

International Conference on Actual Issues of Mechanical Engineering (AIME 2018)

Advances in Engineering Research Volume 157

Novosibirsk, Russia
19-21 April 2018

Editors:

**B.V. Malozyomov
E.G. Porsev
N.V. Martyushev**

ISBN: 978-1-5108-7061-1

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by Atlantis Press
All rights reserved.
<http://www.atlantis-press.com/php/pub.php?publication=aime-18>

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact the publisher:

Atlantis Press
Amsterdam / Paris

Email: contact@atlantis-press.com

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

IMPROVING THE DESIGN OF POPPET VALVE IN PISTON MUD PUMP	1
<i>Rima Yavdatovna Abdyukova</i>	
RANGE OF APPLICATION OF THE BROOKS-COREY MODEL FOR APPROXIMATION OF CAPILLARY CURVES IN RESERVOIRS OF WESTERN SIBERIA	5
<i>Rasul Tukhbatulloev Akhmetov, Vyacheslav Vyacheslavovich Mukhametshin</i>	
OPTIMIZING CYCLES OF ADSORPTION SEPARATION OF GAS MIXTURES	9
<i>A.I. Akulinin, D.S. Dvoretzky, O.O. Golubyatnikov, S.I. Dvoretzky, S.A. Skvortsov</i>	
EXERGETIC ANALYSIS OF COMPRESSOR CHARACTERISTICS USING COMPUTER MODELING	16
<i>Gennady Valentinovich Alexeev, Aleksey Petrovich Savelev, Sergey Aleksandrovich Romanchikov, Igor Iosifovich Bridenko</i>	
DEVELOPING THE TECHNOLOGY OF NON-STATIONARY TREATMENT THROUGH THE EXAMPLE OF THE DEPOSIT OF SEVERNYYE BUZACHI	23
<i>Elvira Maratovna Almukhametova</i>	
KINEMATIC ANALYSIS OF ROBOTIC COMPLEX WITHIN THE SOLIDWORKS MOTION SYSTEM	27
<i>Sergey Igorevich Anciferov, Elena Vladimirovna Gaponenko, Leonid Sergeevich Kulakov</i>	
ENERGY EVALUATION OF PRODUCTION IN AGRO-INDUSTRIAL COMPLEX	32
<i>Leonid Andreev, Vladimir Yurkin</i>	
STATISTICAL MODEL OF CENTIMETER RANGE SIGNALS THAT HAVE PASSED THE SURFACE AND SPACE PROPAGATION PATH	38
<i>Alexey S. Anikin</i>	
RELIABILITY-BASED DESIGN ALGORITHM FOR ARTIFICIALLY REPLACED HIP PROSTHESIS CONSIDERING MATERIAL PROPERTY UNCERTAINTY	44
