

UNIVERSITY "ȘTEFAN CEL MARE" of SUCEAVA
FACULTY OF MECHANICAL ENGINEERING
MECHATRONICS AND MANAGEMENT

TEHNOMUS XV

NEW TECHNOLOGIES AND PRODUCTS IN MACHINE
MANUFACTURING TECHNOLOGIES



THE 15-th
INTERNATIONAL CONFERENCE TEHNOMUS



2009

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EDITURA UNIVERSITĂȚII SUCEAVA



2009

1. Dynamic testing with an electromechanical spindle actuator instead of a servohydraulic actuator	9
Jurgen SYMYNCK, Filip DE BAL	
2. A novel visual scheme for indoor navigation memory, movement and will,	23
Mário RAMALHO	
3. Rotating bending machine for high cycle fatigue testing	29
D. BRANDOLISIO, G. POELMAN, G. De CORTE, J. SYMYNCK, M. JUWET, F. De BAL	
4. Production Quality Control Using Robot-based Optical Sensors	41
Eberhard ROOS, Christian, OBLINGER	
5. Researches upon the influence of the deformation feed on the parameters of processed surfaces through cold plastic deformation	47
Constantin CĂRĂUȘU, Ocravian PRUTEANU, Traian GRĂMESCU, Corneliu PRICOPE	
6. The influence of the thermal and thermomechanical treatments applied to aluminium alloys	51
Elisabeta VASILESCU, Marian NEACSU	
7. Shape memory alloy type cuZnAl aspects about Sea water Corrosion	57
Carmen NEJNERU, Nicanor CIMPOEȘU, Andrei Victor SANDU, Ramona HANU CIMPOEȘU, Maria LUNGU	
8. Differential dilatometer used in Al-Si alloy investigation	63
Sergiu STANCIU, Nicanor CIMPOEȘU, Roxana-Gabriela CARABET, Bogdan ISTRATE, Ramona HANU-CIMPOEȘU	
9. Theoretical and experimental research regarding real time aquisition of ultrasound cleaning parameters	69
Larisa BUȚU, Marinela MARINESCU, Delicia ARSENE, Claudia BORDA	
10. Phase transformations in the zn-al system	75
Béla VARG	
11. Improving the hunting motion stability by using nonlinear dissipation device in wheel set with elastic joints System	81
Daniel BALDOVIN, Tudor SIRETEANU, Ana-Maria MITU	
12. Waste sheet metal utilization resulted in the processing of the semi-cages for radial ball-bearings	87
Lucian V. SEVERIN	
13. Evolution of the industrial mobile inspection robot spider	97
Grzegorz KOWALSKI, Zbigniew BORKOWICZ, Maciej CADER	
14. Considerations concerning the plasma torch clamping on a numerical controlled table	103
Alexandru RĂDEANU, Adriana MUNTEANU, Dumitru ULIULIUC	
15. Reducind the noise level with special robber panel	107
Ana-Maria MITU, Daniel BALDOVIN, Viorel SERBAN	

16. Proteus as industrial crisis zone securing system	113
Grzegorz KOWALSKI, Maciej TROJNACK	
17. Using the CAD and CAE concepts in the study of basic technical subjects	119
Ioan UNGUREANU	
18. Statisttical study of interaction influence from technological factors over joining radius to electrohydraulic perforation of the polygonal holes	125
Dumitru IACOB, Radu-Mihai IACOB	
19. Knowledge integration throuh a plm approach	131
Aurélie BISSAY, Phillipe PERNELLE, Abdelaziz BOURAS, Arnaud LEFEBVRE	
20. The audit process appreciation conditions	141
Costel MIRONEASA, Silvia MIRONEASA	
21. Shape memory alloy actuators in robotics: a review	147
Bogdan STIRBU	
22. Design activity in mechanical engineering. Achievements and demands in the design of devices	155
Vasile RATA, Traian Lucian SEVERIN	
23. Service robots used in constructions, Part I : General aspects	161
Ionel STARETU, Ioan DAJ	
24. Service robots used in constructions Part II: Case study	165
Ionel STARETU, Ioan DAJ	
25. Service robots for home surveillance – Achievements and perspectives	169
Ionel STARETU, Ioan DAJ	
26. A systemically approach on quality factors	175
Marius BAESU, Mircea CIOBANU	
27. Ishikawa diagram in magnetic abrasive finishing (m.a.f.)	181
Mircea CIOBANU, Marius BAESU	
28. Stress states influence on deformation induced martensitic transformation	187
Iulia SOLOMON, Nicolae SOLOMON, Ilie MUSCA	
29. Supplier component review as part of product and process development and validation phases	191
Iulia SOLOMON, Nicolae SOLOMON	
30. Study about the opportunity in robotic drilling	195
Traian Lucian SEVERIN , Romeo IONESCU	
31. Researches regarding unipulse depositions morphology with ti electrode on the phosphorous cast iron using the vibrator electrode method	201
Carmen NEJNERU, Manuela Cristina PERJU, Victor Andrei SANDU, Anca Elena LARGEANU, Mihai AXINTE, Tudor RAILEANU	
32. Complex morphologies under euclidian geometry influence	207
Delicia ARSENE, Claudia BORDA, Marinela MARINESCU, Gheorghe ARSENE, Larisa BUTU	
33. Shape memory alloys type CuZnAl and CuMnAl comparison of their energy dissipation capacity	211
Nicanor CIMPOEȘU, Sergiu STANCIU	

34. On machinability of austenitic manganese steel used to machines elements of technological constructions equipments	217
Ștefan RUSU	
35. Facility for study heating and diffusion processes in terms of ionic triode plasma	223
Mihai AXINTE, Carmen NEJNERU, Mihai ȘTEFAN, Ioan HOPULELE	
36. Corosion rezistence characterization of Niobiumm steel compozite layers	229
Lucica BALINT, Dumitru DIMA, Simion Ioan BALINT	
37. Researches regarding the type of material used for continuous casting machines rolls	237
Marian BORDEI, Aurel CIUREA, Angela-Eliza MICU, Adrian MICU	
38. Aspects regarding the working of the charging machine for continuous pusher type furnace	243
Marian BORDEI Aurel CIUREA Beatrice TUDOR Ștefan DRAGOMIR	
39. Dynamic characteristics of the hydraulic drive with proportional electrohydraulic control	249
Yuriy BURENNIKOV, Leonid KOZLOV, Dmitriy LOZINSKY, Vadim KOVALCHUK	
40. Considerations regarding the problems of energy in the metallurgical sections	255
Aurel CIUREA, Marian BORDEI, Angela-Eliza MICU, Adrian MICU	
41. Polyfunctionalization of nickel-ferrite by encapsulation into polypyrrole shell	259
Dragos-Viorel BREZOI	
42. Contributions to the development of an architecture for the quality management informational system	265
Rodica ROHAN, Raul ROHAN	
43. Influence of ultrasonic field on the ability of cooling TT22A oil	271
Nicolai BĂNCESCU, Traian Lucian SEVERIN, Constantin DULUCHEANU	
44. Electrodeposition of nickel layers on copper substrate using pulse current technique	275
Violeta VASILACHE, Sonia GUTT, Traian VASILACHE, Gheorghe GUTT Marius BENTA	
45. Mathematical model associated to optimization of nickel electroplating process	279
Violeta VASILACHE, Traian Lucian SEVERIN, Traian VASILACHE	
46. Recovery method of waste glass	285
Constantin DULUCHEANU, Nicolai BĂNCESCU, Traian Lucian SEVERIN	
47. Moddeling of force-cutting speed lagging dependence	289
Ștefan RUSU	
48. Aspects regarding the integration of the robots in the CAM / CIM manufacturing system	295
Ion ION, Aurelian VASILE, Gabriel VELEA, Cornel DINU	
49. Obtaining and characterization of a calcium hydroxyapatite	301
Aurora Anca POINESCU, Rodica Mariana ION, Inna TRANDAFIR, Elena	

