

IBM Enterprise Production Planning and Optimization System (EPOS)

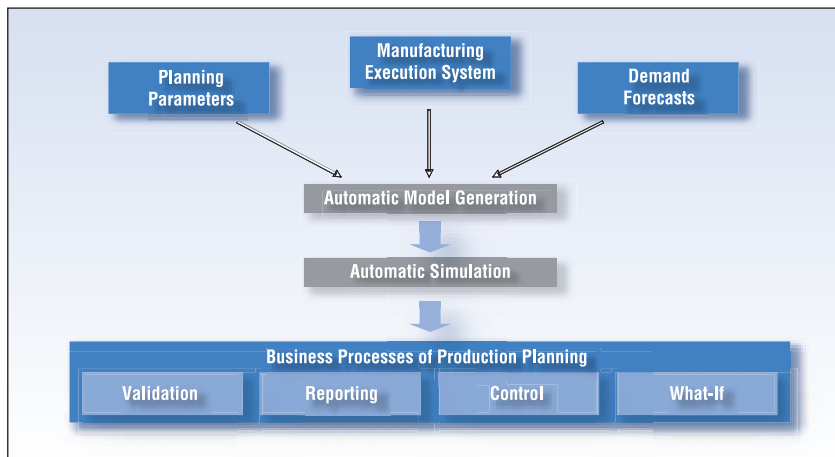


Figure 1: The concept of integrated simulation with EPOS

Highlights

- **EPOS is an integrated system for capacity planning, work-in-process, lead time, and output forecasts for complex manufacturing lines**
- **EPOS takes care of random effects in the production line like rework, scrap, machine break-downs by using stochastic methods.**
- **EPOS uses analytical methods like queueing theory and mathematical optimization to predict performance measures of complex production lines.**
- **Integration with Enterprise Resource Planning systems allows to establish and validate planning assumptions to be used in higher level planning systems.**

Queues and Lead Time.

The Enterprise Production Planning and Optimization System (hereafter called EPOS) is a queueing network based simulation system for production planning. Tactical planning tasks like capacity planning, lead time and work-in-process calculations can be performed. Moreover, fluid networks forecast the work-in-process positions and predict output of a manufacturing line.

Analyze Your Fab.

Due to the analytical approach of EPOS response times of simulation runs are very short even for complex manufacturing lines like those normally found in the semiconductor industry. This enables the planner or industrial engineer to analyze several what-if scenarios within a short period of time and use the simulation as a decision support tool for his daily business.

Value Proposition.

EPOS helps to manage complex manufacturing lines. It increases the quality and speed of planning thus making it easier to get to market with high quality products. The competitiveness and profitability of the manufacturing company will be improved by

- *Better resource utilization*
- *Increased line output*
- *Lower inventory levels*
- *Reduced cycle time*
- *Optimized product mix*
- *Faster product launches and ramp-ups*

- *Integrated decision support*
- *Validated delivery commitments*
- *Accelerated planning cycle*

Solution Features.

The Enterprise Production Planning and Optimization System provides the following functions

- *Calculation of steady state logistical performance measurements*
- *Computation of operating curves*
- *Simulation of the work-in-process movements*
- *Projection of manufacturing output and machine throughput*
- *Time phased parameters (e.g. yield, rework, number of tools, cycle time, load sizes)*
- *Administration client to easily create and/or modify simulation models*
- *Web portal for access to simulation input parameter and result reports*

Integration with Advanced Planning Systems.

EPOS allows a quick calculation of performance values even for complex manufacturing lines due to its underlying mathematical model. Thus it can be used for a detailed analysis of different plants in a supply chain with respect to critical resources and utilization-dependent lead times. In such a scenario EPOS can be used to improve, validate and aggregate the planning parameters to be used in the Advanced Planning or Enterprise Resource Planning Systems (ERP/APS) improving the data and planning accuracy of the ERP/APS.

Success Stories.

EPOS was originally developed and used in the IBM manufacturing lines for read/write heads of hard disks (including wafer lines). Hitachi Global Storage Technology is using EPOS as the planning tool for its wafer plant in San Jose, California.

IBM Micro Electronics is using EPOS as its planning system for the 300mm wafer line in Fishkill, New York.

Moreover, EPOS has been used as a tool for several consulting projects in supply chain optimization projects, e.g. for a technical fiber company, a paper plant, a wafer manufacturer and a steel mill.

Product information.

EPOS is offered as a module of IBM PRPQ 5799-MC5 IBM Manufacturing Execution System - Advanced Functions Feature Codes 1 & 2 'Enterprise Production Planning and Optimization System' called 'EPOS' in this flyer.

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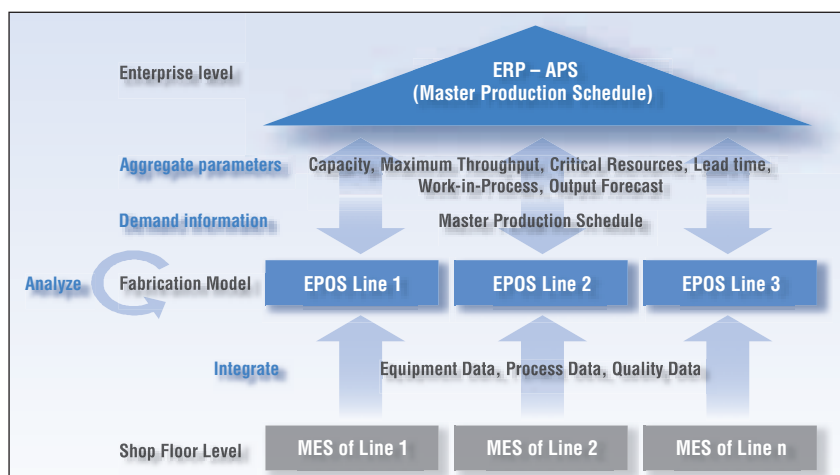


Figure 2: Integrating EPOS with ERP and MES systems