

Contents

Chapter I Machine Design	1
FE Analyzing of Layout Types For Multi-hole Extrusion Dies	3
S. Bingöl, M. S. Keskin, O. Ayer, K. Sarikaya, O. Burucu, P. Alipur	
Development of the Testing Device for Simulation of Contact Between Plasmabit’s Locking System and the Surface of the Geothermal Well	9
J. Bucala, J. Mudrak and M. Zarnay	
Solution the Drive Lifting Scissor Platforms	15
M. Burian, J. Havlik, Z. Folta, M. Trochta and P. Marsalek	
Powershift Differential Transmission with Three Flows of Power for Hybrid Vehicles	21
M. Galbavy, J. Pitonak and L. Kucera	
Active Bonnet Hinge	27
M. Galda and J. Brandejs	
The Chance for Application of the Pneumatic Dual – Mass Flywheel in Drive Combustion Engine	33
R.Grega	
Tolerance Analysis – Future Prospects	39
H. Haberhauer	
The Design of the Folding Device for the Production of 3D Textile Products	45
J. Hanus, P. Rydlo, L. Sevcik, M. Konecny, D. Vejrych, M. Diblik	

Optimal Tuning of Torsional Oscillating Mechanical Systems.....	51
J. Homisin and P. Kassay	
Thermal Simulation of Plasmabit Electronic System Protective Housing.....	57
S. Hreck and J. Bucala	
Finite Element Modeling of a Torque Rod Forging Process.....	63
M. S. Keskin, S. Bingol, H.B Elem, A. Atar	
Influence Of Heat Treatment On The Mechanical Properties Of Steel Type (40X).....	69
M. Khidhair	
Investigation of Heat Treatment Effect on Mechanical Properties of High Strength Steel Bolt Material.....	75
U. Kınıt, M. Bozca, I.M. Palabıyık, A. Sevinc and U. H. Buyukalgan	
Power Flow Distribution of an Anti-backlash Designed Transmission.....	81
V. Kloucek, J. Fabera, S. Pryl and V. Brozova	
Computing and Design of Electric Vehicles.....	87
L. Kucera, I. Gajdac and P.Kamas	
The Vibrodiagnostics of Gears.....	93
L. Kucera a T. Gajdosik	
New Way in Steel Bead Design.....	99
R. Madaj	
Development of Dependable Controllers in the Context of Machines Design.....	105
J. Machado and J. C. Campos	

Hexapod - the Platform with 6DOF.....	111
R. Martonka and V. Fliegel	
Stand for Measuring Temperatures of the Main Gears of Automobile Differential.....	117
M. Mazac	
Materials Selection in Mechanical Design.....	123
I. Mazinova and P. Florian	
Tip Rounding of a Spur-gear Pinion-type Cutter.....	131
M. Nemcek	
Experimental Hydrostatic Stand to Energy Recovery Research for Vehicles.....	137
J. Nevrlý	
Test Rig for Gearboxes of Rail Vehicles.....	143
K. Petr, V. Dynybyl and J. Chmelar	
The Elimination of Gear Noise in a Six Speed Gearbox for Passenger Cars.....	149
J. Prokop	
Design of the Masks Civil Protection.....	155
L. Sevcik	
Vibration Device for Long-term Testing of Car Seats....	161
P. Srb and V. Fliegel	
Design of Suspension Roller Working Units Used in Agricultural Machines.....	167
P. Syrovatka, V. Dynybyl and J. Andrus	
Identify the Sources of Vibration and Noise on Cars Gearbox by Spectral Analysis.....	173
E. Tomeh	

Optimization Methods for Minimizing Vibrations and Noise Radiation of Gearboxes.....	179
V. Vanek	
Design Frame for Car eTUL.....	185
R. Vozenilek and P. Brabec	
Chapter II Engineering Analyses	191
Tangent Curve Model for Describing Mechanical Behavior of Oil Bearing Crops under Compression Loading.....	193
D. Herak and A. Kabutey	
Identification of the Shaft Failure Causes Based on the Description of fracture Surfaces.....	199
K. Kalab	
Reliability Analysis of Telescopic Universal Joints Shaft.....	205
K. Kalab, R. Slanina and P. Marsalek	
Dynamic Analysis of Rolling Bearings With Elastic Cage.....	211
R. Kohar and S. Hrcek	
Static Analysis of Crawler Excavator Chassis.....	217
J. Kricka	
Press-on Joint of Rotating Discs.....	223
E. Kronerova and J. Kratky and V. Kubec	
A Comparison of DFA Methods for Manual Assembly..	229
I. Masin	
Analysis of Marine Electric Power Plants Loads.....	235
Z. Matuszak and G. Nicewicz	

