Implementation of a Core Engagement and 5S Event QMS Project – DMS Standardization

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Abstract — The manufacturing industry is extensive and generally includes businesses that take materials or components and transform them into products. Often, manufacturing firms operate out of factories and plants. In a more limited sense, manufacturing denotes the fabrication or assembly of components into finished products on a large scale. Manufacturing is the creation or production of goods with the help of equipment, labor, machines, tools, and chemical or biological processing or formulation. It is the essence of the secondary sector of the economy. The term may refer to a range of human activity, from handicraft to high-tech, but it is most applied to industrial design, in which raw materials from the primary sector are transformed into finished goods on a large scale. Such goods may be sold to other manufacturers to produce other more complex products or distributed via the tertiary industry to end users and consumers. To guide practitioners, execute the steps needed to manufacture a product detailed and precise work instructions are required. These documents guide manufacturing personnel step by step through a process. They provide essential information on how to assemble, fabricate, and inspect products, ensuring consistency, quality, and safety. Company ABC is now the umbrella for several organizations that are providing manufacturing services for the Aerospace Industry. Under the new document's integration of Company XYZ with Company ABC, there are opportunities to standardize or streamline the paperwork needed. After both companies' evaluations of specific documentation changes need to be executed. Although this is a general effort; this Project or Event will be done specifically for the business support unit for the manufacturing shop floor. The department folders have been identified. Currently there are either files for services that are no longer provided or files that need to be taken out local tool because in certain cases keeping them produces duplicity. With this Project we will create and execute a streamline plan in support to the Quality Management System integration process to:

1. Identify files that: need to be obsoleted, moved to US locations, or need to remain in PR Document Management System
2. Create disposition plan (method, owners, timeline, etc.)
3. Execute disposition plan.

Event will be performed within the Department and participants will be new hires who are working through their respective CORE Apprentice certifications. We will use the 5S Methodology and will be later detailed in this document.

   Key Terms — DMS, QMS, CORE.

PROBLEM STATEMENT

Since these two companies are now one, under the new Quality Management System (QMS) integration are opportunities to standardize the Document Management System (DMS) for the Operations Support Department. The documents in the Document Management System shall be accurate, since most of them are utilized as guidelines to execute tasks that support the shop floor. Currently there are either files for services that are no longer provided or files that need to be taken out local tool hence there are already maintain in the Headquarters The reason is that some of them are obsolete, due to the service or task has been discontinued or are duplicated in the systems.

RESEARCH DESCRIPTION

The 5S methodology is a systematic approach to workplace organization. This method includes the five steps of Sort, Set in Order, Shine, Standardize, and Sustain. The steps of 5S involve going through items in a workspace, removing what's unnecessary, organizing items, cleaning, performing maintenance, and making sure these things become habits. The files must be reviewed by the owners and practitioners to validate its content is accurate with the task, if the service is still provided, there are not in United States and Puerto Rico systems – which will incur in duplicity. Documents guide manufacturing personnel piece by piece. They deliver critical information on how to assemble, fabricate, and inspect products. Manufacturing engineers are responsible not just for creating the work instruction, but for updating and managing these documents in a timely fashion to maintain product quality and meet regulatory requirements. These steps should occur in this order, and there must be a plan in place for performing the tasks associated with these steps on a regular basis.

We will use the 5S Methodology and the event will be performed within the Department and participants will be new hire employees who are being trained in the current systems and methodologies.

RESEARCH OBJECTIVES

The objective is to reduce in the outmost way the quantity of documents in the local tool as part of the folder standardization effort creating and executing the streamline plan in support to the Company XYZ & ABC integration process.

RESEARCH CONTRIBUTIONS

The Department is reorganized with only the necessary documents once all dispositions are performed based on documents owners' decisions related to the adequacy or need of them. The contribution of this research is the Business Support

Unit (BSU) Quality Management System Integration Alignment with two organizations that merge. As required in the Lean Methodology daily improvement is expected, identifying, and eliminating waste and implementing measures to prevent duplicity and is intolerant to waste in all its forms. This will positively affect the time spend in the process of location the documents and the time waste of cross-referencing and researching if the document still applies. Time waste and accuracy will be significantly improved. Time reduced impacts the process and deliverable quality with cause a direct impact in the operational costs of the organization.

LITERATURE REVIEW

Continuous improvement is the process of making small incremental changes that add up to significant results based on deliberate observation of current processes. Continuous improvement gives organizations a competitive advantage by producing quality products and providing maximum value to customers.

