Implementation of the 5S Methodology in the Spare Parts Warehouse Area located in a Medical Device Company

John Rosado Miranda
Master in Manufacturing Competitiveness
Advisor: Carlos Pons Fontana, Ph.D.
Industrial and Systems Engineering Department
Polytechnic University of Puerto Rico

Abstract *— The implementation of a continuous improvement and application of the 5´S in a medical device company was specifically developed in the warehouse area (spare parts) and focused on the identification of materials, order and cleaning in order to achieve Certification of the ISO 9001: 2000 Quality Platform referring to quality and good customer service. The main objective of this project was to carry out inspections in the area of the warehouse to observe the existing deficiencies and improve them based on the 5´S and Kaizen methodology applied to the warehouse.*

Key Terms *— 5S Methodology, Continuous Improvement, Kaizen, ISO 9001: 2000 Quality Platform.*

INTRODUCTION

The 5´S and Kaisen methodology represent actions that are principles expressed with five Japanese words that begin with S. Each word has an important meaning for the creation of a decent and safe place to work. These five words are: Classify (Seiri), Order (Seiton), Cleaning (Seiso), Normalized Cleaning (Seiketsu), Discipline. (Shitsuke) [1]. The evaluation of the 5´S and Kaisen was carried out in the warehouse area (spare parts) of a medical device company. Areas of opportunity were identified to offer suggestions and recommendations that go for the benefit of the company. The necessary resources were also available to make a diagnosis of the deficiencies in the warehouse and thus determine the possible causes of the main problems in terms of disorder and disorganization. The research was developed based on brainstorming applied to warehouse facilities from the point of view of workers and existing needs.

The spare parts department has a warehouse where all the materials (in their totality fifty-two) are considered replacement parts for the activities of the other departments of the company. Especially for the different manufacturing lines. It is in this place where such pieces are stored, once they are received by the distribution center and that is where they are kept until required by the company's operating departments. Figure 1 shows the plant layout of the spare parts warehouse within the medical device company.

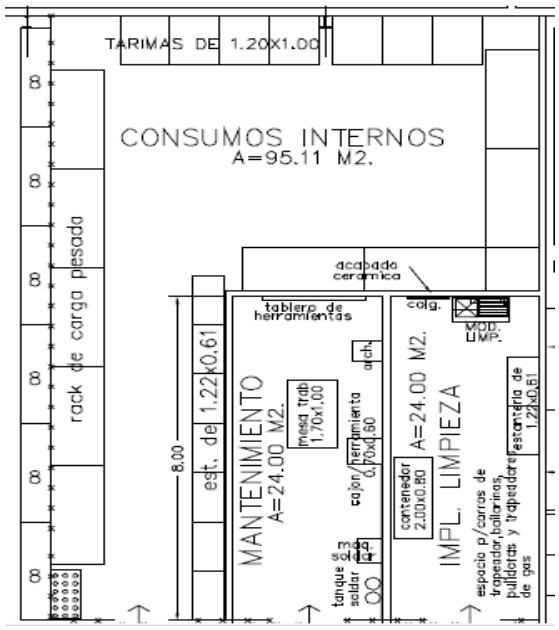

Figure 1
Plant Distribution of the Spare Parts Warehouse

When making a review visit in the spare parts warehouse within the medical device company to know the current situation, it was possible to detect the poor organization, since the area was in a mess and dirt situation. There were boxes on the ground that obstruct the flow of personnel and material, as shown in Figure 1. It was also found that the

merchandise is not classified or located in a way that makes it easy to quickly find all products thus making it impossible for obtaining inputs. A lot of dust was also observed on the shelves and boxes.

Figure 2
Current Warehouse Situation

In the last inventory made to the warehouse of internal consumption, a percentage of loss of 2.5% was disclosed exceeding the percentage of loss of 1% allowed within the margin established by the company's management. With this information Table 1 was prepared which helps to raise areas of opportunity within the warehouse. The table shows the indicators already existing in the consumption department, supply percentage and decrease percentage as well as others which were necessary to consider in order to measure the good performance of activities within the workplace. Other indicators shown in Table 1 are the percentage of compliance in the cleaning role and percentage of orders supplied per minute.

