

**2025 19th International Conference on Electrical Machines,  
Drives and Power Systems (ELMA)**

# **ELMA 2025**

## **50th anniversary**

**19 - 21 June 2025,  
Technical University of Sofia, BULGARIA**

Organised by:

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

**IEEE Bulgaria Section**

with the support of:

**Technical University of Sofia – Conference host**

Technical University of Varna

University of Ruse

Technical University of Gabrovo

Federation of Scientific and Technical Unions

## **Preliminary PROGRAM**

2025 19th International Conference on Electrical Machines, Drives and Power  
systems (ELMA) is technically co-sponsored by IEEE  
(Conference record # 65795).

The conference is part of the "Science Days of TU-Sofia" forum.

## CONFERENCE VENUE

The 19th International Conference on Electrical Machines, Drives and Power Systems ELMA 2025 will be held in Sofia, Bulgaria, **in the Faculty of Electrical Engineering, building 12 of Technical University of Sofia, Sofia, 8 Kliment Ohridski blvd.**

## LANGUAGE

The official language of the Conference will be **English**.

## REGISTRATION DESK

The Registration Desk will be open as follows:  
Thursday, 19 June 2015 – 09:00 ÷ 17:00

## PAPER PRESENTATION

Authors who will present the papers (orally or by poster) are kindly requested to contact their session chairmen 10 minutes before the beginning of the session. In this way, the authors will contribute to well organization of the sessions.

The time for the **oral** presentation of the papers including discussion is **15 minutes**. Papers should be presented in English only by the registered authors. Multimedia projectors will be at their disposal during the presentation.

For **poster presentations**, a place for one A1 page will be provided with the corresponding number of the poster according to this Program.

The Secretariat will provide the tape for poster mounting. Authors are requested to set up their posters well in advance of the session starting time and must be present throughout the whole session.

**After the session authors are kindly requested to remove their posters.**

## CONFERENCE CHAIRMEN

**Vladimir LAZAROV**  
**Bohos APRAHAMIAN**

**Technical University of Sofia**  
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Nikolay HINOV  
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Adrian IVANOV

## CONFERENCE TIME-TABLE (Sofia local time GMT+3)

Day	Time	Event - <i>Place</i>	
Thursday, 19 June 2025	09:00-10:00	Registration - <i>Lobby</i>	
	10:00-10:30	Opening Session - <i>Hall A</i>	
	10:30-11:30	Plenary Session 1 - <i>Hall A</i>	
	11:30-11:45	Coffee Break - <i>Lobby</i>	
	11:45-12:45	Plenary Session 2 - <i>Hall A</i>	
	13:00-14:00	Lunch break	
	14:30-15:30	Oral Session 1 - <i>Hall A</i>	Oral Session 2 - <i>Hall B</i>
	14:15-15:30	Poster Session 1 - <i>Lobby</i>	
	15:30-16:00	Coffee Break - <i>Lobby</i>	
	16:00-17:30	Oral Session 3 - <i>Hall A</i>	Oral Session 4 - <i>Hall B</i>
	16:00-17:45	Poster Session 2 - <i>Lobby</i>	
	17:45-18:30	Plenary Session 3 - <i>Hall A</i>	
	18:30-20:00	Welcome Cocktail in the <i>Lobby</i>	
Friday, 20 June 2025	09:00-10:30	Oral Session 5 - <i>Hall A</i>	Oral Session 6 - <i>Hall B</i>
	10:30-11:00	Coffee Break	
	11:00-12:30	Oral Session 7 - <i>Hall A</i>	Oral Session 8 - <i>Hall A</i>
	10:45-12:30	Poster Session 3 - <i>Lobby</i>	
	13:00-14:00	Lunch break	
	14:30-16:00	Oral Session 9 - <i>Hall A</i>	Oral Session 10 - <i>Hall B</i>
	16:00-16:30	Coffee Break - <i>Lobby</i>	
	16:30-18:00	Poster Session 4 - <i>Lobby</i>	
	19:30	Conference Gala Dinner	
Saturday, 21 June 2025	10:00-17:30	Meetings and Discussions	
	10:00-13:00	Sightseeing tour (museums) of Sofia	

