

7S's SYSTEM FOUNDATION OF TOTAL PRODUCTIVE MAINTENANCE HOUSE FOR LEAN ORGANIZATION

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Abstract

The goal of Lean TPM or TPM for lean organization approach is maintaining international competitiveness. This Lean TPM from our article, approach proposes tree additions to the current understanding of the TPM system: the 7Ss as a critical first step in any improvement program; instant maintenance; improvement setup operations. A company cannot make business gains solely by using cost-cutting measures because it cannot cost enough to become a world-class competitor. Instead, it must invest resources in productivity improvement. This generally increases factory throughput and cuts costs at the same time. Maintaining equipment in its optimal state and continually improving its productivity is the whole strategy behind TPM.

The main objective of the 7S system is to grow the value added to each worker. To grow the added value, we must create ordered and well adjusted production lines based on the principles of the 7S's: organization and order. Above all these two S's bring to the factory standard positions and acknowledgement. Focus on the first two S's brings a new perspective on understanding the 7S's.

1. Introduction

In today's business environment companies have in view every possible advantage. In the first decade of the 2000's, many firms directed their attention towards the optimization of their actives. Because firms realize that most of them don't have actives or "hidden" processes, they must be more effective than their competitors in the usage of actives and processes. This competitive attention virtually implicates all the parts of the organization with impact on the effectiveness of actives. The area where the firm has the greatest impact is the maintenance department and those responsible with maintenance. Because maintenance has great

impact on the status and capacity of actives, firms search for the best method for maintenance management.

How did TPM evolve? What hurried its development? TPM has its origins in Japan, as a strategy conceived to support the Total Quality Management strategy. Japanese realized that firms can't produce goods of consistent quality with low equipment maintenance.

TPM started its existence in the 50's, their main objective being preventive maintenance. When a new tool was set, the purpose was to apply the preventive maintenance recommended by its manufacturer. Emphasis was put on equipment that worked according to manufacturer's specifications without deteriorating. In the 60's TPM focused on productive maintenance, admitting the importance of liability, maintenance and economical efficiency regarding the factory's project. Then, in the 70's, TPM evolved into a strategy that focused on productive maintenance efficiency with the help of a comprehensive system based on individual respect and total involvement of employees. In this period the word "Total" was added to PM. Interest towards TPM is accentuated these days. This interest helps companies enhance the value of their goods.

2. Continuous improvement strategy

The perspective on generalization of advanced production systems that uses modern managerial methods for fabrication processes imposes new exigencies on continuous quality improvement for production and products in contemporary firms. So, reaching high quality standards becomes the first objective that conditions good development for any activity. The importance given to the elaboration process and the quality of the implementation strategy is, in this context, more than obvious. Structurally integrated in the firm's global strategy, quality strategy assures effect on future performances of the firm,

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construction possibilities, exploitation of competition advantages and finding of behavioral procedures on different markets.

In this context the interest towards conceptualization and implementation of KAIZEN shown in the last period on theoretical level but also on pragmatic level is legit. Continuous improvement strategy known under the Japanese name of KAIZEN represents an integrator strategy that appoints graduate and continuous improvement of management, firm activities and quality, productivity and competitive parameters with direct participation from the entire staff. Seen by a group of authors as the most important concept of Japanese management, the term KAIZEN is owed, in its original form, to the Japanese specialist Masaaki Imai[3]. This is the results of its efforts to investigate the causes of Japanese competitive environment. Masaaki Imai elaborated an extremely original and valuable work that he called “KAIZEN-the key to Japanese competitive environment”. In his opinion KAIZEN can be seen as an umbrella that gathers an ensemble of managerial practices and typical Japanese concepts as: total quality control, the “no defects” principle, just-in-time, quality circles, orientation towards costumers, productive maintenance etc.

In its usual accept on KAIZEN is the result of a three-dimensional approach. First of all it is an integrated global strategy oriented towards continuous improvement of all the firm’s activities in a participative manner. On a pragmatic level KAIZEN is implemented under the form of a current managerial practice founded on the grounds of graduate improvement principle trough “small steps strategy”. The third face of KAIZEN is its interpretation as a result of typical Japanese mentality that places in the first row the human factor with its grounding, its experience, its endowment and motivation oriented towards the strategic objective of uninterrupted progress.

Out of all Japanese managerial instruments known under the “KAIZEN umbrella”, the following knew a range of application: JIT (“Just-in-time”), the Taguchi method, total productivity maintenance, the “3S” and “5S” methods, suggestion system etc.

