

# To Improve Efficiency of the Production Process by Implementation of 5S

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**Abstract:** To be successful in today’s highly competitive environment, an organization needs to have the necessary parts in stock or have a reliable supplier to meet customers’ demands at a particular moment. Either way, an organization must have a practical, efficient method for managing production in order to stay in business and satisfy their customers because the customer requirement depends on quality, price and quantity of product. Plating of product is very important innovation in human life that has given speed to increase the material life of the product. Here we are going to study the problem that occurs in inner tube plating in production process line. This research helps in reducing the plating rejection at customer end with the help of various techniques. It is related to the placement of the inner tube in the proper place if it is not properly done, it leads to generation of mix up with fresh inner tube and other mixed material of plated tubes. The main objective of research is improving the efficiency of organization through 5’S and Visualization to know how to manage & control rejection in the production process.

**Keywords:** 5S, Brainstorming, Plating, Tubes, Efficiency etc.

## 1. Introduction

In this Research, the benefit of being “Lean” in the logistics of implementing theory into practice in the form of a 5S. The idea for the research came from the observation of inner tube production and processing line into an organization. 5S is one important tool of Lean Management and its main function is to eliminate non-value adding processes. As per observation, 5S can also be considered as a tool of organizing and cleaning of the whole production process. 5S comes from five Japanese words that begin with the letter “S”. These words that form the 5S system are Sort (Seiri), Set in order (Seiton), Shine (Seiso), Standardize (Seiketsu) and Sustain (Shitsuke). The 5S system saves wasted time and most importantly increases safety at production site. Implementing the system into the working environment enables the opportunity for continuous improvement. The reader will get a better understanding of lean in logistics and understand the importance of a well-organized, safe and efficient working environment with the help of quality improvement tools. It will demonstrate and measure different steps of lean process with figures and different measurement tools. For improvement in shop floor at the production shop by using 5’S and brainstorming is important tool. By doing brainstorming and keeping 5’S practices daily we can improve

efficiency of the organization.

## 2. Objectives

- To solve the customer problem arising due to mixing of fresh and Mix-up Plating tubes.
- To implement the 5S at production process line.
- To improve efficiency of the organization by using brainstorming and 5S techniques.

## 3. Hypothesis

- Implementation of 5S leads to improvement in quality of dispatched at customer end.
- All workers & management are seriously involved in brainstorming & 5S implementation.

## 4. Research method

Basically for this research the Descriptive method is used because this method aimed at highlighting on current issues and problems through a process of data collection and site observation that enables them to describe the current situation more clearly and completely. The research study focus on what, where, when, who and how to solve the current problems and issues about mixing of tubes. So by using the descriptive method this problem solved on the basis of observation and implementation of 5S technique in the organization.

Table 1  
Research method

<b>Research Type</b>	Descriptive research
<b>Industry Type</b>	Manufacturing Unit
<b>Primary Data</b>	Observation on production line. Face to face communication with supervisors.
<b>Secondary Data</b>	Books, Articles and Websites.
<b>Analysis of Data</b>	Data, Graphs & Figures.

## 5. Literature review

The Authors M. Shabeena Begam and R. Swamynathan describes the topic “Current Trends on Lean Management” in the year 2013. A detailed literature survey has been conducted to identify the lean practices in various manufacturing industry. This paper will further assist the organizations to improve its process, align it to the requirements of its customers and

relentless contribution to manufacturing sector to enhance productivity, quality and competitiveness is immense.

The Author Mayank Dev Singh, Swati Singh, Abhishek Chokshi, Harshad Chavan, Dhruipsinh Dabhi describe the topic “Process Flow Improvement through 5 ‘S Kaizen and Visualization”. This research is based on lean manufacturing tools like 5S and Kaizen. 5S is tool to ensuring systematic organizational environment, Kaizen is continuous improvement through small steps to obtain economical result of the organization and Visualization is technique of creating images, diagrams or animations of firm’s activity which are helpful and effective way of communication for all people connected with firm.

### 6. Data analysis

#### A. Mixing of Fresh & Plating tubes in the dispatched material at customer end

For plating the tube come from customer end is the purpose of the organization but due to miss handling of material fresh tube and plated tube get mixed at the time of actual process line. Therefore, some different application of the tube gets mixed during the dispatch of materials.

