

# 5's Not Just a Tool, It's a Way of Life

Sahil yadao<sup>1</sup>, Akshay Shinde<sup>2</sup>, Dr. V.M Athawale<sup>3</sup>

SY<sup>1,2</sup>, UG students, Government College of Engineering Nagpur, Nagpur, India, 441108  
Associate professor<sup>3</sup>, ME, Government College of Engineering Nagpur, Nagpur, India, 441108

**Abstract** -5s Technology has become one of the most important tool of lean manufacturing in recent global market. Many organizations around the world have attempted to implement it but without clear understanding of 5s technique will contribute to the failure of its practices. There are many papers, articles and report that addresses 5s technique but few studies were found which focuses on systematically implementation of it. This paper suggests the ways to minimize the mistakes and negligence on the part of implementer. Finally, it can be concluded that effective implementation of the 5s activity depends on the commitment of the top level management, total involvement of the staff at all level within the company and taking 5s as way of life rather than a tool.

**Keywords:** 5's methodology, suggestions for effective implementation of 5s technique, benefits from renowned company.

## I- INTRODUCTION

**F**irst impression is crucial, and creating the best impression possible is key to lasting success for any organization. Un organized, untidy, or dirty storefronts and public spaces will virtually guarantee that customers will be repelled and will take their business elsewhere. Additionally, company morale suffers in such an environment. Employees may feel as though the company does not care about itself, and as result they will care less about the company themselves. On a basic level, disarray may reflect a fundamental problem with operations as it is filled with wastes of space, time, and energy, and interrupts a continuous flow of activities. On the other hand, a company that is highly organized, does not waste space, flows effectively, and maintains an

attractive appearance tends to be more profitable than one that is unkempt. A well-organized workplace is better for all parties involved. The lean methodology for addressing such organizational issues is known as 5s. 5s is a comprehensive system that reduce waste and optimizes productivity by maintaining an uncluttered and visually organized workspace. This organization enables to quickly know where objects are stored, reducing search time, as well as see when items are missing from their designated homes. 5s is essentially a "clean up and organization" of the workplace to enhance productivity. 5s originates from the Japanese words seiri, seiton, seiso, and shitsuke. Translated into English, they stand for sort, set in order, shine, standardize, and sustain.

## II- LITERATURE REVIEW

### History of 5s

5S began as part of the Toyota Production System (TPS), the manufacturing method begun by leaders at the Toyota Motor Company in the early and mid-20th century. This system, often referred to as Lean manufacturing in the West, aims to increase the value of products or services for customers. This is often accomplished by finding and eliminating waste from production processes.

5s is defined by previous authors from different views.

R.S.Agraharietal (2015) explained the 5S implementation methodology and guidelines to improve performance of the small scale industries. The qualitative form of results obtained in the safety, productivity, efficiency and housekeeping practices.

J. Michalska et al (2007) suggested the Total Quality Management (TQM) can be achieved through lean principles such as 5S. The paper discusses the 5S methodology and implementation strategies in order to enhance the quality of the product with proper training, guiding and educating the employees.

### III- METHODOLOGY

The 5S implementation consists of seven phases shown in Figure 1. viz. Sort, Set in order, Shine, Standardize, Sustain or Self Discipline

Each phase continuously improves the performance of an organization by eliminating wastages of searching, waiting, transportation, motion, work in progress inventory etc. 5S also makes the working environment clean and safe that improves the morale of the employees. The improvement in the form of the morale is a qualitative form that is responsible for the reduction in the Manufacturing Lead Time (MLT). So, the 5S helps to reduce MLT in quantitative form as well as in qualitative form. The quantifiable variables are searching, move, waiting time, cycle time, lead time, production rate, productivity, quality, profit and client network and the qualitative variables are working environment, communication and morale.



Fig.1

5 S means [5-8]:

Seiri (sorting, organization of the workplace, elimination of unnecessary materials). Refers to the practice of sorting through all the tools, materials, etc., in the work area and keeping only essential items. Everything else is stored or discarded. This leads to fewer hazards and less clutter to interfere with productive work.

Seiton (set in order, place for everything). Focuses on the need for the workplace in order. Tools, equipment, and

materials must be systematically arranged for the easiest and the most efficient access. There must be a place for everything, and everything must be in its place.

Seiso (shine, cleaning, removing of wastes, dust etc.). Indicates the need to keep the workplace clean as well as neat. Cleaning in Japanese companies is a daily activity. At the end of each shift, the work area is cleaned up and everything is restored to its place.

Seiketsu (standardize, constant place for things, constant rules of organization, storage and keeping cleanliness). Allows for control and consistency. Basic housekeeping standards apply everywhere in the facility. Everyone knows exactly what his or her responsibilities are. Housekeeping duties are part of regular work routines.

