# 2021 17th International Conference on Electrical Machines, Drives and Power systems (ELMA)

**IEEE**

Bulgaria section

# ELMA 2021

**1 - 4 July 2021,
Technical University of Sofia, BULGARIA**

Organised by:

**Union of Electronics, Electrical Engineering and Telecommunications (CEEC)**

**IEEE Bulgaria Section**

Friends of the ELMA 2021 are:

Technical Universities of Sofia, Varna and Gabrovo
University of Ruse "Angel Kantchev"
Federation of Scientific and Technical Unions
"Prof. Assen Zlatarov" University – Bourgas

# Preliminary Program

## CONFERENCE VENUE

The 17th International Conference on Electrical Machines, Drives and Power Systems ELMA 2021 will be held in Sofia, Bulgaria, **in the building of Federation of the scientific engineering unions (FNTS) in Sofia, 108 Rakovsky Str.**

## LANGUAGE

Official language of the Conference will be English.

## REGISTRATION DESK

To be announced soon

## PAPER PRESENTATION

Authors who will present the papers (orally or by poster) are kindly requested to prepare their presentations BEFORE the conference start and send them to elma2021@tu-sofia.bg after 25.07.2021.

The time for the **oral** presentation of the regular papers including discussion is **15 minutes**. Papers should be presented in English only by the registered authors.

For **poster** presentation, please follow the template on the site.

# TIME-TABLE

| Day | Time | Hall A | Hall B |
|---|---|---|---|
| **Thursday, 1 July** | 10:00-10:30 | **Conference opening** | |
| | 10:30-12:30 | **Plenary session** | |
| | 12:30-14:00 | **Lunch break** | |
| | 14:00-15:30 | **Oral 1** | **Oral 2** |
| | 15:30-16:00 | **Coffee Break** | |
| | 16:00-17:30 | **Oral 3** | **Oral 4** |
| | 18:00-20:00 | **Welcome Cocktail** | |
| **Friday, 2 July** | 9:00-10:30 | **Oral 5** | **Oral 6** |
| | 10:30-11:00 | **Coffee Break** | |
| | 11:00-12:30 | **Oral 7** | **Oral 8** |
| | 12:30-14:00 | **Lunch break** | |
| | 14:00-15:30 | **Oral 9** | **Poster 1** |
| | 15:30-16:00 | **Coffee Break** | |
| | 16:00-17:00 | **Poster 2** | |
| | 17:00-18:00 | **Poster 3** | |
| **Saturday, 3 July** | 10:00-11:00 | **Poster 4** | |
| | 11:00-12:00 | **Poster 5** | |
| | 12:00-14:00 | **Lunch break** | |
| | 14:00-16:00 | **Participants' discussions on the conference topics** | |
| **Saturday, 4 July** | 10:00-16:00 | **Round tables and participants' discussions** **Conference closing** | |

# CONFERENCE PROGRAM

## Thursday, 1 July 2021

**10:00-12:30**                                                                      **Hall A**

## CONFERENCE OPENING

**Chair: V. Lazarov Co-Chairman of ELMA2017**

**10:00 – 10:30   Welcome addresses**

**10:30 – 12:30   Plenary session**

"Application prospects of high-temperature superconducting materials in magnetic systems of electromechanical devices", by *Pavel Kurbatov,*
*Andrey Drozdov, Ekaterina Kurbatova, Egor Kuschenko*
*Russian Federation*

"Induction machines in automotive applications - the example of Audi and Tesla", *by Robin Thomas,*
*Hugo Husson, Lauric Garbuio, Laurant Gerbaud*
*France*

"Tilos, a small Greek island full of green and sustainable energies", by *Gilles Notton*
*France*

"Complex Engineering Systems Approach in Evaluating the Recent Energy Crisis in Texas" by *Martin Minchev*
*USA*

**12:30-14:00            Lunch Break**

# Thursday, 1 July 2021

**14:00-15:30**                                    **Oral Session - Hall A**

## Oral 1

### *Chairman:*

**<span style="color:red">Calculation Methodology of Common Capability Diagram for Parallelly Connected Generator Group</span>**
  **<span style="color:red">Boris Glavan</span>**, <span style="color:red">Zlatko Hanić</span>

**Efficiency of synchronous motor with interior permanent magnets with included losses and nonlinear parameters of magnetic circuit**
  **Željko Hederic**, Venco Ćorluka, Miralem Hadžiselimović

