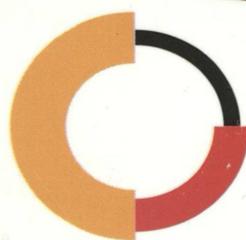


**17th INTERNATIONAL MULTIDISCIPLINARY
SCIENTIFIC GEOCONFERENCE
SGEM 2017**

**CONFERENCE PROCEEDINGS
VOLUME 17**

Energy and Clean Technologies

Issue 43



RECYCLING

**AIR POLLUTION AND CLIMATE CHANGE
MODERN ENERGY AND POWER SOURCES**

**17th INTERNATIONAL MULTIDISCIPLINARY
SCIENTIFIC GEOCONFERENCE
S G E M 2 0 1 7**

**CONFERENCE PROCEEDINGS
VOLUME 17**



**ENERGY AND CLEAN TECHNOLOGIES
ISSUE 43**

RECYCLING

**AIR POLLUTION AND CLIMATE CHANGE
MODERN ENERGY AND POWER SOURCES**

**27 – 29 November, 2017
Vienna, Austria**

HOFBURG Congress Centre

DISCLAIMER

This book contains abstracts and complete papers approved by the Conference Review Committee. Authors are responsible for the content and accuracy.

Opinions expressed may not necessarily reflect the position of the International Scientific Council of SGEM.

Information in the SGEM 2017 Conference Proceedings is subject to change without notice. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of the International Scientific Council of SGEM.

Copyright © SGEM2017

All Rights Reserved by the International Multidisciplinary Scientific GeoConferences SGEM
Published by STEF92 Technology Ltd., 51 "Alexander Malinov" Blvd., 1712 Sofia, Bulgaria
Total print: 5000

ISBN 978-619-7408-28-7

ISSN 1314-2704

DOI: 10.5593/sgem2017H/43

**INTERNATIONAL MULTIDISCIPLINARY SCIENTIFIC GEOCONFERENCE SGEM
Secretariat Bureau**

E-mail: hofburg@sgemviennagreen.org

URL: www.sgemviennagreen.org

ORGANIZERS AND SCIENTIFIC PARTNERS

- THE CZECH ACADEMY OF SCIENCES
- LATVIAN ACADEMY OF SCIENCES
- POLISH ACADEMY OF SCIENCES
- RUSSIAN ACADEMY OF SCIENCES
- SERBIAN ACADEMY OF SCIENCES AND ARTS
- SLOVAK ACADEMY OF SCIENCES
- NATIONAL ACADEMY OF SCIENCES OF UKRAINE
- INSTITUTE OF WATER PROBLEM AND HYDROPOWER OF NAS KR
- NATIONAL ACADEMY OF SCIENCES OF ARMENIA
- SCIENCE COUNCIL OF JAPAN
- THE WORLD ACADEMY OF SCIENCES (TWAS)
- EUROPEAN ACADEMY OF SCIENCES, ARTS AND LETTERS
- ACADEMY OF SCIENCES OF MOLDOVA
- MONTENEGRIN ACADEMY OF SCIENCES AND ARTS
- CROATIAN ACADEMY OF SCIENCES AND ARTS, CROATIA
- GEORGIAN NATIONAL ACADEMY OF SCIENCES
- ACADEMY OF FINE ARTS AND DESIGN IN BRATISLAVA
- TURKISH ACADEMY OF SCIENCES
- NIZHNY NOVGOROD STATE UNIVERSITY OF ARCHITECTURE AND CIVIL ENGINEERING, RUSSIAN FEDERATION
- BULGARIAN ACADEMY OF SCIENCES
- BULGARIAN INDUSTRIAL ASSOCIATION
- BULGARIAN MINISTRY OF ENVIRONMENT AND WATER

INTERNATIONAL SCIENTIFIC COMMITTEE

Ecosystems Energy and Clean Technologies

- PROF. JEFFREY L. COLLETT, USA
- PROF. GIULIANO DALL'O', ITALY
- PROF. DR. PINJING HE, CHINA
- PROF. CASIMIRO PIO, PORTUGAL
- PROF. DSC KOSTADIN GANEV, BULGARIA

- PROF. DSC DIMITER SYRAKOV, BULGARIA
- PROF. DR. CHRISTOS S. ZEREFOS, GREECE
- PROF. DR. TERCIO AMBRIZZI, BRAZIL
- PROF. DSC SERGEY GANDZHA, RUSSIA
- PROF. DR DIMITER IVANOV, DSC, BULGARIA
- ASSOC. PROF. PETER FRIGAARD, DENMARK

