

USE CA SYSTEMS IN INDUSTRY

¹ TECHNICAL UNIVERSITY OF KOŠICE, FACULTY OF MANUFACTURING TECHNOLOGIES, DEPARTMENT OF TECHNICAL DEVICES DESIGN, STUROVA 31, 080 01 PREŠOV, SLOVAKIA

ABSTRACT: This article describes the use computer supported systems in practise. CA systems supported activities in all stages of production – from design region and construction, through production and finally mounting, storage and expedition. These systems represent very effective tool in region before-production and production stages in this time. They represent tool which can increase company's market position.

KEYWORDS: CA technologies, CAD/CAM systems

INTRODUCTION

Manufacturing companies are under the influence of strong home and foreign competition which still increase with globalization of market industry. This situation is forcing producers to adapt to new situations and react for requirements of clients. Flexibility is subject to production flexibility on the market, shortening production cycle of products but with increasing product quality, the same prize and cost reduction. For these requirements individual subjects must introduce CA technologies which are important for performance difficult requirements on the product, his quality and function, requirements for increased productivity, increased claims on the production system flexibility, fast change of production assortment. They are use in different sector of industry and different levels of management. In this time on the market are a lot of CA systems which have important influence on the industry production. The most common computer aided systems are CAD/CAM systems.

CAD SYSTEM

CAD (Computer Aided Design) systems represent computer design or computer aided design components, computer aided design models and computer aided of design documentation. It is the equipment for geometric and mathematical modelling components and their characteristic.

CAM SYSTEM

CAM (Computer Aided Manufacturing) systems represent systems for the preparation of data and programs for management the Numerical Control Machine for automatic production of mechanical components, the all report and for the electronic circuit. When we apply Cam systems, we use mainly geometric and other data which were obtained in the computer design stage components or the all product by CAD system.

CAM as complex computer aided manufacturing includes these activities:

- Controls of entry to manufacturing
- Plan of manufacturing
- Collection of production data
- Monitoring of production process
- DNC, CNC and NC control

- Robots and manipulators
- Flexibility transport system
- Manufacturing units
- Management tool

CAD/CAM SYSTEM

- Sign of system used for production when design of product and production management is by the computer
- Originally developed for engineering
- Now is by computer aided system design with integrated and production component
- He represents the first real integration between CA systems, mainly between CAD and CAM systems. Sometimes is uses abbreviation CADM (Computer Aided Design and Manufacturing). System CAD/CAM integrates modelling component and his construction design, technological design documentation in the form NC programs and operation control of production into a single computer system
- The benefits this integration system is his ability to solve complex and difficult tasks. Integration parts of CAD/CAM system is product model and the internal database system
- The term CAD/CAM represents technology which use numerical computer to perform certain functions in before-production stages and in the production itself. This technology represents the integration of the preparation and production processes in all industrial activities

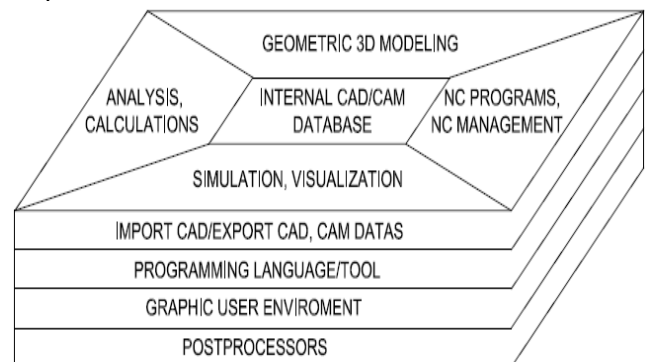


Figure 1. Scheme of CAD/CAM system
Benefits of the deployment CAM/CAD systems:

- Shorten product development cycle

- Simplify and speed up calculations, possibility of making the complex calculations
 - Simplify and speed up construction of technical documentation
 - Possibility of the construction the simple complex, creation of the complex shapes and whole report used for the montage and making of the installation producers
 - Generate CL data and making of the NC programs – the system application is presented to model the shape of the product that was created in an environment and then technological parameters are assigned and they are necessary to generate tool paths. The exit can be directly control the program for a particular type of machine or CL data and postprocessors are modified NC program format for the particular control system.
 - Analysis and simulation of the products under load and use, but simulation and optimization of the machining process, too.
 - This system can be use as a control mechanism to detect functional or errors of the proposed mechanism. When propose design has errors, is there possibility fast and effective adjustments.
 - Choice and effective use of the materials.
 - Minimize of the errors which are caused by human
- These privileges are sufficient to guarantee for the use CAD/CAM systems in the individual companies. The most important represents in the group CAD/CAM systems are:

- Creo Elements/Pro
- NX Unigraphics
- Catia

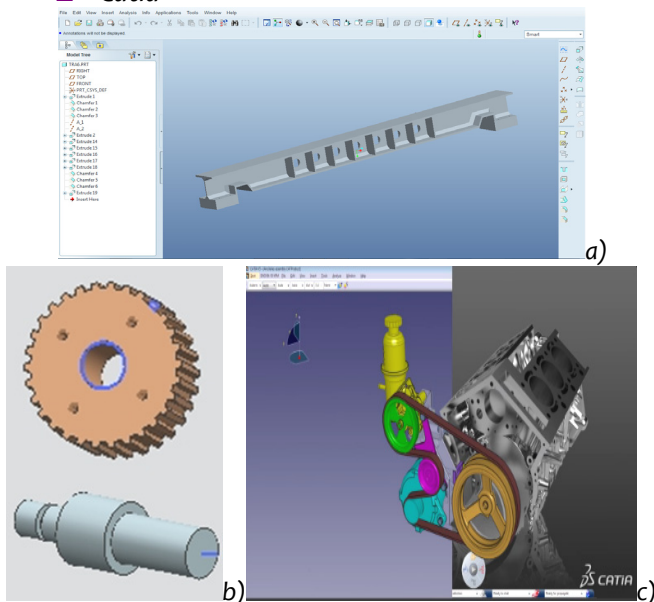


Figure 2. Examples of possible systems a) Creo Elements/Pro b) NX c) Catia

CONCLUSIONS

Nowadays production subjects cannot be a long successfully without a technically advanced system, his fast and effective development and production. Just because is needs an effective introduction of the CA technologies.

This article describes the functioning integration CA systems – CAD and CAM systems. Using these systems represent the important factor of successful and the future a business from shortening production cycle of product, through his design and finally his transport to the customer with the small cost. And from the company and her reacts to the effective and flexibility production for the requirements on the customers, too. For these requirements are important CAD/CAM systems and the other CA systems, which represent the important tool for increasing productivity, the rationalization of work, increase accuracy and reducing the cost of the production in the business.

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 FACULTY OF ENGINEERING HUNEDOARA,
 5, REVOLUTIEI, 331128, HUNEDOARA, ROMANIA
<http://acta.fih.upt.ro>