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IMPROVING WORKPLACE ORGANIZATION USING 5S METHOD

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ABSTRACT: *The objective of this paper is to present the benefits of 5S Method in workplace organizing in sorting rolls workshop. Workplace organization is the active component of any enterprise because by her life depending the consumption of energy or time. For this purpose the workplace organization are in continuous improvement, the revelation of this area was brought to management feature Japanese 5S Method. This method began to be used and big Romanian companies but with some reluctance. The results, after achieving the research presented in the paper, leading to emphasize efficiency of this method in the sorting workshop. The originality of the work is offered by the application of the method, using standard forms but also in evaluating of method effectiveness.*

KEY WORDS: *workplace, improving, 5S Method, benefits, evaluation.*

1. INTRODUCTION

The organization of workplace is at the basis for organizing workshops, departments and factories because it depends in large measure the consumption for each work operation, mark or product, its size has a determining role on the elements needed for organizing time and space of production processes. It is a dynamic activity that starts from the product design and continue during the process of production, being necessary for the permanent agreement a existing organization of the new conditions created with the newest achievements of science and technology [7]. Along time, many studies have been done to improve workplace organization, but by this area is the revolutionary 5S Method.

2. GENERAL INFORMATIONS

The Lean manufacturing principles represent a radical departure from traditional plant techniques [2]. The employee's roles, skill-sets, process-requirements, and rules have changed. Lean manufacturing focuses on

eliminating waste and improving flow using techniques such as value stream mapping, standard work, 5S, single minute exchange of dies, and visual management [4]. 5S is one of the most widely adopted techniques from the lean manufacturing toolbox[3]. Along with Standard Work and Total Productive Maintenance, 5S is considered a "foundational" lean concept, as it establishes the operational stability required for making and sustain continuous improvements[2]. The primary objective of 5S is to create a clean, orderly environment- an environment where there is a place for everything and everything is in its place. Beyond this, many companies begin their lean transformation with 5S because it exposes some of the most visible examples of waste it also helps establish the framework and discipline required to successfully pursue other continuous improvement initiatives[6].

3. EXPERIMENTAL RESEARCHS

This paper is mainly aimed at highlighting the benefits of 5S Method in workplace

organizing one workshop. To accomplish this goal have a set of experimental researchs conducted over a period of 18 months in the sorting rolls workshop, Figure 1 and Figure 2, to the enterprise S.C. Rulmenti SA Barlad,Romania.



Figure 1. Sorting roll worker

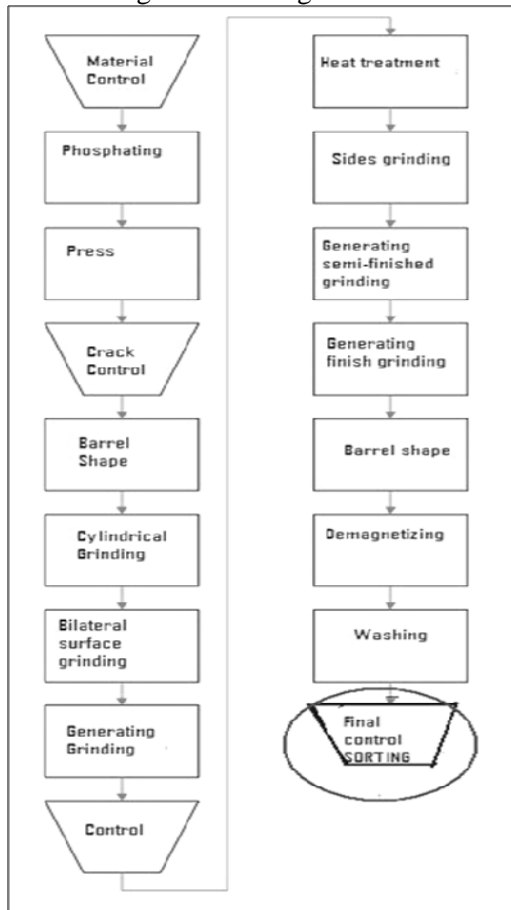


Figure 2. Rolls flow

The Method "5 S" or the five steps of proper maintenances - is a process of organizing and cleaning work area that is gradually and systematically carried out in five steps / stages. "5 S" is five words in Japanese (Seir Seiton, Seiso, Seiketsu and Shitsuke), denoting good maintenance together presented in figure 3. For the 5 S

Method the goals are: creating a working environment clean, hygienic, safe and pleasant, the revitalization of the workplace, improve employee morale and motivation, to eliminate different types of paraphernalia by minimizing time to search tools, facilitating work made by workers, by reducing stress and work through the issue space.