CONFERENCE PROCEEDINGS CONTENTS

SECTION RECYCLING

1. ABOUT A POSSIBILITY OF PROCESSING OF TECHNOGENIC WASTE WITH USE OF THE NEW EQUIPMENT AND FLOTOREAGENT, Semushkina L., Kenzhaliyev B., Turisbekov D., Tussupbayev N., Narbekov S., Institute of Metallurgy and Ore Beneficiation, Kazakhstan.....	3
2. APPRAISAL OF MUNICIPAL SOLID WASTE RECYCLING CHALLENGES IN SOUTH AFRICA: A CASE STUDY OF LIMPOPO PROVINCE, Ntavheleni Virginia Mudau, Tabukeli Musigi Ruhiiga, University of Venda, South Africa	11
3. ASSESSMENT OF PRODUCTION OF COPPER CONCENTRATE FROM TECHNOGENIC RAW MATERIALS, Assoc. Prof. Dr. Symbat Dyussenova, Bagdaulet Kenzhaliyev, Gulnar Abdykirova, Asemgul Sugurbekova, Zhanna Ramazanova, Institute of Metallurgy and Ore Beneficiation, Kazakhstan	19
4. BREWER'S SPENT YEAST AS A POTENTIAL STIMULATIVE AGENT IN RYE PLANTLETS, Leahu Ana, Lobiuc Andrei, Oroian Mircea, Ghinea Cristina, Damian Cristina, Stefan cel Mare University of Suceava, Romania	27
5. CHALLENGES OF THE INFORMATION SYSTEM SUPPORTING WASTE MANAGEMENT IN A CIRCULAR ECONOMY, Dr Marek Szafraniec, Silesian University of Technology, Poland.....	35
6. COLD WASTE ASPHALT RECYCLING USING FLY ASH, CATIONIC EMULSIONS AND NATURAL AGGREGATED ADDED, Senior Lecturer Phd Loredana Judele, Senior Lecturer Phd Daniel Lepadatu, Lecturer Phd Andrei Boboc, Lecturer Ana Raluca Rosu, Senior Lecturer Iulian Cucos, Technical University of Iasi, Romania.....	43
7. COMBUSTION WASTE LANDFILL SITES AS ALTERNATIVE SOURCES OF RARE EARTH ELEMENTS, Barbara Bialecka, Magdalena Cempa, Joanna Calus Moszko, Central Mining Institute (GIG), Poland.....	51
8. ENVIRONMENTAL ASPECTS OF REE RECOVERY TECHNOLOGY FROM SECONDARY SOURCES IN NEW KANKBERG AND COVAS, Ryszard Kozakiewicz, Katarzyna Grzesik, Karolina Kossakowska, AGH University of Science and Technology, Poland	59
9. CONCEPTION OF WASTE MANAGEMENT AND REGENERATION OF POST-INDUSTRIAL LAND IN EXAMPLE OF MINING RESIDUES DUMPING GROUNDS, Jaroslaw Brodny, Silesian University of Technology, Poland	67

10. EVALUATING THE EFFICIENCY OF RARE EARTH ELEMENTS RECOVERY FROM TAILINGS USING ENVIRONMENTALLY FRIENDLY METHODS , Assoc. Prof. Dr. Catalin-Gabriel Borcia, Ph.D. student Laurentiu-Valentin Soroaga, Prof. Dr. hab. Romeo-Iulian Olariu, Dr. Valentin Nica, Lecturer Dr. Mitica Pintilei, Alexandru Ioan Cuza University, Romania	75
11. IMMOBILIZATION OF ARSENIC AND IRON FROM ACID DRAINAGE WATERS BY USING REAGENT , Olga Saeva, Natalya Abrosimova, Nataliya Yurkevich, Svetlana Bortnikova, Tatyana Kuleshova, Trofimuk Institute of Petroleum Geology and Geophysics of Siberian Branch RAS, Russia	83
12. THE IMPACT OF A BIOLOGICAL WASTE COLLECTION STRATEGY ON TOTAL GREENHOUSE GAS EMISSIONS IN NORTH-EASTERN POLAND , Maciej Neugebauer, University of Warmia and Mazury in Olsztyn, Poland	91
13. KINETIC MODELLING OF HYDROLYZED LIGNIN PYROLYSIS USING THERMAL ANALYSIS , T.R. Musin, M.A. Varfolomeev, A.V. Gerasimov, M.V. Kok, Kazan (Volga Region) Federal University, Russia.....	99
14. MICROWAVE PYROLYSIS TREATMENT OF SEWAGE SLUDGE: PERFORMED AT LABORATORY AND FULL-SCALE CONDITIONS , Dr. Jakub Racek, Prof. Andrea G. Capodaglio, Ing. Jan Sevcik, Dr. Tomas Chorazy, Prof. Petr Hlavinek, Brno University of Technology Faculty of Civil Engineering, Czech Republic	107
15. LIFE CYCLE ENVIRONMENTAL IMPACTS OF ROMANIAN BEER PRODUCTION , Cristina Ghinea, Ana Leahu, Stefan cel Mare University of Suceava, Romania	115
16. MEASURING PRODUCT MATERIAL CIRCULARITY - A CASE OF AUTOMOTIVE INDUSTRY , Dr. Agnieszka Janik, Dr. Adam Ryszko, Silesian University of Technology, Poland.....	123
17. OPTIMIZATION OF LOGISTICS OF MUNICIPAL WASTE TRANSPORT IN REGIONAL FORMULATION , Ph. D. Eng. Waldemar Parkitny, Cracow University of Technology, Poland.....	131
18. PREDICTION OF THE DEVELOPMENT OF LONG TERM DEFORMATIONS IN DEPOSIT BODIES , Assoc. Prof. Dr. Eng. Miroslav Georgiev Todorov, Prof. Dr. Eng. Vladimir Ivanov Kostov, University of Architecture Civil Engineering and Geodesy, Bulgaria	139
19. PRELIMINARY MYCOREMEDIATION EVALUATION OF WASTE ASH FROM THERMAL POWER PLANT UTILISING THE OYSTER MUSHROOM , Dr. Martin Pavlik, Dr. Danica Krupova, RNDr., Dr. Lucia Ungvarska Malucka, Martin Pavlik, Martin Rajtar, Technical University in Zvolen, Slovakia	147

