

5S: GOOD HOUSEKEEPING TECHNIQUES FOR ENHANCING PRODUCTIVITY, QUALITY AND SAFETY AT THE WORKPLACE



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This bulletin provides information on 5 S good housekeeping techniques which can be used as a tool for systematic approach for productivity, quality and safety improvement in all types of business.

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1. What is 5S all about?



5S is amongst the first and fundamental steps implemented by an enterprise towards the path of implementing Total Quality Management and continuous improvement at the operation level. 5S is a process designed to organize the workplace, keep it clean, maintain effective and standard conditions. It instils the discipline required to enable each individual to achieve and maintain a world-class environment.

The use of this tool was started in 1972 by Henry Ford in the United States as the CANDO programme: Cleaning up, Arranging, Neatness, Discipline and Ongoing improvement. The technique was popularized as 'Japanese 5S' in 1980 by Hiroyuki Hirano.

Many enterprises have practiced the 5S and derived significant benefits from it. In particular, this technique has been widely practiced in Japan. Most Japanese 5S practitioners consider 5S useful not just for improving their physical environment, but also for improving their thinking processes too. In Japan it is also called 'workplace management'.

5S will be needed if the workplace is messy and unorganized. It will also be needed if employees spend extra time in searching tools, papers, information, etc.

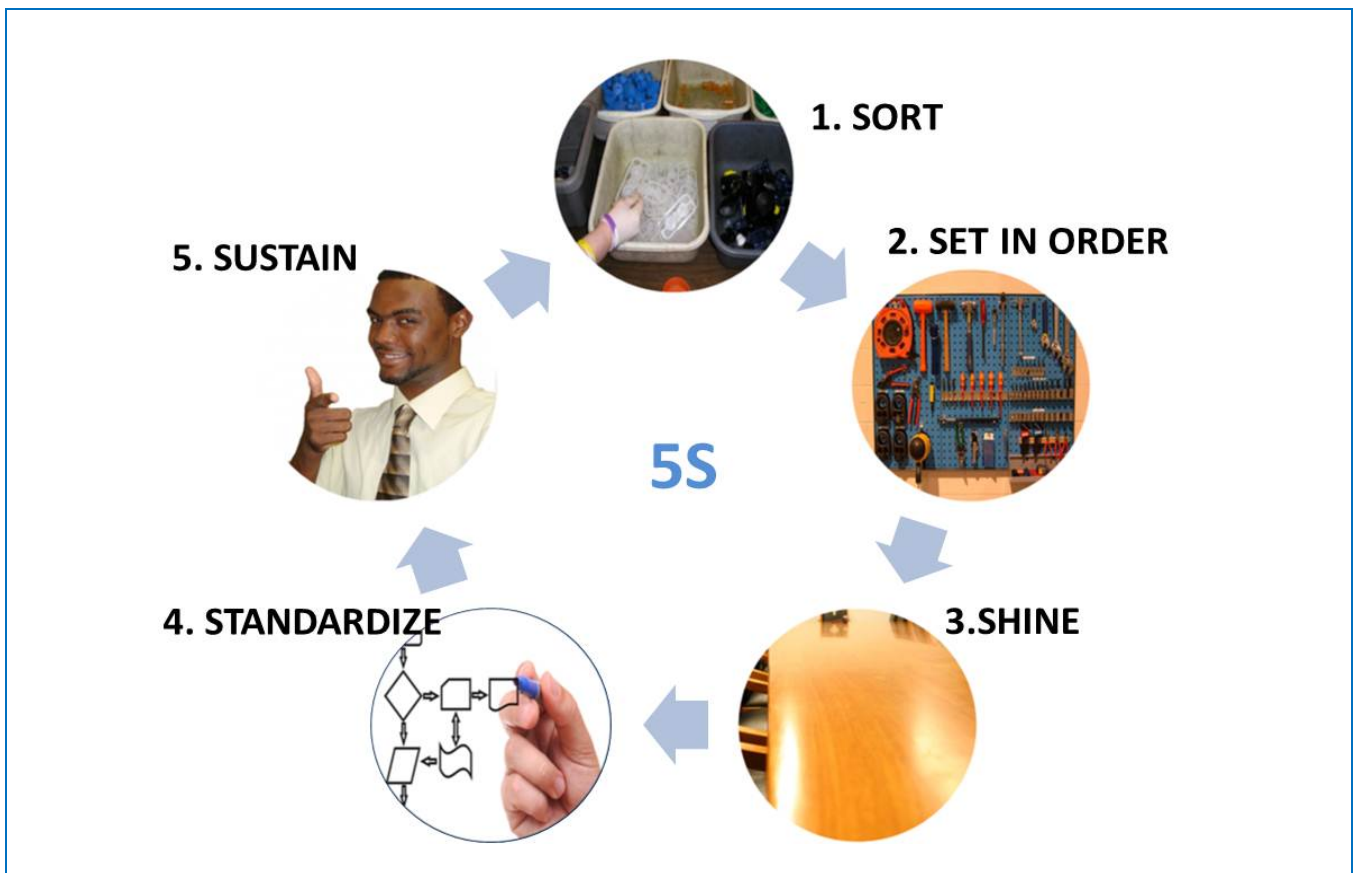
2. What is the meaning of 5S?

