

# Conference Programme

**MONDAY, June 9<sup>th</sup>, 9:30-10:00**

**Opening Ceremony**

**Chairs: Lidija Petkovska, Andrzej Krawczyk and Bojan Štumberger**

**MONDAY, June 9<sup>th</sup>, 10:00-10:45**

**Plenary Lecture – PL**

**Chairs: Andrzej Krawczyk and Lidija Petkovska**

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|------|---|----|
| 5-40 | Electromagnetics & Occupational Safety and Health (OSH) in bibliographic databases – source of information: qualitative-quantitative analysis<br><i>Witold Sygocki</i><br>Central Institute for Labour Protection – National Research Institute, Warsaw, POLAND | 95 |
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**MONDAY, June 9<sup>th</sup>, 10:45-11:15 – COFFEE BREAK**

**MONDAY, June 9<sup>th</sup>, 11:15-13:15**

**Session 1: Materials, Diagnosis and Measurements – MDM**

**Chairs: Ivo Doležel and Bojan Štumberger**

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| 5-05 | Simplified Model of Transformer Hysteresis Curve<br><i>Damir Žarko, Stjepan Stipetić, Tanja Poljugan</i><br>University of Zagreb, CROATIA  | 25 |
| 5-12 | Modelling of Four Electrode Measuring System for Determine the Resistivity of Thin Antistatic Coatings<br><i>Adam Jakubas, Lech Borowik</i><br>Częstochowa University of Technology, POLAND  | 39 |
| 5-11 | Application of Vibration Power to Induction Motor Diagnostics<br><i>Mykhailo Zagirnyak, A. P. Kalinov, O. V. Bratash</i><br>Kremenchuk Mykhailo Ostrohradskyi National University, UKRAINE   | 37 |
| 5-01 | Noise Assisted High Performance Linear Inductive Distance Sensor<br><i>Zoltán Pólik, Zoltán Kántor</i><br>Széchenyi István University, HUNGARY   | 17 |
| 5-22 | Detection of Local Changes in Resistance by Means of Data Mining Algorithms<br><i>Agnieszka Duraj<sup>1</sup>, Ewa Korzeniewska<sup>1</sup>, Andrzej Krawczyk<sup>2</sup></i><br><sup>1</sup> Lodz University of Technology, <sup>2</sup> Czestochowa University of Technology, POLAND | 59 |
| 5-14 | Methods for Determination of Design Defects in Electric Machines During Testing<br><i>Mykhailo Zagirnyak, V. Prus, A. Kushpil</i><br>Kremenchuk Mykhailo Ostrohradskyi National University, UKRAINE  | 43 |
| 5-09 | A Non-Destructive Method to Determine Residual Stress in Drawn Wires Based on Magnetic Measurements<br><i>Maciej Suliga, Lech Borowik, Krzysztof Chwastek, Piotr Pawlik</i><br>Częstochowa University of Technology, POLAND  | 33 |
| 5-28 | Laser Modification of Electrical Properties of Conductive Layers Made on Teflon Substrates<br><i>Ewa Korzeniewska, Maria Walczak, Ryszard Pawlak</i><br>Lodz University of Technology, POLAND  | 71 |

**MONDAY, June 9<sup>th</sup>, 13:15-14:45 – LUNCH**

**MONDAY, June 9<sup>th</sup>, 15:15-19:00 – Excursion to Lake Matka; Refreshments and Coffee**

**Boat trip to cave "Vrelo"; Visit to St. Andrea Monastery Church**

**MONDAY, June 9<sup>th</sup>, 20:30-24:00 – Welcome Reception at "Pivnica"**

**TUESDAY, June 10<sup>th</sup>, 9:15-10:45**

**Session 2: Bioelectromagnetism – BIO**

**Chairs: Dagmar Faktorová and Bolesław Kalicki**

5-20	Thermographic Examination of the Warming Effect in the Process of Magnetostimulation and Magnetotherapy <i>Bolesław Kalicki, Anna Jung, Agnieszka Lipińska-Opałka, Andrzej Krawczyk</i> Military Institute of Medicine, Warsaw, <sup>2</sup> Częstochowa University of Technology, POLAND	55
5-21	Measurement of Temperature Distribution in Metallic Implant Embedded in Phantom Exposed to HF Electromagnetic Field <i>Arkadiusz Miaskowski, Grażyna Olchowik, Andrzej Krawczyk, Jan Blacha</i> University of Life Sciences in Lublin, Medical University of Lublin, Technical University of Częstochowa, POLAND	57
5-02	Hypersensitive Reactions in Humans Due to Electromagnetic Radiation <i>Nada Pop-Jordanova<sup>1</sup>, Sofija Loleska<sup>2</sup></i> <sup>1</sup> Macedonian Academy of Sciences and Arts, <sup>2</sup> University American College, Skopje, MACEDONIA	19
5-39	Optimization of Mild Microwave Hyperthermia Interconnection with Targeted Delivery of Nanoparticles <i>Dagmar Faktorová, Mária Pápežová</i> University of Žilina, SLOVAKIA	93
5-25	The "TeleMedNet II" Opportunity for Interdisciplinary Analysis of Images in Medical Applications <i>Piotr Murawski, Bolesław Kalicki, Anna Jung, Janusz Żuber</i> Military Institute of Medicine, Warsaw, POLAND	65
5-37	Human Exposure to Radio Frequency Electromagnetic Fields Near Base Stations in Urban Areas <i>Blagoja Markovski, Ljupco Karajanovski, Leonid Grcev, Marija Kacarska, Aleksandar Krleski</i> Ss Cyril and Methodius University, MACEDONIA	89