BACALUM, Constantin RADOVICI	
50. Intercritical thermomechanical treatments applied to the steel heavy plates	307
ElisabetaVASILESCU	
51. Determining a relationship for calculating the r_a parameter for the evaluation of surface roughness	311
Iolanda POSCHIN, Gheorghe NAGIT, Mihai BOCA, Sorin POPA	
52. Investigation of the effects of plasma arc parameters on the structure variation of some mild steel plates	317
Sanda-Maria ILII - Dragoş ACHIŢEI-, Adrian IOSUB	
53. Study about the influence of exothermal head used on the yeld index from steel	323
Beatrice TUDOR, Marian BORDEI, Alexandru CHIRIAC	
54. Optimization of the press efficiency of rapeseed oil used as fuel	327
M. De CONINCK*, D. MERCKX, R. Van HECKE, H. CHRISTIAEN, K. DEPREZ, Elke THEEUWES	
55. Simulation of the multistage deep drawing process	339
Viorel PAUNOIU, Dumitru NICOARA, Mihaela BANU	
56. Exploring the impact of branding and design on supply chain management	345
Adrian MICU, Angela-Eliza MICU, Aurel CIUREA, Marian BORDEI	
57. A holistic approach to green supply chain strategies	351
Adrian MICU, Angela-Eliza MICU, Aurel CIUREA, Marian BORDEI	
58. Calculation of the optimized parameters for the mechanical system from numerical axes structure of the numerically controlled machine-tools	357
Dumitru Al. DUMITRU, Eugen STRĂJESCU	
59. Evaluation d'état de surface usinée par tournage à partir de courbe Abbot – Firestone	365
Adriana CÎRSTOIU, Nicolae IONESCU	
60. Studies concerning the optimization of parameters for mechanical system from the numerical axes structure of the numerically controlled machine-tools	371
Eugen Străjescu, Dumitru Al. Dumitru	
61. Study of layer thickness variation at multistate deposition by vibrating electrode method using a titan electrode	377
Manuela Cristina PERJU, Carmen NEJNERU, Dan Gelu GALUSCA, Nicanor CIMPOESU, Andrei Victor SANDU	
62. The analysis of the influence of the cutting regime parameters through the signal-noise ratio by the lathing process of the polyamide PA 66 GF30	383
Marin MOŢOI	
63. Study concerning the forces of chip removal to the remaking through turn in longitudinal of the polyamide PA 66 GF30	389
Marin MOŢOI	
64. Consideration regarding the opimization of mechanical processing of working part of punch using a Computer Numerical Control (CNC)	395
Carmen MOTFOLEA	

65. Researches concerning aluminum alloys hardening by quenching and cyclic ageing and metallographic aspects at their corrosion in seawater	399
Roxana Gabriela CARABET, Carmen NEJNERU, Manuela Cristina PERJU, Nicanor CIMPOESU, Dragos Cristian ACHITEI	
66. A new perspective on overall equipment effectiveness	405
Ana ROTARU	
67. Kanban and extended kanban systems	411
Ana ROTARU	
68. The wearproofness of beeting knives in saccharine production, SAVULYAK V.I., MOLODETSKA T.I., SAVULYAK V.V.	417
69. Synthesis and Characterization of Nanocrystalline Iron Oxides for Nanocomposites with Biomedical Applications	423
Sergiu SORA, Rodica Mariana ION	
70. Silver nanoparticles in nanomedicine	429
Daniel MUNTEANU, Rodica-Mariana ION, George - Costel COCINA	
71. Generator of single electrical discharges	435
Laurențiu SLĂTINEANU, Victor GROSU, Margareta COTEAȚĂ, Oana DODUN	
72. Critical aspects concerning the recycling of the iron-bearing wastes generated by an integrated steelwork	439
Daniela NEGOIȚĂ, Anișoara CIOCAN	
73. Integrated waste management system in steel company	445
Daniela NEGOIȚĂ, Anișoara CIOCAN	
74. Electrochemical and microstructural aspects regarding the corrosion of some zinc alloy coatings	453
Tamara RADU, Elena DRUGESCU, Gina NASTASE, Lucica BALINT	
75. Researches on mathematical correlation approach to corrosion resistance of zn-coated steel wires	459
Tamara RADU, Vasile BAȘLIU, Ioan Simion BALINT	
76. Aspects concerning the lathe static rigidity	463
Mihai BOCA, Gheorghe NAGÎȚ, Sorin POPA, Iolanda POȘCHIN	
77. Logistic system of an aircraft engines producer that use multi-agent technology	467
Camelia LIXANDRU, Traian GRĂMESCU	
78. Structural analyses of boron nitride thin films	473
Stela CONSTANTINESCU	
79. Electrochemical deposition method to obtain composites coatings with metal matrix	479
Olga MITOSERIU, Lucica ORAC, Stela CONSTANTINESCU	
80. Experimental characteristics of the hydraulic drive with a variable-displacement pump	485
BURENNIKOV Yu. A., KOZLOV L. G., REPINSKIY S. V., PETROV O. V.	
81. Research on the implementation six sigma concept in the manufacturing	491

process	
Sorin POPA, Gheorghe NAGIT, Mihai BOCA, Iolanda POSCHIN, Ionut POPA	
82. Research regarding the influence of the static pressure force on the sonotrode amplitude in the case of ultrasonic welding	497
Victor POPOVICI Doru Virgil PĂUȘAN	
83. Research regarding the ultrasonic installation technology of metallic inserts into thermoplastic materials	503
Doru Virgil PĂUȘAN, Victor POPOVICI	
84. Role of non-destructive testing in preventive maintenance	509
Valentin LUPU, Petru V. DUSA, Iustina-Elena ROTMAN	
85. Aspects regarding the achievement of thin aluminium layers on steel	515
Dragos ACHITEI, Dan Gelu GALUSCA, Manuela PERJU, Roxana CARABET	
86. The influence of relative speed at thin walls tubes drawing in sonodraw system	521
Mihai SUSAN, Roxana-Gabriela CARABET, Viorel Constantin ILIESCU, Dragos Cristian ACHITE	
87. Determination of uncertainties in charpy impact testing of composite materials	527
Rodica ROHAN	
88. Cooling agglomeration ferrous to start	535
Adrian VASILIU	
89. Technical solutions to design an equipment for abrasive flow nanofinishing	541
Aurelian VIȘAN, Nicolae IONESCU, Valeriu AVRAMESCU, Traian MAZILU, Aurel TARARA	
90. Considerations to realignment of new car Dacia Logan	547
Marius CHIRUGU, Gianina-Madalina CHIRUGU, Dragos PARASCHIV	
91. Some aspects of parameterized CNC programming	553
Nicolae POP Margareta COTEATA	
92. Considerations on the use a new generation taps	559
Gianina CHIRUGU, Marius CHIRUGU, Dragos PARASCHIV	
93. Observations about the possibility to improve the measurement of hardness when the vickers indenter is being used	565
Bogdan Ionuț DAVID	

DYNAMIC TESTING WITH AN ELECTROMECHANICAL SPINDLE ACTUATOR INSTEAD OF A SERVOHYDRAULIC ACTUATOR

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ABSTRACT. This paper discusses the benefits and drawbacks of electromechanical test machines compared to servo hydraulic test machines for dynamic testing, as well as some practical problems and their solutions when preparing the durability test. It describes the actual steps to perform durability tests, using a Zwick/Roell EZ020 (EM) actuator.

A NOVEL VISUAL SCHEME FOR INDOOR NAVIGATION MEMORY, MOVEMENT AND WILL

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ABSTRACT: Indoor navigation is still an open problem in mobile robotics. Although not a recent problem, the solution has been reached through the use of external systems as floor embedded guides, triangulation systems or gps systems. These require external systems to provide localization information. In this paper we analyze a vision only based approach. As humans can drive themselves using vision and memory it is assumed that a mobile robot is able to perform the same task provide it have memory from the environment.

ROTATING BENDING MACHINE FOR HIGH CYCLE FATIGUE TESTING

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ABSTRACT. The aim of the project is to develop and build an innovative rotating bending (RB) fatigue testing machine. This new apparatus has to cover most of the commercial available machines in testing possibilities, due to its wide range in force, rotation speed and dimensional flexibility. Furthermore it needs to have an open and versatile acquisition for measurements, with the synchronization ability for a controllable bending moment.

PRODUCTION QUALITY CONTROL USING ROBOT-BASED OPTICAL SENSORS

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ABSTRACT: Industrial robots have developed more and more into multi-purpose and universally useable automation tools. They guarantee high flexibility and perform their tasks reliably, accurately and around the clock. Modern robotic systems are easy to program and operate. However for many applications, robots can still not be used for various reasons. By equipping them with powerful sensors and vision systems, industrial robots are able to verify, calibrate and adjust themselves to changes in their environment. Thus completely new robotic applications can be developed for quality control. In the automotive industry, robot-based optical measurement systems are increasingly being used directly on the production line. Without any direct contact to the machinery, industrial robots are now able to carry out 100 % inspection of manufacturing steps and work pieces in areas of the car body which are hardly accessible. They can perform these tasks in the shortest possible time. The state-of-the-art of optical measuring robots in industrial production, new developments of sensors and industrial robots, as well as practical experience will be described in the following lecture.

RESEARCHES UPON THE INFLUENCE OF THE DEFORMATION FEED ON THE PARAMETERS OF PROCESSED SURFACES THROUGH COLD PLASTIC DEFORMATION

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Corneliu PRICOPE - SC Rulmenti SA Barlad

ABSTRACT. This paper presents the results of the theoretical and experimental researches obtained at the processing through cold plastic deformation of the means of bearing rings rolling. It is being presented the influence of the cold deformation feed on the quality parameters: roughness, oval shape and circularity of processed surfaces.

THE INFLUENCE OF THE THERMAL AND THERMOMECHANICAL TREATMENTS APPLIED TO ALUMINIUM ALLOYS

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ABSTRACT. The paper presents the laboratory experimental results concerning the behavior on the thermal and thermomechanical treatments of aluminium based alloys . The conventional thermal treatment was used, consisting of the solution quenching and heat ageing. More working condition of the intermediary and finally thermomechanical treatments used on the rolled test specimen. The structure and mechanical characteristics were analyzed and the gotten results were compared using those variants of thermal and thermomechanical treatments. A significantly improvement of the mechanical characteristics was ancerained to the thermomechanical treated test specimen.