## CONFERENCE PROGRAM

Thursday, 19 June 2025

<b>10:00-10:30</b>	<b>OPENING SESSION</b>	<b>Hall A</b>
<b>Chairman: Vladimir Lazarov Co-Chairman of ELMA2025</b> <b>10:00 – 10:30 Welcome addresses</b>		
<b>10:30-11:30</b>	<b>Plenary session 1</b>	<b>Hall A</b>
<b>Chairman: Vladimir Lazarov</b>  <b>Management of Intermittence of Renewable Energy Production: Various Aspects of Energy Storage</b> <b>Presented by <i>Gilles Notton, France</i></b>  <b>Studies on Application Technology of New Soft-magnetic Material in High-performance Traction Motors</b> <b>Presented by <i>Dr. Ruilin Pei, China</i></b>		
<b>11:30÷11:45</b>	<b>Coffee Break</b>	<b>Lobby</b>
<b>11:45-12:45</b>	<b>Plenary session 2</b>	<b>Hall A</b>
<b>Chairman: Zahari Zarkov</b>  <b>Electrification of aircraft</b> <b>Presented by <i>Prof. Dr. Michael Terörde, Germany</i></b>  <b>Comparative Analysis and Torque Ripple Minimization of Hybrid and IPM Machines</b> <b>Presented by <i>Kapeel Kumar, Mudassir Ahmed and Sajad Ali, Pakistan</i></b>		
<b>13:00-14:00</b>	<b>Lunch Break</b>	

**Thursday, 19 June 2025**

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**14:30-15:30, 19 June**

**Oral Session 1**

**Hall A**

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**Chairman: Boris Evstatiev**

1. **Design and Analysis of Bidirectional Cascaded Buck-Boost Converter with Average Current Mode Control for Vehicle-to-Vehicle (V2V) Charging**  
*Omer Berber, Mehmet Buyuk, Mustafa Inci*
2. **Simulation of the Traction Power Supply System in Normal and Degraded Operating Modes**  
*Valeriy Kuznetsov, Artur Rojek, Petro Hubsnyi*
3. **Estimation of the Energy Regeneration Potential**  
*Valeriy Kuznetsov, Artur Rojek, Petro Hubsnyi*
4. **Torque Ripple Minimization of IPM Spoke Type Motor**  
*Sajad Ali, Kapeel Kumar, Fares Suliaman Alromithy, Mohammad R. Altmania, Qasim Ali, Hafiz Mudassir Munir*

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**14:30-15:30, 19 June**

**Oral Session 2**

**Hall B**

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**Chairman: Nikolay Mihailov**

1. **Crowbar Protection for a Power Electronics Hardware Trainer**  
*Bart Slat, Diego Zuidervliet, Peter van Duijsen*
2. **Modular Dual Active Bridge design for DC Grids**  
*Raoul Baksoellah, Diego Zuidervliet, Peter van Duijsen*
3. **Control Scheme for a DC Grid Manager in a Tiny House**  
*Sebastiaan Koning, Diego Zuidervliet, Peter van Duijsen*
4. **Comparative Study of Hybrid IPM and SPM Brushless Wound Rotor Vernier Machine for Variable Speed Applications**  
*Kapeel Kumar, Qasim Ali, Mohammad R. Altmania, Sheeraz Ahmed, Hafiz Mudassir Munir*
5. **Management of Intermittence of Renewable Energy Production: Various Aspects of Energy Storage**  
*Gilles Notton*

**Chairmen: Vyara Ruseva and Valentin Milenov**

1. **A Concept of an Electronic System for Control of a Semi-Automated Car Wash**  
*Andrii Terpan, Teodora Hristova, **Boris Evstatiev**, Milena Purvanova*
2. **Comparison of the Speed-Torque Characteristics of an Induction Motor with Parameters Obtained by a Genetic Algorithm and an Experimental Method**  
*Donka Ivanova, Vyara Ruseva, **Anka Krasteva***
3. **Tuning PID Controllers Parameters of the DC Motor with Genetic Algorithm**  
*Donka Ivanova, **Anka Krasteva**, Vyara Ruseva*
4. **Research of the possibilities for compensating the electrical energy imbalances in the balancing groups of photovoltaic power plants using a cogenerator**  
***Vyara Ruseva**, Vladimir Valov*
5. **Conceptual Model of an IoT-Based Testing and Analysis System**  
*Deyan Dimitrov, Boris Evstatiev, **Irena Valova***
6. **An Educational Innovative Platform for Research and Training in Solar Energy**  
*Boris Evstatiev, Nikolay Valov, Tsvetelina Kaneva, Ioan Viorel Banu, George Culea, **Nicolay Mihailov***
7. **A Power Loss Analysis in the Bi-directional Operation Mode of an Asymmetric Bridge Converter and (N+1)-switch Converters for a Three-phase SRM**  
***Dimitar Yankov**, Tsvetana Grigorova*
8. **A Study and Comparison of Interleaved Boost DC/DC Converters Powered by Fuel Cells**  
***Tsvetana Grigorova***
9. **An Improved Method for Measuring the Inductance Profile of a Switched Reluctance Motor**  
*Georgi Bodurov, **Tsvetana Grigorova**, Dimitar Yankov*
10. **Methodology and algorithm for testing a variable frequency drive in operation with a lifting mechanism**  
*Denis Petkov, **Prodan Prodanov***
11. **Simulation and practical investigation of a digital PID controller in servodrive for DC motor**  
*Todor Nedelchev, **Prodan Prodanov***
12. **Analysis of the Daily Performance of CdTe and CIGS Photovoltaic Systems Under Real Operating Conditions**  
*Ivaylo Lazarov, Plamen Tsankov, **Tsvetozar Petkov***
13. **Dynamic Response of the Space Current Vectors of an Induction Motor in the Case of Non-symmetrical Supply Voltage**  
***Tsvetozar Petkov**, Dimitrina Koeva*

