



Application of 5S Management System in NDE Laboratory

K.R.M. Ananthanarayanan

MSA, Vikram Sarabhai Space Centre, ISRO P.O., Thiruvananthapuram-695 022

Abstract

The rapid growth of NDE laboratories has opened up a requirement of better management of these laboratories in order to provide a safe, clean and healthy environment. The statutory laws on health, safety and environmental protection have also assumed a bigger role today. In this background, it is essential to imbibe a quality management system that would help in improving the planning of the laboratory layout, provide an impetus for a clean environment which in turn can reduce health and safety hazards. 5S is a technique that is used to establish and maintain a quality environment that help in reducing waste and maintain a high degree of cleanliness and orderliness in the work place. This assumes more importance in NDT laboratories wherein cleanliness and orderliness are more linked to safety and health. The 5S system also helps to establish and maintain an efficient data management system that can provide a personalized customer service.

In this paper, the concept, the need, methods and the resources required for implementing a 5S management system in an NDE laboratory are dealt with. The experiences on implementing the system in an NDT laboratory are dealt with as embedded cases in the explanation of the steps of implementation.

1. Introduction

The concept centers around good housekeeping that will result in reduction of waste, better cleanliness and evolve a culture that would sustain for a long time. 5S refers to the five structured programs using the Japanese principles of **seiri, seiton, seison, seiketsu, and shitsuke**-or commonly referred to as sort, set, shine, standardize and sustain, respectively. Although there are different anglicized versions of the Japanese words within the context of Lean Manufacturing, the 5S is collectively alluded to as the “Pillars of Good Housekeeping” for successful lean implementation. It is indeed what is well practiced in the kitchen of our house from generation after generation.

2. The Need

It is found by experience that NDT laboratories in organisations have to cater to the needs of the various customers both internally and externally. The input comes in different forms and sizes of components and in varied specifications. People who visit the laboratory are also not fully aware of the NDT methods and safety. As most of the NDT methods have the defect comparison as the mainstay in the evaluation of the defects, samples pile up. Sometimes rejected items are not taken back by the concerned department. In an organization that takes up production and developmental works, the setting of the equipments often change and modifications in the fixtures, transducers and data acquisition system take place. These

interfere with the routine production work leading to some unintended errors. It is also important these laboratories are clean to avoid deleterious effects of chemicals, oil, grease and other materials that aid the evaluation. 5S management system helps to reduce these problems and also brings in better work discipline.

2.1 Methods of Implementation with Embedded Cases

Following are the main steps in the implementation of the 5S management system:

1. Getting the theme convinced of the need. The experience at this stage is very interesting. In a government department, where the effort to implement the system was started, it was initially considered that such systems are already there. ‘Our laboratory is clean and well laid out’ was the typical reaction. But a visual inspection revealed that cotton waste was hanging out and all the time it was just pulled out with bits and pieces falling out and the used up waste was seen near the cotton storage box. An electrical wire was hanging across the wall towards the surface plate connecting a visual inspection aid. The operator moving around was lifting up the wire each time he passed through that side. The resources were there but it needed to be organized. In a private sector laboratory that was visited during a surveillance activity for the Department, it was observed that penetrant stains were on the floor and walls, developer dust was seen on UT equipments and the radiographs were heaped up and it took a good amount of time to retrieve an old record. The customers often have to wait for the report and third party inspectors found it difficult to visit the place. It was also seen that in the night radiography was taken in the open factory yard causing safety hazard. These issues
2. Organize a task team and plan a one hour programme to explain the technique. It is important to use as many examples that the laboratory staff can identify with improvement than to describe the meaning of each S. This best done by persons who were working in the same field and were visiting the place for quite sometime. The team can be just two members who have a NDT background.
3. Developing a plan for each of the S. For example - Treat seiri (sort/organize) as a ‘waste reduction’ activity. The goal is to find time for housekeeping and to make housekeeping as easy as possible. The best way to do this is to go out in the laboratory and search for everything that creates unnecessary effort and time delay. Sort out unnecessary objects; mark all known problems, find leakages, and remove hazards. Red-tag every problem and make an action plan to eliminate the cause of the problem. The paper describes the action plans for each of the S and the difficulties faced in the implementation of the same.
4. Publicly announce the program.
5. Evaluate the results of the program after the implementation. Check for acceptance of the programme by the core concerned in the laboratory. If they have found difficulties, try to sort it out rather than the forcing the technique on them. The methods are to be accepted by all as a part of their daily routine that needs no eminder. That brings the ultimate success.

3. Conclusion

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Implementation of 5S management system in a NDE laboratory helps to reduce waste, organize the laboratory in a customer friendly manner, focus of improvement on health and safety of the concerned and in ensuring better data management. This paper provides the fundamentals of the concept, the need and the steps of implementation. The case experience in the implementation of the technique is also explained. This paper provides justification and motivation for the NDE laboratories to implement the 5S management system in their premises.

4. References

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