

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

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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 a 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 work place; (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

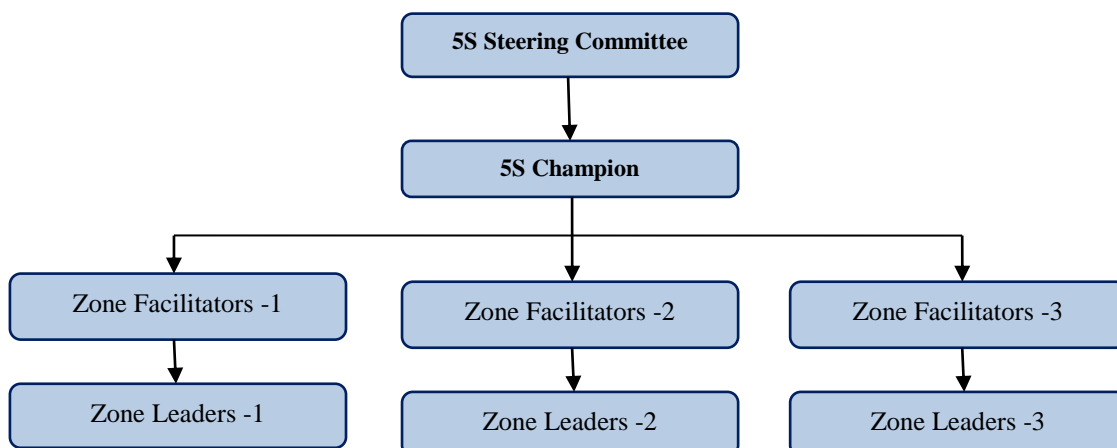


Fig.1: 5S Organization chart

Table 1: Roles & Responsibilities of 5S Organisation levels

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

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]

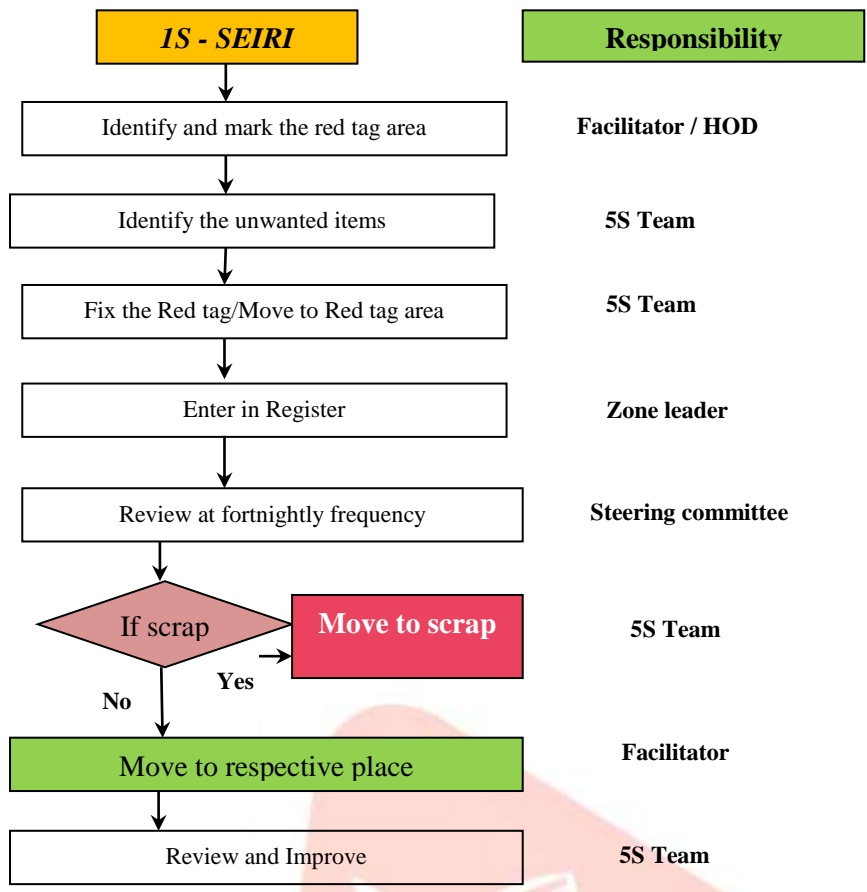


Fig.2: 1S – SEIRI Process Chart and Responsibilities

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]

