

**XXI-st International Symposium on  
Electrical Apparatus and Technologies**

***SIELA 2020***



**PROGRAMME**

**3 - 6 June 2020**

**Bourgas, Bulgaria**

**SIELA 2020** is organized by:



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



**IEEE Bulgaria Section**

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## **Notes**

**The symposium will be held entirely online.**

- Oral presentations – up to 15 min including discussions (all presentation should be loaded in advance)
- Invited paper presentations – up to 30 min including discussions
- Poster size - online: landscape (16:9 screen ratio)
- Papers not presented at the Symposium will not be submitted to IEEE Xplore Digital Library

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## SIELA 2020 General Schedule

Day	Hour	Event
Wednesday 3 June	15:00 - 19:00	Online Registration
Thursday 4 June	9:30 – 10:00	Opening Session
	10:00 - 12:00	Oral Session <b>O1</b>
	13:00 - 15:00	Oral Session <b>O2</b>
	15:30 - 17:00	Poster Session <b>P1</b>
	17:00 - 18:00	Invited papers
	18:00 - 19:30	Poster Session <b>P2</b>
Friday 5 June	9:00 - 11:00	Oral Session <b>O3</b>
	11:30 - 13:00	Poster Session <b>P3</b>
	14:00 - 15:30	Poster Session <b>P4</b>
	16:00 - 18:00	Oral Session <b>O4</b>
Saturday 6 June	9:00 – 10:30	Poster Session <b>P5</b>
	10:30 - 11:00	Closing Session

## ORAL SESSION O1

**Thursday, 4 June, 10:00 - 12:00**

**Chair: Chavdar ALEXANDROV**

- O1-1 *Valentin MATEEV, Georgi IVANOV, Iliana MARINOVA*  
**Comparison of electromagnetic formulations for multilayer hts power cable modeling** *Bulgaria*
- O1-2 *Yavor LOZANOV, Svetlana TZVETKOVA, Angel PETLESHKOV*  
**Modeling of thermal transient processes in frequency-controlled induction motor** *Bulgaria*
- O1-3 *Atanas TERZIYSKI, Stoyan TENEV and Vedrin JELIAZKOV*  
**Radon concentration gauge** *Bulgaria*
- O1-4 *Yuliyana YORDANOVA, Valentin GYUROV*  
**Research into the possibilities for diagnosis of asynchronous electric drives powered by a frequency inverter in the presence of unbalance** *Bulgaria*
- O1-5 *Nikolai KOLEV, Avgustin HRISTOV, Miroslav TSVETKOV, Chavdar ALEKSANDROV*  
**AIS assisted Sentinel-1 SLC image ship detection, motion and displacement estimation** *Bulgaria*
- O1-6 *Andon LAZAROV, Todor KOSTADINOV*  
**3-D SAR geometry and LFM waveform for ship target imaging** *Bulgaria*
- O1-7 *Andon LAZAROV, Chavdar MINCHEV*  
**Pseudo 3-D ISAR imaging by Barker's phase code modulated waveforms** *Bulgaria*
- O1-8 *Rumen POPOV, Slavi LYUBOMIROV, Ivan BOZHNIKOV, Krasimir KEHAYOV*  
**Development of cost-effective high accuracy multichannel RTD signal conditioner** *Bulgaria*

## ORAL SESSION O2

**Thursday, 4 June, 13:00 - 15:00**

**Chair: Iliana MARINOVA**

- O2-1 *Ivan TONEV, Nikolay NIKOLAEV*  
**Review on blockchain applications for electric power systems** *Bulgaria*
- O2-2 *Alexander MITOV, Jordan KRALEV, Tsonyo SLAVOV, Ilcho ANGELOV*  
**Real-time LQG control strategies for electrohydraulic steering of mobile machines** *Bulgaria*
- O2-3 *Petar DARJANOV, Denitsa DARZHANOVA*  
**Dynamic performance analyses of an iron-cored winding at ac mode of operation** *Bulgaria*
- O2-4 *Denitsa DARZHANOVA, Petar DARJANOV*  
**Extended analyses for the static thermal response of an iron-cored winding at AC mode of operation** *Bulgaria*

