

# Tpm in japan industry management essay



It can be argued in Japan it is strongly believed that the success of a country depends on the brilliance of its production ability. Japanese commitment to continuous technical innovation in manufacturing industry, in which allowed them to become a leading economic power. Many Japanese manufacturing companies believe that there are two key feature needed to create a reasonable benefit: one is attractive products and strong manufacturing potential. Japan has made a concerted effort to strengthen its manufacturing capability over the last three decades, however to accomplish this success many Japanese factories implemented TPM. Manufacturing industries which retain production plants in Japan, concentrate on improving output by implementing TPM. (Yamashina, 1995)

### **3. 2 Why TPM**

It can be argued there are many reasons why TPM has stretched so quickly in Japanese industry and also companies outside worldwide are interested. The main reason for expanding of TPM is provide remarkable results, first transforms the work place evidently and elevates the knowledge in production and maintenance team.

Companies practicing TPM consistently achieve reduce in equipment break downs, minor stoppages, reduction quality defects, cutting accidents and promoting employees confidence. TPM increases workers roles in the decision making process. TPM increases roles in providing input and in making tactical decisions. Empowering the workforce is the main goal of TPM. TPM helps operators appreciate their equipment and expands the range of maintenance and other tasks they can handle. It allows workers to make new finding, obtain fresh knowledge and enjoy new skill. It strengthens

motivation, prompt interest in their work and concern for equipment and furthers the desire to preserve equipment in top good condition. (chokotei in Japanese)

## **2. 3 TPM Implementation**

In order to implement a successful TPM structure of the firms need to be studied. unacceptable organization structure can guide to the failure of TPM implementation. A typical organizational structure for TPM implementation is as shown in Figure below:

### **Figure 14: TPM Structure**

According to (McBride, 2004) TPM needs effectual management from higher level, without successful leadership TPM efforts to the business, worker, equipment performance and consistency will keep on to decline. Also TPM is a long range program which can take more than few years to implement there for is more reasonable for firms to have a person responsible of implementing TPM.

## **3. 1 TPM Implementation Nakajima's 12 Steps**

Total productive maintenance TPM was developed by Seiichi Nakajima, Vice Chairman of the Japan Institute of Plant Maintenance, and below are the 12 famous steps for implementing TPM:

Step 1: TPM management declaration

This step requires top management support for TPM introduction. Lacking the support of management, doubt will execute the proposal. TPM aims need to be highlighted clearly in company's newspaper, newsletter and magazine.

### Step 2: TPM education

This step will allow and teach all the employees about TPM. Managers provide data and presentation, in other hand this step of implementing TPM also include collection of data about TPM and to appreciate how it works.

### Step 3: Create Organizations to Promote TPM

This team will encourage and continue TPM activities once they started. One of the tasks of this group to include individual from every level of the organization from each department in the firms, this structure will allow good communication between each departments to achieve same goals.

### Step 4: Establish Basic TPM Goals

In this step existing conditions need to be analyzed and set of goals needed to be sets. The established TPM policies and goals should be very simple and obvious to everyone concerned in TPM implementation.

### Step 5: TPM Development Master Plan

In this stage full master plan for implementation of TPM is all set and suggestion given to management. This task can be done by a consultant, with a plant visit to study production operations, equipment problems and losses, maintenance operations, and cleanliness in the plant, and talk to employees to determine their motivation and attitude. The consultant can then come up with proposal plan (Hartmann, 2000)

### Step 6: TPM kickoff

In this stage visible study will establish a base data, against which TPM results and progress can be calculated. Also teams needed to include OEE explanation and calculations of important equipment. The study will assess the condition of these equipments, maintenance activities and personnel skill. Then viability study results are presented to management team.

Hartmann (2000)

#### Step 7: Improve Equipment Effectiveness

In this steps TPM guide installation should cover between %25 percent overall equipment, need of different teams to insure carry on of the installation. All employees in the stage must get TPM training.

#### Step 8: Establish an Autonomous Maintenance Program

Program need to be drawn for how to manage maintenance effectively, Maintenance that is performed by the machine operator rather than the maintenance staff

#### Step 9: Introduction inspection:

Inspection needs to be carryout and by checking TPM fundamentals are done correctly.

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#### Step 10: Conduct Training

This stage highlights the importance of training the worker to achieve high standard performance from the equipment.

### Step 11: Certification:

The stage is very important because certificate is to show to the client that equipment and product quality have been improved and maintained from equipment.

### Step 12: TPM Award:

The final stage is reward for TPM installation is. By gaining award it shows the improvement in the firms also carrying out individual reward to boost worker morale.

