

ABSTRACTS “INNOVATIVE TECHNOLOGY” 3 -4 / 2006

ADJUSTMENT OF FD 320 A TOOTH PROCESSING MACHINE TO PERFORM CYLINDRICAL WHEELS WITH CYCLOIDAL CURVED TOOTH

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Based on the necessary motions to generate the cylindrical gear with curved cycloidal flanks it was established the kinematical structure of the tooth processing machine. The Romanian machines FD-Cugir type supplies the necessary kinematical linkage and their adjustment with changeable gears. In this paper were established the adjustment elements of the FD320A tooth processing machine in order to adjust the procedure. This procedure can be applied using a device fixed on the tangential sleigh of the machine and a milling head tool.

THEORETICAL AND EXPERIMENTAL RESEARCHES CONCERNING COORDINATE MEASURING MACHINES

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The successful utilization of computerized numerical control in production field, has determined the expanding of it also in dimensional control domain. For measuring a product, it's better to find a very simple way in order to certify the integrity of the product in the design parameters.

If the profile of the part is very complicated, it will be also difficult for measuring, and the measuring time, could be equal or greater than the fabrication time. For this situation, we have coordinate measuring machines with Rubin head, which allow the measuring of the part surface.

The recording of the point's coordinates it's made based on a null position.

This coordinates can be compared with a set of control values or by processing we can generate the surface of the part.

The obtain surface can be visualized and compared with a standard surface.

TECHNOLOGY FOR OBTAINING THIN METALLIC LAYERS WITH SPECIAL PHYSICAL AND MECHANICAL PROPERTIES USING ELECTRIC IMPULSE DISCHARGE

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The technology and the equipment present a certain degree of novelty and complexity, consisting in: the realized technology and equipment permit to obtain, by diffusion (alloying) and deposition, thin metallic layers with special physical and mechanical properties (large hardness, very high durability, corrosion resistance, special electric and/or magnetic properties); the spectacular modification of the properties of the films obtained by diffusion (alloyed) or deposition are produced by electric impulse discharge, combined with thermal treatments before and after the deposition, whence the complexity of the procedure.

THE ALIGNMENT OF TECHNOLOGIES FOR MACHINE COMPONENTS MANUFACTURING TO THE EUROPEAN ENVIRONMENT DIRECTIVES: DIR. 2000/53/CE

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The alignment of technologies for machine components manufacturing to the European Environment Directives: Dir. 2000/53/CE is meant to assimilate the principles of the European Community industrial policy based on the amplification of the industrial competition based on competitiveness criteria under the conditions of strictly complying with the imposed environment demand. The Romanian industry of machine components is more and more attractive for the foreign investors, a fact supported by the investment level during the last years, which strongly imposes the compliance of the technologies for the machine components manufacturing with the demands of the European Environment Directive: Dir. 2000/53/CE.

**EXPERIMENTAL RESEARCHES
CONCERNING THE DURABILITY INCREASE
OF BORDER TOOLS AND AND NEGATIVE
IMPACT DIMINUTION OVER THE
ENVIRONMENT**

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Caii Ferate, SIMC Buzau, ** Universitatea
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*The paper presents experimental researches realised
in order to enrich the border tools durability and to
step down the negativ impact on the environment.*

**EXPERIMENTAL RESEARCHES
METHODOLOGY CONCERNING THE WEAR
OF ACTIVE PARTS OF THE BORDER TOOLS**

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*The paper presents the methodology of experimental
researches concerning the wear of active parts of the
border tools.*

**THEORETICAL CONTRIBUTIONS
CONCERNING THE ACTIVE PART
GEOMETRY
OF THE BORDER TOOLS**

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*The paper presents theoretical contributions to the
researches concerning the active part geometry of the
border tools.*

**DISTURBANCES AND WEAR
OF THE BORDER TOOLS
AND THEIR INFLUENCE
OVER THE ENVIRONMENT**

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Caii Ferate, SIMC Buzau, ** Universitatea
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*The paper presents disturbances and wear of the
border tools and their influence over the
environment.*

**THE OPTIMIZING HARDENING
SHALLOW PROCESS BY THE METHOD
OF FINITE PROCESS
IN ORDER TO GROW THE RESISTANCE
UP OF THE CAST IRON COLUMNS
FROM THE UPRIGHT OF RADIAL
DRILLING MACHINE**

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*The actual work present a best method shallow
hardening through by induction for pieces of high-
dimension for exemple the upright of radial drilling
machine.*

*This method is based on the simulation of the
process of heating and cooling of a piece for
shallow of the most proper one for practical
realization of the technology by shallow hardening.*

