

Application of 6S Approach in Manufacturing Industry - A Case Study

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ABSTRACT

The main aim of this study is to resolve the problems of manufacturing industry. The 6S technique is a team oriented technology. This concept can be applied to achieve the desired results in the manufacturing plant. This technology provides continuous upgradation in the each department according to time. The main issue of manufacturing industry is to maximum use of resources and manpower in modern time. The main aim of 6S technology is to maximum use of all resources and gets maximum output from all the resources. This technology resolves the all drawbacks and issues come in the workplace. This technology increases the work efficiency of plant as well as quality and safety of plant. This technology helps the manufacturing industry to achieve better quality as well as better customer satisfaction. This technique can work as a team work in the organization. The 6S technology can be used in any organization to improve the performance. This technique is worldwide popular in the modern time. We can get maximum output from all resources by using 6S technology in our work environment. Use of this technology can reduce the 80 to 90% time in material handling and tool searching in the manufacturing plant or workplace. This technology gives quick response to every problem and resolves the problem very quickly at the workplace. We can eliminate 90% of accidents at the workplace after implementation of 6S technology.

Keywords : Improvement in overall efficiency, 6S Technology, 6S Technique, Increasing Performance, Creating good work environment, 6S methodology, 6S method, 6S approach, Safety, Safe work environment.

I. INTRODUCTION

The 6S is a technique used to increase the work performance, productivity and safety of manufacturing unit. The 6S technique can be implemented in all type of manufacturing industries like small size, medium size and large size industries etc. The 6S technique is easy to implement in the any organization.

The 6S technique constructs a good work environment in the manufacturing industry. The 6S technique benefits in increasing the work efficiency of workers in the industry. The 6S technique creates a more discipline work environment in the industry.

The six phases of 6S technique are as follows:

1. Sorting
2. Set in order
3. Shine

4. Standardization
5. Safety
6. Sustain

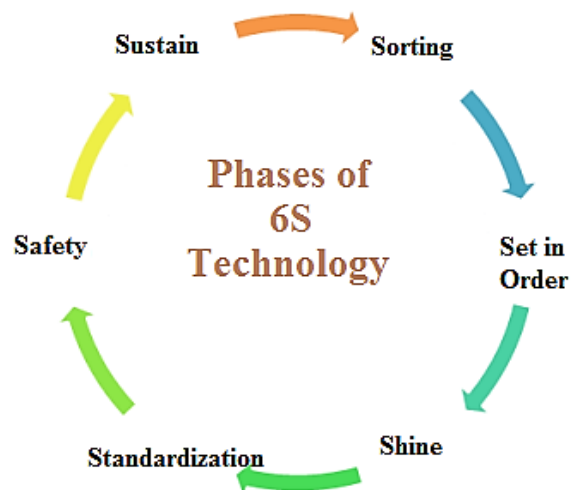


Figure 1: Phases of 6S Technology

The above figure is shows the all six phases of 6S technology. The figures shows explain the order of implementation of phases of 6S technology.

Objective of Study

- Full utilization of floor area at the workplace.
- To maintain the all materials, tools and equipment in an effective manner and do proper utilization of them.
- To increase the safety of workplace using all safety equipment.
- To make a better and safer work environment for the employees.
- To improve the efficiency of manpower and company.
- Reduces the wastage of material and manpower in the company.
- To improve financial performance of the business or company.

Methodology

The 6S methodology uses the maximum all resources and manpower to get maximum output. This is a technique to increase the individual performance of workers as well as overall performance in the manufacturing industry.

Sorting

Sorting is the process of identifying wanted and unwanted items at the workplace in the industry. Separate the wanted and unwanted items in the workplace. Apply red tag to unwanted items present at the workplace and remove them from there. The sorting is also known as Red tag activity. Sorting is the initial step of 6S technique.

Steps of “red tag” process in sorting:

1. Identify the unwanted items present at the workplace.
2. Attach red tags to the unwanted items.
3. Move the red tag items from the workplace.

The above steps are to follow to remove unwanted items from the workplace. Removing of unwanted items from workplace creates free floor area for working. The material handling is easy after

implementation of sorting at the workplace. More floor area is free to perform work activities at the workplace. The figures 1 and 2 show the effect of implementation of sorting at the workplace in the industry.



Figure 1. Before implementation of Sorting



Figure 2. After implementation Sorting

Set in Order

Set in order means arrange the all items, machines and tools in planned and correct order to reduce the searching time for them at the workplace. The set in order is the process of organizing all items, machines and tools in defined order for maximum utilization of them. The main purpose of set in order is to search the materials and tools easily at the workplace and reduces the production time.