The Estimation of the Marine Main Diesel Engine Energy Balance.....	243
Z. Matuszak and G. Nicewicz	
Dynamic Model of a Chainsaw.....	253
L. Pesik and A. Skarolek	
FEM Simulation of Flank Breakage on Tooth of Gears and Experimental Photos.....	259
K. Petr, V. Dynybyl and M. Dub	
Vibration Resistance of High Speed Assembly Secured Bolted Joint With Nut DIN 985.....	265
S. Poljak and R. Bastovansky	
Improving The Performance of Profiles Straightener SIMAC RD750 on Rolling Mill HCC at ArcelorMittal..	271
R. Slanina and P. Sniehotta	
Chapter III Experimental Methods and Measuring	277
Experimental and Theoretical Analysis of the Surge in a Centrifugal Compressor.....	279
Abdulkareem A. Wahab Albehigi, Rasha H. Hashim	
Coefficient of Thermal Expansion of Electric Guitar String Material Determination.....	287
O. Dajbych	
Processing of Automobile Gearbox Load Spectra.....	293
M. Hrudickova and Z. Foltá	
Multi Room Throttle Valve.....	299
O. Kohl	

Influence of the Type of Gearing to Pitting Damage.....	305
B. Kopilakova, M. Bosansky and J. Zapotocny	
Tensile Test of the Car Parts Materials in a Climatic Chamber.....	311
R. Kovar and R. Martonka	
Experimental Research of Gear Contact Fatigue strength.....	317
P. Marsalek, M. Burian and M. Trochta	
Test Rig for Packaging Films.....	323
J. Mrazek, F. Sary and O. Kult	
Sound Absorption Measurement in Alpha Cabin.....	329
P. Nemecek	
Emission Pollutants Measuring with the Help of Two Independent Methods.....	335
J. Popelka and P. Brabec	
Mechanical Properties of Polyurethane Foam in Different Climate Conditions.....	341
P. Srb and R. Martonka	
Measuring of Torque on Testing Device for Measuring Transmission Error.....	347
M. Trochta, M. Burian, P. Marsalek and Z. Foltá	
Experimental Testing of Agricultural Trailer.....	353
R. Uhler, P. Mossoczy and P. Maly	
Climate Chamber for Testing of Uniaxial Loading.....	359
D. Vejrych and R. Martonka	
Experimental Verification of Deformation Behavior of Towing Hitch by Optical Measurement Method.....	365
A. Zatocilova, D. Koutny and D. Palousek, J. Brandejs	

Chapter IV Products Innovation	375
Procedure for Developing Shaped Models Using the Generative Design Method.....	377
J. Gavacova and M. Veres	
Interdisciplinary Engineering Design Projects in Cooperation with Industrial Partners.....	383
S. Hosnedl, J. Dvorak and M. Kopecky	
Interdisciplinary Innovation of EDI Module Case Using 'Design for X' and 'Prediction of X' Knowledge and Methods System Based on TTS.....	389
M. Kopecky, S. Hosnedl, J. Dvorak and L. Janik	
Innovation of Car Seat Construction Using TRIZ- based Tool - Function-Oriented Search.....	395
P. Lepsik, M. Petru and O. Novak	
Reduce of Head Injuries during Whiplash Using TRIZ Methodology.....	405
P. Lepsik, M. Petru and O. Novak	
Innovation of the Control System for Hydraulic Power Units.....	411
A. Lufinka	

Chapter V Optimization and Design	417
A Mechanically Skimmed Screen.....	419
L. Barton	
Design Assistance System (DASY)	425
Z. Foltá and M. Hrudicková	
Dynamical Analysis of Lifting Platform Construction for a Car Relocation.....	431
M. Petru, L. Sevcik, I. Masin, P. Lepšík, A. Lufinka and O. Novák	
The Simulating Model Of A Supercharged Hydrogen Engine.....	439
J. Popelka	
Different Approaches to Calculation of Rotating Ring Deformations of Wrapping Machine.....	445
F. Stary, J. Mrazek, P. Kribala and J. Kamenický	
HCR Gearing Geometry Optimization by using of Generalized Particle Swarm Algorithm.....	451
M. Veres, M. Kanovic and M. Rackov	
Chapter VI Modern Material and Technology	457
Cutting Forces Analysis During High Speed Milling Of Hardened Tool Steel.....	459
Mustafa M. Abdulgadir	
Rotary-Die ECAP System - Static and Dynamic.....	465
R. Bastovansky, S. Poljak, and T. Donic	

Material and component testing of conveyor belts and its numerical analyses.....	471
P. Bocko, O. Marada, and T. Bouda	
Geometrical Accuracy of the Metal Parts Produced by Selective Laser Melting: Initial Tests.....	477
J. Ilcik, D. Koutny, D. Palousek	
Workpiece Grain Size Influence on The Vibration in Micro-Milling.....	487
M. Matuszak, P. Kochmanski and B. Powalka	
Simulation of Laminated Composite Loading.....	493
J. Petrik	
Chapter VII Tribology	499
Friction Characteristic of CrN/DLC2 Layer Deposited on AISI 304 in Contact with AL2O3 Ball Examined under Atmospheric and Vacuum Conditions.....	501
J. Broncek, M. Dzimko, M. Kovalicek and Y. Takeichi	
Tribological Application With Non - Metallic Coatings.	507
M. Leitman, R. Bastovansky and S. Poljak	
Qualitative Analysis of Film Thickness in Rolling EHD Contact by Fluorescence Technique.....	513
D. Necas, M. Vrbka, P. Sperka, M. Druckmuller, P. Skladal, P. Starha, I. Krupka and M. Hartl	