**RESEARCHES RESULTS CONCERNING
TOOTH CONSTRUCTION
FOR CONICAL WHEEL
WITH CURVED TEETH
WITH INVOLUTE FORM KNIVES**

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*The paper presents the experimental research
obtained while executing a conical gear with
curved teeth in an arc that was processed with
experimental tothing knives. The profile of these
knives is made up of complex surfaces that are part
of helixes. In this case, the lateral positioning
surface of the knives has as a directing curve an
evolventic spiral.*

**RESEARCHES CONCERNING KNIVES
USED FOR TOOTHING CONICAL GEARS
WITH CURVED TEETH**

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*This paper presents the research regarding knives
used for tothing conical gears with curved teeth
on the basis of a mathematical model, using the
spatial gearing method of researching gears that is
particularized for the technological gear formed on
rectifying positioning surfaces. Calculus programs
regarding the optimization of the technology were
drawn up in the Visual C++ and Mathcad 2001
programming environments. The chipping edge of*

the knife is theoretically a line that is part of a helical surface. The deviations of the chipping edge from a line that passes through its extreme points are determined through simulation. These deviations are evaluated in different sections of the resharpening domain of the knife. The maximum admitted deviation of the chipping edge is 0.08 mm.

ESTIMATION OF CUTTING FORCES USING FEM SIMULATION FOR CHOOSING INSERT TYPE

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Finite Element Analysis based techniques are available to simulate cutting process and offer several advantages including prediction of tool forces, distribution of stresses and temperatures, estimation of tool wear and residual stresses on machined surfaces, optimization of cutting tool geometry and cutting conditions. However, work material flow stress and friction characteristics at cutting regimes are not always available. This paper presents the current modelling capabilities available in modified DEFORM 3D™ system to simulate 3D metal cutting environment in turning process.

ERCAD – SOFTWARE FOR THE DETERMINATION OF ORIENTATION ERRORS OF PROCESS DEVICES COMPONENTS

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In the fixture device design, the computer-assisted determination of the optimal orientation scheme appeared as a major progress, both to express and to capture conceptual designs and design intents. The paper describes an interactive system which implements an electronic library of orientation error problems. The system is implemented as client-server architecture. The server side runs along with a web server and manages a database of problems and registered users. The client side is represented by a Java applet which provides graphical interaction with the users. Drawing tools are available for on line problem solving. The system features some simple tutoring capabilities.

GICAD – EDUCATIONAL SOFTWARE FOR ENGINEERS GRAPHICS

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The use of graphics to communicate ideas is essential for designers, engineers and drafters. Engineering education is now realizing the potential of multimedia as learning and teaching tool. The use of computer multimedia offers several tools that are useful in engineering graphics education. Many of the topics encountered in a graphic course deal with 3D objects or concepts, which are often difficult to visualize for students. Orthographic projection, object sectioning and descriptive geometry are typical of topics that are sometimes especially difficult. In these cases 3D representation and animations of these representations may be beneficial to students trying to relate 2D drawings to the 3D objects they represent. The paper presents original educational software for Engineering Graphics, used into multimedia system, who transform classroom into an efficient and attractive medium.

THE STUDY OF THE DYNAMIC BEHAVIOUR OF ELASTIC COUPLING WITH FLEXIBLE METALLIC ELEMENTS DIAPHRAGM TYPE

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The paper presents the study of dynamic behaviour for an elastic coupling with flexible metallic elements type diaphragm, also the nature and the quantification of disturbances and it presents a real case. There are determined the angular critical speed and the vibrational movements amplitudes.

THE STUDY OF PLAN CRINKLING STABILITY OF A FLEXIBLE MEMBRANE FROM ELASTIC COUPLING STRUCTURE WITH METALLIC ELEMENTS DIAPHRAGM TYPE (I – THEORY)

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The paper presents the theoretical static analysis of buckling state of metallic membrane from the structure of the flexible elastic coupling, using the finite element analysis (FEA). The analysis determines the buckling load factors and buckled

shapes of the structure. Linear buckling takes into account the effects resulting from the compressive stresses, which tend to lessen the capacity of the membrane to resist lateral loads. The buckling analysis is favorable in the optimal design of flexible metallic couplings used in power transmissions.

**THE STUDY OF PLAN CRINKLING
STABILITY OF A FLEXIBLE MEMBRANE
FROM ELASTIC COUPLING STRUCTURE
WITH METALLIC ELEMENTS DIAPHRAGM
TYPE (II – EXPERIMENT)**

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The paper describes the experiments carried out to determine the loading-unloading characteristics of a metallic membrane from the structure of the flexible elastic coupling, on a static test stand (of a non-rotating type, in an opened circuit arrangement, with a mechanical loading system, using levers). This analysis gives general conclusions of membrane behavior. This study is basic to find the solutions for improving membrane performance. The final conclusions are important for future research in respect of the entire membrane packet. Through its characteristics, the membrane disk plays an important role in the variation of the transmitted torque, this aspect has not been studied so far.

