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# THE 5S METHODOLOGY AS A TOOL FOR IMPROVING ORGANIZATION OF PRODUCTION

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**Keywords:** 5S; methodology; improving production

**Abstract:** The chapter presents the 5S method as a tool for continuous improving lean management processes, whose task is to create a highly efficient, clean, and ergonomic working environment. The method is presented as a collection of 5 simple rules, and at the same time it is a tool that allows you to control the workplace visually. The history of the 5S tool originates from Japanese philosophy, namely the five basic elements of the system: Seiri (selection), Seiton (systematization), Seiso (cleaning), Seiketsu (standardization) and Shitsuke (self-discipline).

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## 1. Introduction

The 5S method is a tool for continuous improving lean management processes, whose task is to create a highly efficient, clean, and ergonomic working environment. It is a collection of 5 simple rules and at the same time it is a tool that allows you to control the workplace visually. The 5S tool originates from Japanese philosophy, namely from the five basic elements of the system: Seiri (selection), Seiton (systematization), Seiso (cleaning), Seiketsu (standardization) and Shitsuke (self-discipline).

## 2. Definitions

The after 5S is a collection of techniques aimed at creating and maintaining clean and high-performance workstations. The 5S as a name refers to the five steps required to fully implement all the assumptions of the method:

**SELECTION** is the basis for the standard that follows the principle: "Just what is needed, in the quantities needed only, and only when needed". That is removing from the workplace any items unnecessary to perform the current operation.

**SYSTEMATICS** is a means by which you keep all your equipment in order and label both the equipment and all the items stored so that everyone can easily find what is needed. The effectiveness of the systematics depends on proper selection. The Systematics will be ineffective if there are too many items organized and labelled unnecessarily. Speed identification of objects, can be obtained by labelling, drawing lines and outlining the highlight/shadow areas.



**CLEANING** tasks in the workplace include washing, vacuuming, renovation and dirt/dust/waste removal. The 5S method procedure should be implemented as a necessary and routine task performed by each employee to create a friendly and safe working environment. Regular cleaning improves the feeling of comfort, and reduces the risk of equipment failure. An important element at this stage is the responsibility and common involvement of all the team members participating in the process.

**STANDARDIZATION**, implementation and maintenance of the previous three stages of the 5S, is a time when it is possible to begin standardizing the company processes with the use of this method. The introduction of a set of rules resulting from the three steps of selection, systematics, and cleaning will help employees to understand their tasks and the aims to be achieved by the introduction of the 5S method. At this stage it is possible to implement instructions at the workstation.

**SELF DISCIPLINE** is continuous acting in compliance with given procedures. In accordance with the concept of Kaizen, the previously started tasks should constantly be improved. To maintain the introduced policy, we can enter internal audits and bonus schemes for employees. Applying checklists at various positions allows to check on the present degree of compliance with earlier assumptions.

### 3. Implementation

The effective implementation of the 5S method is the responsibility of the management and the entire team of employees. The implementation should be carried out after prior training and making staff aware of the validity and the effectiveness of the method used. We can compare the introduction of the 5S principle to the PDCA (Plan, Do, Control, Act).

The introduction of the 5S methods requires the whole team's commitment. The activities to be implemented are going to serve the common good – both the employees and the company. The appropriate definition of the objectives and tasks the crew is faced with is the key to the effective implementation of the 5S tools. The management, along with the employees, plan and implement the various steps of the method. Shared responsibility, as well as a vision of a more comfortable and efficient workspace, motivate people to take action and make changes. All employees, without exception, must view the 5S Program as a tool helpful in daily work. Proper training and the right attitude of the employees result in the sense of joint effort and the satisfaction of both the company and the workers, bringing them all closer to the objectives.

A clean and organized workplace will bring about benefits in terms of:

- reducing waste in the workplace;
- improving the quality of products;
- avoiding time wasting while looking for tools/items;
- improving communication within the company;
- providing more comfort;
- improving security.