<b>O2-5</b>	<i>Alexandros BOUBARIS, Nick RIGOGIANNIS, Faidra KOTARELA, Anastasios KYRITSIS, Christos CHRISTODOULOU, Nick PAPANIKOLAOU</i> <b>On the incorporation of smart PV into NZEB concept</b>	Greece
<b>O2-6</b>	<i>Nick RIGOGIANNIS, Nena APOSTOLIDOU, Dimitris BAROS, Symeon FOUNTOUKIDIS, Nick PAPANIKOLAOU</i> <b>Development of an educational regenerative braking system employing supercapacitors</b>	Greece
<b>O2-7</b>	<i>Dimitris BAROS, Nick RIGOGIANNIS, Dionisis VOGLITSIS, Nick PAPANIKOLAOU</i> <b>Improved adaptive droop control scheme for DC microgrids</b>	Greece
<b>O2-8</b>	<i>Martina PETKOVIC, Ivan GARVANOV, Dragan KNEZEVIC, Slavoljub ALEKSIC</i> <b>Optimization of GIS for forest fire risk assessment</b>	Serbia

## POSTER SESSION P1

**Thursday, 4 June, 15:30 - 17:00**

**Chair: Stanimir VALTCHEV**

<b>P1-1</b>	<i>Daniela OROZOVA, Ivan POPCHEV</i> <b>Cyber-physical-social systems for big data</b>	Bulgaria
<b>P1-2</b>	<i>Daniela OROZOVA, Nely HRISTOVA</i> <b>Generalized net model for dynamic decision making and prognoses</b>	Bulgaria
<b>P1-3</b>	<i>Teodor DIMOV, Daniela OROZOVA</i> <b>Software for data cleaning and forecasting</b>	Bulgaria
<b>P1-4</b>	<i>Todor KOSTADINOV, Stanislav SIMEONOV</i> <b>Processing and acquisition of navigation parameters</b>	Bulgaria
<b>P1-5</b>	<i>Atanas TERZIYSKI, Stoyan TENEV and Vedrin JELIAZKOV</i> <b>A multisensor environmental monitoring device</b>	Bulgaria
<b>P1-6</b>	<i>Valentin MATEEV, Miglenna TODOROVA, Iliana MARINOVA</i> <b>Axial field of coaxial magnetic gear</b>	Bulgaria
<b>P1-7</b>	<i>Iosko BALABOZOV, Dragoslav TOMOV, Ivan HADZHIEV, Ivan YATCHEV, Hartmut BRAUER</i> <b>Experimental study of the influence of some parameters on the characteristics of hybrid electromagnetic system with magnetic flux modulation</b>	Bulgaria, Germany
<b>P1-8</b>	<i>Valentin MATEEV, Iliana MARINOVA, Martin RALCHEV</i> <b>Transient heating of discharging Li-Ion battery</b>	Bulgaria
<b>P1-9</b>	<i>Ivan GARVANOV, Magdalena GARVANOVA, Stoyan VLADIMIROV</i> <b>Improving GPS positioning of vehicles in urban environment</b>	Bulgaria
<b>P1-10</b>	<i>Magdalena GARVANOVA, Ivan GARVANOV, Daniela BORISSOVA</i> <b>The influence of electromagnetic fields on human brain</b>	Bulgaria
<b>P1-11</b>	<i>Todor TODOROV, Rosen MITREV, Ivan YATCHEV</i> <b>A parametric study of electrothermal oscillator based on shape memory alloys</b>	Bulgaria
<b>P1-12</b>	<i>Elitsa GIEVA, Krasimir NEDELICHEV, Georgi NIKOLOV, Ivelina RUSKOVA and Ivan KRALOV</i> <b>Acoustic barrier with energy harvesting</b>	Bulgaria