**Fault Diagnosis Modeling of Induction Machine**
  **Nikolay Djagarov**

**Investigation of Thermoelectric Cooler System Effect on Induction Motor Performance**
  Murad Toren, **Hakki Mollahasanoglu**

**Adaptive Controller for Induction Machine Direct Torque Control**
  Nikolay Djagarov, **Hristo Milushev**, Yuri Kononov, Julia Djagarova

**Investigation of the Influence of Hysteresis on the Characteristics of Direct Torque Control of Induction Motor**
  Nikolay Djagarov, **Hristo Milushev**, Aleksandra Varganova, Julia Djagarova

**Frequency Response Analysis of the Tesla Model S Induction Motor**
  Angelo Ferreri, **Robin Thomas**, Lauric Garbuio, Hervé Chazal

**14:00-15:30**                                    **Oral Session - Hall B**

## Oral 2

### *Chairman:*

**Analysis and practical application of the regulatory requirements for coasts power stations in port complexes**
  **Rumen Kirov**, Ginko Georgiev

**Analysis of the Energy Balance and Electric Consumption of Luxury Yacht for Charters**
  Ginka Ivanova, **Valentin Gyurov**

**Energy Performance Evaluation for a Residential Building in Romania**
Andreea Vartires, **Andrei Damian**

**Insights Into the Urban Electric Transport System by Means of Comparative Analysis of Different Power Theories**
**Nikola Makedonski**, Georgi Milev

**Investigation of the Energy Losses of Supercapacitor Banks due to Self-Discharge**
**Boris Evstatiev**, Dimcho Kiriakov

**Investigation of the influence of current harmonics generated by crane systems on some parameters of the power supply systems**
**Neli Simeonova**, Mladen Proykov

| 15:30÷16:00 | Coffee Break | Lobby |
|---|---|---|

| 16:00-17:30 | Oral Session - Hall A |
|---|---|

**Oral 3**

*Chairman:*

**Analysis of short circuit currents in interface nodes of Kitka wind power park in Kosovo**
Nuri Berisha, Petrit Kastrati, Gazmend Pula, **Dimo Stoilov**, Rad Stanev

**Comparative Analysis of Alternatives for Bulgarian Energy System Development**
**Kristina Hadzhiyska**, Dimitar Tonev, Kiril Angelov, Dimo Stoilov

**Impedance determination of 400kV Overhead Lines of Kosovo Power System**
Nuri Berisha, Genc Sejdiu, **Rad Stanev**, Dimo Stoilov

**Study of Faults and Power Outages in Power Distribution Grids**
Mediha Mehmed-Hamza, Anton Filipov, **Milena Ivanova**

**Water Storage Electric Power Plant with Controllable Suction Head**
**Dimo Stoilov**, Georgi Stoilov, Sylvia Goranova

**Reactive power of nonlinear sign – changing loads**
Dzhengiz Ibram, **Vultchan Gueorgiev**

## Oral 4

*Chairman:*

**Possibilities for Determining the Apparent Power Components When Ship Synchronous Generator is Operating**

Vladimir Chikov, **Nikola Makedonski**, Georgi Milev, Borislav Cvetanov

**Power Quality Analyzers Calibration on Total Harmonics Distortion of Voltage and Current by Reference Square Waveform Signal and Algorithm for Measurement ang Processing**

Plamen Tzvetkov, **Krasimir Galabov**, Andrey Serov, Ivan Kodjabashev

**Research on the impact of regulator functions of power transformers on power losses in electrical supply systems**

**Rumen Kirov**, Ginko Georgiev

**Research, analysis and rationalization of the operating regimes of the power supply system of K.K. "Sunny Beach"**

**Neli Simeonova**, Mladen Proykov

**Study of the electricity efficiency in the implementation of an energy management system in an industrial site of the electrical industry**

