

## Automatic Defect Redetection and Cross-Sectioning Option for the Defect Analyzer™ 300HP

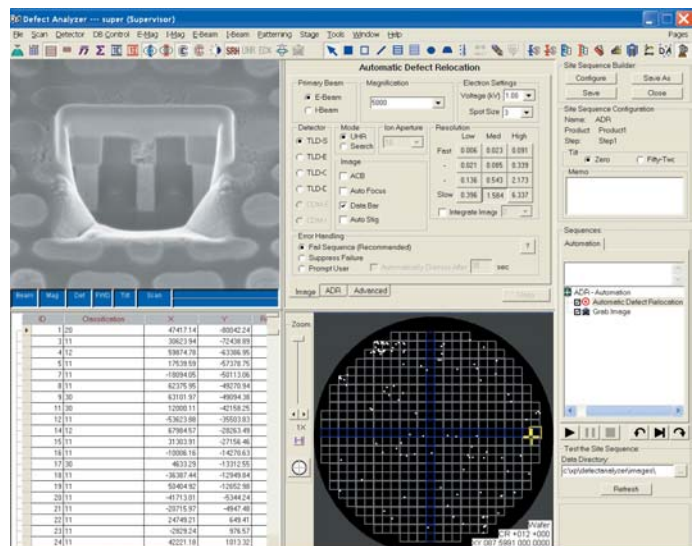
### 3D Analysis of Buried Defects

The need for three-dimensional analysis of defects during both process development and volume production has experienced a dramatic increase as new technologies, materials and processes are introduced to meet next generation design nodes. To satisfy the demand for obtaining rapid and consistent cross-sections, FEI Company has created the Defect Analyzer 300HP. The ADR software relocates the defect by performing a die to die image comparison. With the precise defect size and location known, the DA300HP can then make intelligent decisions on where to place a cross-section for the Automatic Defect Cross-Sectioning (ADX) process.

- *Automatically cross section defects without operator intervention*
- *Choice of ion beam or electron beam ADR for layer specific use*
- *Automatically relocate hard-to-find Voltage Contrast (VC) defects*
- *View results in web-based Defect Explorer software or export to your Yield Management System (YMS)*
- *Allows the DA300HP to be used as a standard Defect Review Scanning Electron Microscope (DR-SEM)*
- *Easy recipe preparation and parameter tuning for minimal setup time*

#### Automatic defect cross-sectioning

By using ADX a fab can easily incorporate defect cross-sectioning into their production or development line. This allows acquisition of statistical data on systematic defects to prioritize and properly attack marginal processes as well as aid in quickly determining root-causes of yield limiting defects. ADX helps minimize the time to find and correct yield issues while eliminating the need to have a highly trained engineer manually cross-section defects.



**Variety of Defects**

FEI's ADR has been proven to work well on Voltage Contrast, surface, and embedded prior level defects. The ADR option can be used with the ion beam, which is particularly sensitive to VC defects, or with the electron beam (e-beam). Utilizing ADR with the electron beam allows the DA300HP to operate as a standard DR-SEM in preparation for cross-sectioning only critical defects.

**Voltage Contrast**

As E-beam inspection systems gain acceptance and prevalence in fabs, the demand for three dimensional analysis of defects has increased. One of the main complaints that come from users of E-beam inspection systems is that a lot of data is generated without being able to determine the root cause of the VC defect. Utilizing ADR and ADX on the Defect Analyzer 300HP, users have been able to quickly determine the root causes of yield-relevant VC defects detected with E-beam inspection tools.

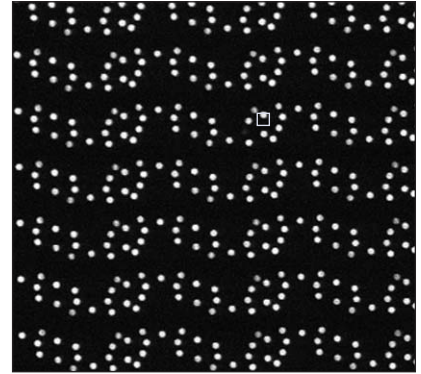
**Automated Operation**

FEI has been a leader in DualBeam technology for over 10 years and has

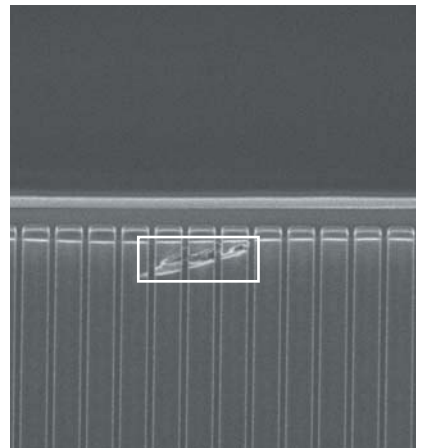
been performing automated cross-sectioning for over 5 years. With the addition of ADR and ADX, automated cross-sectioning has taken on a new dimension. Defects can now be re-detected and immediately cross-sectioned with no operator intervention. The images can then be viewed via a yield management software system or with FEI's exclusive Defect Explorer™ (DE) data viewer software. DE can display ADR outline images as well as reference images. In addition to a single pass defect cross-sectioning recipe, a user can also choose to run an ADR recipe then tag specific defects within Defect Explorer to revisit and automatically cross-section.

**Process Optimization**

ADR on the Defect Analyzer 300HP will change the way defect analysis is performed in your manufacturing line. By providing critical root cause analysis in a fraction of the time currently required by sending samples to the lab, the DA300HP ensures that your production processes can be optimized in real-time for continuous yield improvement.



**Ion beam ADR locates a missing contact after Tungsten CMP**



**Electron beam ADR locates embedded particle after gate etch.**



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