Total Productive Maintenance (TPM) is a global administration technique, integrating equipments, aiming towards the growth of usage extent and life expectancy of machineries, with the participation of all workers. The principles of this method were brought to light for the first time in Japan in the 80’s as a result of researches made by a team of specialists from The Japanese Institute for Industrial Maintenance. TPM

“includes more than the simple maintenance function, because we are talking about a global management technique where ALL the workers must contribute”. The term “total” which is included in the name of TPM method has three meanings that accentuate the main features of this kind of maintenance: total efficiency, meaning that the goal of TPM is achievement of economical efficiency or firm rentability; a total maintenance system that includes flaws prevention, corrective maintenance and preventive maintenance; total involvement of personnel that has in view autonomic maintenance made by workers that exploit machineries.

In the KAIZEN perspective an infinity of small efforts creates the possibility that every day’s activity could be better than the last.

2.1. The impact of maintenance strategy

The purpose of every company is to increase its profit. This fact is true regardless of the mature of the company (if it is a public company that has shareholders or a private one). A complete strategy of maintenance/management of actives will increase profits by two main ways: reducing expenses and increasing capacity.

When you improve an organization with reactive maintenance, they are immediately reduced. You need time to evaluate total reductions because transforming an organization with reactive maintenance into a proactive one, even when the best of decisions are taken, it can take from 3 to 5 years.

If the organization focuses on maintenance, then it is possible for this business process to contribute to the firm’s profitability. It needs though the cooperation concentration of all departments and organization functions to be successful.

2.2. The TPM system development

The objective of innovative approach regarding TPM is to keep the company’s competitively. Japanese know-how thought the world how to produce cheap goods by reforming the fabrication process and using workers in a more efficient way.

Reforming an existent system means rejecting the present state and presenting its weaknesses. If we don’t present these weaknesses, we will be incapable to improve the way we do things. This improvement idea leads to the three things that innovative approach brings to TPM in comparison to the present understanding of TPM:

-The new 7S.

- Instantaneous Maintenance.
- Improvement of installation operations.

The 5s system derives its name from the five Japanese words which define the process, they are: seiri, seiton, seiso, seiketsu and shitsuke. Translated into English they are: sort, set in order, shine, standardize and sustain. The guiding principles underlying the 5S system involve organization, cleanliness and standardization. Overall workplace cleanliness, created by removing waste from the work area, promotes internal organization and enhances visual communication. Now, system is named 7S after integrated safety and environment rules.

The main objective of the 7S system is to grow the value added to each worker. To grow the added value, we must create ordered and well adjusted production lines based on the principles of the 7S's: organization and order. Above all these two S's bring to the factory standard positions and acknowledgement. Focus on the first two S's brings a new perspective on understanding the 7S's.

Operators ask maintenance technicians every time equipment beaks down. Technicians come and fix the equipment while operators take a break.

This scenario divides work force in two kinds of persons: the ones that make the equipment break down and those that fix it. It's almost like cartoons. The solution for this loss is instantaneous maintenance. Instantaneous maintenance is a technology that allows fixing the equipment to its initial state in three minutes since its break down. It's important that the operators achieve qualities necessary fir instantaneous maintenance. If we are attentive in implementing, this will lead, in a natural manner, to improvements in daily inspections and maintenance and improvement of planned maintenance. It should save the company's money because you won't depend on the equipments manufacturers to do maintenance and repair.

Improving adjustment means reducing operations for production lines adaptation to one single step or even their elimination. Factories that implement it correctly can eliminate the problem of minor stops likewise checking and regulating after the adaptation of the production line.

This new innovative approach of TPM is built on the same three pylons, as on other methods that identify the seven types of losses connected to total productive maintenance (TPM).

Most of the losses in the factory come from inappropriate implementation of TPM as is shown in Table 1.

Table 1: Seven types of waste[4]

No	Types of waste
1	Minor,medium and major interupments.
2	Interminable adjusting time.
3	Manual remodeling, defects, defective products..
4	Planed dead points.
5	Incomplete application of 2S's.
6	Over-production caused by large equipments.
7	Equipment problems at the beginning of production.

The first basic source for this type of wasted efforts is equipment installation without correlating with production volume. This thing means that, for example, more small lots on specialized machinery and large lots in processing centers.