EDUCATIONAL PROCESS INFORMATION

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Current e-learning technologies emerging from the market today fail to take a holistic approach towards the development of training content that encompasses all academic and industry domains available. Emerging web technologies, real-time collaboration technologies, and authoring software tools accelerate the growth of e-learning. The e-learning content must be designed and developed. Learning strategies and instructional design methodologies are used to create and organize the course content, to be delivered on the platform of a learning management system. With regard to this paper, a detailed research was carried out detailing aspects of online learning, by reviewing learning theories and pedagogical approaches emphasizing virtual collaboration technologies for e-commerce and then developing an e-training technology framework followed by the developing of a model for creating educational content designed for e-learning standards.

**THE STUDY OF THE UTILIZATION
OPPORTUNITY OF A VIRTUAL
ENTERPRISE ARCHITECTURE IN A
PRODUCT DESIGN AND PROCESS**

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Virtual enterprise is a temporary alliance of enterprises that come together to share skills and resources in order to attend a business opportunity and whose cooperation is supported by computer network and adequate information and communication technologies tools and special application software. Enterprises operate as nodes in a network of suppliers, customers, engineers and other specialized service providers. Virtual Enterprise materializes by selecting skills and assets from different firms and synthesizing them into an apparently single business entity. In this paper we present a modeling and simulation methodology for product design and manufacturing and as a case study we use a real system that is realized and simulated in Witness.

**THEORETICAL CONSIDERATIONS
CONCERNING THE CHARACTERISTICS
OF MAIN GRAINS**

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The paper presents some characteristics of the main grains cultivated in Romania. There are analysed most important varieties, in order to obtain better reaping conditions for the future productions.

**RELATIONSHIP BETWEEN
THE MAIN INFLUENCES FACTORS
OF THE CLEANING PROCESS
OF THE HARVESTER_THRESHERS**

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The paper presents relationship between the main influences factors of the cleaning process of the harvester - threshers. There is specified the dependence between the index of the grain content in the material body, the medium elevation of the field and the medium height for cutting the plants. It is necessary for the calculus and projection of cleaning system of the modern combines.

STUDIES CONCERNING THE MAIN PARAMETERS OF GRAINS

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In the paper there are presented studies concerning the main parameters of grains. There are analysed the dimensions of the grains, the friction coefficients on different materials and the floating speed of the grains, of the straw fragments and of the chaff.

CONSIDERATIONS CONCERNING THE KINEMATIC OF SIEVES AND THE DYNAMIC MOVEMENT OF THE STACK PARTICLES ON THE SIEVES

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In the paper there are presented some of the theoretical considerations about cleaning on the harvest combine sieves. There are presented the kinematics of the sieves and the dynamics of the relative movement of the stack particles on the sieve.

NEW CONSIDERATIONS ABOUT ENGINE OILS

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The paper present the conditions of lubricating oils for new engines which must to ensure of the manufactures requirements to low maintenance costs. In this work to present grades viscosity, and performance level and service oil drain interval in accordance with international specifications API. If the oils not satisfy one from the conditions of the API standard the oil drain interval for use of oil must to be shortened up to 50%.

IMPROVING MACHINERY RELIABILITY WITH OIL MIST TECHNOLOGY

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Oil mist is effective in improving machinery reliability by typically reducing bearing failures by as much as 90 percent. Regarding the technology, the oil mist is generated by introduction of liquid oil and air into the sonic velocities of a vortex throat. This process can be applied in two formats: pure mist (dry

sump oil mist) or purge mist (wet sump oil mist). With purge mist applications, the oil mist is applied to the vapor space above the liquid oil in primarily gear boxes, oil reservoirs, and journal (plain) bearings. There are numerous direct benefits of oil mist, such as: increasing of the bearings reliability, reduction in oil consumption and decreasing of the temperature during the work.

CALCULATION METHODOLOGY FOR LINIAR HYDRAULIC ENGINES BANKED TOGETHER

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The work presents two static calculation methods for the hydraulic systems driving two linear hydraulic motors from the same directional control valve. The calculation can be extended for more consumers.

ORGANIZATIONAL CULTURE ROLE IN VIRTUAL INDUSTRIAL ENTERPRISE ENVIRONMENT

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The main goal of this paper is to accord the relevant characteristics of virtual enterprises with the four important types of organizational cultures used in their management (ethnocentric, polycentric, regiocentric and geocentric). Such virtual enterprise architectures started to act like classical multinational enterprises and as a consequence borrowed their organizational characteristics. However those organizational cultures must be adapted to the new paradigm.