Table 1
Comparative Chart of Indicators in the Warehouse

Objective	Indicator	Real Valor	Desired Valor	Difference	Problem
1. Know the frequency with which all cleaning activities are carried out that facilitate the operation inside the spare parts warehouse	% compliance in the cleaning role	0%	100%	100% Negative	No cleaning role is established for the object under study
2. Know the quantity in percentage of orders that are supplied in time established for it	% of orders supplied per minute	50%	100%	50%	The location of the products within the warehouse is unknown, which causes a lot of search time.
3. Know the percentage of products that are counted in correct quantities without the need to perform the store operations	% supply	70%	100%	30% less	There is no exact supply of the required merchandise, as there is no inventory, to know what is needed and what is not
4. Know the percentage of material that becomes unusable to work due to mishandling or destruction.	% of waste generated	2.5%	1%	1.5% of waste generated	There is no good handling of the products, which generates deterioration within the warehouse, in addition there are conditions of dirt, and disorder, generating products that are not used for use

PROBLEM STATEMENT

With the information in Table 1 a cause-effect diagram was developed, which supports the definition of the main current problem within the internal consumption store (see Figure 3).

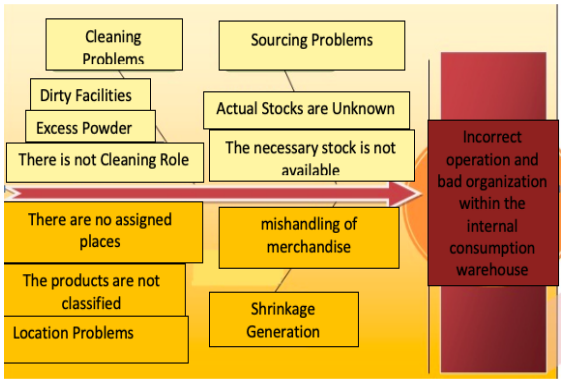

Figure 3
Cause-Effect Diagram

With the help of this diagram it was possible to define the following problem: There is a need to implement a methodology that eliminates disorganization, poor product location and dirt in the spare parts warehouse.

LITERATURE REVIEW

Continuous improvement is a method to make sure that processes, methods, and practices are as efficient, accurate, and effective as possible. This is done by periodically examining and improving the processes to smash bottlenecks, use the best software, and take advantage of the most efficient methods. Continuous improvement is based on principles similar to those of lean, kaizen, Six Sigma, and DMAIC and forms a key part of those practices. This is because the primary objective of any changes is to reduce waste and streamline your work. While there are many different methods for achieving continuous improvement (such as process innovation and the Deming cycle), all can be classified into one of two groups; incremental or breakthrough improvements [2].

What is the 5S Strategy? It is called the 5S strategy because it represents actions that are principles expressed with five Japanese words that begin with S. Each word has an important meaning for the creation of a decent and safe place to work. The five words are: Sort out (Seiri), Order (Seiton), Cleaning (Seiso), Standard cleaning (Seiketsu) and Discipline (Shitsuke).

The five "S" are the foundation of the industrial productivity model created in Japan and applied today in Western companies. It is not that 5S are exclusive characteristics of Japanese culture. Everyone, including non-Japanese, practice the five "S" in personal lives on numerous occasions without noticing. People practice Seiri and Seiton when they keep items such as tools, fire extinguishers, garbage, towels, notebooks, rules, keys etc. in appropriate and identified places. When the work environment is disorganized and without cleaning, efficiency is lost and morale at work is reduced [1].

