Micro & Macro Plan for Implementation of 5S in a Manufacturing Organisation

Dr. Ravi Shankar Kalva¹, Dr.A.Prabhu Kumar², V.Srinivasu³

¹Professor, Department of Business Management, J B. Institute of Engineering & Technology, Yenkapally (V), Moinabad (M), RR District, TELANGANA, 500 075, INDIA
²Professor & Director, School of Management Studies, JNTUH Kukatpally, Hyderabad, TELANGANA, 500 085, INDIA
³Sr. Manager Operations, Tecumseh Products Company, Balanagar Township, Hyderabad, TELANGANA, 500 037, INDIA

Abstract - The global economic challenges have changed the perspectives of working culture towards excellent working performance with the adoption of best practices. Companies are eager to implement Lean into their operations quickly. However, before Lean can be implemented, the proper foundation must be laid through the implementation of standardized work and visual controls through Plan –Do–Check–Adjust (PDCA). Today, it is increasingly recognized that 5S management techniques enhance productivity and competitiveness. In order to become a World Class Gemba, an organisation has to go through a continuous and systematic process to identify, reduce and eliminate waste, enhance teamwork, enhance operational effectiveness in a better working environment. As each 5S management technique begins with an S, this approach has been named 5S. Many companies are kicking off 5S (Sort, Set in Order, Shine, Standardize, and Sustain) initiatives to clean up the work area and marking off where things are to be located. One of the tools to achieve organisational excellence is the 5S management techniques. 5S management techniques have contributed significantly to improve internal efficiencies, operational effectiveness and foster on time delivery system to the delight of customers. To achieve this, organisations should integrate 5S activities into their business functions as their organisational culture.

Key Words: 5S management, Seiri, Seiton, Seiso, Seiketsu, Shitsuke

INTRODUCTION

5S is a management tool from Japan, which focuses on establishing a quality environment in the organisation, ensuring adherence to standards and in the process, fosters the spirit of continual improvement. It focuses on five management techniques that are the foundation for any organisation’s competitive initiative.

The salient objectives of a 5S programme implementation is to (a) establish orderliness in all work place; (b) establish visual controls at workplace; (c) create a safe working condition and (d) reduce retrieval time and thereby eliminate delays. When a company decides to go for implementing 5S the preparatory activities are Select location of camera for taking Fixed Point photographs & mark on floor; Take Fixed Point photographs before improvement with date marked; Assess current situation through “Fixed Point Photographs”; Display Photographs in respective areas; Identify areas for improvement on 1S, 2S, 3S; Receive Suggestions for improvement; Evaluate Suggestions; Implement the Suggestions; and Review & Improve.

In order to translate the idea of an organisation to become a world class organisation it has to go through a continuous and systematic process to identify, reduce and eliminate waste, enhance teamwork, enhance operational effectiveness in a better working environment which can be initiated by preparing an organization chart and fixing the roles and responsibilities to the employees for effective implementation

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![Fig.1: 5S Organization chart](image-url)
Table 1: Roles & Responsibilities of 5S Organisation levels

<table>
<thead>
<tr>
<th>Steering Committee</th>
<th>HODs / Facilitators</th>
<th>Zone Leaders</th>
<th>5S Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured monthly review with Facilitators</td>
<td>Hold weekly review meetings</td>
<td>Involve in developing cleaning standards</td>
<td>Follow the system as in 5S manual</td>
</tr>
<tr>
<td>Resource planning &amp; allocation ,5S Budget approval</td>
<td>Review and set goals to 5S teams</td>
<td>Prepare and update cleaning standards</td>
<td>Practice 5S as per standard</td>
</tr>
<tr>
<td>To review constraints / issues with regard to 5S</td>
<td>Counsel, motivate 5S team members</td>
<td>Innovativeness / new methods in cleaning</td>
<td></td>
</tr>
<tr>
<td>Specific attention on low scoring areas</td>
<td>Fortnightly 5S audit</td>
<td>Follow red tag system</td>
<td></td>
</tr>
<tr>
<td>Rewards &amp; recognition approval</td>
<td>Develop visual control</td>
<td>Ensure orderliness of section</td>
<td></td>
</tr>
<tr>
<td>Promote 5S culture, Motivate 5S teams</td>
<td>SOP process audit</td>
<td>Maintain visual controls</td>
<td></td>
</tr>
<tr>
<td>Monthly decision on Red tag items</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support implementation and recommend necessary resources</td>
<td></td>
<td>Plan and prepare requisition for facilities / resources</td>
<td></td>
</tr>
<tr>
<td>Monthly 5S audits</td>
<td></td>
<td>Develop and update SOPs</td>
<td></td>
</tr>
<tr>
<td>Review effectiveness of 5S audits done by Team leaders / HOD and SOP audit</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1S – SEIRI (Sorting out)
Seiri (sorting): it is the first ‘S’ and its main focus is to eliminate the unnecessary items from the workplace. Red tagging is done to the items which are unnecessary. The items which are occasionally used are moved to a more organised storage area outside of the work area. Items which are completely unnecessary are disposed. [1] Sorting helps in eliminating scrap, obsolete jigs and fixtures and also broken tools.[2] Specify the work areas to be evaluated and identify type of items which need to be evaluated. In setting red-tag criteria one should ask the questions. How much is needed? How often is it needed? Is it useful? After all these questions are answered attach the red-tag and decide what actions are to be taken. [3] Documentation of result is the next process so as to measure the improvements and savings through the process. [4]
2S – SEITON (SET IN ORDER by Organizing)