5S is the acronym for five Japanese words: Seiri, Seiton, Seiso, Seiketsu and Shitsuke and they represent the five steps for a systematic technique for good housekeeping as indicated in the table below:

Table 1. The five steps of Japanese 5 S

Step	Corresponding action
<i>Seiri</i> (Sort)	Distinguish between necessary and unnecessary items. Remove the latter.
<i>Seiton</i> (Set in order)	Enforce the dictum 'a place for everything and everything in its place'.
<i>Seiso</i> (Shine)	Clean up the workplace and look for ways to keep it clean.
<i>Seiketsu</i> (Standardize)	Maintain and monitor adherence to the first three Ss.
<i>Shitsuke</i> (Sustain)	Follow the rule to keep the workplace 5S-right. Hold the gain.

Figure 1. The five steps of Japanese 5 S



3. Why do we practice the 5S?

The general concept of the 5S is that they are intended to eliminate waste (Osada, 1993).

Working in disorder is neither productive, nor safe. 5S is a simple and practical method to instil a quality culture at the work place. It is relatively easy to undertake, and requires minimal additional resources. The first and small investment made in time and effort pays off in a much bigger manner when the results are realized and maintained.

Among the main benefits of implementing 5S are:

- the workplace becomes cleaner, safer, well-organized and more pleasant
- floor space utilization is improved
- workflow becomes smoother and more systematic and non-value added activities are reduced;
- time for searching tools, materials and document is minimized;
- machine breakdowns are reduced since clean and well-maintained equipment breaks down less frequently and it also becomes easier to diagnose and repair before breakdowns occur, therefore extending equipment life;
- errors are minimized leading to making defect-free products;
- consumables and material wastage are minimized;
- the morale and satisfaction of employees improves; and
- the productivity of the organization improves together with the quality of products and services.

Figure 2. Disorder is neither productive nor safe



4. How do we practice the 5S?

The meaning, methods of implementing and benefits of each of the 5S are given below.

4.1. SORT - SEIRI

The emphasis of Seiri is on stratification management and being able to spot the unwanted and unnecessary before they become problematic (Osada, 1993).

Figure 3: Sort - Seiri



Table 2. Sort - Seiri

Meaning	Methods	Benefits
This means distinguishing or sort out between 'wanted' and 'unwanted items' at place of work and removal of unwanted items	<ul style="list-style-type: none"> • First decide what is necessary and what is unnecessary. To find out unnecessary items you should not only check the floor but also shelves, lockers, storehouse, stairs, roofs, notice boards, etc. • Put a red tag on unnecessary items and keep them in a separate area. • Discard or throw those items which have not been used in the past one year. • Things used once in 6 to 12 months may be stored at a distance from work station. • Things used more than once a month should be available at a central point in the workplace. • Things used hourly/everyday/once a week should be near the work station or may be worn by or kept in the pocket of your worker there. 	Your useful floor is saved. Your searching time of tools, materials, and papers is reduced. You have better flow of work. Your inventory cost of unnecessary items is reduced.

4.2. SET IN ORDER - SEITON

Seiton in essence can be defined as neatness, having things in the right places or set up so that they are readily available for use, eliminating the need to search. Once everything has a right place so that it's functionally placed for quality and safety, it can then be deemed that the workplace is neat (Osada, 1993). While Seiri helps you to decide what items are needed, Seiton helps you to decide the way things are to be placed.



Figure 4: Set-in-order - Seiton



Source: 5S Best Practices(www.5sbestpractices.ning.com).

