

## **CHAPTER III**

### **METHODOLOGY**

#### **3.1 Background**

Kaizen is a Japanese word which means 'improvement' that aimed at incorporating a number of small continuous improvements to achieve and sustain zero losses with respect to minor stops, measurement and adjustments, defects and unavoidable downtimes. Just as lean manufacturing relies on kaizen or continuous improvement, continuous reevaluation of the maintenance cycle allows for kaizen in maintenance programs. The key aspect of kaizen is that it is an ongoing, never ending improvement process through eliminating losses using all techniques for kaizen and by changing the operation process to make the job more productive, less tiring, more efficient or safer for the employee.

Semiconductor Company has been chosen to carry out this project where the main operations are assembly and testing semiconductor packages. This study of yield quantity discrepancy reduction in Semiconductor back-end process manufacturing plant was based on the following steps and procedure:

### **3.2 Model Selection (Equipment/Line/Process)**

According to D J H Newitt (1996), model selection element describes the problem in quantities terms and decide the criteria for project success. The problem should be defined in terms of whose product is affected, what is wrong with it, when the problem arise, where the problem occurs, why it is a problem, how do you measure the defects and how many units are defective.

As illustrated by Che Abd. Kadir (2003), model selection compromises all elements that fair to be given attention because it contains all the relevant cause and it digest the outcome of the final result.

### **3.3 Organize Project Team**

Decide to use a team to solve the problem. Form the team from approach representatives of the affected groups and assign responsibilities for action (D J H Newitt, 1996).

The process of improvement, then, begins with forming a Kaizen team that is responsible for the product, while also carrying responsibilities for the consideration of the process. In this step, the facts of the process and the direction for improvement are examined (Mr. Samsom et al;1999)

### **3.4 Identify Present Losses**

Waste elimination is one of the easiest ways for a company to improve its operations. A company needs to go to where the work is being performed, observe what is going on, recognize waste and take steps to eliminate it (Tony Manorek, 2003).

Kobetsu Kaizen pillar deals with those losses that cannot be handled by any other pillar. All six big losses and its 27 elements have to be considered by the Kobetsu Kaizen committee and make up the loss structure for the company. Next, the priorities of the losses are identified and assign project team to work on specific losses area. According to (A.A.Amaranda, 2002), 5S system must be improved and sustained to eliminate the search time loss. Losses identified by identifying abnormalities. All the possible causes of the problem are identified and tested to decide which are in fact important.

### **3.5 Theme Selection and Goal Setting**

After gathering detailed information about the current process, the Kaizen team identified the goal, which took into consideration the directions of management group. Kobetsu Kaizen themes are selected based on losses, setting targets and ability of the group to conduct the project. Apart from that, the identification of bottleneck areas and its priority level determines the theme and goal setting.

### **3.6 Scheduling**

Planning is an essential part of Kaizen activity it defines the exact timing and duration of the proposed project to finish. It might take a week or worse up to six months depending on the complexity of the process (Mr. Samsom et al;1999). Without proper scheduling, work routine would not be pushed to the limit and actual progress will not commence simultaneously (A.A.Amaranda ,2002).

### **3.7 Analysis and Countermeasure**

Viable long term solution to the problem are thought of and tested to make sure that they really do fix things without causing undesirable side effects (D J H Newitt, 1996).

Before changes made to any current processes, specific tasks and activities should be studied for complete understanding. “Process mapping” is an excellent tool to use during activity analysis. Use of process mapping enables gaining consensus among everyone involved through his or her “ownership” and participation. Process mapping also helps identify the non-value-added steps within current procedures and helps guide the worker towards eliminating them. Through actual documentation of current specific tasks, a better understanding of current process is gained.

### **3.8 Implementation**

Trying to implement too much too fast has proven to be the downfall of many initiatives. Instead of taking the necessary time up-front to develop an overall, results-oriented approach which incorporates a systematic deployment strategy and long term implementation plan, the top priority for many organizations has been to get many quality activities started as quickly as possible. When it comes to quality improvement, doing more with many in a short period of time is not necessarily better (Richard Chang, 1995).

The corrective actions are permanently implemented. It is necessary to implement any ideas which have been agreed by the members to the real working environment. Implementation would deliver effective results and also otherwise.

### **3.9 Confirm Effectiveness**

Measurement are used by economists and productivity analyst, are categorized into two activity classifications which are efficiency and effectiveness, Efficiency has to do with processes, that is, doing things better. On the other hand, effectiveness has do with outcomes – optimal behavior – doing the right thing (Johnson and Weber, 1985). Comparison and differentiation between past and previous data vital to point out the effectiveness of kaizen activities. 1% of improvement made also considered as success of

Kaizen. Effectiveness reflects changes in productivity, less losses and process simplification (Che Abd. Kadir, 2003).

### **3.10 Taking Measure to Prevent Recurrence**

Japanese Kaizen is argued to be inseparable from maintain standards since this relation is one of the very foundations for claiming that small ongoing improvements can accumulate to an overall contribution to organization improvement (Anders Berger, 1997).

The situation is monitored for a period to ensure that the problem is resolved and that the corrective actions are instituted.

### **3.11 Horizontal Replication**

Being successfully implemented and taking measures to prevent recurrence, the same line or section will be given the exact implementation idea. The improvement idea is the basis of other machine or equipment replication.

The kick-off for next model start through formation of teams, starting again the whole steps but now with different process. (Johnson and Weber, 1985)

### **3.12 Expected Result**

The expected results from this research are:

- i) The methods of Kobetsu Kaizen techniques that used in this study will improve the productivity of a production line in a manufacturing especially in reducing the discrepancy of the product.
- ii) The data will be compared between before and after improvement activity implementation. The effectiveness of the improvement method will be horizontal developed to the other package.