20. PROJECT MANAGEMENT AND CONFLICT POTENTIALS IN THE RECYCLING SECTOR IN DEVELOPING COUNTRIES, Prof. Dr. Ibrahim Krasniqi, Prof. Ass. Dr. Vehbi Ramaj, University Haxhi Zeka - Peja, Kosovo.....	155
21. PROJECT-BASED APPROACH TO THE IMPLEMENTATION OF LOW-WASTE TECHNOLOGY AT THE MINING COMPANIES, Prof. Dr. in Economics T. V. Ponomarenko, Assoc. Prof. PhD in Economics M. A. Nevskaya, Assoc. Prof. PhD in Economics. O. A. Marinina, Saint-Petersburg Mining University, Russia	163
22. RECOVERY OF SAWDUST, RECYCLED RUBBER PARTICLES AND TEXTILE WASTE BY MAKING SOUND ABSORBING MATERIALS, Ancuta-Elena Tiuc, Timea Gabor, Ioana Monica Sur, Daniela-Roxana Tamas-Gavrea, Horatiu Vermesan, Technical University of Cluj-Napoca, Romania	171
23. RECYCLING OF GOLD-BEARING ABOVE-ORE ROCKS WITHIN TERRIGENOUS CARBONIFEROUS FORMATION, Akhmetova K.Sh., Kenzhaliyev B.K., Dyusenova S.B., Efremov S.A., Nechipurenko S.V., Institute of Metallurgy and Ore Beneficiation, Kazakhstan.....	179
24. RECYCLING OF NEODYMIUM FROM PERMANENT MAGNETS, prof. Stanislaw Pietrzyk, PhD Piotr Palimaka, PhD Michal Stepien, MSc Andrzej Piotrowicz, AGH - University of Science and Technology, Poland.....	189
25. THE STUDY OF BENEFICIATION OF MANGANESE-CONTAINING RAW MATERIALS, PhD, Dr. Gulnar Abdykirova, Gulnara Toilanbay, Symbat Dyussenova, Erzhan Kuldeyev, Institute of Metallurgy and Ore Beneficiation, Kazakhstan	197
26. ROLE OF ECOLOGISTICS IN THE MANAGEMENT SYSTEM OF ENERGY WASTE, Monika Stepien, Barbara Bialecka, Karolina Jaderko, Central Mining Institute (GIG), Poland	205
27. SCREENING LIFE CYCLE ASSESSMENT OF RARE EARTH ELEMENTS CONCENTRATE PRODUCTION FROM MINING WASTE, COVAS, PORTUGAL, Karolina Kossakowska, Katarzyna Grzesik, Ryszard Kozakiewicz, AGH - University of Science and Technology, Poland	213
28. TESTING OF THE INFLUENCE OF RECLAIMED ASPHALT PAVEMENT AND MANUFACTURE WASTE ASPHALT SHINGLES ON THE PROPERTIES OF ASPHALT CONCRET, Dr. Eng. Piotr Zielinski, Cracow University of Technology-Faculty of Civil Engineering, Poland.....	221
29. THE EFFECT OF SLAG ADDITION ON THE: MORPHOLOGICAL, CHEMICAL AND MECHANICAL PERFORMANCE OF LOCAL PORTLAND CEMENT COMPOSITES., Ahmad Mousa, Al-Balqa Applied University, Jordan	229