Seiton (set in order): “A place for everything and everything in its place” is the phrase well suited for 2nd S. [1] It focuses on effective storage and segregation of things is done. [2] Activities included in this are labelling each item, use colour for quick identification, store similar items together, and store different items together, putting names and numbers on everything, painting floors, and use of rack or shelf and shadow boards for tools. [3]

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**Fig.2: 1S – SEIRI Process Chart and Responsibilities**

**2S – SEITON Process Chart and Responsibilities**

1. **Identify and mark the red tag area**
   - **Facilitator / HOD**

2. **Identify the unwanted items**
   - **5S Team**

3. **Fix the Red tag/Move to Red tag area**
   - **5S Team**

4. **Enter in Register**
   - **Zone leader**

5. **Review at fortnightly frequency**
   - **Steering committee**

6. **If scrap**
   - **No**
   - **Yes**
     - **Move to scrap**
       - **5S Team**

7. **Move to respective place**
   - **Facilitator**

8. **Review and Improve**
   - **5S Team**

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**Fig.3: 2S – SEITON Process Chart and Responsibilities**

1. **Create and Address Grid**
   - **Every Machine Storage Place**
     - **5S Team**

2. **Colour Code**
   - **5S Team/Facilitator**

3. **Line Mark**
   - **Zone leader / 5S Team**

4. **Create Visual Organization**
   - **Files, Tools, Fixtures, Moulds, Materials, Shadow**
     - **Zone leader / 5S Team**

5. **Can Locate**
6. **Can Take Out**
7. **Can Retrieve**
   - **How Many (Qty)**
   - **5S Team**

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3S – SEISO (SHINE through Cleaning)

Seiso (Shine): the third ‘S’ focuses on the cleaning. Daily cleanliness is must to have a better work area. More comfortable and safe workplace is ensured in third ‘S’. [1][2] High quality work is achieved. Clean and organised work area act itself as motivation factor for the employees. Every employee enjoys their work in a clean and healthy environment which raises confidence. People have to make 3rd ‘S’ as a habit. They have to do the cleanliness without being told to them. Zone wise responsibilities should be given to the employees. Some standards have to be followed to ensure people do the cleaning effectively. [4]

4S – SEIKETSU (Standardize)

Seiketsu (standardize): the high standard of workplace organisation can be ensured by standardization. [1] To develop the standards employees play a great role in it. Every employee knows his responsibilities and housekeeping duties are performed in a regular routine. Best work practices are carried out and different ways are find out to ensure that everyone carries out their individual activity in their workplace.[3][4]

5S – SHITSUKE (SUSTAIN through Training & Discipline)
Fig. 6: 5S – SHITSUKE Process Chart and Responsibilities

Shitsuke (Sustain): this ‘S’ is considered to be the toughest to implement. Many firms do the 5S activities for months. But it becomes very difficult to sustain the activities performed for a longer period of time. [1] Standards have to be maintained year after year in an effective manner.[2][3] Counselling of the employees should be done regularly. Proper discipline should be maintained. Also there should be award and reward system to motivate the employees. It can be a financial gain or formal presentation of a certificate.[4]

5S IMPLEMENTATION
After the company has established the 5S process and assigned the responsibilities we need to plan the implementation in macro level and micro level with a time frame which determines the efficiency with which it is following the implementation process and the meeting the time deadlines. The steering committee and the total 5S organisation members have to monitor the progress and check whether the planned schedule is meet. Tabulating the progress in the Gantt charts are given in the end of the paper

BENEFITS OF 5S IMPLEMENTATION
1. Workplace becomes cleaner and better organised.
2. Shop floor and office operation becomes safer.
3. Visible results enhance the generation of more and better ideas.
4. Lead-time reduced
5. Changeover time reduced by streamlining operations
6. Breakdowns and minor stops eliminated on production lines
7. Defects reduced by mistake proofing
8. Clear methods and standards are established
9. In-process inventory is reduced. Space usage is improved
10. Customer complaints are reduced.

Gantt charts

Macro Plan for 5S Implementation
## 5S Implementation - Macro plan

<table>
<thead>
<tr>
<th>S.No</th>
<th>Steps</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Awareness Training Programme on 5S</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Develop an activity plan for implementation</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Choose pilot area &amp; Train People in depth</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Prepare Gantt chart for the chosen area</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Develop 5S Manual</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>Monitor and provide Guidance during 1S,</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>Start Reviews and Audits</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>Standardize System</td>
<td>9</td>
</tr>
</tbody>
</table>

CONCLUSION

5S implementation is very easy because no difficult terminologies are present. It is logical, simple and natural to human behaviour. 5S should not be considered as a house keeping exercise. For achieving potential benefits from it one should develop a habit of not blaming people. 5S implementation cannot be achieved if we are forcing people to work harder and faster. In order to make successful 5S system most important factors are participation, commitment and support from top level management. By implementing first ‘S’ first change seen will be unwanted items are eliminated and searching time is reduced. Thereby there is improved working environment and space utilization is maximized. Implementing 2nd ‘S’ results in easy storage and retrieval of the items. There is a place for everything which prevents misplacing. 3rd ‘S’ helps in having a clean, safer environment and making good impression on the visitors. Implementing 4th ‘S’ will ensure better workplace standards and visual control systems. Development of team spirit and discipline can achieved by implementing 5th ‘S’. Implementing 5S is the first step for kaizen events which presumes a practical approach and low cost of improvement. Kaizen found problems as a opportunity to improve. Kaizen creates a atmosphere where employee suggestions are valued. Work gets easier in the companies where kaizen events are regularly done. Work environment becomes more enjoyable resulting in job satisfaction of the employee and higher employee morale. Kaizen activities enrich the work experience and bring out the best in every person.
REFERENCES