All materials and tools are placed at a specific defined place in the workplace. Everyone should have to put the tools after use at their defined position or place. This process arranges the all resources in a specific way or order for make them easily accessible to everyone. This reduces the material handling time for the raw materials. After implementation of set in order no time wastage in searching the tools and materials.



Figure 3. Before implementation of Set in Order



Figure 4. After implementation of Set in Order

Shine

Shine is a process to make everything shiny, neat and clean at the workplace in industry. For creating and maintaining better working condition at the workplace, always neat and clean the all machines, tools and floor area daily. Sweep the floor after the end of working shift at the workplace and remove the dust, oil, grease and other dirty item from the floor. Clean the all machines and tools after the use in the end of working shift at the workplace.

Daily cleaning of machines and tools increases their life. The floor area is free from dust and any rigid material. The neat and clean environment increases the work performance of workers. It also reduces the chances of accident.



Figure 5. Before implementation of Shine



Figure 6. After implementation of Shine

Standardization

Standardization is the process to maintain the first 3S. There should be suitable standards to be followed for

creating better-quality workplace for the workers in the industry.

Standardization of Activity		
	Activity	Responsibility
1.	Clean the floor area before start of working shift	
2.	Remove red tag items from workplace and store them at appropriate place	
3.	Check all machines and tools before working	
4.	Remove all empty ballets from workplace and store them in a suitable place	
5.	Sweep the entire area at the end of shift	
6.	Place the all tools to their appropriate place at the end of shift	

Figure 7. Before implementation of Standardization

Standardization of Activity		
	Activity	Responsibility
1.	Clean the floor area before start of working shift	Sweeper
2.	Remove red tag items from workplace and store them at appropriate place	Supervisor
3.	Check all machines and tools before working	Engineer
4.	Remove all empty ballets from workplace and store them in a suitable place	Supervisor
5.	Sweep the entire area at the end of shift	Sweeper
6.	Place the all tools to their appropriate place at the end of shift	Machine operators

Figure 8. After implementation of Standardization

The main purpose of the standardization phase is creating best practices and get implemented these practices by each worker or employee regularly at the workplace. Without good standards, there is no system to monitor the improvements in the work performance at the workplace. Standards should be good and easy to understand for everyone at the workplace.

The standards should be followed by everyone in the workplace to monitor the improvement in the work environment. These standards help in achieving the desired goal in the work performance of individual as well as team of workers.

Safety

Safety is the process of making workplace safe for creating better working condition for workers. The main purpose of safety in 6S technique is to reduce the chances of accident at the workplace. The safety of workers is main issue in the industries. The implementation of this step at workplace increases the safety of workers. All safety equipment's should be present at the workplace to reduce the chances of accident. The workers should have to wear all safety kit like safety shoes, safety jackets, safety gloves, safety helmet etc. before entering in the workplace.

The first aid kit is mandatory to present at the workplace. The first aid kit should have all necessary medicines in it. At least one first kit with all necessary medicines present at the workplace for 20 workers. Safety officer should have to implement all safety rules and disciplines at the workplace. Everyone has to follow the safety rules at the workplace.

Fire Extinguisher present in Manufacturing Plant



Figure 9. Safety items available at workplace

Sustain

Sustain is the final phase of 6S technique. After implementation of all above five phases of 6S technique at the workplace, it is important to implement them regularly. Sustain is the process of maintaining all above 5S regularly at the workplace. It monitors the regular implementation of all five phases at the workplace. Sustain is a process to retain these standards continuously for years.

II. Conclusion

6S technique powerfully helps in achieving continuous improvement in the work performance and efficiency of any industry. The 6S technique increases the performance of workers in the organization. It delivers neat and clean, well-organized, safe working environment to the workers in the organization. This research clearly presented that training of workers about 6S technique is very essential for increasing work efficiency. Implementation of 6S technique is half the part and the other half is sustaining it regularly for years.

III. REFERENCES

- [1]. Deepak Dhouchak and Naveen Khatak, 6S Methodology and Its Applications, International Journal of Research in Mechanical Engineering, Vol. 4, Issue 02, ISSN: 2349-3860, 2017.
- [2]. Kumar and Kumar, Steps for Implementation of 5S, International Journal of management, IT and Engineering, vol. 2, no.6, pp. 402-416, 2012.
- [3]. Gheorghe Dulhai, The 5S strategy for continuous improvement of the manufacturing process in auto car exhausts, Management and marketing, vol. 3, no. 4, pp. 115-120, 2008.
- [4]. Deepak Dhouchak, Review of 6S Methodology, International Journal of Development Research, Vol.07, Issue 08, pp.14455-14457, August, 2017.
- [5]. R. A. Pasale, Prof. J. S. Bagi," 5S Strategy for Productivity Improvement: A Case Study", Indian Journal of Research, Volume: 2, Issue: 3, Issn-2250-1991, 2013.