30. THE INDUSTRIAL WASTE MANAGEMENT IN THE EXAMPLE OF AN ENTERPRISE FROM THE WOOD CARPENTRY INDUSTRY, Dorota Palka, Silesian University of Technology, Poland	237
31. THE INTERACTION OF IRON(II) CATIONS WITH CHROMATE ANIONS IN THE PRESENCE OF LIGNOSULFONATES, Prof. Yuriy Khabarov, Viacheslav Veshnyakov, Nikolay Kuzyakov, Galina Pankina, Northern Arctic Federal University, Russia	245
32. THE POSSIBILITY OF USING DIFFERENT TECHNOLOGIES OF ASH RECYCLING RESULTING FROM ENERGY PRODUCTION IN UNDERGROUND MINING EXCAVATIONS., Tomasz Cichy Piotr Banka, Silesian University of Technology, Poland.....	253
33. THE TIME BEHAVIOR OF SELF COMPACTING CONCRETE WITH FLY ASH, Catalin Badea, Politehnica University of Timisoara, Romania	259
34. URBAN RECYCLABILITY: A CREATIVE APPROACH BASED ON FUZZY ASSESSMENT, Marius Pislaru, Silvia Avasilcai, Lidia Alexa, Technical University of Iasi, Romania.....	267
35. VARIABILITY OF RARE EARTH ELEMENTS CONTENT IN ASH AND SLAG DEPOSITED AT A LANDFILL SITE, Barbara Bialecka, Magdalena Cempa, Arkadiusz Bauerek, Joanna Calus Moszko, Central Mining Institute (GIG), Poland...275	
36. WASTE PLANS AND URBAN PLANNING: EXPLOITATION OF MINING HOLES AS LOCATION FOR LANDFILL SITES, Victor Fernandez, Dr. Jorge Loredo, University of Oviedo, Spain	283

SECTION AIR POLLUTION AND CLIMATE CHANGE

37. A GEOSPATIAL APPROACH FOR VULNERABILITY ANALYSIS ON MOSCOW, RUSSIA, Komal Choudhary, Mukesh S. Boori, Alexander Kupriyanov, Samara State Aerospace University, Russia.....	293
38. ANALYSIS OF VARYING LEVELS OF METHANE EMISSIONS FROM COAL MINES IN POLAND, Magdalena Tutak, Silesian University of Technology, Poland	301
39. ASSESSMENT OF ATMOSPHERIC POLLUTION WITH NO₂ AND ITS TREND DUE TO URBAN TRAFFIC IN GALATI, ROMANIA, Paraschiv Spiru, Paraschiv Lizica Simona, Dunarea de Jos University of Galati, Romania.....	309
40. ASSESSMENT OF HEAVY METAL POLLUTION IN SURFACE SOILS OF URBAN AREAS IN BRNO, Assoc. prof. Vladimir Adamec, Dipl. Eng. Pavel Bulejko, Barbora Schullerova, Ph.D., MSc. Lucie Simonikova, Dr. Milan Sanka, Brno University of Technology, Czech Republic	317

41. BATUMI ATMOSPHERIC AIR QUALITY MONITORING BASED ON THEIR CHEMICAL POLLUTERS , Assoc. Prof. Dr. Nino Kiknadze, Assoc. Prof. Dr. Shota Lominadze, Assist. Prof. Dr. Nunu Nakashidze, Assoc. Prof. Dr. Merab Mamuladze, Ph.D. Roberto Rodriguez-Fernandez, Batumi Shota Rustaveli State University, Georgia	325
42. CO₂/N₂ SEPARATION YIELD BY USING MIXED MATRIX MEMBRANES BASED ON MESOPOROUS SILICA IN ORGANIC POLYMER , Marius Miricioiu, Violeta Niculescu, Nadia Paun, Gheorghe Nechifor, National Institute for Research and Development for Cryogenics and Isotopes Technologies - ICSI Rm.Valcea, Romania	333
43. COMPONENT RESEARCH OF INDUSTRIAL DUST PARTICLES EXPOSITION BY ANALYSIS OF MICROSCOPIC IMAGES , A.N. Kokoulin, D.A. Kiryanov, Mihail Tsinker, Perm National Research Polytechnic University, Russia	341
44. CONTRIBUTIONS CONCERNING THE IMPACT ON THE WORKING ENVIRONMENT OF THE FORGE SHOP IN A MACHINE BUILDING PLANT , Conf.dr.ing. Nitoi Dan Florin, Prof.dr.ing. Amza Gheorgh, Prof.dr.ing. Semenescu Augustin, Sef lucr. dr. ing. Amza Zoia, Conf. dr. ing. Chivu Oana Roxana, University Politehnica Of Bucharest, Romania.....	349
45. DEVELOPING CLIMATE CHANGE STRATEGY FOR MOSCOW , E. Gaso, T. Guseva, M. Stepanova, A. Malkov, I. Lomakina, Environmental Industrial Policy Centre, Russia.....	358
46. ECOLOGICAL AND ECONOMIC PROBLEMS OF DEVELOPMENT OF SOCIO-ECONOMIC SYSTEM AT THE MUNICIPAL LEVEL , Assist. Prof. Svetlana Stash, Prof. Dr. Tatiana Makarenko, Prof. Dr. Nataliya Simchenko, Assoc. Prof. Timur Sinelnikov, Southern Federal University, Russia	366
47. ENSURING ENVIRONMENTAL SAFETY AS A GLOBAL AND NATIONAL PROBLEM , Elena V.Vorontsova, Andrey L. Vorontsov, Southwest State University, Russia	373
48. ENVISIONING "CITY OASIS" ON THE URBAN ENVIRONMENT. CLIMATE CHANGE ORIENTED DESIGN FOR AIR PURIFICATION IN BIG CITIES. , Karol G. Kowalski, Krystyna Janusziewicz, West Pommeranian University of Technology, Poland.....	381
49. EXPERIMENTAL RESEARCH ON THE INFLUENCE OF VARIABLE GAS HUMIDITY OF CO₂ / N₂ MIXTURE IN THE CONTEXT OF CO₂ SEPARATION FROM COMBUSTION GASES IN POWER PLANTS ON SELECTIVITY AND OTHER SEPARATION PARAMETERS OF CAPILLARY POLYMER MEMBRANE , Grzegorz Wiciak, Leszek Remiorz, Silesian University of Technology, Poland.....	389

