Revenue Maximization Algorithm for Production Planning

**Ong Qing Zhang, Zhu Geyun,
Tinaga Sukhavati Angkasa,
Tan Zhao Cheng, Lin Chengwei**

Supervisors: Professor Chew Ek Peng and Dr Chai Kah Hin
Department of Industrial and Systems Engineering, National University of Singapore

1. Project Description

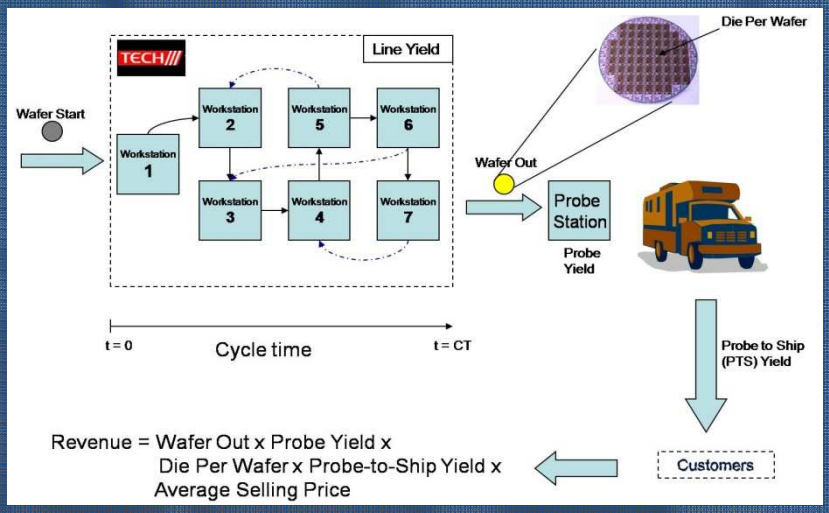
The company seeks to develop a better method in their weekly production planning for the purposes of the company's long-term strategic business planning.

2. Project Objective

- To develop a systematic approach to facilitate the company in improving their production planning process.
- To generate a basic weekly production plan that utilizes their resources and specify the quantity of each device to load.
- To maximize revenue while meeting production capacity and demand constraints.

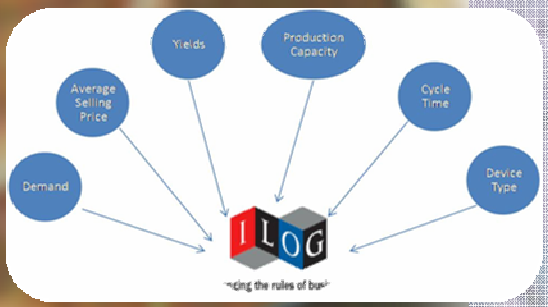
3. Process Flow

- Lapping and Polishing
- Oxidation and Deposition
- Lithography
- Etching
- Photoresist Strip
- Ion Implantation
- Inspection



4. Methodology

- Given the complexity of the problem, a Linear Programming approach was adopted to formulate the model to reduce the computation time.
- The model is implemented using ILOG CPLEX 10.0.



5. Achievements

- Developed and tested program to maximize the company's revenue while satisfying production and demand constraints.
- The model offers the following improvements to the current practice:
  - -Able to consider multiple interacting factors simultaneously to optimize production plan.
  - -Reduction in production planning time from days to minutes.
  - -Flexibility and ease in adding constraints to fit their specific needs.
  - -Offers a platform for sensitivity analysis of production decisions like adding new machines.