

# Implementation of 5S & Kaizen in ABC Industry

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**Abstract**— Manufacturing industry is one of the fastest growing industry today. In the competitive business the manufacturing companies have to pay attention for the improvement in productivity, quality, efficiency, safety and its service. Today, many industries are interested in the improvement of standards and techniques for best performance so they can reign over the present market scenario. Among various important parameters which considered being very important, two most important primary parameters are safety and quality. In this article, we will study various literatures related to 5S & Kaizen. Data is accumulated from different papers, this will help to study success factor of 5S & Kaizen. Primary data will be collected by personal observation and originated by the researchers for specific purpose for addressing research problems. Secondary data collected from various books, material, reports and data which is stored in the organization and provide by the HR people. The next step will be implementation of 5S & Kaizen in ABC Industry by applying PDCA cycle. [Note\*: Because of security reasons instead of company name we used ABC Industry].

**Key words:** 5S, Kaizen, Manufacturing Industry

## I. INTRODUCTION

### A. 5S

5S is a Japan originated technique and first developed by Hiroyuki Hirano. It include five words Seiri, Seiton, Seiso, Seiketsu and Shitsuke, which means Sort, Set in order, Shine, Standardize and Sustain respectively. It is one of the efficiently working tools of Lean Manufacturing. 5S is the foundation of all improvements and is the key component of establishing a visual workplace. The benefit of 5S technique is improvement in productivity, quality, efficiency and safety. Term of 5S given as:

- SEIR (sort): It this step the removal of all unwanted, unnecessary, and unrelated materials in the workplace is performed.
- SEITON (set in order): This step consists of setting things in an assigned place so that it can be accessed quickly as well as returned in that same place quickly.
- SEISO (shine/clean): This stage consists of cleaning up the workplace and giving it a 'shine'.
- SEIKETSU (standardize): This stage involves, Establishing the standard rules to maintain the hygiene and safe environment at the workplace. Standards should be very communicative, clear and easy to understand.
- SHITSUKE (sustain): The last step involves installing the self-discipline and culture that will sustain the program . and build awareness of the importance of 5S through re-training.

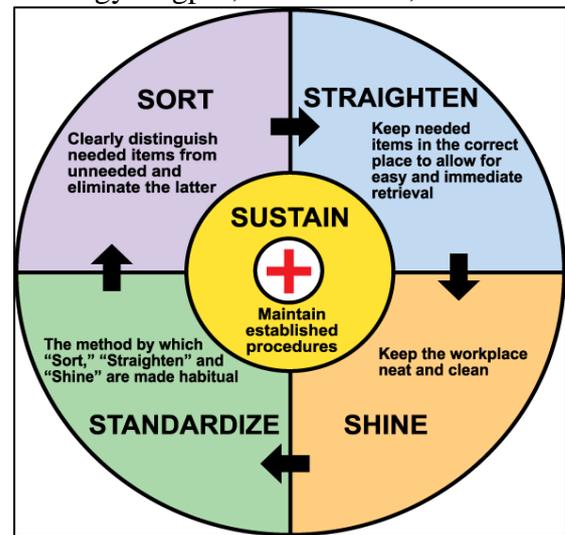


Fig. 1: 5S Processes

### B. Kaizen

Kaizen is a technique for continuous improvement of industry involving everyone in the organization from top management to managers then to supervisors, and to workers. Kaizen is a culture of continuous improvement by focusing on eliminating waste in all systems and process of an organization. The Kaizen strategy begins and ends with people.

There are two elements that construct Kaizen, improvement/change for the better ongoing and continuity. Lacking one of those elements would not be considered Kaizen. For instance, the expression of “business as usual” contains the elements of continuity with improvement. On the other hand, the expression of “breakthrough” contains the element of change or improvement without continuity. Kaizen should both elements.

## II. LITERATURE REVIEW

### A. Jagdeep Singh and Harwinder Singh

In this project the author has aimed to identify the effectiveness of 5S implementation in diverse industries to study employee performance and their attitude towards 5S. The result showed that 5S is an effective tool for the advancement of organizational performance, regardless of organization type, size, its production or its service and following findings achieved.

