

## Computer techniques in automatized wood industrial company

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**Abstract:** *Computer techniques in automatized wood industrial company.* One analysed technics computer in automatized wood industrial company. One ascertained the necessity of the usage of the computer technics on all surfaces of the activity of the firm. Only like this the firm can quickly react on needs of receivers. The special attention one ought to turn on the use of the computer technics in production.

*Keywords:* integrated manufacturing, CIM, FMS

### INTRODUCTION

On purpose the present firm is the production of products gode in the short time, at small costs. It there is subjected to considerable pressures externa and internal. On one hand this is the incessant height of costs of the production consequential from enlarged costs of the energy, materials and the labour. On the other hand the intensification of the competition, the height of requirements of customers and the market. The uncertainty, what carry with themselves constringenting markets and the shakiness of the capital causes that the present firm must quickly react on needs of the market. The position of the firm on the present market represents the drawing 1.

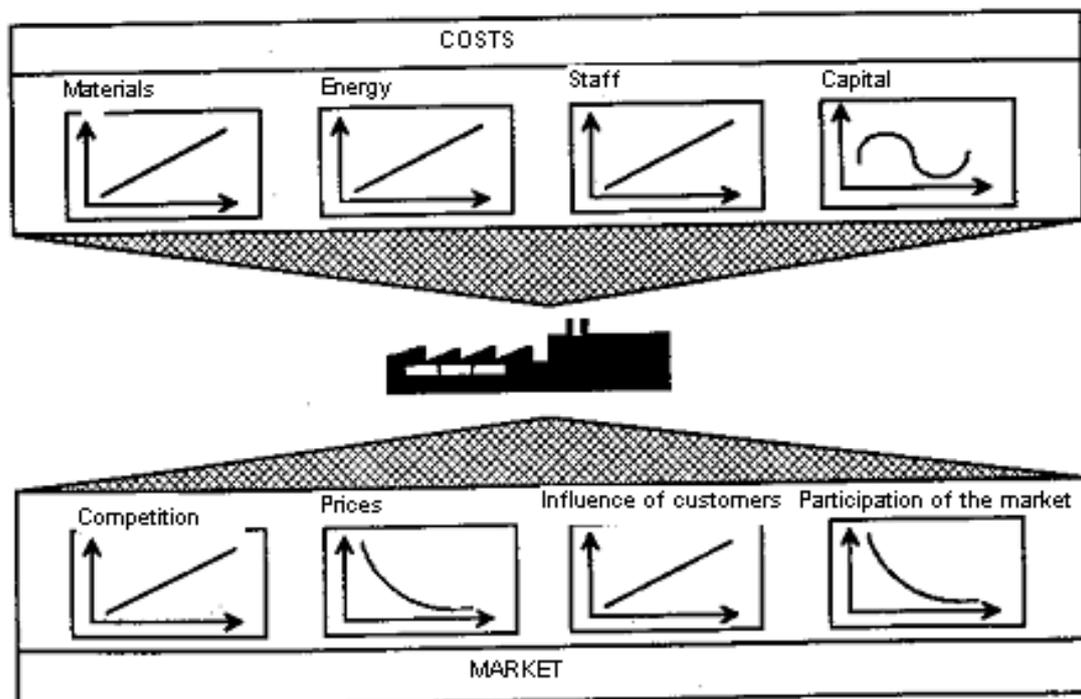


Fig. 1. The position of the firm on the present market

The present market is a market of the customer, and not as before a market of the producer. He seeks corner variants of the same article eg. tables in different colours, couches with different the upholstery etc. does not interest him the large-scale production which does not make possible the free choice.

The life cycle of the article consists of three phases: phases of the projection, the phase of the production and the phase of the use. Because all the time appear on the market new products the phase of the use all the time it surrenders to the shortening. The extension of the time production the new article drives so to the loss of the market rating.

In such situation the computer technics is indispensable on all surfaces of the activity of the firm. The computer aid moves in all activities of the firm, to begin from plannings and the construction, and having finished on the dispatching of ready made products.

## COMPUTER TECHNICSES

1. Production Planning and Control – PPC. Is this production planning and the control her so, so that products become produced in planned time-limit and complied with requirements qualitative at least costs of the production. Within the framework of production plannings one executes three main assignments :
  - the planning of the programme production,
  - the planning of the application of materials,
  - the planning of time-limits and weights of machines /of workplaces/.
2. Computer Aided Design – CAD, the computer aid of the projection of the construction. The full process of the construction consists of three phases:
  - the conceptional phase - the utilization CAD is still in the country all the time very not large,
  - phases of the projection - the utilization CAD is not large,
  - phases of the preparation of the records - the utilization CAD greatest.

Systems CAD can be integrated with other systems eg. with the system to generating of programmes on machine tools CNC, with the system to the analysis of the computational construction - most often calculations FEM - Finite Element Method.

