

Implementation of 5's to improve work ethic and overall performance of the organization

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Abstract - 5s is a Japanese technique consisting of 5 words starting with 'S', namely Seiri (sort), Seiton (systematic arrangement), Seiso (shine), Seiketsu (standardize), Shitsuke (sustain). This paper represents 5S implementation in a company named Accura Tech located in Shirol MIDC, Kolhapur. 5S has direct impact on productivity as well as quality. The need of 5S implementation was detected due to improper utilization of space, wastage of time and presence of unwanted material at the workstation. The aim of implementation of 5S was to minimize idle time, reduce effort, increase safety to workers, and improve working conditions and environment. All staff members took initiative; also workers participated actively in the implementation process. The successive implementation of 5S resulted into increase in overall performance of the company and improved work ethic between the workers.

Key Words: 5S, Seri, Seiton, Seiso, Seiketsu, Shitsuke

1. INTRODUCTION

In today's world of increasing competition, it is important to seek better quality and productivity for satisfying customer's ever increasing demands. An organization needs to improve continuously. Overall performance of organization depends upon the workplace management. Providing proper facilities and working environment to the worker is important for the same. 5S is an effective tool for increasing overall performance of the organization.

Implementation of 5S ensures proper utilization of available resources as well as modifies the system which is not fully capable of fulfilling the required function. Small changes make a big difference which is beneficial for the organization. 5S not only helps to lift the standard of the organization but also to improve the work ethic among the workers.

1.1 What is 5S?

5S is a tool used for arranging a workplace in effective manner. 5S was introduced by Takashi Osada in early 1980s in Japan. It is a set of 5 Japanese terms starting with S, Seiri (sort), Seiton (systematic arrangement), Seiso (shine), Seiketsu (standardize), Shitsuke (sustain). 5S leads to elimination of waste, proper utilization of place and provides clean and comfortable working conditions. It has impact on overall performance of the organization.

1] Seiri

- Sorting the material into - need and want.
- Shifting unwanted materials to the red tag area.
- Disposing the waste and excess material by reselling or trash.

2] Seiton

- "Place for everything and everything in its place" is the mantra of the Seiton.
- "Go visual Go vertical", principle is followed.
- Make proper place for each and everything needed at workplace.
- Arrange things systematically and name them in order to eliminate wastage of time in searching.

3] Seiso

- Keep the workplace as well as tools and equipment clean.
- Maintain the cleanliness by following proper schedule.
- Develop methods for proper disposal of waste.

4] Seiketsu

- Develop standard procedures for maintaining improvements of first 3S.
- Assign responsibilities to everyone.
- Prepare checklists for various activities of 5S.

4] Shitsuke

- Carry out scheduled internal audits and surprise audits.
- Install 5S slogans and posters.
- Give awards and recognition to the workers doing well for maintaining 5S system.

2. LITERATURE REVIEW

Implementation of 5s is basically technique of improving productivity as well as quality of the product in any organisation. It totally depends upon how we are applying all those concepts in our organisation.

According to Sagar D. Ghagare (et.al 2017) - effective implementation of 5s will manage all the tools and material in the industry. And side by side it will help to improve the productivity, quality and efficiency of the organisation.

Shraddha P. Deshpande (et.al 2015) - she has implemented this technique in Samsonite South Asia Pvt. Ltd. Gonde-Dumala, Maharashtra. According to her, because of implementation of this concept we can save our time, we can improve the productivity and we can see the rapid result of this concept.

Swapnil Patil (et.al 2016) - he has implemented the 5s technique in Asara and Girija industries, Palus, Maharashtra. According to him efficient implementation of 5s lead to subsequent improvement in productivity.

Soumya R. Purohit (et.al 2015) - according to her, implementation of 5s will tends to reduce human effort, less time, less inventory and increase the productivity. She has implemented the concept of 5s in Spoorti Machine Tools Pvt. Ltd. Bangalore, India.

Arash Ghodrati (et.al 2013) – he has implemented this technique in V.M. Auto Pvt. Ltd. Satpur (MIDC) Nashik. According to him it is the technique of reducing the cost, improving the working condition of organisation and improving the efficiency of that organisation.

3. PROBLEM STATEMENT

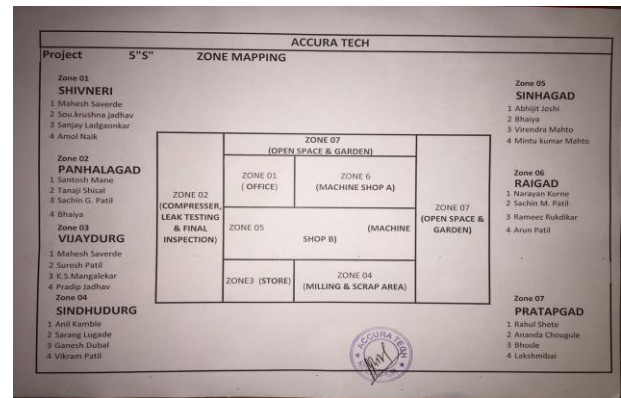
- 1) Waste of time while finding the tools or any important equipment (no place).
- 2) Waste of money (for purchasing of same kind).
- 3) No proper disposal of waste, making environment dirty which affects the moral of worker.
- 4) No systematic arrangement of tools and equipment. Hence, more retrieval time.
- 5) No specific place for job rejection, finished product and raw material.

