# 2020 7th International Conference on Energy Efficiency and Agricultural Engineering (EE&AE 2020)

**Ruse, Bulgaria**
**12 – 14 November 2020**

**IEEE Catalog Number:** CFP20V95-POD
**ISBN:** 978-1-7281-0363-1

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.**
**All Rights Reserved**

*Copyright and Reprint Permissions*: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number: CFP20V95-POD
ISBN (Print-On-Demand): 978-1-7281-0363-1
ISBN (Online): 978-1-7281-0362-4

**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
E-mail: curran@proceedings.com
Web: www.proceedings.com

**TABLE OF CONTENTS**

**P1. A Virtual Lab for Demonstration of Temperature Measurement Errors Due to Transient Heat Transfer...1**

Boris Evstatiev, Dimitar Trifonov, Nicolay Mihailov, Katerina Gabrovska-Evstatieva, Ivan Beloev

**P2. Increasing energy efficiency of a gas boiler using remote access control...6**

Nikolay Valov, Donka Ivanova, Velina Valova

**P3. Near-time Optimal Control of a System with Quazistationary Switching Line...10**

Donka Ivanova, Nikolay Valov, Maria Popova, Anka Krasteva

**P4. Tilos, an autonomous Greek island thanks to a PV/Wind/Zebra battery plant and a smart Energy Management System...16**

Gilles Notton, Marie-laure Nivet, Cyril Voyant, Jean-Laurent Duchaud, Alexis Fouilloy, Dimitris Zafirakis, John Kaldellis

**P5. Building integrated solar thermal systems: some few successful examples...20**

Gilles Notton, Andrei Damian

**P6. An Experimental Investigation of a Common-rail Diesel Engine with Butanol Additives...24**

Simeon Iliev, Hristo Stanchev, Emil Mitev

**P7. Research of the Combustion Process in a Heat Generator with Ansys Fluent...28**

Dias Umyshev, Iliya Iliev

**P8. Reducing the Toxicity of Diesel Engines Due to Two-Phase Fuel Injection...32**

Iliya Iliev, Abay Dostiyarov, Gulnara Saduakassova, B A Biakhmetov

**P9. Optimization of wind turbine operation in variable wind speed conditions...36**

Cristian Paul Chioncel, Marian Dordescu, Ovidiu Gelu Tirian, Elisabeta Spunei

**P10. Proposed Location and Proposal for Canal Top Solar PV Plant...41**

Fahad Javaid, Zain Islam

**P11. Interactive Methods for Investigating Frequency Modulation Applied in the Educational Process...44**

Ivanka Tsvetkova, Adriana Borodzhieva

**P12. Home Automation System with Raspberry Pi...48**

Nikolay Valov, Irena Valova

**P13. Methodology and Results of the Experiment of The Formation of Nitrogen Oxides in a Powder Torch...53**

Bulbul Ongar, Hristo Beloev, Almagul Mergalimova, N.M. Aitzhanov

**P14. Research of the Formation of Nitrogen Oxides During the Burning of Ekibastuz Coal...57**

Bulbul Ongar, Hristo Beloev, Almagul Mergalimova, G.M. Yergaliyeva

**P15. Computer System for Microclimate Management in Closed Areas of the Post-Minning Galleries and Greenhouses...61**

Mila Ilieva-Obretenova, Nikola Kolev

**P16. Electric Bicycle Design Experiences and Riding Costs...65**

Ventsislav Petkov Keseev

**P17. Influence of a slotted flap gap size on the aerodynamic characteristics of a light aircraft wing at taking off and landing...69**

Ivo Angelov Angelov, Cvetelina Vladimirova Velkova

**P18. The Soil Resistivity Influence on the Electrical Safety in Medium-Voltage Power Grids with a Predominant Cable Part...74**

