5S IMPLEMENTATION MANUAL

UNIVERSITI KUALA LUMPUR

Malaysian Institute of Marine Engineering Technology

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DEAN'S FOREWORD

This manual provides a guideline for staff and students on the implementation of QE/5S system at UniKL MIMET's workshops. We hope that this manual will also help to "Sustain" the implementation of QE/5S practices and set a good example for the entire university community.

The implementation of 5S is to provide a quality work environment for staff to work and for students to learn. This shall include making reasonable efforts to regularly sort, arrange, label and clean items used in the workshops and making information on the items using labels and operating instructions that are readily accessible.

5S is more than just good habits, it is a work culture. The full commitment and diligent effort on everyone's part will ensure the success and effectiveness of the 5S system. A quality work environment through the implementation of 5S will lead to a more efficient, productive, safe and satisfying staff and work procedures.

We applaud the Safety Unit of UniKL MIMET and Mr. Shamsul Effendy Abd Hamid, Head of Marine Construction and Maintenance Technology Section for coordinating the production of this manual. All staff and students should become familiar with the contents of this manual as it pertains to their particular workshop areas.

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Head of Campus/Dean
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1.0 WHAT IS 5S

5S is a system used for keeping the quality of work in an organization. It is one of the most widely adopted techniques from the "lean manufacturing" practice. The primary objective of 5S is to create a clean and orderly environment where there is a place for everything and everything is in its place. It also improves safety, work efficiency, and productivity. Many organizations begin their lean transformation with 5S because it exposes some of the most visible of waste. It also helps establish the framework and discipline required to pursue other continuous improvement initiatives.

Figure 1.1: 5S definition

1.0 WHAT IS 5S

SORT

Separate things by keeping what are needed and what are not. Keep only those things that are needed in the workshop. Get rid of unnecessary items.

SET-IN-ORDER

Place and identify needed work items neatly. Design an area or place for everything so that anyone can easily find it. Always put things back in their designated places.

SHINE

Clean up. Always do the housekeeping before and after work. Maintain a clean and shiny work place.

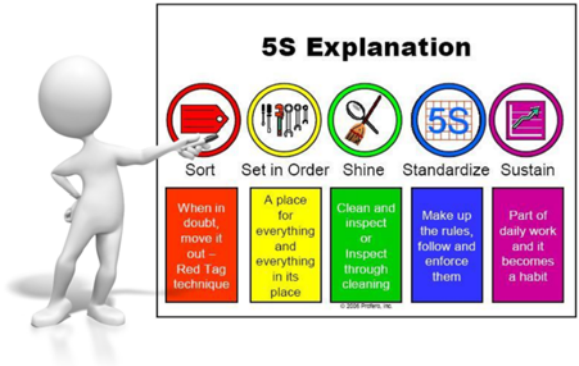
STANDARDIZE

Identify and encourage others to establish workplace practices as a standard. Make rules and procedures to promote a good work environment until the 5S culture becomes everybody's second nature

SUSTAIN

Maintain the momentum generated in practicing the first four S's. Give commitment and attitude in straightening up, putting things in order and cleaning.

1.0 WHAT IS 5S



2.0 BENEFITS OF 5S

- Reduce non-value adding activity.
- Reduce mistakes by staff and students.
- Reduce time for student orientation and training.
- Reduce search time in navigating the facility and locating tools, parts and supplies.
- Reduce parts stored in inventory, and associated inventory carrying costs.

2.0 BENEFITS OF 5S

- Reduce unnecessary human motion and transportation of goods.
- Improve floor space utilization.
- Improve staff and students' safety and morale.
- Improve product quality.

3.0 HOW TO IMPLEMENT

3.1 SORT (SEIRI)

Step 1 | **Make a clear standard for deciding what is necessary.**

- Things used once in a day, place them close to area of use.
- Things used once a week, place them close to the process.
- Things used once in 2 months, place them close to the workshop.
- Things that are rarely used, place them in a temporary storage.
- Disused items, throw away.

Figure 3.1a: Temporary storage

Figure 3.1b: Discard unnecessary item

3.0 HOW TO IMPLEMENT

Step 2 | **Decide (sorting) on the spot, implement on the spot.**

- Schedule a red tag. The Red Tag Strategy is a simple method for identifying potentially unneeded items in the workshop, evaluating their usefulness, and dealing with them appropriately. Red tag shows the item name, classification, person in charge, the action should be taken and the reason for the action.

Figure 3.1c: Red tag

- Create groups to straighten up according to the standard. Make sure all groups participate and are knowledgeable about the 5S.
- When choosing a workplace, choose where success can be guaranteed. This is to minimize failure rate.

