

# IMPLEMENTING 5S TECHNIQUE IN MANUFACTURING INDUSTRY



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The ultimate goal of any manufacturing industry is to create and produce finished products based on the customers' demand without producing any waste during the operations. In this era of competitiveness, manufacturing industry ought to need set of principles and techniques for the identification and elimination of waste in manufacturing and administrative processes. However, many industries in reality are not able to transform themselves to a managed manufacturing organization towards creating the world-class companies. Lack of knowledge is one of the most important problems of managers about familiarity with a convenient method to successfully improve the performance of the organization. Furthermore, in this competitive environment, organizations have to make the best judgment and choose the best methods to achieve their target and not to lose very finite opportunities.

As resource whether it human or non-human including time is a constraint factor which the managers need to allot and manage for gaining competitiveness in the industry. In context of Nepal most of manufacturing industries are experiencing the issue of productivity and quality. This is due to less effectiveness of implementing the 5S technique into the workplace.

## What is 5S Technique?

The 5S technique is one of a number of Lean Manufacturing tools designed to help improve workplace efficiency through facility organization. Its early beginnings can be traced to management methods developed and applied during the American Industrial Revolution. Many early methods were later improved upon in Japan during post-WWII reconstruction. Each now plays a role in helping managers and workers throughout the world systematically achieve greater organization, standardization, and efficiency.

## The Five "S"

Japanese Term	Meaning	English Equivalent	Meaning in Japanese Context
Seiri	Sort	Tidiness	Throw away all rubbish and unrelated materials in the workplace
Seiton	Set	Orderliness	Set everything in proper place for quick retrieval and storage
Seiso	Shine	Cleanliness	Clean the workplace; everyone should be a janitor
Seiketsu	Standardize	Standardization	Standardize the way of maintaining cleanliness
Shitsuke	Sustain	Discipline	Practice 'Five S' daily - make it a way of life; this also means 'commitment'

**Source: From Own Presentation Slide.**

The term 5S originates from five Japanese words starting with the letter S. They are Seiri, Seiton, Seiso, Seiketsu and Shitsuke. Literally translated, Seiri means tidiness, Seiton means orderliness, Seiso means cleanliness, Seiketsu means standardization, and Shitsuke means discipline. To simplify the system further, five English terms starting with the letter S were substituted to describe each element. They are Sort, Set in Order, Shine, Standardize, and Sustain. Not all facilities use these exact words in their own implementation and may substitute terms better suited for their own specific applications.

Since Japanese factories first began implementing an early form of 5S decades ago, they experienced unprecedented levels of efficiency, safety, and growth. 5S is even credited with helping Japanese factories eclipse American industrial output and product quality. By the mid-1980s, managers at America's largest factories were taking serious notice of Japan's success and began rapidly applying similar systems and methods. One of these systems is known globally today as 5S. Once U.S. factories began implementing 5S, managers saw many of the same dramatic gains in efficiency and reductions in cost previously seen only in Japan.

Through 5S methodology, the management can create an environment where quality work is comfortable, clean and safe in the organization and it can ensure the compliance to standards and will further foster continuous improvement. 5S is a system that used to reduce unwanted waste and optimize productivity through continuously maintaining the system in the workplace in order to consistent the operational results. The 5S method is a tool for continuous improving lean management processes, where the task is to create a highly efficient, clean, and ergonomic working environment. However, effort and participation from top management is a key factor that determines the success of the 5S practice. Moreover, most important barrier for implementation of 5S effectively is poor communication and existing barrier between managerial level and shop floor employees and the poor training and awareness of 5S.

Before the industry starts to implement new manufacturing process, the top management should identify the true meaning of 5S, why and how to implement 5S system so that it will give beneficial for the industry. This column is concerned on the implementation of 5S in manufacturing industries which will obviously help members of "Chitwan Association of Industries" and other readers too.

The 5S system is a good starting point for all improvement efforts aiming to drive out waste from the manufacturing process, and ultimately improve a company's bottom line by improving products and services, and lowering costs. Many companies are seeking to make operations more efficient, and the concept is especially attractive to older manufacturing facilities looking to improve the bottom line by reducing their costs.

"A place for everything, and everything in its place" is the mantra of the 5S method, and storage and workspace systems allow improved organization and maximum use of cubic space for the highest density storage. The result is an improved manufacturing process and the lowest overall cost for goods produced.

### A Cycle of Efficiency

5S is comprised of five easy-to-remember steps, as described in the flowchart below. Each step plays an integral role in helping facilities successfully implement and sustain the system.

Once each step has been implemented, 5S should function indefinitely. To achieve this level of sustained success, managers and workers must embrace the system. They do so by integrating 5S methods and techniques into their daily work routines. Keep in mind, reaching the system's final step only concludes implementation. 5S should continue to cycle through previous steps, as appropriate, so a facility remains organized for maximum efficiency. Before moving forward on any facility reorganization, seek the consent of all potentially affected managers (maintenance, safety, production, etc).

Staff involvement greatly helps facilitate the transition to 5S and may even provide new and more effective ideas for implementation. Team Building Implementation of 5S begins with the creation of an internal committee of 5S team leaders. This group is assigned to actively manage and support the system from Sort through Sustain. Depending on a facility's size, a team may be as small as a single individual or include a broad cross section of managers and workers with diverse facility roles. Individuals with strong leadership skills should be considered as top candidates for this team. Once the team has been organized, they can move forward by developing a formal 5S plan. All facility employees are encouraged to actively participate in 5S. This requires proper training and education so employees understand how implementation will improve the workplace. Eventually, each employee's role in 5S will be well-defined so it seamlessly integrates with normal work routines.