Marinela Yordanova, Mediha Mehmed-Hamza, Plamen Stanchev

**P19. Some Considerations for the Risk Assessment at Work with Medical Equipment...78**

Marinela Yordanova

**P20. Optimizing the Maintenance of Medical Apparatus...82**

Anton Slavchev Georgiev, Rosen Nikolov Vasilev

**P21. Comparison of Some Variants of Emergency Maintenance Strategy...86**

Anton Slavchev Georgiev, Rosen Nikolov Vasilev

**P22. Maintenance Strategies Where the Moment in Which Next in Line Preventive Repair of the Medical Apparatus Will Begin, is Known in Advance...90**

Anton Slavchev Georgiev, Rosen Nikolov Vasilev

**P23. An Approach to Use Virtual and Remote Labs in Mechatronics Education Based on Cloud Services...94**

Pavel Vitliemov, Daniel Bratanov, Milko Marinov

**P24. Feasibility study of irrigation system with wind generator...98**

Ivan Bachev, Ludmil Stoyanov, Vladimir Lazarov

**P25. Development of Load Cycle of Automotive Alternator...102**

Andrey Puzakov

**P26. Study of Precipitation Influence on the Sizing of PV Installation for Irrigation System...106**

Ludmil Stoyanov, Ivan Bachev, Vladimir Lazarov

**P27. Thermodynamic Parameters of the Extraction of Three Nicotiana Species...110**

Stanislava Tasheva, Vanya Gandova, Venelina Popova, Tanya Ivanova, Albena Stoyanova

**P28. Kinetic Parameters of the Extraction of Tannis from Three Nicotiana Species...114**

Stanislava Tasheva, Vanya Gandova, Venelina Popova, Tanya Ivanova, Albena Stoyanova

**P29. Chemical composition and biological activity of pennyroyal (Mentha pulegium L.) grown in Turkey...118**

Hafize Fidan, Stanko Stankov, Nadezhda Petkova, Stanislava Tasheva, Albena Stoyanova, Ivayla Dincheva, Belgin Cosge Senkal, Hülya Doğan, Tansu Uskutoğlu

**P30. Strawberry anthocyanins copigmentation process investigation at different temperatires with appropriate copigment chlorogenic acid...122**

Ivalina Petrova, Vanya Gandova

**P31. Kinetic parameters investigation at reaction of pigment:copigment complex between quercetin and strawberry anthocyanins...126**

Ivalina Petrova, Vanya Gandova

**P32. Selection of Optimal Configuration for Autonomous Solar-Wind Hybrid System for Household Consumption...130**

Tanya Pehlivanova, Atanas Atanasov

**P33. Studies and Researches Regarding the Influence of the Size of Solid Particles Forming a Heterogenous Mix on the Aerodynamic Separation Process...134**

Emilian Mosnegutu, Alexandra-Dana Chitimus, Narcis Barsan, Dragos Rusu, Mihai Vulpe, Valentin Nedeff, Marcin Jasiński

**P34. Filtration Theory and Techniques. A Short Review on the Filtration Process...138**

Narcis Barsan, Andrei Zaharia, Dana Chitimus, Emilian Mosnegutu, Florin Nedeff, Dragos Rusu, Carolina Untilă, Doina Capsa

**P35. Influence of Soil Fertilization Systems and Crop Rotation on Physical and Chemical Properties of the Soil...144**

Alexandra-Dana Chitimus, Narcis Barsan, Emilian Mosnegutu, Alina Corobana, Valentin Nedeff, Oana-Maria Muscalu (Plescan), Elena Partal

**P36. Monitoring the quality of services provided in a telecommunication network by analyzing the statistics of PPPoE packets...149**

Ayan Zhunussov, Alimjan S. Baikenov, Diana Ilieva

**P37. Study of the options for joining decentralized electricity generation to the power distribution grid...153**

Stefka Nedeltcheva, Misho Matsankov, Mehmed Hassan

**P38. Development of the Information System Based on BigData Technology to Support Endocrinologist-Doctors...157**

Assel Mukasheva, Teodor Iliev, Gani Balbayev

**P39. Assesment of sound pressure levels using experimental and numerical modelling of a complex office space...161**

Horatiu Dragne, Tiberiu Catalina, Andrei Damian

**P40. Validation and ordering test for an formula of soil tillage draft force, extended to the dependence on soil moisture...166**