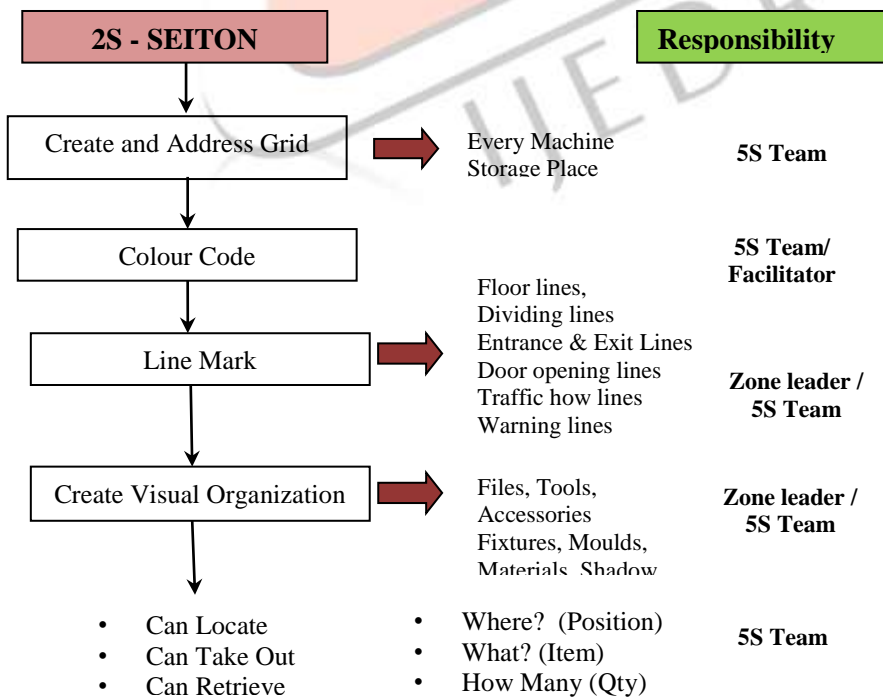


Fig.3: 2S – SEITON Process Chart and Responsibilities

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]

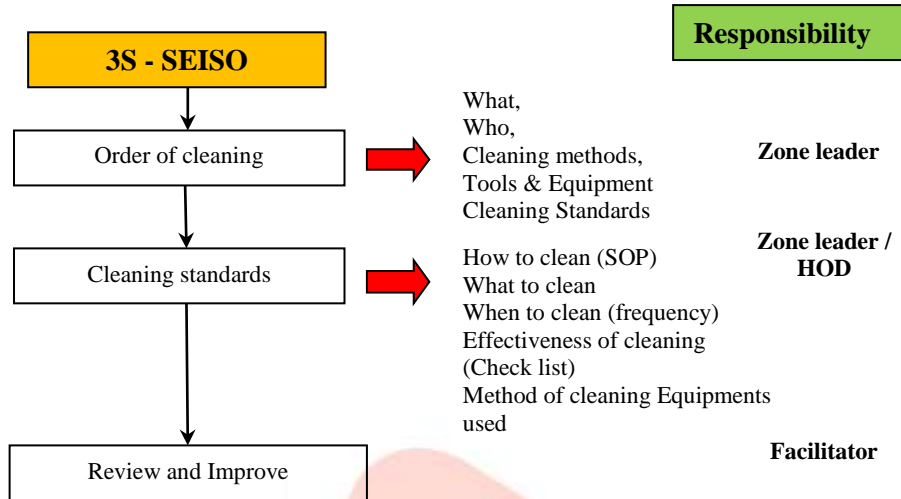


Fig.4: 3S – SEISO Process Chart and Responsibilities

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]

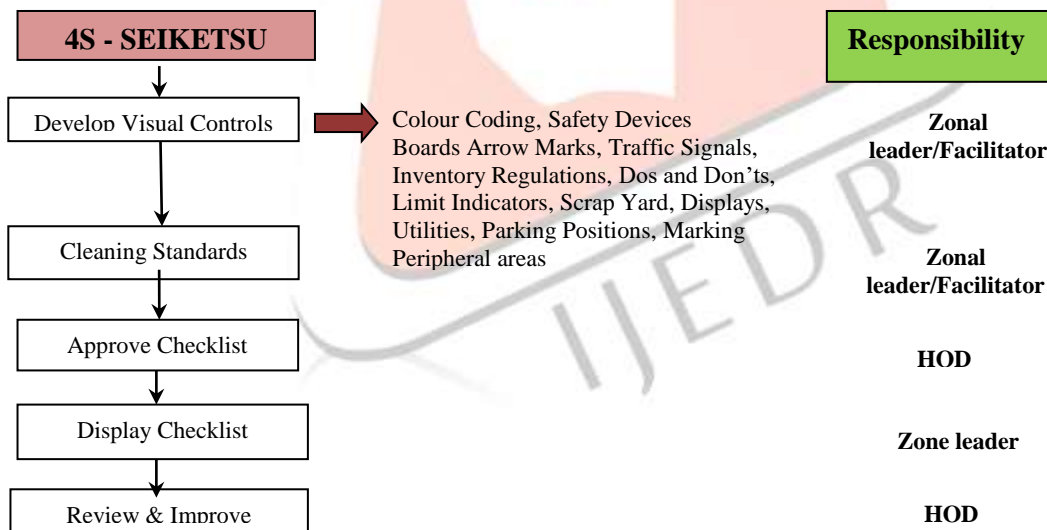


Fig.5: 4S – SEIKETSU Process Chart and Responsibilities

5S – SHITSUKE (SUSTAIN through Training & Discipline)

