

## Implementation of 5S Practices in Manufacturing Company: A Case Study

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**Abstract:** 5S is an initial stage for applying lean management systems. It is useful in sorting, cleaning, arranging the necessary things for workplace management systems. This research deals with implementation of 5S methodology in a manufacturing industry, which is a small scale industry located in industrially developed region. The paper highlights about team formation for implementation, initial photographs before implementation, day wise plan, material required, standardization of 5S. The research document also shows before and after photographs, issues in implementation, benefits achieved and lessons learned from conducting case study.

**Keywords:** 5S, implementation, manufacturing.

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### I. INTRODUCTION

Many international companies are doing business aggressively in our country. There is an acute competition for excellence everywhere around us. This competitive market requires 'better quality products and services at lowest price. Only those organizations which manage both quality and productivity on continuous basis would be in a position to compete output and increased productivity in the system would ensure result for the organization to stay in operation.

To stay competitive, we not only have to pay attention to what we are doing now, but also to what we plan or have to do tomorrow. Customer satisfaction is the ultimate goal as it addresses quality, cost and even exceeding the customers' expectations. The top management at all manufacturing locations must take the lead in establishing this lean system successfully and the strategy for implementation, success and results calls for both top-down & bottom-up approaches which is the most important factor in the organization.

Modern industries call for high level of process accuracy, dust free atmosphere, proper maintenance, clean habits, proper training etc., for sharpening the skills in all of us, we have to learn continuously to manage the present and also plan the future. For this purpose, continuous efforts are required periodically year after year for creating a congenial environment in factory and thus create a healthy working atmosphere. The concept of 5 S techniques was originally developed and implemented successfully in Japan. They have identified 5 steps in improving housekeeping in work place for higher quality & productivity. They are

1S – Seiri - Sorting out

2S – Seiton - Set In Order (Systematic Arrangement)

3S – Seiso - Shine (Spic & Span)

4S - Seiketsu - Standardization

5S – Shitsuke - Sustain (Self Discipline)

As all the five steps start with the letter "S" it has been termed as 5S techniques in short form.

The case study is carried out in a small scale manufacturing unit located in industrially developed area, regarding implementing 5S as a pilot study project in plant.

### II. Introduction about company:

Company was incorporated in by a team of top-notch, highly experienced Engineers to deliver all-under-one-roof services .It has a pool of super Specialists from the field of Design, Engineering, Manufacturing, Erection & Commissioning, Operation and Maintenance, Repairs, Troubleshooting etc.. In a short tenure the company has achieved high customer acceptability and phenomenal growth having executed critical and challenging assignments.

### **III. Why implementation of 5S:**

The following problems occurred before implementation of lean tool i.e.5S in the organization:

1. Improper utilization of storage space for raw material, bins and finished products.
2. Wastage of time in searching the raw material due to non- permanent location for storage of raw material.
3. Low productivity due to time wastage in searching for tools materials due to improper workplace management.
4. Presence of unwanted material at workplace which affects the morale of workers while working.
5. Useful storage place being acquired by the unwanted materials.
6. More time and cost required for the inventory process of unwanted stored materials in raw materials stores.
7. No well-defined space for storing the unwanted or rejected material.
8. Unequal participation of officers and workers in workplace management due to non-standardization.

### **IV. Steps for implementation:**

Following steps are used for implementation of 5S.

#### **4.1 5S team formation:**

For implementation of 5S a team is formed with total 6 members are divided in three different areas, two members each are divided for three different areas for total 10 days of duration for implementation of 5S.

#### **4.2 Review photographs:**

After the formation of three different teams, the members take the photographs in their assigned areas to know the condition of area before implementation; these photographs are called as before photographs. The photographs are as follows.

##### **1. Workshop area:**



**Fig No. 1**



**Fig No. 2**



**Fig No. 3**



**Fig no04**



**Fig no 5**



**Fig No :06**

**2.Store area:**



**Fig no :07**

**III. Librery and Office area:**



**Fig no :08**



**Fig no :09**

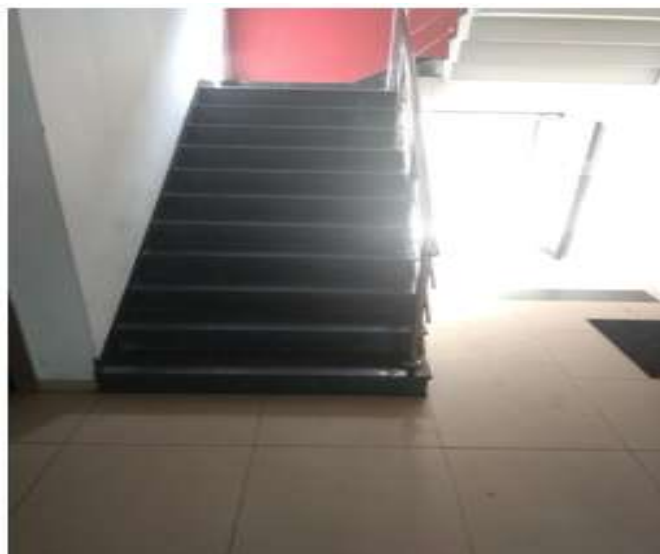




**Fig No 10**



**Fig no 11**



**Fig No 12**

These are before photographs from which we will access the areas for improvements by using the 5S methodology. The photographs are studied and analyzed regarding different actions to be carried out in three different important areas of the plant to improve overall workplace management.

