

# CONTENTS

## MACHINE SCIENCE

**Polishchuk M.M., Rolik O.I.**

DRONE FOR MAINTENANCE OF LARGE DIAMETER PIPES.....1

## MATERIAL PROCESSING IN MECHANICAL ENGINEERING

**Kazymyrenko Yu.O., Lebedieva N.Yu., Dovzhenko D.V., Ryzhenko M.S., Baiunov A.O.**

FORMATION OF THE FRAME STRUCTURE OF PRESSES COPPER POWDER AND SHAVINGS...8

## INDUSTRIAL ENGINEERING

**Gaponova O.P., Tarelnyk N.V.**

RESEARCH OF STRUCTURE AND TRIBOLOGICAL PROPERTIES OF MoS<sub>2</sub> COATINGS  
OBTAINED BY ELECTRO-SPARK ALLOYING METHOD.....13

## EQUIPMENT

**Romanyuk V.A., Starodubtsev S.O.**

ASSESSMENT OF THE INFLUENCE OF THERMOPHYSICAL PROPERTIES  
OF THE COVERING MATERIAL OF UAVS ON THE EFFICIENCY OF LASER DEVICES.....22

## RADIO ENGINEERING AND TELECOMMUNICATIONS

**Kononova I.V., Nekrutenko V.I.**

MODEL OF THE INFORMATION PATH OF A SPECIAL-PURPOSE COMMUNICATION  
NETWORK WITH REAL EQUIPMENT RELIABILITY.....27

**Korchynskiy V.M.**

OPTIMIZATION OF THE BANDWIDTH OF RASTER IMAGE TRANSMISSION CHANNELS.....33

**Manko O.O., Kharlai L.O., Konovalov O.Yu., Nikiforenko K.B., Sotnichenko Yu.O., Vakas V.I.**

INCREASING THE EFFICIENCY OF OPTICAL CRYPTOGRAPHY USING PASSIVE  
OPTICAL ELEMENTS.....38

## INFORMATICS, COMPUTER ENGINEERING AND AUTOMATION

**Behlov Ya.I., Tarakhtii O.S.**

COMPARISON OF EXTREME PYROLYSIS PLANT CONTROL SYSTEMS.....45

**Bogza M.S., Voloshchuk V.A.**

APPLICATION OF MACHINE LEARNING METHODS  
IN THE PROBLEMS OF MODELING THE DYNAMICS OF THERMAL POWER PLANTS.....52

**Vasylenko V.M., Vakaliuk T.A.**

ARTIFICIAL INTELLIGENCE IN PROJECT MANAGEMENT: ANALYSIS  
OF MODERN RESEARCH AND DEVELOPMENT PROSPECTS.....60

**Vdovychyn T.Ya., Bilyy R.T.**

GOOGLE SITES DIGITAL TOOL FOR E-PORTFOLIO CREATION.....68

**Dromenko V.B., Lisovets S.M.**

FEATURES OF SOFTWARE ENGINEERING IN THE DEVELOPMENT OF SYSTEMS  
WITH ELEMENTS OF ARTIFICIAL INTELLIGENCE.....74

**Zabolotnyi O.V., Siroklyn V.P., Nikulin S.S.**

DEVELOPMENT OF A HARDWARE-SOFTWARE COMPLEX FOR COMBAT  
QUADCOPTERS TESTING: IMPROVING RELIABILITY AND EFFICIENCY  
IN MODERN MILITARY TECHNOLOGY.....83