**Neli Simeonova**, Mladen Proykov, Stanislav Simeonov

**Study of the Parameters of an Autotransformer Discrete Alternating Voltage Regulators Considered as a Two-Port**

Emil Panov, **Milena Ivanova**, Emil Barudov

**18:00-20:00**                    **Welcome Cocktail in the Lobby**

# Friday, 2 July 2021

**09:00-10:30**           **Oral Session - Hall A**

## Oral 5

*Chairman:*

**Design of Non-Inductive Transformer With Capacitive Coupling Using Mutual Capacitance**

  **Necdet Kaan Onur**, Gokturk Poyrazoglu

**A Wireless Power Transfer Method for Electric Vehicles by Synchronization to Secondary Resonance**

  **Mete Cesmeci**, Gokturk Poyrazoglu

**Using MBSE for Operational Analysis of Power Converter for Electric Traction**

  **Nasr GUENNOUNI**, Nadia MACHKOUR, Ahmed CHEBAK

**Mathematical analysis of PMIC for VRM applications**

  Filip Stoimenov, **Vladimir Dimitrov**

**Quasi-Resonant Circuitry to Improve Heat Transfer and Efficiency in Induction Cookers**

  **Huseyin Kucukosman**, Gokturk Poyrazoglu

**Single Phase PFC Topology Selection Based on Neuron Network Algortihms**

  **Angel Marinov**, Svetlozar Zahariev, Ivelin Ivanov, Svilen Simeonov

**Slim Design of An LLC Resonant Converter by Using Toroidal Transformer for OLED TV**

  **Samet Kurt**, Gokturk Poyrazoglu

**The Cooling System Of High-voltage Power Rectifier**

  **Ilia Kirillov**, Pavel Dergachev

**09:00-10:30**           **Oral Session - Hall B**

## Oral 6

*Chairman:*

**Adaptive Dynamic Braking Schemes to Damp Interarea and Subsynchronous Oscillations using Deep Reinforcement Learning**

  **Nikita Tomin**, Victor Kurbatsky, Alexey Iskakov

**Essential frequencies in the characteristics of control systems, analytical definitions, correspondences and symmetries**

Emil Nikolov

**Research of LED dimming sources and lighting systems**

**Iliyan Iliev**, Samet Isak, Hristian Panchev

**Fuzzy Logic Control Design Based on the Genetic Algorithm for a Modular Servo System**

Donka Ivanova, **Martin Dejanov**

**Data Acuisition Board for Monitoring and Analys of Electrical and Non-electrical data on Board of a Vessel**

**Nikolay Djagarov**

**Educational set-up for brushless motor drives**

Akin Uzel, Diego Zuidervliet, **Peter van Duijsen**

**Some Opportunities to Improve the Learning Process of Students Based on Computer Simulations**

**Ilona Iatcheva**

**Teaching Field Oriented Control using Animation**

**Peter van Duijsen**, Diego Zuidervliet

| 10:30÷11:00 | Coffee Break | Lobby |
|---|---|---|

| 11:00-12:30 | | Oral Session - Hall A |
|---|---|---|
| | Oral 7 | |

*Chairman:*

**Carrying Out of Strenght Tests of Geared Motor Box as Part of a Frequency-Controlled Traction Electric Drive**

**Genadijs Kobenkins**, Marks Marinbahs, Vsevolod Burenin, Jaroslavs Zarembo, Olegs Sliskis

**Carrying Out of Tests for the Functionality of the Traction Autonomous Drives in the Conditions of Industry and Serial Production**

**Ilja Dvornikovs**, Marks Marinbahs, Olegs Sliskis, Karlis Ketners, Genadijs Kobenkins

**Efficiency Optimization of Electric Drives with Full Variable Switching Frequency and Optimal Modulation Methods**

**Timijan Velic**, Maximilian Barkow, David Bauer, Patrick Fuchs, Johannes Wende, Jan Nägelkrämer, Nejila Parspour

**Induction Motor Simulink Implementation of the Rotor Flux Oriented Direct Vector Control Method for Electric Vehicles**

 **ilayda Demircioglu**, Gokturk Poyrazoglu

**Modelling of regenerative braking**

 Valentin Totev, **Vultchan Gueorgiev**

**Methodology for Forecasting of Energy Consumption in Trolleybus Transport with Probabilistics Indicators**

 **Valentin Gyurov**, Nikolay Bezhanov

**Comparative Study of the Tesla Model S and Audi e-Tron Induction Motors**

 **Robin Thomas**, Hugo Husson, Lauric Garbuio, Laurent Gerbaud

| 11:00-12:30 | Oral Session - Hall B |
|---|---|

## Oral 8

*Chairman:*

**A Concept for Flexible and Self-Adaptable Classification of ETIP SNET Technologies and Functionalities**

 Christina Papadimitriou, **Rad Stanev**, Venizelos Efthymiou

**Advanced Machine Learning Approaches for State-of-Charge Prediction of Li-ion Batteries under Multisine Excitation**

 **Adrienn Dineva**

**Comparison of Energy Management Strategies in a Microgrid with Photovoltaic/Battery System**

 Sarah Ouédraogo, **Ghuvan Antone Faggianelli**, Guillaume Pigelet, Jean Laurent Duchaud, Cyril Voyant, Gilles Notton