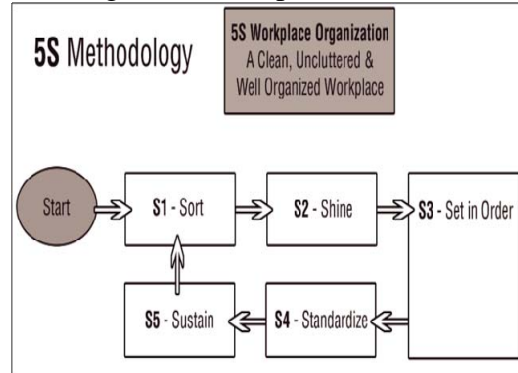


Figure 3. 5S Method

In sorting workshop, in addition to the machinery of the 5S method in control points and associated storage areas, must comply with the following rules:

- at the beginning of the batch removed from the work area all the products left over from previous order.
- it is processed in the same group of machines, products that are similar in sizes.
- products are identified with identification label and stored in separate areas and marked.
- the frequency of checking / sampling and related records are under control plans.
- the means / instruments of measurement must be valid within metrology and proper running.
- technical documentation and effective control must be in sort workshop, available at any time.
- on the control tables, should be receptacles for discarded and reprocessed products.
- workplace and control areas lighting must be adequate.
- additional visual inspection must be carried out 100%, the presence of cracks, after visual inspection of all surfaces, two checks will be made by different people.
- controlling the visual appearance of all surfaces is carried out at the tables of control required.
- measuring instruments and accessories are identified and stored so as to be kept clean and without risk of being damaged, to be easily retrieved when adjustments or changes are made landmark.
- products should be handled carefully and



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placed in containers so as to avoid hitting them.

Applying 5S was done using the following program, presented in table 1.

Seiri (Sort) - differentiate between necessary and the unnecessary things from a work area and removing the unnecessary ones.

Useful things to be different from those unnecessary work area, and to eliminate unnecessary things presented in table 2.

Results obtained after applying a sorting step: It established a rule for identifying unnecessary things existing when is made a

workplace analysis.

The rule of thumb is to remove, after sorting the useful and useless things, everything that is not used in the next 30 days. It established a ceiling for the number of articles required.

It has eliminated unnecessary things and useful things were kept.

Seiton (Set in order) - orderly arrangement of all the items that remain after sorting. Useful things are placed in an orderly manner to be easily accessed, table 3.

Table 1. 5 S Application program

LOCATION: Role Sorting Workshop			
Stage	Measures	Period	Responsible
Sort	-Check the condition of the control devices, changing worn parts and delivery, device defects repaired. -Removal of documents and the filing deadline passed.	1.02.2010 29.04.2010	Sort Coordinator
Set in order	Ordering devices and checkers Ordering deleted material		Sort Coordinator
Shine	DCP-sized cleaning, inspection tables.		Maintenance Representative
Sustain	- Designation weekly, each with a grader on each hand, to coordinate activities in the area in terms of cleanliness. Permanent monitoring of clean, wearing equipment, completing paperwork, etc.	01.05.2010 01.08.2010	CTC Coordinator
Standardize	It will display the minimum rules of operation.	01.08.2010 01.09.2010	Sort Coordinator
Future targets	Restoration maintenance area	10. 2010	Maintenance Coordinator

Table 2. Sort

	Existing things	Useful things	Useless things	Destination of useless things	Observations
Step 1 SORT	Control tables	x			
	Chairs	x			
	Transportatorting tables	x			
	Banks	x			
	Equipments	x			
	Technical documentation	x			
	Procedures / guidelines / standards	x			
	Passive Control Devices	x			
	Documentation enclosures	x			
	Tools enclosures	x			
	Militeslametre	x			
	Containers for compliance	x			

	Bins	x			
	Telephone	x			
	Percentage of total useful things things			100%	

Table 3.Set in order

Step 2 SET IN ORDER	Classification of useful things depending on the frequency of use		
	Useful things	Frequency of use	Observations
	Control tables	Daily	
	Chairs	Daily	
	Transportatorting tables	Daily	
	Banks	Daily	
	Equipments	Daily	
	Technical documentation	Daily	
	Procedures / guidelines / standards	Daily	
	Passive Control Devices	Daily	
	Documentation enclosures	Daily	
	Tools enclosures	Daily	
	Militeslametre	Daily	
	Containers for compliance / nonconforming products	Daily	
	Bins	Daily	
Telephone	Daily		

Results obtained after applying the step 2: Useful things remained in this area were classified according to frequency of use, and then were placed in a controlled manner, so that she would be easily accessible.

Storage products for processing was done in areas designated for: products for processing, processed products compliant products, scrap, reprocessed products.

Relevant documents were placed in a prominent and easily accessible.

Seiso (Shine) - equipment and working environment is clean and kept clean. Clean everything: work, equipment and accessories and remove sources of dirt and discomfort, table 4

Table 4 Shine

Step 3 SHINE	Evaluation of workplace issues		
	Workplace issues	Score	Date
	Order tables control		
	DCP order		
	Documentation		
	Protective equipment		
	Clean		

Results obtained after applying the step 3Shine: Areas of activity (floors, tables, self-discipline and habit of engaging in the 5S by applying the standards, table 7.

windows) are maintained in a sanitary condition. Cleaning these areas is done periodically, work equipment and machinery are cleaned and maintained daily. Documents necessary to the activity is kept neat and orderly manner. Shall wear protective equipment to work and care are maintained.

Seiketsu (Sustain) - extending the concept of self cleaning and continuous practice the three steps described above,table 5.

