Residual CMP Defects ADC

From Microtronic

EAGLEview - The industry's best inspection tool for residual CMP defects on the wafer edge

EAGLEview Highlights:

No recipes needed (minimize resources)

Easy to operate - no buttons to press

High speed throughput – over 3,000 WPD

Automatically detect macro defects and edge chips

Auto Defect Classification (ADC) for residual CMP

Easily detect typical CMP defects such as unpolished, over/under polished, etc.

Detect edge CMP defects even on partial die

Retains years of stored images and data

No license required - unlimited ProcessGuard clients

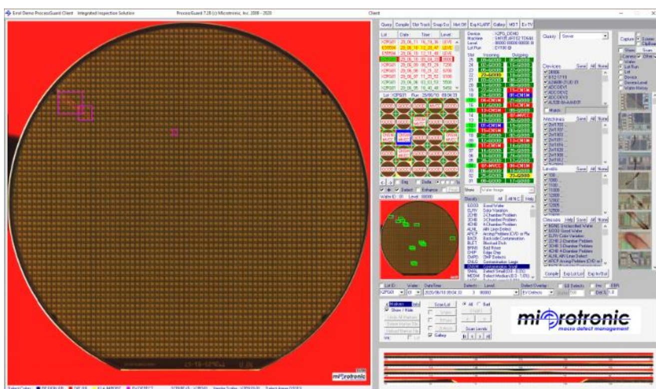
Sorter capabilities (automatically sort without operator intervention)

Integrated updateable defect image library

Guardband capabilities, digitally ink-off at probe

Fast RCA – on board commonality analysis

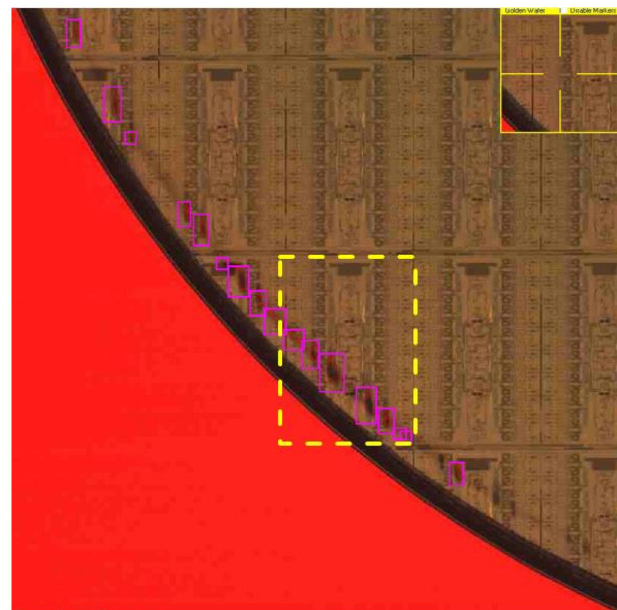
Massive sampling for excursion control



Inspect partial die near the wafer edge

The majority of automated tools used for inspection of CMP defects utilize a die-to-die inspection strategy. For product with large die, this prevents detection of residual CMP defects on partial die near the edge.

Special software was designed for CMP levels which allows detection of residual defects very close to the wafer edge. This capability provides an "early-warning" for CMP defects allowing problems to be corrected before they become severe. This early-warning results in lower rework and increased yield.

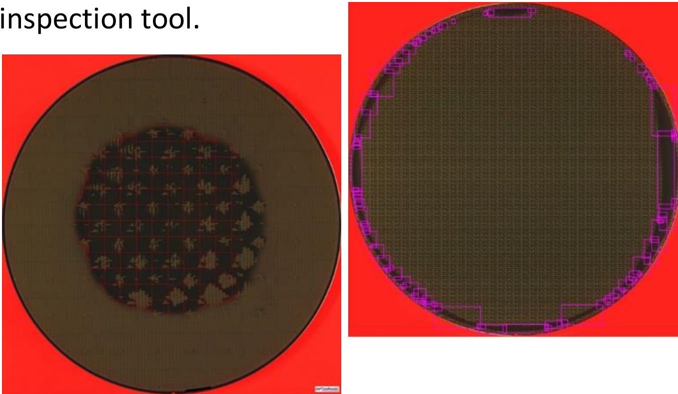


Automated tools that use a die-to-die inspection technique do not inspect the partial die near the wafer edge.