Table 3: Set-in-order - Seiton

Meaning	Methods	Benefits
<p>Arranging items in such a manner that they are easy to use.</p> <p>Labelling them so that they are easy to find and put back.</p> <p>This means a place for everything (necessary) and everything in its place. No more homeless items.</p>	<ul style="list-style-type: none"> • If necessary, reassign spaces, racks, cabinets, etc. • Decide the right places for everything. • Put all materials and equipment at a place allocated to them with proper label or signalization. <p>Use alerts or indications for out-of-stock situations.</p> <ul style="list-style-type: none"> • Use floor paint marking to define working area, path, entrance/exit, safety equipment, cart/ trolley locations, etc. • Use standard colour coding for pipelines for steam, water, gas, drainage, etc. • Use display cautions, messages, instructions at proper place at proper height and written clearly 	<p>You take things out and keep things back easily.</p> <p>You make lesser mistakes.</p> <p>You reduce searching time.</p> <p>Your work environment becomes safe</p>

4.3. SHINE - SEISO

Seiso places emphasis on cleaning so that things are clean; in other words carrying out cleaning as a form of inspection i.e. getting rid of waste, and foreign matter. It is important to note that depending on the circumstance, with higher quality, higher precision and finer processing technologies, even the minute details may have the greatest ramifications, hence the importance to carry out cleaning as a form of inspection (Osada, 1993).

Figure 5: Shine - Seiso



Table 3. Shine - Seiso

Meaning	Methods	Benefits
<p>This means removing dirt, strain, filth, soot and dust from the work area.</p> <p>This includes cleaning and care for equipment and facilities and also inspecting them for abnormalities. In a way it also includes primary maintenance of equipment.</p> <p><i>Note: Cleaning is not polishing, etc., to make the piece of equipment more beautiful – it looks after its condition and fitness for use.</i></p>	<ul style="list-style-type: none"> • Divide the total area in zones and allocate responsibility for cleaning for each zone. • Decide on cleaning points, order of cleaning, type of cleaning, cleaning aid required, etc. • Display cleaning schedule. • During cleaning look for defective conditions (loose bolts, vibrations, excessive sound, high temperature, fallen tools, etc.) and solve the problem. • Allocate space for storage of cleaning aids and consumables for cleaning. 	<p>Your work place becomes free of dirt and stains which is the starting point for quality.</p> <p>Your equipment lifespan will be prolonged and breakdowns will be less.</p> <p>Creates a pleasant environment.</p> <p>Prevents accidents.</p>

4.4. STANDARDIZE - SEIKETSU

This aspect of the 5S focuses on standardization, making the first three S's, Seiri, Seiton, and Seiso a constant routine. The emphasis here is on visual management, an important aspect to attain and maintain standardized conditions to enable the individuals always act quickly (Osada, 1993).

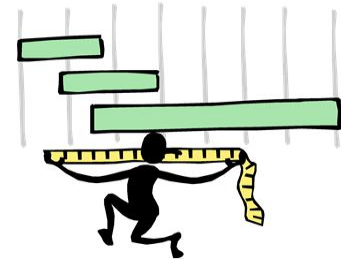
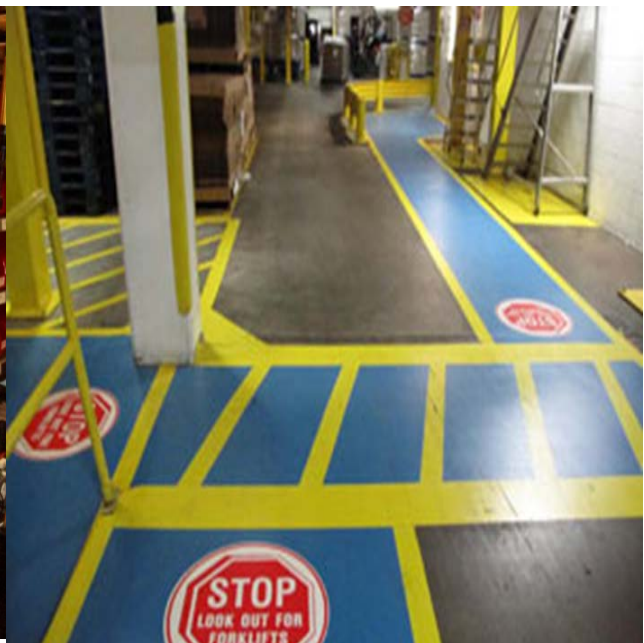


