

The 5S methodology as a tool for improving the organisation

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ABSTRACT

Purpose: The aim of this paper is showing the 5S methodology. In this paper it was introduced the way of implementing the 5S methodology in the company.

Design/methodology/approach: In the frames of own research it has been analysed and implemented the 5S rules in the production process.

Findings: On the basis of the own research it can be stated, that introducing the 5S rules bring the great changes in the company, for example: process improvement by costs' reduction, increasing of effectiveness and efficiency in the processes, maintenance and improvement of the machines' efficiency, safety increasing and reduction of the industry pollution, proceedings according to decisions.

Research limitations/implications: The 5S methodology permits to analyse the processes running on the workplace. The 5S is the methodology of creation and maintaining well organized, clean, high effective and high quality workplace.

Practical implications: Own research clearly showed, that very essential is training of workers about the 5S rules. Essential thing is to divide activities on some main steps and to maintain the continuous improvement.

Originality/value: The 5S method begins each programme of improvement in a company. This method can be used in all companies. Its result is the effective organization of the workplace.

Keywords: Quality management; Quality improvement; The 5S methodology

1. Introduction

Modern management in the company is not only the quality management system based on the ISO series 9000:2000 standards, but pursuit to the continuous improvement, so this is the philosophy of the Total Quality Management [1].

In the frames of implementation of the Total Quality Management on the operating level more and more popular becomes the idea of so called 5S.

The 5S method begins each programme of improvement. It is the tool for helping the analysis of processes running on the workplace. The 5S is the methodology of creation and

maintaining well organized, clean, high effective and high quality workplace. Its result is the effective organization of the workplace, reduction of work's environment, elimination of losses connected with failures and breaks, improvement of the quality and safety of work [2-4].

The philosophy of the 5S has its roots in Japan. Name 5S is the acronym of five Japanese words of the following meanings:

- Seiri (sort),
- Seiton (set in order),
- Seiso (shine),
- Seiketsu (standardize),
- Shitsuke (sustain).

2. The 5 S methodology

5 S means [5-8]:

- Seiri (sorting, organization of the workplace, elimination of unnecessary materials). Refers to the practice of sorting through all the tools, materials, etc., in the work area and keeping only essential items. Everything else is stored or discarded. This leads to fewer hazards and less clutter to interfere with productive work.
- Seiton (set in order, place for everything). Focuses on the need for the workplace in order. Tools, equipment, and materials must be systematically arranged for the easiest and the most efficient access. There must be a place for everything, and everything must be in its place.
- Seiso (shine, cleaning, removing of wastes, dust etc.). Indicates the need to keep the workplace clean as well as neat. Cleaning in Japanese companies is a daily activity. At the end of each shift, the work area is cleaned up and everything is restored to its place.
- Seiketsu (standardize, constant place for things, constant rules of organization, storage and keeping cleanness). Allows for control and consistency. Basic housekeeping standards apply everywhere in the facility. Everyone knows exactly what his or her responsibilities are. House keeping duties are part of regular work routines.
- Shitsuke (sustain, automatic realization of above-mentioned rules). Refers to maintaining standards and keeping the facility in safe and efficient order day after day, year after year.

Implementing the 5S rules should begin from trainings of productive workers in the range of the 5S's elements and advantages from their usage. It is important that all participants of trainings will understand the need of using the 5S rules on the own workplace and will agree on the changes. During trainings it is essential to train the usage of all rules on the clear example, so that every participant can understand the methodology of realization of the 5S's elements. Very important fact is that these rules do not refer only to the productive positions, but also refer to the warehouse, office positions and others [9-12].

1 S – Sorting

Through the suitable sorting it can be identified the materials, tools, equipment and necessary information for realization the tasks. Sorting eliminates the waste material (raw materials and materials), nonconforming products, damaged tools. It helps to maintain the clean workplace and improves the efficiency of searching and receiving things, shortens the time of running the operation.

The 1S rule's proceedings [5]:

A) On the first stage one should answer to so-called Control Questions:

- Are unnecessary things causing the mess in the workplace?
- Are unnecessary remainders of materials thrown anywhere in the workplace?
- Do tools or remainders of materials to production lie on the floor (in the workplace)?

- Are all necessary things sorted, classified, described and possess the own place?

- Are all measuring tools properly classified and kept?

