

# Increasing Productivity Using 5 S Techniques in Small Scale Industries

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**Abstract** – Global markets are continuously changing and demanding due to high quality and low cost. Such products can be produced using lean manufacturing, by this we aimed to reduce all types of wastes at product manufacturing so as to reduce product cost. 5S is a basic lean manufacturing technique for cleaning, sorting, organizing and providing necessary improvement in work place. This system helps to organize a workplace for efficiency and decrease waste and optimize quality and productivity via monitoring an organized environment. Primary data collected by personal observation and Secondary data collected from the 3 weeks personal observation of the manufacturing department. The next step will be implementation of 5S in Percision Turn component ltd by applying PDCA cycle.

**Keywords-** 5S Implementation, Plant Optimization, Productivity.

## INTRODUCTION

**5S** is a Japan originated technique and first developed by Hiroyuki Hirano. It include five words Seiri, Seiton, Seiso, Seiketsu and Shitsuke, which means Sort, Set in order, Shine, Standardize and Sustain respectively. It is one of the efficiently working tools of Lean Manufacturing. 5S is the foundation of all improvements and is the key component of establishing a visual workplace. The benefit of 5S technique is improvement in productivity, quality, efficiency and safety. . Name 5S is the acronym of five Japanese words of the following meanings:

### A. Seiri (Sorting):

Sorting items which are not necessary and segregating and disposing of goods that are not needed at work systematically. Separation process is helpful in

determining the necessary materials at the present or the future and should be stored in a designated storage area. Unnecessary items will be disposed .The arrangement used for keeping each material in the company at correct place is named as sort. The defective or rarely used material and equipment's in the company cause the demolishment of the workplace's order and decrease in the work efficiency . This leads to fewer hazards and less clutter to interfere with productive work.

### B. Seiton (Set In Order):

Especially important is visualization of the workplace in order to focuses on the need for the workplace. Tools, equipment, and materials must be systematically arranged for the easiest and the most efficient access. The main objectives of Seiton are forming a regular workplace, avoiding time loss while searching the material and mistake proofing work.

### C. Seiso (Shine):

Point outs the need and necessity of clean and neat work place. Cleaning should become a daily activity. The dust, dirt and wastes are the source of untidiness, indiscipline, inefficiency, faulty production and work accidents. There for Work place should be cleaned at regular intervals. Every tool and equipment should be restored at their own places after their use.

### D. Seiketsu (Standardize):

Establishing the standard rules to maintain the perfect hygiene and safe environment at the workplace. The goal of this step is keeping, standardize, and preventing from this present order and regularity. The necessary systems are formed in order to maintain the continuance of these good practices at the workplace. Standards should be very communicative, clear and easy

to understand. Regarding this during preparation and improving, it should be involved all participants of the process on the given workplace, it means direct workers.

**E. Shitsuke (Sustain):**

Train employees disciplined for practicing 5S system continuously so that the habits and culture within the organization. This is by far the most difficult S to implement and achieve. People tend to resist change and even the most well-structured 5S plan will fail if not constantly reinforced. It creates an educating, co-operating, discipline system and inspection for protecting the best present situation.