50. HEAVY METAL TOXICITY AND DECONTAMINATION: TARNITA CLOSED MINE POLLUTION CASE , Dr.Marius Zaharia, Prof. Dr.Gabi Drochioiu, Dr. Daria Ilieva, PhD student Alina-Elena Butnariu, Assoc. Prof. Andriana Surleva, Alexandru Ioan Cuza University, Romania.....	397
51. IDENTIFICATION AND FORECAST OF DROUGHT STATUS FOR CLIMATE CHANGE MONITORING , PhD. Vergil Muraru, Math. Petru Cardei, Researcher Raluca Sfiru, PhD. Student Sebastian Muraru, Research Eng. Paula Condruz, INMA Bucharest, Romania	405
52. KEY ASPECTS IN REALIZING A CLIMATE CHANGE ADAPTATION PLAN FOR RURAL AREAS , Cristina Halbac-Cotoara-Zamfir, Rares Halbac-Cotoara-Zamfir, Eugen Teodor Man, Politehnica University of Timisoara, Romania	413
53. KEY PROPERTIES OF COMBUSTION PRODUCTS AND THEIR APPLICATION IN FIRE SAFETY ENGINEERING , Assoc. Prof. Jozef Martinka, Ing. Igor Wachter, Dr. Peter Rantuch, Prof. Karol Balog, Faculty of Material Science and Technology in Trnava STU in Bratislava, Slovakia	421
54. MATHEMATICAL MODELLING OF POLLUTANT DISPERSION IN ATMOSPHERE RESULTING FROM AN ASPHALT MIXTURE PREPARATION PLANT , Mihaela Ilie, Gyorgy Deak, Ana-Maria Anghel, Agnes Keresztesi, Iuliana-Maria Marcus, National Institute for Research and Development in Environmental Protection, Romania.....	429
55. MODELLING OF MIDDLE ATMOSPHERE GLOBAL RESPONSE TO ANTHROPOGENIC CLIMATE CHANGE: IMPACT ON GENERAL CIRCULATION AND AIR COMPOSITION IN MESOSPHERE AND LOWER IONOSPHERE , Dr. Dmitry Kulyamin, Dr. Anna Makarova, D. Mendeleyev University of Chemical technology of Russia, Russia	437
56. NEURO-FUZZY SUPPORT TOOL FOR ECOSYSTEMS MONITORING , Marius Pislaru, Ionut-Viorel Herghiliu, Raluca-Petronela Lazarescu, Lidia-Elena Alexa, Technical University of Iasi, Romania	445
57. NEW PRECIPITATION INDICES FOR MONITORING DROUGHT – AN ANALYSIS OF THE PRECIPITATION REGIMES OF GERMANY AND THE IBERIAN PENINSULA IN THE COURSE OF THE CLIMATE CHANGE , Freya Skierlo, Konrad Miegel, Prof. Dr. J. Jaime Gomez-Hernandez, University of Rostock, Germany	453
58. PSEUDO DESERTIC MINING AREAS FROM BAIA MARE MINING BASIN, ROMANIA , Assoc. Prof. Dr. Eng. Mirela Coman, PhD. Eng. Math. Bogdan Cioruta, Stud. Larisa Muntean, Dipl. Eng. Romulus Ghisa, Technical University of Cluj-Napoca, Romania	461

