1. THE KINEMATICS' ANALYSIS OF AN ECCENTRIC MECHANISM OF A MOWER MACHINE (pp. 3 – 10)

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Abstract: The paper is structured in two parts. In the first part is described the construction of the cut-off me-chanical system from one mowing machine and achieved the kinematics modelling for the actuator mechanism. The second part of the paper refer to the mechanism kinematics analyse. They are presented diagrams with the positions, speed and acceleration of the mechanism elements.

Keywords: kinematics – analyze – mechanism – mower - modelling.

2. RELATIVIST STUDY OF CONCEPT OF "MOTION" (pp. 11 – 24)

STĂNESCU M.M., BOLCU D., STAVRE P., BĂGNARU D.Gh.

Abstract: This paper, subject of future development emphasizes the possibility of relativist study of concept of "motion". After having presented the general form of the differential operators that will be used, we will proceed with all approach on the extend motion problem for the perfect fluid.

3. THE DEVELOPMENT OF A NEW CLASS OF FUELS WITH COLLOIDAL DISPERSION OF SOLID FUEL NANOPARTICLES (pp. 25 – 31)

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Abstract: The paper includes the results of a study on developing colloidal dispersions of nano powdered solid fuel particles in a classical fuel matrix. From the fluid mechanics point of view these compounds are called nanofluids. The analysis proposed by the authors includes the thermo-physical properties of proposed solid powders and the resulting colloidal mixtures and the consequences on the injection and combustion processes in the Internal Combustion Engines.

Keywords: nanoparticles, fuels, internal combustion engines, colloidal solutions, combustion models.

4. CONTRIBUTION TO THE STUDY OF THE INFLUENCE OF CONSTRUCTIVE AND OPERATIONAL PARAMETERS OF THE WORK TRACTOR TYRE WHEELS UPON THE DISTRIBUTION AND MAGNITUDE OF THE SOIL STRESS (pp. 32 – 46)

Simion POPESCU[1], Liviu Laurențiu DINU[2], Ion CÂNDEA[3]

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Abstract: In the paper it is analyzed the influence of constructive and work parameters of the tire wheels (types, dimensions, inflation pressure, load,) and of working conditions of the machinery (travel speed, number of passing on the same tracks etc.) over the propagation way of the pressure from the contact surface wheel-soil in the depth of soil and over the penetration resistance and of soils apparent density. . In the end it is presented the technical possibilities of modification of inflation pressure during the run, using a central tire inflation system.

Keywords: agricultural tractor, tire well, contact surface whell-road, soil stress, soil deformation

5. PROPOSALS OF DEFINITE AND APPLICABLE MEASURES TO INCREASE THE OUTPUT OF AN ELECTRIC POWER PLANT BY IMPROVING THE TECHNOLOGIC PARAMETERS OF THE COOLING SYSTEM (pp. 47 – 54)

Constantin MOŞOIU, Francisc SISAK

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Abstract: In this paper we make some proposals of definite and applicable measures to increase the output of an electric power by improving the technologic parameters of the cooling system. We present the updated cooling system and the implementation of a new technologies by using the circulating pumps of variable flow in exploitation of cooling water system and the implementation of new technologies in cooling towers. Through this we increase the cooling system (by water) working efficiency of an EPP, an essential factor in economic working of a steam turbine.
Keywords: cooling system, steam turbine, power plant.

6. THE VIBRATION INFLUENCE ABOVE THE STRAINS STATE OF LINEAR ELASTIC BAR TYPE CINEMATIC ELEMENTS OF THE MECHANISMS (pp. 55 – 60)

Raluca MALCIU[1], Mădălina CĂLBUREANU[2], Dan BĂGNARU[3]
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Abstract: This paper presents the strain field in a linear viscoelastic bar in specific work condition. These data are very necessary in calculus of stress field in the cinematic element. It is used the Mathematica program for compute the displacements field in element using the linear elastic properties for material.
Keywords: strain field, linear elastic material, crank and connecting rod assembly

7. AN ANALYSIS OF TOOL GEOMETRY AND CUTTING PARAMETER INFLUENCE ON SURFACE LAYER MICROSTRUCTURE AND MICRO HARDNESS IN MACHINING OF HARDENED RUL1V BEARING STEEL (pp. 61 – 70)

