IMPLEMENTATION OF TPM WITH CASE STUDY

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ABSTRACT

The purpose of this paper is to evaluate the contributions of Total Productive Maintenance (TPM) initiatives in reducing equipment breakdowns, increase equipment reliability and improve productivity. This will result in increased equipment utilization and life, reduced work stoppages and machine slowdowns, closer adherence to production and delivery schedules as well as increased employee morale. The Total Productive Maintenance (TPM) concept addresses these goals. The aim of TPM is to keep the plant and equipment at its highest productive level through the cooperation of all areas of the organization. TPM is a partnership between maintenance and production organization to improve product quality, reduce waste, reduce manufacturing cost and increase equipment availability.

Key words:-Total productive maintenance, Preventive maintenance, Overall equipment efficiency, Total quality management

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Introduction

Total Productive Maintenance (TPM) seeks to engage all levels and functions in an organization to maximize the overall effectiveness of production equipment. This method further tunes up existing processes and equipment by reducing mistakes and accidents. Whereas maintenance departments are the traditional center of preventive maintenance programs, TPM seeks to involve workers in all departments and levels, from the plant-floor to senior executives, to ensure effective equipment operation.

TPM addresses the entire production system lifecycle and builds a solid, plant-floor based system to prevent accidents, defects, and breakdowns. TPM focuses on preventing breakdowns (preventive maintenance), "mistake-proofing" equipment (or poke-yoke) to eliminate product defects or to make maintenance easier (corrective maintenance), designing and installing equipment that needs little or no maintenance (maintenance prevention), and quickly repairing equipment after breakdowns occur (breakdown maintenance).

The goal is the total elimination of all losses, including breakdowns, equipment setup and adjustment losses, idling and minor stoppages, reduced speed, defects and rework, spills and process upset conditions, and startup and yield losses. The ultimate goals of TPM are zero equipment breakdowns and zero product defects, which lead to improved utilization of production assets and plant capacity.

Why TPM?

TPM was introduced to achieve the following objectives.

The important ones are listed below.

- Avoid wastage in a quickly changing economic environment.
- Producing goods without reducing product quality.
- Reduce cost.
- Produce a low batch quantity at the earliest possible time.
- Goods send to the customers must be non defective.

Similarities and differences between TQM and TPM:

The TPM program closely resembles the popular Total Quality Management (TQM) program. Many of the tools such as employee empowerment, benchmarking, documentation, etc. used in TQM are used to implement and optimize TPM.

Following are the similarities between the two

Total commitment to the program by upper level management is required in both programs. Employees must be empowered to initiate corrective action, and a long range outlook must be accepted as TPM may take a year or more to implement and is an on-going process. Changes in employee mind-set toward their job responsibilities must take place as well.

Category	TQM	TPM
Object	Quality (Output and effects)	Equipment (Input and cause)
Mains of attaining goal	Systematize the management. It is software oriented	Employees participation and it is hardware oriented
Target	Quality for PPM	Elimination of losses and wastes.

TPM Targets:

P

Obtain Minimum 80% OPE.

Obtain Minimum 90% OEE (Overall Equipment Effectiveness)

Run the machines even during lunch. (Lunch is for operators and not for machines)

Q

Operate in a manner, so that there are no customer complaints.

C

Reduce the manufacturing cost by 30%.

D

Achieve 100% success in delivering the goods as required by the customer.

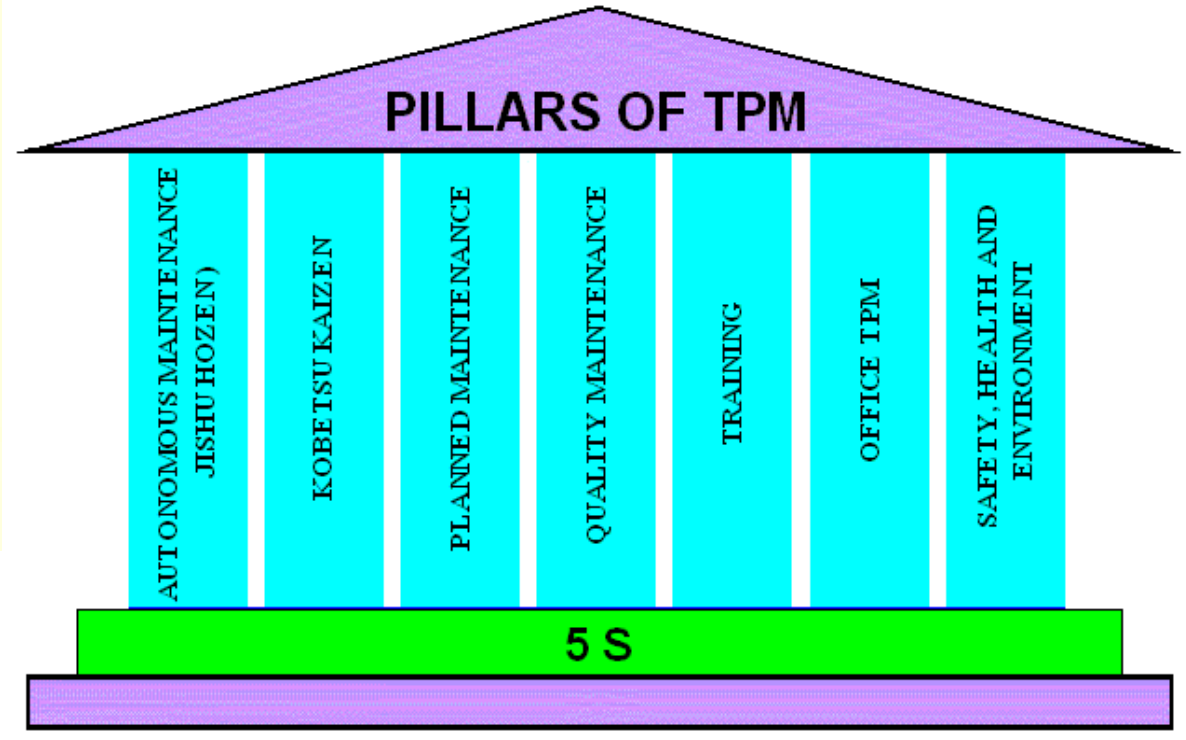
S

Maintain a accident free environment.

M

Increase the suggestions by 3 times. Develop Multi-skilled and flexible workers.

Pillars of TPM



Case Study

PROBLEM STATEMENT 1

The problem of frequent filter clogging was found due to unwanted particles in the cutting oil which results in the early damage of filter which results in reduction of filter life.

Before Implementation Of TPM

COUNTER MEASURE

Fine wire mesh filtration system provided to avoid frequent filter clogging & also to safeguard the cutting oil pump.

After Implementation of TPM

Result

The idea of avoiding coarse wire mesh filter at the drain end of cutting oil came from the Grinding machine operations team during the regular roundtables conducted as part of the TPM activity. A detailed study was conducted on one machine, for various components that were processed in the grinding machine. Based on the study it was decided to avoid coarse wire mesh filter at the drain end of cutting oil. All engineering and automobile industry has large no of machining equipment like, grinding machines, lathes, CNC machines, drilling machines, presses etc. Any energy saving possibility could be established only after a large no of trials involving various components. TPM approach is a structured approach which can ensure that this opportunity is tapped in a phased manner.

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