14. Study of an Induction Motor by Using the Hodographs of Space Phase Current Vectors in the Case of Non-Sinusoidal Supply Voltage  
*Tsvetozar Petkov, Dimitrina Koeva*
15. Analysis of the Effect of Mixed Eccentricity Fault on Controlled Induction Machines via Finite Element Method  
*György Istenes, Krisztián Horváth*
16. Demagnetization Fault Detection and Fault-Tolerant Control for PMSynRM Drive Using EKF-Based Permanent Magnet Flux Linkage Estimator  
*Krisztián Horváth, Zoltán Németh, Tamás Horváth*
17. Distribution Transformers a Potential Contribution on Reduction of Technical Losses  
*Aida Spahiu, Darjon Dharmo, Genci Sharko*
18. Energy Load Modeling with Behaviorally Interpretable Clustering and LightGBM  
*Adrienn Dineva*
19. On the Impact of Magnetic Saturation on Incipient ITSC Fault Signal Detection in PMSMs under EV Transient Conditions  
*Adam Zsuga, Adrienn Dineva*
20. Opportunities for pulse-based diagnostics in electric and hybrid vehicle battery  
*Szabolcs Kocsis Szürke, Illés Lőrincz*
21. Radar Cross Section Analysis via the Nonstandard Finite-Difference Time-Domain Method Combined with a Subgridding Scheme and GPU Acceleration  
*Yasushi Kanai, Tadao Ohtani, Nikolaos Kantartzis*
22. Performance of Foldable Photovoltaic Panels in Real Conditions  
*Valentin Milenov, Ivan Bachev, Zahari Zarkov*
23. Fault Tree Reliability Analysis of Solar-Powered Pump Systems  
*Yavor Lozanov, Svetlana Tzvetkova, Angel Petleshkov*
24. Influence of Collector Geometry on the Morphology of Electrospun Fibers  
*Dilyana Gospodinova, Momchil Shopov*
25. Influence of Wire Cutting and Laser Cutting Processes on Magnetic Properties of Electrical Steel for Motors  
*Leyiran Zhang, Zhaohui Liu, Deji Ma, Kai Xie, Lubin Zeng, Ruilin Pei*

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**15:30÷16:00**

**Coffee Break**

**Lobby**

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**16:00-17:30, 19 June**

**Oral Session 3**

**Hall A**

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**Chairman: Bohos Aprahamian**

1. **Influence of Soiling and Partial Shading on the Performance of Photovoltaic Modules**  
*Nikolay Valov, Dimitar Trifonov, **Boris Evstatiev**, Nicolay Mihailov*
2. **Simulation-Based Analysis of a Grid-Connected Micro PV System with Integrated Green Hydrogen Storage**  
*Angel Marinov, Svetlozar Zahariev, Kaloyan Solenkov*
3. **Algorithm for Data Extraction from Photovoltaic Module Technical Documentation**  
*Angel Marinov, Kaloyan Solenkov*
4. **Dynamic Agrivoltaic Shading System for Optimal Plant Shading**  
*Pavel Andreev, Bohos Aprahamian, Atanas Mitsev*
5. **Simulation Automation for Power Efficiency for Autonomous Air Quality Measurement Systems**  
*Angel Marinov, Boyan Shabanski*
6. **A Multidisciplinary Project-Based Approach to Engineering Education: Design and Development of a Portable Music Player**  
*Vladimir Velikov, Tsvetelina Kaneva, Irena Valova, Dimitar Trifonov, Georgi Georgiev*