Petru Cardei, Sebastian Muraru, Cornelia Muraru, Raluca Sfiru

**P41. Air Source Heat Pump Performance Evaluation Based on Experimental measurements and Neural Network...170**

Talpiga Mugurel Florin, Iordache Florin

**P42. Public transport in Bacau City...174**

Claudia Tomozei, Mirela Panainte-Lehadus, Oana Irimia, Florin Nedeff

**P43. Design and Study of an Automotive Thermoelectric Generator...178**

Kaloyan Ivanov, Anatoliy Aleksandrov

**P44. Simulation of the performance of wireless radio controlled fire protection system...182**

Filip Tsvetanov, Martin Pandurski, Ivanka Georgieva, Grigor Mihaylov

**P45. The influence of solar-shading systems on an office building cooling load...186**

Andrei Damian, Razvan-Gabriel Filip, Tiberiu Catalina, Rodica Frunzulică, Gilles Notton

**P46. Statistical analysis of energization and reenergization overvoltages in overhead transmission line 220 kV...190**

Margreta Vasileva, Danail Stanchev

**P47. Switching transients in overhead transmission line 220 kV...194**

Margreta Vasileva, Danail Stanchev

**P48. Sensitivity and Selectivity of Time Overcurrent Relay Protection in Medium Voltage Power Lines...198**

Mediha Mehmed-Hamza, Plamen Stanchev

**P49. Coordination of the Time Overcurrent Relay Protection Settings in Medium Voltage Electric Power Grids...202**

Mediha Mehmed-Hamza, Plamen Stanchev

**P50. Development of an innovative agricultural tool for farmers who use manual labor in crop production...206**

Ivan Voiku

**P51. Investigation the Influence of the Active Resistance Value in the Neutral and the Transient Resistance of Earth Faults in Medium Voltage Electrical Grids...210**

Mediha Mehmed-Hamza, Plamen Stanchev

**P52. Analysis of the Influences of the Electromagnetic Field Produced by an Electrified Railway Section...214**

Constantin Daniel Oancea, Florin Calin, Valentin Golea

**P53. IoT in Agriculture: Irrigation Monitoring and Control System Example...220**

Radosveta Sokullu

**P54. Sustainable option to reduce by-side impact of agricultural growth on hydropower plants efficiency...224**

Carmen Mateescu, Dorian Marin

**P55. New design of a flame-tube steam generator based on a hot water boiler burning agricultural waste...228**

Lucian Mihăescu, Gabriel Negreanu, Ionel Pîșă, Viorel Berbece, Gheorghe Lăzăroiu, Emil Enache

**P56. Study of Multi-stage Peltier Module in Generator Mode...232**

Kaloyan Ivanov, Ivaylo Belovski, Anatoliy Aleksandrov

**P57. Electric Vehicles Driving Cost and Competitiveness...236**

Ventsislav Petkov Keseev

**P58. Modelling and evaluation of electromagnetic field of urban high-voltage power line...240**

Atanas G. Chervenkov

**P59. Modelling and Simulation of Big Data Networks...244**

Elena Ivanova, Teodor Iliev, Ivaylo Stoyanov

**P60. Environmental Management: Global Threats and Key Determinants...248**

Anzhelika Chepelenko

**P61. Energy efficiency of intermittent drying regimes of carrot...252**

Mariya G. Georgieva, Atanas I. Tashev, Dimitar G. Atanasov

**P62. Design of technical systems by functional–structural analysis...256**

Aneliya Manukova-Marinova

**P63. An approach to developing a monitoring and control of pollution from industrial processes...260**

Aneliya Manukova-Marinova, Kamen Kostadinov Krastev

**P64. Determination of the heat convection coefficient by CFD simulation of heat transfer processes at forced convection...264**