SHAPE MEMORY ALLOY TYPE CuZnAl ASPECTS ABOUT SEA WATER CORROSION

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ABSTRACT. The work mediums have, in time, effects on metallic materials like corrosion, shape memory alloys have multiple applications in different fields were are in contact with many kind of surroundings like air, water, human body liquids or special controlled atmosphere. We present a study on a shape memory alloy based copper expose to corrosion in sea water using a potentiostat / galvanostat equipment type Volta Lab 21. Alloy electronic micrographs, before and after corrosion test, was realize on a SEM and chemical analyze was made with a spectrometer.

DIFFERENTIAL DILATOMETER USED IN Al-Si ALLOY INVESTIGATION

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Bogdan ISTRATE “Gh. Asachi” Technical University of Iasi

ABSTRACT. Aluminum alloys type Al-Si has many important applications in different fields and especially on aeronautical domain because of them good properties and reduces masses. In this paper Al-Si is investigate with a differential dilatometer type Linseis to express thermal cyclic solicitation before and after a thermal heat treatment. Alloy microstructures were determinate with an optical microscope and chemical composition with a spectrometer.

THEORETICAL AND EXPERIMENTAL RESEARCH REGARDING REAL TIME AQUISITION OF ULTRASOUND CLEANING PARAMETERS

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Claudia BORDA- University „Politehnica” of Bucharest
Delicia ARSENE- University „Politehnica” of Bucharest

ABSTRACT: In this article one the some optimisation methods regarding the parameters of cleaning with ultrasounds proceses are presented Using new sensors, we could measure the real time temperature, cavitations noise and the vibration of acoustic system.

PHASE TRANSFORMATIONS IN THE Zn-Al SYSTEM

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ABSTRACT: Microstructure changes and phase transformations of Zn-Al based alloys have been systematically studied, using XRD, SEM and TEM techniques. The paper presents the results of experimental research concerning the eutectoid transformation in the Zn-Al system. The paper focuses on the determination of the activation energy for the eutectoid transformation in the binary Zn- (4, 8, 12, 22,) % Al system, using the values of the temperatures corresponding to the peaks on the derivatives of the dilatation curves.

IMPROVING THE HUNTING MOTION STABILITY BY USING NONLINEAR DISSIPATION DEVICE IN WHEEL SET WITH ELASTIC JOINTS SYSTEM

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Ana-Maria, MITU- Institutul de Mecanica Solidelor

ABSTRACT: The hunting motions it's a lateral movement of the railway vehicles is a consequence of the reversed conic shape of the rolling surfaces. The stability is an important dynamic problem for vehicle system that determines the maximum operating speed of railway vehicle. To increase the stability performances of the wheel set it can be used elastic joints and linear dissipation devices, to bogies. Depends to the horizontal dissipation forces, the critical speed can be increased but the lateral forces can grow a lot and goes to derailment.

EVOLUTION OF THE INDUSTRIAL MOBILE INSPECTION ROBOT SPIDER

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Industrial Research Institute for Automation and Measurements PIAP

ABSTRACT. Human inspection of the coal boilers is very time and money consuming. This brings lots of financial loses for the heating company as they must stop the boiler for few weeks. Spider robot is a tool, which can substitute humans in the inspection process, shorten it and scan wider area. In the paper evolution of the Spider robot's construction is presented.

CONSIDERATIONS CONCERNING THE PLASMA TORCH CLAMPING ON A NUMERICAL CONTROLLED TABLE

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Dumitru ULIULIUC - Technical University of Iași
Adriana MUNTEANU - Technical University of Iași

ABSTRACT. To achieve some experiments of plasma jet cutting, a device for supporting the plasma torch is necessary. With this aim in view, a device adaptable on a numerical controlled table was designed. By taking into considerations the information included in the specialty literature, the method of ideas diagram was used to find different solutions for the problem solving. The paper presents some authors considerations concerning the design of ideas diagram and some solutions found for the plasma torch support.

REDUCIND THE NOISE LEVEL WITH SPECIAL ROBBER PANEL

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Abstract: Within the last few years, concern about the protection of the environment has grown rapidly as it has become generally recognized that the steady rise in pollution of all kinds cannot be allowed to continue indefinitely. The aim of this paper is to give a new solution for reducing the railway noise level. Environmental impact studies, design of noise mitigation to reduce environmental impact are done. The experimental measurements are compared with predetermined criteria in order to judge its acceptability.

PROTEUS AS INDUSTRIAL CRISIS ZONE SECURING SYSTEM

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Paper describes Proteus – the system, which is able to work near the industrial crisis zone, coordinating and supporting the work of firefighters and other rescue forces. Proteus collects and analyzes the data about the area and manages the mobile supporting robots to aid or even substitute humans in risky interventions. In the paper the system’s architecture and the role of its particular components are presented.

USING THE CAD AND CAE CONCEPTS IN THE STUDY OF BASIC TECHNICAL SUBJECTS

Ioan UNGUREANU - University “Stefan cel Mare” of Suceava

ABSTRACT: The specialized programs for computer graphics, which are adequate to the CAD and CAE concepts, with the exception of their main purpose, can also acquire equally important and useful teaching capabilities. For students, the study of some difficult and abstract theoretical issues can become attractive and friendly if the computer and its representation capabilities are used. This article shows a few examples which plead in favor of generalizing the use of the capabilities offered by computer graphics in the study of some geometric properties of modeled figures or plane sections.

Key words: AutoCAD Mechanical, Auto CAD ,Catia, Solid Works, CAE , revolution bodies.

STATISTICAL STUDY OF INTERACTION INFLUENCE FROM TECHNOLOGICAL FACTORS OVER JOINING RADIUS TO ELECTROHYDRAULIC PERFORATION OF THE POLYGONAL HOLES

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Radu-Mihai IACOB – S.C. TOTAL CAR GRUP Iasi

ABSTRACT: This paper, present the statistical study of the mod how the principal technological factors influence over joining radius which to obtain to electrohydraulic perforation of the polygonal holes.

KNOWLEDGE INTEGRATION THROUH A PLM APPROACH

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ABSTRACT: This paper presents an approach of knowledge capitalization within a PLM (Product Lifecycle Management) system. We propose a methodology which allows knowledge integration through a PLM system. Knowledge integration is realized during the deployment of the PLM system and the processes definition stage. This paper is illustrated by an industrial example in the plastics industry.

THE AUDIT PROCESS APPRECIATION CONDITIONS

**Costel MIRONEASA, University “Ștefan cel Mare” Suceava
Silvia MIRONEASA, University “Ștefan cel Mare” Suceava**

ABSTRACT: During the audit the auditors meet a complex system with different processes. Complexity, in this case, is a function of the number of processes and their interconnections in the organization and also a function of the relationships with a lot of communication channels. The classification of the nonconformance during audit depends by the experience of the auditor. The paper presents the interpretation of the requirements of the audit approach.

SHAPE MEMORY ALLOY ACTUATORS IN ROBOTICS: A REVIEW

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ABSTRACT

In this paper, a review of shape memory alloy actuators used for some of the newest robotics applications is presented. It contains concrete examples of using this kind of actuator in robot driving systems.

DESIGN ACTIVITY IN MECHANICAL ENGINEERING . ACHIEVEMENTS AND DEMANDS IN THE DESIGN OF DEVICES

Vasile RATA – University „Ștefan cel Mare” Suceava ROMANIA
Traian Lucian SEVERIN – University „Ștefan cel Mare” Suceava ROMANIA

ABSTRACT : In the conditions of the market economy the design activity is a continuous correlation between social and / or technical interests of the community, financial resources and economical availability, as well as the ability of scientific creation of the individual as part of the operational staff organized on the basis of a project management.

Design work in mechanical engineering is part of a complex system, apparently reducible to individual human resources.

SERVICE ROBOTS USED IN CONSTRUCTIONS Part I : General aspects

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ABSTRACT: In this paper, in the first part there are presented the peculiarities of robotizing some operations specific to constructions, and a systemizing of the representative popular robots used in constructions, highlighting the significant structural - functional characteristics. In the second part of the paper, it is presented the design of a modular robot used in masonry construction and coating operations in the interior of buildings, with details of the component devices and subsystems, in particular the prehension subsystem. It is emphasized the importance of operational simulation in CAD environments, and in perspective, in the virtual environment.

SERVICE ROBOTS USED IN CONSTRUCTIONS Part II: Case study

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ABSTRACT: In this paper, in the first part there are presented the peculiarities of robotizing some operations specific to constructions, and a systemizing of the representative popular robots used in constructions, highlighting the significant structural - functional characteristics. In the second part of the paper, it is presented the design of a modular robot used in masonry construction and coating operations in the interior of buildings, with details of the component devices and subsystems, in particular the prehension subsystem. It is emphasized the importance of operational simulation in CAD environments, and in perspective, in the virtual environment.