**Zylevich M.O., Zaichenko V.D.**

DEVELOPMENT OF AN ATMOSPHERIC AIR CONDITION MONITORING SYSTEM.....91

<b>Karpenko M.I., Chumachenko S.M., Moshenskyi A.O., Guida O.G.</b> CHOOSING THE OPTIMAL DATABASE FOR CREATING A SOFTWARE AND HARDWARE COMPLEX FOR THE DETECTION OF DANGEROUS SUBSTANCES.....	98
<b>Kyrychenko O.L., Kyrychenko O.O.</b> THE UTILIZATION OF AWS APPSYNC FOR REAL-TIME WEB APPLICATION COMMUNICATION ...	105
<b>Kysil A.Yu.</b> METHODOLOGY FOR IMPLEMENTING MACHINE ANALYSIS SYSTEMS OF GRAPHICAL DATA IN MILITARY OPERATIONS.....	111
<b>Krymska A.O.</b> THE KEY ROLE OF POLYGRAPH EXAMINATIONS IN INFORMATION SECURITY MANAGEMENT STRATEGIES IN ECONOMIC SECTORS.....	118
<b>Levkivskiy V.L., Marchuk D.K., Panarina I.V., Kuzmenko A.V.</b> MODELING AND SOFTWARE IMPLEMENTATION OF A HEALTH MONITORING SUBSYSTEM..	123
<b>Legeza V.P., Neshchadym O.M.</b> A TWO-FACTOR OPTIMIZATION CRITERION AND ITS IMPLEMENTATION IN THE PROBLEM ABOUT BRACHISTOHRON ON A TRANSCENDENT SURFACE.....	128
<b>Lysenko O.I., Tachynyna O.M., Furtat S.O., Furtat O.V.</b> METHODOLOGY OF ALGORITHMIC MODERNIZATION OF DIGITAL ELECTRIC DRIVES OF MECHATRONIC DEVICES OF SMALL CIVIL AVIATION.....	135
<b>Oleshchenko L.M., Burchak P.V.</b> SOFTWARE SYSTEM ARCHITECTURE DEVELOPMENT FOR INTELLIGENT ANALYSIS OF WEB APPLICATION PERFORMANCE METRICS.....	141
<b>Pavlenko V.D., Ilutsa A.S., Gidulian V.I.</b> A PLATFORM FOR CLOUD COMPUTING IN NEUROPHYSIOLOGICAL RESEARCH BASED ON EYETRACKING DATA.....	151
<b>Pakhomova V.M., Starikov D.I.</b> DESIGN OF A DATABASE OF MEDICINES, WHICH FORMS THE BASIS OF AN INFORMATION RETRIEVAL SYSTEM.....	161
<b>Petrosian R.V.</b> ALGORITHM FOR CALCULATING THE VOLTAGE FREQUENCY IN A THREE-PHASE POWER SYSTEM BASED ON DIGITAL FILTERS.....	168
<b>Pundyk V.I.</b> SOFTWARE SYSTEMS DEVELOPMENT IN THE CONTEXT OF CLOUD TECHNOLOGIES USING THE DEVOPS METHODOLOGY AND AGILE DEVELOPMENT.....	175
<b>Regeda I.O., Reheda V.O.</b> KEY ISSUES IN THE USE OF BIG DATA IN INFORMATION SYSTEMS AT THE CURRENT STAGE OF DEVELOPMENT.....	182
<b>Sikora O.V., Pazyuk R.I.</b> GAME TECHNOLOGIES IN INCREASED QUALITY EDUCATION OF COMPUTER SCIENCES...	188
<b>Solomchak O.V., Solomchak A.O.</b> MEASUREMENT OF HIGHER HARMONICS OF CURRENTS AND VOLTAGE AT POINTS OF COMMON CONNECTION OF DISTRIBUTION ELECTRICAL NETWORKS.....	194
<b>Statsenko D.V., Statsenko V.V., Zlotenko B.M., Demishonkova S.A.</b> APPLICATION OF MACHINE LEARNING MODELS TO OPTIMIZE MANAGEMENT OF RENEWABLE ENERGY SOURCES INTELLIGENT NETWORKS.....	202
<b>Tarnovetska O.Yu., Osadchuk R.R.</b> RESEARCH OF INTERACTION METHODS BETWEEN SERVICES IN MICROSERVICE SOFTWARE ARCHITECTURE.....	208
<b>Khambir V.R.</b> ANALYZING PROJECT MANAGEMENT METHODS IN SOFTWARE DEVELOPMENT.....	218
<b>Shkarupylo V.V., Dusheba V.V., Zaiko T.A., Shkarupylo V.V., Skrupsky S.Yu.</b> INDUCTIVE APPROACH TO SOFTWARE AND ALGORITHMIC COMPONENT FORMALIZED REPRESENTATIONS CONSTRUCTION AT DESIGN.....	224

## POWER ENGINEERING

<b>Bovsunovsky A.P., Nosal O.Yu.</b> FEATURES OF VIBRATION DIAGNOSTICS OF TURBINE BLADES DAMAGE .....	230
<b>Bovsunovsky O.A., Nosal O.Yu.</b> DIAGNOSTICS OF TURBINE ROTORS DAMAGE AT THE REPAIR STAGE.....	238
<b>Habovda O.V.</b> STUDY OF THE CONCEPT UNDERLYING THE OPERATION OF BLADELESS WIND GENERATORS.	246
<b>Peshko V.A., Konovaliuk O.L.</b> CHARACTERISTIC FEATURES OF THE TEMPERATURE FIELD FORMATION IN THE TURBINE ROTOR DURING THE START-UP MODE OF OPERATION.....	254
<b>Ryndyuk D.V., Bednarska I.S.</b> MODELING OF STEAM GAS DYNAMICS IN MAIN PIPELINES OF NUCLEAR POWER PLANTS....	260
<b>Shakhbazov I.O., Siryi O.A.</b> MATHEMATICAL MODELING OF THE HYDROGEN-CONTAINING FUEL COMBUSTION PROCESS IN A DIRECT FLOW BURNER WITH ROUND SECTION.....	265
<b>Sheleshei T.V., Bednarska I.S., Panchenko K.A., Fedoruk R.O.</b> ANALYSIS OF MODERN METHODS OF COMBATING NITROGEN OXIDES IN GAS BOILERS...	271

