

# JEOPARDY MONITORING FOR DEFECT INSPECTION AND THK MEASUREMENT

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*Primary Area of Interest:*

## Process Control and Monitoring

*Type of presentation preferred( Subject to Program Committee assignment*

## Poster Presentation

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### PROBLEM DESCRIPTION

To ensure product quality monitoring of certain process parameters is a prerequisite. It becomes difficult as you would like to know how good is your monitoring and what is still your process jeopardy.

### OPPORTUNITY FOR IMPROVMENT

The goal was to have a system in place that monitors our process jeopardy, alarms and takes actions accordingly. Furthermore it should support people and give guidelines how to avoid high process jeopardy. In our module (Thin Films) two jeopardy sources were defined:

- Product THK monitoring
- Product defect monitoring

Our MES system (Workstream Open) does not meet all the requirements. In order to succeed various sub-systems had to be used (Fig.1).

### USE CASE: THK CONTROL AND DEFECT SCAN ON ILD LAYERS

Defect scans usually cover two ILD layers, THK measurement often controls up to three ILD layers. Not all process steps have defect scan and THK control.

An APC application and APC database is used:

- To track defect scans and THK measurements for all ILD layers.

- To identify the process tool that was monitored with the measurement.
- To track number of lots processed before the defect scan and/or THK measurement were performed (Jeopardy counter)
- To alarm and inform the operator if a certain limit is exceeded.
- To prevent further lot starts

The SPC system is used:

- To visualizes the jeopardy counter (Fig. 2)
- To shut down the equipment if a certain limit is exceeded

An EI and APC sampling system is used:

- To ensure defect and THK control based on sampling rules
- To force measurement if a jeopardy limit is exceeded
- To feed the DISPATCH system with sampling data

The DISPATCH system is used to visualizes appropriate lots for defect scans (Fig.3). It puts lots on higher priority if a certain jeopardy limit for the tool is exceed.

### CONCLUSION

By using different factory system components a jeopardy monitoring could be implemented. Having this data available it helps to identify leaks within process monitoring and reduces scrap risk.