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Abstract: The hard machining process may lead to so called white layers, similar to the layers known as grinding burn. The similar appearance of the outer surface zone leads to the idea that the changes in physical properties are similar as well. The presence of the white layer causes great concerns in machining industry just because the white layer effects on component life are not yet understood. In these conditions, it is frequently considered that the formation of white layers on the machined surface could drastically affect a component's service life. In order to find the appropriate cutting parameters that reduce the apparition of the white layer in the machined surface, orthogonal cutting tests of hardened RUL 1V steel (61 HRC), were carried out. The results show that, depending on machining conditions used in this experiment, the white layer thickness ranges between 1 and 40 um and the measurement of microhardness from surface to the unaffected structure show that, generally, there are not significant variations.
Keywords: microstructure, microhardness, tool geometry, cutting parameters, hardened steel

8. FRICTION COEFFICIENT METHODS FOR COPPER BASE SINTERED PARTS (pp. 71 – 78)

Ştefan GHEORGHE[1], Cristina TEIŞANU[2], Ion CIUPITU[3]
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Abstract: In this paper there are presented the results of wear tested of the CuSnZnPb + graphite antifriction sintered alloys: : CuSn5Zn5Pb4+1% graphite symbolized PBM 1, CuSn5Zn5Pb5+1% graphite symbolized PBM 2, CuSn5Zn5Pb6+1% graphite symbolized PBM 3, CuSn5Zn5Pb7+1% graphite symbolized PBM 4, CuSn5Zn5Pb8+1% graphite symbolized PBM 5. For the optimal process analysis are considered three representative factors for the porous Cu based sintered bearings: the content of Pb (w%) in the mixture,

the compaction pressure, the sintering temperature. This study presents this influence on the wear behaviour of the CuSnZnPb + graphite antifriction sintered alloys. The friction coefficients are determined by KISTLER device.

Keywords: wear strength, powder metallurgy, antifriction alloys, bearing.

9. ESTIMATION BY CALCULATION OF MECHANICAL POWER LOSSES ON AUTOMOTIVE TURBOCHARGERS (pp. 79 – 92)

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Abstract: Nowadays diesel automotive engine is turbocharged. Regulations of CO2 emission lead also for gasoline engine to be turbocharged (downsizing). Therefore, high performances of the turbocharger are required on an even wider functioning area. That also means that these performances must be known with a satisfactory accuracy. Unfortunately, this is not the case for turbocharger's operation at low speeds, which is often encountered in automotive applications. Some experiments have been performed in Cnam laboratory on a turbocharger test bench equipped with a torquemeter. Experimental results permit a coarse evaluation of friction losses based on the difference between power given to the airflow and power measured by the torquemeter. It seems that a better accuracy of these losses can be obtained by a direct mechanical calculation of friction losses but first calculations were not satisfactory. So, it has been decided to carry out a careful analytical calculation using "classical" methods for journal bearings applied to one turbocharger and study influences of different parameters (load, clearance, eccentricity, lubricating oil viscosity…). Then these calculations have been compared with 2D CFD results. A 3D analysis is in progress. In this paper, the results of these different computations are presented and discussed.

Keywords: turbocharger, friction losses, journal bearings, CFD

10. THE VIBRATION INFLUENCE ABOVE THE STRESS STATE OF LINEAR ELASTIC BAR TYPE CINEMATIC ELEMENTS OF THE MECHANISMS (pp. 93 – 98)

Mădălina CĂLBUREANU[1], Raluca MALCIU[2], Dan BĂGNARU[3]
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Abstract: The determination of displacement fields by vibrations of linear elastic cinematic elements of the crank and connecting rod assemblies makes possible the calculus of strain tensor components and then the calculus of the stress tensor components. This paper realize the representation of stress tensor components for a specific mechanism in precise work conditions. These data are very significant in designing and dimensioning the cinematic elements of the mechanisms.