3.0 HOW TO IMPLEMENT

Step 3 | **Regular audit committee/staff/technician checks for compliance.**

- Inspect frequently and without any advanced notice.
- Evaluate the workplace, give feedback to the staff or technician on what need to be changed for better quality.
- Give appropriate time for the 5S application before the next audit.

Step 4 | **Make sure that no unnecessary things are brought into the workshop.**

- Do not create any storage for unneeded things.
- Do not bring unnecessary and non-allowable things in the workshop.
- Make place such as rack, locker or shelves for placing the non-allowable things outside the workshop.

Figure 3.1d: Clean and larger workplace produced

3.0 HOW TO IMPLEMENT

3.2 SET-IN-ORDER (SEITON)

Step 1 |Arrange items in such a way for easy retrieval.

- Design a storage place that is well marked so that tool or items can be taken in and out quickly for ease of use. Unnecessary items can be easily detected.

- Create storage space for easy return and detection of missing items.

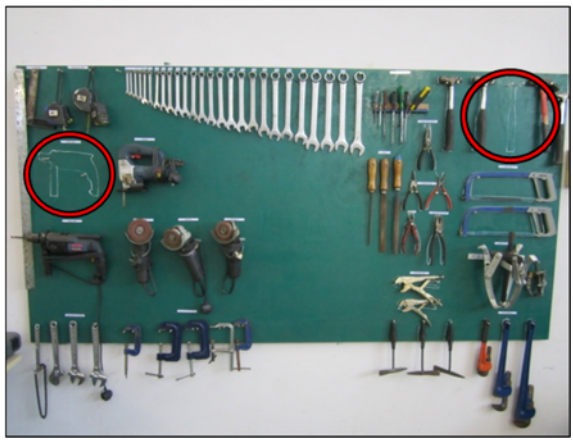


Figure 3.2a: Missing tools

3.0 HOW TO IMPLEMENT

Step 2 | Straighten up thoroughly.

- Never straighten up anything unnecessary. Get rid of unnecessary items.
- Within the work area, store only the minimum necessary items.
- Decide whether each item is a personal or group possession.

Step 3 | Decide where to place things.

- Decide on a convenient place in the work area to place things.
- The frequency of usage determines the location.

Step 4 | Decide on how to place things.

- There are many different ways of storing things such as drawer, shelves, boxes, lockers, and hanging. Storage should display items clearly for easy identification and access. Welcome any ideas from each work area.

Figure 3.2b: Drawers, shelves and lockers

3.0 HOW TO IMPLEMENT

Step 5 | Display.

- Locate display in the storage area.
- Display the actual item to be stored.
- Label and identify the storage location of each item.

Figure 3.2c: Labeled storage

3.0 HOW TO IMPLEMENT

Step 6 | Label items properly for easy identification.

- Post a list of articles (names, pictures).
- Arrange items for easy retrieval to minimize injuries in handling.
- Display the person in charge (PIC) for the items.

Figure 3.2d: Easy retrieval of items

Figure 3.2e: Expert technicians for machines and tools

3.0 HOW TO IMPLEMENT

Step 7 | Standardize by taking pictures, drawing sketches, and marking floor of the location of the equipment.

- Use shadow boards to standardize location of hand tools.
- Designate location and label it for all materials.
- Place parts according to types, and make the quantity easily seen.
- Make things first in, first out (FIFO).
- Designate area to fit quantity of items.

Figure 3.2f: Parts easily seen

Figure 3.2g: Big space for raw material storage

3.0 HOW TO IMPLEMENT

3.3 SHINE (SEISO)

Step 1 | First, get rid of all that dirt.

- Use the top down cleaning method – clean from the ceiling to the floor.
- Clean thoroughly with broom, mop and dust cloth.
- Make sure that the staff and students participate.

Figure 3.3a: Workplace cleaning

3.0 HOW TO IMPLEMENT

Step 2 | Determine the root cause of dirt and eliminate the source.

- Determine the root source of the dirt and take corrective measures so that dirt does not recur.
- Conduct meeting with staff/technician to locate the root cause of the dirt; decide how to prevent it and keep the areas clean.

Figure 3.3b: 5S meeting

3.0 HOW TO IMPLEMENT

Step 3 | Ensuring equipment is in usable condition is the primary purpose of shine.

- Get rid of all garbage and dust from the work area.
- Clean everything from the floor, the wall, the ceiling, and even insides of cabinets.
- All machine equipment, shelves and lockers must also be cleaned
- Polish the machinery every day so that the equipment really shines.
- Never just paint over the dirt on machines. Do not mistakenly think that if it looks clean, it is clean.

Figure 3.3c: Clean, shine and safe store /workplace

"Shine, make facilities spacious, bright, visibly appealing and produces much safer workplace"

3.0 HOW TO IMPLEMENT

3.4 STANDARDIZE (SEIKETSU)

Step 1 | Create ideas for making the 5S changes in standard operating procedure.