On the basis of the answer to the above questions it is possible the estimation of the workplace in terms of the 1S rule so littering the workplace. If on any question answer is yes, it should execute sorting of things, which are in the workplace.

B) On the second stage one should execute the review of all things which are in the workplace and group them according to the definite system. According to carried out sorting it should execute the elimination from the workplace the things, which were found „unnecessary”.

C) To permanent usage the 1S rule is so-called the Programme of the Red Label. It means giving the red label to things, which operator will recognize as useless within his workplace. This label will make possible not only the elimination of the given thing, but through its own formula will make possible the liquidation of the reasons of appearing on the workplace this given thing.

2 S – Set in order

Especially important is visualization of the workplace (eg. painting the floor helps to identify the places of storage of each material or transport ways, drawing out the shapes of tools makes possible the quick putting aside them on the constant places, coloured labels permit to identify the material, spare parts or documents etc.).

Implementing the 2S rule [3]:

It should execute the segregation of things and mark the places of their storing. Used things should always be divided on these, which should be:

- in close access (1st degree sphere),
- accessible (2nd degree sphere),
- in the range of hand (3rd degree sphere).

To the estimation of the workplace in terms of the 2S rule, that is setting in order things, serve the following Control Questions:

- Is position (location) of the main passages and places of storing clearly marked?
- Are tools segregated on these to regular uses and on specialistic tools?
- Are all transport palettes stored on the proper heights?
- Is anything kept in the area of devices against the fire?
- Has the floor any irregularity, cracks or causes other difficulties for the operator's movement?

Things used occasionally and seldom should be on the workplace but outside the direct using sphere. Their distance and location from the place of work should depend on the frequency of using these materials or tools. Places of storage should be marked in the manner making possible their quick identification. It can be used coloured lines, signs or tool boards. Once defined places and methods of storage should be invariable.

3 S – Shine

Regular cleaning permits to identify and to eliminate sources of disorder and to maintain the clean workplaces. During cleaning it is checked the cleanness of machine, workplace and floor, tightness of equipment, cleanness of lines, pipes, sources of light, current data, legibility and comprehensibility of delivered information etc. Indispensable is also taking care of and maintenance the personal tidiness of the operator.

Implementing the 3S rule [3,13]:

The first step of realization the 3S rule is renovation the workplace. It is assumed that „the first cleaning” forces the exact checking of usage two of the previous rules. The usage of the 3S rule relies on everyday keeping in faultless cleanness the workplace. It is executed by the operator of the given workplace. To the estimation of the workplace in terms of the 3S rule, that is cleaning the workplace, serve the following Control Questions:

- Are the oil's stains, dust or remains of metal found around the position, machine, on the floor?
- Is machine clean?
- Are lines, pipes etc. clean, will they demand repairing?
- Are pipe outlets of oils not clogged by some dirt?
- Are sources of light clean?

4 S – Standardize

Worked out and implemented standards in the form of procedures and instructions permit to keep the order on the workplaces. Standards should be very communicative, clear and easy to understand. Regarding this during preparation and improving, it should be involved all participants of the process on the given workplace, it means direct workers. The group knows the best specificity of its own activities, and process of elaboration and after that, usage gives them possibility of understanding the essence and each aspect of the operation. In the aim of assuring all the easy access, obligatory standards should be found in constant and visible places.

It is assumed that standards should not be implemented only in the typical operational processes e.g. production, movement maintenance, storing, but also in the administrative processes, for example: book-keeping, customer service, human resources management, or secretariat service [5,14].

5 S – Sustain

Implementing the idea of the 5S will demand from workers the compact self-discipline connected with implementing and obeying the rules of regularity in cleaning and sorting. It leads to increasing the consciousness of staff, and decreasing the number of non-conforming products and processes, improvements in the internal communication, and through this to improvement in the human relations.

It is also important to understand the need of executing the routine inspections of usage the 5S rule. This inspection is executed by helping of so-called Check List and created on its basis the radar graph of the 5S, which serves to estimation of the workplace. The inspection of realization of the 5S rule is executed once a month by chosen team implementing the 5S rule – the control team [2].

