

# STUDY OF IMPLEMENTATION OF TPM AT RUCHI SOYA INDUSTRIES LIMITED, MUMBAI

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## ABSTRACT

*Liberalization of global economy has resulted tough competition in global market and for the sustainability in market for any product or service, the optimization of resources and costs in all sorts is required. The global competition is based on the innovation of advanced products, processes etc. and technology support is the essential requirement for any advancement in product or process. The advancement in technology had lead to the industrial revolution and higher level competition for survival.*

*In today's situation, the importance of the upkeep of equipment has its own importance since the condition and performance of the equipment have large role in the quality and availability of the products.*

*So the concept of 'Total productive maintenance' (TPM) has very much relevance today. This concept was introduced by Mr. Seiji Nakajima, a Japanese Engineer in 1971.*

*TPM focus on improvement in equipment availability, performance and quality with assuring health and safety of employees and protection of environment.*

*The study is conducted in a food industry in South India which is engaged in the manufacture of egg related products. The implementation factors and performance are compared with that in TPM awarded industry and the correlation is found significant. This study will help the management team to focus on the areas for improvement to improve the system level.*

*The company already started some TPM initiatives by making awareness and training to operators for engaging in routine maintenance activities.*

*A Plan-Do-Check-Act concept is introduced for the further steps.*

*Plan-It includes the leadership role and their strategic decisions to fix the objectives, assigning the responsibilities, providing the resources etc.*

*Do –It is the efforts of utilizing all the inputs like plant/equipment /process inputs, utilization of human resources by giving proper training, motivation, availing the necessary methods and information with the support of computerized maintenance management system etc. for achieving the planned objectives and targets.*

*Check & act-It includes the measurement, analysis and implementation system for monitoring the processes and as well as the results, doing proper analysis and taking the improvement steps etc.*

*The employee attitude change or the organizations cultural change is the hurdles in TPM implementation and it need a time period. The implementation of these P.D.C.A approach will make results definitely and the time period for getting results will depends upon how fast the organization is adopting the changes as well as the effectiveness of this implementation.*

## 1.INTRODUCTION OF TPM:

Liberalization of global economy has resulted tough competition in global market and for the sustainability in market for any product or service, the optimization of resources and costs in all sorts is required.

The global competition is based on the innovation of advanced products, processes etc. and technology support is the essential requirement for any advancement in product or process. The advancement in technology had led to the industrial revolution and higher level competition for survival. For sustainability in the market, the factors like product quality, availability, costs etc. are the some of the basic parameters considered. Technological advancements resulted sophisticated, automated equipment's by which the operations can be performed by even semi skilled or unskilled operators. Also the liberalization of economy supports the industries for the availability of high quality raw materials with competitive price.

In today's situation, the importance of the upkeep of equipment has its own importance since the condition and performance of the equipment have large role in the quality and availability of the products.

So the concept of 'Total productive maintenance' (TPM) has very much relevance today. This concept was introduced by Mr. Seiji Nakajima, a Japanese Engineer in 1971.

TPM focus on improvement in equipment availability, performance and quality with assuring health and safety of employees and protection of environment.

TPM helps for eliminating equipment breakdown and improving quality performance of equipment, thus the achievement in TPM strongly supports in attaining the lean concepts which includes the elimination of waiting time, defects in process etc.

## 2. PILLARS OF TPM :

TPM is stands on its 8- eight pillars

**1. Autonomous Maintenance**-This pillar is geared towards developing operators to be able to take care of small maintenance activities, thus freeing up the skilled maintenance people to spend time on more value added activity and technical repairs.

**2. Planned maintenance**-It is aimed to have trouble free machines and equipments, producing defect free products for total customer satisfaction. It breaks maintenance down into 4 families or groups as

a. Preventive Maintenance b. Breakdown Maintenance c. Corrective Maintenance d. Maintenance Prevention.

**3. Quality Maintenance**-Quality maintenance activities are to set equipment condition that preclude quality defects, based on the basic concept of maintaining perfect equipments to perfect quality products.

**4. Focussed improvements**-Target is to achieve and sustain zero losses with respect to minor stops, measurement and adjustments, defects and un avoided down times.

**5. Development management**-Planning project strategies, analyzing the factors influencing project decision, design new products with customer focus, reduce lead time from design to production to market.

**6. Education and Training**-It is aimed to have multi skilled revitalized employees, whose morale is high and who has eager to work and perform all required functions effectively and independently.

**7. Safety, Health & Environment**- Focus on targets, actual data, and gaps in implementation of systems for ensuring safety, occupational health and clean and safe environment.

**8. Administrative Improvements**- To improve productivity, and efficiency of administrative functions and to eliminate the losses.