There where fifteen complaints registered as per following table.

Table 2

15 Days Record of registered customer complaints about dispatched material

Day No.	Date	Total Dispatch	Plated	Mix-up Plating Tube	Fresh Tube
1	03.05.2018	8000	7975	15	10
2	06.05.2018	8500	8490	3	7
3	08.05.2018	8500	8492	3	5
4	09.05.2018	8000	7970	18	12
5	11.05.2018	8000	7980	12	8
6	13.05.2018	8000	7985	12	3
7	14.05.2018	8000	7970	15	15
8	15.05.2018	8500	8430	38	32
9	18.05.2018	8500	8492	3	5
10	20.05.2018	8000	7940	35	25
11	21.05.2018	8000	7985	6	9
12	22.05.2018	8000	7982	8	10
13	23.05.2018	8000	7988	7	5
14	27.05.2018	8500	8491	7	2
15	29.05.2018	8500	8493	6	1

#### B. Data Collection

The above table shows that, the total number of plates dispatched records of fifteen days of month June-2018 in process lines. But there is some mixing of fresh tubes and other materials because miss handling of materials from workers at the time of dispatched.

Below Graph shows that, the total dispatched records of fifteen days in graphical presentation and variations through X & Y Axis. The X-axis defined the total number of dispatch days & Y-axis defined as Number of mixing tubes i.e. Fresh and Mix-up Plating Tubes.

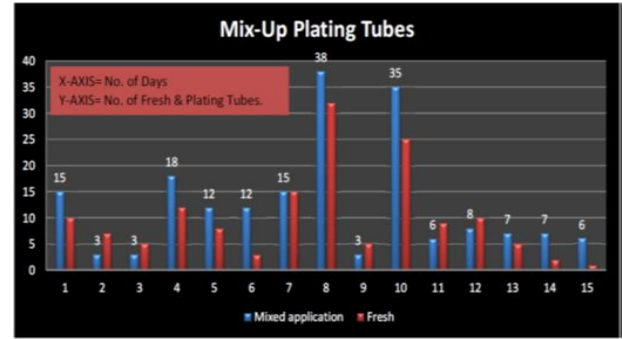


Fig. 1. Comparison of fresh and mix-up plating tubes



Fig. 2. Before inward & outward inspection area

Above Fig. shows that, the area of inward and outward inspection is same and that’s why the fresh and plated tubes are mixed at the time of dispatched of materials.

#### Solution: By using Brainstorming Technique:

From Table-2, Fig. 1, and Fig. 2, show that, how the defects are getting rises day by day in the dispatching process of the material. To solve this problem with the help of brainstorming were done on the production process line.

In this brainstorming method the new ideas were coming out to solve that problem i.e.

- To implement 5S in organization for improving the efficiency.
- To do partition in inspection area.
- To change the place of inward inspection area.
- To change the place of material loading and unloading.



Fig. 3. After separation of inward & outward inspection area

After applying the brainstorming method, the result gets improved and finally the customer ended complaints was solved. Hence, after fifteen days there were no problems found in dispatching process line.

Table 3

15 Days Record of registered customer complaints after brainstorming

Day No.	Date	Total Dispatch	Plated	Mix-up Plating Tube	Fresh Tube
1	01.09.2018	8000	7998	0	1
2	03.09.2018	8000	7999	1	0
3	04.09.2018	8500	8499	1	0
4	07.09.2018	8000	8000	0	0
5	10.09.2018	8500	8500	0	0
6	13.09.2018	8000	7998	1	1
7	14.09.2018	8000	7999	0	1
8	16.09.2018	8000	8000	0	0
9	18.09.2018	7900	7900	0	0
10	19.09.2018	8000	8000	0	0
11	20.09.2018	8000	8000	0	0
12	21.09.2018	8500	8500	0	0
13	24.09.2018	8400	8400	0	0
14	25.09.2018	8000	8000	0	0
15	28.09.2018	8000	8000	0	0

From the above, it is cleared that the quality of dispatched process is improve and reduced the complaint of customer by using brainstorming.