<span style="color:red">**Genetic Algorithm for Generation of PV Panel Curves From Datasheets**</span>

 <span style="color:red">**Angel Marinov**, Svetlozar Zahariev, Ivelin Ivanov, Toncho Papanchev</span>

**Power Transform of Solar Irradiation Time Series and Univariate Representation of Periodic AutoRegressive**

 Cyril Voyant, Gilles Notton, **Jean Laurent Duchaud**

**Renewable energy from two-stage anaerobic digestion of organic wastes**

 **Ivan Simeonov**

**Distributed Siting of Wind Farms to Minimize Fluctuations in Generated Power**

 **Vladislav Shakirov**, Nikita Tomin, Victor Kurbatsky

| 12:30-14:00 | Lunch Break |
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| 14:00-15:30 | Oral Session - Hall A |
|---|---|

## Oral 9

*Chairmen:*

**Case-study for HW accelerated FEA model for electrical machine control prototyping**

**Richard B Szilagyi**, Adrienn Dineva

**Construction of a three-dimensional thermal model of the stator of a turbogenerator taking into account gas dynamics**

**Vitaly Ryzhov**, Oleg Molokanov, Pavel Dergachev, Sergey Osipkin, Ekaterina Kurbatova, Pavel Kurbatov

**Design Variants Assessment Of Street LED Device Based On Virtual Prototyping**

Georgi Todorov, **Konstantin Kamberov**, Hristo Vasilev, Tsvetozar Ivanov

**Review and Conceptual Design of FPGA-based Application for Data-Driven Power Electronic Systems**

**Adam Zsuga**, Adrienn Dineva

**Methodology for determining the socio-economic factors in the performance of Cost-Benefit Analis for the production of electricity from biomass**

**Kiril Anguelov**, Kalina Kavaldzhieva

**Methodology for effectiveness in applying for grant funding for energy effectiveness of enterprises**

**Kiril Anguelov**, Miglena Angelova

**A "single component" approach for electronic units' reliability prediction**

Toncho Papanchev, **Angel Marinov**, Julia Garipova

| 14:00-15:30 | Poster session - Hall A |
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## Poster 1

*Chairmen:*

**Analysis of the Influence of NdFeB Permanent Magnet's Grade and Volume on the Characteristics of a PM Claw-pole Alternator**

**Ivan Bachev**, Vladimir Lazarov, Zahari Zarkov

**Application of ANN for forecsting of PV plant output power – Case study Oryahovo**

**Ludmil Stoyanov**, Iva Draganovska

**Automated LabVIEW measurement LLC System Control GUI**

**Nikolay Hinov**, Tsveti Hranov

**Assessment of the technical condition of electric contact joints using thermography**

**Yavor Lozanov**

**Determination of the Periodicity for Thermographic Tests of the Electrical Equipment**

**Yavor Lozanov**, Svetlana Tzvetkova, Angel Petleshkov

**Axial Magnetic Gear Harmonic Spectrum Analysis**

Valentin Mateev, **Miglenna Todorova**, Iliana Marinova

**Ferrofluid Break Modeling**

Georgi Ivanov, **Miglenna Todorova**, Valentin Mateev, Iliana Marinova

**Identification of moving lightning clouds using four-dimensional electromagnetic potential**

**Atanas Chervenkov**

**Electromagnetic field evaluation in building located close to high-voltage overhead line**

**Atanas Chervenkov**

**Induction Brazing Process Control**

Dragomir Grozdanov, **Nikolay Hinov**

**Integrated Biologically Effective Lighting and Heating Installation for Sport Facilities**

Iva Petrinska, Dimitar Pavlov, **Dilyan Ivanov**

**Interruptions of the Power Supply in Low Voltage Cable Networks**

**Svetlana Tzvetkova**

**Electric Power Quality Indicators in a Company Producing Power Electronics**

**Svetlana Tzvetkova**, Angel Petleshkov, Yavor Lozanov

**Magnetic Properties of 3D Printed Magnetic Materials**

Martin Ralchev, **Valentin Mateev**, Iliana Marinova

**Experimental Verification of Hertzian Contact Model for Electric Joints**

Raina Tzeneva, **Valentin Mateev**, Martin Ralchev, Yanko Slavchev

**Capacitance Analysis of Multilayer HTS Power Cable**
> Georgi Ivanov, **Valentin Mateev**, Iliana Marinova

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| **15:30÷16:00** | **Coffee Break** | **Lobby** |