<b>P1-13</b>	<i>Iva PETRINSKA, Dimitar PAVLOV, Dilyan IVANOV, Kiril KASSEV</i> <b>Investigation of the electrical and photometric parameters of industrial LED luminaire fed by different drivers</b>	<i>Bulgaria</i>
<b>P1-14</b>	<i>Iva PETRINSKA, Dilyan IVANOV, Dimitar PAVLOV, Kiril KASSEV</i> <b>Photometric flicker of LED luminaires according to driver type</b>	<i>Bulgaria</i>
<b>P1-15</b>	<i>Valentin TOTEV, Vultchan GUEORGIEV</i> <b>Regenerative braking in electric vehicles</b>	<i>Bulgaria</i>
<b>P1-16</b>	<i>Svetlana TZVETKOVA, Angel PETLESKOV, Yavor LOZANOV</i> <b>Harmonics of voltage and current in an electric power supply system for vertical cement mill</b>	<i>Bulgaria</i>
<b>P1-17</b>	<i>Yavor LOZANOV, Angel PETLESHKOV, Svetlana TZVETKOVA</i> <b>Capabilities for diagnostics of pump system's electrical equipment via frequency converters</b>	<i>Bulgaria</i>
<b>P1-18</b>	<i>Yavor LOZANOV</i> <b>Reliability assessment of variable speed induction motor drive with fault tree analysis</b>	<i>Bulgaria</i>
<b>P1-19</b>	<i>Nikolay HINOV, Tsveti HRANOV, Bogdan GILEV</i> <b>Comparison of different methods for controlling DC-DC converters in constant current mode</b>	<i>Bulgaria</i>
<b>P1-20</b>	<i>Nikolay HINOV, Tsveti HRANOV</i> <b>Model-based optimisation of a buck-boost DC-DC converter</b>	<i>Bulgaria</i>
<b>P1-21</b>	<i>Prodan PRODANOV</i> <b>Research of reliability of power semiconductors in dependency of thermal modes</b>	<i>Bulgaria</i>
<b>P1-22</b>	<i>Prodan PRODANOV, Dobroslav DANKOV</i> <b>Research of reliability of power thyristors using methods MIL-HDBK-217F and fides</b>	<i>Bulgaria</i>
<b>P1-23</b>	<i>Prodan PRODANOV, Dobroslav DANKOV</i> <b>Study of time for preventive maintenance of the electronic equipment</b>	<i>Bulgaria</i>
<b>P1-24</b>	<i>Nikolay PETROV, Kremena DIMITROVA, Svilen RATCHEV</i> <b>Determination of the optimal circuit-engineering solution of electronic circuits</b>	<i>Bulgaria</i>

## INVITED PAPERS

**Thursday, 4 June, 17:00 - 18:00**

**Chair: Hartmut BRAUER**

<b>I-1</b>	<i>Nathan IDA</i> <b>Sensors for Nondestructive Testing and Evaluation – from Coils to Radar Systems</b>	<i>USA</i>
<b>I-2</b>	<i>David LOWTHER</i> <b>Machine Learning applied to the Design and Analysis of Low Frequency Electromagnetic Devices</b>	<i>Canada</i>



## POSTER SESSION P2

**Thursday, 4 June, 18:00 - 19:30**

**Chair: Nebojsa RAICEVIC**

- P2-1** Yanko SLAVTCHEV, Raina TZENEVA, Valentin MATEEV  
**Coupled mechanical-electric analysis of hemi-spherical bodies in Hertzian contact** Bulgaria
- P2-2** Kostadin MILANOV  
**Extending the capabilities of silicon overvoltage arresters for powerful DC network applications** Bulgaria
- P2-3** Kostadin MILANOV  
**Methodology for investigation of supercapacitors in pulse modes** Bulgaria
- P2-4** Mihaela SLAVKOVA  
**Control options of parallel-connected thyristors operation in power electronics converters** Bulgaria
- P2-5** Mihaela SLAVKOVA  
**Application of current transformers in power electronics converters with voltage feedback** Bulgaria
- P2-6** Plamen RIZOV, Vultchan GUEORGIEV  
**Determination of the leakage parameters of synchronous hydrogenerators** Bulgaria
- P2-7** Vultchan GUEORGIEV  
**Thermal analysis and design of lighting equipment** Bulgaria
- P2-8** Dzhengiz YALMAZ, Vultchan GUEORGIEV  
**Controller for measurement reactive power of nonlinear sign changing loads** Bulgaria
- P2-9** Atanas KUNEV, Preslav TACHEV, Nikolay STOIMENOV, Vesselina TRASHLIEVA, Tatyana RADEVA  
**A study of the short-circuit thermal effect on aluminum and cooper bus-bars using a laboratory stand** Bulgaria
- P2-10** Nuri BERISHA, Nysret AVDIU, Rad STANEV, Dimo STOILOV, Shyqeri MORINA  
**Dynamic modeling of 'Kosovo A' power station synchronous generator** Bulgaria
- P2-11** Tanyo TANEV, Rad STANEV  
**Mathematical model of storage batteries in photovoltaic power plant** Bulgaria
- P2-12** Nuri BERISHA, Nehar SELIMI, Rad STANEV  
**Voltage stability analysis of kosovo power system local area** Bulgaria
- P2-13** Rad STANEV, Kamen NAKOV  
**Power system stabilizers in future power systems** Bulgaria
- P2-14** Marin MARINOV, Dimitar NIKOLOV, Borislav GANEV, Todor DJAMIJKOV  
**Smart multi sensor node for remote elevator condition monitoring** Bulgaria
- P2-15** Nikola GEORGIEV and Raycho RAYCHEV  
**Study of a coupled piezo-electromagnetic harvester** Bulgaria
- P2-16** Nikola GEORGIEV and Raycho RAYCHEV  
**Study of two- and four- spring electromagnetic harvesters** Bulgaria
- P2-17** Nikola GEORGIEV and Raycho RAYCHEV  
**Study of a linear generator, converging sea wave energy into electricity** Bulgaria
- P2-18** Dimitar YANKOV, Tsvetana GRIGOROVA, Emil DINKOV  
**A power loss analysis of a tree-phase 12/8 switched reluctance motor fed from asymmetric power converter in Matlab/Simulink** Bulgaria