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**16:00-17:30, 19 June**

**Oral Session 4**

**Hall B**

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**Chairman: Gilles Notton**

1. **Analysis of Energy Storage Technologies**  
*Aleksandar Aleksandrov, Angel Chikichev, **Anatoliy Parushev**, Daniela Shehova, Rumen Popov*
2. **Efficiency of the Photovoltaic Panel on the Temperature Change**  
*Nikolai Paunkov, Rumen Popov, **Anatoliy Parushev**, Angel Chekichev, Aleksandar Aleksandrov, Milena Bundevea*
3. **High Precision Measurement of the Air Temperature Using RTD Pt100 Sensor**  
*Angel Chekichev, Aleksandar Aleksandrov, Rumen Popov, **Anatoliy Parushev**, Daniela Shehova*
4. **A Simulation Based Comparison of PWM and DTC Control for 8/6 SRM**  
*Franklin Sánchez, Maribel Milanés, Enrique Romero, González Eva, Roncero Carlos, Fermín Barrero*
5. **Comparative Analysis of Lithium-Ion Batteries**  
*Stoyan Stoyanov, Vultchan Gueorgiev*
6. **Microgrid Rule-based Control Energy Management with Probabilistic Solar Forecast**  
*Ghjuvan Antone Faggianelli, Mohammed Asloune, Jean Laurent Duchaud, Cyril Voyant, Gilles Notton*

**Chairmen: Maik Streblau and Valentin Milenov**

1. **A Case Study on the Influence of Oxyhydrogen on Emission Levels in Diesel Car Engines**  
*Kalin Nikolov, Mihail Simov, **Maik Streblau**, Georgi Zhelev*
2. **FEM-Based Analysis of the Induction Motor Temperature Field at Various Supply Frequencies**  
*Marin Todorov Marinov, Marin Slavov Marinov, **Maik Streblau***
3. **A Case Study on the Analysis of Faults Distribution in Induction Motors**  
*Dragomir Dragnev, Bohos Aprahamian, **Maik Streblau**, Ilonka Lilyanova*
4. **Adapting to Change: Human Resource Management Practices in the Evolving Electrical Power Industry**  
*Marina Marinova Stoyanova, Boris Gramchev*
5. **Managerial Influence in Structuring Communication Networks for Effective Team Management in the Bulgarian Electricity Sector**  
*Marina Marinova Stoyanova, Svetlana Dimitrakieva, Zhulieta Mihaylova*
6. **An Approach for Reliability Estimation and Improvement of Control Systems Part of Intelligent Transportation Systems**  
*Boyan Karamilev, Toncho Papanchev, Angelina Dimitrova*
7. **Efficiency and Reliability Comparison and Estimation of Si MOSFETs and GaN Power Switches on Frequency**  
*Toncho Papanchev, Angelina Dimitrova, **Boyan Karamilev***
8. **Reliability Testing of Medical Ultrasound Devices' Control Systems**  
*Angelina Dimitrova, Toncho Papanchev, **Boyan Karamilev***
9. **Analysis and Optimization of Training Time of ML Dlassifiers**  
***Georgi Enchev***
10. **Optimization of Bagging Classifier for Diagnosis of Marine Electric Drives**  
***Georgi Enchev**, Dimitar Tsvetanov, Nikolay Djararov"*
11. **Analytical Comparison of Topologies for Microphotovoltaic Systems with Enhanced features and Attributes.**  
***Kaloyan Solenkov***
12. **Approach For Automated Batch Evaluation of MOSFET Losses In Power Electronic Converters Based on System Level Simulation and Program Scripting**  
*Firgan Feradov, **Svetlozar Zahariev**, Angel Marinov*
13. **Improvements of Battery Charging Systems for Electric Vehicles**  
***Svetlozar Zahariev***
14. **Research Production of Brown Gas Generator Under Different Methods and Modes of Operation**  
***Svetlozar Zahariev***
15. **Aspects of Regulation of Grinding Tools**  
*Ilian Iliev, **Desislava Mihaylova***