At first there may be some resistance from the workers towards the implementation of the new system, which might result from their ignorance regarding the method and its purposes as well as all the benefits which the introduction of the 5S tools can bring. The appropriate explanation of the 5S system as a whole will allow for the employees' easier assimilation of knowledge and its implementation in daily duties. While introducing the system, we can rely on and use one example for all so that everyone can clearly understand the principle of action and the expected results. To introduce the method effectively, it is vital for the management to set an example. The managers should first of all organize their own workstations in order to become credible examples of the importance of the new method implementation.

It is most difficult to introduce new solutions in profitable companies as the question may arise about the point of implementing the new system when the company is prospering. If even the smallest attempts of resistance in the initial phase of implementation are ignored, you may find out that the objectives have been accomplished only partially and the system will not work at its best.

One of the important elements of the 5S method implementation is forming fixed habits by each employee. It might be helpful to display on-screen, in the company cafeteria, some promotional material with examples of a standard workstation. It will enable the employees' minds to take in information and it will increase the efficiency of annual trainings regarding the general 5S principles.

The next important step is to establish responsibilities and the information flow among employees of different levels.

Trained employees with designated tasks can go and implement their knowledge through training. In order to achieve the objectives set by the 5S method - Tab. 2.

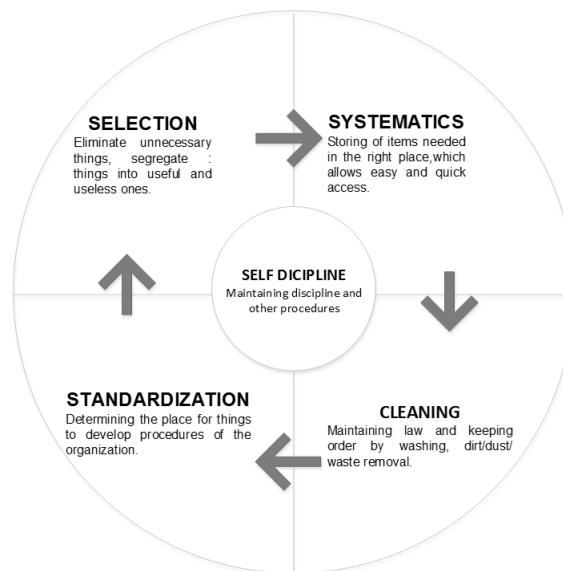


Fig. 1. Implementation of 5S method



Tab. 1. 5S responsibility

Responsibility	
Head of Production	presents responsibilities and objectives that the company has set to be achieved by introducing the 5S method
QSM Employee	is designated as responsible for the implementation of the 5S
Shift Manager	monitors the employees' change in terms of the 5S delivery
Senior Operator	instructs new employees as for the functioning of the system
Operator	implements instructions and self-discipline

Identify the steps to be implemented to achieve the goal. The implementation of the various 5S stages must be controlled on an ongoing basis, in accordance with the whole concept. Omissions of the initial three phases in the final settlement will show that the method implementation results have not brought the expected results.

As for the examples introduced in a company, we can quote:

- setting a special shelf for the brush broken down by use;
- keeping all hand tools in the tool box labelled with a list of contents;
- marking production areas – drawing stripes;
- designating sites for specific stages of production process.

It should be added that the use of the 5S method may be a good basis for introducing or maintaining standards in accordance with the ISO 9001: 2008 and BRC standards or other standards of the integrated management system.

### 3.1. Action control

The introduction of action is aimed at improving the situation in the company. To successfully arrive at the benefits and goals to be achieved, you should regularly monitor the progress of work and the overall system of performance. The 5S method does not impose the way of carrying out the checkouts. The choice of tools at disposal tends to be a simple but an effective way to both control and improve the implementation of the whole system. One of the most popular methods which should apply to the 1S (selection) is the method of the "Red Label" – all unnecessary items should be either thrown away or stored in special areas marked as red label items.

