

Table of Contents

Preface and Organizing Committees

Chapter 1: Modern Management and Teaching Approaches

Teaching Approaches to Free-Form Surfaces Design and Manufacturing I. Baránek and I. Buranský	3
New Teaching of Quality V. Pelantová	9
On-Line Classroom for Dynamic Education I. Buranský, J. Peterka and I. Buranský	15
Holistic Analysis and Risk Assessment of an Industrial Organization Processes V. Cibulka	21
The Methodology of Development of the Manufacturing Information Acquisition System (MIAS) for Production Management G. Ćwikła	27

Chapter 2: Novel Trends in Production Systems and Logistics

On the Integration of Production and Maintenance Planning at the Tactical Level: Proposal of a Contribution Procedure R.D. Cazañas and D.R. Delgado Sobrino	35
On the Analysis and Customization of an iCIM 3000 System: A take on the Material Flow, its Complexity and a few General Issues to Improve D.R. Delgado Sobrino, P. Košťál and J. Vavruška	42
Application of Material Requirements Planning as Method for Enhancement of Production Logistics in Industrial Company H. Fidlerová, J. Prachař and P. Sakál	49
Relative Term of Capacity Computations and Manufacturing System Design E. Hrušková	55
CA Systems and Modularity Principles as Tools for Flexible and Efficient Production Systems Design A. Javorova	61
Innovation of Business Processes by Means of Computer-Aided Simulation F. Manlig, E. Šlaichová, F. Koblasa and J. Vavruška	67
VSM as a Tool for Mini-Audit of Information System J. Vavruška, F. Manlig and F. Koblasa	73
Adaptive Simulation of Automated Guided Vehicle Systems Using Multi Agent Based Approach for Supplying Materials A. Rinkács, A. Gyimesi and G. Bohács	79
Design of Experiments and Definition of Criteria for the Evaluation and Analysis of the Process of Machining in a Robotic System M. Kusa and F. Pechacek	85
Material Flow Design Supported by Simulation Methods M. Matúšová	91
Materials Flow Analysis in the Production Process - Case Study G. Królczyk, S. Legutko, J. Królczyk and E. Tama	97
Direct Production from CAD Models Considering on Integration with CIM Flexible Production System R. Ružarovský	103
The Sensory Devices in the Assembly Workspace of an Intelligent Assembly Cell M. Šimúnová and K. Velíšek	109
Prediction of Selected Production Goals by Classification Methods D. Jurovátá, P. Važan, M. Kebisek, P. Tanuska and L. Hřčka	115

Assignment of Labour to a Production Line Depending on Lot Size J. Kurnátová, P. Važan, G. Križanová and K. Orihelová	121
Model-Oriented Safety Analysis of Dynamic Technological Systems M. Strbo, P. Tanuska, A. Gese and M. Korytar	127
The Impact of Customized Variety on Configuration Complexity of Assembly Process V. Modrak, D. Marton and S. Bednar	135
Interactive Game Supporting SMED Method M. Bárdy, J. Kudrna, B. Šrámková and M. Edl	141
System of Designing Complex Technical Means Using Fuzzy Analysis A. Gwiazda	147
Numerical Analysis and Simulation of Drawpiece Forming Process by Finite Element Method P. Kaldunski and L. Kukielka	153
Incremental Modelling and Numerical Solution of the Contact Problem between Movable Elastic and Elastic/Visco-Plastic Bodies and Application in the Technological Processes L. Kukielka, K. Kukielka, A. Kułakowska, R. Patyk, R. Patyk and Ł. Bohdal	159
Design and Manufacturing Optimization of Single-Cylinder Engine Block Prototype Using CATIA Environment S.A. Haba and G. Oancea	165

Chapter 3: Novel Trends in Technology

Digital Image Processing in the Camera System of Assembly Systems ICIM N. Danišová	173
Application of Camera Image Processing to Control of Humanoid Robot Motion R. Duriš	179
Production of Composite Material by FDM Rapid Prototyping Technology L. Novakova-Marcincinova and J. Novak-Marcincin	186
Finite Element Simulation of Cutting Forces in Orthogonal Machining of Titanium Alloy Ti-6Al-4V L. Kandrác, I. Maňková, M. Vrabel' and J. Beňo	192
Investigation of Stress State and Contact Pressures in Contact Area of Journal Bearing by Numerical Simulation Š. Hajdu	200
Possibility of the Process Monitoring during Assembly and Disassembly Components R. Holubek	206
Adaptive Control System to Assist the Surface Workpiece Quality when Drilling M. Vrabel', I. Maňková, J. Beňo, L. Kandrác and J. Stahovec	212
The Numerical Simulation of Workpiece Clamping J. Oravcová	218
Investigation of the Surface Quality when End-Ball-Milling Form Surfaces with Sequence of the Radii Ratio J. Beňo, J. Stahovec and M. Vrabel'	224
The Influence of Technological Loading on Stable Operating State of Asynchronous Motor E. Riečičiarová	230
Trends in Cutting Materials and Tools for Hard Machining I. Baránek	236
Component Base for CNC Processing Center EMCO Concept TURN 105 M. Bučányová	242
Verification of Shaped Surface Manufacturability and Surface Quality of Stamping Die's Punch P. Ižol, D. Draganovská, J. Hudák, M. Tomáš and T. Trojčák	249
Design of a Digital Positioning System with Sinusoidal Change of the Jerk M.Y. Stoychitch	255
Verification of a Three Axis Milling Machine Accuracy in the Process of Complex Shaped Part Production J. Král' and J. Král'	261