P2-19	Dimitar ARNAUDOV, Krasimir KISHKIN, Vladimir DIMITROV <b>Algorithm and circuits for active balancing systems</b>	Bulgaria
P2-20	Teodora TODOROVA, Dimitar ARNAUDOV, Krasimir KISHKIN <b>Study of the operating modes of a resonant dc-dc converter with voltage clamping across resonant capacitor and different designs of the high frequency transformer</b>	Bulgaria
P2-21	Mincho PEEV, Dimitar DIMITROV <b>Electrical magnitudes on led drivers with high energy indicators</b>	Bulgaria
P2-22	Dimitar DIMITROV, Mincho PEEV <b>Starting regime of an electronic startup regulating apparatus for fluorescent lamps</b>	Bulgaria
P2-23	Dimitar YANKOV <b>The finite element model and analyses of a three-phase 12/8 pole switched reluctance motor</b>	Bulgaria

## ORAL SESSION O3

**Friday, 5 June, 9:00 - 11:00**

**Chair: Valentin MATEEV**

O3-1	Grzegorz DEBITA, Przemyslaw FALKOWSKI-GILSKI, Grzegorz WISNIEWSKI, Bogdan MIEDZINSKI, Marcin HABRYCH, Jan WANDZIO, Przemyslaw JEDLIKOWSKI, Bartosz POLNIK <b>Attempt to a video-transmission capability in MV mine cable network using BPL-PLC technology</b>	Poland
O3-2	Xin WANG, Bogdan MIEDZINSKI, Marcin HABRYCH, Grzegorz WISNIEWSKI, Grzegorz DEBITA, Bartosz POLNIK <b>Approach to control of a polarized reed switch using an equivalent solenoid method</b>	Poland
O3-3	Marcel NICOLA, Claudiu-Ionel NICOLA, Dumitru SACERDOTIANU <b>Sensorless control of PMSM using DTC strategy based on multiple ANN and load torque observer</b>	Romania
O3-4	Marcel NICOLA, Claudiu-Ionel NICOLA, Camelia MARINESCU <b>Sensorless control of PMSM using FOC strategy based on PI-ILC law and sliding mode observer</b>	Romania
O3-5	Rinat KARYMOV, Oleg KUZNETSOV <b>Determination of tuning parameters of SVC controllers using D-decomposition method</b>	Russia
O3-6	Ekaterina GERASIMENKO, Alexander KUVALDIN, Ulrich LÜDTKE, Maksim FEDIN <b>Electrothermal model of a multilayer inductor with external cooling</b>	Russia
O3-7	Victor Demidovich, Maxim Khatsayuk, Olga Demidovich <b>Computer simulation of coupled electromagnetic, temperature, magnetohydrodynamic and stress fields in the induction processing of metals</b>	Russia