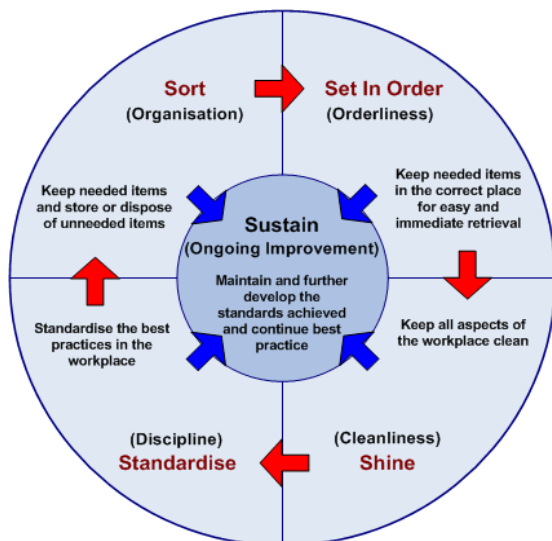


Fig. 1: 5S Processes

**METHODOLOGY**

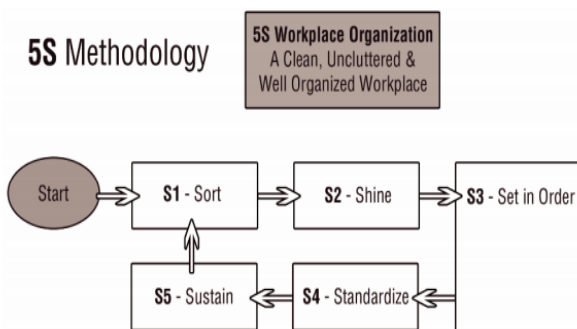


Fig.2: 5S Methodology

**Sorting** -- Sorting clears the deck for the remaining activities. It can often take weeks to accomplish in any given area or department. The steps of sorting are:

- Establish criteria for what is not needed. For example, if something hasn't been used for a year, it may be a candidate for disposal.
- Identify the unneeded items, and move to a holding area.
- Dispose of the not needed items, either by transferring to a department that needs them, selling them, or discarding them.
- Red Tagging is done to identify unneeded items. The line spacing for the table content should be single only.



Fig.3: Sorting

**Set in order:** The home should be where the item will most efficiently be stored. Frequently-used items must be as close to where they are used as possible. The steps of simplifying are:

- Determine a location for each item based on frequency of use and proper safety zone (decreasing the likelihood of strain injuries, for example).
- Develop shadow boards and label items - a home for everything.
- Determine how to replenish supplies.
- Document layout, equipment, supplies, and agreements for returning items to their homes.



Fig.4: Set in order

**Shine** : Systematic cleaning provides a way to inspect, by doing a clean sweep around a work area. This means visually as well as with a broom or rags. The idea is make the job of doing daily cleaning and inspections easier. The steps of systematic cleaning are:

- Identify points to check for performance.
- Determine acceptable performance.
- Mark equipment and controls with visual indicators (e.g., gauges show the correct range).
- Conduct daily cleaning and visual checks.



Fig.5: Shine

**Standardizing**: Standardizing assures that everyone knows what is expected. Since the workplace team establishes the standards, everyone should have had some involvement in establishing the 5S in their work area. The steps in standardizing are:

- Establish a routine check sheet for each work area. The check sheet is like a pilot's pre-flight check list. It shows what the team should check during self-audits.

- Establish a multi-level audit system where each level in the organization has a role to play in ensuring that 5S is sustained in the work areas and that the 5S system evolves and strengthens.

- Establish and document standard methods across similar work areas.

- Document any new standard methods for doing the work.



Fig. 6: Standardize

**Sustaining**: Sustaining is usually thought of as the toughest "S." However, it doesn't need to be. The trick is to let the 5S system work for you. When you get to this point, you should have engaged everyone in the work area during 5S activities and have a "tell at a glance" visual workplace. The steps of sustaining are:

- Determine the 5S level of achievement - the overall grade.

- Perform worker-led routine 5S checks using the 5S check list.

- Address backsliding and new opportunities found during routine checks.

- Conduct scheduled, routine checks by team leads or supervisors or by people from outside of the workgroup.

- Perform higher-level audits to evaluate how well the 5S system is working overall. For example, are there systemic issues with sustaining 5S? Often, the company's safety committee is an excellent body for conducting these audits.

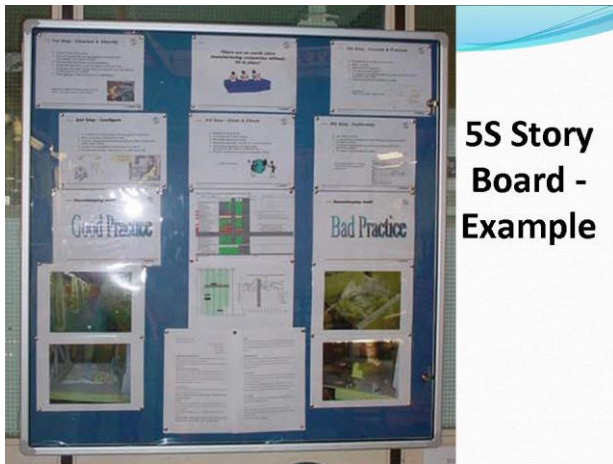


Fig. 7: Sustain

### CONCLUSION

In this research work we have study the various literatures related to 5S and the data is accumulated from different papers, this will help to study success factor of 5S. The data is collected by personal observation. Further work will be the part of our next paper.

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