Lasertec

PRESS RELEASE

Lasertec Corporation
2-10-1 Shin-yokohama, Kohoku-ku, Yokohama
(Code 6920 / Tokyo Stock Exchange 1st Section)

Lasertec releases new lithography process inspection system LX530

Yokohama, Japan, December 1, 2016 – **Lasertec Corporation** has released **LX530**, a lithography process inspection system that embodies a new concept to make such contributions as yield improvement at wafer edge. The new system will be introduced at SEMICON Japan 2016, which is scheduled from December 14 to 16, 2016, at Tokyo Big Sight.

Lasertec has released LX530, an inspection system that detects critical dimension (CD) errors and CD non-uniformity at high speed and high sensitivity in semiconductor patterning process.

Manufacturers of leading-edge semiconductor devices today are required to have more stringent CD control than ever before. This is due to the escalation of miniaturization enabled by self-aligned quadruple patterning (SAQP) or by extreme ultraviolet (EUV) lithography, as well as due to the introduction of new processes such as high aspect ratio silicon etching for NAND devices. Because hitherto-used CD measurement tools such as CD-SEM and OCD are slow in measurement speed, they can be used only at sampling points, tens per wafer at best. These conventional tools can hardly be employed to detect local CD non-uniformity over an entire wafer surface.

Lasertec has developed LX530 under these circumstances. LX530 provides a CD-SEM level sensitivity together with a high throughput that enables the detection of CD non-uniformity over an entire wafer surface. A successor to LX330, the new system retains its feature as a macro inspection system while it has adopted a brand-new optical layout incorporating a newly developed light source and imaging unit to achieve a higher sensitivity. With its high performance, LX530 gives manufacturers a tool that enables wafer-edge CD control and intra-shot CD control at production lines for the first time.

Because LX530 inspects a whole wafer at high speed and high sensitivity, it can be employed to perform full-lot inspections at production lines. By reviewing results from LX530, chip makers can monitor the condition of process equipment and take appropriate corrective actions for yield improvement. In the process development or startup phase, LX530 will help them optimize process conditions quickly.

【Applications】

- Whole-wafer, intra-shot or intra-chip critical dimension uniformity (CDU) control in lithography process
- Whole-wafer, intra-shot or intra-chip CDU control in etching process
- Statistical process control (SPC) of CD at wafer edge

【Key Features】

- High sensitivity CD measurement enabled by high S/N imaging signals
- High speed imaging that enables whole-wafer measurement
- Proprietary optics with a capability to cancel the effect of background patterns
- Industry's first system that provides a CDU inspection and classification function

【Glossary】

- A critical dimension (CD) is a width, length, diameter or any other dimension of a small geometrical feature that requires precise control in semiconductor patterns. Critical dimension uniformity (CDU) is the uniform state of critical dimensions in an area of interest.
- CD-SEM stands for critical dimension scanning electron microscopy. It is designed especially for measuring critical dimensions on wafer. CD-SEM measures one point at

a time. Since it takes a long time to measure critical dimensions on an entire wafer surface, it is not a practical usage.

- OCD, an acronym of optical critical dimension, is used to indicate an optical metrology or device that measures the average value of CD for an area illuminated by a spotlight. Generally, OCD has a higher throughput than CD-SEM, but it is not fast enough for whole wafer measurement.
- Self-aligned quadruple patterning (SAQP) is a process technology that enables the creation of IC patterns from 4-times larger pitched patterns on photomasks with spacers beyond the prior limitations of optical lithography.
- Statistical process control (SPC) is a method of process control using statistical data of CDU.

Contact:
Hidemasa Uezono
Solution Sales Department 1
Lasertec Corporation
Phone: +81-45-478-7337
Fax: +81-45-478-7333
E-mail: sales@Lasertec.co.jp