

TENDENCIES OF THE WORKING TECHNOLOGICAL SYSTEMS

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Abstract: The dynamic evolutive character of the production systems is determined by the tendency of the continuous major efficiency with which the society actions upon the environment. The contemporane science evolution has impressed higher rythms of development of the material production under qualitative and qualitative aspect, due especially to the operative revaluation of the scientific and technical discoveries and the perfectionings intervened in the leading or the management of the production systems.

KEY WORDS: production system, quality, inputs, outputs

INTRODUCTION

The industrial production system is conceveid as a material actioning dynamic and complex system, having as main objectives the obtaining of the natural resources or of some resources created by the man as finite products necessary to the human society, of corresponding quality, with minimla costs and hurman effort.

A production system may be represented skematically by its essential elements : inputs, outputs and the so-called main production or manufacturing process (Picture 1). The industrial production systems are included within the class of the systems man-machine-environment, createdand developed by man, with the purpose of the mentainance of the life of the individual entity and of the human society.

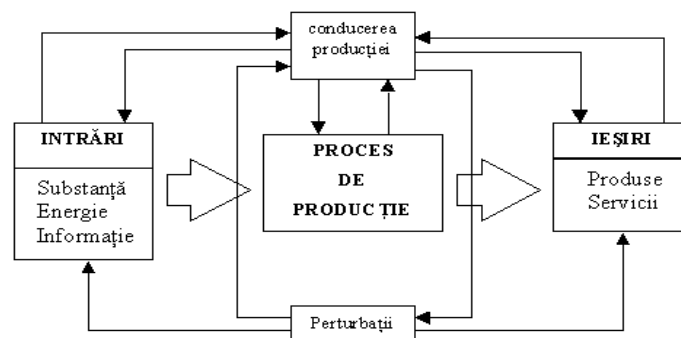


Fig.1. Inputs, outputs and the so-called main production or manufacturing process

THE SYSTEM MAN – MACHINE - ENVIRONMENT

The systems man- machine-environment,, contain self-setting processes for mentaining the stability and also informatic and leading or conducting subsystems with optimizing character for some objectives obiective, thus

impressing to those systems an active-actioning character.

The action represents, generally, the finished transformation of the repport between the man –as a subject of the action- and environment- as an object of the action. The notion of environment

includes not only the physical ambient-phenomena and existing in nature objects relationships established during the actioning deployment.

The action of the man on the environment is, by definition, mediated by an adequate physical –system-object (tool, machine, production), called conventionally, machine or equipment.

The evolution in time of the man role in the production systems is represented in the figure 2.

The technological action has as main objective the determined, specific transformation of the substantial, energetic and information resources ,available on the different stages of development of the human society.

or created by man , but also the social ambient, resulted from the interhuman

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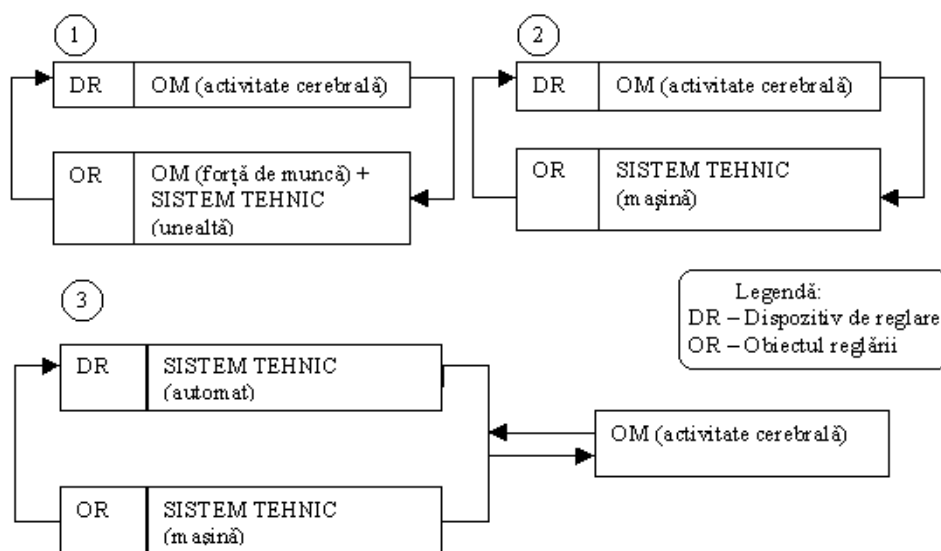


Fig.2. The evolution in time of the man role in the production systems

Within a specific activity of a production system it can be distinguished the interaction of three categories of systems : the social, technological and the the technical ones.

The Social system is characterized by the participation of the people, as organizers of the interaction of the production equipment with the labor objects.