Figure 6: Standardize - Seiketsu



Source: Lean Expertise
 (www.tpmonline.com/articles_on_total_productive_maintenance/leanmfg/the5sindetail.htm)



Source: Concare Inc. (<http://www.concare.com>)

Table 5: Standardize – Sieketsu

Meaning	Methods	Benefits
<p>This call for systematizing the above 4S practices. This means ensuring that whatever cleanliness and orderliness is achieved should be maintained.</p> <p>This requires that you should develop a work structure that will support the new practices and turn them into habits. The purpose of standardization is to make sure that everyone in the company follows the same procedure, the same names of items, the same size of signalization/floor marking, shapes, colours, etc. Standardize also helps to do the right thing the right way every time.</p>	<ul style="list-style-type: none"> • Document procedures and guidelines for sorting, set in order and shine. • Make a checklist for each section and train your people in using them • Carry out periodic evaluation by using the above check list. • Use visual management to act quickly, for example putting/using: <ul style="list-style-type: none"> – Open and shut directional labels on switches, etc. – Temperature and safety labels – Zone labels on measuring metres (normal zone, danger zone, etc.) – OK or hold marks on product. – Put transparency control – Make transparent covers of drawers. – Put inspection windows in the metal covers. – Use location maps with emergency exits, fire fighting equipment, etc. 	<p>Your activities will be simplified.</p> <p>You will have consistency in the work practices.</p> <p>You will avoid mistakes.</p> <p>With better visual and transparency management work efficiency will improve.</p>

4.1. SUSTAIN - SHITSUKE

Shitsuke places emphasis on being able to forge a workplace with good habits and discipline. Demonstrating to others what needs to be done and encouraging practice amongst them. This is mainly a management responsibility.

