



ASPECTS OF MAINTENANCE ORGANIZATIONS

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Abstract

At present, the reliability of production equipment as well as the company is necessary to preserve competitiveness on the market. Article examines important aspects of the maintenance organization, because good maintenance organization is a key element for reliable production system and maintains market position.

Key words

Maintenance, organization, planning, management, communication

Introduction

Nowadays it is virtually impossible to guarantee the required reliability of production systems, without good and regular maintenance. To achieve the most efficient maintenance in company is very important the right maintenance organization that depends from planning, through the provision of resources to the excellent communications staff at all levels.

Defining the problem

The process of organization of maintenance represents a significant internal source of increasing business efficiency and thereby improving its market position. Feasibility of these objectives can be achieved through planning, management, control and improvement of organizational methods, including economic aspects. Basics of maintenance management are the same or very similar to any of these areas, from organization of work and data recording to the management of spare parts. In other words, maintenance is medicine for the equipments, to keep them in good health, or the restoration of good health when necessary.

Fields involved in the process of maintenance and their support

Assess the situation and formulate requirements for maintenance-repair activities, prepare the material, technical, personnel and economical aspects, and realize maintenance, and after functional and performance tests put into operation repaired manufacturing machine is a very difficult feat that requires parallel activities in three fields (Fig. 1). Into the first field belongs the planning, organization and management, the second is executive field and the third is material security (logistics). These three fields of realization of maintenance are irreplaceable whole. This is a very complex issue, thus teamwork is essential in the process engineering departments.

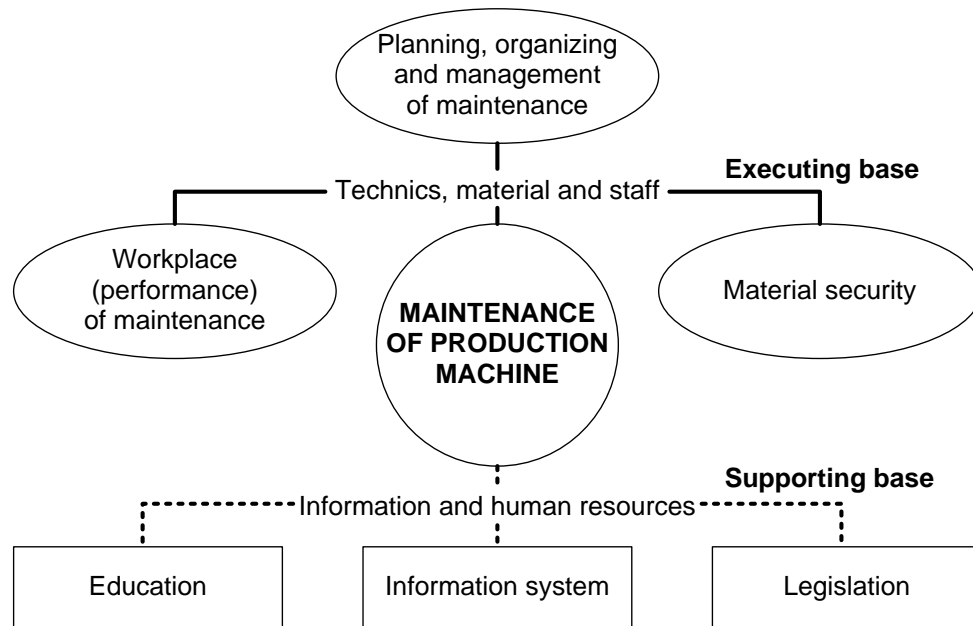


Fig. 1 Fields of the maintenance process and their support

Planning, organization and management of maintenance form part of the overall infrastructure of the industrial company. Centre for the planning, organization and management of maintenance is technical department (or technology), whose duty is to:

- organize and manage maintenance (preventive maintenance, job preparation, schedule of works, recording of events, ...),
- analysis and study of the causes of downtime, determine which is the most costly, which is the root cause and what action should be taken,
- draw up technical studies,
- ensure complete technical documentation (drawings, descriptions, remarks, ...).