59. QUALITY OF LIFE IMPROVEMENT THROUGH MONITORING OF ENVIRONMENTAL FACTORS IN CLUJ-NAPOCA, ROMANIA, Cristian Tosa, Dragos Florin Lisman, Ilinca Mirela Beca, Tudor Milchis, Technical University of Cluj-Napoca, Romania.....	469
60. REDUCTION OF GREENHOUSE GASES EMISSIONS - COMPARATIVE STUDY CASE BETWEEN REFRIGERANTS WITH LOW GLOBAL WARMING POTENTIAL, Gratiela Maria Tarlea, Mioara Vinceriu, Ana Tarlea, Technical University of Civil Engineering of Bucharest - Building Services Faculty, Romania.....	477
61. RESEARCHES ON AIR PURIFICATION USING ULTRASONIC FILTERS, Conf. dr. ing. Nitoi Dan Florin, Prof. dr. ing. Amza Gheorghe, Prof.dr.ing. Semenescu Augustin, Conf.dr.. ing. Chivu Oana Roxana, Sef lucr. dr. ing. Amza Zoia, University Politehnica of Bucharest, Romania	483
62. RESULTS TOXIC EFFECTS OF INDUSTRIAL DUST ON ANIMALS, S. Dyussenova, B. Tukbekova, S.Kizatova, G. Serikova, K. Alimshaikhina, Karaganda State Medical University, Kazakhstan.....	491
63. STORAGE OF CARBON DIOXIDE IN LIQUIDATED MINING HEADINGS OF ABANDONED COAL MINES, Jaroslaw Brodny, Silesian University of Technology, Poland	497
64. THE ANALYSIS OF POSSIBILITY OF AIR POLLUTANTS ELIMINATION – A CASE STUDY OF LASER USAGE IN GRINDING, Barbara Ciecińska, Lydia Sobotova, Ireneusz Gagala, Rzeszow University of Technology, Poland	505
65. THE CONTENT OF TOXIC ELEMENTS IN CHARS AFTER THE GASIFICATION OF LIGNITE, Barbara Bielowicz, AGH - University of Science and Technology, Poland	513
66. EFFECT OF NEGATIVE EXTERNALITY ELIMINATION ON TRANSPORT INFRASTRUCTURE PROJECT ASSESSMENT, Assoc. Prof. Jana Korytarova, M.Sc., Michaela Rudolecka, M.Sc., Ph.D., Jan ZACPAL, M.Sc., Brno University of Technology Faculty of Civil Engineering, Czech Republic.....	521
67. THE IDENTIFICATION OF HUMIDITY OF GAS MIXTURE CO₂ / N₂ (SIMULATING THE EXHAUST FUMES) IMPACT ON PROPERTIES OF THE CAPILLARY POLYMER MEMBRANE CO₂ SEPARATION, Grzegorz Wiciak, Silesian University of Technology, Poland	529
68. THE INFLUENCE OF AERIAL EMISSIONS OF CEMENT PRODUCTION ON THE CHEMICAL AND BIOLOGICAL PROPERTIES OF FROZEN FOREST SOILS IN CENTRAL YAKUTIA (EASTERN SIBERIA, RUSSIA), Marina V. Shchelchkova, Tuyara A. Petrova, Gennady G. Boeskorov, North-East Federal University, Russia.....	537

69. THE INFLUENCE OF CHEMICAL COMPOSITION OF ASH ON THE COAL GASIFICATION PROCESS , Barbara Bielowicz, AGH - University of Science and Technology, Poland.....	545
70. THE MODEL OF NEURAL NETWORKS FOR FORECASTING OF DISTRIBUTION OF THE AIR POLLUTION IN THE URBAN AREA , Assoc. Prof. Nina Plugotarenko, Assoc. Prof. Oxana Korotkova, Southern Federal University, Russia	553
71. THE RELATIONSHIP BETWEEN CLIMATIC EXTREMES FROM 2016-2017 IN THE WESTERN ROMANIA , Vlad Dragoslav Mircov, Cristian Nichita, Adalbert Okros, Alma Nicolin, Livia Luminita Barliba, University of Agronomic Sciences and Veterinary Medicine Timisoara, Romania.....	561
72. TOPOGRAPHICAL SURVEY PERFORMED IN VIEW OF CLOSING AND GREENING OF THE DECANTING POND “VALEA SALISTEI”, ABRUD, ALBA COUNTY , Begov Ungur Andreea, 1 Decembrie 1918 University of Alba Iulia, Romania.....	569
73. UNDERSTANDING AND MANIPULATING DROUGHT – A PERMANENT CHALLENGE , Rares Halbac-Cotoara-Zamfir, Politehnica University Timisoara, Romania.....	577
74. URBAN GREEN SPACE MONITORING FOR CLIMATE CHANGE MITIGATION , Assoc. Prof. Dr. Sorin Herban, Assistant Prof. Dr. Clara-Beatrice Vilceanu, Assistant Prof. Dr. Eng. Rares Halbac-Cotoara-Zamfir, Politehnica University Timisoara, Romania	585
75. USING HYPERSPECTRAL AND MULTI-SPECTRAL REMOTE SENSING DATA TO BUILD SPECTRAL LIBRARY FOR LAND COVER CLASSIFICATION IN SAMARA, RUSSIA , Dr. Mukesh Singh Boori, Rustam Paringer, Komal Choudhary, Dr. Alexzander Kupriyanov, Samara State Aerospace University, Russia.....	593

SECTION MODERN ENERGY AND POWER SOURCES

76. AN ANALYSIS OF ELECTRICITY GAINS FROM HORIZONTAL POLYCRYSTALLINE AND VERTICAL MONOCRYSTALLINE PHOTOVOLTAIC INSTALLATIONS UNDER THE REAL-WORLD CONDITIONS OF NORTH-EASTERN POLAND , Maciej Wesolowski, Aldona Skotnicka- Siepsiak, Maciej Neugebauer, Piotr Solowiej, Marcin Tejszerski, University of Warmia and Mazury in Olsztyn, Poland	603
77. ANALYSIS OF THE WORK QUALITY OF DC/AC CONVERTERS IN AN AUTONOMOUS OR QUASI-AUTONOMOUS LIGHTING POINT , Krzysztof Nalepa, Wieslaw Komar, Andrzej Lange, Wojciech Miaskowski, Maciej Neugebauer, University of Warmia and Mazury in Olsztyn, Poland	611