**C. Implementation of the 5S**

The whole process started by taking pictures. All the faults and shortages were photographed so that it is easier to observe the points which should take into notice. The pictures are playing an important role in this research so it was really important to take actual photos in production line.



Fig. 4. Before implementation of 5S

In the above figure from the production area, before implementation of 5S the materials are not organized and unnecessary items are located in the area and also same time no supervisor present continuously at the production line for observation.

**Solution:**

To solve above problems, the workers and management ready to implement 5S at production line.

**D. SEIRI**

Seiri means remove all unnecessary items from production or operation site for saving and recovering space for other work process. Some control questions prepared for workers and management for problem solution like:

- Are all measuring and dispatched tools properly classified?
- Are all supervisors present on production line?

**E. SEITON**

Seiton means preparing the necessary items neatly and systematically on production line. So, that they can easily be taken and returned in the original place after use. Some control questions prepared for workers and management for problem solution like:

- Has the floor any irregularity or other difficulties for the supervisor’s movement?

**F. SEISO**

Seiso means to keep everything swept and clean. This is done with the objective of inspecting for problems and taking faster corrective actions. Some control questions prepared for workers and management for problem solution like:

- Are the dusts or remains of metal found around the Dispatched of Materials?
- Is Production line of plating clean?

**G. SEIKETSU**

Seiketsu means to create a consistent way of doing tasks and procedures. Some control questions prepared for workers and management for problem solution like:

- Is attention given to keep workplace neat and clean with supervisor?

**H. SHITSUKE**

Shitsuke means to make it a habit of properly maintaining correct procedures of dispatched. The directors should explain the importance of 5S to their workers and management members. This inspection is executed for plating distribution in fresh and various mixing of plating material at production line.



Fig. 5. After implementation of 5S

In the above figure, after implementation of 5S the materials are arranged in good manner with some notification in numbers or alphabets for all the employees know where the materials are

located. Also the separate supervisor is available on regular basis for improving and checking quality of materials.

### 7. Advantages after implementation of 5S

- Process Improvement.
- Proper usage of dispatched area.
- Elimination of plating mix-up materials.
- Quick informing about plating mix-up.
- Increasing efficiency of workers.

### 8. Conclusion

Continuous improvements have become especially important in the Indian scenario. On that basis, this paper demonstrates the efficient implementation of 5S technique leads to subsequent improvement in quality of dispatched materials and reducing the mix up of plating tubes at customer end. It also helps to eliminate the complaint of customers about mixing dispatched plating tubes. The 5S improves environmental performance on production line and increasing efficiency of workers to dispatched material without mixing.

The implementation of the 5S system of rules leads to the following effects regarding the improvement in quality of dispatched process:

- Observable results within a short period of time.
- Workers get used to order and discipline about dispatching of plating tubes.
- Reduction of Complaints.
- Improving Efficiency of works.

### References

- [1] Mosin Shaikh, Business Research Method, Vishwakarma publication, 2014.
- [2] C.R.Kothari, Research Methodology, New age International Publishers, 2004.
- [3] B.Mahadevan, Operation Management, Pearson publications, 2010.
- [4] M. Shabeena Begam, J. Sekkizhar and R. Swamynathan, "Current Trends on Lean Management", International Journal of Lean Thinking / Volume 4, Issue 2, Dec. 2013.
- [5] Mayank Dev Singh, Swati Singh, Abhishek Chokshi, Harshad Chavan, Dhruvsinh Dabhi, "Process Flow Improvement through 5 'S Kaizen and Visualization," Vol. 4, Issue 3, March 2015, IJIRSET.
- [6] Vipulkumar C. Patel, Dr. Hemant Thakkar, "Review on Implementation of 5S in Various Organization", Journal of Engineering Research and Applications, Vol. 4, Issue 3 (Version 1), March 2014.
- [7] Soumya R. Purohit, "Implementation of 5S Methodology in a Manufacturing Industry", International Journal of Scientific & Engineering Research, Volume 6, Issue 8, August-2015.
- [8] Arash Ghodrati, Norzima Zulkifli, "The Impact of 5S Implementation on Industrial Organizations' Performance", International Journal of Business and Management Invention, Volume 2, Issue 3, March. 2013.