Keywords: vibration, stress state, linear elastic cinematic element

11. THE INFLUENCE OF THE SINTERING PARAMETERS ON THE COPPER BASED ALLOYS WITH LOW TIN CONTENT (pp. 99 – 106)

Ştefan GHEORGHE[1], Cristina TEIŞANU[2], Ion CIUPITU[3]
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Abstract: The paper presents the influence of the sintering atmosphere and temperature and heating rate on the copper based antifriction alloys having low tin content. The two sintering atmosphere were vacuum and hydrogen. The sintering temperatures were fixed at 815°C and 805°C and the heating rates were established at 10°C/min, 7°C/min and 4°C/min. Also, the paper highlighted the dimensional changes during sintering and the microstructure and X ray analysis. The studied microstructures show the insolubility of the lead component into the metal matrix and the formation of some characteristic solid

solution of the Cu-Sn-Zn-Pb system. The microhardness method was also performing in order to establish the hardness characteristics of the grain components.

Keywords: PM copper base material, sintering.

12. METHODOLOGY FOR STUDYING THE DYNAMIC SYSTEM OF HIGH SPEED GRINDING MACHINES (pp. 107 – 114)

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Abstract: A methodology to study the dynamics of the high speed grinding machines, which can determine the transfer functions of the component elements of the dynamic system in terms of real performance of the machine-tool, is presented in the paper. The analysis of the system's elastic behaviour in this case is done with only minimal errors in the actual operation of the machine. Using this methodology allows the direct processing of the results of measurements using frequency analyzers and computers.
Keywords: dynamical systems, vibrations, transfer functions, high speed cutting

13. INVESTIGATIONS MADE FOR ESTABLISHING LONGITUDINAL MODULUS OF ELASTICITY IN THE CASE OF POTATO CREEPING STALK (pp. 115 – 122)

Mircea BADESCU, Stelian PETRESCU

Abstract: The longitudinal modulus of elasticity in the case of potato creeping stalk is an important parameter in establishing the required demands for the specific machinery which pull out the potato creeping stalk. For experimental determination of longitudinal modulus of elasticity belonging to the potato creeping stalk, have been used two distinct methods: the vibration method and the method of simple bar lean on the ends and overloaded with a concentrated charge. The first method establishes on an analytical way a relation which allows the calculation of elasticity modulus when the dimension of creeping stalk sample are known as well as moment of inertial and the oscillation period of the sample embed at one end and exposed to a vibration status. The second method of elasticity modulus determination operates with ratio between the variation of loaded charge belonging to the creeping stalk sample and increasing of deformation read to dial gauge indicator. The obtain results through the above two mentioned methods do not registries differences bigger than 6.5%.
Keywords: longitudinal modulus of elasticity

14. JIGS FOR MANUFACTURING PLANE SURFACES ON TURNING MACHINES (pp. 123 – 132)

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Abstract: The paper presents the background consideration which allows machining of plane surfaces on turning machines, using the main feed movement. At this procedure are established the basic principles of an external device, that can be attached to the machine, in order to generate a plane surface.
Keywords: Cycloids curves, turning machine

15. INVESTIGATIONS CONCERNING THE POSSIBILITY OF CONVERTING THE DISPLACEMENT VELOCITY INTO AN ELECTRIC PARAMETER IN ORDER TO AUTOMATIZE THE WORKING PROCESS FOR AGRICULTURAL SPRINKLING MACHINERY (pp. 133 – 140)

Mihnea GLODEANU[1], Tudor ALEXANDRU[2], Simion POPESCU[3], Sorin BORUZ[4]
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Abstract: Agro-technical demands imposed for the technological process of diseases combat and pest control by means of the sprinkling treatments have required the sprinklers fitting out with automatic adjusting systems of the agro-pharmaceutical liquid flow, depending on the variation of displacement velocity.
Keywords: converter; integrated circuit; inductive wheel; velocity; sprinklers.