Shitsuke (sustain, automatic realization of above-mentioned rules). Refers to maintaining standards and keeping the facility in safe and efficient order day after day, year after year.

Implementing the 5S rules should begin from trainings of productive workers in the range of the 5S's elements and advantages from their usage. It is important that all participants of trainings will understand the need of using the 5S rules on the own workplace and will agree on the changes. During trainings it is essential to train the usage of all rules on the clear example, so that every participant can understand the methodology of realization of the 5S's elements. Very important fact is that these rules do not refer only to the productive positions, but also refer to the warehouse, office positions and others [9-12].

#### 1 S – Sorting

Through the suitable sorting it can be identified the materials, tools, equipment and necessary information for realization the tasks. Sorting eliminates the waste material (raw materials and materials), nonconforming products, damaged tools. It helps to maintain the clean workplace and improves the efficiency of searching and receiving things, shortens the time of running the operation.

The 1S rule's proceedings [5]:

A) On the first stage one should answer to so-called Control Questions:

- Are unnecessary things causing the mess in the workplace?

- Are unnecessary remainders of materials thrown anywhere in the workplace?
- Do tools or remainders of materials to production lie on the floor (in the workplace)?
- Are all necessary things sorted, classified, described and possess the own place?
- Are all measuring tools properly classified and kept?

On the basis of the answer to the above questions it is possible the estimation of the workplace in terms of the 1S rule so littering the workplace. If on any question answer is yes, it should execute sorting of things, which are in the workplace.

B) On the second stage one should execute the review of all things which are in the workplace and group them according to the definite system. According to carried out sorting it should execute the elimination from the workplace the things, which were found „unnecessary”.

C) To permanent usage the 1S rule is so-called the Programme of the Red Label. It means giving the red label to things, which operator will recognize as useless within his workplace. This label will make possible not only the elimination of the given thing, but through its own formula will make possible the liquidation of the reasons of appearing on the workplace this given thing.

## **2 S – Set in order**

Especially important is visualization of the workplace (eg. painting the floor helps to identify the places of storage of each material or transport ways, drawing out the shapes of tools makes possible the quick putting aside them on the constant places, coloured labels permit to identify the material, spare parts or documents etc.).

Implementing the 2S rule [3]:

It should execute the segregation of things and mark the places of their storing. Used things should always be divided on these, which should be:

- in close access (1st degree sphere), - accessible (2nd degree sphere),
- in the range of hand (3rd degree sphere).

To the estimation of the workplace in terms of the 2S rule, that is setting in order things, serve the following Control Questions: - Is position (location) of the main passages and places of storing clearly marked?

- Are tools segregated on these to regular uses and on specialist tools?
- Are all transport palettes storage on the proper heights?

- Is anything kept in the area of devices against the fire?
- Has the floor any irregularity, cracks or causes other difficulties for the operator’s movement?

Things used occasionally and seldom should be on the workplace but outside the direct using sphere. Their distance and location from the place of work should depend on the frequency of using these materials or tools. Places of storage should be marked in the manner making possible their quick identification. It can be used coloured lines, signs or tool boards. Once defined places and methods of storage should be invariable.

**3S – Shine** Regular cleaning permits to identify and to eliminate sources of disorder and to maintain the clean workplaces. During cleaning it is checked the cleanness of machine, workplace and floor, tightness of equipment, cleanness of lines, pipes, sources of light, current data, legibility and comprehensibility of delivered information etc. Indispensable is also taking care of and maintenance the personal tidiness of the operator

Implementing the 3S rule [3,13]:

The first step of realization the 3S rule is renovation the workplace. It is assumed that „the first cleaning” forces the exact checking of usage two of the previous rules. The usage of the 3S rule relies on everyday keeping in faultless cleanness the workplace. It is executed by the operator of the given workplace. To the estimation of the workplace in terms of the 3S rule, that is cleaning the workplace, serve the following Control Questions:

- Are the oil’s stains, dust or remains of metal found around the position, machine, on the floor?
- Is machine clean? - Are lines, pipes etc. clean, will they demand repairing?
- Are pipe outlets of oils not clogged by some dirt?
- Are sources of light clean?

## **4 S – Standardize**

Worked out and implemented standards in the form of procedures and instructions permit to keep the order on the workplaces. 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. The group knows the best specificity of its own activities, and process of elaboration and after that, usage gives them possibility of understanding the essence and each aspect of the operation. In the aim of assuring all the easy access,

obligatory standards should be found in constant and visible places.

