

REGARDING THE APPRECIATION AND EVALUATION OF THE MACHINE-TOOLS FOR WOOD PROCESSING THROUGH THE QUALITY CRITERIA

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ABSTRACT

The machine-tools for wood-processing present several particularities compared to other fields. On the other hand the display of such machines is large and diverse, which impose the existence of some common appreciation and evaluation criteria. The paper refers to the importance of quality connected to the purchase price of the machine, the appreciation and evaluation possibilities, special emphasis being put on the quality of the machines, on the technical and exploiting characteristics. The appreciations and considerations belong to the authors, taking into consideration the concrete production conditions in the Romanian companies.

1. INTRODUCTION

The wood processing in Romania has a long presence and experience. This industrial branch takes an important place in the general modern development of the country, both regarding the finite product as well as the labor hand.

The structure of the companies has gone through a radical change in the field of the wood-product diversity and technical endowment. The modernization of the wood-industry takes an accelerated rhythm using performant machine-tools, units and equipment, which guarantee the production of semi-finished and finished wood-products competitive on national and international markets.

We take as guarantee that a well chosen technical endowment constitutes the link between all the parts of a production technology (fig.1). [6,7]

Following this scheme, having the parts of the production process in a closed circuit, the technical endowment is revealed through the quality of the machines, but also through their exploitation conditions based on their technical characteristics. All the parts are in close connection with the production process and determine their quality.

The paper presents the machine-tools offer, the appreciation and evaluation possibilities, the quality of the machines and their technical and exploiting characteristics being emphasized.

The opinions and the appreciations of the authors are conventional and orientative, based on the concrete conditions of the Romanian companies.

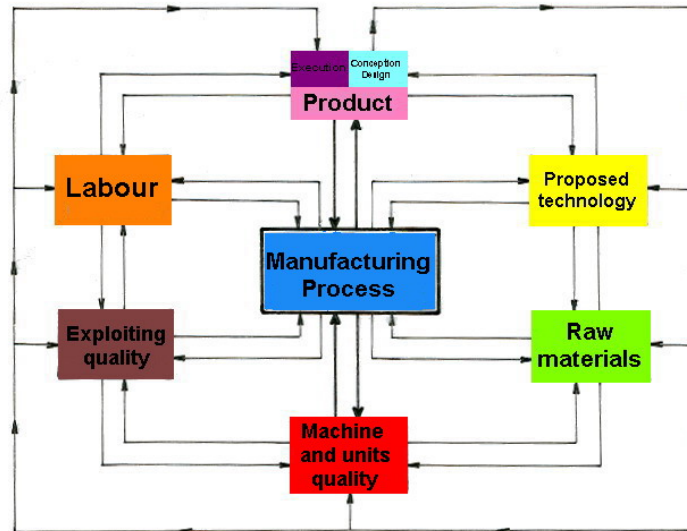


Figure 1.

2. THE MACHINE-TOOLS OFFER IN THE WOOD PROCESSING INDUSTRY IS RICH AND DIVERSE SATISFYING ALL THE NEEDS AND STANDARDS OF THE WOOD PRODUCTS MANUFACTURERS.

In this situation the companies are placed in a challenging situation, “bombarded” with the most varied and performant machine-tools of high quality and flexibility.

