



INDUSTRIAL MANAGEMENT



Seminario Permanente en Diseño, Gestión y Optimización de Procesos  
Industriales y de Servicios

*Seminar on Design, Management and Optimization of Processes in Industry and  
Services*

**“Optimization Problems in Semiconductor Supply Chains”**

*Prof. Lars Mönch*

Chair of Enterprise-wide Software Systems, Department of Mathematics and Computer  
Science, University of Hagen, Germany

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**Summary:** Supply chain management issues have become increasingly important to the semiconductor industry over the last two decades due to the global distribution of facilities and increasing numbers of firms specializing in particular stages. In this talk, we start by discussing characteristics of semiconductor supply chains. After describing the manufacturing process in a single wafer fabrication facility (wafer fab), we identify typical optimization problems found in single wafer fabs. This includes various types of scheduling problems, for instance, problems with batching machines and multiple orders per job scheduling problems. A matheuristic for a specific batch scheduling problem will be described. In the second part of the talk, we discuss production planning models with workload-dependent lead times that arise in semiconductor supply chains. Results of simulation experiments are shown.

LARS MÖNCH is a Professor for Enterprise-wide Software Systems in the Department of Mathematics and Computer Science at University of Hagen. He received a master's degree in mathematics with minor in computer science, a Ph.D. in the same subject from the University of Göttingen, and a habilitation degree in Information Systems from the Technical University of Ilmenau. He worked two years for Softlab GmbH, Munich in the area of software development. His current research interests are in information systems for manufacturing and logistics, production planning and control for complex manufacturing systems, especially semiconductor wafer fabrication facilities, scheduling, and artificial intelligence applications in manufacturing and logistics. He serves as an Associated Editor of the European Journal of Industrial Engineering, Business & Information Systems Engineering Journal, IEEE Transactions on Automation Science and Engineering, and IEEE Transactions on Semiconductor Manufacturing. His research was funded by companies like Infineon Technologies AG, GLOBALFOUNDRIES, X-FAB Semiconductor Foundries AG, Airbus, the German Government, and the European Commission.