- 16.Design improvement of an Automatic Assembling Machine for Door Locks**  
*Ilian Iliev, Reneta Parvanova, Desislava Mihaylova*
- 17.Design of a Quality Control Module for a Nipple-Nut Assembling Machine**  
*Desislava Mihaylova, Svetlozar Zahariev*
- 18.Braking Mode Investigation of Switched Reluctance EV Traction Motor Drive**  
*Nikolay Djagarov, Nikolay Yanev, Hristo Milushev, Dimitar Tsvetanov*
- 19.Low Cost Shipboard Voltage Monitoring Using a Raspberry Pi-Based Data Acquisition System**  
*Dimitar Tsvetanov*
- 20.Modeling of Adaptive Control of Switched Reluctance EV Traction Motor Drive**  
*Nikolay Djagarov, Nikolay Yanev, Hristo Milushev, Dimitar Tsvetanov*
- 21.Study of Low-Frequency Electromagnetic Field in Specific Areas of a Car Carrier Vessel with 6.6 kV Propulsion System**  
*Milena Ivanova, Emil Barudov, Dimitar Tsvetanov*
- 22.Ways to Improve Energy Efficiency of Ship Power Systems**  
*Evgeni Nikolaev*
- 23.Modelling of a Reluctance Magnetic Gear**  
*Miglenna Todorova, Valentin Mateev, Iliana Marinova, Wolfgang Gruber, Edmund Marth, Stefan Mallinger*
- 24.Optimal Operation Model of a Microgrid in a Market Environment – Part I: Model Formulation**  
*Vesselina Trashlieva, Tatyana Radeva*
- 25.Selection Analysis of Amorphous Alloy and Silicon Steel for Permanent Magnet Synchronous Motors with Different Speeds**  
*Sifan Wang, Changhao Yan, Zhiye Li Kai Xie, Lubin Zeng, Ruilin Pei*

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<b>17:45-18:30, 19 June</b>	<b>Plenary Session 3</b>	<b>Hall A</b>
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**Chairman: Ludmil Stoyanov**

- 1. Huawei C&I - One Fits All and Residential Solutions**  
*Presented by Slavtcho Deltchev*

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<b>18:30-20:00</b>	<b>Welcome Cocktail in the Lobby</b>
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## Friday, 20 June 2025

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09:00-10:30, 20 June

Oral Session 5

Hall A

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**Chairman: Iosko Balabozov**

1. **Automated Time-Variant Fuzzy Time Series Controller for Multi-Scale Glucose Prediction with Medication Adherence**  
*Anita XHEMALI, Elma ZANAJ, Lorena BALLIU, Gledis BASHA*
2. **Open Source Automatic Transfer Switch with Three Power Inputs, Smart Energy Monitoring Capabilities and Remote Access Option**  
*Iosko Balabozov, Ivan Hadzhiev, Ivan Yatchev*
3. **Analysis the security level of end devices in a ZigBee network**  
*Marieta Haka, Aydan Haka, Veneta Aleksieva, Hristo Valchanov*
4. **An analysis of the feasibility of renewable energy sources to supply thermal loads**  
*Valentin Totev, Vultchan Gueorgiev, Hristo Vasilev*
5. **Analysis of the impact of WPP on the Electric Power System in Romania**  
*Georgiana Balaban, Alexandru Sorin Nistor, Razvan Jeciu, George Cristian Lazaroiu, Nicoleta Paun, Claudia Popescu, Luminita Popescu, Radu Stefan, Soteris Kalogirou*
6. **Comparative Study of Bipartite Matching Algorithms**  
*Ventseslav Shopov, Vanya Markova*

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09:00-10:30, 20 June

Oral Session 6

Hall B

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**Chairman: Valentin Gyurov**

1. **Experimental evaluation of a magnetic core's relative permeability and core loss coefficients**  
*Rosen Dimitrov*
2. **Mathematical Modeling of the Electromagnetic Processes of a Three Phase Inductor with a Split Phase**  
*Rosen Dimitrov, Marin Marinov, Georgi Zhelev, Miroslava Doneva*
3. **Sensorless estimation of relative angular position and speed in a linear-rotary reluctance actuator with high influence of eddy currents**  
*Bogdan Miroschnitschenko, Florian Poltschak, Wolfgang Amrhein*
4. **Novel Online Parameter Identification and Angle Offset Calibration Method for Electrical Machines**  
*Stefan Haehnlein, Jan Philipp Degel, Christian Kloeffer, Boschert Lars, Philipp Mueller, Martin Doppelbauer*
5. **Transient Emission from Welding Machines in the Frequency Range 2 to 9 kHz**  
*Alexander Novitskiy*
6. **Application of Envelope Function Method for Evaluation of Industrial Electric Power Supply Systems with Photovoltaic Installations and Energy Storage Devices**  
*Valentin Gyurov, Andrey Yankov, Vladimir Chikov*