What is the need for 5S Strategy? The 5S strategy is a simple concept that often is not given enough importance; however, a clean and safe factory allows to guide the company and workshops towards the following goals:

- Respond to the need of improving work environment eliminating waste caused by disorder, lack of cleanliness, leaks, pollution, etc.
- Seek the reduction of losses due to quality, response time and costs with the intervention of personnel in the care of the work site and an increase of morale for work.
- Facilitate the creation of conditions to increase the useful life of the equipment, thanks to the permanent inspection by the person who operates the machinery.
- Improve standardization and discipline in compliance with standards by giving staff the possibility of participating in the development of cleaning, lubrication and tightening procedures.
- Make use of visual control items such as cards and boards to keep all the elements and tools involved in the production process in order.
- Keep the work site clean through regular checks on the maintenance actions of the improvements achieved with the application of 5S.
- Implement any type of program of continuous improvement of production; Just in Time, Total Quality Control and Total Productive Maintenance.
- Reduce potential causes of accidents and increase awareness of care and conservation of equipment and other resources [3].

What is SEIRI? Seiri, or classifying, means eliminating all elements from the work area that are unnecessary, not required to perform the work. Often the workplace is "fill up" with items, tools, boxes with products, cars, supplies and personal items and people have a hard time thinking about the possibility of doing the job without these elements. They seek to have around elements or components thinking that they will need them for the next job. This creates small stocks which annoy, take away space and hinder. These elements impair the visual control of work, prevent circulation through work areas, induce mistakes in the handling of raw materials and in many opportunities can cause accidents at work. The first "S" of this strategy provides methods and recommendations to avoid the

presence of unnecessary elements. The Seiri elements are:

- Separate on the job site the things that really work from the ones that don't work.
- Classify the necessary from the unnecessary for routine work.
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- Maintain what we need and eliminate the excessive.
- Separate the elements used according to their nature, use, safety and frequency of use in order to facilitate agility at work.
- Organize the tools in places where changes can be made in the shortest possible time.
- Eliminate elements that affect the operation of the equipment and that can lead to breakdowns.
- Eliminate unnecessary information that can lead to errors in interpretation or performance [3].

What is SEITON? Seiton consists of organizing the elements that have been classified as necessary so that they can be easily found. Applying Seiton in maintenance has to do with the improvement of the visualization of the elements, machines and industrial facilities. Once the unnecessary elements have been eliminated, the place where frequently needed items should be located is defined, identifying them to eliminate the search time and facilitate their return to the site once used (this is the case of the tool). Seiton allows to:

- Have a suitable site for each element used in routine work to facilitate access and return to it.
- Have identified sites to locate items that are used infrequently.
- Have places to locate the material or elements that will not be used in the future.
- Facilitate the visual identification of the elements of the equipment, security systems, alarms, controls, directions of rotation, etc. (in the case of machinery).
- Ensure that the equipment has visual protections to facilitate autonomous inspection and cleaning control.
- Identify and mark all auxiliary systems of the process such as pipes, compressed air and fuels.
- Increase knowledge of equipment by production operators [3].

What is SEISO? Seiso means removing dust and dirt from all the elements of a factory. From the point of view of the Total Productive Maintenance (TPM) Seiso involves inspecting the equipment during the cleaning process. Problems of leaks, breakdowns, failures or any type of FUGUAI (defect or problem existing in the productive system) are identified. Cleaning is closely related to the proper functioning of the equipment and the ability to produce quality items. It does not mean only keeping the equipment in a pleasant aesthetic permanently. Seiso implies a superior thought to clean. It requires to carry out a creative work of identification of the sources of dirt and contamination to take root actions for their elimination, otherwise, it would be impossible to keep the work area clean and in good condition. It is about preventing dirt, dust, and filings from accumulating in the workplace. To apply Seiso it is a must to:

- Integrate cleaning as part of daily work.
- Assume cleaning as an autonomous maintenance activity: "cleaning is inspection".
- Abolish the distinction between process operator, cleaning operator and maintenance technician.
- Consider cleaning work as an inspection, it generates knowledge about the equipment. It is not a simple activity that can be delegated to people of lower qualification.
- Understand it is not just about removing dirt. The cleaning action should be elevated to the search for sources of contamination in order to eliminate its primary causes [3].