Seher Yusnieva Kadirova, Zhivko Dimitrov Kolev

**P65. Analysis of the possibilities of using a sulfur-free solid fuel at CET Deva-Romania...268**

L. Mihaescu, T. Prisecaru, I. Pisa, E. Pop, G. Negreanu, V. Berbece, A. Adam, C. Mandrean

**P66. A Software Tool for Accuracy Evaluation of Calculated Similarity Factors between Papers and Reviewers...272**

Yordan Kalmukov

**P67. Model Reference Adaptive Control for Steering Application of Agriculture Machines...277**

Alexander Mitov, Tsonyo Slavov, Jordan Kralev, Ilcho Angelov

**P68. Modelling and Optimizing the Tool Life of Zirconia Toughened Alumina Ceramic Cutting Tools during Turning...281**

Irina Aleksandrova, Trayan Hristov

**P69. Energy and cost -efficient air flow measurement solution for small scale processes...285**

Ivan Khvorostin, Katariina Penttilä, Ari Lindgren

**P70. Co-Generation Power Plants Based on Biomass Gasification...289**

Iliya Iliev, Angel Terziev, Violeta Rasheva

**P71. Chellenges to create “new entrepreneurs” by intergenerational family businesses at the University of Ruse “Angel Kanchev”...293**

Daniel Pavlov

**P72. Hall elements study with a microprocessor system...297**

Anatolii Aleksandrov, Goran Goranov, Gergana Mironova

**P73. Simulation Modelling of Reasonably Application of Small Wind Power System in Bulgaria...301**

Atanas G. Chervenkov, Atanas Y. Yanev

**P74. Fostering the innovative university student-centred learning by application of ICT tools together with stakeholders: a project methodology overview...305**

Svilen Kunev, Diana Antonova, Bogdan Fleaca, Radovan Dráb

**P75. LED Transmitter for Plastic Optical Fibers...309**

Yanka Nikolova Ivanova, Svetoslav Cvetanov Ivanov

**P76. Reducing Energy Losses in Realising MOSFET Control by an Active du/dt Feedback Driver...313**

Svetoslav Cvetanov Ivanov, Yanka Nikolova Ivanova

**P77. Research of the Impact of the Active Driver Circuit with a dv/dt Feedback on the Speed of a DC Motor...317**

Svetoslav Cvetanov Ivanov, Yanka Nikolova Ivanova

**P78. Hybrid Nanocomposite RGO/ZnO as Sensing Material...321**

Ioana Ion, Gabriela Telipan, Virgil Marinescu

**P79. Evaluating the Development of Activity Monitoring Systems for Small Scale Dairy Farms...325**

George Papageorgiou, Kyriakos Porgouris, Andreas Efstathiades, George A. Papageorgiou

**P80. Adaptive Vector Control of Induction Motor Drive...329**

Nikolay Djagarov, Hristo Milushev, Milen Bonev, Julia Djagarova, Zhivko Grozdev

**P81. Experimental and simulation performance investigation of a hybrid PV/T solar panel...334**

Mihai Baiceanu, Tiberiu Catalina, Andrei Damian

**P82. Implementing a large LoRa network for an agricultural application...339**

Adrian Zarnescu, Razvan Ungurelu, Mihai Secere, Gaudentiu Varzaru, Bogdan Mihailescu

**P83. Energy Efficient Built Environment of the R&D Institute of the Transilvania University of Brasov Romania...344**

Ion Visa, Macedon Moldovan

**P84. Justification of Agrotechnical Indicators of Agrorobot...348**

Georgi Komitov, Ivan Mitkov, Veselin Harizanov, Nesho Neshev, Mariyan Yanev

**P85. Innovative Method for the Application of Green Energy in Technical Maintenance of Engines...353**

Georgi Komitov, Manol Dallev, Ivan Mitkov

**P86. Influence of Led Bulbs on Electromagnetic Compatibility Parameters...357**

Krasimir Marinov Ivanov, Petar Kolev Petrov, Tsvyatko Kolev Varbov, Georgi Tsonev Velev

