

ECONOMICAL ASPECTS OF MAINTENANCE

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***Abstract:** The paper presents some economical aspects of maintenance regarding to costs. Is presented the general structure of the costs of maintenance and some organization structure.*

***Key word:** maintenance, costs.*

1. INTRODUCTION

The maintenance can be define as all actions which have as an objective to retain an item in or restore it to, a state in which it can perform the required function. The actions include the combination of all technical and corresponding administrative, managerial, and supervision actions. For proper management of life cycle of machines and manufacturing facilities, it is important to perform appropriate maintenance operations, and to keep machine status for better reuse and recycling opportunity.

The actions do to accomplish the objective can be classified in two important parts:

- Preventive actions (**P**reventive **M**aintenance) comprise all measures for maintaining the target condition of the technical equipment in a system. The PM is based to maintenance plans indicative of all actions, intervals between actions and logistic support (human and material). The PM is applying to functional equipments.
- Repairs actions comprise measures for restoring the target condition of the technical equipment in a system. The repairs actions are applying to total or partial damaged equipments. This actions includes the analyze of failure (cause and effects), analyze of methods for restore to found the best possible solution (comprises costing, scheduling, provision of personnel, funds and material), the repair tasks. After the tasks have been completed, a functional test, acceptance inspection, notification of completion, and evaluation (including documentation, cost monitoring, and indication of suggested improvements or preventive measures) are carried out.

The both parts are completed by another type of action: inspection. Inspection comprises actions for assessing the actual condition of the technical equipment in a system. This also includes creating a plan for determining the actual condition, with information on the inspection date, method and tasks, as well as on the use of technical equipment. On the base of results of inspection the equipment can be included in repair actions (soon as possible) or PM schedule can be updated.

2. COSTS OF MAINTENANCE

The maintenance costs (figure 1) are the sum of:

- initial costs;
- PM costs;
- stockholding costs;
- costs of recycling;
- costs for replacement equipments;
- shutting down costs.

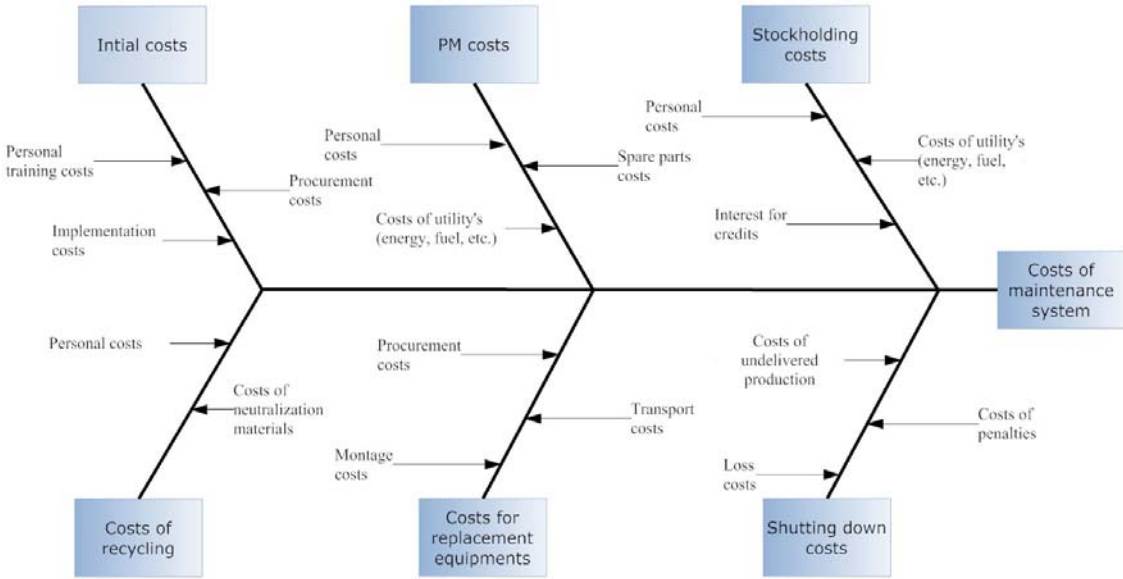


Fig.1 *Costs of maintenance system*

Each type of costs has a different structure but as part of logistic system maintenance must have as principal target minimize loses and maximize benefits. Another way to define the main target is to minimize the costs and maximize the lifetime of equipment without any concession to technical condition or to quality of products. One way to attachment the goal of maintenance is to find his best position in line organization. Possible positions are:

- maintenance as subarea of production (figure 2);

- maintenance as independent subarea (figure 3);
- maintenance as “service” system (figure 4).