What is SEIKETSU? Seiketsu is the methodology that allows to maintain the achievements made with the application of the first three "S". If there is no process to preserve the achievements, it is possible that the workplace again has unnecessary elements and the cleanliness achieved with previous actions is lost. An operator

of a consumer products company, that has practiced TPM for several years, states: "Seiketsu implies developing cleaning and inspection standards to carry out permanent self-control actions…must prepare standards for us [3]." When the standards are imposed, they are not satisfactorily met compared to those developed thanks to a prior training process. For decades the principle written in numerous companies has been known and also that it must be fulfilled when a work shift ends: "We will leave the workplace as clean as we find it." These types of phrases without proper training in standardization and without the space for employees to perform these standards, makes them to hardly compromise on their compliance. Seiketsu or standardization aims to:

- Maintain the state of cleanliness achieved with the first three S.
- Teach the operator to make rules with the support of management and adequate training.
- Require the rules to contain the necessary elements to perform the cleaning work, time spent, safety measures to be considered and procedure to follow in case of identifying something abnormal.
- If possible, take photographs of how the equipment and care areas should be maintained should be used.
- Require the use of standards to be audited to verify compliance.
- Use cleaning, lubrication and tightening standards as the basis of autonomous maintenance (Jishu Hozen).
- Eliminate areas of difficult access, sources of contamination and improvement of cleaning methods by Kaizen work program.
- Integrate Seiri, Seiton and Seiso actions into routine work.

What is SHITSUKE? Shitsuke is the discipline creating habits based on the previous 4'S. Shitsuke or discipline means making the use of established and standardized methods for cleaning in the workplace a habit. The benefits achieved with the first "S" for a long time can be obtained if an environment that respects the established norms and standards is created. The four previous "S" can be implanted without difficulty if discipline is maintained in the workplace. Its application guarantees that safety will be permanent, productivity will be progressively improved, and the quality of the products will be excellent. Shitsuke implies a development of the culture of self-control within the company. If the management of the company encourages each of the members to apply the Deming Cycle in each of the daily activities, it is very certain that the practice of Shitsuke would have no difficulty. Shitsuke is the bridge between 5S and the Kaizen concept or continuous improvement. The habits developed with the practice of the PDCA (Plan , Do, Check, Act) cycle constitute a good model to make discipline a fundamental value in the way of performing a job. Shitsuke implies:

- Respect for the rules and standards established to preserve the impeccable work site.
- Performance of personal control and respect for the rules that regulate the operation of an organization.
- Promoting the habit of self-monitoring or reflecting on the level of compliance with established norms.
- Understanding the importance of respect for others and the standards in which the worker has surely participated directly or indirectly in its preparation.
- Improved respect for a person's own being and others [3].

METHODOLOGY

5S's is a fully proven work methodology around the world, considered as a management tool with a Japanese approach to quality and productivity improvement, fostering a culture of continuous improvement through active staff participation. This chapter describes each of the steps that were followed for the implementation of the 5S's in the internal consumption store. In addition, the materials used are included in order to achieve the objective, which is the organization of the warehouse.

Subjects

The subject is the spare parts warehouse that is located within the company of medical devices in Dorado, Puerto Rico. The participants in the implementation of the 5S´s will be the Chief of the same and his assistant. There will also be participation of an industrial engineer who will be in charge of supervising and verifying the correct monitoring of the implementation.

Materials

For the realization of the 5S's application project in the spare parts warehouse the following materials were necessary:

- Digital camera: used to take evidence by means of photographs of the situation in which the spare parts warehouse was located before carrying out the project, photos were also taken to document the gradual change and the results presented in the work area as the first three stages of the methodology were implemented.
- 5S´s evaluation format: this document contains the information necessary to evaluate at the beginning and at the end of the project. Evaluating the cleanliness of the area in general, its order and the discipline that is instilled in the labor camp staff.
- Red card format: it is used to locate all the unnecessary objects, which indicates the destination, preventing them from mixing with the objects or materials that do have any use.
- Brochure: designed to provide information to personnel in charge of internal consumption, with the purpose of knowing the method and application of the 5S's methodology.