**P87. Determination of the Electrical Field Intensity Affecting a Person Situated under the Phase Conductor of a High Voltage Power line...363**

Petar Kolev Petrov, Krasimir Marinov Ivanov, Georgi Tsonev Velev, Tsvyatko Kolev Varbov

**P88. Influence of an integrated battery system over the annual grid consumption for a hybrid decentralized system...368**

Yavor Stefanov, Krasimir Ivanov

**P89. Mathematical modeling and experimental study of heat transfer processes of a two-phase thermosiphon with complex geometry...372**

Angel Terziev, Iliya Iliev, Hristo Beloev, Emilian Velkov

**P90. Adaptive Vector Control of Induction Motor Drives by Optimal Adaptive Observer...376**

Nikolay Djagarov, Hristo Milushev, Milen Bonev, Zhivko Grozdev, Julia Djagarova

**P91. GNSS for Accuracy Positioning in Mobile Communications with Multipath Propagation of the Signal...381**

Teodor B. Iliev, Elena P. Ivanova, Ivaylo S. Stoyanov, Ivan H. Beloev, Grigor Y. Mihaylov

**P92. Multi-fuel Autonomous Electric Generating Unit with Stabilization System of the Output Voltage...385**

Pavel V. Kovalenko, Vasilina V. Kovalenko, Sergei F. Stepanov, Ivan I. Artyukhov, Ekaterina E. Mirgorodskaya, Nikita P. Mityashin

**P93. Study on the Electric Field Between the Electrodes of a Chamber for Pre-Sowing Treatment of Seeds...389**

Kiril Sirakov

**P94. Optimization of the Design of a Chamber for Pre-Sowing Treatment of Seeds...392**

Kiril Sirakov

**P95. Kinematic modelling of the tracking system for parabolic trough collector...395**

Daniela Ciobanu, Radu Saulescu, Codruta Jaliu

**P96. A Study of the influence of HHO Gas on the Performance and Emissions of a Diesel Engine...399**

Simeon Iliev

**P97. Recent Trends in FMEA Methodology...403**

Tzvetelin Gueorguiev, Miroslav Kokalarov, Boris Sakakushev

**P98. Possibilies for Improvement the Ecological Effect of Battery Electric Vehicles Using Renewable Energy...407**

Rosen Ivanov, Ivan Evtimov, Donka Ivanova, Gergana Staneva, Georgi Kadikyanov, Milen Sapundzhiev

**P99. Determination of Core Losses and Optimal Values of Rotation Rate of an Induction Motor Driving a Compact Electric Vehicle under Different Parameters and Conditions...412**

Svilen Rachev, Lyubomir Dimitrov

**P100. Analysis of combustion efficiency at boilers operating on different fuels...416**

Penka Zlateva, Nina Penkova, Kalin Krumov

**P101. IoT Applications and Protocols: An Air Quality Monitoring Example...420**

Radosveta Sokullu, Abdullah Balcı, Önem Yıldız

**P102. Lean Startup and Agile for Addressing Educational Challenges...424**

Zornitsa Yordanova

**P103. Assessment of the adequacy of an energy model for energy flow management system in residential premises...428**

Snezhinka Zaharieva, Adriana Borodzhieva, Iordan Stoev, Valentin Mutkov

**P104. The Impact of Channel Correlation on the System Performance and Quality of Service in 5G Networks...432**

Stanimir Sadinov, Krasen Angelov, Panagiotis Kogias, Michail Malamatoudis, Anatoliy Aleksandrov

**P105. An Aproach for Application of UAVs for Observation of Processes in Agriculture...436**

Mihail Iliev, Monika Bedzheva

**P106. An Approach for Building of Radar Sensor Networks for Observation of UAVs...440**

Mihail Iliev, Ventsislav Vasilev, Borislav Bedzhev

**P107. Modelling the Energy Fluxes in a Biomass Gasifier...444**

Nadezhda Evstatieva, Hristo Beloev

**P108. Investigating the Influence of the Process Parameters on the Energy Characteristics of a Gasifier...448**

Hristo Beloev, Nadezhda Evstatieva

**109. Multiobjective modelling in choice of route and vehicle for public city transportation for minimum travel time, low cost and energy consumption...452**