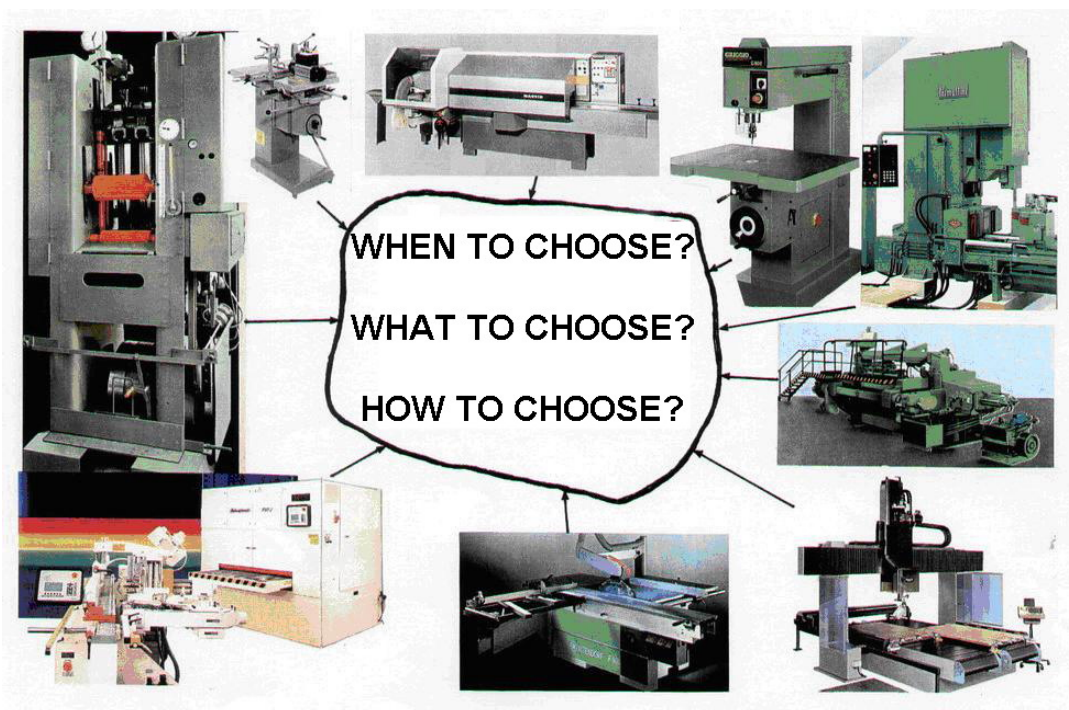


Figure 2.

Three main questions have to be taken into consideration, when acquiring machine-tools: When to chose? What to chose? How to chose? Only by answering these questions, one can get the necessary information and one can take the most convenient offer [6,10].

The decision for the best quality and economic offer requires a good understanding of each machine but also a good knowledge of the exact needs of the company.

Regardless the size of the company, they should be able to obtain the necessary information, classified into five categories of questions, according to fig.3 [2,3,6].

3. QUALITY CONDITIONS OF THE MACHINE-TOOLS

The acquiring of a machine-tool should be based on certain quality conditions. The evaluation of the quality can't be made at first sight. It must result from the sum of all the characteristics offered by the producer and the technological demands of the beneficiary (fig.4). Consequently for the evaluation of the quality there should be a technical documentation of the producer using common scientific criteria with the beneficiary.

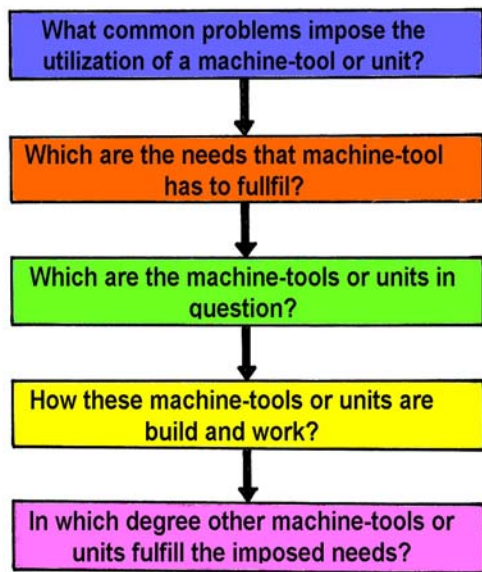


Figure 3.



Figure 4.

The quality of the machine-tools represents the sum of their characteristics, the degree in which

they satisfy, the necessities, the degree of their utility and economic efficiency.