## POSTER SESSION P3

**Friday, 5 June, 11:30 - 13:00**

**Chair: Nenad CVETKOVIC**

- |              |  |                 |
|--------------|--|-----------------|
| <b>P3-1</b>  | <i>Stefan SULAKOV</i><br><b>Mid-term adequacy assessment of Bulgarian power supply</b>   | <i>Bulgaria</i> |
| <b>P3-2</b>  | <i>Todor PETKOV, Ivaylo BELOVSKI, Kaloyan IVANOV, Anatoliy ALEKSANDROV</i><br><b>Modeling the parameters of a cascaded Peltier module using neural network</b>                                       | <i>Bulgaria</i> |
| <b>P3-3</b>  | <i>Kaloyan IVANOV</i><br><b>Design, realization and study of thermoelectric watch</b>  | <i>Bulgaria</i> |
| <b>P3-4</b>  | <i>Chavdar ALEXANDROV, Miroslav TSVETKOV, Nikolai KOLEV, Yordan SIVKOV and Avgustin HRISTOV</i><br><b>Oil spills detection by using Sentinel - 1 SAR images</b>                                      | <i>Bulgaria</i> |
| <b>P3-5</b>  | <i>Veselin ATANASOV, Yordan SIVKOV</i><br><b>Data fusion for IoMT in shipping</b>  | <i>Bulgaria</i> |
| <b>P3-6</b>  | <i>Peycho TOMOV, Dragiya YANULOV</i><br><b>Dynamic model of electro-hydraulic pumping unit driven by an asynchronous motor</b>   | <i>Bulgaria</i> |
| <b>P3-7</b>  | <i>Peycho TOMOV, Bohos APRAHAMIAN, Pavel ANDREEV, Petko PETKOV</i><br><b>Experimental study of transient processes in the electric pump block with throttle control</b>                              | <i>Bulgaria</i> |
| <b>P3-8</b>  | <i>Peycho TOMOV, Dragiya YANULOV</i><br><b>Modelling and examining the dynamic characteristics of an electro-hydraulic unit for discrete control based on direct acting high-speed servo valve</b>   | <i>Bulgaria</i> |
| <b>P3-9</b>  | <i>Iliyan ILIEV</i><br><b>Wideband signal detection with softwer DSP processor implemented on a microcontroller</b>  | <i>Bulgaria</i> |
| <b>P3-10</b> | <i>Toncho PAPANCHEV</i><br><b>A fuzzy control of Peltier-based thermal chamber for reliability tests</b>   | <i>Bulgaria</i> |
| <b>P3-11</b> | <i>Plamen STANCHEV, Mediha MEHMED-HAMZA</i><br><b>Investigation of the change of the single line to earth fault current in medium voltage electrical grids grounded through an active resistance</b> | <i>Bulgaria</i> |
| <b>P3-12</b> | <i>Plamen STANCHEV, Mediha MEHMED-HAMZA</i><br><b>Simulation training models for an automatic transfer switch and relay protection</b>   | <i>Bulgaria</i> |
| <b>P3-13</b> | <i>Vyara Vasileva, Miroslava Doneva</i><br><b>Variational approach with transferring coefficients for magnetic circuit analysis</b>  | <i>Bulgaria</i> |
| <b>P3-14</b> | <i>Dian Dzhibarov</i><br><b>Adaptive boundary control technique of distributed parameter systems</b>   | <i>Bulgaria</i> |
| <b>P3-15</b> | <i>Tatyana DIMOVA</i><br><b>Theoretical and experimental investigation of drum electromagnetic separator for waste material</b>  | <i>Bulgaria</i> |
| <b>P3-16</b> | <i>Kiril DIMITROV, Nikolay NIKOLAEV</i><br><b>Implementation of the phase compensation approach for tuning power system stabilizers with Simulink</b>  | <i>Bulgaria</i> |