Within the Continuous Improvement Process there are several methods. We will use The Lean Method. The Lean Method principles aim to eliminate waste, optimize processes, and maximize value for customers. It gives various tools, such as Value Stream Mapping, 5S (Sort, Set in order, Shine, Standardize, Sustain), and Kanban, are used to identify and eliminate non-value-added activities in processes.

A Lean Manufacturing is a culture about a way to work that expects daily improvement, identifying and eliminating waste and implementing measures to prevent recurrence across the entire enterprise. It is intolerant to waste in all its forms.

This methodology aims to fully optimize the team's process and output through continuous improvements.

Lean concepts application started since 1799 with the concept of interchangeable parts. These concepts and fundamentals were acquired by auto

industry which integrate on market and advertise strategically like Toyota, GM, and Ford.

Lean is relevant in the manufacturing area because the goal is to reduce waste within the production system as well as waste from suppliers and to customers. The lack of tolerance to waste in the manufacturing area is leading the industry to adapt the means and methods toward day-to-day enhancements. Lean is the mean for optimization for achieving the overall goal of eliminating waste from the workplace. That includes wasted time, wasted products, and wasted services. Even small improvements that eliminate waste from a process can end up big over time.

The 5S methodology is a systematic approach to workplace organization by eliminating waste, improving flow, and reducing the number of processes where possible [1]. The 5S condition of a work area is critical to employees and is the basis of customers' first impressions. 5S was developed in Japan and was identified as one of the techniques that enabled just-in-time manufacturing 5S is defined as a methodology that results in a workplace that is clean, uncluttered, safe, and well organized to help reduce waste and optimize productivity. It's designed to help build a quality work environment, both physically and mentally [2]. The 5S philosophy applies in any work area suited for visual control and lean production [3]. This method includes the five steps of Sort, Set in Order, Shine, Standardize, and Sustain. The steps of 5S involve going through items in a workspace, removing what's unnecessary, organizing items, cleaning, performing maintenance, and making sure these things become habits. These steps should occur in this order, and there must be a plan in place for performing the tasks associated with these steps on a regular basis.

The decision-making process usually comes from a dialogue about standardization, which builds understanding among employees of how they should do the work.

METHODOLOGY

The methodology to be used is 5S. 5S is a system for organizing. This system focuses on putting everything where it belongs and keeping the workplace clean, which makes it easier for people to do their jobs without wasting time.

Figure 1
5S Process

The posts of 5S are simple.

Sort - involves going through all the tools, furniture, materials, equipment, etc. in a work area to determine what needs to be present and what can be removed.

- What is the purpose of this item?
- Who uses it?
- Does it need to be here?

These questions help determine the value of each item. A workspace might be better off without unnecessary items or items used infrequently. These things can get in the way or take up space.

Keep in mind the best people to assess the documents are the people who work in that space.

Document Owners will determine which documents will be targeted and assign an owner for the task.

Straighten: determine what is being used, what can be deleted or what is important but no longer needed

Once the extra clutter is gone, it's easier to see what's what. Now work groups can come up with their strategies for sorting through the remaining items. Things to consider:

Shine: assign to United States or Headquarters Document Management System or delete or what is no longer needed to create a lean Local PR Document Management System with the retention of the essential files.

Standardize: The processes of clean and maintain a streamlined Document Management System for accuracy, order, and use should be standardized and implemented across the organization.

Sustain: The organization should have the initiative to continuously and consistently practice the 5S methodology [4]. The objective is to maximize the business's potential by removing all obstacles to productivity that are within the operation's control. utilize the 36 Month Revision to maintain the Document Management System required content.

This schedule is the proposed plan with the most relevant milestones required to complete the work, with their estimated due date or the time required to complete each activity.

5S Stages	Dates	Actions	Owner (S)
SORT (Distinguish between what is needed and not needed)	*11/30/2023*	Files were sorted and Event/Doc owners were identified.	▪ Brenda Picart
STRAIGHTEN (A place for everything and everything in its place)	*12/05/2023*	A spreadsheet was modified to document actions and status.	▪ Brenda Picart
SHINE (Cleaning, and looking for ways to keep it clean and organized)	*01/10/2024*	Dispositions for Files were identified for either moved, retained or deleted by the owners.	Participants
STANDARDIZE (Maintain and monitor the first three categories)	01/15/2024	Review the File provided to document the dispositions made and any pending action from the Owners.	▪ Brenda Picart
SUSTAIN (Self-discipline, Schedule cleaning and maintaining)	*Occurs every 36 Month.*	Owners of the Documents will be responsible to update the documents as per DMS requirements.	▪ Document Owners

Figure 2
Stages Due Dates and Actions

Figure 3
Gantt Chart

RESULTS AND DISCUSSION

This section presents the analysis of results and a discussion of the problem established. After putting the plan in action, using the 5S Methodology, the effort demonstrated that there were not duplicates and that the local tool will hold most of the documents except for 20 obsolete documents. The retention of those implied a cost of using documents outdated or obsoleted could be a high risk for quality nonconformances. Additionally, there are costs related to reviewing on a determined time basis for auditing, which would have been hours of effort not needed and therefore a waste.

