iJRASET
International Journal For Research in Applied Science and Engineering Technology

# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

**Volume:** 6 **Issue:** III **Month of publication:** March 2018

**DOI:** http://doi.org/10.22214/ijraset.2018.3630

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887*
*Volume 6 Issue III, March 2018- Available at www.ijraset.com*

# Implementation of 5s in Small Scale Industry

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***Abstract:*** ***In today's industrialization small scale industries plays important role in countries growth and economy. Specially country like India it effects in large scale. In small industries there are numerus problems such as space utilization, quality workers, defective materials, etc. In an organization the prime importance is given to the quality and productivity. Since a problem come across due to the defects in materials, down time in production, working conditi11ons, housekeeping etc. This case study deals with the 5S implementation in an industry, Implementation of 5S can result in considerable improvements in environmental performance beside with improved housekeeping and health and safety. 5S can improve the quality, productivity and working conditions in organizations.***

***5S is an approach to organize, order, clean, standardize and continuously improve a work area. 5S is not just about housekeeping, It is one of the efficiently working tools of Lean Manufacturing. The all five activities beginning with the letter S, which were derived from five Japanese words. The words are Seiri, Seiton, Seiso, Seiketsu and Shitsuke, which when translated mean Sort, Set in Order, Shining, Standardize and Sustain, respectively. where sort means remove all unwanted materials: only what is needed . Set establishes locations and quantities needed for efficient operation. Shine represent cleaning through inspection. Standardize implements visual displays and controls. Sustain helps to keep the organization effort in place through training and total employee involvement.***

***Keywords: Seiri, Seiton, Seiso, Seiketsu , Shitsuke***

## I. INTRODUCTION

In today's industrialization small scale industries plays important role in countries growth. Specially countries like India. It affects in large scale. In small industries there are numerous problems such as space utilization, quality workers, defective materials, etc. In this changing business it is important to win hearts of customer though quality and cost of the product or service. It is also required to have productive production with continuous improvement. The present need of the organization is to deliver high quality product through continuous improvement. To fulfill these requirements, 5S technique emerged for better production in the industries.

5S is a technique originated from Japan and it was first developed by Hiroyuki Hirano. It include five words of S i.e. Sort, Set in order, Shine, Standardize and Sustain . The 5S technique is derived from "Kaizen" .

which means "change for the better". It allows the enhancement of efficiency and productivity in the industry. The 5S technique is a program to achieve total organization cleanliness, and standardization in the workplace for better productivity. The benefit of 5S technique is improvement in productivity, quality, health and safety. Term of 5S given as: SEIRI (sort): Removal of all unwanted & unnecessary materials in the workplace. SEITON (set in order): Putting everything in an assigned place so that it can be accessed quickly as well as returned in that same place quickly. SEISO (shine): It means to cleaning up the workplace and giving it a 'shine'. SEIKETSU (standardize): Defining the standards by which must regularity in cleanliness. SHITSUKE (sustain): Maintain regularity and to practice the first 4S on regular basis.

By implementing above techniques and methods quality and production rate can be affected in large scale. This activity or study specifically applied in small scale industries. And it is quite effective when it is implemented properly.

## II. LITERATURE REVIEW

### *A. Historical Background*

*1)* 5s method was first implemented in 1970s at Toyota. Perhaps the innovation into workplace and quality product process development led to Toyota Motor Corporation.

*2)* The 5s technique has exploded in other workplace of quality improvements including total productive maintenance and the visual workplace.

*3)* Directly corelated with six sigma or kaizen, the 5S methodology was founded through five Japanese words.

*4)* 5s is derived from kaizen which consist of five words and it is base of 5s method consist of five activities.

*B. Literature Survey*

*1)* Chakraborty et al. (2011) studied the critical problems facing by small scale industries while selling their product. SSE (Small Scale Enterprise) is not having huge financial backup and therefore they are depending upon the revenue eared after selling their product. The product sales can only be increased by reducing the cost of the product.

*2)* Upadhye et al. (2010) studied the importance of small and medium scale industries in Indian context. Medium size manufacturing industry plays an important role in Indian economy. Their contribution to the economic development of the nation is indeed significant. But the productivity level of these industries is quite low as compared to other country.

*3)* Palaniappan (2010) described the performance and benefits of small scale manufacturing industry in India. Small scale industries form an important sector constituting 40% of the total output to the privet sector and much more significant is the employment generation capacity of small scale sector.

*4)* Chauhan et al. (2010) shows the problem to sustain in global market for an organization. Lean manufacturing is hymn of survival and success of any organization. The goal of lean manufacturing is to minimize all types of waste so cost of the product can be reduced.

