

Integrated Measurement Association (IMA)

Meeting at SPIE

5 March 2002

Santa Clara, CA

Integrated Measurement Association (IMA)

- What is the IMA?
- Who belongs?
- What do we do?
- Why you should join?

IMA Purpose

- Promote the use of Advanced Process Control (APC) for semiconductor manufacturing
 - helping to create cooperative solutions among technology providers
 - lowering barriers for implementation of the solutions

IMA Corporate Members

KLATencor

AE ADVANCED
ENERGY®

INFICON

NOVA

AMD

MKS
INSTRUMENTS

SEMATECH

BROOKS AUTOMATION

NP
NANOPHOTONICS

Si Automation

CYMER®

New
Vision
Systems

Verity
INSTRUMENTS, INC.

IMA Uses the Two-Part Definition of APC

Advanced Process Control

$$\text{APC} = \text{FDC} + \text{MBPC}$$

Model Based Process Control
(IMA Focus)

Fault Detection & Classification
(Similar to e-Diagnostics)

High Priority MBPC Tasks for the Integrated Measurement Association

Results of Prioritizing MBPC Problems List

3-18-2001

- **Standards Needed**
- **ROI**
- **Education**

SEMI Standards

- IMA identifies needed standards
- IMA follows SEMI-Standards procedures
 - Establish the task force
 - Provide leadership and staffing
- 2001 - Reporting Endpoint Detection over Sensor Bus
- 2002 - Sensor (reflectometer) on 300 mm EFEM
 - Integrated Measurement (Phys. Interf. & Carriers)
 - Integrated Measurement (Information & Control)

ROI

- **Create a Standard Methodology for Calculating ROI for MBPC Projects**

Intent: Offer a common methodology for calculating the ROI for MBPC applications, that can be accepted by both the seller and the end customer of the MBPC product. This will allow them to begin the conversation accepting the basic premise of the ROI calculation.

- **Who does this:** Get working group from among IMA members, spearheaded by Peter Solomon. Start with simple delta (before-after MBPC) in Cost of Ownership (COO) model used by SEMATECH (Wright, Williams & Kelly, Austin, TX), and modify it for a methodology appropriate for integrated metrology. Provide simple calculator on IMA web site to IMA Members.
- **Tim Stanley is doing the needed modeling at SEMATECH**

Educational Communications

<http://www.integratedmeasurement.org>



Integrated Measurement Association

Home | Calendar | News | Publications | Members | Links

Problems & Solutions | Cost of Ownership | Pilot Studies |
Standards | Business Model | Presentations | How to Join



IMA News

The Newsletter of the Integrated Measurement Association

Volume II, Issue 1 December 14, 2001

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High Volume Integral Metrology for Oxide Deposition Thickness

Rick Markle, Lance Nevala, and Naomi Jenkins, Advanced Micro Devices, Inc.; Eloy Bransky, Leland Howell, Eitan Blank, and Boris Zolotov Nova Measuring Instruments

(extracted from the full presentation at the AEC/APC Symposium XIII)

Within the past year, AMD has made significant advances in integrated CVD metrology. Specifically, AMD's Fab 25 worked with Nova Measuring Instruments to evaluate a beta site system incorporating the NovaScan NS840D integrated thickness monitoring system under vacuum on a standard CVD oxide deposition process tool. [See Figure 1]

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Education through Three IMA Meetings/Year

Spring

SPIE Conference

5 March 2002

Use of Optical Scatterometry for Lithography
CD Measurement and process control

Fall

AEC/APC Symposium

11 October 2001

Examples of Using In-situ Metrology for Process
Monitoring & Closed Loop Control

Summer

Semicon-West

14 July 2001

Three Fabs' Experience Implementing APC and
the Effects of Measurement Lag Time

Why You Should Join IMA

- Promote this communication forum for
 - Fabs, Tool OEMs, Sensors, Software
 - Identify/address your APC needs
 - Learn from others
 - customers, suppliers, competitors
 - Identify APC project partners
 - Forging a unified industry vision of practical integration of metrology for APC solutions
 - Help identify the critical problems to work on
 - help create the standards needed

Meeting Agenda

6:00 Reception

6:30 Jimmy Hosch - Introduction

6:40 Fred Terry, University of Michigan-- Scatterometry Research

7:00 James Moyne, Brooks Automation/ Univ. of Michigan -- "Determination of Optimal Metrology and Control Strategies for Run-to-Run Control of Lithography Processes"

7:20 Ady Levy, KLA-Tencor -- "Spectroscopic CD technology for process control"

7:40 Boaz Brill, Nova Instruments -- Optical scatterometry product performance

8:00 Chris Raymond, Accent Optical Technologies-- "Production Implementations of Scatterometry for Photolithography Process Control."

8:20 Alan Nolet, Timber Division of Tokyo Electron -- "Integrating Scatterometry for High Volume Manufacturing"

8:40 Break

9:00 Panel Discussion: { When will scatterometry be ready for high volume production?
How will it be used in production for process control?
How soon will it migrate onto the process tools?

9:30 Jimmy Hosch - Wrap up.