Determination of the Current Warehouse Situation with Respect to 5S´s

As a first activity within this phase a tour was made within the warehouse facilities. All twenty one shelves located inside and the different areas where the merchandise is placed were reviewed in order to define the current state and detect the areas of opportunity in terms of; organization, order and cleanliness, highlighting visible needs. Subsequently, in conjunction with the warehouse manager a 5S´s verification sheet was applied. This format contains twenty-four questions or items related to each phase of the methodology, measuring their compliance within the activities of the warehouse to continue determining the current situation of the warehouse. This list will be used to measure the achievements once the 5S's application is completed, since the results obtained before and after applying the methodology will be compared.

Implementation of the first S (Select): At this stage the investigators proceeded to select and separate material or objects that are not designated to be used. In the case of the object of study analyzed, all material or product that is used less frequently was selected, considering that the necessary objects are rearranged and maintained only with the necessary quantities. The frequency of use was established as a selection criterion, then taking as "necessary" all products that are used more than three times per week and as "not necessary" or "minor" to all products that are used two or once a week. Once the selection criteria were defined, all products of lesser or no need within the warehouse were identified by means of red cards. The red cards contain name and type of product, as well as a folio number for identification. Within the warehouse, a transition zone was temporarily established where all the elements classified as "of minor importance or use" were located to later be assigned and located in a place defined according to their type.

Implementation of the second S (Sort): To order the location of the products within the warehouse, a list was prepared with all the types of products that are handled in it. In the list, each item was classified by department, to later decide on its location within the warehouse. Once all the products were classified by the department to which they belong, they were assigned a color that will help to locate them once the area where they are permanently accommodated is established, this with the purpose that anyone can easily find them with the help of color classification. First, places within the warehouse were defined for the products that are most used, to allow the

minimum time it takes to find and obtain them. After locating the main products within the warehouse the location of those products with less frequency of use, those that were located in the "transition zone", was continued since its use is equal to or less than twice a week. Finally, an area was established within the warehouse to locate all surplus products. At the end of locating all the materials a letter size label was placed with the name of the department to which they belong and the corresponding color for each area of the shelves where the merchandise is accommodated. The layout of the warehouse was also graphically designed, defining each area marked by the assigned colors, in the department classification.

Implementation of the third S (Clean): Keeping the installation clean will help to keep it in good condition. For this it was defined what is required to clean inside the warehouse, how often it should be done, and assign the person or persons who will be responsible for such cleaning activities. Once such information was collected, a cleaning plan was established that will contain the frequency with which it will be carried out and the people responsible for carrying it out; also what will be cleaned, when and who will do it. Next was to establish the way in which such activities will be carried out, carrying out a small training on how each activity is carried out.

Implementation of the fourth S (Standardize): In order to maintain all the progress made in the warehouse, a standardization must be created regarding the activities previously carried out. For this a small "check-list" format was designed which will be applied continuously at least once a week by the person in charge of management at the branch. This in order to obtain honest and real results regarding the follow-up that will subsequently have to be given of all the activities carried out. The results of each application of the "checklist" will be graphed to review the performance of each of the first three stages. Waiting progressively for the improvement of the results in each of these.

Implementation of the fifth S (Follow-up): To follow up on order and cleanliness this stage is based on managing to develop in the staff a self-discipline and culture in the work area, where everyone must participate actively because it is not only about momentary actions, but about following up until arriving to a habit, always waiting for the results to be positive and turn the workplace into a simple space to work more effectively. This phase of the methodology consisted mainly of maintaining the positive changes that were generated in the previous activities of the 5S's. Therefore, a commitment was sought by management to continuously monitor the follow-up that the person in charge of the spare parts warehouse and his assistant should provide for ordering, cleaning and standardization activities. To support the implementation of this stage, a document was sought in different sources of bibliographic support, which would help to follow up on the active part of the methodology, through a review of the key activities that the spare parts warehouse must maintain.

