5S AS A TOOL AND STRATEGY FOR IMPROVISING THE WORK PLACE

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ABSTRACT:
We provided some vast literature on the implementation of 5S in any industry. This strategy involves the study and change in the work place of a manufacturing industry post implementation of 5S. This strategy helps in minimizing the time of manufacturing and also increases the area of work place. Thus, the solution found by our approach solely minimizes several hazards at the work place.

1. INTRODUCTION:
Implementing ISO 9001:2008 alone in an organization does not make a way to obtain Total Quality Management System; Organization also needs to adopt several Lean tools to achieve TQM. In the path of implementation of the Total Quality Management on the operational level, 5S will become the first step. 5S is a Japanese concept for increasing quality and productivity. 5S will become the essential tool for acquiring continuous Improvement in the organization. In any organization improvement begins with 5S.

5S is a Lean Tool which is implemented for obtaining a clean, effective and pleasant work environment. 5S is the first step of approaching the Lean Manufacturing.

5S is a strategy that delivers results by a systematic approach of planning and organizing the activities. 5S is a philosophy rooted from Japan and branched into other countries. 5S is an acronym for the following Japanese terms:

- **SEIRI** [Sort]
- **SEIRON** [Set in order]
- **SEISO** [Shine]
- **SEIKETSU** [Standardize]
- **SHITSUKE** [Sustain]

2. 5S Systematization:
5S states that:

- **SEIRI** (sorting and disposing the unnecessary items). Deals with sorting all the tools, materials and other equipment in the workplace. Important equipment is stored accordingly, which reduces the hazards at the work place.

- **SEITON** (everything is set in order, provide a place for everything). Identifies the need of the worker. Tools, materials and other equipment should be arranged systematically for quick access and movement.

- **SEISO** (shining, cleaning, removal of waste and dust) Point outs the need and necessity of clean and neat work place. Cleaning should become a daily activity. Work place should be cleaned at regular intervals (generally at the end of the shift or once in 3 hours). Every tool and equipment should be restored at their own places after their use.

- **SEIKETSU** (consistent and standardized work environment with unique rules of organization and storage along with cleanliness). Everyone should know his or her responsibility. Cleaning should become a part of regular work routines. This helps in having a good control over the production.

- **SHITSUKE** (Sustain, realization of the above set of rules in order). Maintain these standards continuously for years.

Implementing 5S should begin from educating the workers about 5S and its importance. It is mandatory that every worker should understand the need of 5S and its advantages. Workers should be provided with an example for all the 5S’s, which makes it easy to understand. It is very important to understand the fact that this methodology do not refer only for the production team but also refers to stores (warehouse) and other office teams. It is better to supply a 5S pocket guide to the workers such that they could clarify their doubts by reading it.

1 S – Sort

Eliminate all unnecessary materials, tools, parts, equipments. Sorting identifies necessary information for the realization of tasks. Sorting eliminates the waste raw materials, nonconforming stock, and damaged tools. Keep only necessary items and eliminate what is not required. It improves the efficiency of searching and collecting items, reduces the running time of operation.

1. Implementing 1S rule:

1) On the first stage one should be able to answer the control questions:

- Does unnecessary things create the problem in work area?
- Does unnecessary odds and ends of materials thrown anywhere in the work area?
- Do tools and rest of materials of production are placed on the shop floor?
- Are all necessary things sorted, ordered and retain at their own place?
- Are all measuring tools sequentially kept?

On the basis of answers to the above questions it is possible for the assessment of work area in terms of the 1S rule. If any question answer is yes, it should carry out sorting of items, which are in work area.

2) On the second stage one should carry out the review of all things which are in the work area and arrange them. According to established sorting it should execute the elimination of items from work area, which were unnecessary.
3) To continual usage the 1S rule is the movement of the Red Tag. It means giving red tag to items, which operator will make out as useless within his work area. At the beginning of each month, put a red tag on every item. During the month, remove the red tag when item is used. At the end of the month, decide whether the item with the tag is necessary or not.

**2 S – Set in order**

The important thing is visualization of work area the painting of the floor helps to identify the storage places of each material or transport ways. The place for each item should be labeled. Each tool, material, supply, or piece of equipment should be kept close to where it will be used - in other words, aligning the flow path.