<i>Kharmanda Ghias, Antypas Imad Rezakalla</i>	
METHOD OF TEMPERATURE MEASUREMENT IN CUTTING ZONE WHILE TURNING USING PORTABLE CLASS THERMAL IMAGING SYSTEM	51
<i>I.V. Anukhin, S.A. Lyubomudrov, V.I. Anukhin, N.V. Nikitkov</i>	
TREND OF APPLICATION OF AUTOMATED WELDING PROCESS OF COLD METAL TRANSFER IN STRUCTURES MADE OF ALUMINUM ALLOY	56
<i>I.E. Arzhannikova, N.Z. Sultanov</i>	
SWIRLING DEVICES INTENDED FOR USE IN AIR DUCTS OF DUST EMISSIONS CLEANING SYSTEMS	60
<i>I.V. Stefanenko, V.N. Azarov, D.P. Borovkov, I.V. Polyakov</i>	
DETERMINING PARAMETERS OF ELECTRIC POWER UNIT FOR LIGHT AIRCRAFT	65
<i>Dmitry Bakholdin, Valery Biryukov, Lyudmila Tolstobrova</i>	
NON-DESTRUCTIVE TESTING APPLICATION FOR DIAGNOSIS OF LONG-RUNNING CIVIL AND INDUSTRIAL FACILITIES UNDER SPECIAL CLIMATIC CONDITIONS	70
<i>Mikhail A. Bandurin, Vladimir V. Vanzha, Victor A. Volosukhin, Alexander V. Mikheyev, Yakov V. Volosukhin</i>	
INFLUENCE OF MICRODAMAGE STRUCTURE ON FATIGUE RESISTANCE OF METAL FUNCTIONAL MATERIAL	76
<i>Maria Bartolomey, Dmitriy Boyarshinov, Sergei Batin, Mikhail Gitman, Vladimir Oborin</i>	
STRUCTURAL DIAGRAMS AND BASIC DESIGN RELATIONSHIPS FOR THE CALCULATION OF ROAD SAFETY INDICATORS	81
<i>Anatoly Pavlovich Bazhanov</i>	
DESIGN OPTIMIZATION OF MACHINE ACCESSORIES THROUGH ANALYSIS OF THEIR ELEMENTS DEFORMATION IN NX NASTRAN	85
<i>M. V. Nekhoroshev, K. A. Bezsonov, A. V. Meshcheryakov, A. P. Shulepov</i>	
RISK-ORIENTED APPROACH TO PROBLEM OF CENTRIFUGAL PUMPS RELIABILIZATION DURING OPERATION	90
<i>Marina Aleksandrovna Bikmukhametova, Rimma Borisovna Tukaeva, Anton Timurovich Bikmukhametov</i>	
PROPERTIES OF NARROW-GAP SOLID SOLUTIONS OF NEAR INFRARED BAND OPTOELECTRONIC DEVICES	95
<i>A.V. Blagin, N. A. Nefedova, V.V. Nefedov</i>	
RESEARCH OF OVERALL PERFORMANCE OF POLYMERIC SPRINKLER OF COOLERS	100
<i>Evgeni Vladimirovich Boev, Nina Ivanovna Boeva, Rustem Rifovich Daminev, Oleg Khasanovich Karimov</i>	

