Product News

**SpectraCD-XT**
*Cost-effective Optical CD Metrology*
SpectraCD-XT provides high-performance 2D/3D CD metrology for the 90-nm and 65-nm nodes at the lowest cost per yield-relevant measurement. Optimized to meet chipmakers’ increased sampling requirements without compromising sensitivity, the SpectraCD-XT features sub-two-second move-acquire-measure (MAM) time and a two-fold increase in throughput (to more than 100 wph) compared to previous-generation platforms. Leveraging spectroscopic ellipsometry technology, the system provides leading measurement precision for advanced applications where device structures are highly complex and require multiple types of measurements, such as shallow trench isolation (STI), gate, and spacer. Oblique illumination optics enable the identification of smaller structural anomalies—such as notching and footing of gate profiles—that more accurately correlate to end-of-line device performance and yield. Improved model setup and analysis tools available with the SpectraCD-XT speeds library generation by 30 to 60x, providing significant savings in time and engineering resources.

**TeraScan STARlight-2**
*Cost-effective Reticle Contamination Inspection*
The TeraScan STARlight-2 provides cost-effective inspection of contamination and electrostatic discharge on advanced 65-nm node photomasks at high resolution and throughput. Its enhanced capabilities are uniquely suited for inspecting mainstream XRET (extreme resolution enhancement technique) photomasks, as well as detecting crystal growth and other progressive defects, which lead to gradual yield roll-off. Smaller pixel sizes (125 nm and 90 nm) provide the resolution and sensitivity needed to detect extremely small mask contaminants well before they impact the process window. Improved algorithms enable contamination detection in high-density patterned areas. TeraScan STARlight-2’s full-field contamination inspection capability allows detection in scribes and borders — where progressive defects generally emerge—as well as in high density patterned areas for both single-die and multi-die reticles. After defects are captured, a ReviewSmart option on the TeraScan STARlight-2 dramatically reduces the number of defects that require review by grouping similar defects into common bins to facilitate disposition and speed corrective measures.

**Viper 2435**
*Automated Wafer and Tool Dispositioning System*
As KLA-Tencor’s newest automated 300-mm wafer and tool dispositioning system, the Viper 2435 delivers quick go/no-go decisions to help chipmakers avoid production delays and minimize yield loss. Able to capture the broadest range of defect types at high throughput, the Viper 2435 can be implemented inline quickly to monitor the lithography, chemical mechanical planarization (CMP), and etch process modules. Automated dispositioning with the Viper 2435 delivers a 67 percent lower cost of ownership than manual inspection. Process engineers are equipped to identify critical defects through the tool’s enhanced signal-to-noise ratio and adaptive thresholding techniques, which result in stronger nuisance suppression capabilities. Engineers can then quickly determine which wafers need to be scrapped or sent for rework and to promptly flag problematic tools or process modules. Extendible and fully 300-mm factory automation-compatible, the Viper 2435 can help chipmakers accelerate time to decisions.
**2367**

*UV Line Monitor for Rapid, Low Cost of Ownership Yield Ramp*

Extending the widely adopted 2365, the 2367 is the latest-generation UV brightfield patterned wafer inspection solution from KLA-Tencor. With increased sensitivity and a 2X faster data rate, the 2367 is equipped to deliver higher sampling rates and more effective capture of yield-impacting defects on critical FEOL and BEOL layers such as gate etch and Cu CMP. The 2367 complements the 2800 DUV brightfield inspector in a mix-and-match inspection strategy that enables chipmakers to customize the illumination wavelength applied to each unique layer for more effective defect capture. For faster tool and yield learning as well as production ramps, the 2367 features a common UI with the 2800 as well as the Puma 9000 darkfield inspection solution and the eS32 e-beam inspection tool.

**eS32**

*e-Beam Inspection for Faster Decision-making*

Providing the widest capture of systematic, yield-impacting electrical and physical defects in FEOL and BEOL applications, the eS32 is integral in an inspection strategy facilitating faster decision-making. With its unique ability to find and fix electrical defects earlier, before production delays or yield loss result, the eS32 enables chipmakers to continue innovating to maximize transistor performance. Methodologies such as the proprietary, on-board µLoop along with algorithms for advanced binning facilitate faster time to root cause. Enhancements in sensitivity and throughput, along with its ease of setup and use, enable the eS32 to provide a low cost of ownership. Rather than spending time calibrating the tool, for example, yield engineers can focus on implementing applications that can help them improve yield.

