

Analysis and Application of 5S Methodology in Mechanical Work Shop of Rungta College of Engineering and Technology, Raipur

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ABSTRACT: The aim of this paper is to review the implementation of 5S methodology as one of the main tools of improving continuously for a long term in order to improve efficiency and quality. 5S is beginning of a qualitative workplace. This 5S system results in increasing the efficiency, reducing the waste materials thus increasing quality and more satisfactory outputs thus 5S quality control will strongly support the objective of workplace in order to achieve improvement and better performance from previous results. [1]

Keywords: Mechanical; quality control; workshop.

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I. INTRODUCTION

It is one of the Japanese technologies that was introduced by Takashi Osadain the early 80's. Basically it is a workplace management methodology that help to improve workplace and human efficiency. the 5s word represent the 5 discipline for maintaining visual work place basically 5s is implemented to minimize the loss of time and unnecessary movements. It comprises 5 principles in making the workplace highly effective and efficient. The 5S technique is Derived from "Kaizen" principle which directly means "Change for Better". Through 5S Methodology the organization can create an environment where Quality work is comfortable, sustainable and safe. These are as follows[2]: -

Seiri(sort):

It may be defined as the removal of all unwanted, unrelated and unnecessary material in work place so that workspace can be increased.

Seiton (set in order):

This term is used to arrange all the things in such a way that it can be accessed or retrieved quickly so that it will save our time & effort.

Seiso(shine):

It means cleaning of the work place, machine & tools.

Seikestu(standardize):

It defined as the standards and specifications along with this, making some rules that should be followed in workplace.

Shitsuke(sustain):

It means 'discipline'. To make the above 4S part of our daily routine so that it become our habit.

- Improper storage and handling of raw material.
- Due to non-permanent location for storage of raw material time is wasted.
- Time wastage in searching for tool and materials due to improper work place management.
- No well-defined space for storage of raw material and rejected waste material.
- Useful space is been acquired by the unwanted material.
- Unequal participation of workplace management due to standardization.

II. 5S METHODOLOGY

1. Seiri(Sort) [Good Arrangement]:

This means to divide the things into groups of necessary items hence no unnecessary object should be allowed. The unnecessary and necessary material available in the work area should be sorted and classified. with the help of suitable sorting we can identify the materials, tools and necessary items required in the task. The tools which are frequently used are sorted in such a manner or placed in such a way within which easy reaching is possible. This leads to decrease in hazards in the work area with improving the productive work. On the basis of our surveillance it is possible to eliminate the unnecessary item according to Seiri rule. On the next step we should execute the all things which are in the work place and group them according to definite place. In general purpose this means to put the things in right order that means to organize the things to distinguish between the necessary things, I.e. sorting out the unnecessary things.

Problem Identification

According to sorting we should eliminate the unnecessary things found in work place.

BENEFITS:

- Better Utilization of work area.
- Reduction in losing of tools.
- Decrease in stock in work area.

2.Seiton (Set in order) [Good Order]

It means having things exactly in the right place and in the right layout. The main goal of seiton is to reserve necessary objects always in good order and make them always available as well as minimize time required by the worker to necessary item required to perform a specified work. By forming a regular work area, we can avoid time loss. While searching for material thereby improving the efficiency. the system is made to minimize the number of moves in the work area that a worker has to perform during operation. Especially visualisation of the workplace is necessary i.e. floor painting of corridors, drawing layout of tools which make easy for quickly putting inside the cases.

BENEFITS:

- Reduction of time to find necessary things.
- Improving the safety system.
- It includes the process improvement.

3.Seiso(shine)[Cleaning]:

It literally means getting rid of waste and foreign material and making things neat and clean. The basic concept of seiso is to create a clean working area and clean workplace. The waste are source of inefficiency, indiscipline and untidiness. Thus, creating an impeccable workplace. The next step is to renovate the workplace. The 3rd S rule and realize on every day. Cleaning activity workplace must be cleaned at alternate intervals according to requirement whenever it is needed.

BENEFITS:

- The efficiency of the machine might increase with this technique.
- Maintenance of devices.
- To keep the work place clean.
- The damages are easily and frequently informed.
- Work environment is improved which results in elimination of hazardous accidents.

4.Seiketsu (Standardize):

The concept of seiketsu is to ensure the standards are compiled and the work area is clean and tidy all the time. it means making of consistent ways of doing procedure and task.

This is done with the job of ensuring the condition which does not reverse back. Everybody

should know exactly what the work is for and knowing exactly How, when and where to implement the work assigned to them. In order to maintain the continuity of these good practices the necessary system should be performed.