At present the time “of draughtsmen” CAD slowly draws to end. Now the skill of very efficient drawing no longer is sufficing. Generally, follows the retreat from tools drawing toward of applications helping the work of the constructor. The application grows on constructors knowing such programmes as eg. CATIA, PRO/E etc. Simple programmes drawing of course will survive, to find to themselves niches too “narrow” for advanced packs Cax – Integrated Manufacturing.
3. Computer Aided Planning or Computer Aided Process Planning – CAP,CAPP - the computer aid of the planning. This is the process of the transformation of raw material /of the semimanufactured article/ into the ready product complying with requirements definite in the project. A result of the work of the technologist is worked out technological records. She contains data about the technological gear , manners of fastening of objects worked, technological surpluses , tolerances of the realization, tools, parameters of the machine cutting, machine tools, technological devices etc. Computerly the helping planning considerably makes easy and shortens the time of the preparation of the technological records.
4. Computer Aided Quality Control – CAQ. It serves to the continuous estimation of the quality of the product and processes of his production from first phases of the formation, until the final inspection of the functionality of the product. Makes possible the success of the agreement of technological foundations with obtained exactitude of the tooling and the assembly . At the estimation of the quality of the production the large part play systems of the statistical control with the process eg. the diagram Pareto, the time sheet , the histogram etc.
5. The computer technics in production - CAM /Computer Aided Manufacturing/. The use of the computer technics in production is dependent on from the degree of her automatization and embraces the aid computer controls of machines and devices and their

programming by means the computer.

Systems CAM embrace all practical systems in production. To reckon them one ought controlled machine tools numerally , industrial robots , forwarding systems , systems controlled stockpilings by means computers.

A name CAM is also embraced programming technique of machine tools and controlled devices numerally by means the computer.

The use of the computer technics in production one ought to examine with reference to two different types of the organization production:

- when each machines or technological devices are not related into the system of the production,
- when machines and technological devices create the system of the production.

In the first case will appear single machines and technological devices conventional and controlled numerally, and the computer aid of the production will limit itself to the preparation of processings and programmes of the control on each machine tools.

In the case, when machines create the system production, computer systems helping the process of the production must be with themselves integrated. They come into being then so-called Flexible Manufacturing System – FMS.

The Flexible Manufacturing System this is the arrangement of machine tools CNC /Computer Numerical Control/ joint automatized forwarding system , administered by the central sensor-based computer of control work of machines and the forwarding system. Thanks to the computer control is possible the quick change of the programme of the work of productive devices , in accordance with changing assignments .

The idea of the elastic productive system is connected first of all with processes of the mechanical tooling of elements.

In the dependence from the number and the kind of machines, their destinations and the spatial distribution one can favour following basic types of elastic productive systems.

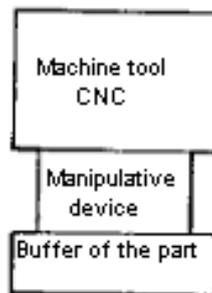


Fig. 2. Flexible manufacturing cell

The Flexible manufacturing cell /Fig. 2/ is a most simple type of the elastic productive system. Consists of one machine tool about the control of the type CNC /is usually this manufacturing centre/, equipped into changers of tools and elements and bufora of goods for further processing and worked elements. Clever he is to work partly without the service. With the whole steers the superior computer - the computer of the module. In the wood industry, by means elastic productive modules is executed tooling of frame- constructions on milling-machines CNC and edging of record- furniture- elements.

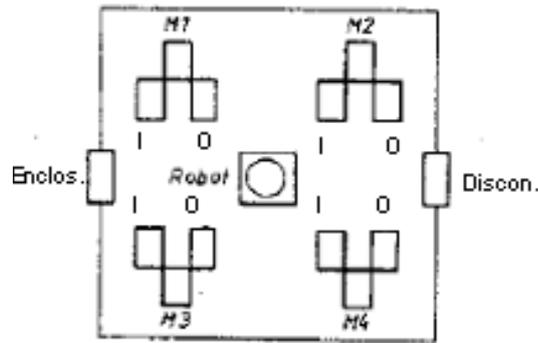


Fig. 3. Flexible productive socket

The Flexible productive socket /Fig. 3/ consists of several productive connected modules with the certain kind of the article or the integrated processing mutually across the transportation, the stockpiling and the common computer control.

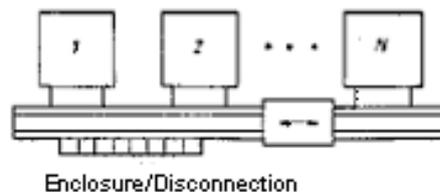


Fig.. 4. Flexible production line

The Flexible production line /Fig. 4/ this is the gathering of specialistic machines seated in compliance with an order of the exercise of the operation. Works similarly as automatic production line, differs however from her with the ability to frequent and quick rearmings. Thanks to the use of machine tools CNC of the act of rearming of the line limit themselves to the retooling, tooling handles and programmes of the tooling.

The flexible productive net in general consists of several mutually related lines, nests or single modules. This is the most composite kind of the elastic productive system.

The strategy of the computer integration of the industrial company well-known under the name CIM /Computer Integration Manufacturing/ , consists in the connection of all divisions of the firm with the network computer. During the realization of systems CIM were met on following problems: the necessity of the full automatization in the area production and the lack of the compatibility of computer systems serving different functions of the firm.

In the reality present solutions CIM are in the most island “solutions” , i.e. refer not the all firm, and only his chosen areas.

The integration of methods CIM in the firm should make for creations fully automatized and computerized factory of the future.

## CONCLUSIONS

The firm perhaps quickly to react on needs of receivers to use computer technicses on all surfaces of the activity of the firm. The special attention one ought to turn on the use of the computer technics in production.

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**Streszczenie:** *Techniki komputerowe w zautomatyzowanym przedsiębiorstwie drzewnym.* Przeanalizowano techniki komputerowe w zautomatyzowanym przedsiębiorstwie drzewnym. Stwierdzono konieczność stosowania techniki komputerowej na wszystkich płaszczyznach działania przedsiębiorstwa. Tylko w ten sposób przedsiębiorstwo może szybko reagować na potrzeby odbiorców. Szczególną uwagę należy zwrócić na zastosowanie techniki komputerowej w produkcji.

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