SERVICE ROBOTS FOR HOME SURVEILLANCE – ACHIEVEMENTS AND PERSPECTIVES

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Ioan DAJ, Transilvania University of Brasov, Romania

ABSTRACT: Services' robotics keeps developing obviously, both by increasing the units completed and implemented, and by diversifying the types of robots proposed for various uses. The paper presents issues considered significant on service robots to assure the safety and security of private dwellings. First, a few robots are presented with this purpose, considered representative, out of the popular variants, highlighting the main constructive and functional characteristics. In the second part of the paper there are presented the main steps in the realization and implementation of such a robot and two variants designed under the coordination of the authors.

A SYSTEMICALLY APPROACH ON QUALITY FACTORS

Marius BAESU – Universitatea „Ştefan cel Mare” Suceava
Mircea CIOBANU –Universitatea „Ştefan cel Mare” Suceava

ABSTRACT:In this work are highlighted issues relating to internal and external factors, which are influencing the quality of products or services, achieving a systematization.

ISHIKAWA DIAGRAM IN MAGNETIC ABRASIVE FINISHING (M.A.F.)

Mircea CIOBANU – Universitatea „Ştefan cel Mare” Suceava
Marius BAESU – Universitatea „Ştefan cel Mare” Suceava

ABSTRACT: This paper shows how to draw a cause-effect diagram (Ishikawa) and its application in magnetic abrasive finishing which reveals the multitude of factors influencing the quality of surface finished by this method.

STRESS STATES INFLUENCE ON DEFORMATION INDUCED MARTENSITIC TRANSFORMATION

Iulia Solomon,* "Dunarea de Jos" Galati University Galati, Romania
Nicolae Solomon, "Stefan cel Mare" Suceava University
Ilie Musca, "Stefan cel Mare" Suceava University

ABSTRACT

This paper is focused on the influence of stress states on the deformation-induced α' martensitic transformation in austenitic stainless steels. Erichsen cupping test and extrusion tests were carried out. In order to establish the links between mean normal stress, named tensile hydrostatic stress, and martensitic transformation, experimental tests were followed by numerical simulation.

SUPPLIER COMPONENT REVIEW AS PART OF PRODUCT AND PROCESS DEVELOPMENT AND VALIDATION PHASES

Iulia Solomon,* "Dunarea de Jos" Galati University Galati, Romania
Nicolae Solomon, "Stefan cel Mare" Suceava University

ABSTRACT

ISO/TS 16949 is a framework of procedures which aim is the development of a quality management system that provides for continual improvement, prevention action and the reduction of variation and waste in the supply chain. The Supplier Component Review is a procedure which defines the rules for the technical elements of a product /component to be checked and mutually agreed before contract is signed with a selected supplier. This paper focus on supplier component review start up.

STUDY ABOUT THE OPPORTUNITY IN ROBOTIC DRILLING

Traian Lucian SEVERIN – University Stefan cel Mare of Suceava
Romeo IONESCU - University Stefan cel Mare of Suceava

ABSTRACT. Processing of parts with tools that are carried by a robot is a relative recent technology that robots manufacturing companies suggest to be implemented in industry. Authors started from the idea that robots could replace in many processes cases the processing of manual device, case of electric hand drills.

The tool machines can be replaced by the robot, including the drill press. The main advantages found are avoid heavy and dangerous work for the human operator, the robot flexibility increased processing capacity. Processing by robotic drilling of a piece with Kuka KR125 robot and transfer of information from a software CAD / CAM to the command of the robot is the subject examined by the authors of this article.

Key words: robot, drilling, manufacturing, simulation

RESEARCHES REGARDING UNIPULSE DEPOSITIONS MORPHOLOGY WITH TI ELECTRODE ON THE PHOSPHOROUS CAST IRON USING THE VIBRATOR ELECTRODE METHOD

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Manuela Cristina PERJU - “Gh. Asachi” Technical University of Iași, Romania
Tudor RAILEANU - “Gh. Asachi” Technical University of Iași, Romania
Anca Elena LARGEANU - “Gh. Asachi” Technical University of Iași, Romania
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Victor Andrei SANDU - “Gh. Asachi” Technical University of Iași, Romania

ABSTRACT

There were made unipuls deposits of Ti on hard cast iron eutectic phosphorous with vibrating electrode method for analyzing the dynamics of deposition. Deposited layer is composed of a multitude of drops unipuls and the qualities that depends on the quality of lodging drops. The analysis was performed with a scanning electron microscope (SEM), performing in the same time the elements analysis distribution of elements on the microalloy surface and the shape gained through working process.

COMPLEX MORPHOLOGIES UNDER EUCLIDIAN GEOMETRY INFLUENCE

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Claudia BORDA - University „Politehnica” of Bucharest
Marinela MARINESCU - University „Politehnica” of Bucharest
Larisa BUTU - University „Politehnica” of Bucharest
Gheorghe ARSENE- University „Politehnica” of Bucharest

Abstract: The present work is takes in consideration the experimental study of the influence of some morphological fields regarding the development of the complex technological forms.

KEYWORDS: electro-deposited cluster, fractal patterns, morphological fields

SHAPE MEMORY ALLOYS TYPE CuZnAl and CuMnAl COMPARISON OF THEIR ENERGY DISSIPATION CAPACITY

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Sergiu STANCIU Technical University „Gh. Asachi” Iași

ABSTRACT

The energy dissipation capacity of metallic materials was observe at shape memory alloys. Energy dissipation manifest by mechanical energy transformation, apply to a material, to thermal energy and as examples, with big values are polymers materials and for reduce values the metallic materials. In this paper two shape memory alloys was investigate, with respect for them amortization capacity, and analyzed for chemical composition, shape memory effect, microstructure and internal friction.

ON MACHINABILITY OF AUSTENITIC MANGANESE STEEL USED TO MACHINES ELEMENTS OF TECHNOLOGICAL CONSTRUCTIONS EQUIPMENTS

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Catedra de Tehnologie Mecanică și Organe de Mașini

ABSTRACT. In the paper it was set a methodology which wished to establish how can be evaluated the machinability of a manganese steel, giving enough information and to establish too an optimum between several used tools (indexable carbide inserts). Thanks to this methodology it was defined a machinability index, using the specific cutting pressure, being known that austenitic manganese steel is a material with a high degree of elastic recurrence, high intensity of tension state in machining layer and an important mechanical energy consumption.

FACILITY FOR STUDY HEATING AND DIFFUSION PROCESSES IN TERMS OF IONIC TRIODE PLASMA

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Carmen NEJNERU - “Gh. Asachi” Technical University of Iași
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Mihai ȘTEFAN - “Gh. Asachi” Technical University of Iași

ABSTRACT: Active screen plasma nitriding (ASPN) is an emerging surface engineering technology. Discharging process can produce an undesirable phenomena such as arc discharge or the double cathode effect. By placing the ionic triode is amended both polarized electric field distribution between electrodes and the characteristic volt-amperes curve configuration of electrical discharge. We can change a classical plasma nitriding facility very easy into ionic triode terms by placing a screen between anode and cathode with a power source to the active screen. A simplified scheme for a fizico-mathematical model for stability study of electrical discharge inside the thermo-chemical treatment is presented. Analysis of the test facility has resulted in a better stability in terms of discharge for polarization of the screen and possibly an increase in heating efficiency.

COROSION REZISTENCE CHARACTERIZATION OF NIOBIUMM STEEL COMPOZITE LAYERS

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Dumitru DIMA - University “Dunărea de Jos” of Galați

ABSTRACT:

This paper presents the researches of niobium – cobalt composite layer, on the steel support, obtaining by electrolytic method and their characterization depending on the electrochemical parameters. Samples obtained were subject of thermo treatment in aim of adherence and toughness improvement by diffusion. There were make some macro and microscopic analyses, microhardness measurements, appreciatory tests for corrosion resistance and for the mechanism of corrosion.

RESEARCHES REGARDING THE TYPE OF MATERIAL USED FOR CONTINUOUS CASTING MACHINES ROLLS

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Aurel CIUREA – “Dunarea de Jos” University of Galati
Adrian MICU – “Dunarea de Jos” University of Galati
Angela-Eliza MICU – “Dunarea de Jos” University of Galati

ABSTRACT

Studies and researches of the present paper were performed on forged semi-finished products bar type of round made of 21MoMnCr12 steel. These semi-finished products are used at the machining of the guidance rolls of the curved thread at the continuous casting machines having as a purpose the improvement of their quality, standing out their defects through ultrasonic control. The ultrasonic control is done on cog pieces having as a purpose the location of the major discontinuities inside the semi-finished products.

ASPECTS REGARDING THE WORKING OF THE CHARGING MACHINE FOR CONTINUOUS PUSHER TYPE FURNACE

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Aurel CIUREA – “Dunarea de Jos” University of Galati
Stefan DRAGOMIR – “Dunarea de Jos” University of Galati
Beatrice TUDOR – “Dunarea de Jos” University of Galati

ABSTRACT

The continuous pusher type furnaces for the slabs heating are great units, consumer of energetic fluids, having productivities of 185-200 t/h. In the paper we analyzed the vibrations in the continuous pusher type furnace machine and their consequences.