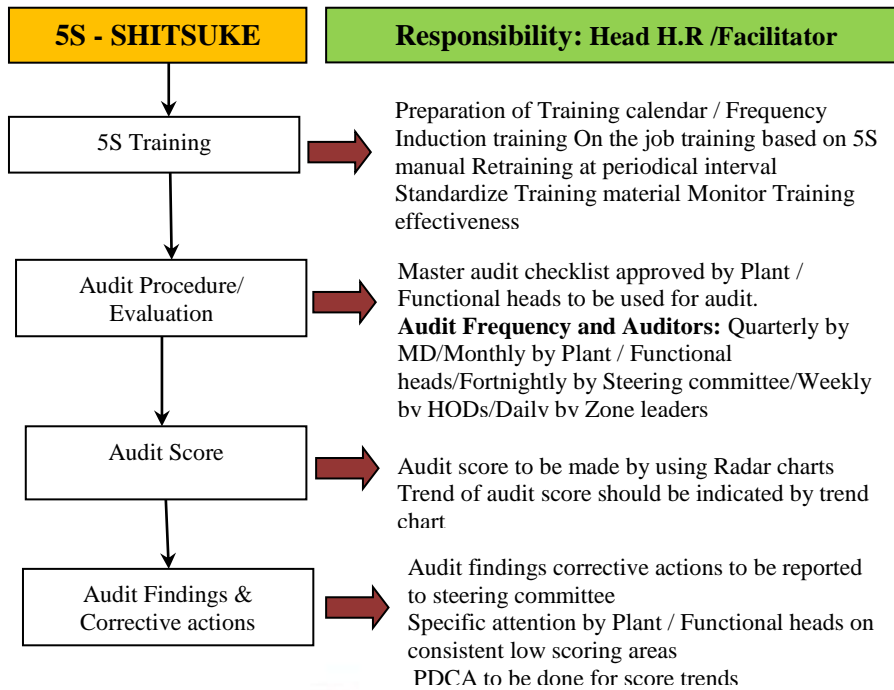


Fig.6: 5S – SHITSUKE Process Chart and Responsibilities

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

S.No	Steps	Months						
		1	2	3	4	5	6	7
1	Awareness Training Programme on 5S	■						
2	Develop an activity plan for implementation	■						
3	Choose pilot area & Train People in depth	■						
4	Prepare Gantt chart for the choosen area	■						
5	Develop 5S Manual	■						
6	Monitor and provide Guidance during 1S,	■	■	■	■			
7	Start Reviews and Audits	■	■	■	■	■	■	
8	Standardize Sysytem						■	■

■ Plan ■ Actual

Micro Plan for 5S Implementation

5S Implementation - Micro plan

S.No	Steps	Weeks														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Awareness Taining Programme on 5S	■	■	■												
2	Form Team and Assign Area	■	■	■												
3	Fixed point Photographs/ Creation of Ideas		■	■	■	■										
4	Red Tag Campaign			■	■	■	■	■								
5	Arrangement of Work Place/ Parts/ Tools/				■	■	■	■	■	■						
6	Cleaning Work Place						■	■	■	■	■					
7	Development of Cleaning & Checking Standards								■	■	■					
8	Training on Specific issues related to 5S											■	■			
9	Conformance to Manual											■	■			
10	Internal Audit Training											■	■			
11	5S Audit													■	■	
12	Recognition														■	■

■ Plan ■ Actual

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 be 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

- [1]. Peterson, J. and Smith, R. (2001) *The 5S Pocket Guide, Quality Resources*, New York
- [2]. Harrington, H.J. (2000) *Business Process Improvement: The Breakthrough Strategy for Total Quality, Productivity, and Competitiveness*, McGraw-Hill Inc., New York
- [3]. Dudek-Burlikowska, M. (2006) 'Quality research methods as a factor of improvement of preproduction sphere', *Journal of Achievements in Materials and Manufacturing Engineering*, Vol. 18, Nos. 1–2, pp.435–438
- [4]. Lancucki, J. (2001) *Basis of Total Quality Management*, AE, Poznan.

