

“STUDY AND IMPLEMENTATION OF ‘5 S’ SYSTEM IN MANUFACTURING INDUSTRY”

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Abstract - Each and Every company in today's scenario is in search of tools and techniques for improving or increasing their profit rates for the growth of the organization, but at the same time the market needs quality products at minimum prices. So it is very important to consider that the companies can't increase their product's sales cost. In this situation it is very necessary to minimize the manufacturing cost. So as to minimize the manufacturing cost we have to increase the efficiency of the available resources that are basically men, machines, material, plant layout, method, and at the same time minimize the wastage. All the above stated things can be achieved by implementing the TQM (Total Quality Management) tools and techniques in the organization. There are numbers of various tools and techniques used in TQM like Kaizen, '5 S' Poka-Yoke, Baka-Yoke, Just in Time (JIT) etc. Out of these above techniques the '5 S' is the basic and easy to implement technique, so we firstly start with '5 S' implementation. This paper aims at the study and implementation of '5 S' system in manufacturing industry efficiently and the practical approach of '5 S' implementation. This study provides basic steps or guidelines to implement each 'S' of the '5 S' methodology with the reference pictures at of the implementation of '5 S' In Avison Industries M.I.D.C. Shirol, Kolhapur.

Key Words: '5 S' Methodology, Sieri, Seiton, Seiso Seiketsu, Shitsuke, etc....

1. INTRODUCTION

'A standard place of each and every object and each and every object on its standard specified place' this can be observed as the basic formula of overall '5 S' system. The term '5 S' relates to the 5 supports of the visual workplace as mentioned these are -

- Sieri Sort
- Seiton Set in Order or Store
- Seiso Shine
- Seiketsu Standardize
- Shitsuke Sustain

In the above information the Japanese original words and their respective meanings in English is given [1].

These above 5 words relates to 5 steps in the '5 S' system. Basically it is a housekeeping approach but in practical implementation in can play a vital role in the industry to increase the benefit of the organization. In Japan '5 S' is termed as a philosophy, whereas in U. K. (United Kingdom) or U.S.A. (United States of America) it is framed as a tool or technique. But in simple perspective it is a formula which marks the superiority of any organization from its competitors [2]. In the next point we will go through the actual implementation of '5 S' system and practical steps and guidelines which needs to be followed for easy and effective implementation.

2. STEPS AND GUIDELINES OF '5 S'

2.1 Sort (Seiri)

Firstly we need to allocate the Seiri zone or Red zone, so in the initial stage the unnecessary objects, scrap, and not frequently required objects tools will be then transferred to the Sieri zone. The things that are unwanted and laying on the shop floor must be collected and placed into the Red zone for about one week. In the duration of that one week the workers will take out the necessary objects which they require from the Red zone. After that remaining things will be transferred to Permanent Red zone. And then the things that are required and not required must be sorted as per various factors as per the situation.



Figure 1 Proper allocating Red Zone



Figure 2 Collecting the Unwanted Material from Machine floor



Figure 3 Sorting the Collected Material

2.2 Set in Order (Seiton)

After the Seiri has been done the next step is Set in Order. In this step the sorted material has to keep in the sorted manner and its temporary location has to be given. In this step the basic thing is to keep the objects on accessible locations. [3] This location must ensure the accessibility of each employee and smooth work or material flow.



Figure 4 Sorting and Storing is Done for Standard Parts

2.3 Seiso (Shine)

The basic idea behind this step is that, if the work space is clean and clear, it will definitely results in much higher morale of the employees to work harder. So we need to take the cleanliness factor into account while considering the changes to be made in the shop floor. For the sustainability of the shine we came with the idea of curtains for the racks available in the company for protection from the dust particles.



Figure 5 Before image of the rack



Figure 6 After image of the rack (Racks are covered by Curtains Made up of Rexist Material for Protection from Dirt)

2.4 Seiketsu (Standardize)

The plant layout plays an important role while studying any manufacturing industry. So the first step of standardization must be started with the plant layout. In initial stage the layout has been marked with chalk. After brief discussions with company managers and C.E.O. the permanent marking has been done. After that we marked the corners of each and every object for ensuring that the object will remain at that position for sustain point. The

spanner board was color coded for standardization purpose. [4].



