



*Yield Management System  
for enhancement in quality and yield of semiconductor and FPD industries.  
The yield management solution that supports variety of data analysis.*

# DA **Crux**



Enterprise Quality Management





## Yield Management System

DACrux is well organized quality analysis solution that helps enhancement in quality and yield of manufacturing industries, especially semiconductor and FPD industries by variety of analysis of engineering data.

DACrux make it easy to analyze about various and complex data that occurred while manufacture process, and reduce analysis time and support easier ways to use.

DACrux will go far toward improving in quality and yield. It will be improve engineer's analysis ability by combining analysis with various visualized map and statistical analysis functions.

## Necessity of Yield Management System

- Yield is the most important management index for semiconductor and FPD industries, and many companies cost a lot of money and efforts to increase yield.
- Various engineering data that occurred while manufacture process must be managed by well organized system and all data have to be collected and analyzed in real time.
- Must analyze the process status and take quick steps to deal with problems to improve yield within a short term by various and comprehensive analysis about probe test, PCM test, defect inspection, defect review image, inline measurement data to make yield of new products can be improved over fixed level.
- Yield analysis of semiconductor/FPD industries have to detect abnormal data and problem by analyzing map and correlation between factors that affect yield.
- Need to suggest a reform measure about problem of quality, and decrease incidence of same problem by presumption and inspection about improvement.

- The verified analysis method must be built as a system that can prevent a serious accident that related on quality.
- Improve engineer's analysis ability about the cause of defective by keeping and sharing of effective, valid analysis method and knowledge for advanced quality.
- Need to make it easy to grasp relation among various formed data from various processes, by arranging data as connected with products.



### Composition of DACrux

DACrux is the System that can Increase Yield of Semiconductor/FPD Industries.

- Process History & Condition
- Inline Measurement Data Analysis
- PCM Parametric Data Analysis
- Probe (EDS Test) Data Analysis
- Defect Inspection/Image Data Analysis
- SPC & Statistical Analysis
- Correlation Analysis



### Collect

Collect data in real time from measurement equipment, inspection / review equipment and testers.

### Store

Optimize database for analyze and store of collected data.

### Analyze

Support quick and various analysis methods for user's convenience.

### Share

Share analysis process, result and analyzed information to improve yield.

## Advantages of DACrux

Organize package by combination of component module in accordance with the use. Support reuse of analysis workflow and guide by function that share analysis process and result knowledge.

Support various map, chart and Image analysis.

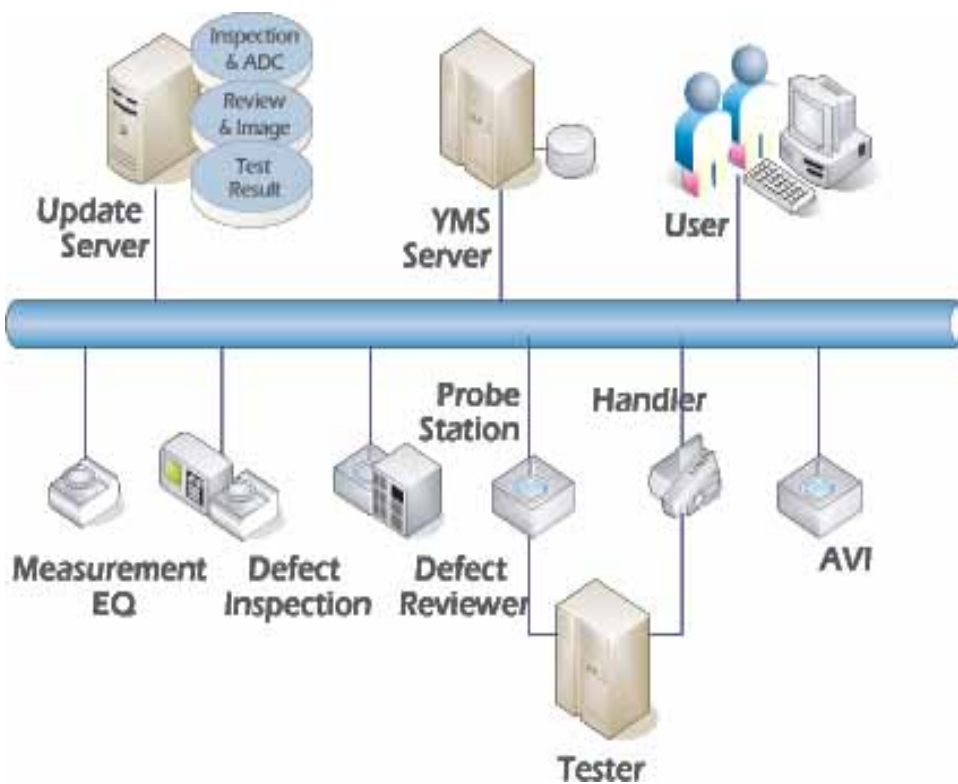
Support various DBMS (Oracle, MS-SQL, DB2)

Use query management that is based on XML and independent data transaction engine.