<b>10:30÷11:00</b>	<b>Coffee Break</b>	<b>Lobby</b>
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<b>11:00-12:30, 20 June</b>	<b>Oral Session 7</b>	<b>Hall A</b>
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**Chairman: Valentin Gyurov**

- 1. Modeling and Optimization of Energy-Efficient Zone for Wind Turbines under Time-Variable Wind Speeds**  
*Iliyan Petrov, Ciprian Surandaru, Denis Chikurtev, Samuel Ciucurita, Sorin Misuroi*
- 2. Possibilities for Applying a Transport Algorithm in the Implementation of Renewable Energy Sources in Power Supply Systems of Chemical Industry Enterprises**  
*Valentin Gyurov, Andrey Yankov*
- 3. Key Factors for Hybrid Power Plants Performance Evaluation**  
*Ana Borissova*
- 4. Solar Aided Geothermal Binary Power Plant**  
*Ana Borissova*
- 5. Analytical study of the intermittent operation mode of warm air heating in a warehouse for storage and freight forwarding of goods and materials**  
*Ana Borissova, George Tomov*
- 6. Model Predictive Control Approach for Trajectory Tracking**  
*Ventseslav Shopov, Vanya Markova*

<b>11:00-12:30, 20 June</b>	<b>Oral Session 8</b>	<b>Hall B</b>
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**Chairman: Kiril Anguelov**

- 1. The capacity as a mechanism to support generation capacity and supply security of Kosovo Power System**  
*Shyqeri Morina, Kadri Kadriu, Dimo Stoilov*
- 2. Requirements Concerning the Selection of Energy Scenarios**  
*Kristina Hadzhiyska, Dimo Stoilov*
- 3. Indicators for Evaluating the Effectiveness of Algorithmic Management in Mobile Teams of Power Distribution Companies**  
*Miglena Angelova, Kiril Anguelov*
- 4. Methodology for Evaluation Effectiveness and Efficiency of Algorithmic Management in Emergency Response Teams**  
*Miglena Angelova, Kiril Anguelov*
- 5. Power System Development in the Context of the Decarbonization and Digitalization of the Energy Sector**  
*Georgiana Balaban, Alexandru Sorin Nistor, Soteris Kalogirou*
- 6. The Green Skills in Albania Energy Sector**  
*Ani Sharko, Genci Sharko*

**Chairmen: Tatyana Dimova and Vladislav Petrov**

1. **Comparative Analysis of Different Types of Heat Exchangers Used in Hot Water Storage Tanks**  
*Yanita Slavova, Mariya Marinova, Cvetelina Nikolova*
2. **Evaluation of the Impact of Operating Modes of a Home Bread Maker on Energy Efficiency**  
*Yanita Slavova*
3. **Examining the Security Processes at the ZigBee Network Level in Real and Simulated Environments**  
*Marieta Haka, Aydan Haka, Veneta Aleksieva, Hristo Valchanov*
4. **Study of Encryption Time with the Use of AES 128-, 192- and 256-bit keys**  
*Marieta Haka, Aydan Haka, Veneta Aleksieva, Hristo Valchanov*
5. **Failure Rate Analysis of a Medium Voltage Grid**  
*Mediha Mehmed-Hamza, Yulian Rangelov, Milena Ivanova*
6. **Hybrid Architecture for Real-Time Object Detection from UAV Video Streams Using External ROI Processing and Embedded Optimization**  
*Veselin Atanasov*
7. **Identification of a Low-Inertia Separately Excited DC Motor**  
*Mariyana Todorova, Reneta Parvanova, Iliyan Iliev*
8. **Influence of the Discretization Step in Parametric Identification of a Low-Inertia DC Motor with Independent Excitation Using Discrete Wavelet Transform**  
*Reneta Parvanova, Mariyana Todorova, Iliyan Iliev*
9. **Improving Road Safety Through Advanced Signaling Technologies**  
*Pavel Andreev, Bohos Aprahamian*
10. **Integrating Artificial Intelligence into Dental Practice Education**  
*Marinela Petrova*
11. **Study of Communication Channels Under Different Weather Conditions**  
*Marinela Petrova*
12. **Research on a Laboratory System for the Application of Electrochemical Coatings in the Processing of Structural Units in Electrical Devices**  
*Tatyana Dimova, Bohos Aprahamian, Marin Todorov*
13. **Research on the Entrepreneurial Capacity of Engineering Students**  
*Vesela Dicheva*
14. **Risk Assessment for the Technological Development of a Startup Developing Technological Solutions in Power Electronics**  
*Svilen Simeonov*
15. **Risk Assessment in the Growth and Development of a Startup Developing in the Field of Power Electronics**  
*Svilen Simeonov*

