THE ARCHER 10 IS KLA-TENCOR’S LATEST GENERATION OPTICAL OVERLAY METROLOGY SYSTEM. It incorporates several significant improvements in automation, diagnostics, throughput, productivity and precision over previous generation systems. The Archer 10 provides better monitoring and control with new optics components that maximize overlay control on copper and dual damascene technologies, and enable lithographers to achieve their overlay budget targets at the sub-0.13 µm node. This system is one of the industry’s most user-friendly and competitive cost-of-ownership (CoO) overlay solutions for 300 mm manufacturing at the sub-0.13 µm node. The Archer 10 improves yield and cost-of-ownership by boosting overall peak performance and throughput 30 percent, while dramatically decreasing setup time. The Archer 10 also contributes to the overall equipment effectiveness of litho cell and overlay tools with fast, reliable close/open loop feedback to steppers, and demonstrates improved robustness to variations in chemical mechanical planarization (CMP) and copper processes.

PRODUCT DESCRIPTION

Additional Throughput Enhancements
Provides new features such as pipeline job queuing, optimal measurement path, fast focus and fast adjusting, which increase throughput by 30 percent.

New Optics Components
New optics components, including a digital camera and a fragmented optics sensor, provide a 30 percent improvement in peak performance.

Advanced CMP and STI Processing
Enables consistent and reliable measurement of low-contrast targets, including shallow trench isolation (STI) processing. This package includes a brightfield algorithm that automatically adjusts to compensate for low contrast targets and changes in signal/noise levels.

Coherence Probe Metrology (CPM)
A patented white-light interferometric technique that captures three-dimensional data for correct focus. Capturing information on the Z axis in addition to the wafer plane, and automatically discarding out-of-focus and diffracted information, results in better and enhanced images.

Metrology Data Interfaces
Enables automatic transfer of overlay test data between the Archer 10 and ASML PAS 5500™ series stepper, and step and scan lithography tools. Significantly reduces the non-productive time required to perform periodic maintenance on exposure tools to only a few minutes, resulting in increased tool productivity and overall equipment effectiveness.

Archer Analyzer Optional Analysis Software
This fully automated, real-time overlay analysis software option incorporates advanced algorithms and data filters to assess Archer 10 results on-tool with extreme accuracy to determine if a given wafer lot has met predetermined parameters. Archer Analyzer provides mission-critical information, such as wafer lot dispositioning and stepper correction data, that is essential for establishing an advanced process control (APC) framework in advanced 300 mm fabs. This capability allows chipmakers to eliminate unnecessary rework and quickly address variations in lithography tool performance to minimize yield loss. Archer Analyzer also uses the same generic interface as factory automation systems, enabling easy integration into a 300 mm fab network.

Recipe Database Manager (RDM) Software
An integrated offline centralized recipe database and recipe creator/editor that utilizes previously proven recipe components to considerably reduce setup time, and increase reliability and traceability of measurement recipes. Also includes automatic parameters setup, and enables the creation and standardization of recipes without wafers (waferless) across KLA-Tencor overlay metrology systems.

Advanced Process Control (APC)
Combines with KLA-Tencor’s Catalyst software to provide data that drives continuous feedback. Enables run-to-run overlay control to be deployed into high-volume manufacturing for lot-to-lot optimization of stepper corrections, ensuring maximum process capability and minimum rework.

Overlay Field Selector
Determines where overlay measurements should be made on the wafer. Accurately captures all overlay contributions; reduces overlay estimation error; reduces rework and yield loss; quantifies and reduces risk.

YIELD MANAGEMENT INTEGRATION

The Archer 10 has a roadmap in place for integration with KLA-Tencor’s leading yield management products, including advanced process control (APC) software, KLASS stepper analysis software, RDM recipe data management, VARS images storage, and iSupport™ remote assistance and tool maintenance.
KLA-TENCOR: ACCELERATING YIELD

KLA-Tencor’s portfolio of solutions includes the industry’s broadest fleet of advanced inspection and metrology systems, which enables customers to capture yield-critical defect and metrology data. It also includes the sophisticated software to turn that data into quick corrective action. Finally, it includes the expertise to help customers rapidly understand and resolve complex manufacturing problems so they can reap the financial and market rewards associated with faster time to market and increased product yields.

KLA-TENCOR SERVICE/SUPPORT

Customer service and support are an integral part of KLA-Tencor’s yield optimization solution. Our vast customer support organization services our worldwide installed base and is responsible for much of the support of our customers following shipment of equipment and software. This support includes secure on-line monitoring, on-site repair, telephone support, system installation, relocation services and selected post-sales applications.