DYNAMIC CHARACTERISTICS OF THE HYDRAULIC DRIVE WITH PROPORTIONAL ELECTROHYDRAULIC CONTROL

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Dmitriy LOZINSKY, Vadim KOVALCHUK
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ABSTRACT: Hydraulic circuit is developed for the press where proportional control is provided from the free-programmable controller made by FESTO. Non-linear mathematical model of the press hydraulic drive has been developed. Dynamic characteristics of the press hydraulic drive have been determined as well as the influence of main non-linearities on them. Recommendations are presented that can be used while designing hydraulic drive for a proportionally-controlled press.

CONSIDERATIONS REGARDING THE PROBLEMS OF ENERGY IN THE METALLURGICAL SECTIONS

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Marian BORDEI – “Dunarea de Jos” University of Galati
Adrian MICU – “Dunarea de Jos” University of Galati
Angela-Eliza MICU – “Dunarea de Jos” University of Galati

ABSTRACT. Nowadays the problem of energy economy has begun to be better understood in business, industrial and commercial fields. The technological discoveries give the possibility to considerably reduce the consumption of resources and to improve the efficiency of equipments and plants (installations) without diminishing the benefits.

Analyzing the activities in the metallurgical companies we can notice a large scale of energetic aspects: technological consumptions, with utilities, unrecovered energetic secondary sources.

POLYFUNCTIONALIZATION OF NICKEL-FERRITE BY ENCAPSULATION INTO POLYPYRROLE SHELL

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ABSTRACT The aim of this work was to develop a polyfunctional material which combine the electrical conductivity of polypyrrole shell and the magnetic properties of nickel-ferrite nanoparticles (core). Nickel-ferrite/polypyrrole “core-shell” nanocomposites were synthesized by wet chemical method. Magnetic properties measured with vibrating sample magnetometer (VSM) demonstrated the superparamagnetic behaviour of nickel-ferrite nanoparticles and it was observed that the magnetic properties of the nickel-ferrite/polypyrrole nanocomposite do not change significantly. Electrical conductivity study showed a slight variation in conductivity for lower concentration of polypyrrole, with a sudden increase in conductivity to $2.6 \text{ S}\cdot\text{cm}^{-1}$ at 20 %wt. polypyrrole, that could be explained on the basis of percolation theory which predicts that at a certain amount of concentration of conducting polymer a full conducting path is formed for the flow of current.

CONTRIBUTIONS TO THE DEVELOPMENT OF AN ARCHITECTURE FOR THE QUALITY MANAGEMENT INFORMATIONAL SYSTEM

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ABSTRACT: The subject of this paper is a research issue which is very appropriate and up-to-date, as it identifies itself among the most important and specific concerns of modern management. One of these concerns is providing the organizational and decisional factors with performant methods and techniques for gathering, processing and successfully managing a high volume of information, in useful time (on-line), in order to create a process-based quality management system and to evaluate it in an efficient way.

INFLUENCE OF ULTRASONIC FIELD ON THE ABILITY OF COOLING TT22A OIL

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Constantin DULUCHEANU – University Stefan cel Mare of Suceava

Traian Lucian SEVERIN – University Stefan cel Mare of Suceava

ABSTRACT

Using the ultra sound thermal treatments in practice cause an increase product quality and productivity treated treatment processes and the sustainability of mineral oils by heat treatment with major financial implications. In the paper are presented results of study research on the influence of US parameters field on the rate of cooling mineral oil for hardening class TT22A

ELECTRODEPOSITION OF NICKEL LAYERS ON COPPER SUBSTRATE USING PULSE CURRENT TECHNIQUE

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Sonia GUTT – University Stefan cel Mare of Suceava
Traian VASILACHE – SC Daflog SRL Medias
Gheorghe GUTT – University Stefan cel Mare of Suceava
Marius BENTA – University Transilvania of Brasov

ABSTRACT. Nickel electroplating has a great industrial importance because offers a very good quality of the finished surfaces. Electrodeposition processes using direct current (DC) require the use of additives to control deposit structure and properties as well as current distribution. The Pulse Current (PC) technique improves the properties of deposits based on an appropriate selection of the parameters involved. To compare the electrodeposited layers we used an AFM (Atomic Force Microscope).

MATHEMATICAL MODEL ASSOCIATED TO OPTIMIZATION OF NICKEL ELECTROPLATING PROCESS

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Traian Lucian SEVERIN – University Stefan cel Mare of Suceava
Traian VASILACHE – SC Daflog SRL Medias
Silviu Gabriel STROE - University Stefan cel Mare of Suceava

ABSTRACT. Any optimization method implies a mathematical model which should resolve the quantitative requires of the problems. This model is based on the substrate effect and has to calculate the partial current densities and so has to give prediction as far as concern the quantities of metal electrodeposited and the energy involved.

RECOVERY METHOD OF WASTE GLASS

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Nicolai BĂNCESCU - University „Ștefan cel Mare” of Suceava
Traian Lucian SEVERIN - University „Ștefan cel Mare” of Suceava

ABSTRACT

In article are presented methods for recovery of waste glass from various activities. On plaster forms was placed pieces of heated glass to 900°C which were deformed under its own weight.

MODELING OF FORCE-CUTTING SPEED LAGGING DEPENDENCE

Ștefan RUSU – Universitatea Tehnică de Construcții București, Facultatea de Utilaj Tehnologic,
Catedra de Tehnologie Mecanică și Organe de Mașini

ABSTRACT. The paper analyses the lagging variation mechanism of the cutting force in proportion to the rate of cutting and this dependence, which is useful for study of the dynamic stability performances of the Technological Manufacturing System (TMS) is simulated when the exciter principle of the increasing variation force- rate of cutting has preponderant action.

ASPECTS REGARDING THE INTEGRATION OF THE ROBOTS IN THE CAM / CIM MANUFACTURING SYSTEM

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Aurelian VASILE - Politehnica University of Bucharest
Cornel DINU – Politehnica University of Bucharest
Gabriel VELEA Politehnica University of Bucharest

ABSTRACT Today the development of the flexible automatization and the robotization introduction are unavoidable, inducing important effects on all subsystems and relations from an enterprise. The position of an industrial robot in respect to a given application must be settled in accordance with the solutions of an optimization problem. In this paper is described and are presented problems of environment variability and the design of a robotized technological process .

OBTAINING AND CHARACTERIZATION OF A CALCIUM HYDROXYAPATITE

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Rodica Mariana ION - ICECHIM, Bucharest and Valahia University, Targoviste
Inna TRANDAFIR, Elena BACALUM, Constantin RADOVICI - ICECHIM, Bucharest

ABSTRACT. Applications of hydroxyapatite include surface coating of orthopedic and dental metal implants where HA both promote osseointegration process and reduce metal ion release by acting as a physical barrier; bioceramic preparation for replacements of bone fragments, repair of periodontal bony defects. Similarity of synthetic hydroxyapatite to bone mineral makes it the most clinically used biomaterial. The obtaining process and the characterization of HA powder was the main purpose on this paper.

INTERCRITICAL THERMOMECHANICAL TREATMENTS APPLIED TO THE STEEL HEAVY PLATES

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ABSTRACT. This paperwork shows the laboratory experiments made on X60 and X65 steels with several intercritical thermomechanical treatment application. Two variants were used: "down-up " thermomechanical treatment with heating and rolling in the intercritical range and "up-down" thermomechanical treatment with preliminary complete austenitizing and rolling in the intercritical interval. High values of the strength characteristics and a good plasticity were gotten. A comparison was made with gotten results of the classical thermal treatment application (normalizing).

DETERMINING A RELATIONSHIP FOR CALCULATING THE R_a PARAMETER FOR THE EVALUATION OF SURFACE ROUGHNESS

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ABSTRACT. The paper focuses on the study of the micro-geometrical deviations formed at the level of the deformed surface and their influence in determining the surface quality. The parameter that identifies the microirregularities is the surface roughness. The study aims to determine an analytical relationship for calculating the R_a parameter for the evaluation of the roughness of the processed surface. We analyzed the concrete case of the profile obtained by the process of rolling a ball of r_ϵ radius, working with the advance f . Determining the relationship for calculating the R_a parameter was performed using the average line profile. The paper ends by formulating conclusions on the effectiveness of the determined relationship in the practice of cold plastic superficial deformation processes.

INVESTIGATION OF THE EFFECTS OF PLASMA ARC PARAMETERS ON THE STRUCTURE VARIATION OF SOME MILD STEEL PLATES

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Dragoş ACHIŢEI- “Gh. Asachi” Technical University of Iasi – Romania, (SIM)

Adrian IOSUB - “Gh. Asachi” Technical University of Iasi – Romania, (TCM)

ABSTRACT. In this study, some mild steel plates have been cut by plasma arc and metallographic investigations and micro-hardness analyses were performed. According to the experimental results, by using speeds witch are upper or lower limits of the ideal cutting speeds proposed by the manufacturer of the machine tool, the structure of the workpiece material, near the cutting zone, changes and a so called normalization structure appears. Also, the hardness measured near the cutting area was sensible increased compared to the initial hardness value of the material, before cutting.