16. EFFECT OF STIFFNESS UNCERTAINTIES ON THE AEROELASTIC STRUCTURES (pp. 141 – 159)

Stefan C. CASTRAVETE[1], Raouf A. IBRAHIM[2]
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Abstract: This paper deals with the investigation of the influence of span-wise distribution of bending and torsion stiffness uncertainties on the flutter behavior of an aeroelastic wing using a stochastic finite element approach. The analysis adopted a numerical algorithm to simulate unsteady, nonlinear, incompressible flow (based on the unsteady vortex lattice method) interacting with linear aeroelastic structure in the absence of uncertainties. The air flow and wing structure are treated as elements of a single dynamical system. Parameter uncertainties are represented by a truncated Karhunen-Love expansion. Both perturbation technique and Monte Carlo simulation are used to establish the boundary of stiffness uncertainty level at which the wing exhibits flutter in the form of limit-cycle oscillations (LCO) and above which the wing experiences dynamic instability. The analysis also includes the limitation of perturbation solution for a relatively large level of stiffness uncertainty.
Keywords: Flutter, vortex-lattice method, aeroelasticity, fluid-structure interaction, perturbation method, uncertainty.

17. USING THE ACID/ALKALI PHENOMENON IN THE PROCESS OF DESULFURATION OF COMBUSTION GASES (pp. 160 – 166)

Dumitru STANCIOIU
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Abstract: In the paper we present the process of reducing the sulphur oxides emissions from the combustions installations of organic fuels through desulfuration. We propose the introduction of a positive Corona emission installation which will cancel the alkali effect of the gas negative ions existent at the entry in the desulfuration installation.
Keywords: reduction reaction, basic effect, positive Corona.

18. THE GEOMETRICAL PARAMETERS DETERMINATION OF THE LAMELAR MOULDBOARDS USED AT THE MODERN PLOUGHES (pp. 167 – 176)

Sorin – Tiberiu BUNGESCU[1], Sorin – Ştefan BIRIŞ[2], Valentin VLĂDUŢ[3], Lorin PILOCA[4], Florin IMBREA[5]
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[2]*Polytechnic University Bucharest, Faculty of Biotechnical Systems Engineering*
[3]*INMA Bucharest*

Abstract: In the paper there are presented the results of the study conducted on the directions and evolution limits for the parameters which characterise the geometry of the lamelar mouldboards, both indigenous (prototypes) and foreign.
Keywords: lamellar mouldboard; body of a plough

19. NO - TILL RESEARCH RESULTS IN SOUTH-WEST ROMANIA (pp. 177 – 184)

Mircea BADESCU, Marian DOBRE, Adrian MECA

Abstract: The paper deals with the most recent issues concerning the mechanization for the conservation agriculture as well as with the principles involved. Also, there are shown recent results on the no till technology aspects concerning the water loss in an experiment with vegetation vessels carried out by the Soil Management and Machinery Departments of the Faculty of Agronomy from Craiova. The best results were given by the mulch covered variant that has kept the highest amount of water in comparison with tilled and not tilled bare soil.
Keywords: mechanization, conservation agriculture, no till, available water capacity

20. CHECKING ON STAND THE SPECIFIC FEATURE OF A ELECTRONIC AUTOMATIC ADJUSTING SYSTEM IN ORDER TO AUTOMATIZE THE WORKING PROCESS FOR AGRICULTURAL SPRINKLING MACHINES (pp. 185 – 188)

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Abstract: The most important demand imposed for agricultural sprinkling machines is to ensure the stability of liquid rate. That is the reason for what many sprinklers are fitting out with electronic automatic adjusting systems of agro-pharmaceutical liquid flow. Such system is tested on a stand, in laboratory conditions for rise its specific feature.
Keywords: sprinkling machines; adjusting system; specific feature; flow; stability

21. THE FINITE ELEMENT METHOD USED FOR THE STRESS STATE DETERMINATION AT THE SPRAYERS' NOZLESS (pp. 189 – 196)

Sorin – Tiberiu BUNGESCU[1], Sorin – Ştefan BIRIŞ[2], Valentin VLĂDUŢ[3], Lorin PILOCA[4], Florin IMBREA[5]
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Abstract: The study about the stress state from nozzles of the pest and diseases control through chemical machinery, represent a very important problem regarding the optimization of the parameters of nozzles on the basis of the minimum weight's criterion. This calculus can be done successfully by means of the analysis method with the finite elements.
Keywords: Finite Elements Method, COSMOS/M programme, stress, digitization