RESULTS ANALYSIS AND CONCLUSION

The results obtained after the 5S's methodology are presented and mention is made of the evidence resulting from the joint effort, both by the operators and the trainer.

Determination of the Current Situation with Respect to 5´S

At this stage the state of the warehouse was determined through a tour taking photographs that evidenced the areas of opportunity, where qualitatively the lack of cleanliness and order within the warehouse was evident since there was a lot of dust and products on the floor without location (see Figure 4).

Figure 4
Areas of Opportunity

Having applied the 5S´s verification sheet as an initial evaluation within the methodology which handles four types of ranges to locate the percentage of compliance of each of the S's (See Table 2), The results were obtained identifying opportunity areas: 18 items with a rating of one, 5 with a rating of zero and only 1 with a rating of two.

Table 2
Ranges to Rate the 5S Evaluation

3	There is not implementation
1	A 30% of Compliance
2	Meet 65 %
3	A 95% of Compliance

Figure 5 shows the results of the first 5S's evaluation of the warehouse, with the percentages obtained in each of the phases, as well as the general result of compliance within the warehouse.

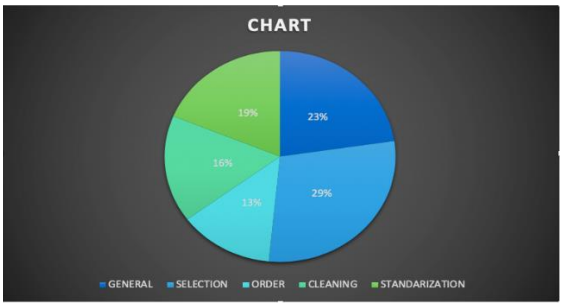

Figure 5
Results 5S First Evaluation

Implementation of the first S (Select) was made adapting the activities of the selection stage, according to the characteristics and needs of the warehouse. The format of the red card was placed to the selected elements as not necessary for any operation in the warehouse. In this activity the help of the head of spare parts warehouse was very important, who established as a selection criterion the frequency of use, then taking as "necessary" all the products requested more than three times a week and as "not necessary" or "minor" to all products that are requested two or once a week (See Figure 6). Once the selection was made, a list was obtained with 52 items, shown in table 3, classified as "necessary" in the warehouse. The items that were classified as "not necessary" had different destinations, some in other departments where they could be more useful or in other cases they were discarded, according to the selection criteria established.

Figure 6
Transition Zone

Table 3
Necessary Elements in the Internal Consumption Store

1. Adaptors	14. Steel CNC	27. Heat resistant precision	40. conveyors
2. Blades	15. Cutter Heads	28. high precision oem	41. bins and containers
3. Manifolds	16.Precison 5 Axis	29. Cutter heads hooks	42. packaging equipment
4. Obturators	17. Machining plastic Delrin	30. auto industries parts	43. storage system
5. Optics	18. Prototype Steel parts	31. CNC turning machining	44. cantilever racks
6. Pipettes	19. Precision cnc lathe machine	32. plastic case	45. lift equipment
7. Regulators	20. pressing parts	33.high precision aluminum	46. fork lift
8. Seals	21. Aluminum stems	34. Computer	47. pallet jacks
9. Clamping products	22. brass cnc machining parts	35. racks	48. hand trucks
10. Tubing	23. OEM Custom	36. Board	49. scale
11. Molding	24. Customized batch production	37. Chemicals	50. service carts
12. Electronic Components	25. fabrication case parts	38. desk	51. dock plates & dock boards
13. Manufacturing Equipment	26. 6063 hard anodizing sand blasting	39. shelves	52. yard ramps

For implementation of the second S (Sort), the order stage was applied prior to the implementation of the first S, and a classification of the 99 products within the warehouse was obtained divided by departments to facilitate the accommodation of the products. See Table 4 for the classification obtained. After classifying each product in the warehouse by department, a color was assigned to each classification, to help improve their location. The color code that was assigned to each department is presented in Table 5.