3. Own Research

The 5S methodology relies on the creation and keeping well organized, clean, high effective and high quality workplace. Own research have been carried out in the selected Polish company of the machine industry. During these research it was executed the selection of things in the chosen production process, on each workplace. The 5S methodology was introduced to workers and control questions have been asked. Each rule has been

implemented and in consequence the great changes have appeared (fig. 1.):

- 1 S:
 - things were sorted on necessary and unnecessary,
 - unnecessary things were removed,
 - workplaces were released from the disturbing things,
- 2 S:
 - all things to quick usage were properly arranged,
 - the time of preparing the workplace was shortened,
- 3 S:
 - machines are maintained in cleanness,
 - conditions of work are tidy and safe,
- 4 S:
 - all obligatory rules in the company are obeyed (procedures, instructions, regulations, orders),
- 5 S:
 - self-control,
 - cooperation in team solving the problems,
 - proceedings is in accordance with decisions.

In the aim of execution the inspection of the 5S rules' activity it is used so-called Check List once a term.

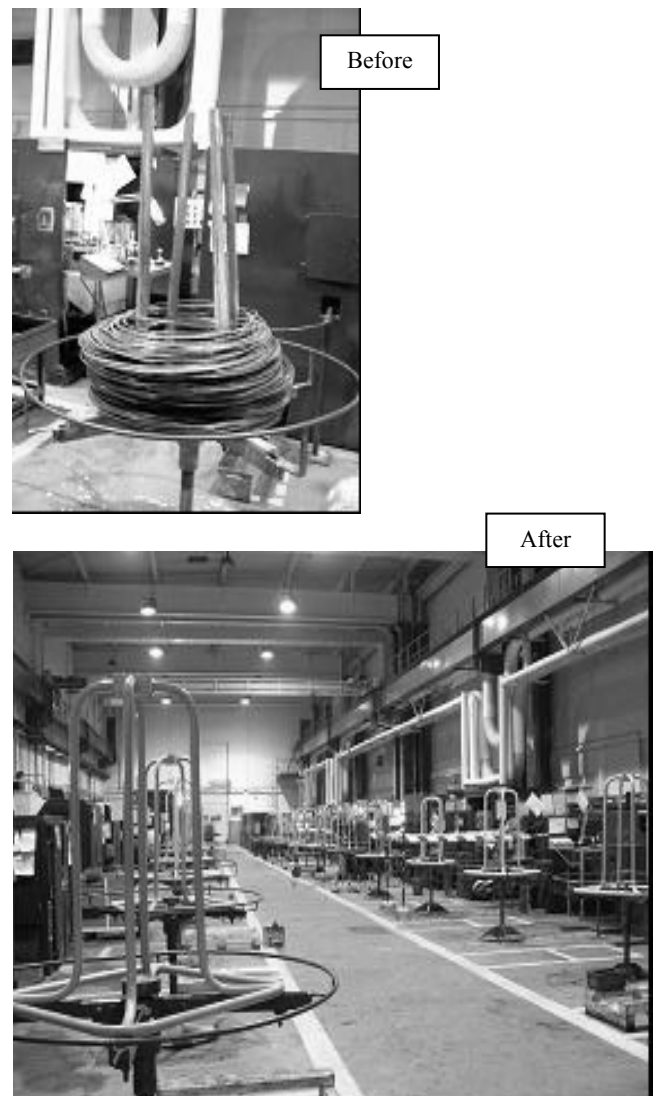


Fig.1. Changes in the manner of giving the material to forging machine

4. Conclusions

The advantages from implementing the 5S rules [2,5,15]:

- 1 S:
- process improvement by costs' reduction,
 - stock decreasing,
 - better usage of the working area,
 - prevention of losing tools,
- 2 S:
- process improvement (increasing of effectiveness and efficiency),
 - shortening of the time of seeking necessary things,
 - safety improvement,
- 3 S:
- increasing of machines' efficiency,
 - maintenance the cleanness of devices,
 - maintenance and improvement of the machines' efficiency,
 - maintenance the clean workplace, easy to check,
 - quick informing about damages (potential sources of damages),
 - improvement of the work environment,
 - elimination of the accidents' reasons,
- 4 S:
- safety increasing and reduction of the industry pollution,
 - working out the procedures defining the course of processes,
- 5 S
- increasing of the awareness and morale,
 - decreasing of mistakes quantity resulting from the inattention,
 - proceedings according to decisions,
 - improvement of the internal communication processes,
 - improvement of the interhuman relations.

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