

# Design and Implementation Strategies of 5S in Industry

**Nilesh C Kanojiya**  
nckanojiya6@gmail.com,  
nilesh.kanojiya@raisoni.net

G. H. Rasoni Institute of  
Engineering & Technology,  
Mechanical Engineering  
Department, Nagpur-440016,  
Maharashtra, India

**Abstract**— The quality and cost of an item are basic parameters which draw in the customers. It is hard to accomplish the ideal quality at the modest creation cost. Subsequently it is important to utilize subjective strategies underway procedures and decrease pointless expenses simultaneously. 5S procedure parameters straightforwardly impact the quality and cost of an item. 5S is a way of thinking and a method for arranging and dealing with the workspace and work process. 5S is essentially 5 Japanese terms, with S as introductory: Seiri (Short), Seiton (Set), Seiso (Shine), Seiketsu (Standardize), Sitsuke (Sustain). It's a fundamental establishment of Lean Manufacturing. This paper depends on the systems and strategies utilized for execution of 5S of a manufacture industry. By studying the effects of 5S on the industry, increased productivity, reduced time, reduced cost, increased space, increased moral of workers was observed. Thus, the review confirms the efficiency of 5S methodologies to identify eliminate problems in an industry. From the design of old and new layout of industry clear that there is an urgent need of 5S implementation in C B industry Nagpur plant for the betterment of good working atmosphere as per as industry and workers point of view.

**Keywords**—5S, Workplace Management, Waste Management, Quality Improvement, Productivity, Design.

## I. INTRODUCTION

The quality and cost of an item are basic parameters which pull in the customers. It is hard to accomplish the ideal quality at the modest creation cost. Subsequently it is important to utilize subjective strategies underway procedures and lessen unreasonable expenses simultaneously. In many research papers the 5S implementation strategies are defined line, the past techniques will most likely be unable to accomplish the outcomes. Design the 5S Methodology for said industry and implemented the S factors in particular area of work and concluded the importance of S Parameters of their organizations [1]. They studied the industry layout and

after they decided for how the Implementation of 5S & Kaizen will be carried out in ABC Industry and how much the 5S will change the working atmosphere of any industry [2]. Focus on the direction and highlighting the 5S contribution in any organization & also gives the brief explanation about how to implement the S strategies in organizations [3]. It is a technique for set up and keeps the nature of workplace in an organization, with the end goal that they can compose and keep up organizations which required less space, human exertion, time, quality. 5S provide guidance or thought regarding how we consider a work environment and give an establishment for significant implementation. 5S is a method developed by Japan. It rearranges the workplace as well as lessens the wastage and is a way of thinking and a method for sorting out and dealing with the workspace and work stream with the aim to improve productivity by taking out waste, improving the stream. A way of thinking dependent on five Japanese terms used for making and supporting an efficient work environment that is increasingly proficient and profitable in operation. 5S incorporates Seiri (Short), Seiton (Set), Seiso

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(Shine), Seiketsu (Standardize), Sitsuke (Sustain) [4]. Studied on the techniques which are suited for the implantation of 5S in any type of manufacturing organization & concluded the importance of 5S [5]. They reviewed many research articles for 5S practices & concluded their study about 5S implementation and its importance [6]. It is the most significant issues of any industry or association is to have specialist and friendliness utilize in a decent working atmosphere so as to cause them to feel better and get more vitality to finish their work. 5S is to improve the modern advantage and working state of representatives [7]. Explained the different steps involved in the implementation of S Strategies for making better organization working atmosphere [8]. The Review has been taken on 5S Implementation; on the basis of various research articles the researchers are very clear about the Importance of S parameters for any type of organizations [9]. They studied about how the Implementation of 5S Practices in the any Manufacturing Companies to be done [10]. After studying the many research article, it is clear that the purpose of 5S is same as per the requirement of the organization & its work environment and hence in this study, the focus on 5S implementation strategies & its implementation for the betterment of work environment and result of it directly in terms of the progress of industry and for their workers efficiency.