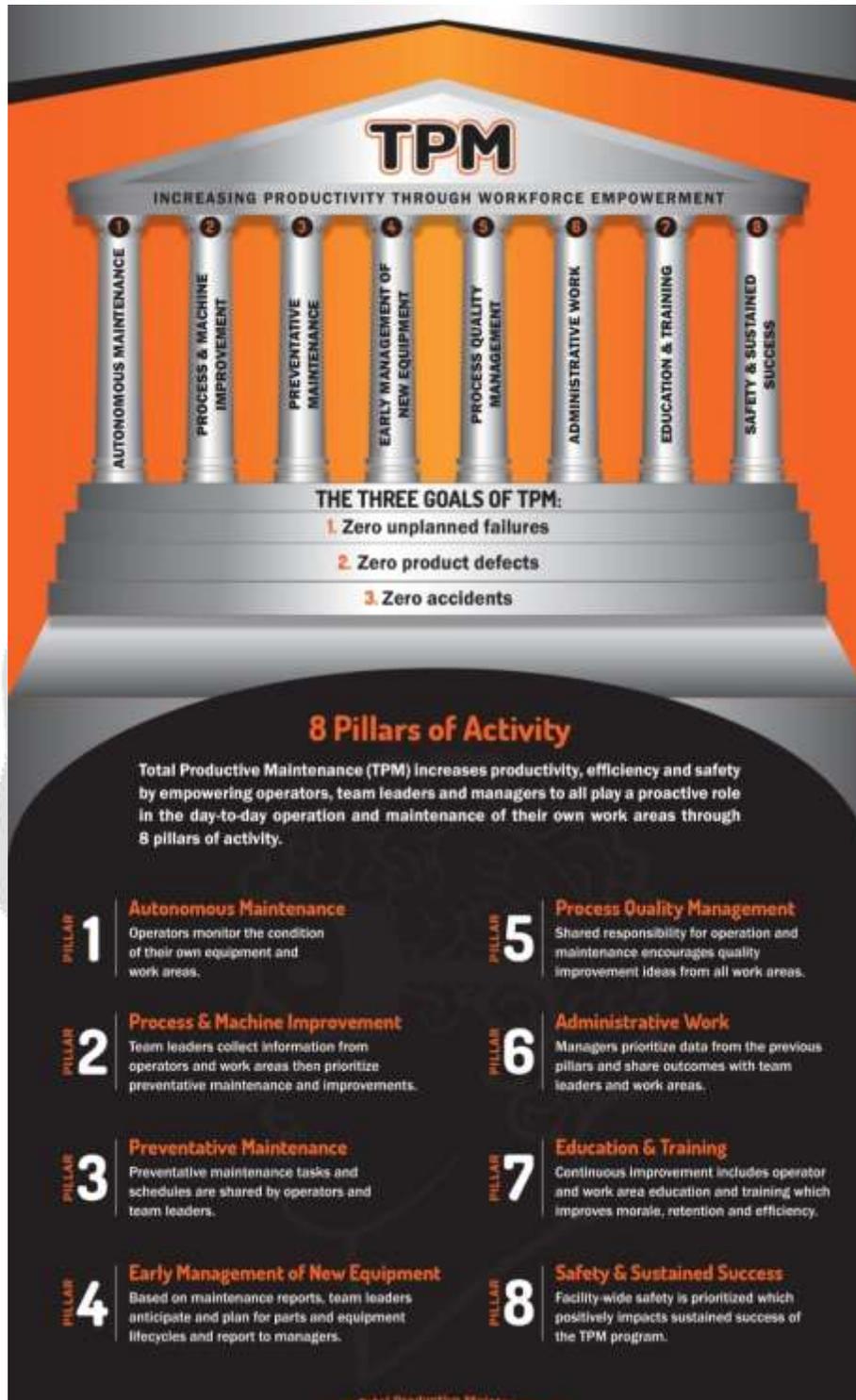


FIG. 1-CHART OF TPM PILLARS

**2.1 MEASURE OF TPM PERFORMANCE :**

TPM can be measured on the basis of 1.Productivity 2.Quality 3. Delivery 4. Cost 5.Safety &Health 6.Environment.

To attain these results through TPM, the each pillars have its own contributions. According to the book ‘TPM Reloaded ‘ by Joel Levitt, the each pillars have its own objectives .This includes

**2.1.1. Autonomous Maintenance Pillar:** 1.Reduction of scheduled down time 2.Reduction of unscheduled down time 3. Increase in speed of the machine 4. Decrease in product/process variability 5. Increase in the number of flexible operators to operate and maintain the equipment 6. Reduction in lubrication oil consumption 7. Increase in small group activities etc.

**2.1.2. Planned maintenance pillar:** 1.Reduction in scheduled down time 2. Reduction in schedule miss due to operations 3. Reduction in breakdown 4. Increase in zero breakdown areas etc

**2.1.3. Quality Maintenance;** 1. Reduction in process defects 2. Reduction in final defects 3.Zero defects areas/zero customer complaint areas identified etc.