Implementing the 2S rule:

It means items must be placed in fixed locations so that they are easily attainable and can be easily used.

2S rule proceedings:

Make sure that items can be identified by labeling them properly.

Every working method has particular type of order. Identify and filter it. Use lean thinking to make things faster.

- Reduce preparation time for tool setting.
- Reduce waiting time for parts, materials, papers and files.
- Reducing processing time and cycle time by improving the plant layout of work area.
- Time and strength spent on looking for jigs, fixture tools etc.
- Run down for parts in stores.
- Searching for files and information in computers.
- Labels are attached so that items can be recognized.
- At a glance and clear.

**3S – Shine**

Regular cleaning permits to identify and to eliminate sources of mess and to maintain the clean workplaces. During cleaning machine, work area and shop floor, sources of light, current information, cleanliness of path are checked. Operator should take care about personal maintenance and tidiness.

Implementing 3S rule:

The first step of 3S rule is improving the workplace, daily follow-up cleaning is necessary in order to sustain this improvement. Cleanliness is helpful to notice damages on equipment such as cracks, breakage and misalignment.

**4S – Standardize**

Standards should be worked out and implemented in the work place. Management should pass instructions in order to set the work place in order. The Instructions should be clear and easily understandable to workers. All the workers in the shop floor should be involved in this activity; the workers group knows specificity of their own activities and process of elaboration along with the usage gives them the possibility of understanding the importance of each aspect of the operation. The aim of the easy access of the obligatory standards for constant and visible places should be assured.

It should be assumed that standards are not only being implemented in typical operational processes like movement of materials, production, maintenance and sorting, but also in administrative processes like Book-keeping, HRM(human resource management), customer service and any other services.

**5S – Sustain**

The principle is to establish the maintenance of a clean environment as an ongoing process for ever. This increases the consciousness if the workers and decreases the number of non-confirming products and defective products. This process also increases the internal communication and human relations in the organization.

It is also essential to understand the need and importance of the inspections for 5S. The inspections are executed with the help of Check list prepared on the basis of the radar charts of 5S. This also helps in estimating the work place. The inspection of the realization of 5S standards is executed once in a month by the team.

**3. 5S APPROACH IN INDUSTRY:**

The 5S methodology depends upon the capacity of creating and maintaining a well organized, clean, effective and high quality work place. Our research was carried out in a manufacturing company of the metal doors. In the first phase of research we executed the selection of things in the production process of the work place. We introduced 5S methodology to the workers on the shop floor and carried out a questionnaire for them. After that all the 5 rules of the 5S has been implemented on the shop floor in a systematic order. We appointed one of the workers as a person responsible for the implementation of 5S for that department and so with the other departments of the industry. This resulted in great changes on the shop floor.

Fig (I): changes in the shop floor before and after implementing 5S:

![Before](before.png)

![After](after.png)

Fig (I): Implies the differences in the arrangement of the materials and machinery in the shop floor before and after implementation of 5S.
1S:
- Things have been sorted on the basis of necessary and unnecessary.
- Distributing the things and other stuff in the workplace has been reduced.

2S:
- All the things and tools are arranged properly for quick usage.
- The time required for preparing the work place has been reduced.

3S:
- Clean and hygienic work place has been established.
- Cleanly working conditions have been established near the machines.

4S:
- All the rules set by the company are being obeyed.
- All the rules were set in order for future

5S:
- 5S became a habit for all the workers in the shop floor.
- Discipline is all around the workplace.

For the perfect execution of 5S in future, inspections based on Check Lists are being performed within the time set for it.

4. CONCLUSIONS:
The advantages from implementing 5S rules:

1S:
- Process development by cost reduction
- Stock confinement
- Better usage of work place
- Prevention of losing tools

2S:
- Process growth
- Increasing efficiency
- Shortening of time required for searching necessary things
- Safety enhancement

3S:
- Improvised working conditions for workers.
- The number of customers has been increased after maintaining a clean and neat layout.
- Machine maintenance cost has been reduced.

4S:
- The standards of the company came to next level.
- Improvement in safety has supported in reducing the injuries of workers.
- Slips and falls of the material have been reduced.
- Travel time of materials is reduced which led to reduction of work hazards.

5S:
- It gives a scope for Workers participation in the work area design and maintenance.
- Workers absenteeism has been lowered down.

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