## II. METHODOLOGY

Following are the Implementation Strategies or Methodology of 5S In C. B Industry Plant, Nagpur

### A. Short (1S) as shown in Figure. 1

Following are the steps of implementing 1S,

- Remove all the unwanted things that are at work place
- Take all items which is not necessary for current manufacturing or operations.
- Collect those items which is only necessary
- Only keep those things that we have to use.
- All the things were sorted by using the criterion
- Necessary
- Unnecessary

- May not be necessary
- Identification for the causes of waste material was made
- Rules and regulations were displayed in the workspace



Figure.1 Implementation Steps No.1

### B. Set (2S) as shown in Figure.2

Following are the steps of implementing 2S,

- Decide place for necessary equipment
- Mark and tag the unnecessary and necessary items
- Tag the item which can be easily identified by using tag
- Determine the items tag them individually each and every items according to their use.
- Respective places were defined for all sorted things.
- Pints were used for marking different storage places
- Arrangement was made so that tools were easy to access.



Figure.2 Implementation Step No.2

### C. Shine (3S) as shown in Figure.3

Following are the steps of implementing 3S,

- Cleaning of work place removal of dirt and also removal of dust particle

- Keep the work piece neat and clean
- Product must be shine after the shining process
- Regular cleaning of the maintained of marching. While existing
- Plan for cleaning the workspace was made
- Shelves were cleaned.
- Floors were cleaned
- All the tools were cleaned
- All the faults in the machine were detected and were cleaned
- Electric boards were insulated for workers safety



Figure.3 Implementation Step No.3

#### D. Standardize (4S) as shown in Figure.4

Following are the steps of implementing 4S,

- Keep up a situation where S1 to S3 are actualized in a similar way all through the association.
- Offer chances to workers to take dynamic part in the advancement of these measures.
- Maintain neat and clean environment.



Figure.4 Implementation Step No.4

- Work only after short, set and shine.
- Creation of procedures for 4s was done
- Creation of checklists for this procedure was made

- Checklists were visibly displayed in workspace
- Job responsibilities were divided

#### E. Sustain (5S) as shown in Figure.5

Following are the steps of implementing 5S,

- Maintain continues working condition
- Involve all the 5s methodology.
- Analyze the '5S' rules for legitimate work environment the executives.
- Encourage the support of all, for consistency in '5S' exercises.
- Made the workers aware about 5S by continuous training.
- Workers were rewarded for following rules and regulation and for good performance.
- Poster and slogans of 5S were visually displayed in the workspace.

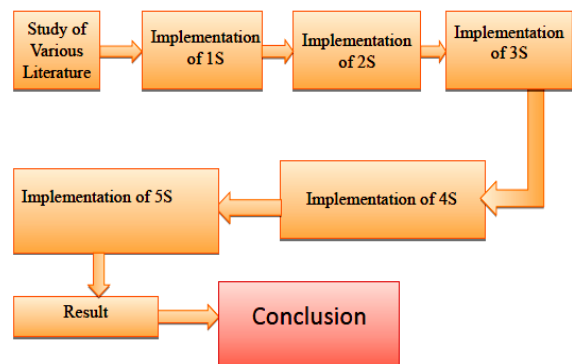


Figure.5 Process of implementation strategies of 5S

### III. DESIGN

Following are the Design Of 5S Implementation Layout of C B Industry Nagpur Plant

#### A. Old Layout Design before 5S Implementation:

As shown in Figure. 6 representing the layout of C B Industry Nagpur plant before the 5S Implementation. In this all the machine, storage, waste material etc. are in scattered manner, this are the only particulars which are lowering the workers work efficiency and environment indirectly, hence there is an urgent need to modify the existing layout with the new layout of plant with the implementation of all 5S technics and related work input.