Table 4
Classification of Products by Department

Calibration
Legacy
Engineering
Messanie
Chemistry
Manufacturing
Finance

Table 5

Color Codes

COLORS	COLOR CODES FOR SPARE PARTS
	CALIBRATION
	LEGACY
	ENGINEERING
	MESSANIE
	CHEMISTRY
	MANUFACTURING
	FINANCE

After placing the 52 products in the warehouse based on the selection criteria (frequency of use), the layout was established graphically (see Figure 7) with official colors assigned for each type of product which will remain visible in the warehouse entrance. Figure 8 shows images of the warehouse already ordered and labeled according to the type of product.

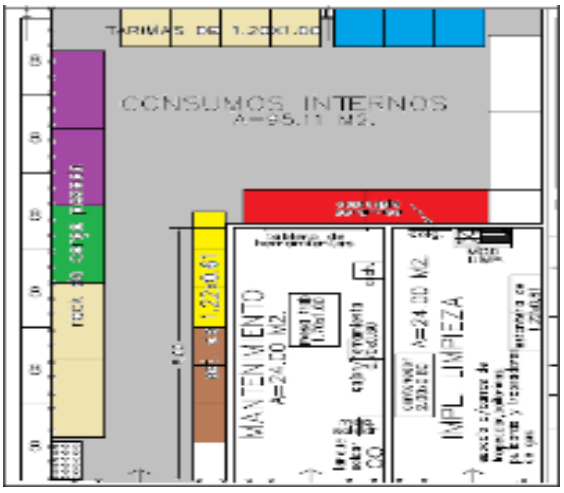

Fig 7

Encoded Layout

Figure 8

Second ''S'' in the Warehouse and Location of Labels

For the implementation of the third S (Clean), once the cleaning stage was implemented, it resulted in clean installations and shelves free of dust and dirt. Cleaning material was assigned which the warehouse did not have. Warehouse personnel were made aware of the importance of maintaining a clean workplace and how this facilitates daily operations.

When cleaning activities and frequency and how they will be carried out were established, a weekly cleaning plan was generated. It contains each cleaning activity in the warehouse (see Table 6).

Table 6

Cleaning Plan

	5S Methodology Implementation Phase	Weekly Cleaning Plan	
Activity	Description	utensils and tools	Frequency
Sweep and Mop halls	Sweep the entire area and mop the Floors. Make sure there are no Objects that Obstruct the Passage	Mop, broom	Mon_____ Wed_____ Fri_____
Clean Calibration area	Remove dust, dirt, waste. Verify that the items are in the places	Duster and jargon	Tue_____
Clean Engineering area Shelves	Remove dust, dirt, waste. Verify that the items are in the corresponding places	Duster and jargon	Wed_____
Clean Messanie Shelve	Remove dust, dirt, waste. Verify that the items are in the places	Duster and jargon	Thur_____
Clean Chemical Shelf and Image	Remove dust, dirt, waste. Verify that the items are in the places	Duster and jargon	Fri_____
Remove dirty Cartons to the Compacted area	Remove all empty cardboard boxes from the shelves, disassemble them and take them to the compacting machine area		Mon_____ Tue_____ Wed_____ Thur_____ Fri_____ Sat_____

In order to achieve a short-term standardization of the advances generated within the warehouse for the implementation of the fourth S (Standardize) management promised to promote the monitoring of each activity proposed by the methodology. This format was designed for management to review the standardization of order activities within the warehouse. It contains key questions which will help to know if an effective change has been generated within the activities or if it is necessary to take measures to strengthen some aspect or area of opportunity. Objectivity of management's vision is very important in order to continuously improve order and cleanliness within the spare parts warehouse.

