

## Case Study: Cycle Time Reduction and Process Improvement at an Electronics Equipment Manufacturer

### I. Description

An equipment manufacturer for visual inspection tools in the semiconductor industry was interested in reducing the cycle time for equipment assembly and improving its work methods. Four manufacturing departments were involved in the process: Mechanical assembly, Electronics, Optics and Final Test.

### II. Objectives

- Reduce equipment assembly cycle time by 25%
- Reengineer operational processes in the following areas:
  - o Warehouse operation
  - o Material flow
  - o Information flow
  - o Manufacturing practices

### III. Methodology

A Multi Observation Study (MOS) was conducted. Equipment status was sampled for 168 continuous hours with Tefen's proprietary equipment and software (figure 1).

- The resulting data were organized and statistically analyzed by a Tefen engineering team.
- Production problems and areas for improvement were identified and prioritized.
- Expert teams were formed to determine the root cause of each problem.
- Preventative/corrective actions were developed and implemented.

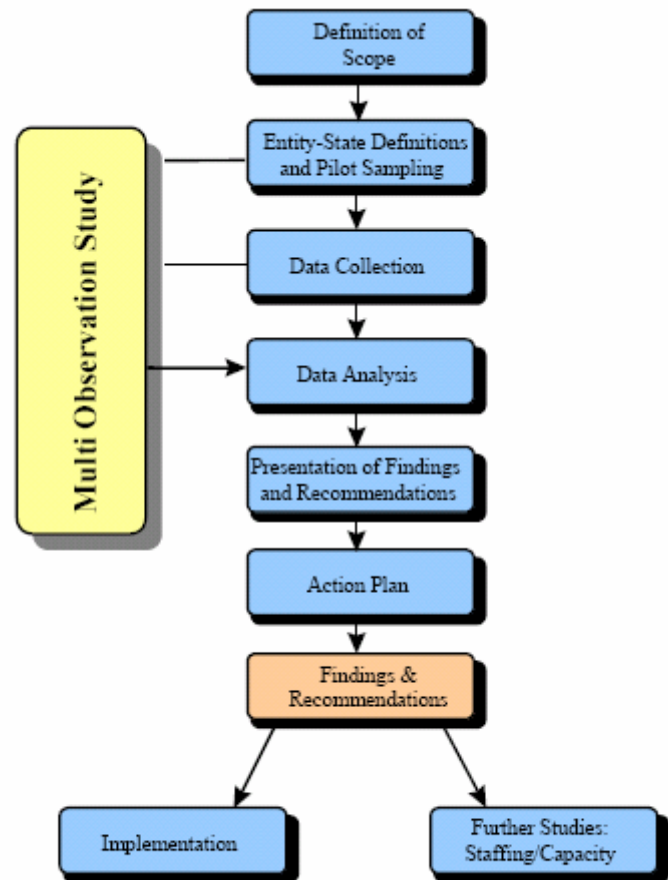


Figure 1: Tefen's MOS Methodology

#### **IV. Observations**

- 50% of the tools in the mechanical assembly process were waiting for missing parts. The shortage source was either the warehouse or the electronic department.
- 30% of the tools in the electronic assembly process had a high percentage of waiting for operator.
- Line balance was unstable. The bottleneck shifted frequently between mechanical to electronic assembly. The tool was waiting 22% of the cycle time between departments.
- Equipment testing was performed twice in the transfer process between departments.
- Production control was done manually.
- Scheduling and dispatching algorithms did not exist.
- The overall process of information transfer from engineering to manufacturing was malfunctioning.
- The kitting process in the warehouse repeatedly misallocated parts.
- The service levels of warehouse to manufacturing were low.

#### **V. Recommendations**

- Change the manufacturing concept from “Production Flow” to “Manufacturing Cells”.
- Implement a new Manufacturing Execution System (MES) for better production planning and control.
- Improve the process of Engineering Change (EC) to enhance the communication and visibility to of EC’s in manufacturing.
- Increase the warehouse attendance and improve parts distribution procedure to achieve better service level.
- Implement parts inventory model to optimize cost and minimize shortages.

#### **VI. Results**

- Elimination of 70% of the tool transfer (waiting) time between departments.
- Reduction of the waiting time for operators by 50%.
- Reduction of the overall tool cycle time from 37 days to 27 days (27% reduction).

*\*For more information regarding this case study or to request an introductory meeting, email us at [info@tefen.com](mailto:info@tefen.com).*