<b>P3-17</b>	Vladimir SHTARBAKOV, Maik STREBLAU <b>Application of laser build-up welding for repair of die casting molds</b>	Bulgaria
<b>P3-18</b>	Emil PANOV, Dimitar DIMITROV, Emil BARUDOV, Milena IVANOVA <b>Protection regimes and electrical quantities in autotransformer alternating voltage regulators</b>	Bulgaria
<b>P3-19</b>	Dimitar GEORGIEV, Georgi GEORGIEV, Yulian RANGELOV, Yoncho KAMENOV <b>Analysis of the effect of soil thermal resistance on high-voltage cables sizing</b>	Bulgaria
<b>P3-20</b>	Milena IVANOVA, Marinela YORDANOVA, Rositsa DIMITROVA <b>Evaluation of the Step Voltages for Grounding Grids at Lightning Strikes</b>	Bulgaria
<b>P3-21</b>	Aydan HAKA, Veneta ALEKSIEVA and Hristo VALCHANOV <b>Comparative analysis of traffic prioritisation algorithms by LTE base station scheduler</b>	Bulgaria
<b>P3-22</b>	Aydan HAKA, Veneta ALEKSIEVA and Hristo VALCHANOV <b>Comparative analysis of traffic prioritisation algorithms in 6LoWPAN networks</b>	Bulgaria
<b>P3-23</b>	Veneta ALEKSIEVA, Hristo VALCHANOV, Anton HULIYAN <b>Implementation of smart-contract, based on hyperledger fabric block-chain</b>	Bulgaria
<b>P3-24</b>	Ivan HADZHIEV, Dian MALAMOV, Iosko BALABOZOV, Ivan YATCHEV <b>Study of operational parameters of a capacitor bank with detuned reactor for power factor correction in a low voltage network</b>	Bulgaria

## POSTER SESSION P4

**Friday, 5 June, 14:00 - 15:30**

**Chair: Dimitar ARNAUDOV**

<b>P4-1</b>	Aydan HAKA, Veneta ALEKSIEVA and Hristo VALCHANOV <b>Software tool for evaluation of traffic prioritisation algorithms in 6LoWPAN network</b>	Bulgaria
<b>P4-2</b>	Diyan DINEV, Veneta ALEKSIEVA and Hristo VALCHANOV <b>Study of Li-Fi indoor network reliability</b>	Bulgaria
<b>P4-3</b>	Dimitar ZLATEV, Julia GARİPOVA, Toncho PAPANCHEV, Anton GEORGIEV <b>Experimental validating of reliability model of MOSFETS in resonant full bridge inverter</b>	Bulgaria
<b>P4-4</b>	Angel MARINOV, Emilian BEKOV, Firgan FERADOV, Toncho PAPANCHEV <b>Genetic algorithm for optimized design of flyback transformers</b>	Bulgaria
<b>P4-5</b>	Angel MARINOV, Emilian BEKOV, Svetlozar ZAHARIEV <b>Practical approach for psophometric noise measurement in DC/DC converters</b>	Bulgaria
<b>P4-6</b>	Marin TODOROV, Marin MARINOV, Maik STREBLAU <b>An approach for investigation of the temperature field in a three-phase induction motor</b>	Bulgaria
<b>P4-7</b>	Reneta PARVANOVA, Mariyana TODOROVA <b>Identification of a DC motor with independent excitation</b>	Bulgaria
<b>P4-8</b>	Mariyana TODOROVA, Reneta PARVANOVA <b>Influence of the sampling period in the identification of a dual-mass DC electromechanical system using Symlet wavelets</b>	Bulgaria