**2.1.4. Focussed improvements-** 1. Increase number of lean/kaizen projects 2.No. of waste areas identified 3.Easiness of operation achieved 4.Reduction in incidents of fire/explosions 5. Plant/Machine flexibility achieved for new product manufacturing /small volume of production of multiple items etc.

**2.1.5. Development management** 1. Intellectual property rights/patent applications being obtained, 2.Innovative products/processes/equipments etc.

**2.1.6. Education and Training** 1. Reduction in absenteeism of employees 2. Increase in suggestions per employee 3.Increase in quality circle participation 4. Improvements in skills per persons etc.

**2.1.7. Safety, Health &Environment** 1.Reduction in pollution level 2. Reduction in discharges 3. Reduction in accidents 4. Increase in recycling 5. Number of audit failures per total findings etc.

**2.1.8. Administrative Improvements:** 1.Reduction in overtime job 2. Reduction in inventory, 3. Reduction in holiday work 4.Improvements in equalizing of work load 5. Improvement of information processing etc.

As per the recommendations of the book ‘TPM Reloaded ‘ by Joel Levitt, Education and training , Safety,health and : environment, and administrative improvements are considered as the plinths of TPM and in this study the administrative improvements are considered as an achievement of overall results.

As per the below diagram, the five implementation factors are influencing the two plinths and five pillars. The administrative improvement is the overall result from the plinths and pillars.

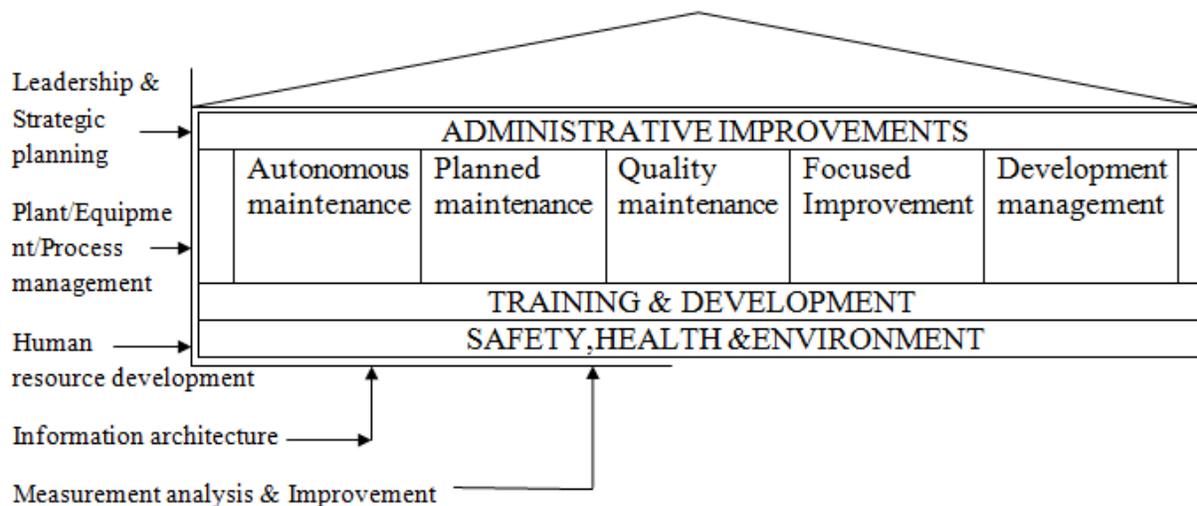
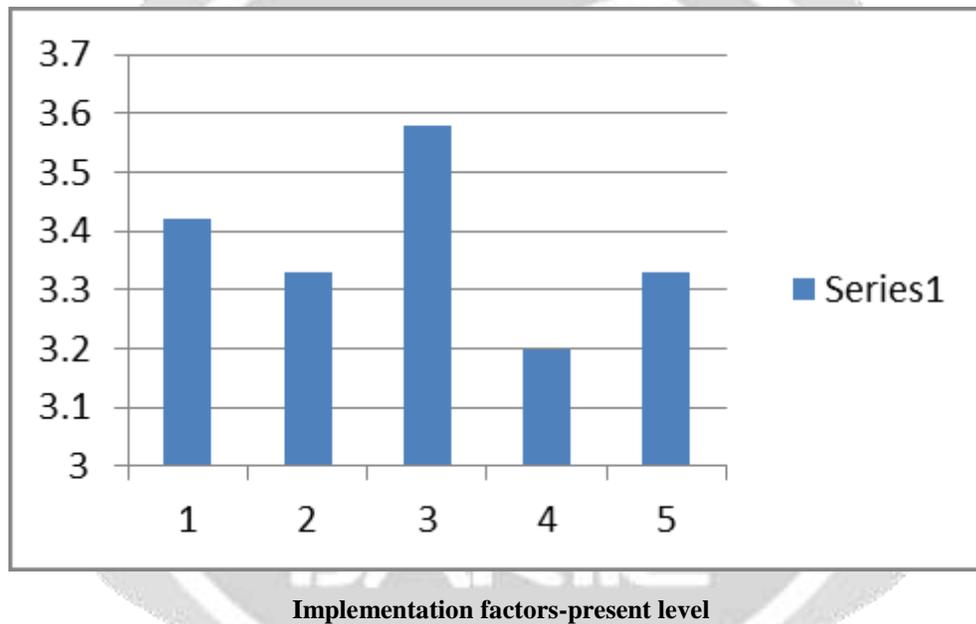