STUDY ABOUT THE INFLUENCE OF EXOTHERMAL HEAD USED ON THE YELD INDEX FROM STEEL

Beatrice TUDOR, Marian BORDEI, Alexandru CHIRIAC

”Dunarea de Jos” University of Galati, Romania

ABSTRACT. In this paper is show a study about cost of part obtained with exothermal heads by replacement of classic heads. This method contribute at conduct solidification of cost pieces, because exothermal heads is forecast with mixture cover witch at connection with liquid alloys give off warmth, effect of exothermal reactions between this components. In ferrous alloys foundries growth yeld index represents an essential objective at growth economic efficiently, because enable reduction of specific consumption of materials. Used this method we can achievement a lot of economic of energy, materials and labour

OPTIMIZATION OF THE PRESS EFFICIENCY OF RAPESEED OIL USED AS FUEL

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Keywords: Pure Plant Oils (PPO), bio fuels, rapeseed oil, pressing, filtration, hydraulics

SIMULATION OF THE MULTISTAGE DEEP DRAWING PROCESS

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Mihaela BANU, Dunarea de Jos University of Galati

ABSTRACT: The paper presents an analysis of the multistage deep drawing process considering the two deformation schemes namely direct and reverse redrawing. The analysis is based on numerical simulation using the finite element method, a powerful tool for analyzing complex three dimensional sheet metal forming problems. The results of numerical simulation are experimental validated. Finally it is concluded the importance of the material load pattern in the redrawing process toward the parts quality and forces level.

EXPLORING THE IMPACT OF BRANDING AND DESIGN ON SUPPLY CHAIN MANAGEMENT

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Angela-Eliza MICU – “Dunarea de Jos” University of Galati
Marian BORDEI – “Dunarea de Jos” University of Galati
Aurel CIUREA – “Dunarea de Jos” University of Galati

ABSTRACT. The focus of this paper is to explore the impact of branding and design on supply chain management. It is aimed to give an emphasis on the integration of logistics, branding and design as the main competitive tool for the companies. Although the significance of these processes for value creation was mentioned in the literature before, the need for management of those in an integrated manner has not been revealed enough. Therefore, a systemic and integrated approach is proposed and emphasized in this study.

A HOLISTIC APPROACH TO GREEN SUPPLY CHAIN STRATEGIES

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Angela-Eliza MICU – “Dunarea de Jos” University of Galati
Aurel CIUREA – “Dunarea de Jos” University of Galati
Marian BORDEI – “Dunarea de Jos” University of Galati

Abstract Due to the rising importance of environmental issues, there is an emerging need for integrating eco-friendly processes into the supply chain. In this study the green supply chain strategies are classified as tactical, transformative and strategic depending on the environmental approach of supply chain strategy. A holistic approach to green supply chain is developed by focusing on the activities of sourcing and purchasing, manufacturing and design, packaging, transportation, warehousing, and reverse logistics.

CALCULATION OF THE OPTIMIZED PARAMETERS FOR THE MECHANICAL SYSTEM FROM NUMERICAL AXES STRUCTURE OF THE NUMERICALLY CONTROLLED MACHINE-TOOLS

Dumitru Al. DUMITRU – University Valahia of Târgoviște
Eugen STRĂJESCU – University Politehnica of Bucharest

ABSTRACT. The selection of the servomotor for a numerical axis is based on a series of calculations that, starting from the curve specification for the necessary motion of the slide, estimates the maximum torques that will be supported by this. Then, by experimentation, a servomotor, which to develop the maximum motor torque in the requested speed field, can be identified in catalogues. In this paper, the method of the servomotor selection optimization that is evolved by authors in a connected work¹, is applied towards its validation for an application with known input data.

EVALUATION D’ETAT DE SURFACE USINEE PAR TOURNAGE A PARTIR DE COURBE ABBOT - FIRESTONE

Adriana CÎRSTOIU - Université Valahia de Targoviste
Nicolae IONESCU - Université Politehnica de Bucharest

ABSTRACT. The paper presents experimental determination of the influence of the tool cutting nose radius on surface roughness in case of external turning. An evaluation of the surface roughness based on Abbot – Firestone curve and on statistical distribution of the profile amplitude has been undertaken in the frames of this paperwork.

¹ Strajescu, E., Dumitru, D., “Studies concerning the optimization of parameters for mechanical system from the numerical axes structure of the numerically controlled machine-tools”, The 15th International Conference THNOMUS.

STUDIES CONCERNING THE OPTIMIZATION OF PARAMETERS FOR MECHANICAL SYSTEM FROM THE NUMERICAL AXES STRUCTURE OF THE NUMERICALLY CONTROLLED MACHINE-TOOLS

Eugen STRĂJESCU – University Politehnica of Bucharest
Dumitru Al. DUMITRU – University Valahia of Târgoviște

ABSTRACT. Any numerical axis is consisted of a mechanical structure and an electrical structure, well-balanced, so that the assembly of the parties' behavior contributes to the achievement of the final performances [1]. The tuning of those two subsystems must be made from the preliminary designing phase. In the mechanical system optimization, the servomotor selection is an important stage. In this paper, it is presented a rationalization method for calculations as basis of decision in the selection of the servomotor for a numerical axis driving from the CNC machine-tools structure.

STUDY OF LAYER THICKNESS VARIATION AT MULTISTATE DEPOSITION BY VIBRATING ELECTRODE METHOD USING A TITAN ELECTRODE

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Carmen NEJNERU - “Gh. Asachi” Technical University of Iasi, Romania
Dan Gelu GALUSCA - “Gh. Asachi” Technical University of Iasi, Romania
Nicanor CIMPOESU - “Gh. Asachi” Technical University of Iasi, Romania
Andrei Victor SANDU - “Gh. Asachi” Technical University of Iasi, Romania

ABSTRACT

On a pearlitic – ferrite cast iron support was realize single-layer depositions and with two layers with titan electrode. Determination was made to appreciate of a layer medium thickness in first and second case using SEM analyzes (scanning electron microscopy). In this study was made also EDX analysis (used for qualitative and quantitative micro-analysis) to obtain the elements repartition from layer and under layer on deposition depth.

THE ANALYSIS OF THE INFLUENCE OF THE CUTTING REGIME PARAMETERS THROUGH THE SIGNAL-NOISE RATIO BY THE LATHING PROCESS OF THE POLYAMIDE PA 66 GF30

Marin, MOȚOI – University of Pitesti

ABSTRACT: This work presents the analysis of the influence of the cutting parameters through the signal-noise ratio by the longitudinal lathing process of a semi-product made of the polyamide PA 66 GF 30. The experiment plan was conceived following the Taguchi method and the results of the experiments show the greater or lesser influence of each parameter of the cutting regime. On the basis of the results we have obtained an equation for roughness Ra and for the parameters of the cutting regime.

STUDY CONCERNING THE FORCES OF CHIP REMOVAL TO THE REMAKING THROUGH TURN IN LONGITUDINAL OF THE POLYAMIDE PA 66 GF30

Marin MOȚOI – University of Pitesti

Abstract: This study presents the dependence of the main cutting force by lathing, F_z , on the cutting depth t , on the cutting feed s and on the speed v , by using a type 2^{3-1} factorial plane. PA 66 GF 30 polyamide is a composite material and is produced by the ERTA Company.

CONSIDERATION REGARDING THE OPIMIZATION OF MECHANICAL PROCESSING OF WORKING PART OF PUNCH USING A COMPUTER NUMERICAL CONTROL (CNC)

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Machine Manufacturing Technology

Abstract. The paper presents a part of the results obtained by the author during steel processing on a CNC. The starting point was to choose a blank, to choose the processing parameters, execute the CNC program, picking tools to get a good surface roughness, punch execution and quality control. The mechanical processing of working part of punch is executed by a end milling cutter.

RESEARCHES CONCERNING ALUMINUM ALLOYS HARDENING BY QUENCHING AND CYCLIC AGEING AND METALLOGRAPHIC ASPECTS AT THEIR CORROSION IN SEAWATER

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Manuela Cristina PERJU - “Gh. Asachi” Technical University of Iasi, Romania
Dragos Cristian ACHITEI - “Gh. Asachi” Technical University of Iasi, Romania
Nicanor CIMPOESU - “Gh. Asachi” Technical University of Iasi, Romania

ABSTRACT. There were used for testing treatable aluminum alloys samples from 7xxx series. These alloys were solution quenched at 560°C followed by ageing. Holding period realized at 10 hours with air cooling. One sample, after solution quenching, was submitted to a cyclic ageing regime. The measurements achieved with PMT 3 microhardness tester with a weight of 100 g. Some optical photographs of samples' structure made. Metallographic aspects achieved by terms of SEM, aspects that refer to aluminum alloys corrosion in seawater.

