

Table of Contents

Preface	v
I. Mechatronics	
Active Impedance Matching K. Jagodzińska, S. Dziura and M. Walkowiak	3
Analysis of Possibilities of Using Membrane Electrolyser in a Closed-Circuit Power Supply System G. Grzeczka	9
Analysis of Power Supply Maintenance in Transport Telematics System M. Siergiejczyk and A. Rosinski	14
Application of Vibroacoustic Methods for Monitoring and Control of Comfort and Safety of Passenger Cars R. Burdzik and L. Konieczny	20
Comparison of Characteristics of the Components Used in Mechanical and Non-Conventional Automotive Suspensions L. Konieczny and R. Burdzik	26
Create Terrain Maps for Unmanned Ground Platform A. Typiak, M. Gnatowski and J. Szklarski	32
Cylinder Pressure Patterns in the SI Engine Fuelled by Methane and by Methane and Hydrogen Blends A. Ambrozik, T. Ambrozik, D. Kurczyński, P. Łagowski and E. Trzensik	40
Designing Diagnosis of the Ship's Hull Strength B. Szturomski, A. Grządziela and M. Kluczyk	50
Diagnosing of Rolling Bearings Working under Conditions of Actual Operation Z. Stanik	58
Dynamic Loads in a Model of the Two-Stage Gears by Varying Stiffness of the Countershaft J. Dyk	65
Experimental Research on Directional Stability of Articulated Tractors A. Bartnicki, A. Dąbrowska, M.J. Łopatka and T. Muszyński	77
Experimental Studies of Direct Cooperation of PEM Fuel Cells and Secondary Batteries A. Polak	87
Modelling of Diving Apparatus Breathing Loop Ventilation R. Klos	97
Modelling of Power Transmission Systems for Design Optimization and Diagnostics of Gear in Operational Conditions G. Peruń and B. Lazarz	108

Preliminary Simulations of High Mobility IED Resistance Suspension with Casting Arms M.J. Łopatka, T. Muszyński, A. Rubiec and P. Sprawka	115
Reliability Model of Motorway Emergency Communication System M. Siergiejczyk	122
Simulating the Impact of Exposure to Corrosive Medium on Cracking Initiation in AW7020M Alloy Specimens W. Jurczak and B. Szturomski	130
Visualization of the Parameters and Changes of Signals Controlling the Operation of Common Rail Injectors S. Wierzbicki and M. Śmieja	136
 II. Automatics	
A Control of Modified Optical Scanning and Tracking Head to Detection and Tracking Air Targets D. Gapiński and K. Stefański	145
Automatically Controlled Anti-Collision Manoeuvre and its Numerical Simulation with Disturbances J. Graffstein	156
Comparison of Single and Multi-Population Evolutionary Algorithm for Path Planning in Navigation Situation Ł. Kuczkowski and R. Śmierczalski	166
Conventional and Fuzzy Force Control in Robotised Machining Z. Hendzel, A. Burghardt, P. Gierlak and M. Szuster	178
Hybrid Expert System for Diagnosing MOS Transistors J. Drabarek	186
Hybrid Position/Force Control in Robotised Machining P. Gierlak	192
Laboratory Control and Measurement System of a Dual-Fuel Compression Ignition Combustion Engine Operating in a Cogeneration System S. Wierzbicki	200
Neuro-Dynamic Programming in Control of the Ball and Beam System A. Burghardt and M. Szuster	206
Optimization-Supported Decision-Making in the Marine Game Environment J. Lisowski	215
Prediction of the Spatial Orientation of a Ship by Means of Neural Networks T. Praczyk and P. Szymak	223
Safe Ship Control Method with the Use of Ant Colony Optimization A. Lazarowska	234
Selected Problems of the Asynchronous Drive Control with the Three-Phase Soft-Start System K. Olesiak	245
System Architecture of Mission Planning and Autonomous Surface Vessel Control Z. Kitowski	252

The Characteristics of the Matrix Game Sensitivity of the Safe Passing of Ships at Sea	
J. Lisowski	258
The Comparison of Parameter Identification Methods for Fractional, Partial Differential Equation	
A. Obrączka and W. Mitkowski.....	265
III. Robotics	
Analysis of Parameters of Traveling Wave Impact on the Speed of Biomimetic Underwater Vehicle	
M. Morawski, M. Malec, P. Szymak and A. Trzmiel.....	273
Low-Cost MEMS Accelerometers for Short Duration Micro ROV Distance Measurement	
B. Zak and S. Hożyń	280
Multiple Unmanned Engineering Machine Management System	
R. Typiak.....	287
Remote Control System for Rescue Robot	
A. Bartnicki, P. Sprawka and A. Rubiec.....	294
Stiffness Evaluation of Fire Rescue Robot Suspension with Hydropneumatic Components	
A. Bartnicki, M.J. Lopatka, T. Muszyński and A. Rubiec.....	301
The Construction of a Biomimetic Mobile Underwater Robot	
M. Giergiel, T. Buratowski, P. Niestój and M. Waclawski	309
The Dynamic Analysis of a Torpedo-Shaped Underwater Vehicle as an Object with Superimposed Nonholonomic Constraints Treated as Control Laws	
E. Ladyżyńska-Kozdraś	320
Thrust Allocation in Propulsion System of Underwater Robotic Vehicle via Linear Programming	
J. Garus.....	326
Keyword Index	333
Author Index	335