



Semi-Automated Repair Verification of Aerial Images

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Using aerial image metrology to qualify repairs of defects on photomasks is an industry standard. Aerial image metrology provides reasonable matching of lithographic imaging performance without the need for wafer prints. Utilization of this capability by photomask manufacturers has risen due to the increased complexity of layouts incorporating RET and phase shift technologies. Tighter specifications by end-users have pushed aerial image metrology activities to now include CD performance results in addition to the traditional intensity performance results.

Newly introduced is a software application providing semi-automated analysis of aerial images for repair verification activities. The software guides users through predefined analysis routines as to minimize errors. There are two main routines available in the software, one allowing multiple reference sites along with a test/defect site on a single image of repeating features. The second routine compares a test/defect measurement image with a reference measurement image.

This paper highlights the new functionality available for aerial image analysis as well as describes the application use cases. Using structured analysis processes and innovative analysis tools, a highly efficient and more reliable result reporting of repair verification metrology is presented.

Keywords: photomask, repair, AIMS, CD control, aerial image

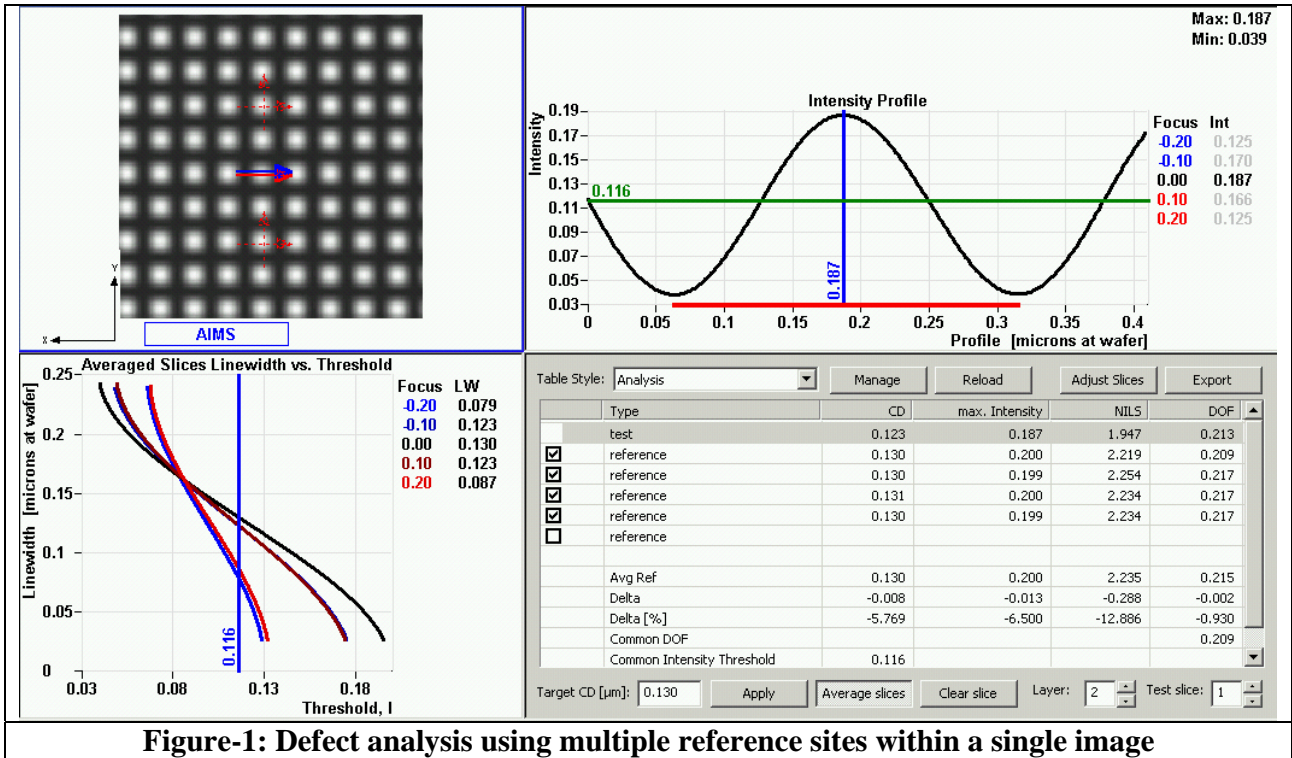


Figure-1: Defect analysis using multiple reference sites within a single image

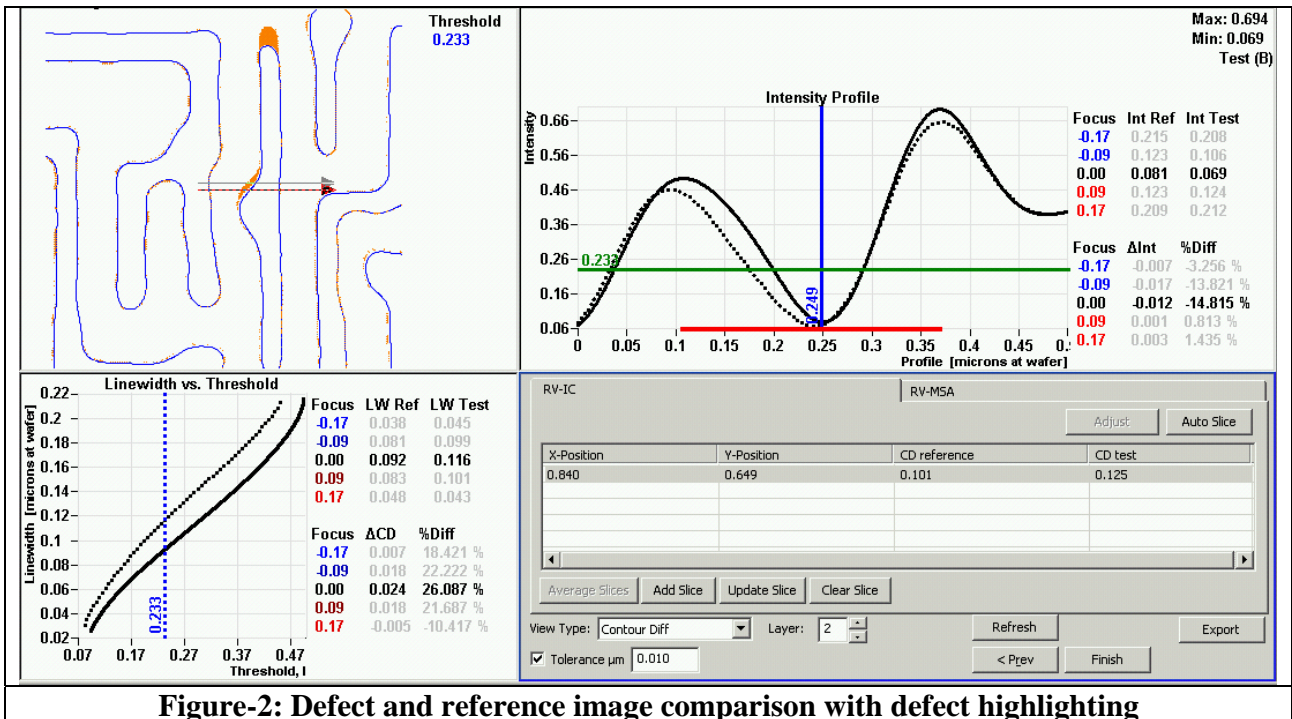


Figure-2: Defect and reference image comparison with defect highlighting