Velizara Pencheva, Asen Asenov, Ivan Georgiev

**P110. Increasing the energy efficiency of fan systems by using outlet diffuser...456**

Gencho Popov, Boris Kostov, Kliment Klimentov, Reneta Dimitrova

**P111. Face Recognition Based Multifunction Smart Mailbox...460**

Radosveta Sokullu, Ozkan Akin, Erginay Aslan

**P112. Water Distribution at Alteration of Flow Regimes with Pressure Flows for Irrigation...464**

Roumen Gadjev

**P113. Simulation of water turbine with oscillating blades...467**

Rositsa Velichkova, Detelin Markov, Iskra Simova, Peter Stankov, Radostina A. Angelova, Wandong Zheng, Guanyi Chen

**P114. Identification of Agricultural Plant Row Using the Clustering Algorithm in the Navigation of Mobile Robot...472**

Lukáš Vacho, Dušan Hrubý, Ladislav Tóth, Zuzana Palková

**P115. Modelling of Fuel Cell and Supercapacitor for Electric Vehicles...476**

Gergana Vacheva, Nikolay Hinov

**P116. A Web-Based Matlab Application for E-Learning and Simulation of Electric Vehicle Performance...481**

Nikolay Hinov, Hristiyan Kanchev, Filip Krastev

**P117. Automated Test & Measurements In Teaching Of Power Supply Devices...485**

Nikolay Hinov, Tsveti Hranov

**P118. Evaluation of the potential of wind energy as a source of electricity generation: Case study - Vanatori Wind Power Plant...490**

Oana (Tirtoaca) Irimia, Claudia Tomozei, Mirela Panainte-Lehadus, Maria Cristina Dinu

**P119. Possibility analysis for the use of remote reference wind measurements, in the evaluation of energy production from low complex terrains...494**

Angel Terziev, Yancho Panteleev, Martin Ivanov

**P120. Variability of Soil Nutritional Parameters in Small-plot Experiment with Mineral Fertilizers Application in Different Depth...498**

Aliya R. Bakhitova, Yuriy I. Enakiev, Vladimir G. Mamontov, Kiril G. Stefanov

**P121. Development of a technological process for the use of lavender waste biomass for energy purposes...502**

Yuriy I. Enakiev, Dobromir N. Arabadzhiev, Ivan E. Mortev, Dimo N. Arabadzhiev

**P122. Investigation of the Secondary School Teachers' Opinion about Mobile Learning...507**

Tsvetozar Georgiev, Evgeniya Georgieva

**P123. Design of Power Wheelchair Controller...510**

Seher Yusnieva Kadirova, Teodor Rumenov Nenov

**P124. Survey of the passive protection on board of the ship against low and high frequency electromagnetic fields...514**

Alexandru Sotir, Petrică Popov, Vasile Dobref, Vlad Mocanu

**P125. Simulation of Arduino Mega 2560 board controlling a variable frequency converter driving a BLDC motor...518**

Vlad Mocanu, Petrică Popov, Vasile Dobref

**P126. Vibroacoustics in the practice of vehicle diagnostics...522**

Radoslaw Wrobel, Radostin Dimitrov

**P127. Environmental Performance of Motorcycle Gasoline Engines...527**

Radostin Dimitrov Dimitrov, Radoslaw Wrobel, Mariana Todorova Krasteva

**P128. Environmental Characteristics of an SI Engine Running on Methane and Gasoline...531**

Radostin Dimitrov Dimitrov, Radoslaw Wrobel, Mariana Todorova Krasteva, Krasimir Tsanov Bogdanov, Liliana Luca, Minodora Maria Pasare