2.3. Benefits of correct implementation of 7S's

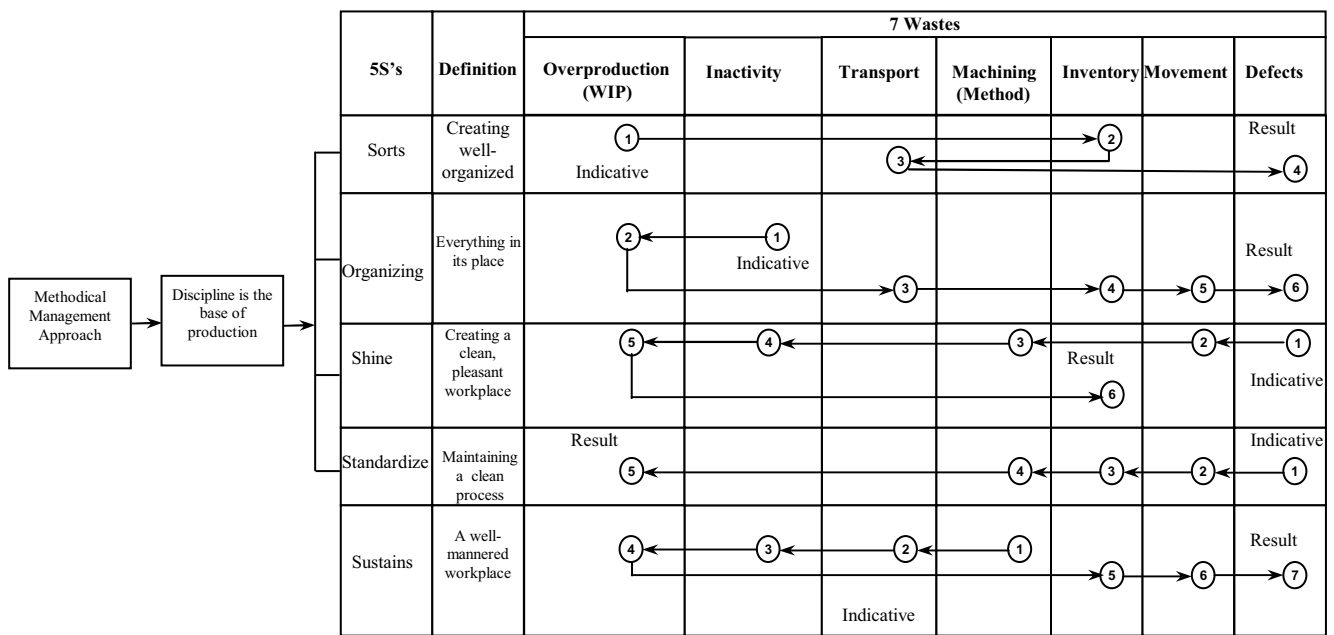
A way to improve precision for the entire production and maintenance work in the factory is to give people an extremely organized work environment where a big part of their work is controlled visually. The visual workplace is an ideal one with no defects and no anomalies.

The first step in creating a visual workplace is the 7S organization. A visual workplace is capable to assure the following benefits:

- There is nothing extra or necessary.
- Storing areas are clearly defined.
- There is a place for every object and everything is in its place.
- The workplace is kept clean.
- Objects, information, plans and processes are immediately recognizable.
- It is easy to what is normal and what is not.
- Bureaucratize is simplified and minimalized.
- Rests and abnormities are immediately recognized by anyone.
- Product flux, deviations from standards is visible at one gleans.
- Standard procedures are easy to understand .
- Quality is raised.
- Productivity is raised.

The three steps must be followed in order to be successful in this approach. First of all, make sure that your top managers are acting in the same direction. If they hope to reach the objectives of the 2S's of organization and order, managers must primarily give a good example. Otherwise, the can talk as long as they want, but employees won't listen.

7S has turned into a very popular program at the workplace.



Many 7S campaigns fail because they are implemented under the form of a “look at us” campaign, projected more to impress visitors than to realize real improvements at the workplace. This approach has 3 defects:

1. Workers gain nothing from 7S activities.
2. 7S’s campaigns become objectives.
3. 7S’s activities happen just during campaigns.

In this situation, the factory could be clean during the campaign, but it returns to the initial mess as soon as the campaign stops. An authentic 7S system keeps its position until achieving the final goal, that is not just improving the factory, but improving the fabrication process.

3. Conclusions

It is extremely hard to keep the 7S’s at the level that we ask. It could be possible for a conscientious person to follow the 7S’s successfully, but while the factory develops problems get out of control. Sometimes it can take up to 10 years for a company to include in its usual procedures the 7S’s, and the habit is seen by employees as a problem.

Reforming an existent system means rejecting the actual state and exposing its weaknesses. If we don’t expose these weaknesses, we will be incapable to improve the way we do things.

This improvement idea leads to the three things that innovative approach brings to TPM in comparison to the actual understanding of the TPM system: 7S, instantaneous maintenance, improved installation and adjusting operations.

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