XMicron Case Summary and Analysis

Prescriptive Analytics

2024

Summary

Background

- Semiconductor manufacturer in Silicon Valley, California

- Spent $1 billion to build its Sunnyvale plant in 1999 Amortized to be $5,000 per lot per fab hr over the expected fab life

- A semiconductor is a material that has electrical conductivity to a degree between that of a metal and that of an insulator

- Semiconductors are the foundation of modern electronics (e.g., transistors, solar cells, LEDs, etc.)

Setup of the case

- Who?

    - Mike Morris, Chief Operating Officer
    - Kelly Klein, VP of finance
    - Warren Wong, VP of sales
    - David Dunn, VP of manufacturing

- When?

    - Monday, 31 May 2004

- What?

    - To determine the production plan for July 2004 given all available information

    - How many of which chips to produce next month?

    - Should XMicron outsource?

Silicon wafers:

- X401

- X402
- X403

Production Process

- **# of raw wafers for July = 10,000**

- **25 wafers per lot**

Lot 1:

- **Lot throughput time:** 22 hours
- **Fabrication Facility:**
  - A (720 hrs/month)
  - B (720 hrs/month)
- **Flow:**
  - 80% to BTS
  - 20% to next facility
- **Defect Rate:** 5%
- **Output Product:** X401
- **Forecast (July 2004):** 65,000 BTS chips

Lot 2:

- **Lot throughput time:** 29 hours
- **Fabrication Facility:**
  - A (720 hrs/month)
  - B (720 hrs/month)
- **Flow:**
  - 50% to BTS
  - 50% to BTO
- **Defect Rate:** 15%
- **Output Product:** X402
- **Forecast (July 2004):** 25,000 BTO chips

Lot 3:

- **Lot throughput time:** 41 hours
- **Fabrication Facility:**
  - A (720 hrs/month)
  - B (720 hrs/month)
- **Flow:**
  - 30% to BTS

- – 70% to BTO
- **Defect Rate:** 12%
- **Output Product:** X403
- **Forecast (July 2004):** 20,000 BTO chips