PLASMA-CHEMICAL MODIFICATION OF CONCRETE	105
<i>Diana Olegovna Bondarenko, Nadezda Ivanovna Bondarenko, Vasilii Stepanovich Bessmertnyi, Valeria Valerievna Strokova</i>	
SPACE CONNECTION INVESTIGATION OF FUNCTIONALLY DEPENDENT KNOTS IN ROTATING ASSEMBLIES	111
<i>Julia Anatolievna Bondarenko, Mikhail Alexeyevich Fedorenko, Tamara Mikhailovna Sanina</i>	
ASSESSMENT OF EFFICIENCY OF ASBESTOSCEMENT DUST COLLECTION BY DUST COLLECTORS WITH COUNTERCURRENT SWIRLING FLOWS	117
<i>V.N. Azarov, I.V. Stefanenko, R.A. Burkhanova</i>	
SIMULATION DESIGN OF MANUFACTURING PROCESSES AND PRODUCTION SYSTEMS	124
<i>Mikhail K. Chernyakov, Maria M. Chernyakova, Kamal Ch. Akberov</i>	
UTILIZATION OF EXPERT SYSTEMS FOR SCREW PUMP SETS WITH SURFACE DRIVE MANAGEMENT	129
<i>Alexander Yurievich Davydov</i>	
INFLUENCE OF POSITION OF MOVING PARTS OF LATHE ON DYNAMIC CHARACTERISTICS	134
<i>Alexander Denisenko</i>	
SUBMINIATURE EDDY CURRENT TRANSDUCERS FOR STUDYING ALUMINIUM-DIELECTRIC AND STEEL-DIELECTRIC JUNCTIONS	139
<i>Sergey Dmitriev, Vladimir Malikov, Anatoly Sagalakov, Alexander Katasonov, Alexey Ishkov</i>	
ULTRASOUND METHOD OF LI-ION ELECTRIC BATTERY MONITORING	145
<i>Vladimir Gaponov, Dmitry Kuznetsov, Vitali Dudnik, Nadezda Afanasieva</i>	
AUTOMATION CONTROL SYSTEM AGAINST DRIVER FALLING ASLEEP IN TRAFFIC	150
<i>Ilya S. Dymov, Denis A. Kotin, Roman E. Derevyanko</i>	
DEVELOPMENT AND RESEARCH OF AERODYNAMIC STAND	155
<i>Y.F. Davydov, E.A. Asangaliev, M.V. Dudkin, A.E. Erulanova, A.D. Daurenov</i>	
ACCURACY ESTIMATION OF MILL PIN MACHINING WITH DESK-SIDE TOOLS	160
<i>Julia Anatolievna Bondarenko, Tamara Mikhailovna Sanina, Olga Vasilyevna Bestuzheva</i>	
OIL REFINERY PLANNING MULTI-PROJECTS UNDER UNCERTAINTY	164
<i>Tatiana Gaibova, Sergei Vasil'evich Lesnyak, Alexey Romanovich Lebedev, Vladimir Ilyich Kravchenko</i>	
FUNDAMENTALS OF POSITIVE FEEDBACK WITH ADDITIONAL CONTROL	169