Influence of the CAM Parameters and Selection of End-Mill Cutter when Assessing the Resultant Surface Quality in 3D Milling M. Fabian, P. Ižol, D. Draganovská and M. Tomáš	267
Optimization of FDM Prototypes Mechanical Properties with Path Generation Strategy E. Spišák, I. Gajdoš and J. Slota	273
Punch-Die Gap Effect on Blanked Edge in Fine Blanking of Low-Carbon, Micro-Alloyed and High-Strength Steels J. Majerníková and E. Spišák	279
Computational Modeling of the Microplasticization State in the Nodular Cast Iron P. Kopas, M. Vaško and M. Handrik	285
Correlation between Charge Composition and Fatigue Properties of Nodular Cast Irons M. Vaško and A. Vaško	291
Examination of Temperature and Stress Fields in the Welding Process H. Kraváriková	297
The Size of the Friction Coefficient Depending on the Size and Course of Normal Load E. Labašová	303
Modification of Modal Characteristics of Machining Tool Body by Reinforcement with Non-Uniform Cross-Section M. Nad and L. Rolnik	309
A Detection of Deformation Mechanisms Using Infrared Thermography and Acoustic Emission V. Dekýš, P. Kopas, M. Sapieta and O. Stevka	315
Temperature Measurement and Finite Element Modeling Methodology for Laser Cutting of Stainless Steel Plate E. Babalová	321
Machining Capabilities of Graded Materials by Cutting Processes T. Irgolic and F. Cus	327
Machining Performance of CBN Cutting Tools for Hard Turning of 100Cr6 Bearing Steel J. Kundrák, L. Ráczkövi and K. Gyáni	333
Using Nonlinear Contact Mechanics in Process of Tool Edge Movement on Deformable Body to Analysis of Cutting and Sliding Burnishing Processes J. Chodor and L. Kukielka	339
Roughness Improvement in Hard Turning when Changing Cutting Parameters and Using Differently Shaped Ceramic Tools M. Kritikos Samardziova and M. Neslušan	345
Improvement of a Riveting Process Capability with Application of Tools and Methods of the Quality Management M. Kučerová and H. Fidlerová	351
Analysis of the Dynamical Effects on Housing of the Axial Piston Hydromotor A. Sapietová, R. Petrech and M. Petrovic	357
Computational Analysis of Contact Stress Distribution in the Case of Mutual Slewing of Roller Bearing Rings L. Jakubovičová and M. Sága	363
Evaluation of DPI Change Impact on Laser Machined Surface Quality J. Knedlova, L. Sýkorová, V. Pata and M. Malachová	369
Application of Fractal Geometry for Laser Engraving of Artificial Leather Surface V. Pata, L. Sýkorová, J. Knedlova and M. Malachová	375
The Mechanical Characteristics of 3D Printed Parts According to the Build Orientation P. Zelený, J. Šafka and I. Elkina	381
Use of Optical Methods for Dimensional Analysis of Multi-Part Moulds R. Mendřický	387
Influence of Surface Shape and Perforation of Plastics on Sound Absorption M. Vašina and O. Bilek	393
Numerical Research on the Changing of the Slip-Line Field in Hard Turning of Case Hardened Steels G. Szabó and J. Kundrák	399
Some Characteristic Parameters of the Run-In Phase in Rotational Turning and their Determination I. Sztankovics and J. Kundrák	405

Can Diamond Burnishing Be Done in an Environmentally Friendly Way? G. Varga	411
Construction Development Using Virtual Analysis on the Example of a Roof Support A. Gwiazda	417
Significance of Production Logistics in Integrated IT Systems A. Brzozowska	423
Three Dimensional Finite Element Simulation of Sheet Metal Blanking Process Ł. Bohdal, L. Kukielka, K. Kukielka, A. Kułakowska, L. Malag and R. Patyk	430
3D Numerical Analysis the State of Elastic/Visco-Plastic Strain in the External Round Thread Rolled on Cold K. Kukielka, L. Kukielka, Ł. Bohdal, A. Kułakowska, L. Malag and R. Patyk	436
Possibility of Steering of Product Surface Layers Properties in Burnishing Rolling Process A. Kułakowska, L. Kukielka, K. Kukielka, L. Malag, R. Patyk and Ł. Bohdal	442
Numerical Study of the Influence of Surface Regular Asperities Prepared in Previous Treatment by Embossing Process on the Object Surface Layer State after Burnishing R. Patyk, L. Kukielka, K. Kukielka, A. Kułakowska, L. Malag and Ł. Bohdal	448
Problems Determining of the Mechanical Properties of Metallic Materials from the Tensile Test in the Aspect of Numerical Calculations of the Technological Processes L. Malag, L. Kukielka, K. Kukielka, A. Kułakowska, Ł. Bohdal and R. Patyk	454
Computer Aided Manufacturing of Models for Moulding out of Synthetic Materials for Producing Sand Casting Moulds M. Paulic, T. Irgolic and J. Balic	460