**P129. Human Errors Simulator in Substations of Power Supply Systems...534**

Georgi Krastev, Tsvetozar Georgiev

**P130. Mathematical Modeling of Aeration Process in the Air-Water Interface...537**

Adele Vaideliene

**P131. Efficiency Analysis of a Planetary Speed Increaser for Wind Turbines with Counter-Rotating Versus Fixed-Stator Electric Generator...541**

Mircea Neagoe, Radu Saulescu, Codruta Jaliu, Nadia Cretescu

**P132. Study of the operational efficiency indicators of soil – protecting machine – tractor aggregates used for vertical mulching by importing organic matter in the soil...545**

Hristo Ivanov Beloev, Petar Dimitrov Dimitrov, Plamen Ganchev Kangalov, Kaloyan Evgeniev Stoyanov, Volodymyr Kravchuk, Simeon Zdravkov Marinov

**P133. A study of the energy – performance indicators of a machine - tractor aggregate for vertical mulching by importing organic matter in the soil...548**

Petar Dimitrov Dimitrov, Hristo Ivanov Beloev, Plamen Ganchev Kangalov, Kaloyan Evgeniev Stoyanov, Simeon Zdravkov Marinov

**P134. Loss of Nutrients by Soil Water Erosion...551**

Gergana Slavova Kuncheva, Petar Dimitrov Dimitrov

**P135. Energy supply of autonomous territories based on renewable energy sources...556**

Viktor Elistratov

**P136. SARMENTI: in-situ real-time soil nutrients and gaseous emission measurement...559**

S. Lesecq, M. Gougis, E. Gouze, G. Dudnik, M. Correvon, A. di Matteo, E. Alessi, V. Di Palma, S. di Salvo, K. Daly, B. Molleman, A. O'Riordan, H. Shao, G. Mouzakitis, T. C. Balan, C. Dimitru, G. Ponsardin, G. Mailat

**P137. Optimum Tilt Angle of Solar Thermal Collectors At Sea...563**

Alexandru Cotorcea, Andrei Pocora, Ion Visa

**P138. Experimental Assessment Of The Tilt Angle Influence On The Solar Thermal Collectors Performance...567**

Alexandru Cotorcea, Andrei Pocora, Florin Nicolae, Ion Visa, Macedon Moldovan

**P139. Lumped Circuit Model of High-Frequency Power Transformers for Time-Domain Analysis...573**

Lucian Mandache, Andrei Marinescu, Ioana Gabriela Sirbu

**P140. Experimental Study on the Performance of Small-Scale Wind Turbine Rotors...577**

Gabriela Cîrciumaru, Rareș-Andrei Chihaia, Dragoș Ovezea, Ionel Chiriță, Sergiu Nicolaie, Lucia-Andreea El-Leathey, Adrian Nedelcu

**P141. State-of-the-art of superconducting materials and their energy-efficiency applications...581**

Katerina Ilieva, Ognyan Dinolov

**P142. Overview of Diagnostic Methods for Rotating Electrical Machines...586**

Nikolay Djagarov, Georgi Enchev, Zhivko Grozdev, Julia Djagarova

**P143. Simulation of Starting Modes of Double Star Ship's Synchronous Propulsion Motor...594**

Nikolay Djagarov, Zhivko Grozdev, Julia Djagarova, Konstantin Gabriel Predoi, Sergey Kokin

**P144. Modeling of Work Modes of Double Star Ship's Synchronous Propulsion Drive...599**

Nikolay Djagarov, Zhivko Grozdev, Konstantin Gabriel Predoi, Julia Djagarova

**P145. Study on the effect of some major environmental factors on the egg-laying capacity of free-range Guinea fowls (Numida meleagris)...604**

Petya Veleva, Matina Nikolova, Tsvetelina Georgieva

**P146. Research of the possibilities for determination of some basic soil properties using image processing...608**

Tsvetelina Georgieva, Antonina Mihaylova, Plamen Daskalov