PRINCIPLES OF THE MAINTENANCE MANAGEMENT

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Abstract: In present, in world, in all domains working many machinery and equipments day by day more complex. The people depends by technical and economical characteristic of machinery and equipments with one condition: the machinery and equipments must work. To keep working machinery and equipments is necessary to be included in some maintenance system. The paper presents some aspects of the most used maintenance systems.

Keywords: maintenance, corrective, preventive, current functional, predictive, palliative

1. INTRODUCTION

In the last century maintenance of machinery and equipment was a challenge. The challenge was (and remain) to maintaining machinery and equipment in function at nominal parameters (technical, safety, etc.) in optimum economical conditions. This mind low number of personal involved in maintenance actions, reduced time of maintenance operations, low founds but without any compromising’s regarding the functioning and safety parameters. To achieve this target was perfected more maintenance systems each with advantages and disadvantages. The difficulty is to choose the best maintenance system according the particular conditions of machinery and equipment used.

2. MAINTENANCE SYSTEMS

The maintenance systems have all the same end objective: mission-ready machinery and equipment at minimum cost. This end objective can be touched using different ways. Some systems try to keep working machinery and equipments under the pressure of production. These systems have as single objective to rapidly restore the equipment to its operational readiness state using available resources. Another’s systems have the same main objective but this main objective is associate with another’s as: improve maintenance operations, reduce the amount and frequency of maintenance, reduce the effect of complexity, reduce the maintenance skills required, reduce the amount of supply support, establish optimum frequency and extent of
preventive maintenance to be carried out, improve and ensure maximum utilization of maintenance facilities, and improve the maintenance organization.

For understanding the most used maintenance systems (fig. 1) is necessary to define some terms[2],[3]:

- **Maintenance**: ensemble of technical and management actions appropriate for retaining an item/part/equipment in, or restoring it to a given condition.
- **Reliability**: The probability that an item will perform its stated function at nominal parameters for the desired period when used per the specified conditions.
- **Maintainability**: The probability that a failed item will be restored to adequately working condition.
- **Preventive maintenance**: All actions carried out on a planned, periodic, and specific schedule to keep an item/equipment in stated working condition through the process of checking and reconditioning. These actions are precautionary steps undertaken to forestall or lower the probability of failures or an unacceptable level of degradation in later service, rather than correcting them after they occur.
- **Corrective maintenance**: The unscheduled maintenance or repair to return items/equipment to a defined state and carried out because maintenance persons or users perceived small deficiencies or small failures.
- **Predictive maintenance**: The use of modern measurement and signal processing methods to accurately diagnose item/equipment condition during operation.
- **Current functional maintenance**: maintenance system applied in all live time of machinery and equipments based to cleaning, lubrication and monitoring operations.
• *Palliative maintenance*: maintenance applied to machinery and equipments at the end of working time, made without schedule.

In practice the maintenance systems can be applied alone or in different combinations. (fig. 2)

![Possible combinations of maintenance systems](image)

**Fig. 2 Possible combinations of maintenance systems**

### 3. CHOOSING THE MAINTENANCE SYSTEM

For choosing maintenance system is necessary to know and to apply the principle of maintenance management (fig. 3).

In practice the best way is to look down over few steps [2]:

- Identify existing problems: technical, material, human, financial.
- Set maintenance objectives according with identified problems.
- Establish priorities in order of savings of other criteria’s.
- Establish performance measurement parameters.
- Develop a quantifiable measurement for each set goal, for example, number of jobs completed per week and percentage of cost on repair.
- Establish the strategic plan (5 or more years)
- Establish the operational plan (maximum 1 year)
- Elaboration of materials regarding the strategic and operational plans.
- Approving the plans
- Implement the plans.
- Preparing the report status. (annually, monthly, etc.)
- Review progress at the end of each period and make the corrections of initial plan
4. CONCLUSIONS

Clear understanding of the main types of maintenance and management principles for these maintenance systems may lead to the main goals of any system maintenance:

- reduce or eliminate if possible accidental falls;
- reducing maintenance costs;
- cutting out the stop times;
- decreased number of workers engaged in these activities, etc..

5. REFERENCES