4. METHODOLOGY

1. Training:

Training programs were conducted to clear the idea of 5S to the staff members and workers. Simple and effective PPT's were used to simplify to concept for better understanding. Importance and benefits of 5S were thoroughly explained to the workers. Some examples of successive implementation of 5S in other organisation and its benefits to that organisation was shown with the help of photographs.

2. Zone Formation:



Photograph 1-Zone Formation

Implementing 5S in entire organisation without systematic planning is a difficult job. For simplifying the process, organisation was divided into different zones. Each zone was given a specific name and number.

3. Problem Identification:

Problems in the specific zone were identified by proper observation.

- Wastage of time
- Proper place not available.

4. Training on Seiri:

- Training was conducted on 1S. The process implementation of 1S was explained to the staff and workers.
- After successful implementation of 1S, other 4S were implemented in similar manner. Training session were conducted before implementation of each 'S'.

5. IMPLEMENTATION OF 5S

5.1 Seiri Implementation

- Objective of implementation of Seiri is to remove all the unwanted material from the workplace and make more space available for the needed material.
- One zone is targeted at a time.
- All the material near the machine is collected together at a place. Name of each material is noted down and the material is categorized into
 1. Need – material which are required constantly without which production will stop comes under the category
 2. Want –
 - a. Not ok – Damaged material, material life expired

- b. Excess – extra units of single material
- c. Low/continuous frequently – material which is rarely required comes under this category

Seiriform is used to classify the material and keep record of the corrective action taken for each material

Sl. No.	Name (Mater. No.)	Stock (Quantity)	Status		Corrective Action (Date)	Action Plan (By Whom)	Remarks	Number (Date)
			Not OK (Y/N)	Excess (Y/N)				
1	7-15 Allen key (1/2)							
2	7-8 Allen key (7 Nos)							
3	6mm Allen key			✓	✓			
4	3mm Allen key			✓	✓			
5	3.5mm Allen key			✓	✓			
6	7-7 Allen key (2 Nos)							
7	Allen key damage (2 No)			✓				
8	TCMT 10008 10002 (1 Nos)			✓				
9	Weld 10007 (5 Nos)			✓				
10	M5x10 screw				✓			

Photograph 2-Seiri Form

After classification the unwanted material is moved to the red tag area. After proper analysis decision about the corrective action for each material is taken. The material is disposed, sold, or repaired. Accordingly, action is taken.

Seiri in Zone 1



Photograph 3-Seiri in Zone 1

Seiri in Zone 6



Photograph 4-Seiri in Zone 6

Seiri Blasting

Implementation of Seiri zone wise is a time consuming process. So a new technique is used for implementing Seiri known as Seiriblasting. A day is selected; all the staff members and workers are gathered. Teams are formed. Each team is allotted a particular zone. Simultaneously at the same time, each team performs the Seiri in a particular zone. After sorting, unwanted material is moved to red tag area, and further decision is taken by the team after proper analysis.



Photograph 5-Seri Blasting

5.1.1 Outcome of Seiri

1. Finding lost or forgotten material may save re-ordering cost.
2. Easy to find tools, as only needed material are stored at work station.
3. Easy to find documents with current information, and avoiding outdated information.
4. Production space is free and more space is available for needed materials.
5. Cost engaged with hidden scrap is free.



Photograph 9-After 1S



Photograph 6-Before 1S

5.2 Seiton Implementation:

Seiton means systematic arrangement. "Place for everything and everything in its place" is the principle of Seiton. After sorting, only the things which are needed are present at workplace. Proper place is made available for each and everything. Arrangement is made simple and effective, followed by naming.

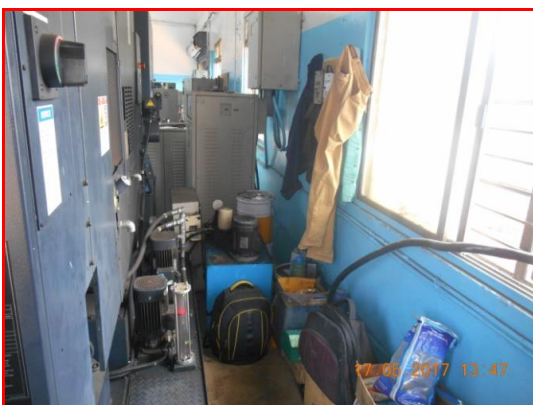
While designing tool boards, racks, we considered aesthetics as well as ergonomics. We made three to four adequate designs and from that we chose optimum design according to suitability.

We used different waste material which was available in the industry while implementing Seiton, to get the best output. Waste plastic boxes were used as tool holder and bottle holder. Scrap Steel strip was used to hold drill boxes. Scrap wooden planks were used to prepare section for keeping files.

Problem Statement- Job has to be turned at least 3 to 4 times while cleaning, which increases fatigue to the worker. Also there is no proper place for storing cleaning equipment. Insufficient light during night shifts.