<i>Maksim Dmitrievich Gavrilenko</i>	
OPTIMAL DISTANCE BETWEEN WELLS IN SAGD BASED ON MATERIAL BALANCE METHOD	174
<i>A.Ya. Gilmanov, A.P. Shevelev</i>	
AUTOMATIC CONTROL SYSTEM FOR ION-EXCHANGE SORPTION IN INDUSTRIAL PRODUCTION OF AMINO ACIDS AS BIOPROTECTIVE FACTORS	179
<i>Inna Pugacheva, Irina Glotova, Nadezhda Galochkina, Larisa Molokanova, Sergey Shakhov, Natalia Lobacheva, Igor Saranov</i>	
INVESTIGATION OF POLYMER INTERACTION WITH NANOSCALE MODIFIER AND DEVELOPMENT OF ITS IDENTIFICATION ALGORITHM	187
<i>Maksim Gudkov, Irina Glotova, Sergey Shakhov, Inna Pugacheva, Nadezhda Galochkina, Stanislav Bokadarov, Natalia Lobacheva</i>	
OPTIMIZING THE POSITIONING OF POWER SOURCES IN INDUSTRIAL UNITS ELECTRICAL POWER SYSTEMS ON THE BASIS OF THE METHOD OF DISTRIBUTED POWER DENSITY	193
<i>Vladimir Goryachev, Aleksey Grishko, Nikolay Yurkov, Tatyana Brostilova, Sergey Brostilov, Igor Kochegarov, Alexey Lysenko</i>	
DEVELOPMENT OF INFORMATION-ANALYTICAL SYSTEM FOR TECHNOLOGICAL REQUESTS MONITORING, TAKING INTO ACCOUNT REGIONAL SPECIFICS	198
<i>Aleksandr Nikolaevich Grechukhin, Mikhail Sergeevich Razumov, Daria Vasilevna Kudelina, Ivan Sergeevich Anikutin, Alexander Sergeevich Byshkin</i>	
DOWNHOLE DEVICE DESIGN AND RESULTS OF ITS UTILIZATION UNDER ACID-IMPLOSION ACTION	203
<i>Olga Anatolyevna Grezina</i>	
THEORETICAL INVESTIGATION OF FORCE ACTING DURING FLANGING OF ANISOTROPIC SHEET MATERIALS	207
<i>Mikhail Vasikievich Gryazev, Sergey Nikolaevich Larin, Andrey Aleksandrovich Pasyukov</i>	
PECULIARITIES OF PROBLEM SOLVING AT STUDYING WELL DRILLING WITH THE USE OF LINEAR DIFFERENTIAL EQUATIONS WITH CONSTANT COEFFICIENTS	211
<i>Galia Rashitovna Igtisamova, Donier Shukurilloevich Nosirov</i>	
SINGLE-PHASE AC RECTIFIER WITH HIGH POWER FACTOR	215
<i>Vladlen Ivanov, Pavel Lisitsyn, Sergei Myatez, Andrei Kapustin, Irina Alekseeva</i>	