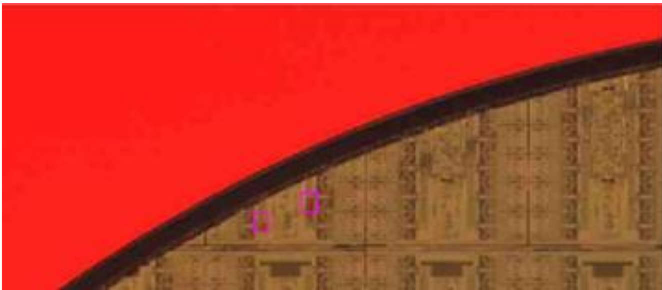
EAGLEview Deep Learning Automated Defect Classification (EVdlADC) software

Detection of CMP Defects

Severe CMP defects on the edge or center of a wafer is relatively easy to detect on an automated inspection tool.

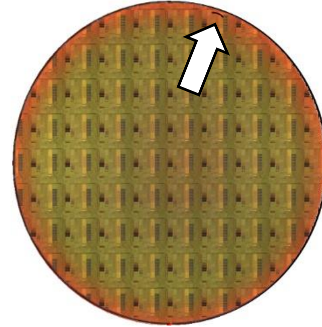


However, subtle CMP residual defects on the edge of a wafer are much more difficult to detect.

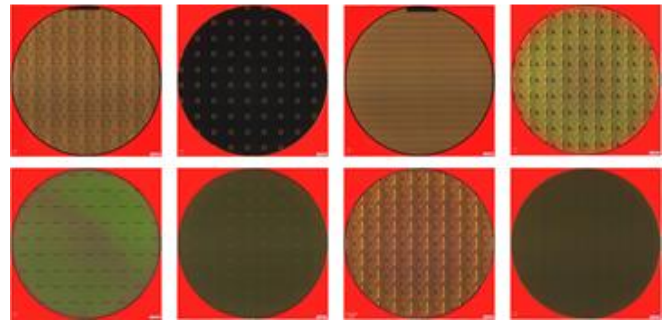


Not So Simple

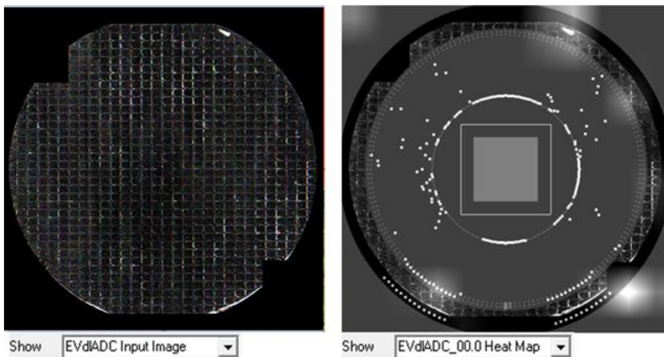
Identifying and detecting small residual CMP defects on the edge of a macro wafer image is difficult. Doing it without recipes is even more challenging.



Aside from size requirements in macro inspection images, signal-to-noise and contrast are impacted by the different patterns from different devices, process levels, etc.



EAGLEview Deep Learning Automated Defect Classification (EVdlADC) software was developed to overcome many of the pitfalls when using AI on macro full wafer images. AI models were trained, and two different algorithms (Image Classification and Object Localization) are used for detection of residual CMP defects.



The example to the right is a residual CMP defect that was detected and automatically classified - the defect area is approximately 0.03% of the wafer image.