- system simplification increases the organizational potential and productivity
- Incremental improvements like kaizen strives to empower the workers, increase worker satisfaction, facilitate a sense of accomplishment there by creating a pride of work
- It not only ensures that manufacturing processes become leaner and fitter, but eliminate waste where value is added [1]

*B. T. Karkoszka, J. Honorowicz*

In this paper the author has presented a continuous improvement strategy aimed at motivating the legitimacy of implementation of kaizen system – the philosophy conducting to the continuous improvement of processes and products by the responsibility of all workers and following findings achieved.

- Kaizen is responsibility of all workers
- Kaizen could be connected with the range of duty, employee's creativeness practicality and efficiency of the idea, resources, deadlines in operations, involvement in accustoming the idea, possible success of idea, safety, quality, cost and time
- It can be applied in case of any organization which manages the quality by identification of the improvement area, selection of the key problem, definition of the cause of improvement, planning of measurement [2]

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The objective of this study was to compare the impact of implementing a Hybrid 5S (integrated with inventory management techniques and process improvement tools) along with two Traditional 5S's to improve healthcare warehouse operations and following findings achieved.

- This study showcases two implementation approaches for the lean tool 5S
- The participating warehouses faced the similar problems due to over/under stocked inventories, space constraints and poor layouts
- The study compares the impact of implementing hybrid 5S (integrated with inventory management techniques and process improvement tools) along with two traditional 5S's to improve healthcare warehouse operations [3]

*D. Mihail Aurel Titu, Constantin Oprean and Daniel Grecu*

In this scientific paper the author has presented a concrete way a study regarding the application of these concepts in a real organization which builds its business success on the phenomenon called KNOWLEDGE. we have selected a series of suggestions that can stand for a guide to use when implementing the Kaizen concept and following findings achieved.

- The Kaizen method is internationally acknowledged as methods of continuous improvements through small steps of the economical results of the companies
- the Kaizen management represents a solid, strategic instrument, with a view to reach and surpass the company's objectives
- The 5S technique represents a fundamental technique which allows the enhancement of efficiency and productivity while ensuring a pleasant organizational climate [4]

*E. Roman Bednár, Natália Horňáková, Helena Vidová*

In this paper the author has focused on the steps to implement lean methods related to logistics, because logistics includes many non-value added processes also present the results of a survey conducted in the V4 countries. Based on this survey the steps to implement the

methods of a lean logistics are proposed in the practical part, what is also the main aim of this paper and following findings achieved.

- Lean methods offer a space to effortless changes through which companies can achieve improving their market position
- Based on this survey the steps to implement the methods of lean logistics are proposed in the practical part
- Focused on steps to implement the lean method related to logistics because logistics includes many non-value added processes [5]

III. IDENTIFIED GAPS IN THE LITERATURE

By performing the extensive literature review. It has been observed that research up to day has studied the various parameters for improvement in productivity, quality, efficiency and safety. But there is limited research on the improvement in productivity, quality, efficiency and safety in lean manufacturing industries. The objectives of this research is to increase the communication between the Employees and Management. To beautify the workplace by simple means (reduction of waste). To enable the participants/Employees to learn about the 5S steps. To increase the safety and security issue of industry. To motivate participants/Employees to adopt 5S practices. To maintain discipline at workplace. To develop ideal guidelines for an effective implementation of 5S & KAIZEN for operation in the industry.

In this research we have divided the industry layout in number of sections and recorded every movable items for six days to trace the movement frequency of objects.