STRUCTURAL SYNTHESIS AS METHOD OF ZONE-PHASE CONTROLLER MODERNIZATION	220
<i>Vladlen Ivanov, Andrei Kapustin, Sergei Myatez, Evelina Langeman, Irina Alekseeva</i>	
NUMERICAL SIMULATION OF INERT SOLID-PHASE THREE- COMPONENT MIXTURES SUBJECTED TO EXPLOSIVE COMPACTION	225
<i>Sergey Zelepugin, Oksana Ivanova, Aleksandr Yunoshev</i>	
TECHNOLOGIES AND TECHNICAL DEVICES FOR ANNUAL REGULATED FLOODING OF A PRODUCTIVE STRATA	232
<i>Ramzis Rakhimovich Kadyrov, Lubov Sergeevna Kuleshova, Irik Galikhanovich Fattakhov</i>	
COMPARATIVE ANALYSIS OF ANTIFRICTION POLYMERS BEHAVIOUR UNDER DEFORMATION OF SPHERICAL BEARING	236
<i>Anna Kamenskikh, Maria Bartolomey</i>	
RESEARCH OF ELECTRICAL POWER PROCESSES FOR OPTIMUM MODELING AND DESIGN OF SPECIAL ELECTRIC DRIVES	242
<i>V.Yu. Karandey, O.B. Popova, B.K. Popov, V.L. Afanasyev</i>	
HEAT EMISSION COEFFICIENTS OF A COMBINED OIL SEPARATOR	248
<i>Bagaudin Khamidovich Gaitov, Lev Efimovich Kopelevich, Yakov Mikhailovich Kashin, Vladislav Anatolievich Kim</i>	
PROMISING CONVERTERS OF WIND AND SOLAR ENERGY INTO ELECTRIC ENERGY FOR ELECTROTECHNICAL COMPLEXES	255
<i>Yakov Mikhailovich Kashin, Mikhail Sergeevich Khristoforov, Alexander Valeryevich Samorodov, Vladislav Anatolievich Kim</i>	
PROMISING ELECTROMECHANICAL AXIAL CONVERTERS	262
<i>Bagaudin Khamidovich Gaitov, Alexander Valeryevich Samorodov, Lev Efimovich Kopelevich, Alexey Alexandrovich Sharshak</i>	
IMPULSE NON-STATIONARY FLOODING OF HYDROCARBON DEPOSITS	266
<i>Marat Yakhievich Khabibullin</i>	
CHOICE OF BOTTOM-HOLE FILTER CONSTRUCTION FLUID FILTRATION	272
<i>Marat Yakhievich Khabibullin, Rustem Iskhakovich Suleimanov</i>	
LABORATORY STUDIES FOR THE MOMENTUM OF LIQUID OPTIMAL IMPACT ON HYDROCARBON FORMATION	276
<i>M. Ya. Khabibullin, L. Z. Samigullina, L. Z. Zainagalina</i>	
EXPRESS METHOD OF INJECTION WELL TREATMENT	280
<i>M. Ya. Khabibullin, R. I. Suleimanov, E. R. Vasilyeva</i>	
INTENSIFICATION OF DRYING PROCESS OF WHEAT SEEDS BASED ON DIFFERENTIATION OF THERMAL ENERGY SUPPLY	284
<i>Anatoly Sergeevich Kizurov, Sergei Nikolaevich Kokoshin</i>	
ABOUT SOME APPROACHES TO PROBLEM OF METALS AND ALLOYS MICROSTRUCTURES CLASSIFICATION BASED ON NEURAL NETWORK TECHNOLOGIES	292
<i>R. Klestov, A. Klyuev, V. Stolbov</i>	
THEORETICAL STUDIES OF EQUILIBRIUM OF DISC COULTER COUNTER WITH ADAPTIVE SUSPENSION	297
<i>Sergei Nikolaevich Kokoshin, Anatoly Sergeevich Kizurov</i>	
COMPUTE METHODS FOR ASSESSMENT OF GAS DISTRIBUTION NETWORKS	301
<i>L A Kushev, A Y Feoktistov, Y G Ovsyannikov, M R Kondrasheva, M A Shvydkaya</i>	
STRUCTURAL AND MECHANICAL PROPERTIES OF ASPHALT MIXTURES - BASIS FOR RATIONING OF THEIR TECHNOLOGICAL PROPERTIES	304
<i>E.V. Kotlyarskiy, S. Yu. Andronov, Zh. N. Kadyrov, V.I. Kochnev, Yu. Em. Vasiliev, A. V. Kochetkov</i>	
DEPENDENCE OF SURFACE ROUGHNESS ON TECHNOLOGICAL CONDITIONS OF ULTRASONIC SMOOTHING	309
<i>V.I. Malygin, L.V. Kremleva, N.S. Oblovatskaya, N.V. Lobanov</i>	
INFLUENCE OF END WOODCUTTERS DESIGN ON THE VIBRATION LEVEL AND SURFACE ROUGHNESS	314
<i>V.I. Melekhov, L.V. Kremleva, D.A. Luzhansky, V. A. Slutskov, T. V. Tyurikova</i>	
DISTRIBUTION OF PRESSURE OF GAS UNDER ACTION OF CENTRIFUGAL FORCES	319
<i>V.V. Krokhal, V.Yu. Klyukin, E.V. Sorokina</i>	
SYNTHESIS OF FULL ORDER OBSERVER FOR VECTOR CONTROL SYSTEM OF INDUCTION MOTOR DRIVE	325
<i>Ekaterina S. Kucher</i>	
SYSTEM ANALYSIS OF ENERGY EFFICIENCY AT OIL AND GAS INDUSTRY ENTERPRISES	331
<i>A. V. Kulbyakina, N.A. Ozerov</i>	