16. **Risk Identification in the Supply of Electronic Components for the Production of Power Electronics Products – Cindynics Approach**  
*Svilen Simeonov, Vesela Dicheva*
17. **Sample Size Impact in Determining the Hosting Capacity of Low-Voltage network**  
*Ivan Tonev, Nikolay Nikolaev*
18. **Specifics in Offshore Wind Farm Generators – Risks, Ideas, Drawbacks in Different Concepts**  
*Petar Mihov, Bohos Aprahamian*
19. **Comparing V/f and Vector Control for Induction Motors in Steady-State Mode of Operation**  
*Emil Rachev, Vladislav Petrov, Gergana Vacheva*
20. **Evaluation of the Efficiency of Active Orientation for PV modules**  
*Gergana Vacheva, Plamen Stanchev, Nikolay Hinov*
21. **Influence of Small Nuclear Power Plants in Smart Grids**  
*Gergana Vacheva, Plamen Stanchev, Nikolay Hinov, Kristiyan Ivanov"*
22. **Tolerance Analysis of SEPIC DC-DC Converter**  
*Gergana Vacheva, Plamen Stanchev, Nikolay Hinov*
23. **The Impact of the Materials Used on the Vehicle's Emission Behavior**  
*Hana Pechova*
24. **Study of the Electrohydrodynamic Processes in a Chamber for Low-Temperature Plasma Processing of Metal Products**  
*Valeri Todorov, Hristo Antchev, Boncho Varhoshkov, Nina Penkova, Kalin Krumov, Veselin Iliev*
25. **Harmonic Effects on Stator Core Loss Characteristics of High-Speed Permanent Magnet Motors with Different Soft Magnetic Materials**  
*Bingbing Yang, Yulin Li, Weizhou Li, Kai Xie, Lubin Zeng, Ruilin Pei*

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**13:00-14:00**

**Lunch Break**

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**Chairman: Gledis Basha**

1. **A Sensor-Driven IoT-Based Alarm System with Fuzzy Tree Multi-controlling For Vital Signs**  
*Gledis Basha, Elma Zanj, Anita Xhemali, Lorena Balliu*
2. **GRU-TANAS, Hybrid GRU, Temporal Attention, NAS and SMOTE Model for Sleep Stage Detection**  
*Lorena Balliu, Elma Zanj, Anita Xhemali, Gledis Basha*
3. **Application of Artificial Neural Networks for Predicting Energy Consumption of a Mining Enterprise**  
*Victor Busher, Valerii Tytiuk, Valeriy Kuznetsov, Vitalii Kuznetsov, Andrii Romanets, Yurii Sherstnov, Petro Hubskeyi*
4. **Gamification of Electrical Engineering Education: Development of an Educational VR Simulation**  
*Tetiana Selivorstova, Taras Chudnyi, Valeriy Kuznetsov, Vitalii Kuznetsov, Viktor Kovalenko, Petro Hubskeyi*
5. **AI for Teaching Subjects of Electrical Engineering**  
*Tetiana Selivorstova, Kateryna Ostrovska, Valeriy Kuznetsov, Vitalii Kuznetsov, Olena Gulesha, Petro Hubskeyi*
6. **Artificial Intelligence and Data Security in Intelligent Education: Bibliographic Mapping and Entropy Analysis of Recent Scientific Research (SCOPUS and Web of Science, (2014-2023))**  
*Iliyan Petrov, Denis Chikurtev, Anna Krusteva*

**Chairman: Alexandru Sorin Nistor**

1. **Energy Optimization for an Energy Community**  
*Alexandru Sorin Nistor, George Cristian Lazaroiu, Nicolae Golovanov, Corneliu Alexandru Mandis, Luiza Brindusa Popa, Cristina Gabriela Saracin, Pierluigi Siano, Viorel Vasii*
2. **Applying Active Methods while Teaching the Topic Investigating of Multipath in Mobile Cellular Networks**  
*Ivanka Tsvetkova, Adriana Borodzhieva*
3. **Enhancing Learning Experience: A Step-by-Step Guide for Reed-Solomon Code Decoding**  
*Adriana Borodzhieva, Dimitar Stoyanov*
4. **Unlocking the Secrets of Reed-Solomon Encoding: Engaging Students through Interactive Learning**  
*Adriana Borodzhieva, Dimitar Stoyanov*
5. **Brushless Hybrid Synchronous Machine Using Surface PM**  
*Mudassir Ahmed, Mumtaz Ali, Fares Suliaman Alromithy, Noraiz Akhtar, Hafiz Mudassir Munir, Kapeel Kumar, Qasim Ali*