Table 5.Sustain

Step 4 SUSTAIN	Daily evaluation of workplace issues		
	Workplace issues	Score	Date
	Order tables control		
	DCP order		
	Documentation		
	Protective equipment		
	Order		

Results obtained after applying step 4 conditions for implementation are provided under the previous steps, cleaning concept is extended to the self according to table 6.

Shitsuke (Standardization) - obtaining

Table 6. Responsible for cleaning and order in according to sorting 5S program



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No	Week	Shift work	The person appointed	Average scores workplace issues
1	01.06 – 05.06.2010	1	X1	7.4
		2	X2	
2	08.06 – 12.06.2010	1	X2	8
		2	X1	
3	15.06 – 19.06.2010	1	X3	8.8
		2	X4	
4	22.06 – 26.06.2010	1	X4	8.8
		2	X1	
5	29.06 – 02.07.2010	1	X5	9.2
		2	X6	
6	06.07 – 10.07.2010	1	X7	9.4
		2	X8	

Table7. Standardization

Step 5 STANDARDIZE	Set the rule / standard	
	The rule	
	Final evaluation:	
	Percent of total useful things	
	Workplace issues score	
	Another criterion	
Future targets		

It was shown in work zones established rules, permanent .

Standards / rules include methods to assess the progress made following the implementation of 5 S.

Assessment methods include: self-evaluation, assessment made by an expert

consultant, the assessment made by a supervisor, the combination of the three, the competition between the teams work. Evaluation can be done after the model in table 8.

Table 8.Model of 5S Evaluation

Level	Sort
1	Necessary and unnecessary items are mixed together in the work area.
2	Necessary and unnecessary items are separated
3	All unnecessary items have been removed from the work area.
4	Documented method to maintain work area free of unnecessary items.
5	Waste is immediately visible and triggers a planned response with root cause analysis and corrective action.
Level	Set in Order
1	Tools, supplies and materials are randomly located.
2	Designated location established for all items as needed.
3	Designated locations are marked to make organization more visible
4	Documented method of visual sweep to identify items out of place or exceeding quantity limits.
5	Defined process to evaluate and improve movement and motion.
Level	Shine
1	No visuals are in place.
2	Visual display of data.
3	Visual controls are in place.
4	Real time metrics and visual management are in place.
5	Abnormal is immediately visible and triggers a planned response with root cause analysis .

Level	Sustain
1	Minimal attention is spent on 5S.
2	5S is a scheduled event.
3	5S practices are evaluated on a regular basis.
4	Documented methods have been put into place to ensure adherence to 5S.
5	Employees continually seek improvement opportunities.
Level	Standardize
1	No attempt is being made to document or improve current processes.
2	Current process is known, but not documented.
3	Current state is documented as Standard Work performed the same by all employees.
4	Future state is documented. Implementation plan is actively worked.
5	Improvements are based on data and tracked for actual results.

Table 9. Questionnaire evaluation

Questions	Average responded points out of 4, with 4 being the “a lot difference” and 1 being “not at all”
Do you think it worth implementing 5S Method in the sorting workshop?	3.3
Did you learn workplace organisation after implementing 5S Method in the sorting workshop?	3.4

4. DIRECTIONS FOR FUTURE RESEARCHS

Research presented can be improved by analyzing a new element, namely workplace security to workshop sort of rolls. The literature already presented several models for the analysis of this component. Security element analysis can be done in the sorting workshop as if in the model presented in figure 4.

Level of Excellence				
1	2	3	4	5

To check the efficiency of this method

was applied in sorting workshop one evaluation questionnaire.

In this questionnaire, answered all department employees sorting workshop and the results are presented in table 9.

Did you see a difference before and after implementing 5S Method in the sorting workshop?	3.5
Did you see a difference before and 3 months after implementing 5S Method in the sorting workshop?	3.4
Did you see a difference before and 6 months after implementing 5S Method in the sorting workshop?	3

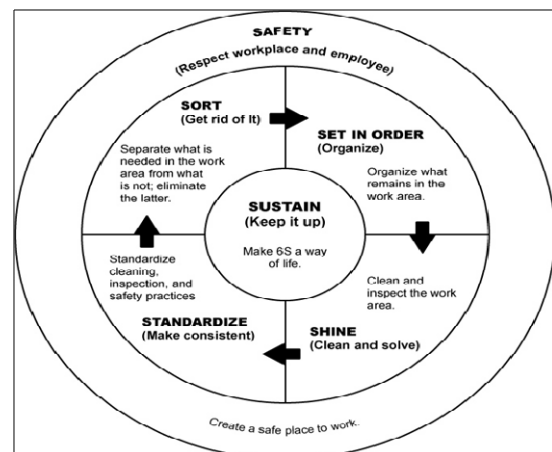


Figure 4. Security workplace[5]

5. CONCLUSIONS

Researches were conducted after a program developed and standardized forms after each step. 5s method efficiency has been demonstrated, both by presenting the results, after applying each step, and through an evaluation questionnaire.

The impact of applying 5S method is



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demonstrated by the following :

- the employees were disciplined
- the number of objects used effectively in the workplace declined
- fell senseless movement

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