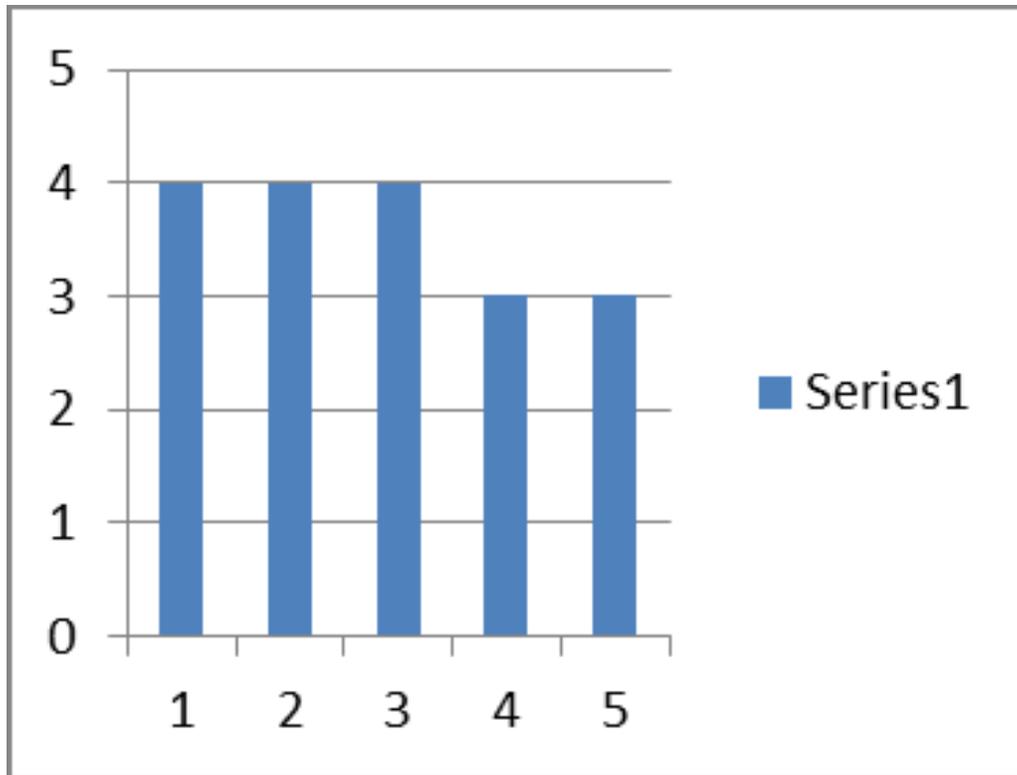
FIG. 2- Administrative Improvement Chart

**3. PRESENT STUDY :**

The study is conducted in a food industry in South India which is engaged in the manufacture of egg related products. The company has already introduced the quality standards like ISO 22000 and other food quality related certifications etc. and the management has the vision to implement the TPM level system in the organization for further performance improvement.

A checklist is prepared from the inputs from the questionnaire of ‘Japan Institute of Plant Maintenance’ for various TPM award criteria’s,previous research papers, and as well as the inputs from articles and books related with the effective implementation of TPM. The study is conducted by visiting the plant, and interviewing the relevant officials and by direct observation of the systems etc. The study objective is to identify, the relationship between the implementation factors and performance based on each pillar of TPM and how much gap exists in the present system with that TPM level and how much gap the present results with that in the proposed TPM level etc. The implementation factors and performance are compared with that in TPM awarded industry. This study will help the management team to focus on the areas for improvement to improve the system level.





**Performance-Present level**

Performance 1. Reduction in scheduled down time 2. Reduction in unscheduled down time 3. Decrease in product/process variability 4. Increase in number of flexible operators to operate and maintain the equipment 5. Reduction in oil consumption

#### 4. CONCLUSION:

Today, with increasing competition and tough markets, TPM may decide the success or the failure of a company. TPM has been a proven program for many years and organizations, especially into manufacturing, can adopt this methodology without any risk.

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