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| **16:00-17:00** | **Poster session - Hall A** |

## Poster 2

*Chairman:*

**Developing and Integration of New Modules for Web-based Education Platform**
> **Atanas Yanev**

**Modeling of photovoltaic power plant electricity generation using machine learning methods**
> **Rad Stanev**, Tanyo Tanev

**Modeling Tool For Determination Of The Available Energy In Battery Storage Systems**
> **Dimitar Arnaudov**

**Study a Converter for Voltage Equalization of Energy Storage Systems**
> **Dimitar Arnaudov**

**Open Source Electronic System for Controlling of Hybrid Electromagnetic Systems with Magnetic Flux Modulation**
> **Iosko Balabozov**, Ivan Yatchev, Dimitar Karastoyanov, Nikolay Stoimenov, Hartmut Brauer

**Challenges of Online Laboratory Electrical Engineering Exercises**
> **Nikolina Petkova**, Snejana Terzieva

**Influence of Magnet Dimensions on Torque Components and Cost of Synchronous Machine with Interior Magnets**
> **Zahari Zarkov**, Vladimir Lazarov, Tsvetomir Stoyanov, Ludmil Stoyanov

**Arching Faults in Low-voltage Distribution Networks**
> Aleksey Kulikov, **Marina Rashevskaya**, Michail Tibrayev, Aleksey Gudoghnikov

**Assessment and Analysis of the Reliability of Insulation System for High-Voltage Induction Motors Based on the Partial Discharge Level**
> Plamen Rizov, **George Todorov**

**Comparison of Inductor Machines With Different Types of Excitation**
Ekaterina Kurbatova, Egor Kuschenko, Timofey Zolotarev, Pavel Kurbatov

**Comparison of Radial Forces between Double-Rotor Planetary and Coaxial Magnetic Gears**
Oleg Molokanov, Elizaveta Konyushenko, Eugene Zenko, Ekaterina Kurbatova, Nikolay Sabaykin, Pavel Kurbatov

**Control Algorythm For Bidirectional Converters In The PV Power Supply System With Intelligent PV Modules**
Konstantin Kryukov, Georgy Solovov, Nikolay Rodkin, Ekaterina Erokhina, Nikolay Baranov

**Dependence of the load capacity of installation cables**
Nikolay Khrenkov

**Development of a system for measuring body temperature and access control**
Alexander Antipin, Semen Astapchik, Ilya Balyasny, Andrey Lapin, Ekaterina Lapteva, Ilya Sorokin, Andrey Tolkachev

**Influence of nonlinearity of magnetic material on skin effect in tubes**
Nebojsa Raicevic, Slavoljub Aleksic, Mirjana Peric, Ana Vuckovic

**Influence of the Load Ratio of Nonlinear Consumers on the Value of Harmonic Components in Power Lines of Significant Length**
Svetlana Molot, Vasilina Kovalenko, Sergei Stepanov, Ivan Artyukhov, **Ekaterina Mirgorodskaya**, Nikita Mityashin

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**17:00-18:00**                      **Poster session - Hall A**

## Poster 3

*Chairman:*

**Modeling of Short-Term Electric Motor Load Power Supply Disturbances in the Matlab (Simulink) System**
Sergey Tsyruk, Nikolay Danilov, **Aleksandr Timonin**

**Statistical approach for designing generic 18650 battery model**
**Szabolcs Kocsis Szürke**, Adreinn Dineva, Krisztián Horváth, István Lakatos

**Using of HTS Materials in Construction of Linear Electric Vernier Machines**
Andrey Drozdov, Ekaterina Kurbatova, **Pavel Kurbatov**

**Vernier Machine with Azimuthally Magnetized Permanent Magnets**
Elizaveta Konyushenko, Ekaterina Kurbatova, Nikolay Sabaykin, **Oleg Molokanov**, Pavel Kurbatov, Eugene Zenko