A NEW PERSPECTIVE ON OVERALL EQUIPMENT EFFECTIVENESS

Ana Rotaru - University of Pitești, Faculty of Mechanics and Technology, Department of Management and Technology

ABSTRACT: In the most general sense, Overall Equipment Effectiveness can be described as a universally accepted set of metrics that bring clear focus to the key success drivers for manufacturing systems. The OEE strategy is considered “best practice” and dovetails well with the Lean Manufacturing philosophy. This article looks at way in which the OEE measure can be used to enhance the capital investment process, starting with a fundamental questioning of whether the purchase is required in the first place

KANBAN AND EXTENDED KANBAN SYSTEMS

Ana Rotaru - University of Pitești, Faculty of Mechanics and Technology, Department of Management and Technology

ABSTRACT: Kanban is a technique for material and production control and performance. Extended Kanban Systems is a recently developed pull production control mechanism that combines base stock and kanban control – for the production systems and depends on two parameters per stage, the number of kanbans and the base stock of finished parts. In the framework of this paper are presented, analyzed and compared the kanban and extended kanban systems.

THE WEARPROOFNESS OF BEETING KNIVES IN SACCHARINE PRODUCTION

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Research results are presented on the beet-cutting knife wearing process depending on the duration of its operation in the real conditions of sugar production. It is shown that wearing of the beet-cutting knife working edges is taking place according to the abrasive-corrosive mechanism. In addition to wearing process, knife durability is influenced by the damage caused by solid impurities. Statistical data about the operating time between failures, with repairs being taken into account, are given in the form of a diagram.

SYNTHESIS AND CHARACTERIZATION OF NANOCRYSTALLINE IRON OXIDES FOR NANOCOMPOSITES WITH BIOMEDICAL APPLICATIONS

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Rodica Mariana ION, Universitatea Valahia Targoviste, ICECHIM Bucuresti

ABSTRACT. This work aims to establish and to optimize the conditions for chemical synthesis of nanosized magnetic iron oxide powders with desired magnetic properties. It was obtained iron oxides by chemical coprecipitation using mixed ferric and ferrous salts, favouring the synthesis at low-temperature, low costs, high material purity and nanostructure control. For biomedical applications like magnetic biofunctional material vectors to target tissues, the iron oxide particles obtained have to be spherical with 10 nm average diameter. Magnetic properties obtained (saturation magnetization M_s and coercivity field H_c) are proper for superparamagnetic character of these nanoparticles. After synthesis, it has been used the best iron oxide nanoparticles obtained to produce some nanocomposite systems with polyvinilic alcohol (PVA). Some investigation techniques as: X-ray diffraction (XRD), transmission electron microscopy (TEM), atomic force microscopy (AFM), vibrating sample magnetometer (VSM) and UV-Vis absorbance spectroscopy, have been used.

Keywords: magnetite, nanocomposite, polypyrrole, polyvinilic alcohol

SILVER NANOPARTICLES IN NANOMEDICINE

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ABSTRACT

Nanotechnology is a fast emerging field of new materials that are manufactured in the size range of up to 100 nanometres (nm). This paper will review the recent advances in the use of silver nanoparticles in nanomedicine. Nanoparticles with silver can be used to suppress inflammation processes due to infection – one of the most important problems with implantable devices in cerebral aneurism, especially.

GENERATOR OF SINGLE ELECTRICAL DISCHARGES

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Victor GROSU - Technical University “Gheorghe Asachi” of Iași
Oana DODUN – Technical University “Gheorghe Asachi” of Iași
Margareta COTEAȚĂ – Technical University “Gheorghe Asachi” of Iași

ABSTRACT

The emphasizing of some aspects specific to the electrical discharge machining process can be made inclusively by the using of the single electrical discharges. Such discharges are produced by the using of the electrical pulses adequate sources. The paper presents some results obtained in the laboratory of non-conventional technologies from the Technical University “Gheorghe Asachi” of Iași. A generator able to ensure single electrical discharges was built and experimented.

INTEGRATED WASTE MANAGEMENT SYSTEM IN STEEL COMPANY

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Anișoara CIOCAN, Dunărea de Jos University of Galati - ROMANIA

ABSTRACT. Waste is generated by activities in all economic sectors and is generally regarded as an unavoidable by product of any economic activity. In environment policy, the waste management is an essential component in conditions of growing up production and, implicit, of waste quantity produced with a negative impact [4, 5]. For that we have to search solutions in order to decrease the waste quantity produced and to abridge the negative effects, recycling the waste that could be recycled in process as raw material [5].

ELECTROCHEMICAL AND MICROSTRUCTURAL ASPECTS REGARDING THE CORROSION OF SOME ZINC ALLOY COATINGS

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Lucica BALINT, University “Dunărea de Jos” of Galati

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ABSTRACT

He was studied the corrosion process of the steel samples covered with Zn-Fe layers. The Zn and Zn-Fe coated samples have been exposed to corrosion attack by the potentiostatic method. The kinetically parameters of the corrosion process was analyzed. In order to assess the corrosion resistance the anode polarization curves were plotted and the Tafel slope was determined. After the electrochemical test macro and microscopic analyses was carried out to establish the type of corrosion occurred.

RESEARCHES ON MATHEMATICAL CORRELATION APPROACH TO CORROSION RESISTANCE OF ZN-COATED STEEL WIRES

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Ioan Simion BALINT Universitatea “Dunărea de Jos” Galați

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ABSTRACT

Steel wires coated by hot immersion with Zn and Zn alloys have been exposed to a corrosive medium similar to sea water. In order to assess sample corrosion resistance three moments have been chosen: the time elapsed until the occurrence of the first rust point, until rusting up to 25% and rusting up to 50%. The results obtained have been mathematically expressed, for each variant a statistic analysis has been produced to determine the simple regression equations. It has been found that there is a correlation between the dependent and independent variables when the value of the coefficient "r" is higher than 0,90.

ASPECTS CONCERNING THE LATHE STATIC RIGIDITY

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Gheorghe NAGÎȚ - Technical University „Gh. Asachi” of Iasi, Romania
Iolanda POȘCHIN - Technical University „Gh. Asachi” of Iasi, Romania
Sorin POPA - Technical University „Gh. Asachi” of Iasi, Romania

ABSTRACT: The paper presents some aspects concerning the deformations which appear in the case of the forces action on the workpiece clamped on a lathe. On the base of the rigidity definition, same considerations about the technological system rigidity were formulated. A mathematical expression for the static rigidity was formulated which allow to measure the displacement between the desired and the real profile.

LOGISTIC SYSTEM OF AN AIRCRAFT ENGINES PRODUCER THAT USE MULTI-AGENT TECHNOLOGY

Camelia LIXANDRU – Technical University „Gh. Asachi” Iasi
Traian GRĂMEȘCU – Technical University „Gh. Asachi” Iasi

Abstract: The administration of the logistic system is quite difficult. If in the past the logistic system administration was made based on the experience of the staff, in our days the administration of the logistic system of an industrial enterprise is made by using some automatic techniques and technologies, or some specific softwares. Thus, for the administration of the logistic system of an enterprise, were applied technologies, such as multi-agent technology. The involvement of the agents and multi-agent system in the administration of the logistic system of an enterprise, facilitate this activity, and lead to the productivity increase and costs reduction.

STRUCTURAL ANALYSES OF BORUM NITRIDE THIN FILMS

Stela CONSTANTINESCU, University „Dunarea de Jos” of Galati, Romania

ABSTRACT: The present paper deals with obtainment and study of the chemical vapour deposition formed boron nitride coatings on silica substratum. The experiments conducted to obtain thin layer of nitride by the vapour chemical deposition method have followed an original path to make BN directly in the working room thus avoiding the import of these hazardous substances. The boron nitride is obtained in the heat treatment chamber by adding chloride acid vapors passed over the incandescent pure boron or ferroboreum. The support temperature was established at about 1030° C so that the BN can provide a suitable deposition of the thin BN layer. Very good results were obtained for four hours exposure times leading to optimum layer thickness of 8µm. Lab-scale systems have been designed with the possibility of use at industry scale for small production.

ELECTROCHEMICAL DEPOSITION METHOD TO OBTAIN COMPOSITES COATINGS WITH METAL MATRIX

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Stela CONSTANTINESCU, University „Dunarea de Jos” of Galati, Romania
Lucica ORAC, University „Dunarea de Jos” of Galati, Romania

ABSTRACT: Electrochemical deposition provides a simple and easily controllable method to obtain composites coatings with metal matrix and ceramics as disperse phase. The ceramics to be found in the electrolysis solution as a suspension of particles with size in the ranging from 0,1 to 50 μm , are codeposited while the metallic irons are reduced. Weight percentage of the disperse phase up to 35 – 40 % can be obtained.

The investigations carried out by our group have mainly tried to :

- Obtain composite coatings of Cu-SiC, Fe-SiC and Co-CeO₂ by electrodeposition
- Optimise the desired technological properties by varying several parameters (current density, stirring, temperature, concentrations of the disperse phase, nature of the electrolyte).