**DesignScan**

*Lithography-aware Design Inspection*

DesignScan is the industry’s first full-chip process window inspection system for inline post-RET reticle design layout inspection. Using DesignScan, chipmakers can catch systematic design defects on critical layer mask designs at the 90 nm and below nodes, before building the reticles. The system was developed with KLA-Tencor’s high speed image computing platform, proprietary calibration process, highly accurate physics-based process models, and defect review and disposition methodologies.

Across the process window and at best focus and exposure conditions, the system delivers the fastest time to results for comprehensive design data defect detection. The tool facilitates communication of design-related information between foundries and the fabless design community. Easy to use and available in different speed configurations, DesignScan provides the lowest cost per inspection while helping chipmakers reduce their frequency of mask respins.
Candela CS20

High Brightness LED Production Monitor

The Candela CS20 is the first automated wafer inspection system from KLA-Tencor designed to address the defect management requirements of the rapidly growing high brightness light-emitting diode (HB-LED) market. Leveraging a proprietary, multi-channel detection architecture, the Candela CS20 can inspect transparent wafers and epi layers for micro-pits and other defects non-destructively at throughputs of up to 25 wafers per hour—enabling, for the first time, a true production line monitor for wafers used to produce HB-LED devices. During HB-LED production, contaminants such as particles and stains can alter film characteristics or cause adhesion problems for subsequent layers. Surface and sub-surface defects, crystal dislocations, and excessive roughness can impact subsequent processes and substantially degrade device performance and yield. Traditional inspection methods rely on manual review by an operator—making them extremely slow, unreliable, and often destructive. In addition, these methods are not easily scaled up to meet increasing production volumes. The Candela CS20 offers the sensitivity, versatility, and throughput needed for both process development and epi-growth production control for HB-LED manufacturing. The Candela CS20 is the first new product to come out of KLA-Tencor’s recent acquisition of Candela Instruments, a leading supplier of inspection systems for the data storage, compound semiconductor, and digital imaging markets.

P-16 and P-16OF

Contact Stylus Profilers

The P-16 and P-16OF (Open Frame) are new contact stylus profilers designed for automated step height, surface contour, and roughness measurements. Providing detailed 2D and 3D topography analysis for a variety of surfaces and materials, these programmable surface metrology tools are utilized in a wide range of applications and industries. The profilers’ new sequencing feature, included as a standard configuration, is key to capturing the needs of those customers who want the added convenience of automated wafer mapping.

With their user friendly and powerful Apex software, the P-16 and P-16OF support the creation of custom reports; apply a variety of ISO standard filtering methods and unique leveling techniques; set tolerance limits for statistical process control metrics; and calculate stress, bearing ratio, distance, volume, density, flatness, peak count distribution as well as an extended list of parameters for step height, roughness and waviness measurements. Apex software is available in several languages. Common applications include CMP monitoring and bump metrology (semiconductor), HDD head and disk tribology characterization (data storage), etch rates and film stress analysis (MEMS), general thin films and chemical coating analysis as well as surface characterization of electronic components, opto electronics, flat panels, and biomedical devices.
**MRW3 Quasi-static Tester**

*Measurement System for MRAM and HDD Industries*

The MRW3 quasi-static wafer tester measures the magneto-resistive characteristics of MRAM (magneto-resistive random access memory), magnetic recording heads, and other magneto-resistive devices. The MRW3 is used to test the devices while they are still in wafer form — prior to the wafer being cut into individual magneto-resistive devices or chips.

The MRW3, configurable for both 200 mm and 300 mm wafers, delivers increased productivity compared with other quasi-static wafer testers, with industry-leading repeatability (<0.5 Oe) and resistance (1000 Kohms). The tester speeds MRAM stack development and tightens the process control loop by enabling access to MRAM bitcell read/write performance without the need for CMOS integration. The MRW3 applies external magnetic fields in the plane of the wafer, and measures device or thin film electrical response. It obtains wafer-level transfer and enables early access to patterned Magnetic Tunnel Junction (MTJ) performance for control of magnetic processes. By reducing set-up time, the MRW3 system also offers dramatic improvements in the software. The system integrates with standard semiconductor probers, and is Class 10 compatible. These features, combined with its superior magneto resistive characterization and analysis accuracy, make the system ideal for both inline monitoring and engineering analysis.

**KT Analyzer**

*Parametric Analysis Solution*

KT Analyzer is KLA-Tencor’s new family of parametric analysis tools that help chip manufacturers make faster and more accurate decisions to achieve a high yielding, reliable patterning process. The solution combines automated analysis capabilities embedded on KLA-Tencor’s latest-generation overlay, optical CD, and CD SEM metrology systems with off-line engineering analysis. KT Analyzer provides the enhanced information needed to achieve real-time process control, including lot and tool disposition, run time and preventative maintenance feed-back and feed-forward, root-cause analysis, and automated fault detection.