Implementation and worked out standard in the form of instruction and procedure. the standard should be very clear, easy to understand and should be very communicate. Basic standard should apply everywhere in the facility . everybody should know what are the responsibility. Housekeeping duties are part of some regular work routines. There is a need of some time to choose the better ways to practice sort, set in order and Shine abide by them.

BENEFITS:

- Pollution created by industries is reduced.
- Safety of work area is increased.
- The allotted procedure is achieved at given sort of time.

5.Shitsuke(Sustain)[Discipline]:

Employee should be trained to maintain disciplines for practicing and obey the 5s system so that it makes a habit if properly maintaining correct procedure. It will be done with the objective of attaining higher productivity. The task should be by higher productivity the task should be undertaken by higher official. The higher authorities should explain the importance of 5s to the person with the help of various training and the knowledge of 5s should be kept updated through the help of 5s methodology departments. It is very important to execute the routine inspection of 5s rule.

BENEFITS:

- The mistake and quantity reduction from inattention is decreased.
- Inter-human relationship is improved.
- It helps to increase moral and general awareness.

Advantages of 5s implementation in Workshop

With the successful implementation of 5s the following benefits are observed.

- **Optimized organisation:** The key point of workplace under which all the working takes place are as follow, to an extent, decreasing potential time wasted looking for, instructing how to use and returning item. Under 5s technology tools and parts are stored in such a manner that they are easily accessible whenever there is a need.
- **Bigger storage Density:** proper implementation of 5s technology reduce significantly work area due which sufficient

working space is obtained which increase the working capacity.

- **Increased workplace morale:** By implementing 5s in routine proper procedure and discipline to avoid backsliding is one of the main objectives of the system.
- **Efficiency:** The 5s implementation gives overall increase in the work area due to elimination of unnecessary items and gives better arrangement of tools by which it reduces the time taken to find the required tools and parts.
- **Safety:** By drawing and painting of boundary lines around the heavy machineries increases the safety of persons working around these machines [3].

III. RESULTS AND DISCUSSION

The Following are the outcomes of implementation of 5S:

- Section 1



Before



After

- Section 2



Before



After

- Section 3



Before



After

• Section 4

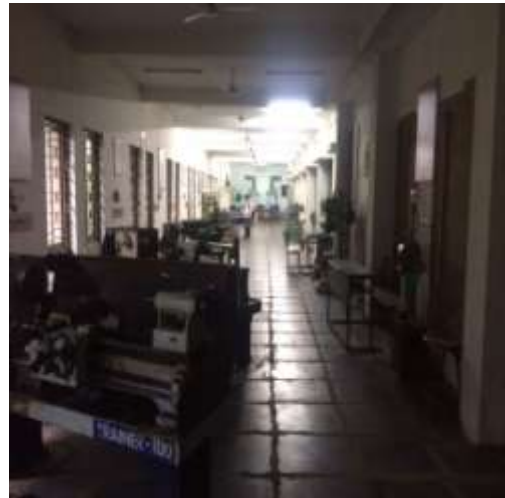


Before

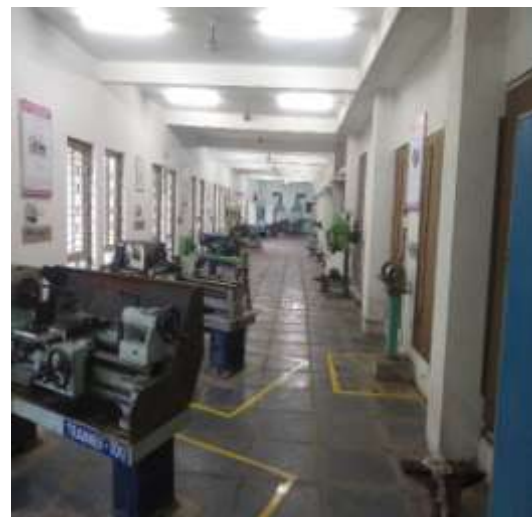


After

• Section 5



Before



After

• Section 6



Before



after

Some more outcomes of the workshop are:



IV. CONCLUSION:

5s quality control method has guide us towards the betterment of workplace invarious ways. Following are the outcome of 5s quality control:-

- People have become more puntual, disciplined and focused towards their work.
- Better workplace is created practically after its implementation.
- More space is available with keeping only required object and machine.
- It has shown a good effect on the performance of work by improving quality, increasing the efficiency of tool and machine and saving precious time.
- It has increased the efficiency & lifespan of machine and tools.
- Working process of workshop has improved.
- The standard of workshop came to higher level.
- Internal communication process of working person has improved a lot.
- It has increased the awareness & morale among the people of our college[4].

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