## CHEMICAL TECHNOLOGY

<b>Kindzera D.P., Hosovskyi R.R.</b> APPLICATION OF SUNFLOWER STEMS' PITH FOR THE PRODUCTION OF THERMAL INSULATION MATERIALS.....	276
<b>Melnyk L.I., Sviderskyi V.A.</b> POLYMER COMPOSITE MATERIAL BASED ON PEARLITE.....	281
<b>Frolova L.A., Mandryka A.G., Rodin D.O., Nikitin M.O., Frolov O.O.</b> STRUCTURAL AND MAGNETIC PROPERTIES OF MODIFIED COBALT FERRIT NANOPARTICLES.....	288

## TECHNOLOGY OF FOOD PROCESSING AND CONSUMER GOODS INDUSTRY

<b>Pavliuk S.K., Sukha I.V.</b> ECOLOGICAL ASPECTS REGARDING PACKAGING: THE PROBLEM OF PET PACKAGING, AND ITS DISPOSAL.....	292
---	-----

## TRANSPORT

<b>Bykovets N.P.</b> ANALYSIS OF TRAFFIC ON THE DANUBE RIVER IN PRESENT CONDITIONS.....	297
<b>Boiko S.M., Kotov O.B., Zhukov O.A., Koval A.M., Rykov G.Yu., Lapina O.S.</b> RELEVANCE AND FEATURES OF IMPLEMENTATION OF RENEWABLE SOURCES OF ELECTRICAL ENERGY IN THE CONDITIONS OF RAILWAY TRANSPORT.....	303
<b>Gurch L.M., Maistruk V.O.</b> CURRENT STATE AND PROSPECTS OF DEVELOPMENT OF THE TRANSPORT AND LOGISTICS SYSTEM IN UKRAINE IN THE POST-WAR PERIOD.....	308
<b>Pavlovska L.A., Korobkova O.M., Shpak N.G.</b> FORMATION OF THE INFRASTRUCTURE FRAMEWORK OF THE DIESEL FUEL DELIVERY SCHEME IN FLEXI-TANKS UNDER THE CONDITIONS OF MARTIAL LAW.....	314
<b>Turpak S.M., Ostrohliad O.O., Vasylieva L.O., Kharchenko T.V., Tretyak V.I.</b> ECONOMIC ANALYSIS OF LIMESTONE DELIVERY BY DIFFERENT TYPES OF RAILWAY ROLLING STOCK.....	321
<b>Fomin O.V., Prokopenko P.M., Fomina A.M., Gunko E.V.</b> RESEARCH OF THE STRENGTH OF THE WAGON MODEL 918 AND THE POSSIBILITY OF CONVERSION (WITH THE INTRODUCTION OF COMPOSITES) FOR THE TRANSPORTATION OF BULK CARGO.....	327

<b>Fomin O.V., Kozynka O.S., Fomina A.M., Lisnychyi V.S.</b> APPLICATION OF SOFT POLYMER COATINGS FOR LOAD-BEARING COMPONENTS OF ROLLING STOCK.....	332
---	-----

## **CONSTRUCTION**

<b>Arinushkina N.S., Hryshchenko T.M.</b> USE OF FOAMED BITUMEN IN EXECUTION VEHICLE CONSTRUCTION AND REPAIR WORKS ROADS.....	337
---	-----

<b>Kostin D.Yu., Arinushkina O.O., Tetera V.S., Sun D.</b> THE INFLUENCE OF THE INITIAL RAW MATERIAL GENESIS ON THE FROST RESISTANCE OF CEMENT STABILIZED AGGREGATE MIXTURES.....	342
---	-----

<b>Savchenko O.V., Nizhnyk V.V., Savchenko T.O.</b> PROGRAM AND METHOD OF EXPERIMENTAL RESEARCH OF THE INFLUENCE OF FIRE PROTECTION SYSTEMS ON INDIVIDUAL FIRE RISK.....	348
--	-----

## **GEODESY**

<b>Pilicheva M.O.</b> EXISTING APPROACHES TO PRICING IN THE SPHERE OF LAND MANAGEMENT.....	354
---	-----

## **ELECTRONICS**

<b>Burkovskiy Ya. Yu., Zinkovsky Yu.F.</b> SIMPLIFIED SHUNT BANDWIDTH CHARACTERIZATION GENERATOR FOR WIDE BANDGAP POWER CONVERTERS.....	359
---	-----

<b>Tomashevskiy R.S., Vasylichuk D.P., Zaluzhna H.V., Semenets D.A.</b> METHOD FOR MEASURING PARAMETERS OF THE EQUIVALENT ELECTRICAL CIRCUIT OF A PIEZORESONANT SENSOR BASED ON ZERO PHASE FREQUENCY MEASUREMENTS....	366
---	-----

INFORMATION ABOUT AUTHORS.....	373
--------------------------------	-----