Maintenance as subarea of production

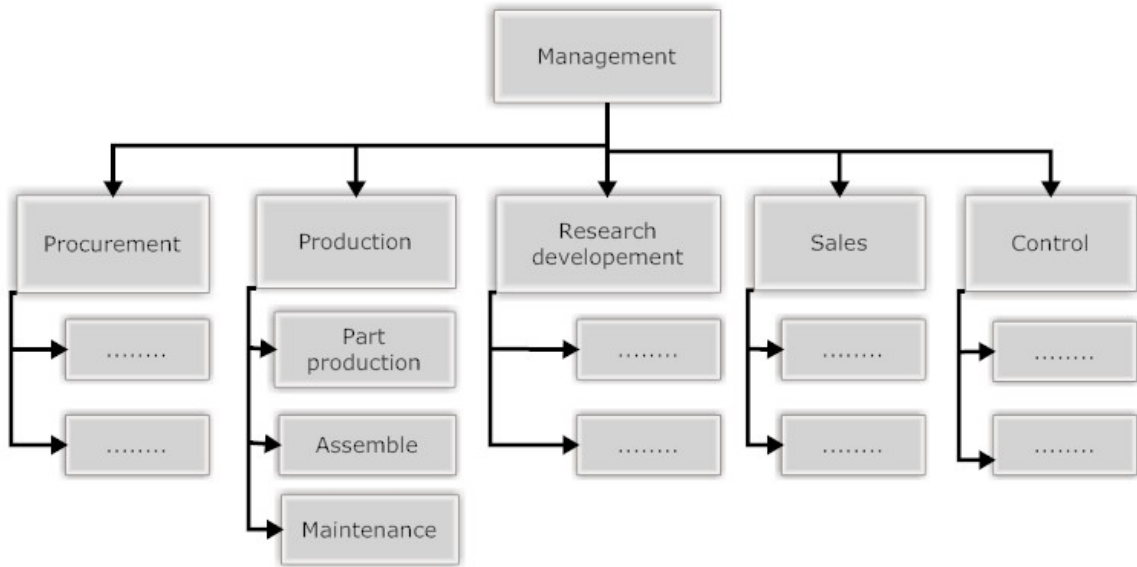


Fig.2. Maintenance as subarea of production

Maintenance as independent area

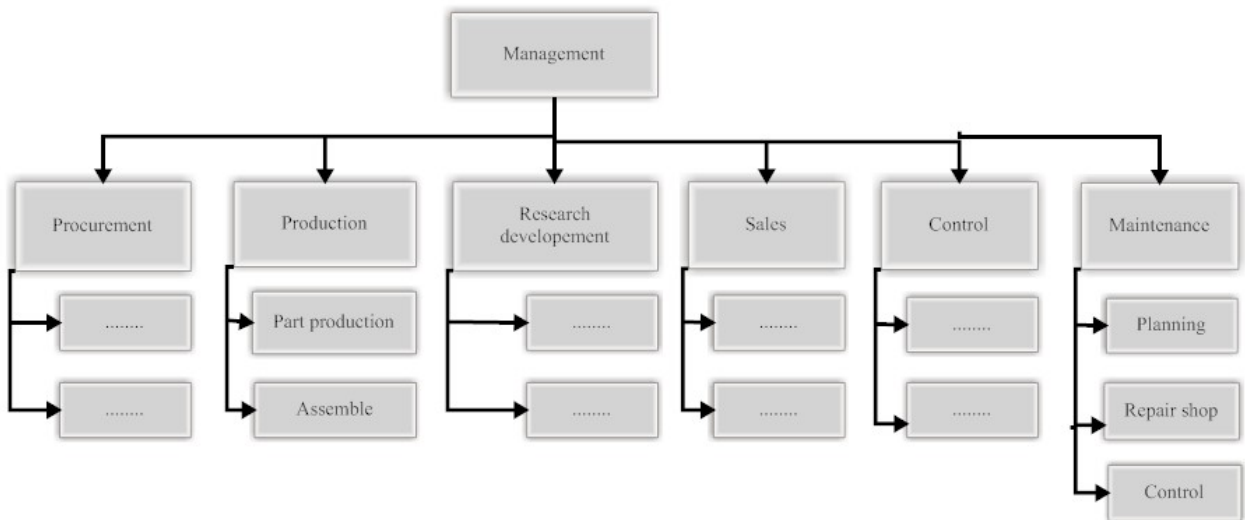


Fig.3 Maintenance as independent subarea

Maintenance as "service" system

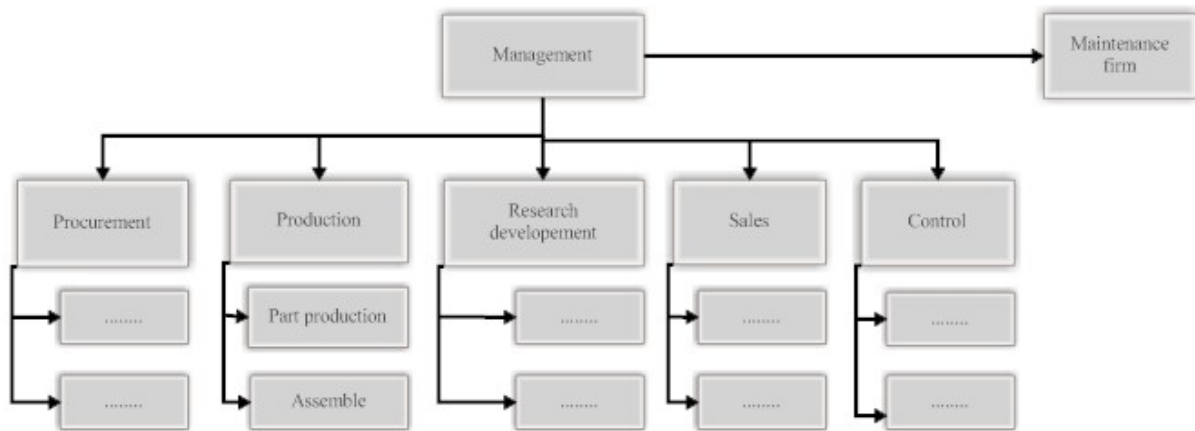


Fig 4. Maintenance as “service” system

3. CONCLUSIONS

The control of maintenance costs and finding the best position for maintenance in line organization is required consideration for modern managers. When done correctly it provides the base for the most activities:

- business processes;
- production process;
- inventory management techniques and methods;
- the numbers and skill requirements of labor.

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