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Philips AMS  
Metrology Solutions for Today and Tomorrow

*Video scheme: Program supported by narrator and interviews - pre-shoot and pre-interview script.*

## ***I. INTRODUCTION***

MUSIC UP  
NARRATOR:

A. The semiconductor industry today demands a high level of precision and near perfection in its manufacturing processes.

B. We're using new materials and smaller line width interconnects,

*Visual:                      Copper*

*Low k dielectrics*

*130 nm, 90 nm, 65 nm, 45 nm*

while wafer sizes increase to realize greater numbers of die.

*Visual:                      200 mm wafer becomes 300 mm*

C. At the same time, there is significant pressure on fabs to reduce costs and increase productivity, and to do more with less.

INTERVIEW:

D. The industry has matured. The major focus now is on operational efficiency versus pure technology advancement. Device manufacturers are focused on increasing yields while improving operational efficiency, and equipment manufacturers have to provide a low cost of ownership solution in order to achieve a competitive advantage.

NARRATOR:

E. Precision. Efficiency. These opposing forces provide an opportunity for the industry to increase yield using a proven new technology from an emerging metrology leader.

*Visual text:      Conflicting demands*

## ***II. PHILIPS AMS BENEFITS***

NARRATOR:

A. At Philips Advanced Metrology Systems, we help semiconductor manufacturers become better at what they do today, and what they will do tomorrow.

*Visual text: Today*

*Fabricate Faster, Better, Cheaper*

B. Our non-contact thin film metrology tools

*Visual text: Non-contact*

*Non-destructive*

*On-line Metrology*

run online at lightning speed

*Visual text: High throughput*

*55 wafers per hour*

measuring the thickness and uniformity of metals and dielectrics at multiple points in the interconnect fabrication process.

*Visual text: Increase productivity*

*Reduce waste*

C. With Philips AMS metrology tools, your equipment investment is decreased, and

*Visual text: Lower Cost Of Ownership*

there is less expensive infrastructure required, meaning your Overall Total Cost of Ownership is markedly lower.

*Visual text: Less frequent service*

*Less complex componentry*

*Less downtime*

C1. Philips AMS equipment provides rapid, precise measurements which give you the ability to immediately make process changes and improve yields.

*Visual text: Numerous measurements*

*Real-time process changes*

*Increase in yield*

D. And the cost of ownership will stay low - tomorrow - because our proprietary technology works with all line widths of submicron arrays and low k materials

*Visual text: Tomorrow*

*Low-k dielectrics*

*Copper*

so that each succeeding node will be measured with the same accuracy, repeatability and reliability.

*Visual text: Next node efficiency*

E. Moreover, fast online measurements enable the data to be easily integrated into Advanced Process Control algorithms which can automatically adjust your process tools during the fabrication process.

*Visual text: Tomorrow*

*Ready now for APC and IMS*

### ***III. PHILIPS AMS FEATURES***

NARRATOR:

A. Philips AMS' patented SurfaceWave™ technology was originally developed in Boston at MIT.

INTERVIEW (Dr. Michael Gostein, suggested):

B. Our unique metrology system uses an acoustic wave created by extremely reliable low power solid state lasers. The acoustic wave travels across the surface of a sample metal or dielectric film,

*Visual text: copper, low-k, tantalum, tantalum nitride, tungsten, aluminum, cobalt, ...*

and a computer analysis of the wave output provides physical measurements such as thickness or mechanical properties. .

*Visual text: Thickness, uniformity, edge profile, modulus, density, porosity, thermal properties, grain size, resistivity, via fill percentage, overburden thickness*

The Cognex® pattern recognition and small spot size allow the measurement to be used directly on the fab line for rapid results, reducing the need for slower offline measurement.

NARRATOR:

C. The technology was specifically designed to meet the challenges posed by the use of copper, low-k dielectrics, and ever-decreasing line widths to meet the demands of the ITRS roadmap.

INTERVIEW (Dr. Michael Gostein, continuing, suggested):

D. The precision and reliability been proven in high volume fab use. SurfaceWave™ provides the perfect balance between speed and sensitivity.

NARRATOR:

E. This perfect balance allows measurements to be made on every interconnect layer throughout the entire fabrication cycle.

*Visual text and graphic: low-k dielectrics*

*metal barrier and seed deposition*

*metal filling*

*metal polishing*

D. And the system is scalable so that it can be used on a pilot line, for ramp up, or for full production.

INTERVIEW:

E. At SEMATECH, we've been using the Philips AMS SurfaceWave™ metrology for over four years for both copper and low-k. As chipmakers move to advanced process nodes, they need to be able to gather large amounts of data quickly for immediate feedback and process control. Advanced metrology will be a critical enabler for the industry to effectively achieve this transition.

*Visual text: Proven Technology, Proven Performance*

NARRATOR:

F. On the fab line, Philips AMS tools provide versatile measurements.

INTERVIEW (Bill Gately, suggested):

G. Philips AMS products can be effectively used at multiple points in the fab line, depending upon our customer's application needs. With the potential yield improvements offered by our rapid measurements, coupled with our low operational costs, the COO equation further tilts the manufacturer toward utilizing more Philips AMS units online.

NARRATOR:

H. Our metrology tools use extremely reliable low- replacement cost solid state lasers with exceptional lifetimes.

I. They are designed to require less technical expertise to operate and maintain, resulting in fewer hours of down time.

INTERVIEW (Bill Gately, suggested):

J. The Philips AMS Series 3300 is a major advance beyond any of the metrology tools in existence today. It was designed for copper process metrology from the beginning, and will maintain its competitive advantage as the industry advances through the ITRS roadmap.

*Visual Text: Built for copper, not aluminum*

#### ***IV. PHILIPS NV***

A. Philips AMS offers manufacturers even more: It is backed by the stability and history of Royal Philips Electronics, one of the world's largest electronic companies with sales of over thirty five billion dollars.

*Visual text: 165,000 employees in 60 countries*

*lighting, consumer electronics, semiconductors, domestic appliances, medical systems*

B. Since its acquisition of the AMS metrology systems organization in 1998, Philips has invested in the development of fab-ready 200 and 300 mm platforms and three generations of SurfaceWave™ technology. Philips stands squarely behind the Philips AMS equipment, sales and service organizations.

#### ***V. CONCLUSION***

NARRATOR:

A. Philips AMS metrology solutions are designed specifically for the challenges of copper and low-k dielectric fabrication.

B. And our tools anticipate the needs of tomorrow's fabs today. Shrinking line widths. Advanced Process Control. Integrated Metrology.

INTERVIEW (Dr. Michael Gostein, about today, suggested):

C. Our products come from cutting edge research. The ability to optically probe mechanical properties provides key process data that fabs need to know. Key data that will help them go further along the path of Moore's law.

INTERVIEW:

D. "We see our members grappling with the challenges of Cu and low-k and the development of suitable metrology strategies, and we are committed to helping them reduce those challenges. We believe that Philips AMS SurfaceWave technology provides the industry with a key piece of metrology equipment to develop and control those processes."

E. Philips AMS. Solutions designed for today, and tomorrow.

F. Faster. Better. Cheaper. Choose any three.