Support precise overlay map of probe and defect that based on real-size map Support high speed / huge volume of data processing by optimized data Base structure.

Support auto search function about similar fail pattern.

## Advantages of DACrux



## Module Organization of DACrux

Base	Integrator	Inline Analyzer	Defect Analyzer	PCM Analyzer	Probe Analyzer	Statistical Analyzer
Menu Management	Inspection/Reviewer Integrator	Control Chart	Defect Map	Shot Map	Probe Bin Map	Commonality Study
Security & User Management	Tester Integrator (LotController)	Histogram Cp/Cpk	Defect Image	PCM Trend Report	Cumulated Map	Correlation
Device/Test Program Definition	Prober Controller	Box-Plot	Size/Category	Box-Plot	Zone Based Analysis	ANOVA
Spec Definition	AVI Integrator	Probability	Defect Density	Control Chart	Map Gallery	SPC
Visual Query	Data/File/Image Processor	Inline Trend Report	Defect Killing Ratio	Histogram	Bin Summary/Yield Trend	DOE
Data Manipulation	Equipment Monitor	Outlier Control	Dynamic Report	Probability	Probe Card Management	Dynamic Chart
Workflow Analysis	Process Monitor	Lot History (MES)	Repeated Defect Management	Outlier Control	Fail Pattern Search	Dynamic Chart
Analysis Knowledge Sharing	Inking/Inkless Map		Data Source Analysis	Probe-PCM Overlay	Probe-Defect Overlay	Statistical Analysis
Smart Menu & Excel Interface						

## Base of DACrux

### Visual Query & Data Manipulation

- ▶ Support sort, subset, transposition, new variable and data transformation functions those are in accordance with analysis purpose.
- ▶ Support visual query for data extracting from DB by users.
- ▶ Support join function within data sheet.



### Workflow & Analysis Knowledge Sharing

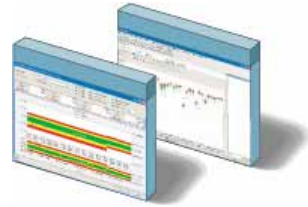
- ▶ Support save and guide function of analysis flow and result.
- ▶ Analysis flow is described by workflow
- ▶ Share analysis flow and result on web server



## Main Functions of DACrux

### Inline Data Analysis

- ▶ Control chart (Xbar-R, Xbar-S) of inline measured data.
- ▶ Histogram, Cp/Cpk.
- ▶ Support Box-Plot, Normal probability chart.



### Defect Data/Image Analysis

- ▶ Defect map/Image gallery , Classified analysis by defect size & category
- ▶ Defect density , defect killing ratio report, Defect source analysis.
- ▶ Repeated defect analysis.



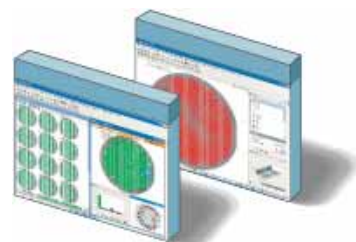
### PCM Parameter Analysis

- ▶ PCM Shot Map, PCM-Probe Overlay
- ▶ Box-Plot, Histogram, Cp/Cpk, Normal Probability
- ▶ PCM Parameter Trend Report



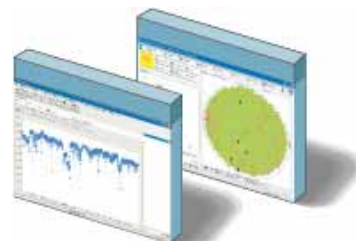
### Probe Map Analysis

- ▶ Bin Summary Yield Trend
- ▶ Bin Map, Cumulated Map, Zoom-In/Out, Map Rotation
- ▶ Map Gallery , Zonal Map, Compare Map



### Fail Search

- ▶ Faulty Wafer and Similar Fail Pattern Search Function.
- ▶ Probe-Defect Map Overlay
- ▶ Commonality Study : Trace common Process of Good/Bad Lot and Passed Equipment List.
- ▶ Inquiry of Lot/Equipment History of MES and PM History and Abnormal lot History



## Statistical Analysis

- ▶ Correlation Analysis (Yield vs PCM Para vs Inline Para)
- ▶ ANOVA, Regression, SPC, MSA, DOE
- ▶ Dynamic Chart



## Installation Effectiveness

- ▶ Build consistent system from data collect step to analysis step.
- ▶ Reduce analyzing time and the loss of yield.
- ▶ Maximize profit by rapid yield ramp up of new product.
- ▶ Increase satisfaction of customer by improving quality and service level.
- ▶ Improve quality by suggesting solution about chronic hidden fault.
- ▶ Improve user's analysis ability by using various user defined analysis method.
- ▶ Decrease repetitive manual work and analysis.
- ▶ Establishment and sharing about know how/analysis methodology
- ▶ It's possible to trace root cause of fault, a point of time, operation and equipment.
- ▶ Support yield modeling function by statistical correlated analysis between manufacture and quality Index.



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