78. BASIC RESEARCH OF BIOMASS INDICATING ITS ENERGY POTENTIAL IN THE ASPECT CARBON DIOXIDE EMISSIONS, Dorothy Koruba, George Piotrowski, Kielce University of Technology, Poland	619
79. COMPARATIVE STRESS ANALYSIS IN A HYDROELECTRIC GENERATOR POLE FIXATION, Aurelia Rusu-Casandra, Florin Baciu, Nicolae Iliescu, Costica Atanasiu, University Politehnica of Bucharest, Romania.....	627
80. DEGREE OF USE OF ALTERNATIVE SOURCES FOR ENERGY PRODUCTION FOR THE ECONOMICAL AIMS IN EU COUNTRIES, Magdalena Tutak, Jaroslaw Brodny, Silesian University of Technology, Poland	635
81. DETETMINATION OF THE HEAT GENERATION OF WOOD PELLETS DURING FLAME AND FLAMELESS COMBUSTION, Ing. Igor Wachter, Doc. Ing. Jozef Martinka PhD., Ing. Peter Rantuch PhD., Ing. Jozef Horvath PhD., Prof. Ing. Karol Balog PhD., Faculty of Material Science and Technology in Trnava STU in Bratislava, Slovakia	643
82. EL HIERRO A FIRST ENERGETICALLY SELF-SUFFICIENT REGION, Grazyna Jastrzebska, Poznan University of Technology, Poland	651
83. ENHANCED ATMOSPHERIC MOISTURE SCAVENGING APPARATUS (EAMSA) POWERED BY PHOTOVOLTAIC (PV) SOLAR SYSTEM, Assoc. Prof. Dr. Tareq S. El-Hasan, Electrical Engineering Department Zarqa University, Jordan	659
84. EXPERIMENTAL MEASUREMENTS AND TRNSYS SIMULATIONS OF ENERGY CONSUMPTION AND ENERGY EFFICIENCY OF HVAC SYSTEMS IN COOLING MODE IN OFFICE BUILDINGS, Assis. Prof. Dr. Marius Adam, Assoc. Prof. Dr. Mihai Cinca, Assoc. Prof. Dr. Olga Bancea, PhD. Eng. Cristian Heredea, Politehnica University of Timisoara, Romania	667
85. EXTENDED DEMAND RESPONSE AS TOOL FOR OPTIMAL MANAGEMENT OF VIRTUAL POWER PLANTS, Assist. Prof. Dr. Dan Jigoria-Oprea, Assoc. Prof. Dr. Constantin Barbulescu, Assoc. Prof. Dr. Gheorghe Vuc, PhD Stud. Maria Mihalcea, Politehnica University Timisoara, Romania	675
86. HEAT EXCHANGER UTILIZATIONS IN WASTEWATER HEAT RECOVERY FOR BUILDINGS: A KEY REVIEW, Timea Gabor, Ancuta Elena Tiuc, Ioana Monica Sur, Iulian Nicolae Badila, Technical University of Cluj-Napoca, Romania.....	683
87. HEAT RELEASE RATE OF VEGETABLE OILS DURING COMBUSTION, Ing. Peter Rantuch, PhD., Ing. Igor Wachter, Ing. Robert Esek, Doc. Ing. Jozef Martinka, PhD., Faculty of Material Science and Technology in Trnava STU in Bratislava, Slovakia	695