A comparative microscopic study of the composite coatings and the pure metals reveals important morphologic differences .

EXPERIMENTAL CHARACTERISTICS OF THE HYDRAULIC DRIVE WITH A VARIABLE-DISPLACEMENT PUMP

Burennikov Yu. A., Kozlov L. G., Repinskiy S. V., Petrov O. V.
Vinnytsia National Technical University (VNTU)

Experimental test rig is proposed for the investigation of static and dynamic characteristics of the hydraulic drive with a variable-displacement pump. In the variable-displacement pump control system automatic regulator is used. The regulator provides pump output stabilization as well as constant-power mode of the pump operation. Static and dynamic characteristics of the variable-displacement pump, obtained on the experimental test rig, are presented.

RESEARCH ON THE IMPLEMENTATION SIX SIGMA CONCEPT IN THE MANUFACTURING PROCESS

Sorin Popa – Universitatea Tehnica „GH.Asachi” din Iasi
Gheorghe Nagit – Universitatea Tehnica „GH.Asachi” din Iasi
Ionut Popa – Universitatea Tehnica „GH.Asachi” din Iasi
Iolanda Poschin – Universitatea Tehnica „GH.Asachi” din Iasi
Mihai Boca – Universitatea Tehnica „GH.Asachi” din Iasi

ABSTRACT: In this paper is presented, one optimization model that will assist management to choose process improvement opportunities. This model consider a multi-stage, asynchronous manufacturing process with the opportunity to improve quality (scrap and rework rates) at each of the stages. This model is to maximize the sigma quality level of a process under cost constrain.

RESEARCH REGARDING THE INFLUENCE OF THE STATIC PRESSURE FORCE ON THE SONOTRODE AMPLITUDE IN THE CASE OF ULTRASONIC WELDING

**Victor POPOVICI, POLITEHNICA University of Bucharest
Doru Virgil PĂUȘAN, POLITEHNICA University of Bucharest**

ABSTRACT

The sonotrode's amplitude oscillations and the static pressure force are the two main parameters of the ultrasonic welding. The paper presents the influence of static pressure force on the sonotrode's amplitude. The measurements were made on a stand which consisted of transducers for measuring the two parameters. Data acquisition was done with LabView virtual instrumentation.

RESEARCH REGARDING THE ULTRASONIC INSTALLATION TECHNOLOGY OF METALLIC INSERTS INTO THERMOPLASTIC MATERIALS

**Doru Virgil PĂUȘAN, POLITEHNICA University of Bucharest
Victor POPOVICI, POLITEHNICA University of Bucharest**

ABSTRACT. Metallic insertions in thermoplastic materials are needed because by their means, the assembly of other parts is realized. The paper presents the results of a series of researches regarding the designing of the inserts and the dimensioning of the mounting holes used for ultrasonic insertion. The parameters of the insertion process and the temperatures resulted at the insert-thermoplastic material interface determined by infrared thermography are presented.

ROLE OF NON-DISTRUCTIVE TESTING IN PREVENTIVE MAINTENANCE

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Petru V. Dusa² Technical University “Gheorghe Asachi” of Iasi - Romania,
Iustina-Elena Rotman³ Technical University “Gheorghe Asachi” of Iasi - Romania,

Abstract: This article present various case studies to highlight the benefits of using non-destructive testing in plant maintenance but also as a cost reducing operation.

ASPECTS REGARDING THE ACHIEVEMENT OF THIN ALUMINIUM LAYERS ON STEEL

**Dragos ACHITEL, Gh. Asachi Technical University of Iasi
Dan Gelu GALUSCA, Gh. Asachi Technical University of Iasi
Roxana CARABET, Gh. Asachi Technical University of Iasi
Manuela PERJU, Gh. Asachi Technical University of Iasi**

ABSTRACT: The paper presents steels aluminizing in powder mixtures in order to imprint a higher resistance to oxidation and atmospheric corrosion resistance.

Keywords: Thin layers, aluminizing, and aluminum powder

THE INFLUENCE OF RELATIVE SPEED AT THIN WALLS TUBES DRAWING IN SONODRAW SYSTEM

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Roxana-Gabriela CARABET, Technical University Gh. Asachi Iasi
Dragos Cristian ACHITEI, Technical University Gh. Asachi Iasi
Viorel Constantin ILIESCU, Sc CABLERO SRL Iasi

Abstract: The paper emphasizes the influence of relative speed (v_{tr}/v_v), in thin walls tubes drawing in Sonodraw system or in ultrasonic field, on force parameters and mechanical characteristics such as resistance and plasticity (v_{tr} – drawing speed and v_v – vibration speed of the auger die). The experiments made on thin walls tubes with small diameter from 10TiNiCr180/AISI 32 stainless steel.

Keywords: thin walls tubes, processing technology in Sonodraw system/ultrasonic field, relative drawing speed, force parameters, resistance and plasticity mechanical characteristics.

DETERMINATION OF UNCERTAINTIES IN CHARPY IMPACT TESTING OF COMPOSITE MATERIALS

Rodica ROHAN- University POLITEHNICA of Bucharest

Abstract: This paper approaches the main aspects of the framework methodology of determining uncertainties in Charpy impact testing of composite materials. Knowledge of the uncertainty implies increased confidence in the validity of a measurement result. The statement of the result of a measurement is complete only if it contains both the value attributed to the measured object and the uncertainty of measurement associated with that value.

COOLING AGGLOMERATION FERROUS TO START

Adrian VASILIU - University "Dunarea de Jos" Galați

ABSTRACT: Mathematical model is based discretization agglomeration areas layer deposited on very small. The $\tau \Delta$ cooling time and the elements of space and elements xi time relationship is discretization as volume control. Based on the mathematical model was presented a program for simulation agglomerates ferrous cooling. The program developed provides the possibilities for the calculation of parameters of air cooler agglomeration.

TECHNICAL SOLUTIONS TO DESIGN AN EQUIPMENT FOR ABRASIVE FLOW NANOFINISHING

Aurelian VIȘAN - POLITEHNICA University of Bucharest
Nicolae IONESCU - POLITEHNICA University of Bucharest
Valeriu AVRAMESCU - S.C. ICTCM S.A. - Mechanical Engineering and Research Institute
Aurel TARARA- POLITEHNICA University of Bucharest
Traian MAZILU- POLITEHNICA University of Bucharest

ABSTRACT. The paper presents some detailed technical solutions to design equipment for Abrasive Flow Machining. The resulted AFM equipment is using two horizontal opposed cylinders, and consists of extrusion of a semisolid abrasive media, back and forth through the work piece or through passages formed by the work piece and a fixture. By repeatedly extruding the media from one cylinder to the other, an abrasive action is produced as the media enters a restrictive passage and travels through or across the work piece.

CONSIDERATIONS TO REALIGNMENT OF NEW CAR DACIA LOGAN

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Gianina-Madalina CHIRUGU- - “Gh. Asachi” Technical University of Iași
Dragos PARASCHIV-- “Gh. Asachi” Technical University of Iași

Reliability is a general problem of all machinery, equipment and parts of these. Of size they all depend on economic factors. A particular problem in the machine building industry is realignment motor vehicles. The overall objective of this work is to study a new method of realignment of vehicles.

The specific objectives of the project which aims to achieve the general objective are the following:

- 1) Tracking the flow of vehicle technology on the band to FINISHING WORKSHOP;
- 2) Developing a new synoptic of realignment.

SOME ASPECTS OF PARAMETRIZED CNC PROGRAMMING

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Margareta COTEATA – Technical University “Gheorghe Asachi” of Iasi

The parameterized programming is generally considered more difficult due to the fact that many of the coordinates are replaced by calculated parameters or formulas. For this reason, a preliminary verification of the program is required. The paper describes a proposed application written using Visual Basic for Application, under AutoCad that allows the interpretation of the formulas including the working parameters, the coordinates determination, the list of the translated version of the program, the verification of the previously determined coordinates, but also the process simulation.

CONSIDERATIONS ON THE USE A NEW GENERATION TAPS

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ABSTRACT: This paper presents a new generation of taps that are improved by the process of covering with protective layers . Following research by using these taps can notice a decrease of working time, increased durability of a tap, an increase in the number of threads made with the same tool and also increase productivity. In the paper are presented a few taps of the new generation and for each part are presented the following elements: characteristics, utilization, advantages, efficiency of the operation and increase the productivity of the processing of inside threads.

Key words: thread, tap, titanium, coverage, efficiency, productivity.

OBSERVATIONS ABOUT THE POSSIBILITY TO IMPROVE THE MEASUREMENT OF HARDNESS WHEN THE VICKERS INDENTER IS BEING USED

Bogdan Ionuț DAVID - Universitatea „Ștefan cel Mare”

ABSTRACT. This paper presents a solution to improve the expression of area in hardness relation when we use the Vickers indenter. For obtain the finest ranges of measurement, it is recommended to describe the geometry of projected area or of the surface of imprint with the maximal accuracy and - to take in to account the principal characteristics provided by norms. In the end it is presented the influence of these parameters in hardness relation and in the hardness value.

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