Photograph 7-After 1S



Photograph 8-Before 1S



Photograph 10-Cleaning table before 2S

Solution- Cleaning booth with rotary table is installed. Now job has to be turned only once, resulting into less fatigue to the worker. Proper place is available for cleaning equipments. Tubelight is provided in the cleaning booth, specially for night shifts.



Photograph 11-Cleaning booth after 2S

Problem Statement- Tools are not arranged systematically, making it difficult to find.



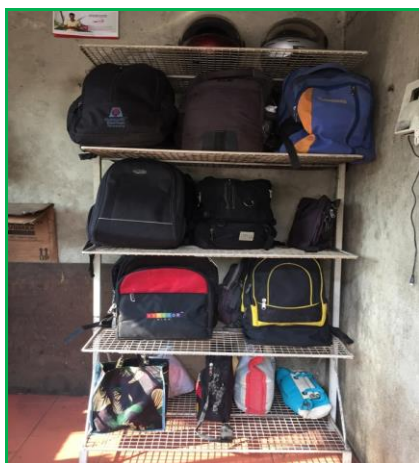
Photograph 14-Tool storage before 2S

Problem Statement- No proper place for keeping bags.



Photograph 12- Before 2S

Solution-Rack for keeping bags is made.



Photograph 13-After 2S

Solution- Rack for storing tools is installed along with name labels.



Photograph 15-Tool storage after 2S

Problem Statement- Jobs placed on the ground making it difficult for worker to lift.



Photograph 16-Before 2S

Solution- Stands for keeping jobs is made, thereby avoiding bending motion for the worker.



Photograph 17-After 2S

Problem Statement- No proper place available near machine for storing the work documents needed near the machine.



Photograph 18-Before 2S

Solution- Bookshelf made for storing the work documents near the machine.



Photograph 19-After 2S

Best out of Waste



Photograph 20-Scrap boxes used for storing tools



Photograph 21-Scrap steel plate used for holding drill boxes



Photograph 22-Scrap boxes used for holding bottle

5.2.2 Outcomes of Seiton

1. Easy to find the tools, equipment and documents.
2. Any missing thing can be easily identified, so less unscheduled downtime.
3. Increased productivity as less time is spent for tools retrieval.
4. Less fatigue to workers, as they do less bending and lifting.

5.3 Seiso Implementation:

Seiso means shine. It aims for eliminating the dirt and keeping workplace clean. Cleaning is everybody's responsibility. For maintaining cleanliness regularly, schedule is prepared. Cleanliness is treated as inspection. All

the tools and equipment are inspected for any breakage or defect, while cleaning. It improves safety and productivity. Clean workplace also helps to improve morale of workers.

Scheduled housekeeping is one way to keep workplace cleaning. But, better way is to prevent workplace from getting dirty. For this, methods to prevent dirt are developed.

Problem statement- Proper system not available for the collection of waste (metal chips) generated.



Photograph 23-Before 3S

Solution- Funnel system designed for the proper collection of waste.



Photograph 24-Developing stage



Photograph 25-After 3S

5.3.2 Outcomes of Seiso:

1. Improve safety in the workplace.
2. Greater visibility and reduced retrieval time.
3. Improve morale of the workers.
4. Maintenance cost is reduced
5. Higher quality products and increased productivity.

5.4 Seiketsu implementation

- After implementation of first 3S, it is important to maintain the achieved improvements. Seiketsu aims for maintaining these improvements
- Any problem related to the first 3s is deeply investigated. Various questions are asked for that purpose, like:
What is the problem?
Why does it happen?
When does it happen?
How can it be eliminated?
Thus a better solution is found out.
- Standard procedure for doing a particular work is developed. Poster of these standard procedures are posted near the machine, so that the workers follow the same procedure.
- Responsibility is assigned to everyone in order to maintain first 3S.
- Checklist is prepared to check whether everyone is fulfilling his responsibility.
- Schedule for practising first 3S regularly is prepared. Documentation of changes is done. The photographs of before and after situation are pasted in the work area. It helps to improve morale of the workers.

5.5 Shitsuke Implementation

Shitsuke means sustain. It is important to maintain the 5s system in order to sustain the improvement. Efforts should be taken by the workers as well as management for the same. Internal audits are carried out at regular intervals as scheduled in the 4S (Shitsuke). Surprise audits are also carried out. Proper recognition and awards are given to the workers who do well in maintaining 5s system. 5s slogans and posters are installed all over the industry to motivate the workers.





Photograph 26- 5S posters

6. CONCLUSION

The main aim of our project is to improve the working environment according to type of work and comfort of the worker. For that purpose, we implemented all the above changes which are shown in before and after photographs. Successful implementation of 5S has led to increase in moral of the worker and working ability. Because of the proper placement of all tools and gauges the retrieval time is reduced. Proper place is now available for storage of all the tools and equipment needed near a machine as well as personal things of workers (like bags, Tiffin box, clothes etc.). After successfully implementation of our project we conclude that, 5S implementation is beneficial for all the industries whose working environment is not good or too old. It improves quality as well as work ethic in the organization.

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