5S Application to the Project

In the next figures, the results of the application of 5S to the project will be presented.

Figure 4
Sort

Figure 5
Straighten

Figure 6
Shine

Figure 7
Standardized

Figure 8
Sustain

Figure 4 presents an extract of the Table in Excel developed with the information from the tool. Files were sorted, and Event/Doc owners were identified. Its purpose is to divide the documents equally among the Team Members and assign owners.

The spreadsheet created in the Sort Phase was modified to organize the documents to be assessed, provide actions and status to the Team. A Teams chat was also created.

Dispositions for Files were identified: after review and owners contact for disposition; Decisions were made to either maintained in the Document Management System or deleted due to their obsolescence.

For the Standardize phase, the excel standard form included additional information as reference for reasoning for disposition or not and for next evaluation.

Owners of the Documents will be responsible to update the documents as per DMS requirements – which is recommended to be at most 36 months. If major or critical changes are needed changes can be submitted as needed.

CONCLUSION

We can conclude that the tool has presented multiple benefits for the sales team immediately after implementation. These benefits are summarized in the following:

The Project Scope was to create and execute a streamline plan in support to the QMS Integration process. It will be performed within the Department and participants will be new hires who are working through their respective CORE Apprentice certifications. We identified eight practitioners to be part of the Project, they will follow the lead of Brenda Picart – current Project Manager and Core Champion of the Team.

Before the 5S Event, 106 Documents were the total contained in the Document Management System where the instructions for the tasks performed by the Department are controlled. After the assignment, revision, and confirmation of the Document owner of the disposition for them a total of 20 documents were obsoleted. Hence 86 documents are active and up to date in the Document Management System. Nineteen percent of the total documents were reduced.

The results of the Project are summarized in the following graphic (Figure 9).

The Scope was initially defined to reduce the quantity of documents in the local tool to avoid using obsolete or duplicate documents.

Recommendations for Future

While this was a Project for the specific Department- this is a task that can be done for the Unit (which holds the Department) and we recommend developing a strategy to apply it to the others-controlled documents, also to determine a timeframe to revisit the documents in the tool and ensure the ones contained in it are required to be in it. And in parallel to create a code to have the same tool to send emails to review and act on the accuracy of the documents and therefore the information contained in them.
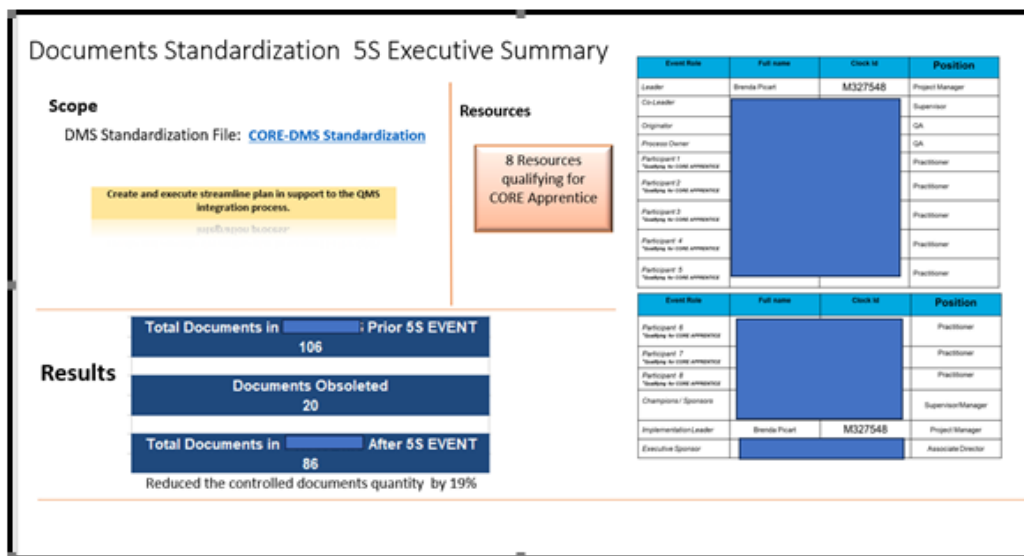

Figure 9
Executive Summary

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