It is assumed that standards should not be implemented only in the typical operational processes e.g. production, movement maintenance, storing, but also in the administrative processes, for example: book-keeping, customer service, human resources management, or secretariat service [5,14].

### **5 S – Sustain**

Implementing the idea of the 5S will demand from workers the compact self-discipline connected with implementing and obeying the rules of regularity in cleaning and sorting. It leads to increasing the consciousness of staff, and decreasing the number of non-conforming products and processes, improvements in the internal communication, and through this to improvement in the human relations.

It is also important to understand the need of executing the routine inspections of usage the 5S rule. This inspection is executed by helping of so-called Check List and created on its basis the radar graph of the 5S, which serves to estimation of the workplace. The inspection of realization of the 5S rule is executed once a month by chosen team implementing the 5S rule – the control team [2].

## **IV-GENERAL MISTAKES AND SUGGESTIONS**

This paper suggests the general reasons behind the failure of 5 s:

### **1.No Process Improvement Strategy**

First and foremost, implementing 5s is a long term strategy that requires commitment from the whole organization. Strategy is People rather than Process Dependent, therefore creating a clear vision will help an organization create a culture of continuous improvement and is critical to achieving a 5s philosophy. Assigning clear responsibilities and committing 100% will allow the organization to achieve the direction desired. Understanding the key performance indicators and setting timelines for when to start must be defined so the organization has a baseline for improvement.

### **2.Lack of Top Management Support**

Organizations must create 5s experts and change practitioners to meet 5s process improvement goals. Without the full backing of top management, any amount of 5s efforts can't be fully realized. 5s requires organization leaders to be inspiring and relentless in their pursuit of continuous improvement within the organization. 5s is not a project – without adequate leadership improvements will not survive in the long term. 5s involves a change in the mind-set for achieving continuous improvement and senior management must be at the head of developing this attitude and culture among employees.

### **3.Lack of Involvement**

Employee participation is vital to achieving long term 5s goals. Implementing 5s is a cultural and people change. Managers need to talk to their staff; Employees typically have more in-depth knowledge and visibility on their work. The greater the line of communication the greater chance employees will support process improvement initiatives. Expecting success without gaining proper insight and mutually engaging employees is a recipe for failure.

### **4. Not Educating Employees**

Management needs to effectively communicate the changes to their employees and provide proper training.

## **V-DISCUSSION**

5S is firstly the daily organisation maintenance and cleaning of an area or process daily is the key not weekly or monthly it's too late by 5s is also the building blocks for developing an entire and complete lean culture within the organisation. Only implementation of the 5S or Workplace organization is not sufficient. Continuous monitoring and controlling the all 5S activities is also important and it can be monitored by conducting the questionnaire survey at regular interval. If the responses by the respondents are poor, then it reflects the degradation of the workplace organization.

### **Benefits of implementing 5S are as follows-**

- Workplace becomes cleaner, safer, well-organized and more pleasant;
- Floor space utilization is improved;

- Floor space utilization is improved;
- Time for searching tools, materials and document is minimized;
- Productivity of the organization improves together with the quality of products and services.

**VI- CONCLUSION**

The paper presented the methodology for implementing the 5s. Thus 5s is not based for industrial purpose but also it relates to every organisation which results in overall improvement of the organisation. Effective implementation of the 5s activity depends on the commitment of the top level management, total involvement of the staff at all level within the company and taking 5s as way of life rather than a tool.



The 5s activities should continuously monitored using questionnaire survey and improved if degrades. The 5S improves organizations performance in terms of higher productivity, better quality, less accidents, clean, safe and healthier working environment.

**REFERNCES**

- [1] *J. michalska, D. Szewiczek, "The 5s methodology as a tool for improving the organisation", Journal of Achievement in Material and Manufacturing Engineering, pp. 211-214, volume 24 issue on 2 oct 2017.*
- [2] *Ajay Anantrao joshi, "A review on seven s (7s) as a tool of organisation", International journal of innovation in engineering and technology, pp. 19-26, volume 6 issue 2 Dec. 2015.*

- [3] *Farzad Behrouzi, Kaun Yen Wang, "Lean Performance Evaluation of Manufacturing System", A dynamic and innovative approach, pp. 388-395, 2011.*
- [4] *J. Michalska, D. Szewiczek, "The 5S methodology as a tool for improving the organization", Journal of Achievements in Materials and Manufacturing Engineering, Volume 24 Issue 2, pp. 211-214, October 2007.*

**Details of all Authors**

Sr.no.	Photos	Details
1.		Name: - Sahil A. Yadao Student Mechanical Government College of Engineering, Nagpur
2.		Name: - Akshay Shinde Student Mechanical Government College of Engineering, Nagpur