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KLA-Tencor Extends Industry's Darkfield Inspection Benchmark With New Puma 9150 Inspection System

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

KLA-Tencor (NASDAQ:KLAC) today introduced the Puma 9150 system, the company's latest advancement in darkfield patterned wafer inspection technology, featuring new optical modes that enable capture of a broader range of yield-critical defects for 45nm production and beyond. At the same time, the Puma 9150 provides the highest available darkfield production throughputs, reducing operating cost and allowing higher sampling rates for tighter process control.

"At 45nm, customers are faced with increasing yield challenges due to shrinking dimensions, new materials and innovative device structures. They also are driven to ramp their fab yields as quickly and cost-effectively as possible," noted Mike Kirk, group vice president and general manager of KLA-Tencor's wafer inspection division. "With the improved defect type capture made possible by new optical modes, the Puma 9150 has again raised the industry bar for darkfield inspection capability. The Puma 9150's unique combination of performance and speed provides customers with the fastest, most cost-effective path to higher device yield of any darkfield technology."

The Puma 9150 provides enhanced capture of low profile, large area defects, such as underpolish and slurry residues from copper CMP. It also improves darkfield defect capture in etch applications, such as microbridges and partially or fully blocked vias.

Masanori Numano, manager of the Material and Process Engineering Group at Toshiba Oita, said, "Our evaluation and beta testing of KLA-Tencor's new Puma 9150 system demonstrated significantly higher sensitivity and increased defect capture, including low-profile line-short defects in copper CMP layers that were not found by our previous darkfield systems. We have already begun using the system on our most advanced production line."

Building on the success of the Puma 9110/9130 systems, launched in September 2006 and already tool of record in advanced fabs, KLA-Tencor has shipped Puma 9150 systems to memory and logic customers in all chipmaking regions, including multiple systems to several fabs. The system is being used for 65nm production, 45nm ramp, and sub-45nm R&D. As the darkfield inspection market's leading platform, Puma-series systems have been installed at 18 of the world's top 20 chipmakers. To protect chipmakers' investments in optical inspection, all Puma 91xx systems are field-upgradeable to 9150 specifications.

The Puma 9150 is an integral part of a broad portfolio of innovative defect control solutions from KLA-Tencor for the 45nm node and beyond. This portfolio includes brightfield and darkfield optical inspection, electron-beam inspection, and a broad array of specialized

software tools that accurately identify and classify defect types, enabling rapid corrective action that elevates chipmakers' yield and profitability.

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>.

Puma 9150 Technology Summary

Leading the Industry in Optical Technology

New Optical Modes for Enhanced Sensitivity

In addition to traditional single and double darkfield optical modes, the Puma 9150 incorporates new darkfield and edgefield optical modes. These multiple optical modes provide improved defect type capture across an extended application space.

Streak(TM) Darkfield Imaging Technology

High resolution darkfield imaging is produced by combining line scanning with a multi-pixel sensor. This innovative technology enables high sensitivity inspections without compromising throughput.

Highest Sensitivity Darkfield Inspection

With new optical modes and the Streak darkfield imaging technology, the Puma 9150 captures the broadest range of defect types at the highest production throughputs - addressing a comprehensive set of line and tool monitoring applications. Cost-effective defect detection on film layers is possible with the system's unique optical features, which maximize surface selectivity and noise suppression. Multiple optical modes allow for increased sensitivity to bridging, shorts and other pattern defects in the etch process, and provide improved capture of residue and other critical defects from CMP. For photo-cell monitoring and after-develop inspection, the Puma 9150 also provides a high sampling option to broadband brightfield inspection.

Enhanced Fab Productivity

Highest Range of Production Throughputs

The approximately 2x higher data rates of the Puma 9150 result in higher throughputs than the Puma 9000. This data rate improvement, together with the proprietary Streak technology, produces the highest production throughputs at required sensitivity of any darkfield inspection tool, enabling increased sampling or lower cost-of-ownership.

Flexible Configurations

With multiple pixel options and several unique optical modes, the Puma 9150 is designed to provide optimal configurations for the broadest range of applications - meeting a fab's particular sensitivity, throughput and cost requirements.

Time to Results

Superior nuisance suppression is obtained with multiple optical modes, selectable incident and collection polarizations, Fourier filters and innovative algorithms. This combines with inLine Defect Organizer(TM) (iDO(TM); automated defect binning) to reduce time to meaningful results, focusing resources on the most critical yield issues.

Efficient Fab Operations

Commonality and Connectivity

The Puma 9150 shares a common platform and user interface with KLA-Tencor's broadband brightfield and e-beam inspectors. This facilitates a mix-and-match inspection strategy which accelerates production integration, and reduces the time required for recipe creation and operator training.

Faster Recipe Setup

The FAST algorithm and Brightfield Recipe Import reduce the number of optimization parameters and eliminate several recipe setup steps. Using these features, the Puma 9150's recipe setup time has been reduced by over 70% since the Puma 9000 was introduced. Puma 9150 recipes can also be optimized offline on a KLA-Tencor SEM review station, protecting inspector capacity and further reducing recipe optimization cycle time. Overall, these ease-of-use enhancements enable operators to optimize recipes without the need for engineering oversight, for faster, less expensive recipe modifications in production.

Matching

Production proven tool-to-tool matching provides the same results on every Puma system without modifying the inspection recipe.

Source: KLA-Tencor