For a machine-tool to satisfy its purchaser, one should take into consideration the following aspects (fig.5): the quality of its conception, the quality of its execution and the quality of its exploitation [6,7].

These quality aspects are common for all machine-tools in the wood industry. They are independent when the appreciation is made regarding efficiency and production. Only by taking into consideration the utility degree, the economizing degree and the economics of the machine, one can fully appreciate its quality level.

The practical appreciation of the quality should be based on some requirements grouped according to the scheme fig.6 The requirements mentioned completely characterize any machine-tools if the necessary information is available.

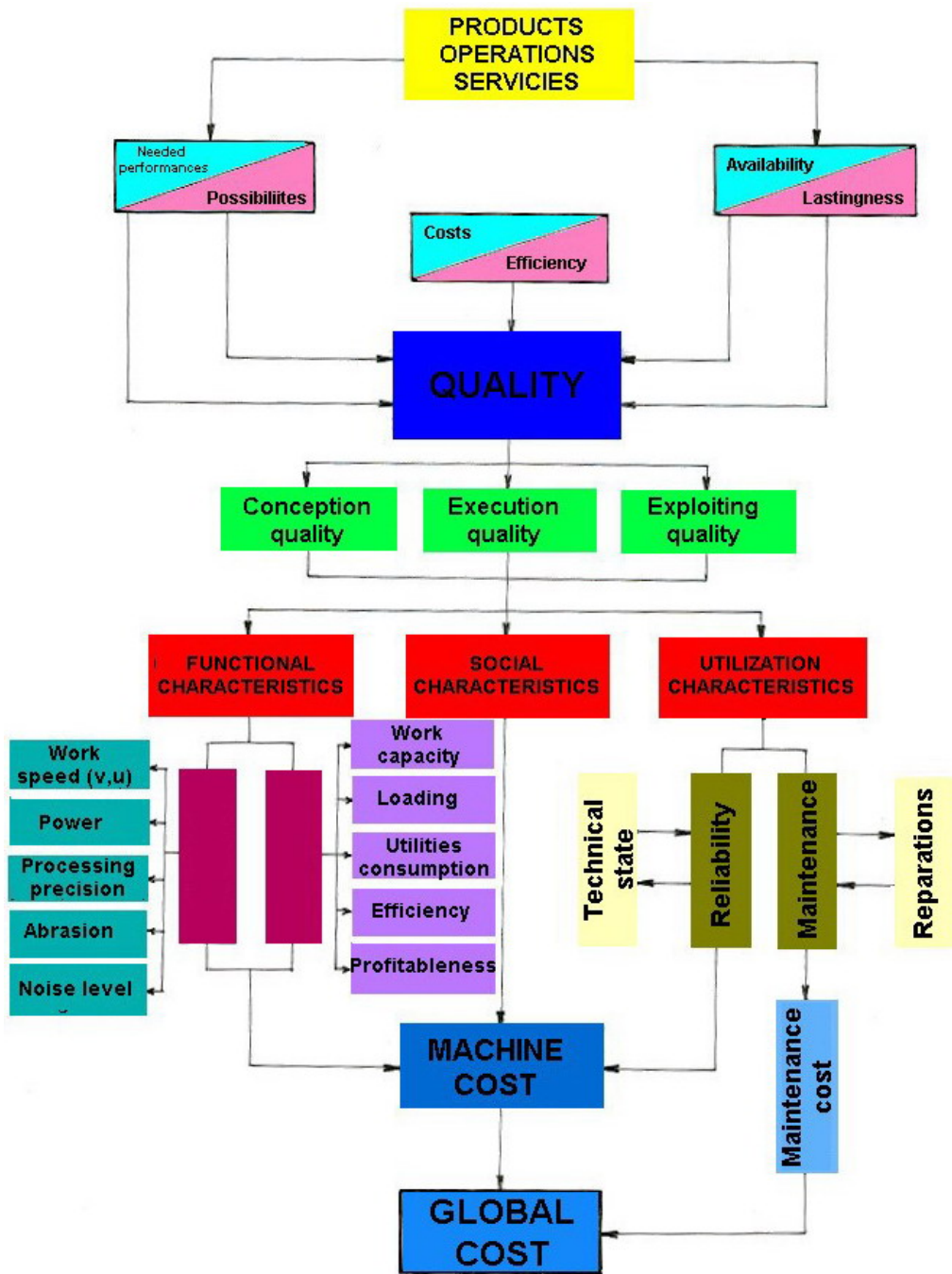


Figure 5.