For the last step, implementation of the fifth S (Follow-up), which consists of a daily review, a document called 5S´s campaign was used but in a time frame of only five minutes with the purpose of making the generated changes remain. This document contains quick steps that will help to review the continuity in the spare parts warehouse of the activities and the scope that was generated within the warehouse, in terms of order, organization and cleaning. The main intention is to create individual and personal awareness in the warehouse operators so that the habits are created and endure, so that they can then be replicated in any department of the branch and even in the daily life of the operators.

Final Evaluation Application of 5S's

The evaluation that was carried out in this step was applied with the same format used in the first evaluation at the beginning of this project. Figure 9 shows the results obtained after applying the 5S inside the warehouse and a comparison with the before and after 5S's in the spare parts warehouse.

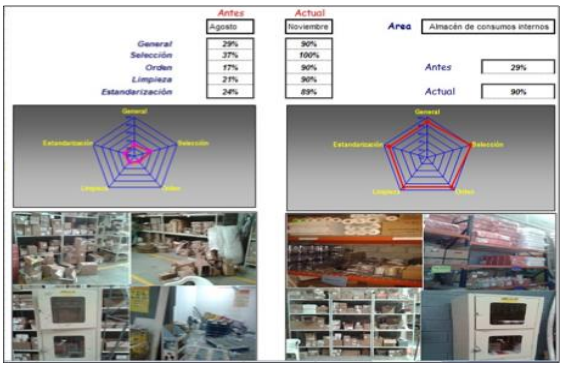

Figure 9
Before and After 5s

CONCLUSIONS AND RECOMMENDATIONS

The objective proposed during this project was to organize the spare parts warehouse applying the 5S methodology to obtain a clean and orderly vision in order to achieve the certification of the Iso 9001:2000 quality platform in reference to quality and good customer service, thus improving their activities in the organization. Thanks to the participation of the personnel working in the warehouse the application of 5S methodology and the fulfillment of the objective were possible. Their collaboration was very important. With the completion of this project a Work Plan was generated (see Table 7) and the 5S methodology was implemented in the spare parts warehouse at the medical device company. With this application cleaning of the area in general was achieved and there is an established order for each object or material. Following are some important recommendations to maintain the improvements that were obtained with the implementation of the 5S methodology. These recommendations will also serve as basis in in the case of future implementation tools that monitor the Lean manufacturing system in the internal consumption store such as Kamban or a value flow map.

Table 8
5S Work Plan

Procedure Steps	Description of the Activity
1. Staff training regarding 5S's	Exposure to the personnel involved, where it is explained what it is, what it is and what the 5S's methodology is for, using a presentation in P.P and a leaflet that contains information about the entire methodology.
2. Determination of the current situation with respect to 5S's	Apply 5S's checklist to confirm actual data that complements and evidences the current warehouse situation and the need to implement 5S's
3. Implementation of the first S: Select	Using red cards that indicate little used or unnecessary material, all the elements within the warehouse were classified. Locate the least necessary items in a transition zone (first S
4. Implementation of the second S: Sort	Determine an area where less important or less used products can remain to later accommodate them. Classify the places with different colored labels, defined within the warehouse for each type of product Develop the layout of the warehouse so that operators know the entire location of the products.
5. Implementation of the third S: Clean	Prepare a cleaning plan that indicates the actions, the people in charge and the time of realization of them. To clean and keep the warehouse clean. Development of a review format that helps keep the actions applied within the warehouse, which will be verified by the store manager.
6. Implementation of the fourth S: Standardize	Development of a review format that helps keep the actions applied within the warehouse, which will be verified by the store manager.
7. Implementation of the fifth S: Follow up	Apply 5S's verification sheet to compare results after applying the five elements of the methodology.

Recommendations

1. Due follow-up to internal audits by management.
2. The correct dissemination of results and improvements obtained to other departments within the company, which serves to motivate the application of the methodology in other areas.
3. Management's recognition of the work team for their effort and dedication.

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