Implementation of 5S in a Storeroom of a Small Scale Industry

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Abstract- 5S is a Lean manufacturing tool used to organize, order, clean, standardize and continuously improve a work area. This has been a widely used approach in many Industries and is the foundation of Lean manufacturing. However, Industries in Nepal are lacking the awareness of 5S and its advantages. This paper deals with the implementation of 5S in a Storeroom of a small scale Industry in Nepal.

Keywords- 5S, Sort, Set in order, Shine, Standardize, Sustain

I. INTRODUCTION

5S is one of the fundamental lean manufacturing technique. It was first introduced in Japan and was identified as one of the techniques that enabled Just in Time Manufacturing. 5S is a method of eliminating waste that contributes to errors, defects, and injuries in a workplace. It is a tool for organizing and improving a workplace. Each S has its own task and is followed in a sequence. In a layman term, 5S can be defined as organize, Clean, and Repeat.

5S consists of 5 Phases: They can be translated from Japanese as

i. “Sort”
ii. “Set in order”
iii. “Shine”
iv. “Standardize”
v. “Sustain"

In case of this paper, the storeroom does not follow the 5S methodology. The lack of housekeeping in the storeroom has caused a loss for the company as a great deal of time and resources are spent in searching for the components in the storeroom. Due to this, there has been an instance when workers were searching for an item and later on finding it below other pieces of equipment which took a lot of time and hard work to get. There is also lack of safety in the storeroom. Similarly, there was the following problem in the storeroom, like,

i. Finding an item in the storeroom was very hectic and required a great deal of time and resources.
ii. Equipments were not arranged ergonomically.
iii. There was no list which showed what are present in the Store house.
iv. Operators were not aware of 5S strategies.
v. No standard procedure were implemented to keep the equipments in the room checked for maintenances.

Sort (Seiri)

Seiri is a first step in 5s, it focuses on eliminating and removing of all unnecessary items from the workplace that are not needed for current production operations. This phase is known as the first pillar of 5S. While sorting out the items the following questions should be asked;

i. What is the use of this item?
ii. When was it last used?

By finding out the following answers we can group it in Different department and find out whether it is Useful, Useful or Unknown.

i. If the item is tagged useful note it down in a piece of paper and mention its department and give its description.
ii. If the item is tagged useless separate it from the rest of the items
iii. If the item is unknown give it a red tag so that everyone can look into the item and give a decision whether it's useful or useless and act accordingly.

Set in Order (Seiton)

Once all the useless items are removed from the room, a lot of space gets empty and in this phase all the useful items are arranged so that they can be easily selected for use. This step is very important as we get to know which item is kept where and in turn helps to eliminate unnecessary employee and material movement.

When allocating a space for an item the following questions should be asked

i. Who uses which item?
ii. How frequently are the items being used?
iii. Which place will be more effective for an item?

One key point to remember is when allocating a space the frequently used items are kept close to the operator.

Shine (Seiso)

Once all the equipment and materials are on place the workplace area is thoroughly cleaned. This phase focuses on removing dust and dirt from the work space so that the space is safe and pleasing to work in. This is also known as the housekeeping phase of 5s.

Standardize (Seiketsu)

Once all the hard work is done and everything is organized we need it to stay that way so a set of rules and procedure are made to enforce all 3s. Standardize makes 5s different from other projects as in this phase we establish procedure to ensure that the first 3 S are implemented properly. This phase is also considered as most important step in 5s since without standardizing the work space can go back into its original state.

Sustain (Shitsuke)

Sustain is the final step of 5S and is also considered the challenging one. Once the standard procedure are made this phase task is to keep the 5s running smoothly, but also of keeping everyone in the organization involved. Sustain is all about making the 5s a long term program and not just a short term program.

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II. LITERATURE REVIEW

5S:
R. S. Agrahari, P.A. Dangle and K.V. Chandratre did a case study in a small scale Industry regarding 5S Methodology. They have stated in their paper that 5S is a foundation of Lean Manufacturing which gives a necessary ground work for workplace improvement. They even make it clear that 5S also intends to build a stronger work ethic within the management and workers who would be expected to continue the good practices. After implementing 5S they found that Workplace was better organised, Cost reduction, prevention in loosing tools, increased efficiency etc.

Arash Ghodrati, and Norzima Zulkifli paper shows the effectiveness of 5S implementation on organizational performance. They did data collection by distributing questionnaire among five organizations that are following 5S technique. The results was obtained by comparative measurement of organizational performance before and after 5S implementation. The results shows that 5S is an effective tool for improvement of organizational performance, regardless of organization type, size, its production or its service.

III. PROBLEM STATEMENT

In Shyam Baba Flour and Rice Mill, much time was wasted in finding the equipments due to unmanaged and misplaced materials. So to increase the productivity it was necessary to reduce the non value adding time.

IV. METHODOLOGY

i. All the equipments and materials were taken out of the racks and laid out on the floor.
ii. Each items are given a tag of Useful, Useless or Unknown
iii. The Useful ones were kept aside and useless ones were scrapped. The items with Unknown tag were given a red tag.
iv. By using a 5S Red tagging strategy we decided which one to keep and which ones to scrap.
v. Now all the useful items were arranged according to its department.
vi. A list of items in the store space was made and stuck it on the board.
vii. The store space was cleaned thoroughly.
ix. A group of personals are given responsibility to implement the given standard procedures.

CONCLUSION

In conclusion, we saw that 5S is an efficient tool of management which can bring great improvement in housekeeping, environmental condition, health and safety standards. In Shyam Baba Flour and rice mill we saw sort stage reduced clutters by getting rid of unwanted materials. Similarly, Set in order stage helped organize equipments so that it was easily found, this helped in reducing search time which then reduced non value adding time. After the 5S implementation the time spent by workers in storehouse reduced drastically and since materials are stored in its allocated space there was no case of misplacing of tool.

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