DETERMINATION OF ELECTROCHEMICAL GENERATOR POWER IN COMBINED TRANSPORT POWER PLANT	336
<i>Kirill I. Kulikov, Nikolai I. Schurov, Mikhail V. Yaroslavtsev, Evelina G. Langeman</i>	
FEATURES OF SETTINGS REGULATION OF PROTECTION DC TRACTION NETWORKS	340
<i>S.M. Kuznetsov, B.V. Malozyomov</i>	
CALCULATED MODEL OF WEDGE-SHAPED SLIDING SUPPORTS IN TURBULENT FRICTION REGIME.....	346
<i>Kamil Samedovich Akhverdiev, Elena Olegovna Lagunova, Igor Vladimirovich Kolesnikov, Murman Aleksandrovich Mukutadze</i>	
ANALYSIS OF WORKPIECE GEOMETRY CHANGE DURING ISOTHERMAL FREE DEFORMATION OF TITANIUM ALLOYS IN SQUARE DIE	354
<i>Sergey Nikolaevich Larin, Valeriy Ivanovich Platonov, Yuliya Vyacheslavovna Bessmertnaya</i>	
INFLUENCE OF ELASTIC STRAINS ON ZONE ENERGY DIAGRAM OF IN1 – XGAXAS/GAAS HETEROSTRUCTURE.....	358
<i>L.S. Lunin, V.V. Nefedov</i>	
USE OF FINITE-ELEMENT SIMULATION OF PRIMARY DEFORMATIONS WITHIN WALLS OF DISCHARGE TUNNEL TO PRESENT ANTHROPOGENIC DISASTERS	363
<i>Taras L. Lyapota, Vladimir V. Vanzha, Mikhail A. Bandurin, Victor A. Volosukhin, Alexander V. Mikheyev</i>	
DETERMINATION OF DIAGNOSTIC PARAMETERS AND RELIABILITY PARAMETERS OF ELECTRICAL SYSTEMS	368
<i>B.V. Malozyomov</i>	
A POSTERIORI ANALYSIS OF THE SOCIO-ECONOMIC POTENTIAL OF RURAL AREAS.....	376
<i>B.V. Malozyomov, M.E. Vilberger</i>	
INNOVATIVE PROTECTION SYSTEMS FOR ELECTRIC TRACTION NETWORKS.....	381
<i>B.V. Malozyomov</i>	
DIGITAL PROTECTION SYSTEMS IN DC NETWORKS.....	386
<i>B.V. Malozyomov, M.E. Vilberger</i>	
INNOVATIVE STATE SUPPORT FOR ECONOMY OF RURAL AREAS AS URBAN SATELLITES	392
<i>B.V. Malozyomov</i>	
EFFICIENCY DETERMINATION OF AMPLITUDE DECAY OF PRESSURE FLUCTUATION OF CIRCULATING FLUID WITH THE HELP OF A MULTI-STAGE PISTON-TYPE DOWNHOLE COMPENSATOR.....	397
<i>Timur Nailevich Minnivaliev</i>	
TABULAR REPRESENTATION OF CONTROL ACTION IN ACTIVE POWER DISTRIBUTION UNITS FOR AC RAILWAYS	401
<i>Pavel V. Morozov, Yury V. Morozov</i>	
TECHNIQUE OF ENGINEERING STRUCTURES STRENGTH ANALYSIS TAKING INTO ACCOUNT DAMAGEABILITY OF MATERIALS DURING CREEP.....	406
<i>A.V. Belov, A.A. Polivanov, E.V. Morozova, N.G. Neumoina</i>	
CALCULATION OF GAS ABSORPTION PROCESS CONSIDERING THERMAL EFFECTS	412
<i>N.G. Neumoina, E.V. Morozova, A.V. Belov, A.A. Polivanov</i>	
METHOD OF OPTIMAL PARAMETERS CONTROL IN THREEPHASE SEPARATOR USING FUZZY CONTROLLER	418
<i>E.A. Muravyova, M.I. Sharipov</i>	
PRODUCTION LINE INTENDED FOR IMPLEMENTATION OF INNOVATIVE TECHNOLOGIES OF CLEANING AND FRACTIONATION OF RAW CORIANDER.....	424
<i>Sergey Kyazimovich Mustafayev, Tatyana Vladimirovna Pelipenko, Alexander Nikolayevich Drozdov, Ekaterina Aleksandrovna Kalienko</i>	
ORGANIZATION OF FODDER PRODUCTION BASED ON SUNFLOWER SEED WASTE.....	429
<i>Sergey Kyazimovich Mustafayev, Evgeniy Olegovich Smychagin</i>	
DEFECTOSCOPY OF CONDUCTIVE STRUCTURES	435
<i>A.V. Myatezh, B.V. Malozyomov</i>	
PROSPECTS FOR USE OF LITHIUM-ION BATTERIES IN TRANSPORT SYSTEMS.....	441
<i>A.V. Myatezh, A.A. Shtang, B.V. Malozyomov</i>	
MAXIMUM ENERGY IN ELECTROMAGNETIC MODULE VOLUME	447
<i>V.Yu. Neyman</i>	
DYNAMICAL MODEL OF SYNCHRONOUS IMPACT ELECTROMAGNETIC DRIVE.....	451
<i>V.Yu. Neyman, L.A. Neyman</i>	
APPROXIMATE DESIGN OF CYCLIC ELECTROMAGNETIC DRIVE WITH RESPECT TO PERMISSIBLE HEATING CONDITION.....	456
<i>V.Yu. Neyman, A. V. Markov</i>	