The next control stage should be periodic internal audits on the implementation of the assigned tasks, the progress and recognizing discrepancies. The audit as a tool clearly indicates the discordance in procedures and will help determine the ways of eliminating these inconsistencies. The person responsible for the 5S implementation in the enterprise should create an Audit Chart to be used in a standard processes. In the chart it is important to leave space for reviews from the people who directly



undergo the changes following the introduction of the system. This will help exchange information and, consequently, increase the effectiveness of the actions, which will lead to final implementation and success.

### 3.2. Benefits

The proper implementation of the 5S principles will bring a lot of benefits such as getting rid of things unnecessary in the manufacturing process, improving communication skills, reducing time and materials waste, and improving comfort. Better arrangement of elements required in the manufacturing process affects its performance and consequently brings tangible benefits to the company. The examples of the 5S benefits are presented in Tab. 3.

Profits resulting from the 5S method introduction do not only constitute a visually observed improvement of the workplace, but also have impact on the conditions in which employees perform their tasks. It is their performance that unmistakably influences the ergonomics of the workplace, which in turn influences the performance of the company and enhances its profitability. The visual improvement of a workplace brings improvement to the entire company.

Tab. 2. Determination of steps (Pawlak, 2002)

5S method / Action level	Determination of steps
<b>SELECTION</b> separate unnecessary things	sort and classify things and get rid of useless ones
<b>SYSTEMATICS</b> create a system of ordering things	systematically organize things to find the frequently used at hand easily; keep them within reach
<b>CLEANING</b> clean your surroundings	accurately clean, vacuum, renovate (paint) and perform trimming jobs in the area
<b>STANDARDIZATION</b> keep yourself and your environment in order	constantly keep order at workstation, in your surroundings and of yourself
<b>SELF-DISCIPLINE</b> give an example from your own 5S practices	use and maintain discipline and relate to colleagues, encouraging them to participate in the 5S maintenance; learn and train from your own example, taking care of the environment and work safety; use simplest techniques of management



Tab. 3. The benefits of the 5S introduction

Activity area	Description of benefits
quality of products	<ul style="list-style-type: none"><li>• higher quality of products</li><li>• improved quality of activities in the production section</li></ul>
health and safety at work	<ul style="list-style-type: none"><li>• lowered accident rate</li><li>• more security</li></ul>
labour productivity	<ul style="list-style-type: none"><li>• better work organization</li><li>• reduction of time waste while looking for items</li><li>• better cooperation between workers</li></ul>
economics	<ul style="list-style-type: none"><li>• less waste</li><li>• reduced impact on the environment</li><li>• lower operating costs due to stocks reduction</li><li>• optimal use of resources</li><li>• fewer hand tools purchased</li></ul>
stock	<ul style="list-style-type: none"><li>• reduction of the spare parts stock</li><li>• reduction of inventory in progress</li></ul>
employees' satisfaction	<ul style="list-style-type: none"><li>• improved working conditions</li><li>• more convenience for workers</li><li>• better work atmosphere</li></ul>

#### 4. Conclusion

The 5S method as a tool of Lean Management and Lean Manufacturing allows to create, implement and maintain an employee-friendly workplace. Acting appropriately in accordance with the 5S principles facilitates

the creation of a well-structured system, namely the production company. The implementation of the entire system is relatively inexpensive, because the costs (cabinets/boxes, paint for labelling items, time spent on the first 3S) are very low when compared to the benefits achieved after the successful 5S implementation. The appropriate installation and maintenance of activities for the benefit of the system will make it possible to save space in the production hall, in the warehouse and offices so that the potential of the company surface may be fully used without being expanded. The introduced measures described in the article have been implemented in a company producing aluminium foils, but the idea is versatile and might be carried out in other manufacturing companies. The methods can be improved by introducing target-colouring of Toolbox table shadows, brushes, and other tools required for each



employee to always know their location. Adequate training and motivating employees through incentive schemes will result in all the company employees' considerable commitment, which will lead directly to the company's success on the market.

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