Figure 7 Sustain – Shitsuke

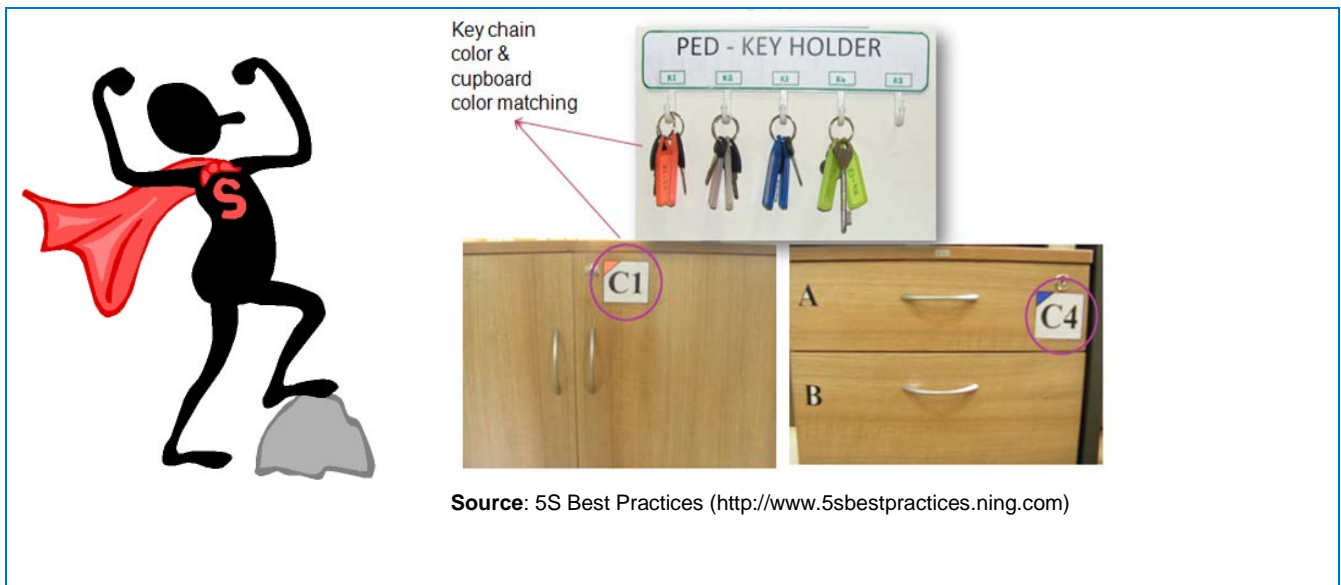


Table 4. Sustain - Shitsuke

Meaning	Methods	Benefits
<p>Sustain also means 'Discipline'. It denotes your commitment to maintain orderliness and to practice first 3S as a way of life. This also requires that your employees show positive interest and overcome resistance to change.</p>	<ul style="list-style-type: none"> • Create awareness and publicize the system. For example develop 5S News, 5S Posters, 5S Slogans, 5S Day, etc. • Create a structure of how and when 5S activities will be implemented. • Formulate guidelines for audit/evaluation of 5S implementation. • Provide management support by providing resources and leadership. • Reward and recognize best performers. 	<p>Promotes habit for complying with workplace rules and procedures.</p> <p>Creates healthy atmosphere and a good work place.</p> <p>Helps you to develop team work.</p> <p>Provides you with data for improving 5S.</p>

Figure 8. Sustain - Shitsuke



Source: 5S Best Practices (www.5sbestpractices.ning.com)

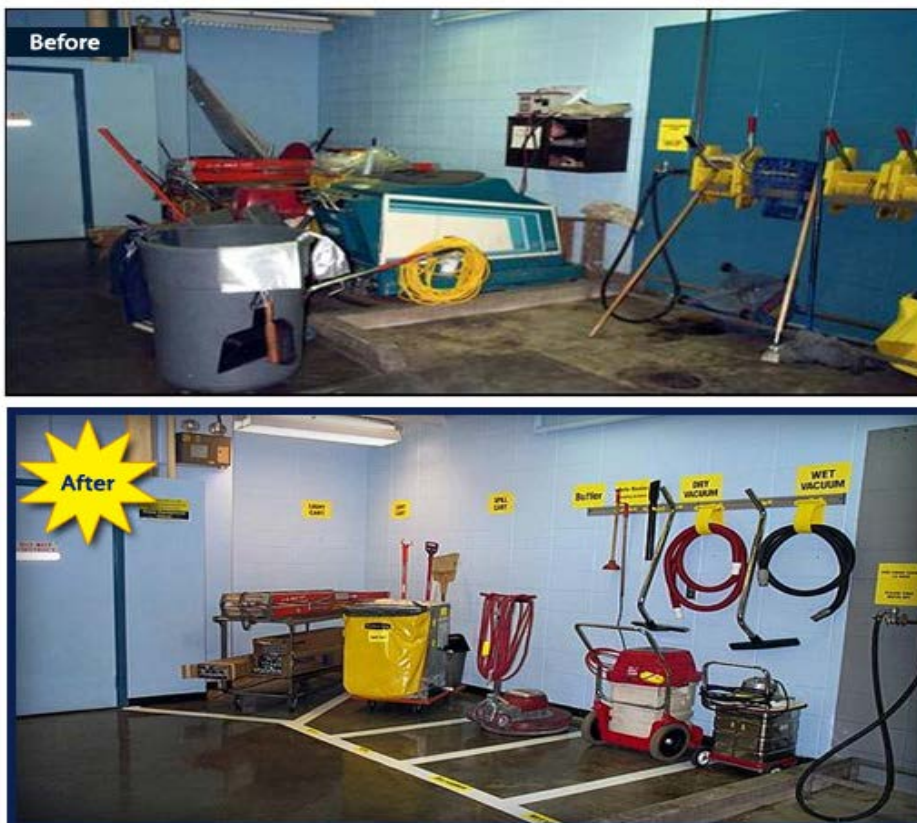
5. What is management's role in implementing 5S?

It is important to note that the implementation of 5S concerns and benefits everyone in the organisation. Like any other initiative, management has the important role to facilitate and support the process by:

- Acknowledging the importance of 5S for the organization;
- Allowing employees time for 5S;
- Providing resources and infrastructure for 5S implementation;
- Personal involvement in implementation of 5S;
- Creating tangible and intangible rewards and recognition for improvements; and
- Promoting ongoing 5S efforts.