Workplace (performance) of maintenance are generally assigned to production plant (workshops) planning to maintenance, or maybe to ensure the maintenance and repair use maintenance workplace from other production facilities. Maintenance of production plant carries out activities on the company establishments, such as daily inspections, lubrication, preventive maintenance, repairs (emergency and corrective maintenance) and overhauls. Historically, the first machinery maintenance (machinery still accounts for about 80% of the maintenance work), then came the electrical maintenance and finally equipment and electronics maintenance. This explains why in many companies the maintenance department is divided into three areas. But at modern facilities, these three areas are deeply mixed and needed to their total comprehensive knowledge, for example, to determine the fault. Therefore, currently is trend to go to mixed abilities (polyvalence): electrical mechanics are able to work on the machinery as well as low voltage equipment with the necessary certification, or even mechatronics capable of doing the machinery and electronic works, such as in modern machine tools.

Material security (logistics) has role stocking up on time maintenance of manufacturing operations with necessary spare parts and consumable material. These include:

- stock of spare parts and consumable material. It is important to be well maintained and very well organized, resulting in increased demands on management and adequate



easy to use system for identifying objects (codification). Especially when most of the spare parts have different origins, such as.:

- part of the shelf often used which easily supplied (bearings, screws, gaskets, fuses, valves, belts, low-voltage switches, ...),
- specific spare parts, very expensive but with a long delivery time, which may be necessary as a pawn spare parts of important equipment,

Stock of spare parts is in a permanent relationship with the supply department of company to avoid costly additional prolonged of shutdowns caused by lack of spare parts.

- major maintenance workshop. Its role is to carry out urgent work that can not be quickly and easily do by supplier, such as produced (if possible) machine parts that are not in stock. Their main job is to recover and examine the worn out parts such as pumps, large automatic valves, reducers, heat exchangers, vessels, piping, electric motors and switches, instrumentation and control equipment, electronic sockets, etc. If performed overhaul its people help maintenance of production workplaces.

Legislation (maintenance norms), the foundations of which are related to the technical requirements on the efficiency and quality of production at its high volume. Today it is clear that the purpose of legislation was introduced in the maintenance their own norms and standards, define and standardize their own vocabulary, define benchmarking indicators, standardize content of technical documents, such as records about maintenance, spare parts list, set the standard paragraphs in maintenance contracts , etc.

Information systems (computer-aided maintenance) are another important factor in the maintenance process. Changes caused by the advent of personal computers and then intranet systems in company have led to the introduction of massive amounts of maintenance software, more or less complex, some for a small companies, some for a large companies. New tools for operations and maintenance enable to define the main types of repair works, determine the necessary preventive repair period. A simple way it is possible to determine necessary volume of works based on norms for elaborateness of maintenance performances, volume of material costs, minimize downtime of production equipment. Enable permanently achieve the specified quality of maintenance work, optimize material security and effectively stimulate the performance of human resource and fault maintenance.

Human resources are an important element of communication in the field of management and hardly expendable element in the implementation section [2]. The share of the maintenance staff in comparison to all workers in companies varies considerably depending on area of activity. Professional composition is primarily divided into general experts and specialists. General experts are able to work with different techniques as well as management, they are necessary to establish the diagnosis when something goes wrong and determine what action should be taken. But a good general expert is also appeal to a specialist if he is not sure the cause or correction.

Maintenance combines a wide knowledge of all areas of technology: mechanics, resistance of materials, energy, thermal technology, the flow of liquids and gases, chemical technology, electricity, electronics, measuring instruments, etc. Further should not forget the basics of civil engineering, because in most companies is the maintenance department also responsible maintenance of buildings, roads, pipelines and sewage networks, and railway tracks, if they



are in company but also subsoil. Indispensable are also environmental issues such as proper disposal of waste. Maintenance also needs highly qualified in management as it deals with a large number of small work of all types, mostly unforeseen and urgent where are still changing priorities and all these costs are clearly counted by a finance team.

Education in the maintenance, maintenance as a specific technology needs to be taught, as mentioned earlier, in the specific programs in specialized schools. This need led in 2003 to the establishment of the Bachelor study program "Operation and maintenance of machinery" to SjF TU Košice, later (2008) was transformed into the study program "Management and diagnostics manufacturing, robotic and transport technology", which subsequently was reflected in increased interest and growth in intellectual quality. It is worthy of mention that at present in Slovakia, where unemployment is a big problem, maintenance is one of the rare areas where finding work is almost guaranteed. Companies actually struggle to fulfill their needs.

