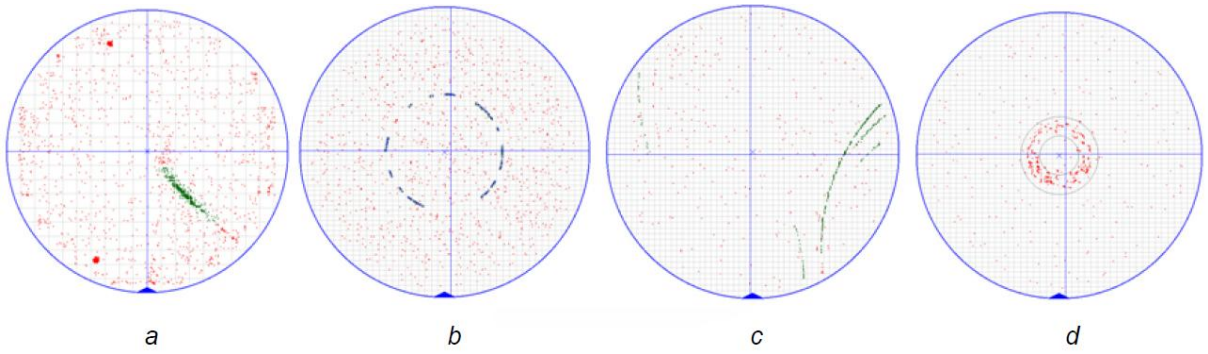
IDA Data Sheet

Intelligent Defect Analysis (IDA™) is a suite of advanced software that enables semiconductor manufacturers to prevent yield loss through the early identification of defect sources. IDA leverages the expertise and knowledge of the defect engineer by providing him with a range of tools and functionality to automatically non-random defect signatures.

IDA recipes, which may be easily integrated into the fab's existing yield management system, automatically monitor production inspection results files. They recognize the "fingerprints" resulting from equipment failures and process excursions, including scratches, streaks rings and clusters. When a defect signature is identified, the fab engineer is notified immediately.



A defect spatial signature is a systematic distribution of defect on the surface of the wafer. The streak (a) and the circle (b) are identified using the object rules library. CMP scratches (c) are detected using a special scratch algorithm; a center ring is identified using zonal analysis.

IDA employs several different signature recognition techniques to automatically identify the spatial signatures that may affect process yield. These techniques may be used in combination to provide high accuracy and purity. These techniques include:

- Object rules library (cluster techniques)
- Pre-defined signature algorithms (linear algebra)
- Layer-to-layer and reticle repeater analysis
- Zonal analysis (user defined regions)

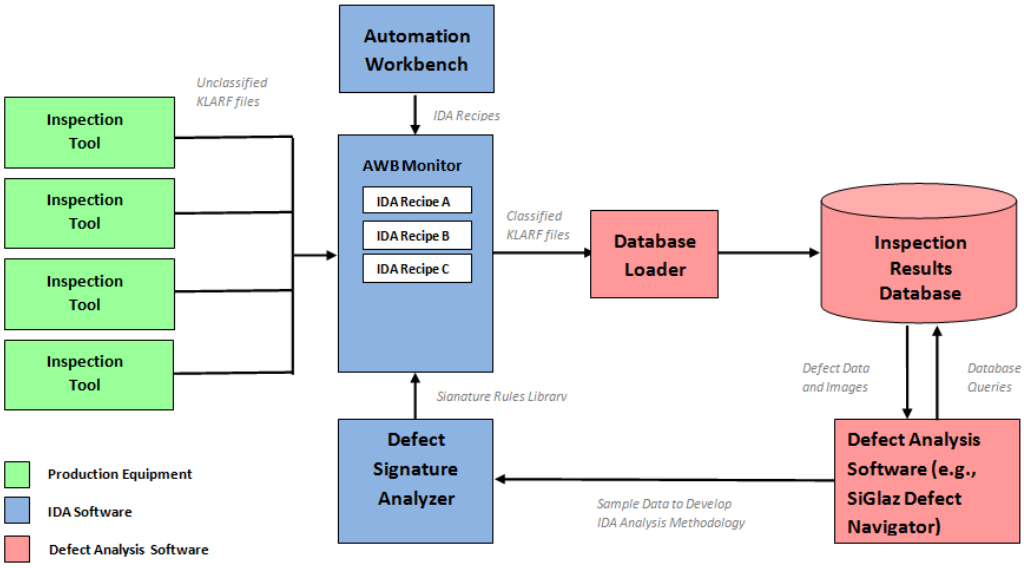
IDA software suite comprises three main components:

Defect Signature Analyzer (DSA™) provides yield engineers with a wide variety of analysis and visualization tools with which to develop and optimize the signature analysis methodology and to train the defect signature library.

Automation Workbench (AWB™) allows the engineers to automate the signature analysis methodology to run the recipe in either batch mode or continuous monitor mode.

Automation Workbench Monitor allows the user to launch and monitor multiple AWB recipes using a single monitor job. AWB Monitor allows the user to conveniently select any of the AWB recipes running in the job and to display the current status of that recipe.

Integrating IDA into Production



IDA integrates easily into the semiconductor fab process. IDA analysis recipes are inserted between the inspection tool output and the database loader. SiGlaz Defect Navigator may be used to load inspection results to the DB and to analyze the results.

IDA enables the applications engineer to optimize the IDA signature recognition recipe for each inspection step to provide a critical component of Advanced Process Control. The IDA recipe monitors the Recipe Source Folder and reads each defect inspection results file that is written to the folder. It then analyzes the defect distribution of the results file according to the signature rules and outputs a KLARF file in which the defect signatures are classified. The analyzed KLARF may then be loaded into the Inspection Results Database. In addition, the recipe may be configured to automatically notify fab personnel when a process excursion is detected.

Key Benefits of IDA

Reduced WIP exposure – immediate feedback allows the fab to limit losses from process excursions

Early warning – identifies potential problems that fall below SPC defect count limits

Standardization – provides a consistent methodology for analyzing inspection results

Improved analysis – identifies systematic defects that are hard to find with manual analysis

Increased efficiency – defect engineers can work on yield problems instead of reviewing KLARF files

Reduced equipment downtime – notify engineer of root cause immediately upon signature recognition

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