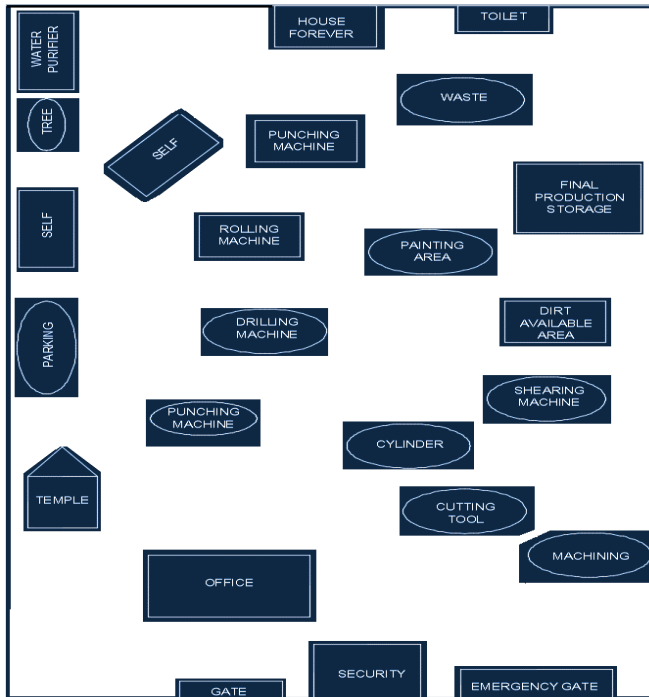


Figure. 6 Design of Old Layout before 5S Implementation, at C B Industry Nagpur Plant.

**B. New Layout Design after 5S Implementation:**

As shown in Figure. 7 representing the layout of C B Industry Nagpur plant i.e. New Layout Design after 5S Implementing in plant i.e. machine, storage, waste material etc. are to be maintained as per the rules of 5S technique. From the design of old and new layout of industry, it is cleared that there is an urgent need of 5S implementation in C B industry Nagpur plant for the betterment of good working atmosphere as per as industry and workers point of view.

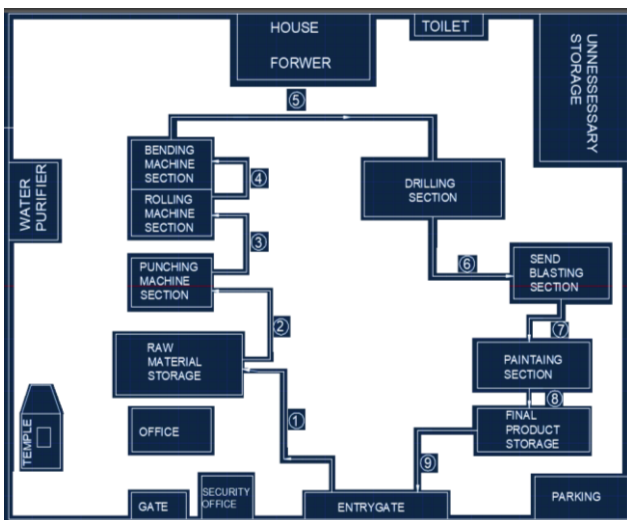


Figure. 7 Design of New Layout after 5S Implementation at C B Industry Nagpur Plant.

**IV. RESULTS AND DISCUSSION**

**A. Results of 5S Implementation:**

This paper has demonstrated the benefits of implementing 5S in any organisation. Thus, the review confirms that efficiency of 5S methodologies to identify and eliminate problems of industry as per following terms.

- Productivity got increased
- Time saving in searching for tools was reduced
- Expenses for the unwanted materials got reduced.
- Availability of more space.
- Morale of the workers increased.
- Chances of loosing of useful things got reduced
- Maintenance cost got reduced
- Reputation of company got increased
- Safety of workers got increased and safe working environment.
- Material travel time got reduced.
- Moral of the workers got increased.
- Proper communication between workers.
- Teamwork got increased.
- Neat and clean workspace.
- Defects got reduced etc.

