

Table of Contents

Preface

v

Chapter 1: Materials, Mechanisms and Energy of Technical Systems and Devices

Analysis of the State of Stress in the Hull of the Ship Kormoran II Loaded with Non-Contact Mine Explosion B. Szturomski, A. Grządziela and R. Kiciński	3
Assessing Energy Efficiency of High Pressure Regenerative Feedwater Heaters in a Heating Unit of a Cogeneration Plant B. Pojawa	14
Cylindrical Gears with Increased Contact Area – Proposal of Application in Watercrafts Power Transmission Systems M. Batsch, T. Markowski and W. Homik	26
Dynamic Characteristics of High Quality Steel in Johnson-Cook’s Model for Fast Processes Simulation in CAE Programs B. Szturomski	31
Dynamic Model of Carbon Fiber Drive Shaft Z. Dąbrowski and P. Deuszkiewicz	39
Exploitation Load Impact on Electrochemical Properties of Shipbuilding 7xxx Series Aluminum Alloy Joints Prepared with TIG and FSW Methods W. Jurczak	53
Simulation Studies of the Effect of Shaft's Nonlinear Flexural Stiffness Parameters for Critical States of Rotating Power Transmission Systems T. Matyja and B. Łazarz	62
State of Stress Analysis for Structural Solutions of Combustion Engine Piston Pins P. Fołęga, R. Burdzik and Ł. Konieczny	70
Temperature as a Source of Information about the Technical Condition Viscous Torsion Damper W. Homik and T. Markowski	78
The Numerical Analysis of Influence of Crankshaft Main Spindles Regeneration in Marine Engine on Stiffness and Eigenfrequency of the Crankshaft J. Merkisz, J. Markowski, J. Kaluzny and R. Roszak	85
The Selection of the Parameters of Laser Beam for Constitution of the Corrosion Resistant Surfaces in Parts of the Rubber Vibration Damper B. Ciecńska, W. Homik and Z. Matuszak	93
Analysis of Power Installed in Ship Power Plants of Offshore Type Vessels A. Adamkiewicz	98
Analysis of the Possibility of Use Lithium - Ion as a Starting Battery on the Ship Engine Room G. Grzeczka and P. Swoboda	106
Simulation Model of Four Stroke, Six Cylinder Marine Diesel Engine M. Kluczyk and A. Grządziela	113

Chapter 2: Control and Robotics

Control-Oriented Model of Biomimetic Underwater Vehicle Motion P. Szymak and T. Praczyk	121
Determination and Display of Safe Ship Trajectories in Collision Situations at Sea J. Lisowski	128
Moving Object Detection, Localization and Tracking Using Stereo Vision System B. Żak and S. Hożyń	134

Chapter 3: Diagnostics of Equipment

Analysis of Action Viscous Torsional Vibration Damper of the Crankshaft Based on Transverse Vibration the Engine Block J. Dziurdź and R. Pakowski	145
Application of a Continuous Wavelet Transform for the Diagnosing of Excessive Valve Clearance of the Combustion Engine T. Figlus and A. Wilk.....	153
Application of HFRT Methods to Diagnose the Technical Condition of High-Speed Marine Diesel Engines T. Lus	161
Characteristics Determination of LM-2500 Naval Gas Turbine in Aspect of Energy Modeling and Simulations B. Pojawa	169
Concept of Engine Vibration Monitoring System R. Burdzik, P. Fołęga, Ł. Konieczny and J. Młynczak.....	180
Energy Loss and the Choice of Damper of Torsional Vibration Combustion Engines M. Zawisza.....	188
Identification of Engine Operation States Using Advanced Signal Analysis Methods Ł. Konieczny, R. Burdzik, P. Fołęga and J. Młynczak.....	196
Influence of the Instantaneous Angular Speed (IAS) of Marine Diesel Engine on its Indication Results M. Lutowicz and D. Cuper-Przybylska	204
Problems of Mathematical Modeling of the Marine Diesel Engine Working Cycle for the Diagnostic Purposes A. Cwalina, T. Kniaziewicz and M. Zacharewicz	212
The Choice of Vibroacoustic Signal Measures in Mechanical Fault Diagnosis of Diesel Engines Z. Dąbrowski and M. Zawisza	220
Toothed Gear Dynamic Model as a Tool for Assist Diagnosis its Technical Condition G. Peruń	228

Chapter 4: Environment Protection Engineering

Analysis of Economic Costs and Environmental Benefits of LNG as the Marine Vessel Fuel	
M. Pawlak	239
Analysis of Gaseous Degradation Products Occurring during Biomass-to-Liquid Processes	
E. Rostek	247
Mathematical Description of the Trajectory of Vessel Motion in Order to Determine Emission of Harmful Compounds in Exhaust Gases	
T. Kniaziewicz and A. Załęska-Fornal	258
Keyword Index	269
Author Index	271