

Kaizen Implementation In A Small Scale Industry

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Abstract—Kaizen focuses upon continuous improvement of processes in manufacturing, engineering and various other fields. Kaizen is a word originated in Japan meaning "change for the betterment". Implementation of kaizen has become the core of improvement in processes in various successful companies'. A material handling equipment Supplier Company had problems with low productivity due to various losses including time loss, higher rejection rate of products and using manual operations leading to extra labour work. There is a need to increase the efficiency of the processes in company with simple kaizen activities and optimal cost. Implementation of Kaizen philosophy fits perfectly in tackling these problems. The project focuses on minimizing the time loss by using 5S methodology, and eliminating the rejection of products by improvement machines by small kaizen activities and thus increase the efficiency of the company. Comparison in utilization of time, rate of rejection, strain on employees, before and after implementation of kaizen will validate the success of implementation of kaizen.

Keywords -Efficiency, Improvement, Kaizen, Lean Manufacturing, 5S Methodology.

I. INTRODUCTION

In this era of competitive market, it has become very difficult for growth of a small-scale industry. Indian small-scale industries have great contribution in economic growth. Lean manufacturing has proved to be such a tool for improvement of the working culture of these industries. It is an initiative activity, which aims to eliminate/reduce the wastes in human efforts, inventory wastes, speed to market and to become highly responsive to demand of customers while producing superior quality products in the most efficient, effective and economical way. The Lean approach consists of various practices, which aims to improve efficiency, quality and responsiveness to customers. This paper is based on implementation of kaizen philosophy to improve productivity of press shop automation manufacturing company. Small-scale industries face problems due to poor management and less knowledge about efficient techniques for problem solving and overall management of company. The aim of this project is to increase productivity and this can be only done by lean manufacturing tools like '5S', 'KAIZEN', 'PLAN DO CHECK ACT'. Out of all these, '5S' being economical and effective tool was chosen for solving concerned industry.

II. PROBLEM DEFINATION

2.1 Problem Statement:-

INVENTORY ISSUES:The Company is struggling with low productivity due to the utilization of less space for actual production and loss of time in search of tools and materials due to improper workplace management.

TAPPING MACHINE:The sensor attached to the machine is unable to sense the work piece when the worker disturbs the sensor while placing and removing the work piece. During changeovers, there is an unnecessary effort in removing the sensor

PRESS MACHINE: The effort of the worker in pressing the pedal for blanking operation is high resulting in stain on legs.

Lead-time is more due to manual feeding

STRAIGHTENING MACHINE: There is a huge rejection ratio in lot of aluminum strips due to process errors in straightening machine.

III. PROPOSED METHODOLOGY

In order to overcome problems a brief study was carried out and implementation of kaizen Philosophy was finalized in order to improve the productivity.

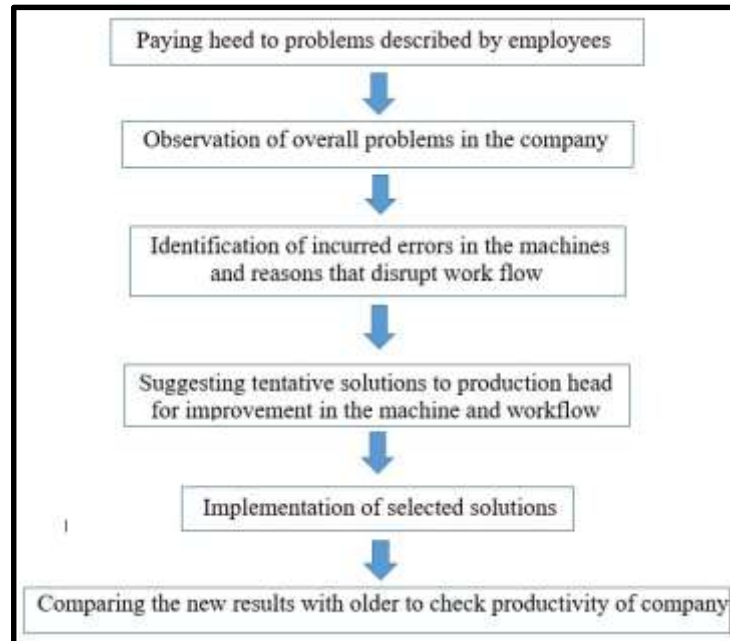


FIGURE 1: Flowchart of Methodology

Kaizen changes

In order to eliminate z plane bend error, a groove was provided inside the roller same as the dimensions of the strip so that there is no space for the strip to buckle out from the groove and thereby eliminating the z plane bend.

For the x plane bend the point of contact of the roller with the strip was increased but the distance between the end rollers was fixed. Therefore, the diameter of individual rollers was increased and thereby increasing the number of rollers.

The float between the bearing race and the bolt made the rollers slightly move when the strip used to pass, causing variation in the set alignment of the rollers to avoid this a customized journal pin design was added to eliminate the movement of rollers when fixed to the plate.

The feed rollers were attached to a single gear and whenever the forced was applied in tightening the roller it made it to bend slightly on the outer end making it a cantilever, thus this caused the strip to move outward and z bend was observed at the output of the machine. So, a support was provided on the other end of the roller.

The steps for implementation of 5S are as follows:

- SORT: Sort is the first step, which includes removal of unneeded items whereas keeping the useful ones. Separation of useful and unneeded items in the company and disposal of unneeded item.

- SET IN ORDER: It decides set locations of the workstations and place to hold tools and equipment so as to reduce time in wasted efforts such as walking, searching, etc.
- SHINE: Cleaning the workplace and marking the areas.
- STANDARDISED: A standard work process or method is implied to the workers and has to be followed.
- SUSTAIN: Maintain the consistency of following the principles set.

After observing the process, found that the sensor which was attached on the periphery of the casing was sensitive and with slight pressure applied by the worker on the casing made it unable to sense the work piece. Also the attachment of sensor with the casing made it difficult while changing the fixture and has to be removed every time the fixture is changed. To eliminate this wasted effort fixing the sensor to a fixed part with an L bracket which will not be in contact with the casing so that there is no fluctuations in sensing the work piece and the need for removing the sensor while disassembly and assembly will be resolved.

To reduce the strain in bending by the worker for picking the work piece a hook was pierced on the wall to hang the sack for easy retrieval of work piece for inserting on the fixtures.

IV. CONCLUSION

The literature represented in this study describes the importance of Kaizen in the field of production. In this study, the problem faced by the company will be analyzed using Kaizen approach. The various problems such as production delays will be sorted after implementation of 5S techniques to bring in improvements and better outputs. The kaizen implementation will provide standardization; it will bring in all people working in the organization right from operators to managers to work together as a team in order to eliminate the bottleneck.

Thus, after carrying out stepwise implementation of Kaizen principles in the company, remarkable improvements in productivity, on time deliveries, reduction in lead-time and reduction in inventories can be achieved thereby increasing the profit to the company. Sustaining the methods of kaizen and with continuous improvement will lead to major production of the company.

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