22. THE INFLUENCE OF THE DEFORMATION OF THE TYRES AND OF THE RACE WAY ON THE TRANSVERSAL STABILITY OF THE WORKING MACHINE-TRACTOR SYSTEM (pp. 197 – 204)

Sorin BORUZ, Mircea BĂDESCU, Mihnea GLODEANU, Constantin STAN

Abstract: In this paper it is presented the influence of the deformation of the tyres and of the race way on the transversal stability of the machine-tractor system when moving on a cross-slope having a real inclination angle α on the level curve and the way of calquing them depending on the geometrical elements of the technical system formed so.
Keywords: tyres, tractor-row tillage machine, cross slope, external forces

23. EXPERIMENTAL RESEARCHES ON WORK QUALITY INDEX OF PEANUTS MECHANICAL HARVESTING (pp. 205 – 212)

ALEXANDRU Tudor[1], GLODEANU Mihnea[2], COLA Mugurel[3]
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Abstract: From research which carried out with the funcţional model we notice that it needs the working speeds to be between 0,61-0,92 m/s and the liniar speeds of the taking up devices to be between 1,56…2 m/s, for working parameters to be optimal.
Keywords: pull out, detach, speed, model, peanuts

24. THE MEASURE EQUIPMENT OF THE RESISTANCE FORCES TO THE TRACTION OF THE CARRIED AGRICULTURE MACHINE ON TRACTOR REAR MOUNTED THREE POINT LINKAGE BY THE 3RD AND THE 4TH CATEGORY (pp. 213 – 222)

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Abstract: In the paper it is presented the measure equipment by the strain gauge used for measuring of resistance forces to opposed traction, in work, by big power tractors equipped with rear mounted three point linkage of the 3rd and the 4th category according of standard SR ISO 730-1+C1.
Keywords: tractor, agriculture machine, traction force, strain carcass

25. CONSIDERATION REGARDING THE COMPORTMENT TO ENDURANCE OF A TRACTION BAR OF A 200 HP TRACTOR, IN CASE OF THE HYDROPULS ACCELERATED TESTING (pp. 223 – 228)

VLĂDUŢ V., MATACHE M., GANGA M., MIHAI M.

Abstract: The traction bar is a component part of a traction device mounted on the tractor and it is use to the warping of agricultural machinery, with an importance role for the safety circulation on the public roads. For this the bar must be testing according the European Norms in operation (Directive 89/173/CEE), for to a follow up the comportment - the mechanical resistance, in the case of an accelerated testing at minimum 2.000.000 cycle, at a frequency max. 20 Hz, follow up very good the mounting conditions on the tractor but and the true of the function. This testing have as aim the determination of bar comportment (in simulated and accelerated conditions work), for to see if the end of the 2.000.000 de cycle appear the fissures, deformations or cracks which can imperil serious the safety on public roads.
Keywords: traction bar, testing, norms, machinery

26. A TEHNOLOGY FOR THE OBTAINING OF THE HOBBING CUTTER PROFILE FOR ROUGHING (pp. 229 – 235)

George GHERGHINA[1], Dragos POPA[1], Mihaela-Liana BOGDAN[1]
[1]The University of Craiova, Faculty of Mechanics

Abstract: The paper presents the technology for obtaining of the hobbing cutter with protuberance for the processing of the gear with material addition for the grinding on the grinding machines by backing off. The finishing by grinding of the gear imposes that this should have in the tooth zone a advantageous profile to permit a better processing of profile, low vibrations and decrease of the abrasive disk wear (essential thing for the grinding of the gear). For this reason, it is imposed the realization of tools for teething with special profile which should permit the processing of gear with keeping a suitable processing addition.
Keywords: hobbing cutter, grinding machines, tools for teething

27. REDUCTION OF THE NOXES' EMISSIONS GENERATED BY THE THERMOELECTRIC POWER STATIONS (pp. 236 – 243)

Dumitru STANCIOIU
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Abstract: The paper analyzes the possibilities of reducing the emissions of noxes in the form of combustion ashes and gases as a result of burning fossil fuels. It is determined which are the methods of reducing the emissions of noxes, it is presented the energo–structural theory of each element or chemical compound in the combustion gases and

makes the difference between the emissions filtered in the industrial electrofilters and those filtered by means of other methods.