Source: GraphicProducts.com 5S System A Lean Manufacturing Tool.

5 S	What does it mean?	Why is it important?	What problems are avoided?
Sort	<ul style="list-style-type: none"> <li>➤ Remove all items not needed for current production operations.</li> <li>➤ Leave only the bare essentials: When in doubt, throw it out.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Space, time, money, energy, and other resources can be managed and used most effectively.</li> <li>✓ Reduces problems and annoyances in the work flow.</li> <li>✓ Improves communication between workers.</li> <li>✓ Increases product quality.</li> <li>✓ Enhances productivity.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The factory becomes increasingly crowded and hard to work in.</li> <li>✓ Storage of unneeded items gets in the way of communication.</li> <li>✓ Time wasted searching for parts/tools.</li> <li>✓ Unneeded inventory and machinery are costly to maintain.</li> <li>✓ Excess stock hides production problems.</li> <li>✓ Unneeded items and equipment make it harder to improve the process flow.</li> </ul>
Set in order	<ul style="list-style-type: none"> <li>➤ Arrange needed items so that they are easy to use.</li> <li>➤ Label items so that anyone can find them or put them away.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Eliminates many kinds of waste, including: <ul style="list-style-type: none"> <li>• Searching waste.</li> <li>• Waste due to difficulty in using items.</li> <li>• Waste due to difficulty in returning items.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ Motion waste.</li> <li>✓ Searching waste.</li> <li>✓ Waste of human energy.</li> <li>✓ Waste of excess inventory.</li> <li>✓ Waste of defective products.</li> <li>✓ Waste of unsafe conditions.</li> </ul>
Shine	<ul style="list-style-type: none"> <li>➤ Keep everything, every day, swept and clean.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Turn the workplace into a clean, bright place where everyone will enjoy working.</li> <li>➤ Keep things in a condition so it is ready to be used when needed.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Lack of sunlight can lead to poor morale and inefficient work.</li> <li>✓ Defects are less obvious.</li> <li>✓ Puddles of oil and water cause slipping and injuries.</li> <li>✓ Machines that do not receive sufficient maintenance tend to break down and cause defects.</li> </ul>
Standardize	<ul style="list-style-type: none"> <li>➤ Integrates Sort, Set in Order, and Shine into a unified whole.</li> </ul>	<ul style="list-style-type: none"> <li>✓ By ensuring conditions do not deteriorate to former state, facilitates implementation of the first three pillars.</li> </ul>	<ul style="list-style-type: none"> <li>• Conditions go back to their old undesirable levels.</li> <li>• Work areas are dirty and cluttered.</li> <li>• Tool storage sites become disorganized and time wasted searching for tools.</li> <li>• Clutter starts to accumulate over time.</li> <li>• Backsliding occurs.</li> </ul>

Sustain	<ul style="list-style-type: none"> <li>➤ Making a habit of properly maintaining correct procedures.</li> <li>➤ Instill discipline necessary to avoid backsliding.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Consequences of not keeping to the course of action greater than consequences of keeping to it.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Unneeded items begin piling up.</li> <li>✓ Tools and jigs do not get returned to their designated places.</li> <li>✓ No matter how dirty equipment becomes, nothing is done to clean it.</li> <li>✓ Items are left in a hazardous orientation.</li> <li>✓ Dark, dirty, disorganized workplace results in lower morale.</li> </ul>
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Source: <http://www.listaintl.com/resource-center/white-papers-and-case-studies>



Source: *GraphicProducts.com 5S System A Lean Manufacturing Tool.*  
**Implementation**

Implementing the 5S method means cleaning up and organizing the workplace in its existing configuration. It is typically the first lean method that organizations implement. This lean method encourages workers to improve their working conditions and helps them to learn to reduce waste, unplanned downtime, and in-process inventory.

A typical 5S implementation would result in significant reductions in the square footage of space needed for existing operations. It also would result in the organization of tools and materials into labeled and color coded storage locations, as well as “kits” that contain just what is needed to perform a task.

The 5S methodology is a simple and

universal approach that works in companies all over the world. It is essentially a support to such other manufacturing improvements as just-in-time (JIT) production, cellular manufacturing, total quality management (TQM), or six sigma initiatives, and is also a great contributor to making the workplace a better place to spend time. Simply 5S is a system to reduce waste and optimize productivity through maintaining an orderly workplace and using visual cues to achieve more consistent operational results. 5S programs are usually implemented by small teams working together to get materials closer to operations, right at workers' fingertips and organized and labeled to facilitate operations with the smallest amount of wasted time and materials.

Finally, the team envisions a future state based on the exercise and begins implementing the future state. The process is iterative; the future state becomes the current state, and a continuous improvement process should be used to identify new ways to reduce waste. Waste is defined very broadly, and includes things like waste in the movement of material, carrying too much inventory, defects or rework, producing scrap, waiting or unnecessary motion.

One of the greatest and most influential people of all time, Mahatma Gandhi, said “Be the change that you wish to see in the world.” Let’s recognize and implement 5S technique in our work place and witness the positive change in work place. *[Complier Mr.Rupesh Krishna Shrestha is serving as Managing Director in Subarna Match Factory Pvt. Ltd. and also engaged as Freelancer Consultant with expertise on Productivity & Quality Management in Manufacturing Industries.]*  
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