Defect Feedback System at AMD Fab36

Author: Dr. Remo Kirsch, AMD Fab36, Section Manager Defect Yield Enhancement

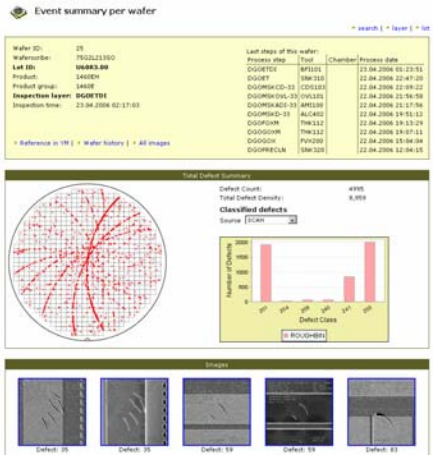
The amount of data in current advanced semiconductor manufacturing lines is continuously increasing. To be focused in a daily work environment an intelligent software solution is needed to filter out important information from all collected manufacturing data.
The needed software needs to be easy to access, fast, customizable and available at every location in / out of a fab.

One response to address the upper mentioned challenge is the usage of ADC for defect inspection and defect SEM review. In addition feedback is needed to supply real time information about the driver of the excursion.

The clear link for defect types and root causes are mainly the results of intensive defect engineering work to correlate data out of different factory systems. Finally the outcome of the defect engineering work will be summarized in “Trouble Shooting Guides” and “Defect Knowledge Libraries” available 7*24.
In a daily environment manufacturing needs faster feedback including information out of different factory systems like MES, SPC and Yield Management Systems.

To increase the efficiency of defect inspection AMD identified the need for a software system that is correlating information from the Factory Systems mentioned above: Basic defect information, SPC functionality and process & tool/chamber information. Predefined user levels need to get notified if OOC rules are violated.
A new software application – called Defect Feedback System (DFS) was developed to close the gaps.

The Defect Feedback System is easy to use based on its web based GUI Design for all user levels. DFS combines on one single web page all basic information for out of control (OOC) wafer or lot events. This event summary page contains basic defect information, like wafer maps, defect classification based on different classification sources, defect images and basic process information (e.g. process chamber and time). – Pls refer to the attached Image below for further information:



From this events summary page the Operator will be guided to “Defect Knowledge Library” or to an TSG – trouble shooting guide which counts information for needed action in case of an OOC event.

Set up of OOC rules can be done easily without intensive training. Due to the possibility of linking all OOC rules to different user groups (email groups) the system at AMD is now also widely used for advanced defect reduction work.

As summary: The Defect Feedback System has helped AMD FAB36 to improve the content of the information between different operation modules at defect problems. It helps less experienced Operators and engineers too set priorities in their defect analysis work based on the OOC notifications of DFS and finally it increased the efficiency to identify critical defect problems at AMD FAB36.