- Update workplace procedures, checklists, job aids, and diagrams.

S.O.P.

Standard Operating Procedure for Drill Machine

MACHINE OPERATION

1 Please ensure there is no material / tool, etc , on the machine.
2 Turn main power switch at electrical switch to 'ON' position.
3 Adjust machine speed to the correct speed by adjusting the belt.
4 The machine is ready for operation.
5 Place material to the drill vice and set the drill bit size needed to the chuck.
6 Push the green button to start the machine and red to stop.
7 STOP the machine before changing the drill direction.

Sequence to OFF the machine

1 Push the red button to stop.
2 Take out material from drill vice.
3 Secure all tools before return it to store.
4 Clean machine / working area after operate the machine.
5 Turn main power switch to 'OFF' position.

Figure 3.4a: Example of Standard Operation Procedure (SOP)

3.0 HOW TO IMPLEMENT

Step 2 | Update documentation to reflect the changes.

- Get the person involved to ensure compliance with ISO requirements.

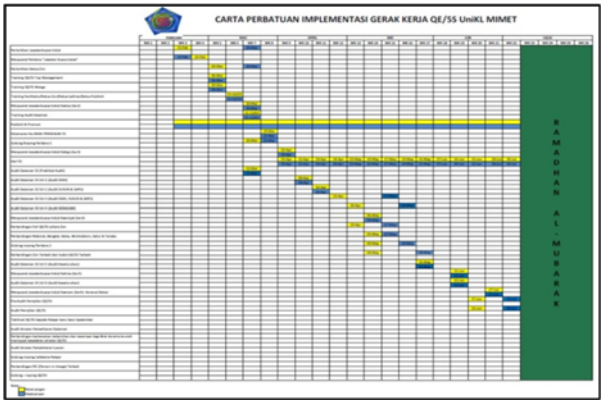


Figure 3.4b: 5S implementation milestone chart

3.0 HOW TO IMPLEMENT

Step 3 | Make sure all staff and students are aware of the new standard.

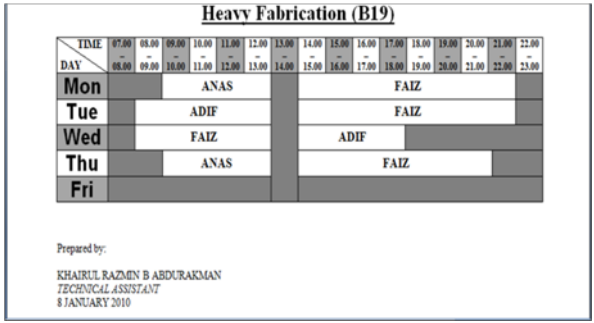


Figure 3.4c:

Duty roster to show the person in charge (PIC) everyday

3.0 HOW TO IMPLEMENT

3.5 SUSTAIN (SHITSUKE)

Step 1 | Maintain 5S awareness

- Continually motivate to improve the workshop and promote the 5S program.
- Distribute 5S newsletter, 5S posters, 5S awards, 5S motto, 5S competition, 5S Day to ensure continuity of practice.

Figure 3.5a: 5s posters and newsletter on the notice board

3.0 HOW TO IMPLEMENT

Figure 3.5b: 5S competition posters

Figure 3.5c: 5S awards

3.0 HOW TO IMPLEMENT

Step 2 | Create motivation for 5S.

- Give motivation at the workshop level by creating more 5S activities.
- Take pictures of our area every 2 months and compare to see improvements.

Figure 3.5d: List of 5S activities

3.0 HOW TO IMPLEMENT

By implementing 5S, productivity, efficiency and working spirit will be generated and promoted. It is not only important to manage work place physically but also useful to develop staff and students' attitude and discipline.

Figure 23: UniKL (MIMET) 5S policy

3.0 HOW TO IMPLEMENT

Figure 24: UniKL (MIMET) objectives

4.0 EXAMPLE OF ONE-DAY WORK WITH 5S

Have a 10-15 minute meeting/briefing before starting work.

- Be cheerful and ready to work
- Get all tools and proper personal protective equipment ready
- Everyone shares information and give ideas

As soon as the meeting/briefing is over, go to work stations.

- Confirm job of the day
- Check materials and machines per startup procedure
- Do not forget safety procedures

Operation begins at the designated time.

- With the designated material
- Use the designated machines
- Follow the designated methods

5S matters at break and rest.

- Breaks are taken at the designated time in the designated place
- After break or lunch, return to work position promptly

Clean up before going home.

- Housekeeping
- Confirm tomorrow's plan
- Parts and materials are arranged in order
- Everything is turned off that should be turned off.

WORKSHOP SAFETY
HAND BOOK

SAFETY COMMITTEE
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