#### **4.3 Location ( Decide areas to implement 5S):**

After review photographs of all major areas of the plant, it is decided based on importance of areas that 5S is to be implemented in following in different areas.

1. Workshops and store area.
2. Library area
3. Office, dining area and surrounding area

These three area covers about all the major portion of the company and are important areas of the plant.

#### **4.4 Day wise Planning (10Days):**

1. First day: On the first day all the members are divided in three different teams, initial photographs are taken of all the areas of the company area. Then photographs are analyzed to know the planning for implementation of 5S in different areas.
2. second day: for second day it was decided to divide the teams in three different areas for further work ,planning was done for implementation in their specific area, discussion is held with in charge and other people of the defined area.
3. Third day: for third it is decided to carry on 1 S activity i.e. Sorting of necessary and unnecessary things, decide red tag area for waste items.
4. Forth day: on this day it was decided to carry on next 2S activity to keep the things at its place i.e. set in order.
5. Fifth day: on the fifth day cleaning activity is carried out along with inspection.
6. Sixth day: on the sixth it is planned to conduct standardization.
7. seven day: planning for standardization.
- 8.Eight day: training for sustain of 5S,visual display boards to be prepared.
9. Ninth day: Plan to Photographs to assess changes after implementation, i.e., after photos.
10. Tenth day: planning to conduct program for sustaining 5S.

#### **4.5 List of material required for 5S implementation:**

For the effective implementation of 5S following material is used:

1. Line marking: Industrial floor tapes of three colors basically yellow, red and green (0.25” to 2” width),cross tapes for fire extinguisher and steps.
2. Shadow board /tool outlining
3. Sign board, banner posters
4. Red tags
5. Display for fire extinguishers.
6. Paint for marking.

### **V. Standardization:**

#### **5.1 Labeling:**

For visual management and identification of all equipment's and machines labelling is done. Similarly labeling was done in store area, all the office equipment's ,all tables chairs, books and all the files.

#### **5.2 Font size:**

For machines font size of 24 is used and for small equipment's font size between 12 to 16 was used depending on size of item,

#### **5.3Fire extinguisher:**

1.first the location is marked with tapes i.e. cross tapes of yellow and black, on the beside the visual management boards are placed to easily usage of fire extinguisher.

#### **5.4 Stair case;**

Stair cases are marked with cross tapes and visual board to be kept for avoiding accidents during step-up or step-down.

### **VI. Issues in implementation:**

1. Resistance of people for shifting of material.

2. Finalization of red tag area.
3. Maintaining store space as per requirement.
4. Cleaning of work area.
5. Maintaining safety rules.

**7. Implementation photos before and after:**

**7.1. Workshop and store area :**



**FIG 13: Photograph before and after (Marking of Work area)**



**FIG 14: Photograph before and after (Marking of area)**





**FIG 15: Photograph before and after (Marking the area)**



**FIG 16: Photograph before and after (Location identification)**



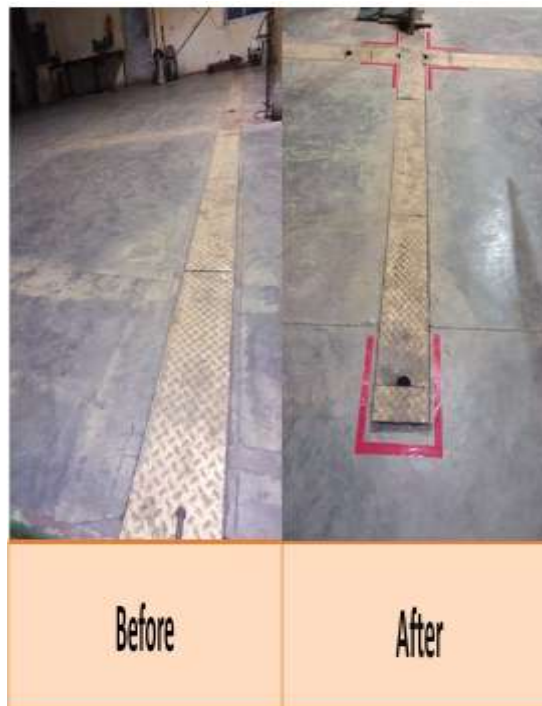
**FIG17: Photograph before and after (proper area marking)**