Figure 7 Color Coding to the Spanner Boards



Figure 8 Color coded spanner board



Figure 10 Change in Gangway and Plant Layout in the final stage (Observing More Space Available for Material in the Left Side of the Image)

2.5 Shitsuke (Sustain)

At last this '5 S' changes needs to be sustained. So for that the awareness to the system must be created among the employees of the company, so for the awareness of '5 S' importance we fixed the digital flex informing the importance of the '5 S' system. All these above boards can be observed in the next pictures taken inside the company.



Figure 11 Banners showing importance of 5'S attached all over the shop

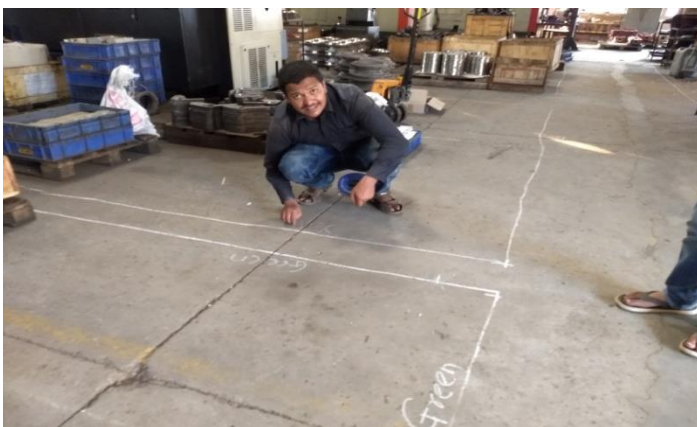


Figure 9 Marking on the Shop Floor by Chalk in the Primary Stage



Figure 12 Banners printed in regional language for workers convenience



Figure 13 Explanations of '5 S'

3. CHANGE IN THE STANDARD STEPS

We suggest a basic change in the standard procedure of implementation of '5 S'. That if we follow the standard procedure after sorting the next stage is store the shine is done that is cleaning and after that we standardize the Locations. So after standardization we also have to again store the object at the standard place. So if the standardization is done before the storing then at the time of Store Stage we have the standard location of the product to be stored. This may save the time and efforts while implementation is carried. Resulting we suggest the following Steps in another sequence of order.

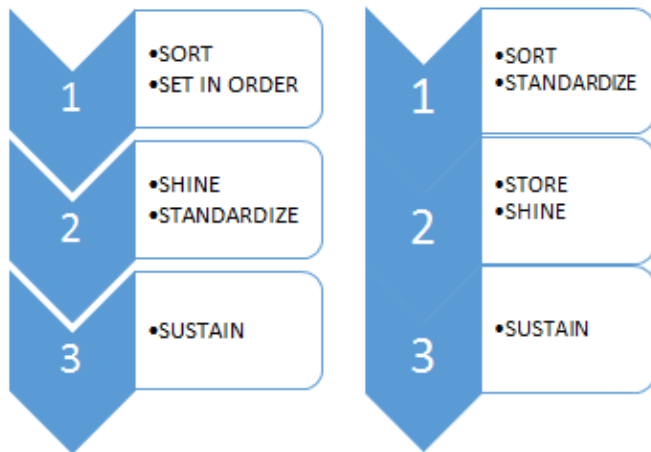


Chart 1 Standard and Proposed Sequence of Procedure

4. CONCLUSIONS

Implementation of '5 S', the changes can be observed from the photographs captured while the implementation work was carried out inside the company. The before after images and standardization system techniques can be observed from the pictures that are indicating that the implementation work is successfully completed in the organization.

By implementing the '5 S' system there is extra free space has been created by just moving the unnecessary and storing necessary objects at standard places.

This increased available space is been generated without expanding the shop floor. This is very important advantage of this system.

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