**Chairmen: Ivan Bachev and Dilyan Ivanov**

1. **A Cascaded Neural Network Framework for Estimating Degree of Polymerization of Insulated Paper and DGA Analysis in Power Transformers**  
*Georgi Ivanov, Valentin Mateev, Iliana Marinova*
2. **Objects Detection in Drone Swarm Surveillance by Color Features**  
*Ivan Garvanov, Georgi Tsonkov, Magdalena Garvanova*
3. **Analysis of Micro-Doppler Signatures for Drone Detection**  
*Ivan Garvanov, Magdalena Garvanova, Daniela Borissova, Milos Cvjetkovic, Jovan Nikic, Miroslav Tomov*
4. **Analysis of The Performance of a Mini Photovoltaic System for the Household**  
*Petar Stoev, Nikolay Matanov*
5. **Performance Analysis of The Mini Photovoltaic System with HV Battery Storage for The Household**  
*Petar Stoev, Nikolay Matanov*
6. **Comparison of Top-Core and Hair-Pin Current Transformers – State of the Art**  
*Gabriela Nacheva*
7. **Claw-pole alternators with hybrid excitation – a brief review**  
*Ivan Bachev*
8. **Study on the use of ferrite permanent magnet materials in hybrid excited claw-pole alternators**  
*Ivan Bachev, Vladimir Lazarov*
9. **Constant Voltage Toroidal Transformer**  
*Mihaela Slavkova, Georgi Tomov*
10. **Creating VR educational environment for functional literacy development of schoolchildren**  
*Olga Alekseeva, Dmitry Rumyantsev, Natalia Alexandrova, Tatiana Skvortsova, Roman Petrov, Slavcho Bozhkov, Ivan Milenov, Penko Bozhkov*
11. **Diagnostics of High Voltage Gas-Insulated Circuit Breakers Switching System**  
*Ivan Malamov, Ivan Hadzhiev, Valentin Mateev*
12. **Energy Efficiency in FDM/FFF 3D Printing Operations**  
*Martin Ralchev, Valentin Mateev, Iliana Marinova*
13. **Current-Fed Converter for Fuel Cell Application**  
*Georgi Balev, Dimitar Arnaudov, Vladimir Dimitrov, Asya Hristova, Tsvetana Grigorova, Kaspars Kroics*
14. **Modelling and Study of Battery Management System**  
*Dimitar Arnaudov, George Angelov, Krasimir Kishkin*
15. **Evaluation of Efficiency Improvement Using WBG MOSFETs in Hard-Switched Converters**  
*Vladimir Dimitrov, Asya Hristova, Dimitar Arnaudov*

- 16. Circadian Efficiency of Mixed Lighting - Electrical and Daylight**  
*Iva Petrinska, Dilyan Ivanov*
- 17. Deterioration of Standard Illuminants A – Stability and Change of Parameters**  
*Iva Petrinska, Dilyan Ivanov*
- 18. Experimental Investigation on Electromagnetic Interference (EMI) in Digitally Controlled Flyback Power Supply for LED Lighting Applications**  
*Nikolay Kurtev*
- 19. Implementing Virtual Laboratories for E-Learning Educational Platform in Electrical Engineering**  
*Nikolay Kurtev*
- 20. Resonant Rectifier Implementation in Micropower Piezoelectric Wind Energy Harvester**  
*Nikolay Kurtev*
- 21. Integrating Microelectronic Solutions in Renewable Energy Education: A Course Development Initiative**  
*Mariya Aleksandrova*
- 22. Optimization of Gray-Scale Photolithography Process for Fabrication of Patterned Backside Electrodes in Perovskite Solar Cells**  
*Mariya Aleksandrova*

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**19:30, 20 June 2025**

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**Conference Gala Dinner**

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**Saturday, 21 June 2025**

**10:00-17:30**

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**Meetings and Discussions**

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**10:00-13:00**

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**Sightseeing tour (museums) of Sofia**

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## Conference halls – bl. 12, Technical University of Sofia



Metrostation  
"G.M.Dimitrov"  
Lines M1 and M2



## Conference Gala Dinner – Ivanova mehana, Mladost 1



Conference dinner  
"Ivanova mehana"  
near metrostation  
"Mladost1"



Metrostation  
"Mladost1"  
Line M1 and M2  
Exits 2 or 3



Ivanova  
mehana  
entry



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