ELECTROMECHANICAL VIBRATORY IMPACT SYSTEMS WITH KINETIC ENERGY LOSSES	461
<i>V.Yu. Neyman, A. V. Markov</i>	
IMPULSE ELECTROMAGNETIC DRIVE FOR MAGNETIC ENERGY ACCUMULATION PRESS.....	466
<i>V.Yu. Neyman, A. V. Markov</i>	
GEOMETRICAL SIMILARITY CRITERION FOR ELECTROMAGNETIC DRIVES MAGNETIC SYSTEMS WITH RESPECT TO PERMISSIBLE HEATING CONDITION.....	471
<i>V.Yu. Neyman, L.A. Neyman, A.S. Shabanov</i>	
MODELING OF THERMAL INTERACTION BETWEEN BURIED PIPELINE AND ICY SOILS.....	475
<i>M.V. Nikolaeva, G.P. Struchkova, R.A. Atlasov</i>	
FUNCTIONAL-ORIENTED TECHNOLOGICAL PROCESSES OF ELECTROEROSIVE PROCESSING	480
<i>S.Yu. Syanov, A.M. Papikyan</i>	
DESIGN-BALLISTIC ANALYSIS OF A MISSION FOR ACTIVE REMOVAL OF SPACE DEBRIS FROM GEOSTATIONARY ORBIT	485
<i>V.G. Petukhov, A.A. Vnukov</i>	
DEEP ELECTROOSMOSIS TECHNOLOGY FOR OIL FIELDS.....	490
<i>E.G. Porsev, B.V. Malozyomov</i>	
INNOVATIVE TECHNOLOGY OF SEED TREATMENT BY ELECTRIC CORONA DISCHARGE.....	496
<i>E.G. Porsev, B.V. Malozyomov</i>	
SYNTHESIS OF ADVANCED ELECTROKINETIC TECHNOLOGIES IN AGROECOSYSTEMS.....	504
<i>E.G. Porsev, B.V. Malozyomov</i>	
TECHNOLOGICAL PROCESS OF HIGH-SPEED HEAT TREATMENT OF CORROSION-RESISTANT 36NKHTYU ALLOY USED IN PRODUCTION OF PRECISION ELASTIC ELEMENTS	509
<i>A.V. Prokhorov, S.I. Dumanskij, I.O. Dumanskij</i>	
MATHEMATICAL MODEL OF DUST COLLECTION PROCESS IN APPARATUS WITH COUNTER-SWIRLING FLOWS IN ASPIRATION SYSTEMS	516
<i>I.V. Stefanenko, T.V. Solovyova, V.N. Azarov, T.A. Kislenko, A. M. Redhwan</i>	
CONVERGING OF ANALYTICAL SOLUTION OF PILE UNDER HORIZONTAL STATIC LOAD WITH ANALYSIS THROUGH FINITE ELEMENT METHOD	520
<i>V.V. Pshenichkina, S.I. Strok, V.V. Drozdov, K.N. Suhina, M.H. Alkneume</i>	
COMPREHENSIVE MOBILE CRANE CONTROL AND SAFETY SYSTEM.....	524
<i>A.V. Red'kin, P.A. Sorokin, N.N. Trushin, N.G. Grinchar</i>	
OPTIMIZATION OF PRODUCTION PROCESS OF MANUFACTURING PARTS USING SIMULATION MODELING OF APERTURE	529
<i>I V Revina, G N Boyarkin</i>	
FORMING C/CU COMPOSITE ON SURFACE OF STRUCTURAL CHROME-NICKEL STEEL BY ION BEAM DEPOSITION	535
<i>Igor V. Rodionov, Lyubov E. Kuts, Irina V. Perinskaya</i>	
OPTIMIZATION OF THE WORKING AREA OF MODULES FOR RELATIVE MANIPULATION BY THE METHOD OF NON-UNIFORM COVERING.....	541
<i>Elena Vladimirovna Gaponenko, Larisa Alexandrovna Rybak, Dmitriy Ivanovich Malyshev</i>	
METHOD OF WORKPIECE GROUP'S CREATION AND SELECTION OF PARTS REPRESENTATIVES IN DIGITAL MANUFACTURING	547
<i>Andrey Kutin, Mikhail Sedykh, Sergey Ivashin</i>	
INCREASE EFFICIENCY OF BRAKING ENERGY IN METRO	553
<i>Elena M. Shabanova, Valeriy V. Biryukov</i>	
INFORMATIVITY OF TRANSIENT PROCESSES ACCOMPANYING HYDRODYNAMIC WELL SURVEY.....	558
<i>Albert Amirzyanovich Shakirov</i>	
DETERMINING THE ECONOMIC FEASIBILITY OF HYDRAULIC FRACTURING IN A LOW-PERMEABILITY FORMATION AREA.....	562
<i>Alsu Fagimovna Shakurova, Aigul Fagimovna Shakurova</i>	
TIME-TESTED RELIABILITY OF ASPHALT CONCRETES ON SLAG AGGREGATES	566
<i>Yuriy Vitalievich Shtephan, Boris Aleksandrovich Bondarev</i>	
QUANTITATIVE RISK ASSESSMENT OF ENGINEERING SLAG ASPHALT MIXES FOR URBAN HIGHWAYS	570
<i>Yuriy Vitalievich Shtephan, Boris Aleksandrovich Bondarev</i>	