The importance of communication between the operation and maintenance

Maintenance organizations are exposed to frequent changes due to uncertainty and desire for maintenance excellence. Maintenance and managers of companies are always fans once centralized maintenance sometime decentralized maintenance and vice versa. The result of this constant change is the creation of channels of accountability and successful routing of the new organization versus achievements of the former structure, causing the staff (craftsmen) must to adapt to new tasks. To create a maintenance organization by objective methods, without distinction the use of any structure, we must respect the fact that there is no good operation without good maintenance, and is not good maintenance without good operation. Operation and maintenance are two articles of the same mechanism: they need to move forward at the same speed that the mechanism could act in the right way (Fig. 2).

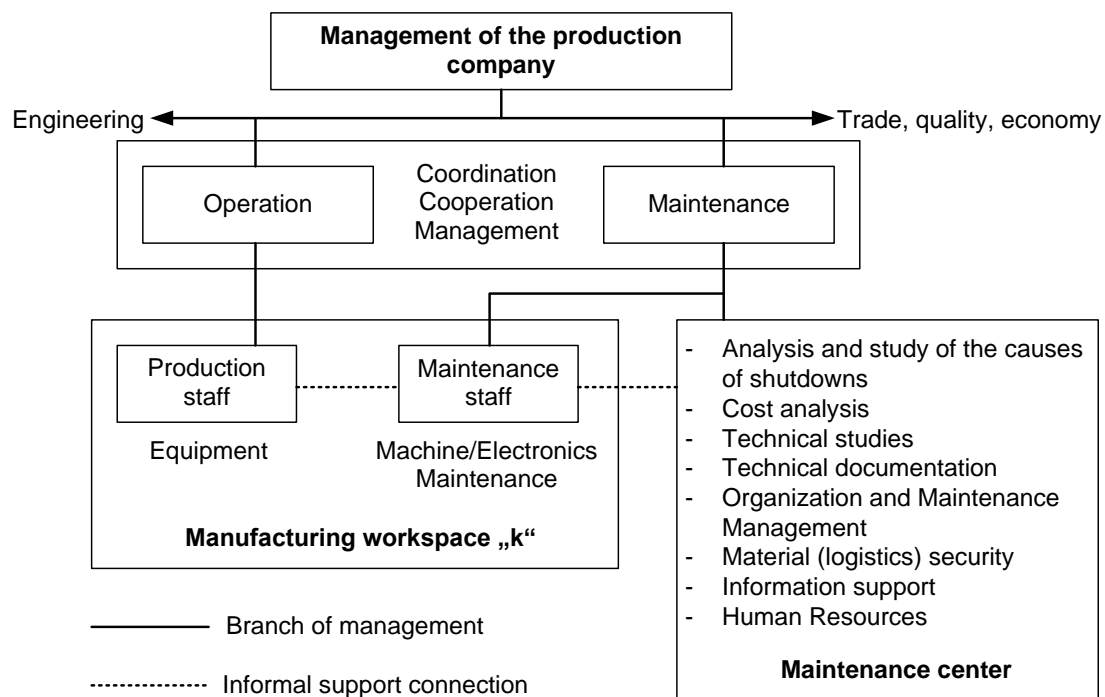


Fig. 2 Status and maintenance organization in the production company



Excellent communication between the operation and maintenance is therefore vitally important. This is why in every company is required daily meetings between the operation and maintenance at the level of workshop, as well as at company level, to analyze daily and recent events and provided a major action plan. But it is necessary to move forward. The best situation is to build excellent informal relationships between people of operation and maintenance, especially at the top level. It occurs when the maintenance manager knows perfectly problems of management operation, while operations manager knows perfectly the problems of maintenance management.

Conclusion

In this post an organization is considered one essential and integral part of the maintenance management function. We mind the process of securing resources (people, material, technology etc.) leading towards fulfilling the tasks and the achievement of organizational goals and strategies. Achieve a clear mission, strategy and goals we facilitate corporate culture and organization starts the process of implementation clarifying work and working relations (chain of technical and physical training, delegation of experts, work management, etc.). Organization structure of maintenance is a way to create different organizational units of maintenance, including defining responsibilities and roles of units and individuals. It is here presented a set of stimuli and criteria for the assessment and design of the organizational structure as well as the main problems to be addressed.

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