*5)* Hudli and Inamdar (2010) described the development of key areas which could be used to assess the adoption and implementation of lean manufacturing practice also presented some of the key areas developed to evaluate and reduce the most optimal project so as to enhance their production efficiency.

## III. OBJECTIVE OF PROJECT

*A.* To increase productivity.
*B.* To control internal rejection .
*C.* To improve performance and workflow in industry or organisation.
*D.* To utilize every inch of workplace efficiently.
*E.* To increase quality of product.
*F.* To utilize every available sources at optimum condition.
*G.* Making such a machine which can be able to perform both the operation.

## IV. METHODOLOGY

As discussed problems in above can be effectively overcome, improve production, quality, performance, response time, communication and many more by implementing 5S which is discussed below.

*A. Implementation of SORT(SEIRI)*

The first S focuses on eliminating unnecessary items in the workplace. It is the series of steps which keep only

*1)* what is needed
*2)* the amount needed and
*3)* when it is needed

To implement the first S the Red-Tag process is commonly employed. The Red-Tag used to identify unwanted materials and determine their usefulness. There are six steps involved in creating a successful Red-Tagging process.

Step 1: Launch the Red-Tag Project

This is usually carried out by the Steering Committee by creating holding areas and planning for the disposal of unwanted materials using the Red-Tag form.

Step 2: Identify the Red-Tag Targets

Identify the type of material and the physical work areas to be evaluated.

Step 3: Set Red-Tag Criteria

Three questions need to be asked to determine if an material is necessary.

*4)* Is it useful ?
*5)* How often is it needed ?
*6)* How much is needed ?

Step 4: Attach the Tag.

The Red-Tagging event must be quickly noticeable less time consuming. The targeted aim must be completed within 4 hours.

Step 5: Evaluate Red-Tagged Items. Decide what to throw and the actions required

Document the Results of Red-Tagging. Results must be logged for accounting purposes so that the organization can measure the improvements and savings realized through the process.

*B. Implementation of SET (SEITON)*

The second S reflects a very popular saying: ―A place for everything in it‘s place‖. It emphasizes safety, efficiency and effective storage and consequently improves the appearance of the workplace. After installing first S by successfully , remaining should be arranged so that there is ease of use and storage. The process eliminates unnecessary items or in clerical activities and ensures all materials, tools and equipment have designated locations which must be conventional and less time consuming. The second S includes activities such as:

*1)* Mark reference materials with an oblique line to detect disorder from a distance.
*2)* Put names and numbers on all jigs and tools.
*3)* Store tools beside the machine with which they will be used according to sequence of work operations.
*4)* Arrange the files and store using tagging system to make it easy to identify materials at a glance.
*5)* Store identical items together.
*6)* Store unidentical items in separate rows.
*7)* Do not mixed items together, use rack or shelf.
*8)* Use small storage to organize small items
*9)* Use color for quick identification of items.
*10)* Label giving clearly to each item and to its storage area (Visual Control)
*11)* Use see-through cover for better visibility.
*12)* Use specially designed colour code to organize tools, jigs and measuring devices that are important for each particular machine.
*13)* Create tool boards. The key word in this description is anyone. Labelling is specifically for other people who need what is in area, when the area owner is away. The benefit is searching time reduced.
*14)* Potential Impacts:
*15)* After use of items it will easily returned to its designated location
*16)* Required items easily located, stored and retrieved.
*17)* First-In First-Out (FIFO) is practiced.
*18)* Retrieval time is reduced.
*19)* Right Item, Right Place, Right Quantity and Right Method (4R) are in place.

*C. Implementation of SHINE(SEIRI)*

The third S based on cleanliness because it ensures a more comfort and safe workplace, as well as better visibility, which reduces retrieval time and ensures higher quality work, product or service. The third S is to totally utilised for clean the work area. Everyday follow-up cleaning is necessary to maintain a clutter-free workplace area and a desirable environment. SHINE speaks for itself. Everyone enjoys working in a clean environment which raises morale and increases productivity. The third S as a daily value-adding activity for that the following steps must be followed.

Step 1: Delegate Cleaning Assignments. Cleanliness is the responsibility of every employee and the workplace must be divided into distinct cleanliness areas, which can be based on: (i) 5S Zones: Show all the cleanliness areas and the names of the people responsible for them. (ii) 5S Schedules: Show in greater detail the different areas and the names of those responsible for them, including daily rosters.

Step 2: Determine what is to be cleaned. Develops targets and categories them for use.