88. IMPROVEMENT IN AN ELEMENTARY THERMOACOUSTIC COOLER PERFORMANCE – NUMERICAL APPROACH , M.Sc. Krzysztof Grzywnowicz, Assist. Prof. Leszek Remiorz, Politechnika Śląska, Poland.....	703
89. A SYSTEM FOR MULTIPOINT MEASUREMENT OF WIND PARAMETERS FOR OPTIMIZING THE LOCATION OF SMALL WIND TURBINES , Wojciech Miaskowski, Krzysztof Nalepa, Paweł Pietkiewicz, Grzegorz Zywica, Bartosz Moczulak, University of Warmia and Mazury in Olsztyn, Poland	711
90. PERSPECTIVES ON RENEWABLE ENERGY DEVELOPMENT AS ALTERNATIVE TO CONVENTIONAL ENERGY IN POLAND , PhD Student, MSc. Kinga Stecula, Assoc. Prof. DSc. Eng. Jarosław Brodny, Silesian University of Technology, Poland	717
91. POSSIBILITIES OF RAPESEED CULTIVATION AS BIOENERGETIC CROP UNDER CONDITIONS OF CHEMICALLY DEGRADED SOILS IN RUSSIA , Ivan Vasenev, Irina Andreeva, Evgeniy Koshkin, Miljan Samardzic, Russian Timiryazev State Agricultural University, Russia.....	725
92. PRACTICAL USE OF METHODOLOGICAL FOUNDATIONS IN DESIGNING WIND POWER PLANTS – CASE STUDY , Dr. Katarzyna Midor Dr. Michał Zasadzień, Silesian University of Technology, Poland	733
93. PROJECT FOR THE RECONSTRUCTION OF A SMALL HYDROPOWER PLANT , Krzysztof Nalepa, Wojciech Miaskowski, Maciej Neugebauer, Piotr Solowiej, Michał Palczewski, University of Warmia and Mazury in Olsztyn, Poland	741
94. RENEWABLE ENERGY SOURCES AS AN OPPORTUNITY FOR GLOBAL ECONOMIC DEVELOPMENT , PhD Student, MSc. Kinga Stecula, Assoc. Prof. DSc. Eng. Jarosław Brodny, Silesian University of Technology, Poland.....	749
95. RENEWABLE SOURCES IMPACT ON ELECTRICAL DISTRIBUTION NETWORK OPERATION , Assoc. Prof. Dr. Constantin Barbulescu, Assoc. Prof. Dr. Gheorghe Vuc, Prof. Dr. Stefan Kilyeni, Assist. Prof. Dr. Dan Jigoria-Oprea, Phd Stud. Robert Meszaros, Politehnica University Timisoara, Romania	757
96. SEWAGE SLUDGE ELIMINATING BY CAPITALIZING ON ITS ENERGY POTENTIAL , Chem. Constantinescu Marius, Chem. Bucura Felicia, Dr. Eng. Ionete Roxana, Chem. Zaharioiu Anca, Eng. Ciucure Corina, Prof. Dr. Oancea Simona, National Institute for Research and Development for Cryogenics and Isotopes Technologies - ICSI Rm.Valcea, Romania	767
97. SYSTEM OF PARAMETERS MONITORING AND ENERGY FLOW CONTROL IN THE LED STREET LIGHTING POINT , Krzysztof Nalepa, Wojciech Miaskowski, Michał Smieja, Paweł Pietkiewicz, Maciej Neugebauer, University of Warmia and Mazury in Olsztyn, Poland	775

98. THE DESIGN OF THE LOW-SPEED BRUSHLESS MOTOR FOR THE WINCH WHICH OPERATES IN SEA-WATER , Prof. DSc. Sergey Gandzha, Assoc. Dr. Sogrin Andrey, Assoc. Dr. Martyanov Andrey, Assoc. Dr. Irina Kiessh, Southern Ural State University, Russia	783
99. THE HIGH-SPEED AXIAL GAP ELECTRIC ALTERNATOR IS THE BEST SOLUTION FOR A GAS TURBINE ENGINE , Gandzha Sergey, Kiessh Irina, Southern Ural State University, Russia	791
100. THE IMPACT OF RENEWABLES ON POLISH ENERGY BALANCE – OPPORTUNITIES AND THREATS FOR GREEN ENERGY DEVELOPEMENT , Izabela Jonek-Kowalska, Silesian University of Technology, Poland	797
101. THE IMPACT OF THE ADAPTATION OF CONVENTIONAL ENERGY TO THE REQUIREMENTS OF THE NEW EU EMISSION STANDARDS FOR ENERGY COSTS AND THE STATE OF THE ENVIRONMENT IN POLAND , Dorota Palka, Jaroslaw Brodny, Silesian University of Technology, Poland	805
102. THE PARADIGM SHIFT IN THE GLOBAL ENERGY MARKET: NATURAL GAS DOMINATED , Vladimir G. Kutcherova, Valery V. Bessel, Alexey S. Lopatin, Gubkin University, Russia	813
103. TRANSFORMATION OF A FIXED WEIR INTO A HYDRO-POWER FACILITY , Krzysztof Nalepa, Wojciech Miaskowski, Maciej Neugebauer, Wiesław Komar, Paweł Bzdera, University of Warmia and Mazury in Olsztyn, Poland	821
104. THERMAL UTILIZATION OF SEWAGE SLUDGE IN THE PROCESS OF STEAM CO-GASIFICATION WITH COAL TO HYDROGEN-RICH GAS , Prof. Adam Smolinski Dr Natalia Howaniec, Central Mining Institute (GIG), Poland.....	829
105. UTILIZATION OF METHANE FROM UNDERGROUND COAL MINES ON THE EXAMPLE OF ZEC COMPANY , Marek Borowski, Zbigniew Kuczera, Michał Karch, AGH University of Science and Technology, Poland.....	837
106. V2G AND G2V AS ELEMENTS OF SMART GRID AND THE WAY OF BALANCING ELECTRIC POWER SYSTEM IN POLAND , Maciej Neugebauer, Krzysztof Nalepa, Piotr Solowiej, Wiktoria Stahl, University of Warmia and Mazury in Olsztyn, Poland.....	845