MODELLING ELEMENT OF CHIPS IN ROTARY MILLING BY EXPERIMENT PLANNING METHOD	574
<i>V.G. Shalamov, S.D. Smetanin, A.V. Plaksin</i>	
SIMULATION SYSTEM FOR OPTIMIZING TECHNICAL AND ORGANIZATIONAL VARIANTS IN COALMINING PRODUCTION	579
<i>Vasilyi Valentinovich Sinoviev, Petr Igorevich Nikolaev, Aleksey Nikolaevich Starodubov, Igor Sergeevich Kuznetsov, Vladimir Pavlovich Kravtsov</i>	
ANALYSIS OF AXIAL FORCES OF HEAVY-DUTY HARMONIC GEAR DRIVE	584
<i>V N Strelnikov, M G Sukov</i>	
ENERGY EFFICIENT TRACTION ELECTROTECHNICAL COMPLEX AT VARIOUS VOLTAGES OF POWER SOURCES	590
<i>Daria Strelnikova, Valentin Sopov, Oksana Marmuleva</i>	
EFFECT OF TRANSVERSE COMPRESSION ON WEB-CRUSHING STRENGTH OF REINFORCED CONCRETE I-SHAPED BEAMS	595
<i>V.P. Pochinok, E.V. Greshkina, M.A. Tamov, M.M. Tamov</i>	
DEVELOPMENT OF COMPLEX OF MATHEMATICAL MODELS AT PRODUCTION STAGES OF MULTILAYER STRUCTURES OF SPHERICAL SHAPE BY POLYMERIZATION METHOD	601
<i>V.N. Kozlov, A.I. Akimov, I.A. Akimov, V.V. Tugov, V.A. Urban</i>	
STATE AND TRENDS OF DEPRECIATION STRATEGY OF ROCKET AND SPACE INDUSTRY ENTERPRISES FORMATION	607
<i>Andrei Anatolievich Boyko, Vadim Sergeevich Tynchenko, Vladislav Viktorovich Kukartsev, Ilnar Rafinatovich Nasyrov, Viktor Alekseevich Kukartsev</i>	
PHENOMENON OF SOCIAL ADAPTATION IN MODERN SOCIO- ECONOMIC CHANGES IN SOCIETY	612
<i>V. V. Vikhman, M. V. Romm, M.E. Vilberger</i>	
ADAPTATION OF INDUCTIVE ENERGY STORE ON DIESEL RAILWAY LOCOMOTIVE	618
<i>M.E. Vilberger, B.V. Malozyomov, V.V. Zhulovyan, I.S. Demidenko</i>	
SYNCHRONIZATION AND MANAGEMENT OF MATERIAL FLOWS IN SMALL-SCALE PRODUCTION	622
<i>A Vozhakov, M Gitman, V Stolbov</i>	
PERFORMANCE ANALYSIS OF SURFACE REDUCING GEAR OF ROD DRIVEN SCREW PUMP WITH INVOLUTE GEARING AND NOVIKOV GEARING	627
<i>Kh. N. Yagafarova, I. G. Arslanov, R. A. Teregulov</i>	
RESEARCH OF AIR NOISE LEVELS CREATED IN DIESEL SHUNTING LOCOMOTIVE'S CABIN	631
<i>Ivan A. Yaitskov</i>	
THEORETICAL SUBSTANTIATION OF RESOURCE-SAVING SYSTEM OF RECYCLE AIR CLEARING	635
<i>Leonid Andreev, Vladimir Yurkin</i>	
DETERMINING OSCILLATING SYSTEM DYNAMIC PARAMETERS OF A NEAR-BIT JUNK PULPER	642
<i>Lyaisan Zulfarovna Zainagalina, Mavlitzyan Sagityanovich Gabdrakhimov, Rustem Iskhakovich Suleimanov, Marat Yakhievich Khabibullin</i>	
DEVELOPMENT OF PREPROCESSOR OF SIGMA SOFTWARE FOR COMPUTER SIMULATION IN AEROSPACE ENGINEERING	646
<i>Yury I. Dimitrienko, Andrey A. Zakharov</i>	
STRENGTH ANALYSIS OF EK-18 EXCAVATOR BUCKET CONSTRUCTION FOR MOUNTING OF ANTI-ADHESIVE DEVICES	653
<i>S. Zenkov</i>	
Author Index	