The technological system represents the assembly of the physical-chemical transformations on which it is obeyed the labor object for becoming a product.

The technical system incorporates the totality of the production tools and equipment. The technical system may be considered as a subsystem of the tehnological system , both being incorporated in the social actioning

system. The unitary treatment of those systems, imposes the use of the economic systems, which operate with indicators of maximal generality: production, benefit, costs, retribution etc.

The structure of the specific production systems of the machines building industry is given in the figure 3.

| | | |
|----------------------|-------------------------|--|
| Production processes | Technological processes | Manufacturing |
| | | Maintenance |
| | | Repairs |
| | Ancillary activity | Planning, scheduling and monitoring production |
| | | Technical and quality control |
| | | Manufacture and maintenance of tools and devices |
| | | Energy management |
| | | Technological internal transport |
| | | Methodology |

Fig.3. The structure of the specific production systems of the machines building industry

Within the technological processes, the labor objects- raw materials and manufactured materials- are transformed in parts and manufactured assemblies. At the actual development level of the science and technology, the technological processes are interpreted as incorporating processes of the information in substantial structures.

For being able to be incorporated, the information has to be encoded in an adequate language, specific to the activities of constructive and technological design (projecting), based on the numerical or digital and analogical expression of the defining parameters: chemical composition, shape, dimensions, relative position, surface

quality, temperature) of the objects and technical systems.

The set of relationships among the components of a system and also the relationships among the components and assembly forms the structure of the system. The system limits separate the environment from the system.

The system exists within its limits and anything passing outside of those limits is the environment of it. The limits control very strictly all inputs and outputs setting the filter, including outside of the system. In essence, the limits are input / output filters (fig. 4).

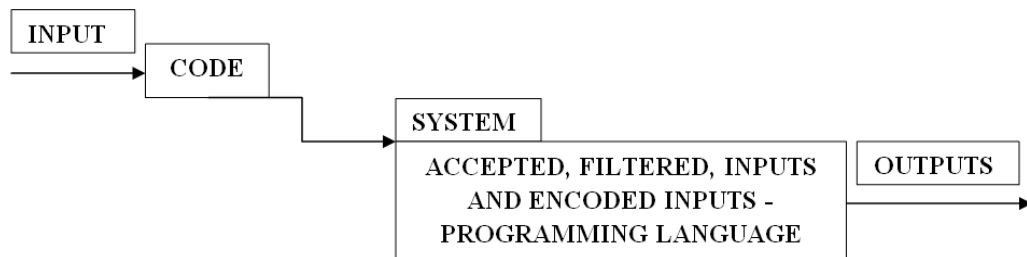


Fig.4. The limits are input / output filters

Within the limits there is the system itself. This can be a single entity or may be composed by many components, named subsystems. The incorporable information and its introducing channels in substantial structures constitutes the object of the science of the methods and means of transforming the resources in products.

This science- of the materials technology- represents in modern conception, the optimal modality of manufacturing some products or of performing services.

CONCLUSIONS

-The systemical theory offers the possibility of the general treatment of the problems concerning the industrial processes , being able to be then

oncretized for special cases, or real situations;

-The man’s role in the production systems evoluted from the specific physical intervention to the cerebral activity;

-The presence of the computers, of the connexions among these, and also of the projecting and execution programmes led to the development of some systems having the possibility of monitoring the activity, of controlling the product quality and even of self-perfecting..

-The powerful development of the communication networks (by Internet) helps that the information to be transmitted /received correctly and within the appropriate time interval for using them and of the parameters of the technological processes (fig. 5).

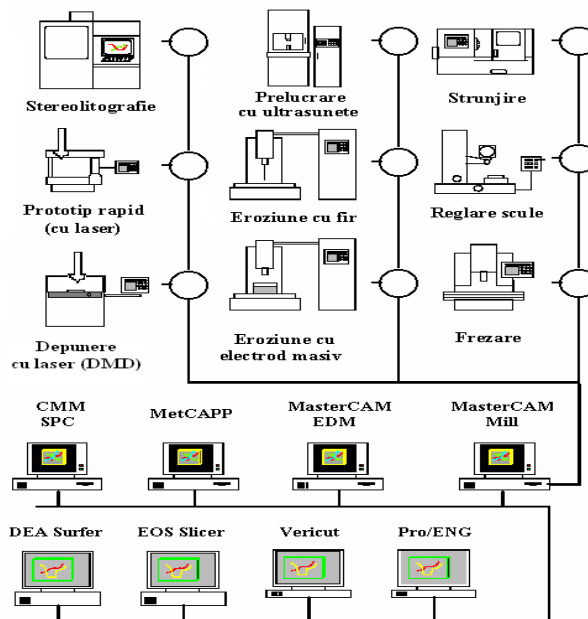


Fig.5.Communication networks (by Internet)

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