<b>P4-9</b>	Mariyana TODOROVA, Reneta PARVANOVA <b>Mathematical modeling of a heat exchanger by the wavelet function method</b>	Bulgaria
<b>P4-10</b>	Pavel ANDREEV <b>Study of Mi Electric Scooter Pro capabilities</b>	Bulgaria
<b>P4-11</b>	Nadezhda TSVETKOVA <b>Coordination of the thermal insulation in an electric resistance furnace for art glass melting</b>	Bulgaria
<b>P4-12</b>	Yanita Slavova, Mariya MARINOVA <b>Determination of the energy efficiency of domestic electric cooktops in real operating conditions</b>	Bulgaria
<b>P4-13</b>	Nikolay NIKOLAEV, Yulian RANGELOV, Ara PANOSYAN, Ngoc Tuan Trinh <b>PSS/E based power system stabilizer tuning tool</b>	Bulgaria, Germany
<b>P4-14</b>	Penka ZLATEVA, Adriana TUDORACHE, Krastin YORDANOV, Liviu Marius CIRTINA <b>An analysis of energy resources in Bulgaria and Romania</b>	Bulgaria, Romania
<b>P4-15</b>	Bohos APRAHAMIAN, Meline APRAHAMIAN <b>Analysis of the performance of AQ500 sodars in low temperature conditions</b>	Bulgaria
<b>P4-16</b>	Dimitar SPIROV <b>Investigation of the starting mode of a three-phase induction machine with single-phase power supply</b>	Bulgaria
<b>P4-17</b>	Roman Petrov, Viktor Leontiev, Artem Solovev, Viktor Kiselev, Mirza Bichurin, Slavcho Bozhkov, Ivan Milenov, Penko Bozhkov <b>Modeling and development of position sensors based on multiferroic layered structures</b>	Russia, Bulgaria
<b>P4-18</b>	Ilona IATCHEVA, Malina DIMITROVA <b>Influence of parameters of power line on the configuration of the magnetic field distribution in its vicinity</b>	Bulgaria
<b>P4-19</b>	Kostadin YOTOV, Emil HADZHIKOLEV, Stanka HADZHIKOLEVA <b>Forecasting energy efficiency and energy consumption in Bulgaria by examining the "energy intensity" indicator using neural networks</b>	Bulgaria
<b>P4-20</b>	Stoyan CHERESHAROV, Georgi GUSTINOV, Stanka HADZHIKOLEVA, Emil HADZHIKOLEV <b>Distributed public cloud on low power devices</b>	Bulgaria
<b>P4-21</b>	Krasimir ORMANDZHIEV, Gencho POPOV, Lachezar APOSTOLOV <b>Applying a dynamic model in analyzing the peak pressure of electrohydraulic drive system</b>	Bulgaria
<b>P4-22</b>	Krasimir ORMANDZHIEV, Gencho POPOV, Lachezar APOSTOLOV <b>Numerical analysis of the peak pressure in electrohydraulic drive system</b>	Bulgaria
<b>P4-23</b>	Dimitar MINCHEV, Atanas DIMITROV <b>Laboratory automation system using IoT devices</b>	Bulgaria

## ORAL SESSION O4

**Friday, 5 June, 16:00 - 18:00**

**Chair: Vultchan GUEORGIEV**

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|-------------|--|----------------|
| <b>O4-1</b> | <i>M. Mustafa ERTAY, Michael SCHMIDT</i><br><b>The modeling of real three phase microgrid for investigating and solving the power quality issues</b>                           | Turkey,<br>USA |
| <b>O4-2</b> | <i>M. Mustafa ERTAY, Md Multan BISWAS, Herbert L. GINN III</i><br><b>The performance of MMC-DSTATCOM under unbalanced and faulty grid conditions in low voltage microgrids</b> | Turkey,<br>USA |
| <b>O4-3</b> | <i>Onur AYAN, Belgin TURKAY</i><br><b>IoT-based energy efficiency in smart homes by smart lighting solutions</b>   | Turkey         |
| <b>O4-4</b> | <i>Ilona IATCHEVA, Ilonka SAYKOVA</i><br><b>Heat effects in plant cellular materials during PEF assisted substances extraction</b>   | Bulgaria       |
| <b>O4-5</b> | <i>Alexandra KHALYASMAA, Stanislav EROSHENKO</i><br><b>Machine learning application for the high-voltage equipment life cycle forecasting</b>                                  | Russia         |
| <b>O4-6</b> | <i>Alexandra KHALYASMAA, Alina STEPANOVA, Stanislav EROSHENKO</i><br><b>The application of partial discharge monitoring system for instrument transformers: special issues</b> | Russia         |
| <b>O4-7</b> | <i>Alexandra KHALYASMAA, Iakov VINTER, Stanislav EROSHENKO</i><br><b>The methodology of high-voltage instrument transformers technical state index assessment</b>              | Russia         |

## POSTER SESSION P5

**Saturday, 6 June, 9:00 - 10:30**

**Chair: Sotir SOTIROV**

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|-------------|--|-------------------|
| <b>P5-1</b> | <i>Tomas KOSTAL, Pavel KOBRLI</i><br><b>Complex parameter identification of induction machine in traction drive</b>  | Czech<br>Republic |
| <b>P5-2</b> | <i>Adrienn DINEVA, Szabolcs KOCSIS SZURKE, Istvan VAJDA</i><br><b>Data-driven terminal voltage prediction of Li-Ion batteries under dynamic loads</b>                            | Hungary           |
| <b>P5-3</b> | <i>Szabolcs KOCSIS SZURKE, Szabolcs SZALAI, Istvan LAKATOS</i><br><b>Battery deformation measurement with DIC technique</b>  | Hungary           |
| <b>P5-4</b> | <i>Dragana JOVANOVIC, Dejan JOVANOVIC, Dragana ZIVALJEVIC, Zeljko HEDERIC, Nenad CVETKOVIC</i><br><b>Star-shaped grounding electrode near vertical cylindrical inhomogeneity</b> | Serbia            |