Distinction should be made between the building requirements shown in the “production characteristics” and the exploitation requirements shown in the “usage characteristics”. The two types of requirements are completed by the “social characteristics” common for both types.

In taking the purchase decision one should start from the production characteristics specific to each producer. Among the eight characteristics mentioned in fig.6, reliability is the most important [5,6]. This should be mentioned because the behavior of a machine-tool during exploitation depends both on the initial characteristic and the way it preserves itself during exploitation. Reliability is the safest and most complex criterium for the quality appreciation of a machine-tool.

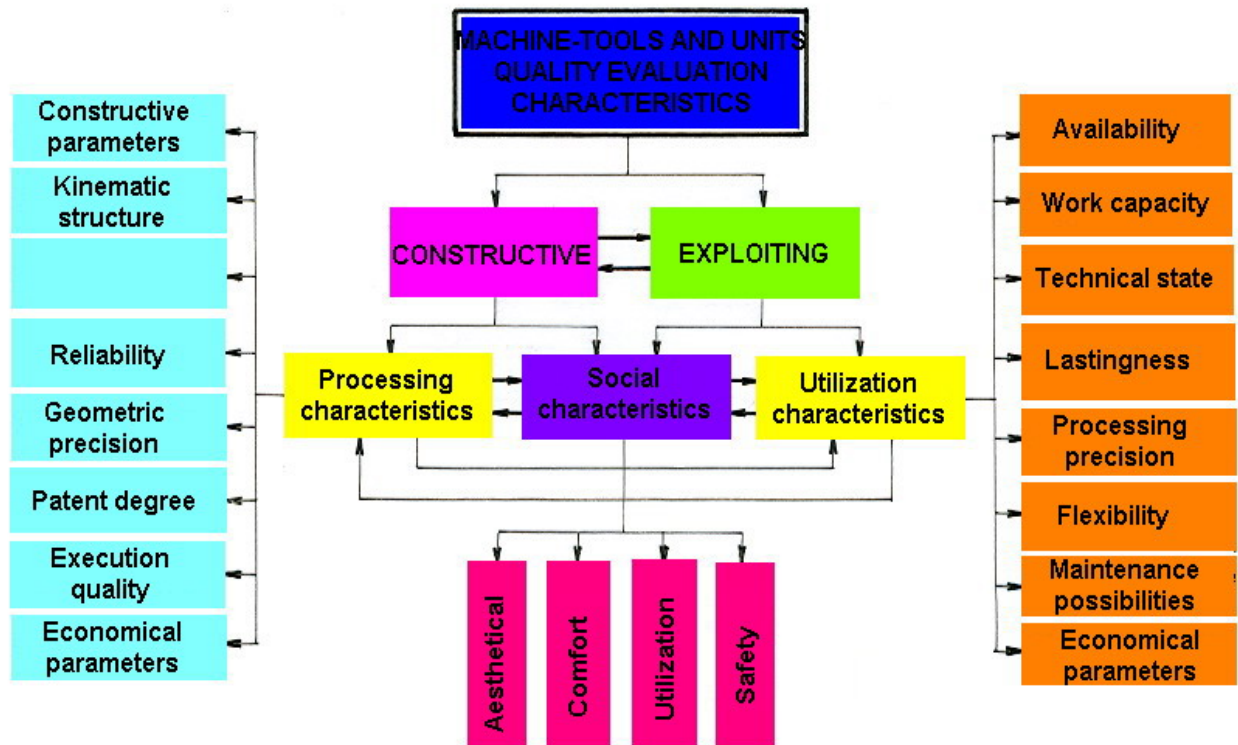


Figure 6.

