parameters with observed process results for prior tool runs.
- 10 The mirror image target vector is compared to the reference library and serves as a basis for generating the recipe for the subsequent process run. This recipe automatically brings operation of the tool back toward the goal. The method may further include comparison of the suggested recipe with the recipe of the prior run to determine whether run-to-run variation is serious enough to warrant a change in tool
- 15 conditions, or whether run-to-run variation is so serious as to indicate a major tool problem. Generation of the mirror image target, and utilization of the mirror image target to create a new process recipe, eliminates effort and uncertainty associated with conventional nonsystematic analysis of tool variation, followed by manual intervention by the operator to adjust tool parameters to reduce such variation.

PA 3084948 v1

This Sheet Has Been Replaced