## 3. 5 TPM and Training

It can be argued team approach training will help development of worker individual skills. The aim of training is to have multi-skilled and refreshed employees with high morale, who are keen to perform all the required functions. By correctly formulate teams create an environment where employees know the benefits of training and the correct method of operating their equipment, research shown that motivation is misplaced because the workers not last long enough at specific workplace to seek basic equipment problems (Kennedy, 2006).

Company normally motivated independent small teams' activities with the aim of matching with company goals and constant training which includes formal daily basis knowledge about equipment and maintenance issues (Kister et al., 2006).

## 3. 6 TPM and Autonomous Maintenance (Jishu Hozen)

Autonomous maintenance is the procedure in which operators recognize and share responsibility within maintenance area to check the performance of the equipment.

According to (Robinson and Ginder 1995) the idea of Autonomous Maintenance is the creation of skilled equipment workers for protecting equipment maintenance. In other hand (AM) can be a keystone of TPM activities. (Komatsu 1999) according to the writer in this Autonomous Maintenance environment, the maximum requirements for operators to have the ability to notice nonstandard with relation to equipment

The goals of Autonomous Maintenance are following (Suzuki 1994):

Prevent equipment decline .

Bring equipment to its ideal state.

Establish the basic conditions needed to keep equipment well maintained.

### 3. 7 TPM and Planned Maintenance

It can be defined as a planned maintenance system in which rising production without no failures, no defects and improving the quality of maintenance methods by increasing machine availability. Implementing this activity powerfully help decrease input to maintenance activities. Also planned Maintenance supports the concept of zero failures (Shirose 1996), also the aim of TPM activities is to support company structures by eliminating losses through the achievement of zero defects.

### 3. 8 Kobetsu Kaizen

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Kaizen is a Japanese word in which means (improvement), this methods objective is to improvement a number of small improvements to reach and maintain zero losses. The key feature of kaizen is that it is an ongoing improvement approach process through eliminating losses using all techniques for kaizen and by shifting the operation process to make the job more productive. The Kobetsu kaizen 10 steps development are showing in the figure below:

### **Figure 15: Kobetsu kaizen 10 steps Development**

#### 3. 9 TPM and Quality Maintenance

Quality maintenance can be described a establishment of circumstances that will prevent the incidence of defects and control of such circumstances to reduce defects to zero. According to (Japan institute of plant maintenance 1996) can be accomplished by establishing environment for zero faults, inspecting and monitoring conditions to eliminate disparity, and carry out blocking actions in advance for equipment failure.

It can be argued the key thought of quality maintenance is focusing on preventive action before it happens rather than reacting after it happens. Quality maintenance, like (MP), structured to develop within the focused Improvement, Autonomous Maintenance, PM, and (MP) all are TPM support. Quality maintenance helps implementing TPM by make certain equipment are functional up to high standard. (Schonberger 1986) (Pomorski, 2004).

#### 3. 10 TPM and Office



Office TPM is another important part of whole package of TPM and it need to implement in correct way to improve productivity, efficiency from administration side and also eliminating of losses. This includes analysing processes and procedures for increased office efficiency.

Office TPM demonstrates twelve major losses (Venkatesh, 2007):

Processing losses;

Cost losses include accounts and marketing sales

Communication losses

Office equipment breakdowns

Communication breakdown

Time depleted on recovery of information

Supply eminence non- accessibility

Customer complaints

emergency purchases

precision loss

Setup loss

Idle loss

3. 11 TPM and Environmental, Health and Safety

The TPM safety and environmental support is important as well as other aspect mention before, no TPM program is significant without focus on safety and environmental issues. According to (Suzuki 1994) describes ensuring equipment consistency, stopping human error, and eliminating disaster and toxic waste are the key aims of TPM. The operators must be trained to execute risk evaluation to build self-assurance and hazard maps should be available to stay away from needless exposure.

According to (Heinrich 1980) shows for every 500, 000 safety issues there are 300 are near neglects, 29 injuries, and 1 death ash showing in figure below. In recent years environmental safety is attracting more focus for when implementing TPM.

Many argue manufacturing management currently will be less efficient without environmental safety. In today's manufacturing environment, environmental safety includes decrease of energy use, elimination of toxic waste, and decrease of material raw material use (Pomorski, 2004).

<http://kaizenrms.files.wordpress.com/2012/01/heindrich2bprinciple.jpg>

[http://www.tpmconsulting.org/images/EngV/concept\\_pic26.jpg](http://www.tpmconsulting.org/images/EngV/concept_pic26.jpg)

## **Figure 16 – The Heinrich Principle**