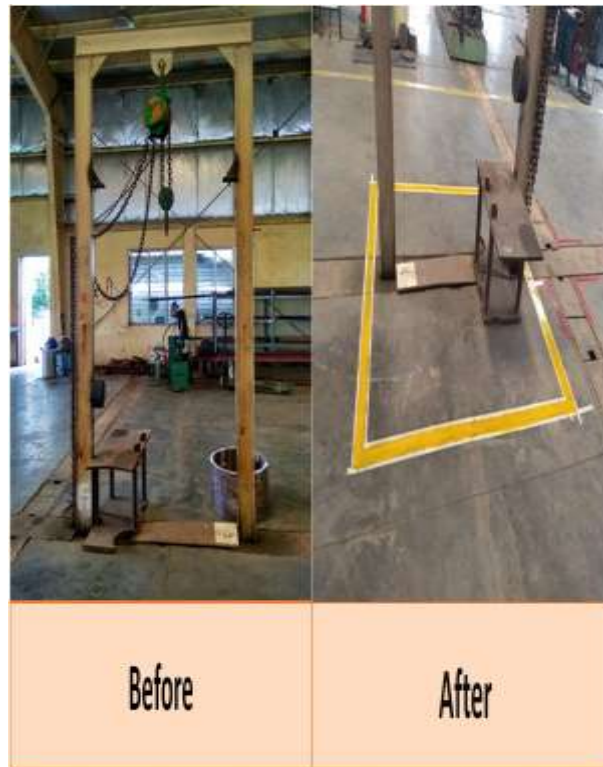
**FIG 18: Photograph before and after (area for keeping raw material)**



**FIG 19: Photograph before and after(Area demarcation)**



**FIG 20: Photograph before and after(Identifying Electrical lines passage)**



**FIG 21:Photograph before and after (Standardization )**



**FIG 22:Photograph before and after(Location for fire Extinguisher)**



**FIG 23: Photograph before and after (Passage location)**



**FIG 24: Photograph before and after (Red tag area)**

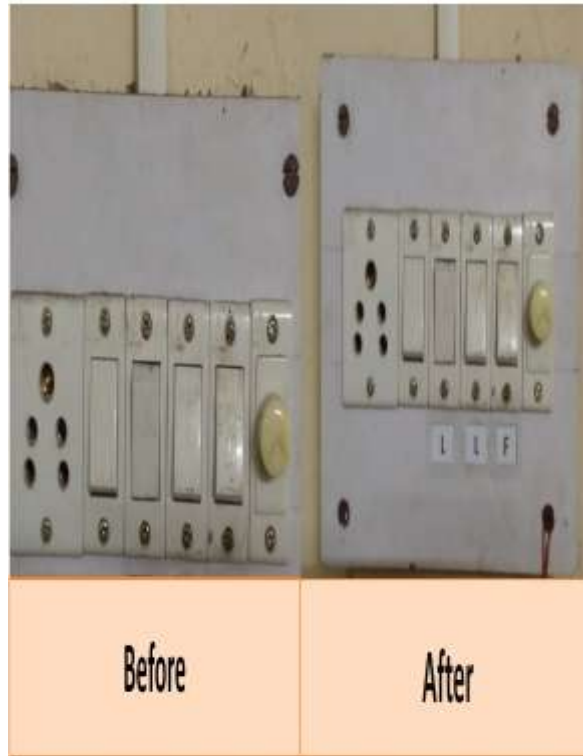




**FIG 25: Photograph before and after(Marking for danger area)**



**FIG 26: Photograph before and after(File management)**



**FIG 27 Photograph before and after (Proper location)**



**FIG 28: Photograph before and after (Visual management)**



**FIG 29: Photograph before and after (Identification )**



**FIG 30: Photograph before and after(Identification)**



**FIG 31: Photograph before and after(Identification)**



**FIG 32: Photograph before and after (Visual management)**



**FIG 33: Photograph before and after (Steps identification)**



**FIG34 :Photograph before and after (Area marking for location)**

**VII. Benefits achieved:**

- a. We save our floor space, helps us to get rid of obsolete items and better utilization of existing material.
- b. Easy access to the materials and materials can be easily retrievable
- c. Time taken to search can be minimized and machine breakdowns can be minimized and handled fast.
- d. Clean machines and floors expose problems like machine cracks / oil leakages fast and allow us immediate corrective action.



- e. Smoother material flow and lesser production down time.
- Proper workplace management is achieved.
- G. Good working condition.

### **VIII. Lessons learned:**

1. Planning of 5S implementation.
2. Interaction with different people for implementation.
3. How to handle with difficulties occur during implementation.
4. Implementation of all 5S at different locations
5. Visual management activities.
6. Management of different task in company.

### **IX. Conclusion:**

The 5S is an effective management method to improve environmental conditions and health and safety standards. 5S sort stage will help to reduce the wastage, after sorting space is increased for utilisation, by set in order equipment's location is fixed and they can easily assessed which save searching time, also other steps are implemented which improve overall working condition of plant. Results of 5S are seen in very short span of time, which makes employees self-discipline during working. For overall development and sustenance participation of all team members is essential.

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