Step 3: Determine the Methods to be used. Justify the tools and materials required and what to be cleaned in each area. Cleanliness must be practiced daily and must take only a short time to execute. Standards must be adopted to ensure people do the cleaning efficiently.

Step 4: Prepare the Cleaning Tools and Materials. Arrange cleaning tools and the required materials in such a manner so that they can easily retrieved for use.

Step 5: Implement Cleanliness All equipment malfunction or defects must be fixed or reconditioned. The key word in this practice is keeping the workplace and everything in it clean and in good functional condition. This is achieved through the combination of the cleaning function and defect detection.

*D. Implementation of Standardize(SEIKETSU)*

The continue employment of the 3S will ensure a high standard of workplace organization. Once the 3S are in place, the next step is to concentrate on standardizing best practices. The industry area must include the creation of procedures and simple daily checklists which are to be at every workplace.

Job responsibilities that include:

*1)* Who is responsible? (ownership)
*2)* What actions must be taken to maintain the desired condition?
*3)* When must those actions be taken?
*4)* Where must they apply?
*5)* What procedures will be followed to ensure compliance?
*6)* Cleaning procedures
*7)* Maintenance schedules

The checklists signpost to ensure that the daily 3S requirements are carried out habitually as best practices in the work area. Examples of checklists are: The key word is to consolidate the 3S establishing standard procedures. This activity is carries out to determine the best output and find ways of ensuring that everyone carries out their individual activity in their workplace. Potential Impacts:

*8)* Better workplace standards.
*9)* Better Visual Control Systems.
*10)* Establishment of Rules and Standard Operation Procedure (SOP).
*11)* Information sharing on required standards.
*12)* Improvement in operation and workflow

*E. Implementation of SUSTAIN (SHITSUKE)*

The fifth S is necessary to maintaining the momentum of the previous four S to make sure sustainability of the system and to make further development by encouraging effective use.

*1)* Build awareness of the importance of 5S through retraining.
*2)* Reward and recognize efforts of staff.
*3)* Use techniques / approaches / strategies to sustain activities.
*4)* 5S Slogans and Posters
*5)* Standards and performance indicators is achievements

The last S stands for SUSTAIN which requires self- discipline without which it is impossible to maintain consistent standards of quality, safety and cleanliness. The key word is this description is shared values.

Shared values are achieved through coaching and team participation, not shouting orders and imposing penalties. The implementation of 5S utilise for the simply understanding to all workers. Buying in to these basic values is the essential starting point to develop a World Class organization.

## V. SURVEY

In industries multiple tasks and works happens at a same time. Hence it is hard to implement and develop process. But It can be overcome by taking survey from workers regarding their work, problems, etc. Following are the some questions that can be asked to workers.

*A.* Does any factor which affects products or production rate?
*B.* Working space and arrangement is proper or not?
*C.* there some mistakes occurring again and again?
*D.* Is there any problem in assembly of products?
*E.* Does enough time is provided to complete work?
*F.* Is there any problem in finding tools?
*G.* Is there overburden or inconsistency occurring during work?
*H.* Is there any wasteful activity or doesn't add up task?
*I.* Quality of raw material is good enough or not?

*J.* Are there any repeatability and rework occurring in regularly?
*K.* Are there any defective tool?
*L.* Is there necessity of labelling, colour coding, numbering, zoning?
*M.* Cleaning of instrument, machine and floor is done regularly or not?
*N.* Periodical checking of changes in machine tool & equipment or breaking observed?
*O.* Is Standard Operating Procedures (SOP) are enough to understand?
*P.* Are there regular generation of report?
*Q.* Training for refreshers id provided or not?
*R.* Is appreciation of worker is done or not?
*S.* Medical facilities are available or not?
*T.* Are there any accidents happened?
*U.* Are there any suggestions for modification?
*V.* Is there any instruments lists and regularly checking of instruments are done or not?

## VI. RESULT AND DISCUSSION

By implementing 5S following result can be achieve

*A. Sort(seiri)*
*1)* Process development by cost reduction
*2)* Stock confinement
*3)* Better usage of work place
*4)* Prevention of losing tools

*B. SET (SEITON)*
*1)* Process growth
*2)* Increasing efficiency
*3)* Shortening of time required for searching necessary things
*4)* Safety enhancement

*C. Shine(seiri)*
*1)* Improvised working conditions for workers
*2)* The number of customers has been increased after maintaining a clean and neat layout
*3)* Machine maintenance cost has been reduced

*D. Standardize(seiketsu)*
*1)* The standerds of the company came to next level.
*2)* Improvement in safety has supported in reducing the injuries of workers.
*3)* Slips and falls of the material have been reduced.
*4)* Travel time of materials is reduced which led to reduction of work hazards.