**B. Need to Plan Safety – 6S**

Following point shows the importance of 6S implementation for any industry.

- Some companies like to include a 6S in their 5S program: Safety. When safety is included, the system is often called 6S. The Safety step involves focusing on what can be done to eliminate risks in work processes by arranging things in certain ways.
- This might involve setting up workstations so they're more ergonomic, marking intersections—such as the places where forklifts and pedestrians' cross paths—with signs, and labelling the storage cabinet for cleaning chemicals so people are aware of potential hazards. If the layouts of the workplace or the tasks people perform are dangerous, those dangers should be

reduced as much as possible. That's what the sixth S focuses on.

- Some people consider safety an outcome of performing the other five S's appropriately, and as a result say a sixth S isn't necessary. They think if the workspace is properly organized and cleaned and uses helpful visual safety cues, a separate safety step is unnecessary.
- Neither approach to safety is right or wrong. But however, a business wants to approach safety, it should be aware that paying attention to safety is important.

#### V. CONCLUSIONS

Following are the concluding points of the entire study and implementation of 5S Techniques in C B Industry Nagpur Plant.

- The study shows that 5S is very effective technique for improving productivity of any organisation and increasing the safety of worker in an organisation.
- From the design of old and new layout of industry clear that safety implementation strategies are the need in C B industry Nagpur plant for the betterment of good working atmosphere as per as industry and workers point of view.
- The implementation result shows that after 5S techniques ultimately the workers work efficiency and work precision will defiantly increase.
- After revising the layout of the plant, will defiantly increases the performance graph of industry in positive direction.

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#### REFERENCES

- [1] T. Lee, S. Pilon, "The Application of the Toyota Production System lean 5S Methodology in the Operating Room Setting". Vol. 54, Nursing Clinics of North America, pp. 53-79, March 2019.
- [2] M. Mokharkar, A. Sahu, A. Shahare, "Implementation of 5S & Kaizen in ABC Industry". *Int. Journal for Scientific Research & Development*, Vol. 4, pp. 23-25, Febuary 2017.
- [3] J. Randhawa, I. Ahuja, "5S implementation methodologies: literature review and directions". *Int. J. Productivity and Quality Management*, Vol. 20, January 2017.
- [4] R. Agrahari, P. Dangle, K. Chandratre, "Implementation of 5S Methodology in the Small Scale Industry: A Case Study". *Int. journal of scientific & technology research volume 4*, pp.180-187, April 2015.
- [5] S. Deshpande, V. Damle, M. Patel, A. Kholamkar, "Implementation of '5s' technique in a manufacturing organization: a case study". *Int. Journal of Research in Engineering and Technology Vol. 4*, pp. 136-148, January 2015
- [6] J. Singh, V. Rastogi, R. Sharma, "Implementation of 5S practices: A review". *Uncertain Supply Chain Management*, Vol.2, pp. 155-162, May 2014.
- [7] V. Patel, H. Thakkar, "Review on Implementation of 5S in Various Organizations". *Int. Journal of Engineering Research and Applications Vol. 4*, pp.774-779 March 2014.
- [8] K. Kumar, S. Kumar, "Steps for implementation of 5S". *Int. Journal of Management, IT and Engineering Vol. 2*, pp. 402-416, June 2013.
- [9] A. Ghodrati, N. Zulkifli, "A Review on 5S Implementation in Industrial and Business Organizations". *IOSR Journal of Business and Management Vol. 5*, pp. 11-13, Nov. - Dec. 2012.
- [10] Md. Nizam, N. Kamaliana, B. Md Deros, W. Hasrulnizzam, "Implementation of 5S Practices in the Manufacturing Companies: A Case Study". *American Journal of Applied Sciences*, Vol. 7 no.8, pp. 1182-1189, August 2010