



The **Chair of Operations Management** of **TUM School of Management** and **Infineon Technologies AG** are looking for an interested and qualified student to conduct his/her

## Master's Thesis

on the topic

### **Evaluation of scrap minimizing dispatching rules for back-end manufacturing in the semiconductor industry**

#### **Description:**

In a highly competitive market environment, the semiconductor industry faces the challenge to satisfy high quality demands in combination with cost-effectiveness and delivery reliability. Traceability data is a key requirement to identify quality problems, root causes, and affected goods. One of the influencing factors for traceability is the dispersion of contaminated material after the occurrence of a quality incident.

Splitting and merging of lots lead to an increased spread of contaminated material, especially in back-end manufacturing. Imagine a customer discovers contaminated material. Infineon must then recall all the material that could possibly be contaminated, too. Depending on how the lots were mixed this could affect many companies and a lot of material that has to be recalled although the contamination only corresponds to a very small part. The material is lost and the customer's trust in the company's quality is damaged. Both cost millions of euros in the long run.

Dispatching rules for merge operations hold the potential to reduce the dispersion and at the same time to minimize scrap goods. This thesis shall review dispatching rules that are commonly used in the semiconductor industry and shall employ a simulation model to evaluate different settings with regard to their suitability for the requirements of Infineon Technologies.

A review of scientific literature on split and merge operations as well as traceability shall provide an assessment of the possibility to reduce the dispersion by means of dispatching rules. An already existing simulation model shall be extended with an appropriate lot dispatcher. The simulation software AnyLogic 7.2 will be used. The impact on material dispersion and cycle time is to be examined. The thesis shall provide recommendations on how to best utilize the potential of dispatching rules to meet the requirements (e.g. short time-to-market) of Infineon Technologies.

#### **Requirements:**

This thesis is suitable for TUM-BWL, TUM-WITEC or TUM-WIN students with a major in the area of operations and supply chain management. Candidates must have a strong analytical background, have to be able to work independently and must show absolute reliability. Very good MS-Office skills (Word, Excel, PowerPoint) are mandatory. Further, experience in simulation software (preferable AnyLogic) is required. The thesis has to be conducted in English.

During this thesis full-time employment with Infineon Technologies AG is provided.



Fakultät für Wirtschaftswissenschaften



Technische Universität München

- Begin:** as soon as possible
- Advisors (TUM):** Alexander Döge, M.Sc. ([alexander.doege@tum.de](mailto:alexander.doege@tum.de))
- Mentor (Infineon):** Dr. Thomas Ponsignon

Any interested student, please send by email your application together with your curriculum vitae and transcripts of records both in Bachelor and Master study programs.