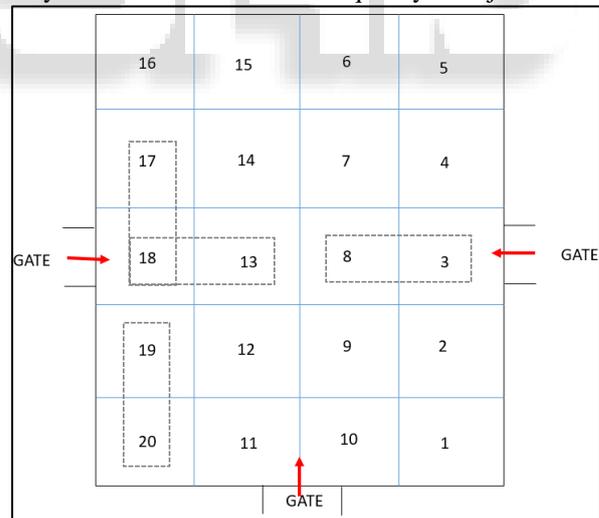
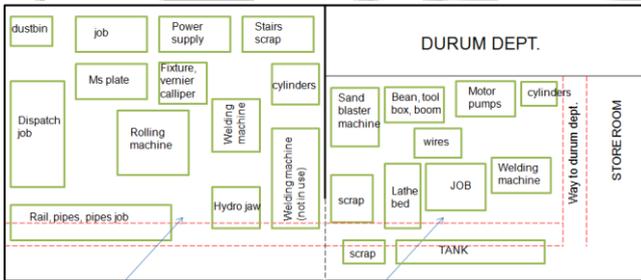


Fig. 1: Layout of ABC industry

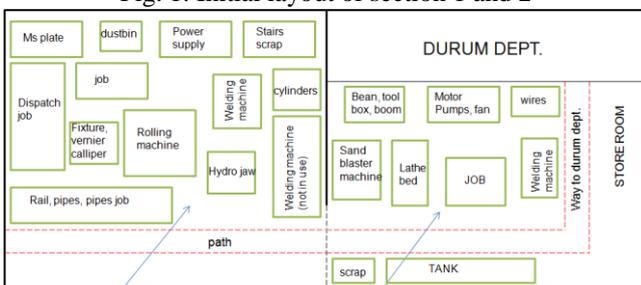
From the observation we conclude that following moveable item should be placed in their suitable places as mentioned.

Section no.	items
section1	Beam1, sand blaster machine1, boom, fan1, motor1, pump1, scrap1, spool1, tank1, toolbox, weld machine1 and wires1.
Section2	Cylinders1, scrap2, spool2, weld machine2, fixture, m.s. plate1, pipes1, rail, stairs1 and vernier caliper.
Section3	m.s. plate2, painting machine1 and rods
Section4	Wires2, boxes, color box, cutter machine, drill machine, drums1, engine1, locker1, surface finishing machine.
section5	No moveable part.
Section6	Beam2, pipes2, drums2, column and electrode.
Section7	Cylinders2, fan2, weld machine3, m.s.plate3, chair1, dustbin1, MIG weld machine1 and table1.
Section8	Combined with section3
section9	Cylinders3, scrap3, weld machine4, m.s.plate4, pipes3, drums3, lockers2, chairs2, table2 and gas weld machine.

Section no.	items
section10	Cylinders4, motor2, cylinder stand1, scrap4, tank2, weld machine5, m.s.plate5, pipes4, drums4, grinding machine1, chair3, dustbin2, MIG weld machine2 and pallet.
Section11	Weld machine6, m.s.plate6, pipes5, weld screen1.
Section12	Cylinders5, weld machine7, m.s.plate7, pipes6.
Section13	Combined with section 18
section14	Painting machine2, plasma weld machine1 and power supply1.
Section15	No moveable part
Section16	Cylinders6, weld machine8, chair4, table3.
Section17	Cylinders7, weld machine9, plasma weld machine2.
section18	Combined with section17
section19	Cylinders8, fan3, weld machine10, drums5, grinding machine2, lockers3, weld screen2, plasma weld machine3.
section20	Scrap5, m.s.plate8, pipes7, stairs2, drums6, engine2, lockers4, table4 and power supply2.



Section 2 Section 1  
Fig. 1: Initial layout of section 1 and 2



Section 2 Section 1  
Fig. 2: Suggested layout of section 1 and 2  
Results and observations of suggested layout:

- Reduced downtime due to misplaced equipment
- Increased quality of products
- Improved housekeeping
- Proper guided path reduces number of accidents
- Increment in production
- Improved level of Safety

#### IV. CONCLUSIONS

In this research we study the various literatures related to 5S & Kaizen, and the data is accumulated from different papers, this will help to study success factor of 5S & Kaizen. The data is collected by personal observation of the layout and suggested proper place for every equipment for section 1 and 2. Further section work will be the part of our next paper.

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