**Voltage Stabilization in Current Inverters with Fully Controllable Switches**

**Ekaterina Mirgorodskaya**, Nikita Mityashin, Yuri Tomashevskiy, Yuri Golembiovsky, Ivan Artyukhov, Sergei Stepanov

**Transient Processes with Starting of a Multi-pole Asynchronous Motor with a Fan on the Shaft**

Ivan Artyukhov, Sergey Stepanov, **Ekaterina Mirgorodskaya**, Nikita Mityashin, Artem Zemtsov

**Application of Synchronous Machines' Models for Distance Learning Purposes**

**Ivan Bachev**, Ludmil Stoyanov, Vladislav Petrov, Emilia Hadjiatanasova-Deleva

**Adapting Electrical Engineering Assessment for Online Learning**

**Ilonka Lilyanova**

**Analysis of the Components of the Magnetic Field Intensity According to the Rotary Theory**

**Miroslava Doneva**, Vyara Vasileva

**Investigating the Influence of an Electronic Device' Properties on Its Temperature Regime**

**Boris Evstatiev**, Nadezhda Evstatieva

**A Realistic Virtual Lab for Investigation of Single-Phase Transformers**

**Boris Evstatiev**, Katerina Gabrovska-Evstatieva, Dimitar Trifonov

**Small BEV Propulsion – Problems and Solutions**

**Emil Sokolov**, Dilo Dilov, Yanko Takavidov

**Study of linear generators with and without rotating permanent magnets in their stator windings**

**Raycho Raychev**, Nikola Georgiev

**Modeling of DC Motor Fed from Photovoltaic Panel**

**Dimitar Spirov**

**Investigation of the possibilities for application of a basis-power model in analysing the energy efficiency of type I fluid systems**

**Ognyan Dinolov**, Katerina Ilieva, Lyudmil Mihaylov

**Adapted Algorithm and Web-Developed Software Tool for Basis Power Analysis Using Gravity-Based Model**

**Ognyan Dinolov**, Katerina Ilieva, Lyudmil Mihaylov

**10:00-11:00**                                                    **Poster session - Hall A**

## Poster 4

*Chairman:*

**A Comparison of Drain-Source Voltage Characteristics for Active and Conventional Gate Control Circuits**

**Svetoslav Ivanov**, Yanka Ivanova

**A Comparison Study of Decisions for Computer Network Laboratory in Distant Learning Education**

**Aydan Haka,** Veneta Aleksieva, Hristo Valchanov

**Active Learning for Teaching "Synthesis and Analysis of Counters" in the Course "Digital Electronics"**

Adriana Borodzhieva, **Ivanka Tsvetkova**, Dimitar Dimitrov

**Air Object Detection Using Pulsar FSR**

Hristo Kabakchiev, **Ivan Garvanov**, Vera Behar, Dorina Kabakchieva, Avgust Kabakchiev, Herman Rohling, Mark Bentum, Jorge Fernandes

**An Analysis of the Impact of the Squirrel-Cage Rotor Faults on the Electromagnetic Torque**

**Maik Sreblau**, Marin Marinov, Ivan Rusev

**Analysis of the Global Solar Radiation and Solar Energy in Ruse, Bulgaria**

Alexandra Boyadzhieva, Todor Yordanov, **Nicolay Mihailov**, Katerina Evstatieva

**Application of Active Methods in Learning the Topic of Diode Limiters Circuits**

**Ivanka Tsvetkova**, Adriana Borodzhieva

**Application of an Inductive Power Transfer System for Charging Modern Electric Vehicles**

**Dobroslav Dankov**

**Comparative Analysis in Parameter Identification of a DC Motor With Independent Excitation**

Reneta Parvanova, **Mariyana Todorova**

**Comparative Assessment of Hybrid PV-Hydrogen Plant: A Case Study for Bulgaria**

**Viktor Garbev**

**Comparision of Failure Rates and Reliability of Power Semisonductors in Power Electronic Devices using Using Methods MIL-HDBK-217F and FIDES**

Prodan Prodanov, **Dobroslav Dankov**

**Conceptual Model of a Remote Laboratory for Investigation of DC Motors**

Teodor Nenov, Boris Evstatiev, **Seher Kadirova**

**Design, Realization and Study of Low Temperature Thermoelectric Refrigerator of Covid-19 Vaccine**

**Ivaylo Belovski**, Kaloyan Ivanov, Analoliy Aleksandrov

**Determining the Efficiency of an Electric Oven in the Grill Heating Mode**

**Yanita Slavova**

**Experimental Determination of The Factors Affecting The Technological Process of Separation With Permanent Magnets**

**Tatyana Dimova**

**Express Method for Thermodynamic Diagnostics of Volumetric Hydraulic Systems with Rotary Machines in Operating Conditions**

