

Applied SmartFactory® Defect Management

A total data management solution that integrates defect wafer mapping, e-test, tool WIP, and metrology data for overall process monitoring.



INDUSTRIES

Semiconductor wafer manufacturing

Semiconductor assembly and test



FEATURES

Integration with YMS for complete analysis

Identification of unique and patterned defects

Tool commonality and drill down fault analysis

Detailed analysis for defect size, source, zone, and cluster

Defect sampling and classification

Defect map quick view



BENEFITS

Provides a complete defect analysis solution

Reduces yield loss, time to identify yield limiters, and costs of manufacturing

Reduces the need for unreliable manual defect classification

Isolates defects and failures to specific tools

Identifies patterns of defects to pinpoint systematic problems



INDUSTRY CHALLENGES

Defects in a fab can occur at any operation or from multiple equipment types. To prevent costly yield excursions, quickly identifying the origin and location of such defects is critical. Due to large numbers of tools and process steps in a factory, a solution like xDMS is required to harness data and make it meaningful. Without visualization and alarm systems in place, engineers and manufacturing personnel can take hours or even days to determine the root cause of failures and defect generation. However, detecting defects is only the first challenge, and inspecting more wafers per hour is only the beginning. The ability to classify defects, analyze them, and make informed decisions is the next challenge.



Catch and Fix Defects Faster



SOLUTION DESCRIPTION

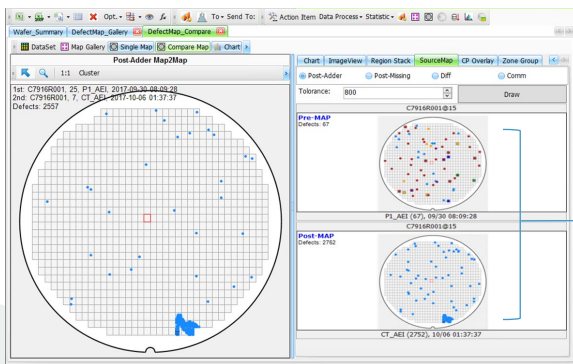
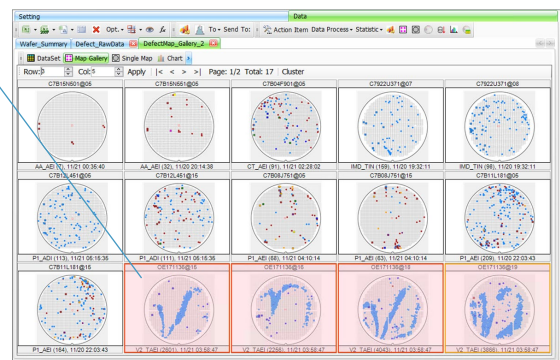
SmartFactory Defect Management is a complete defect analysis solution that tracks trends and displays defect information in an easily centralized and accessible system. Powered by xDMS, the system offers a total solution for tracking, identifying, and classifying defects. Whether deployed for a small factory or large multiple factories, SmartFactory xDMS easily scales to meet your needs.

DATA CONSOLIDATION & INTEGRATION. SmartFactory Defect Management is a comprehensive solution that integrates all data types in the factory, including from yield management systems. The solution provides complete analysis approaches and correlates with different relative data sources, such as WAT, CP, Bit, and reticle. It reduces IT costs and provides faster analysis of defects.

PROBLEM IDENTIFICATION & RESOLUTION. Using SmartFactory Defect Management, you can easily set up the extract, transform, load (ETL) process to automate defect source analysis, as well as display maps and metrology data to quickly determine where problems exist, or where process shifts are occurring. Mapping capabilities include single, gallery, stack, adder, compare, and more.

This example shows the ability to stack multiple-wafers; here four different wafers are selected (highlighted in red) for the stacked defect map analysis.

1


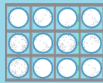


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This shows an example "post adder" defect: in a defined area, the post-MAP (bottom) has defects, but the pre-map (top) does not.

Applied Materials and XDM Tech Are Poised to Increase Speed-to-Value for Customers

Defect Management Capabilities for Reducing Analysis Time and Excursions

✓	Defect Data Automation		Supports defect data automation, as well as data conversions, basic captures, and SQL comment queries.
✓	Defect Map & Image Quick Reviews		Enables you to quickly change column and row definitions and integrates the output of different defect scan and review tools. Also provides quick review of mask and litho issues and is proven in both fab and mask factories.
✓	Process Tool Defect Reviews		Reviews defects within wafer location commonality and is proven with fab and raw wafer manufacturers.
✓	Daily Performance Defect Reviews		Reviews over 10,000 polish performance results daily.
✓	Yield Loss Auto Alarm		Reports top three defects associated with yield loss and auto equipment tracking.

Learn more about Applied SmartFactory



PACKAGE CONTENTS

SmartFactory Defect Management includes the following components:

SOFTWARE

- Factory-wide licenses with factory size dependency
or
Concurrent licenses without any factory size dependency

SERVICES, TRAINING & SUPPORT

- On-site deployment provided by experienced Applied experts
- User training and professional certification
- One or more years of maintenance and support