

July 3, 2007



# KLA-Tencor Completes Its 45nm Defect Portfolio With New Generation Defect Review and Classification System

SAN JOSE, Calif.--(BUSINESS WIRE)--

KLA-Tencor (NASDAQ:KLAC) today introduced the eDR-5200, a new generation wafer defect review and classification system that leverages advances in resolution and defect re-detection sensitivity, along with unique connectivity with KLA-Tencor inspection systems, to enable better review performance, faster yield learning and higher productivity from both systems. The seamless integration of KLA-Tencor inspection tools and the eDR-5200 enables fabs at the 45nm node and beyond to produce a greater number of higher quality defect Pareto(1) per hour, allowing engineers to take rapid, accurate corrective action to protect their yield.

"As design rules shrink to 45nm and beyond, defect and yield engineers are becoming increasingly concerned about the quality of the defect Pareto coming from their review tools," remarked Zain Saidin, group vice president for electron-beam technology at KLA-Tencor. "Because our latest generation of inspection tools, the 281x and Puma 9150, are finding critical defects smaller than 50nm, previous-generation e-beam tools are having difficulty reviewing them. A large number of 'Not Found' or 'SEM Non-Visual (SNV)' defects skews the defect Pareto -- which is used to make key decisions during both yield ramp and process monitoring. Adding the eDR-5200 to our inspection portfolio enables a dramatically reduced SNV count and a defect Pareto that more accurately represents the population of defects of interest on the wafer -- in a shorter time."

The eDR-5200's immersion column design (see Technology Summary) breaks through the resolution barriers hampering traditional SEM review systems, enabling the imaging and classification of less than 50nm defects. Industry-leading stage accuracy and access to the optical patch image from a KLA-Tencor inspector reduce the percentage of SEM Non-Visuals in the defect Pareto by an order of magnitude or more. Getting to a meaningful defect Pareto quickly is further facilitated by a range of novel approaches to defect classification. For example, Power Assisted Classification (ePAC) allows the user to transition from manual classification to fully automated classification without the need for lengthy and cumbersome setup.

KLA-Tencor has engineered connectivity between the eDR-5200 and KLA-Tencor inspectors to enable inspector recipe setup and optimization on the SEM without repeatedly moving the wafers back and forth between platforms. The result is more than 50% reduction in recipe setup time as well as a significant improvement in recipe quality. As a result, the defect Pareto will contain more defects of interest, and fewer SNV defects. Furthermore, when the eDR-5200 system is used together with a KLA-Tencor inspection tool for process window qualification (PWQ), time to results can be reduced by a factor of ten. Together the eDR-

5200 and the KLA-Tencor inspection systems create the highest productivity inspection-review-classification solution available.

The eDR-5200 has been shipped to customers in Asia, Europe and the US, where it is being installed for both memory and logic applications. Multiple customers already depend on the systems' industry-leading resolution and re-detection capability, together with its synergy with the KLA-Tencor inspectors, to produce the best defect Pareto in the shortest time.

About KLA-Tencor: KLA-Tencor is the world leader in yield management and process control solutions for semiconductor manufacturing and related industries. Headquartered in San Jose, California, the Company has sales and service offices around the world. An S&P 500 company, KLA-Tencor is traded on the NASDAQ Global Select Market under the symbol KLAC. Additional information about the Company is available at <http://www.kla-tencor.com>.

## eDR-5200 Technology Summary

### High Resolution Imaging for Classification of less than 50nm Defects

#### Immersion Column Design

As leading-edge fabs bring 45nm devices into production and investigate the 32nm node, the need for better resolution is driving an inflection point in defect review and classification. The eDR-5200 introduces an immersion column design to address the need to image and classify less than 50nm defects. Bathing the imaged area in a strong electromagnetic field enables nearly 2X better resolution, analogous to the benefit that immersion lithography brings to printing smaller features.

#### Widest Range of Beam Conditions

A broad range of operating conditions is necessary to achieve best resolution on the wide variety of materials and geometries employed in advanced devices. The 193nm resists are often the most challenging, requiring soft landing energy to avoid damage to the imaged layers. The eDR-5200 spans the industry's widest range of beam conditions to best meet imaging needs for the 45nm node and beyond.

#### EDX Technology for the 45nm Node

The eDR-5200 employs an innovative EDX design that uses robust, innovative algorithms to enable analysis and classification of defects less than 100nm in diameter, based on their composition.

SEM Non-Visual Reduction

Inspector Recipe Tuning

Proprietary connectivity to KLA-Tencor optical inspection systems enables 2X faster, more accurate inspector recipe development. The inspector's recipe can be set up and optimized on the eDR-5200 for maximum sensitivity and lower SNV rate, eliminating multiple transports of the wafer between the systems, and freeing the inspection tool for additional inspections.

## High Positioning Accuracy

The eDR-5200 review and classification system is equipped with a high precision stage and advanced defect de-skewing algorithms. Together these can reduce SNV rates, by increasing the ability of the SEM review tool to capture less than 50nm defects.

## Superior Automatic Defect Location

Low contrast or tiny defects can be completely missed and categorized as SNV by traditional defect re-detection approaches. The eDR-5200 introduces advanced re-detection methods which contribute a considerable number of critical yield-limiting defects to the final Pareto.

## Recognition of Previous-Layer Defects

Because an electron beam interacts with only the surface of a layer, previous-layer defects are traditionally classified as SNV. A new approach accessing proprietary optical information from KLA-Tencor inspection tools allows characterization of previous-layer defects by displaying their optical image.

## Innovative, Production-Worthy Classification

The eDR-5200 provides an innovative approach to defect classification. Set-up free, power assisted defect classification (ePAC(TM)) and a learn-as-you-go classification engine enable the user to easily transition from manual classification to fully automated defect classification (eADC(TM)).

(1) A defect Pareto is a bar graph of defect frequency by type. It is used to make decisions about what corrective action needs to be taken to reduce defectivity. See example at end of press release.

Source: KLA-Tencor