*E. Sustain (shitsuke)*
*1)* It gives a scope for workers participation in the work area design and maintenance.
*2)* Workers absenteeism has been lowered down.
*3)* Increasing of the awareness and morale.
*4)* Decresing of mistakes quantity resulting from the inattention.
*5)* Proceeding according to decisions.
*6)* Improvement of the internal communication processes
*7)* Improvement of the inter human relations.

## VII. CONCLUSION

By studying the 5S method activity we conclude that this technique is very helpfull and beneficial in Industrial organization. We also concluded that by implementing 5S method we could improve the quality, productivity and efficiency of industrial organization, it also has positive effect on overall performance.

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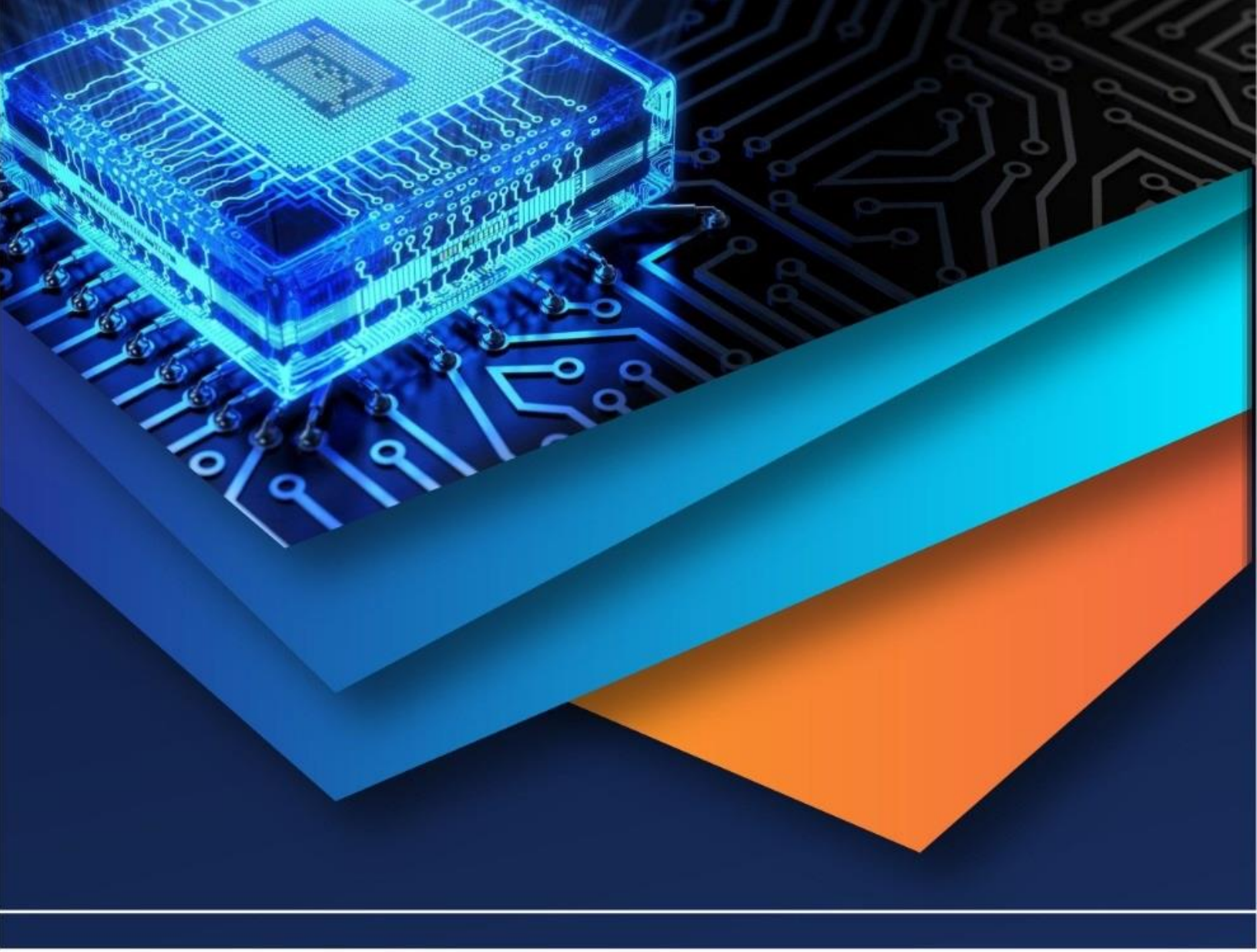

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