<b>P5-5</b>	<i>Vojin KOSTIC, Nebojsa RAICEVIC, Miroslav DOCIC</i> <b>FOP - FSM measurement - relative position of the test conductors</b>	<i>Serbia</i>
<b>P5-6</b>	<i>Grigore CIVIDJIAN</i> <b>Corner capacitance of narrow strip in rectangular cross section envelope</b>	<i>Romania</i>
<b>P5-7</b>	<i>Sorin ENACHE, Aurel CAMPEANU, Ion VLAD, Monica Adela ENACHE, Radu ZLATIAN</i> <b>Dynamic analysis of new induction motor for electrical traction</b>	<i>Romania</i>
<b>P5-8</b>	<i>Sorin ENACHE, Aurel CAMPEANU, Monica Adela ENACHE, Ion VLAD, Marian POPESCU</i> <b>New aspects in optimal design of asynchronous motors used in light railway traction</b>	<i>Romania</i>
<b>P5-9</b>	<i>Gheorghe LAZAROIU, Dana-Alexandra CIUPAGEANU, Teodora VATUIU</i> <b>Highlights of renewable energy integration impact: Evolution and perspectives in Romania</b>	<i>Romania</i>
<b>P5-10</b>	<i>S. BENSALAM, D. PETREUS</i> <b>Electrical behavior of photovoltaic/thermoelectric generator hybrid system</b>	<i>Algeria</i>
<b>P5-11</b>	<i>Grace Firsta LUKMAN, Kwang-II JEONG, Jin-Woo AHN</i> <b>Design options of switched reluctance motors for a high-performance blender</b>	<i>Korea</i>
<b>P5-12</b>	<i>Ancuta-Mihaela ACIU, Maria Cristina NITU, Marcel NICOLA, Claudiu-Ionel NICOLA, Florica LAZARESCU</i> <b>Complementary analysis of the degree of polymerization based on chemical markers 2-furaldehyde and methanol using the fuzzy logic</b>	<i>Romania</i>
<b>P5-13</b>	<i>Dumitru SACERDOTIANU, Florica LAZARESCU, Iulian HUREZEANU, Maria-Cristina NITU, Ancuta-Mihaela ACIU, Marcel NICOLA, Claudiu-Ionel NICOLA, Fevronia Despina ROMAN</i> <b>Integrated systems for the continuous monitoring of the technical condition of transformer units</b>	<i>Romania</i>
<b>P5-14</b>	<i>Maria Cristina NITU, Marian DUTA, Marcel NICOLA, Stefan-Marius SEITAN, Mihai IONESCU</i> <b>The influence of supply voltage phase angle on the transient current generated on transformer energization</b>	<i>Romania</i>
<b>P5-15</b>	<i>German LIPINSKIY, Marina RASHEVSKAYA</i> <b>Applicability of calculation methods for single-phase short circuit currents in grid with voltage up to 1 kV</b>	<i>Russia</i>
<b>P5-16</b>	<i>Andrew ZHURKIN, Marina RASHEVSKAYA</i> <b>Modeling and evaluation of non-sinusoidal current and voltage when operating a variable-frequency drive and capacitor banks</b>	<i>Russia</i>
<b>P5-17</b>	<i>Ekaterina KURBATOVA, Yegor KUSHCHENKO, Pavel KURBATOV</i> <b>Comparison of magnetic systems with HTS bulks and HTS tape for non-contact bearings</b>	<i>Russia</i>
<b>P5-18</b>	<i>Osman Can SOYGENC, Lale T. ERGENE</i> <b>Particle swarm optimization implementation on PMSM design</b>	<i>Turkey</i>
<b>P5-19</b>	<i>Elmira MOUSAREZAEI, Abdullah POLAT, Lale T. ERGENE</i> <b>Wind turbine emulator based on small-scale PMSG by fuzzy FOC</b>	<i>Turkey</i>
<b>P5-20</b>	<i>Onur AYAN, Burak KUCUKASLAN, Belgin TURKAY</i> <b>Turkish spot electricity market price forecasting in Keras</b>	<i>Turkey</i>