Figure 9. Before and after 5S



Source: Marshall Institute (<http://www.info.marshallinstitute.com>)

6. Additional guidelines for implementing 5S

The methods of implementing each of the 5S have been indicated in the tables above. An ITC diagnostic tool is included in Annex I to enable you to assess and score the implementation of your 5S. It would be advisable to start the implementation with one selected area in the organisation and then after getting positive results to extend gradually to other areas. However for effective implementation, it would be important to:

- sensitize management and all employees concerned about the importance and benefits of 5S and get their commitment;
- conduct a status audit with photographs 'as is state'. The diagnostic tool given in the appendix may be used;
- measure throughput, time in materials handling, floor space, flow distance, rack storage, engineering cycle times, annual physical inventory time, and defect ratios before and after the 5S implementation.
- develop an implementation plan, with clear responsibilities and deadlines, in consultation with management and all employees concerned;
- implement the 5 S plan;
- take photographs after the implementation and assess the difference;
- share the experience and extend the implementation to other areas;
- conduct periodic 5S Internal Audits with ratings to monitor progress.

Several companies have introduced annual 5S awards where efforts of work teams are recognized and rewarded.

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ANNEX I: DIAGNOSTIC CHECKLIST FOR 5S

Use the scoring table below to rate your progress with 5S. Total your score and check against the Assessment Report table at the end.

SCORING TABLE

Score*	Stage of readiness
0	Not at all.
1	Little done in that respect.
2	It is done but not systematically
3	This is being complied with more systematically
4	There is an ability to maintain it.

5S - CHECKLIST

	REQUIREMENT	SCORE*	REMARKS
1.0	SORT OUT - SEIRI		
1.1	Is the floor area free of unwanted items?		
1.2	Are tops and insides of all cupboards, shelves, tables, etc. free of unwanted items?		
1.3	Are items stored according to frequency of use?		
1.4	Are walls free of old posters, calendars, pictures, notices etc.?		
1.5	Is there a general clutter free appearance?		
2.0	SET IN ORDER -SEITON		
2.1	Are direction indications available to all facilities from the entrance onwards?		
2.2	Do all items of equipment have identification labels?		
2.3	Are all rooms, cubicles and similar areas clearly numbered or named?		
2.5	Are specific areas demarcated for garbage/rejects/waste, etc.?		
2.6	Are switches, fan regulators, controls, etc. labeled?		
2.7	Are all cables, wires, pipes etc. neat and straight?		
2.8	Is colour coding used effectively for easy identification?		
2.9	Is there a general appearance of orderliness?		
2.10	Is it easy to find any item/document without delay?		

SCORING TABLE

Score*	Stage of readiness
0	Not at all.
1	Little done in that respect.
2	It is done but not systematically
3	This is being complied with more systematically
4	There is an ability to maintain it.

5S – CHECKLIST (CONTINUED)

	REQUIREMENT	SCORE*	REMARKS
3.0	SHINE-SEISO		
3.1	Are cleaning schedules available and displayed?		
3.2	Are floors, walls, windows doors etc. maintained at a high level of cleanliness?		
3.3	Is use of adequate cleaning tools evident?		
3.4	Are machines, equipment, tools, furniture maintained at a high level of cleanliness and their maintenance schedules displayed?		
3.5	Is there a general appearance of cleanliness all round?		
4.0	STANDARDIZE - SEIKETSU		
4.1	Are all 5S procedures standardized?		
4.2	Are standard check lists used to regularly inspect 5S?		
4.3	Are labels, notices etc. standardized?		
4.4	Do isles/gangways have a standard size and colour?		
4.5	Are pipes, cables etc. colour coded?		
5.0	SUSTAIN - SHITSUKE		
5.1	Is there a system for how and when the 5S activities will be implemented?		
5.2	Does management provide support to 5S programme by recognition, resources and leadership?		
5.3	Have first 3S become a part of the daily work?		
5.4	Do employees show positive interest in 5S activities?		
5.5	Are 5S posters and 5S points of work reminders displayed?		
	TOTAL SCORE		

Assessment report

(Add the score obtained and check the assessment)

Score	Percentage	Maturity level	Assessment
Less than 30	Less than 25%	Lack of awareness	You are not aware about the usefulness of 5S
More than 30 and less than 60	More than 25% and less than 50%	No formal approach	You are randomly practicing 5S
More than 60 and less than 90	More than 50% and less than 75%	Formal approach	You are on the right track. If your score is close to 90 then you have fully implemented first 4S. At this stage your work place should have a general appearance of orderliness and cleanliness
More than 90 and up to 120	More than 75% and up to 100%	Sustaining approach	Your management is committed to maintain 5S and employees are showing positive interest in 5S activities

Annex II: Applying 5S in a Quality Improvement Project in the Light Engineering Sector (LES) in Bangladesh

“We have been greatly benefited from BQSP assistance. By implementing 5S we not only have a better working environment but we have increased our productivity by 30%. By introducing better controls during casting and machining we have been able to reduce our product returns from market from 5% to 1% and our sales volume has increased by 20%. We are also proud to say that we have been recently selected by a big manufacturer to be their supplier of hand pump components. We have no words to convey our appreciations for the valuable advice given by ITC and regular support provided by the local Trainer cum Counsellor who helped us in implementing 5S and QCS in a short period of time.” - Mr. Razul Karim, Proprietor, Reza Engineer’s, Bogra.



