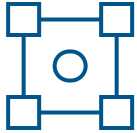# Experiment Management

Enables the design and execution of experiments in an integrated manner

Overview

During process or product development, it's necessary to carry out a series of controlled variations to understand the positive or negative effects. There are many types of possible variations, such as testing new materials, new suppliers, new recipes, new equipment, new durables (e.g. reticles) and new methods. An experiment consists of designing a set of variations and the subsequent execution of the experiment on the shop floor. In cases where sub-materials need to be identified and tracked individually (such as with Semiconductor wafers), multiple variations can be defined for specific sub-materials for the same lot. Overcome the challenges of combining experiment lots with

production lots, especially in high-volume manufacturing –by ensuring that experiments run in a smooth and transparent way for both operators and systems applications.

The Experiment Management module is fully integrated with the MES to support both the design of the experiment (DoE) and the execution of the experiment. The execution of experiments is completely transparent to both the users and the applications that support manufacturing operations. Experiment lots are tracked and processed in the same way as any other lot and the system automatically enforces the set variations.

Figure 1 Experiment Definition example

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Key Features

- Centralized experiment definition system
- Supports experiment version management with access and change control
- Supports both full-material and sub-material level experiments. When using sub-material level experiments, define multiple variations for different lot sub-level groups at the same or different steps
- For sub-material level experiments, define logical or physical splits, both temporary or permanent
- Supports the following type of material and sub-material variations at a given step:
  - Override the Recipe to be used
  - Override the Recipe parameters to be used
  - Override the BOM to be used
  - Override the Durables (e.g.: Mask) to be used
  - Override the Data Collection to be used
  - Override the Checklist to be used
  - Create a Send-Ahead Run
  - Change to a different Flow (permanently and temporarily)
  - Force material processing at a given Resource at a particular step
  - Configure that the material must skip a particular step
  - Set a Work Instruction
  - Put on Hold
  - Scrap (Terminate)
- Track every experiment state and results
- Flexible assignment of sub-materials to experiment sub-material numbers
- Integrates with Material Tracking and executes experiments with complete transparency to the users and applications
- Support for defining optional sub-materials and for changing the sub-materials during the course of an experiment.

Benefits

- Faster speed of learning
- Increased visibility, tracking and monitoring of experiments
- Increased operational efficiency
- Reduction in the opportunity for errors

Figure 2 Experiment details page

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