The usage characteristics are particularly important in appreciating quality and evaluating the offers. Among the eight mentioned in fig.6 availability is extremely important. The machine-tool can fulfill its duty that is, it can be available if it is reliable and if it is maintainable. Flexibility or mobility of the machine-tools is also important. It shows its capacity to swift from one process to another in identical or close conditions of usage without essential modifications.

Quality considerations can not be completed without the social characteristics which refer both to those offered by the machine but also to their influence to their operator. Actually, social characteristics should be making the link between man and machine. Among the four characteristics presented in fig.6 the esthetic ones should be subordinated to the usage conditions. Form and color should be taken into consideration [1,6].

The form should be harmonious, unitary, compact and stable, it should be easily handled by man. Color is important for its esthetics and for its influence on the psychological state of the worker.

To summarize, the appreciation of the quality of the machine-tool through the presented criteria should not be omitted in analyzing any offer, as they will positively or negatively influence the quantity, the quality and the efficiency of the results of the company.

4. SEVERAL APPRECIATION AND EVALUATION OF THE MACHINE-TOOLS.

Several appreciation and evaluation of the machine-tools can be made according to the following criteria [2,6]:

- According to configuration and shape taking into consideration the conception and the construction of the machine-tool to grant them a high technical level.

- According to structure, complexity and componencies which determine the type and the model of the machine for a certain need or function mentioned in the offer.
- According to the usage field, aiming that the machine should efficiency integrate in the technological process.

Machines should be evaluated based on a data-bank. Regardless the size of the company, this should get all the necessary information grouped in five categories of questions [2,6]. It is essential to settle the requirement for the machine, than one should concentrate on the type of the machine-tool which will best satisfy the technological needs.

The appreciation of a machine-tool is correct only if it is made based on the documentation and information. This can also be sustained through value elements used in the conception and design of the machines. One can use in this respect the recommendation VDI – Directive 2225 (Technisch – wirtschaftliches Konstruieren) [2,3,6]. This recommendation makes the difference between a “technical value x ” and an “economical value y ” which result a “power s ” of the machines. The “economic value y ” refers to the production costs, but the purchaser is interested in the purchasing and usage costs.

Orientatively, the machine can be appreciated from a technical and economical point of view. The economic appreciation will contain only the production costs and the purchase. According to the VDI – Directive 2225 the appreciation degree runs on a scale between 0 and 4.

When purchasing a machine, the purchasing price is relevant. It contains the price itself, but also the costs for packing, transport, assembling and starting and interests. The technical recommendation VDI – Directive 2225 establishes the link x - y which limit the areas “satisfactory and unsatisfactory” for the values x and y [1,2,3].

5. CONCLUSIONS

Taking into consideration the above mentioned, the authors formulated the following conclusions:

- The technical endowment of a company guarantees quality finish products competitive on the international market.
- The quality appreciation of a company can be made only through the level of its technical endowment.
- The quality appreciation and the evaluation of the machine-tools should be based on well-chosen scientific criteria, shaped for all bidders.
- There should be complete data-bank for each machine-tool.
- The evaluation and appreciation should contain all information regarding the technological possibilities of the machine-tool, the flexibility and adaptability for certain collateral operations.
- The establishing of the quality is not complete if not taken into consideration the exploiting conditions of the machine-tools the safety degree of the machine but also of the operator.
- The practical application of these recommendations will assure the best choice and efficiency of the machine-tool.
- These considerations, mentionings, and appreciations belong to the authors, they have an orientative and optional character in usage and in practical application.

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