Context: Bringing the LES to the level of quality management (QM) by firstly making the industry aware of systematic use of good housekeeping and quality control (QC) practices.

The Bangladesh Quality Support Programme (BQSP) had two components, one implemented by UNIDO for strengthening the quality infrastructure and the other by ITC for export diversification. The ITC component in particular assisted Bangladesh in harmonising the efforts of all relevant stakeholders through the development of export strategies at sector level using value chain approach and focusing on supply chain management, quality and food safety management and packaging to achieve export diversification objectives by enhancing the competitiveness and quality of products.

Objective

The objective of ITC interventions was to contribute to implement some of the recommendations for quality improvement included in the document “A strategy for developing the light engineering sector in Bangladesh”:

- Lack of standards and quality of product.
- Develop quality gradually into world-class quality.
- Build capacities for manufacturers to meet export requirements in terms of quality and production volume through training involving quality control and quality assurance.
- In the implementation plan of the above strategy document, inter alia, the following two activities have been suggested:
 - Regularly organize group training courses on quality control and safety awareness.
 - Develop quality management guidelines.

Results of the project

- Knowledge on Basic Quality Concepts was imparted to 40 delegates from small enterprises and other stakeholders and 15 potential Trainers-cum-Counsellors (TCC) from Bangladesh
- 15 participants from 6 participating enterprises along with 6 TCCs, selected for assisting the enterprises, received two-day training on quality concepts
- Selected 6 enterprises provided advisory support to implement 5S and QCS by International Consultant and TCC attached to each enterprise
- Five (5) TCCs are now available for conducting training on 5S and QCS to other key players in the sector
- The results achieved by the enterprises were disseminated in an experience sharing workshop attended by 51 delegates from LES both from Dhaka and Bogra (i.e. increase in productivity and sales volume and reduction in waste and product returns)

Testimonials on results of 5S

“ITC project has been well received by the industry in the LES which is in a very nascent stage in Bangladesh. All the assisted enterprises have found Japanese 5S as a very simple and good tool to practice and they demonstrated this by initiating implementation of 5S in a short period of time of six months. QCS practices were also understood well by them and the QCS Manual, now developed by four enterprises with project assistance, will guide them to continue practicing QCS. The TCCs have also taken keen interest in practicing these two concepts (5S & QCS) and they could get hands on experience in implementing them in small companies. These TCCs can continue assisting other companies in future. This is a unique example of capacity building.”

– Mr. Arora, ITC International Consultant

“Our factory is now more organized and tidy, stores and warehouses are well arranged and productivity has also increased considerably. We are confident that the Quality Policy and Quality Manual now introduced will enable us in achieving better quality control which will contribute in boosting our exports which we have recently ventured into. We assure top continuous endeavour in conforming and improving our 5S and QCS practices for our greater benefit. Thanking once again to the International Trade Centre, Geneva, for its invaluable contribution.”

– Mr. Fazle RM Hasan FCA, Managing Director, North Bengal Cycle Industries Ltd. Mirzapur

“We are happy to say that we have very much benefited from the ITC assistance, for example, we had the opportunity to attend training workshops which helped us review our understanding of quality and good housekeeping. We have modified our layout to make it safer. We have eliminated many unnecessary items from the factory which gave us more space to do value adding activities. Store activity is more organized now. We do problem solving in a more organized way following the workforce to become more efficient. We have also prepared a Quality Manual compiling our 5S and quality control activities. We will continue our journey towards improving our 5S and QCS practices and adopt this knowledge in other units of our group of companies.”

– Mr. Shiblee Noman, Chief Engineer, Sigma Technologies Ltd, Dhaka

BEFORE	AFTER
Changes in fabrication shop of Modern Erection Ltd, Dhaka	
 <p>9 10:46AM</p>	 <p>20 10:52AM</p>
Production area at Reza Engineer's, Bogra	
	

Source: ITC