**Petko Petkov**, Peycho Tomov, Bohos APRAHAMIAN

**Impact of Hydroxy Gas for $CO_2$ Emission Reduction in Diesel Car Engine**

Mihail Simov, Kalin Nikolov, **Maik Sreblau**

**Implemented PLC System Controlling the Cleaning of Heat Exchangers in the Extraction of Heat Energy from Geothermal Water**

**Veselin Vasilev**, Bohos Aprahamian

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**11:00-12:00**                                    **Poster session - Hall A**

### Poster 5

*Chairman:*

**Investigation of Digital Protection Relay For Three-Phase Induction Motor**

**Tatyana Dimova**

**Magnetoelectric Structure for Energy Harvesting**

Roman Petrov, Viktor Leontiev, Evgeni Kuzmin, Mirza Bichurin, Alena Petrova, L.A. Nemtsev, **Slavcho Bozhkov**, Ivan Milenov, Penko Bozhkov

**Mathematical Modelling of the Impact of Operational Factors on the Energy Efficiency of an Induction Hob**

**Yanita Slavova**, Mariya Marinova

**Method for Body Pose Recognition based on Two-Finger Touch Bezel on Wearable Device**

Yuri Dimitrov, **Veneta Aleksieva**, Hristo Valchanov

**Methodical Aspects of the Analysis of Non-Harmonic Periodic Signals in Linear Two-Port Circuits**

**Hristo Zhivomirov**, Ilonka Lilyanova

**Modeling of Hybrid System with Photovoltaic Panels-Fuel cells Generation and Hydrogen Storage Using Electrolyzer**

**Ludmil Stoyanov**

**New Approach for Smart Cities Transport Development Based on the Internet of Things Concept**

**Ivan Garvanov**, Magdalena Garvanova

**New Time Indices for the Operational Reliability Assessment Regarding Electronic Items**

**Julia Garipova**, Anton Georgiev, Toncho Papanchev

**Numerical Examination of the Performance of an Electrohydraulic System With Discrete Control**

**Dragiya Yanulov**

**Optimization of Switching Performance of Power MOSFET with Active Driver with dv/dt Feedback**

**Svetoslav Ivanov**, Yanka Ivanova

**Photovoltaic System for LED Lighting Based on Bidirectional Cuk-converter – Computer Research**

**Hristo Antchev**, Anton Andonov, Kostadin Milanov

**Polymeric Composite Insulators for Overhead Power Lines. A Review of In-Service Damages and Diagnostic Approaches**

Georgi Georgiev, **Milena Ivanova**, Rositsa Dimitrova, Yulian Rangelov

**Project-Based Learning in the Topic of Harmonic Oscillators of Clapp**

**Ivanka Tsvetkova**, Adriana Borodzhieva

**PSS/E Based Subsynchronous Resonance Analysis Tool**

**Nikolay Nikolaev**, Konstantin Gerasimov, Yulian Rangelov, Ara Panosyan, Ngoc Tuan Trinh

**Regression Model of a Thermoelectric Generator Based on Peltier Modules**

**Ivaylo Belovski**, Kaloyan Ivanov, Analoliy Aleksandrov, Irina Aleksandrova

**Simulation Environment for Research of Algorithms for Traffic Prioritisation in ZigBee Network**

**Aydan Haka**, Veneta Aleksieva, Hristo Valchanov

**Study and Analysis of Efficiency of Recuperative Energy Utilization in Ground Urban Electric Transport**

Georgy Pavlov, **Lyubomir Sekulov**

**Study of the Power Modes of Skoda Solaris 26Tr and 27Tr Trolleybuses**

**Ilko Tarpov**, Martina Tomcheva

**Thermodynamic Modelling of the oil Tank as a Subsystem in Hydraulic Power Drives**

Peycho Tomov, **Dragiya Yanulov**, Petko Petkov

| 12:00-14:00 | Lunch Break |
|---|---|

**14:00-16:00**

**Participants' discussions on the conference topics**

# Sunday, 4 July 2021

**10:00-16:00**

**Round tables and participants' discussions**

**Conference closing**