**TUESDAY, June 10<sup>th</sup>, 10:45-11:15 – COFFEE BREAK**

**TUESDAY, June 10<sup>th</sup>, 11:15-13:15**

**Session 3: Electrical Machines and Devices – EMD**

**Chairs: Lech Borowik and Mykhailo Zagirnyak**

5-04	Synchronous Generator for Induced AC Voltage Test of Single-Phase and Three-Phase Power Transformers <i>Zlatko Maljković, Stjepan Stipetić</i> University of Zagreb, CROATIA	23
5-47	Finite Element Modelling of the Double Stator Cup-Rotor Machine <i>Eljaroshi Diryak<sup>1</sup>, Paul Lefley<sup>1</sup>, Lidija Petkovska<sup>2</sup>, Goga Cvetkovski<sup>2</sup></i> <sup>1</sup> Leicester University, UNITED KINGDOM <sup>2</sup> Ss Cyril and Methodius University, MACEDONIA	113
5-26	Characteristics of Single- and Double-Layer Windings in an Axial Flux Permanent-Magnet Synchronous Machine <i>Jan Šlamberger, Peter Virtič</i> University of Maribor, SLOVENIA	67
5-13	Finite Element Simulation of Permanent Magnet Synchronous Motor by the Help of C Programming Language Based Development Environment <i>Gergely Kovács, Miklós Kuczmann</i> Széchenyi István University, HUNGARY	41

5-43	Numerical Modelling of The Electromagnetic Brake <i>Iztok Brinovar, Sebastijan Seme, Bojan Štumberger, Miralem Hadžiselimović</i> University of Maribor, SLOVENIA	105
5-49	Implementation of Skewing and Dummy Slots in Stator Teeth for Cogging Torque Reduction of PM Synchronous Motor <i>Goga Cvetkovski<sup>1</sup>, Lidija Petkovska<sup>1</sup>, Paul Lefley<sup>2</sup></i> <sup>1</sup> Ss Cyril and Methodius University, MACEDONIA <sup>2</sup> Leicester University, UNITED KINGDOM	117
5-52	Equivalent Circuit Parameters Calculation of Single-Phase Permanent Capacitor Induction Motor <i>Aleksandar Popovski, Goga Cvetkovski, Lidija Petkovska</i> Ss Cyril and Methodius University, MACEDONIA	123
5-53	Modelling and Simulation the Performance of a Single-Sided Double-Layer Linear Induction Motor <i>Adrijana Milevska<sup>1</sup>, Lidija Petkovska<sup>2</sup>, Goga Cvetkovski<sup>2</sup></i> <sup>1</sup> Beton d.o.o. – Skopje, <sup>2</sup> Ss Cyril and Methodius University, MACEDONIA	125

**TUESDAY, June 10<sup>th</sup>, 13:15-14:45 – LUNCH**

**TUESDAY, June 10<sup>th</sup>, 14:45-16:15**

**Session 4: Coupled Problems and Applications – CPA**

**Chairs: Damir Žarko and Goga Cvetkovski**

5-06	Monolithic Model of Induction Shrink Fit for High-Speed Tools <i>Lukáš Koudela, Václav Kotlan, Ivo Doležel</i> Czech Technical University, University of West Bohemia, CZECH REPUBLIC	27
5-29	Determining the Effects of Rotor Eccentricity and Slotting Via a Versatile Analytical Approach <i>Nils Domann, Markus Henke</i> Technische Universität Braunschweig, GERMANY	73
5-07	Schur Complement Method with Iterative Solver for 2D Field-Circuit Coupling Finite Element Problem with Movement <i>Daniel Marcsa, Miklós Kuczmann</i> Széchenyi István University, HUNGARY	29
5-19	FEM Analysis of Couplers for Inductive Power Transfer <i>Andreas Fuchs, Hans-Peter Schmidt</i> Technical University of Applied Sciences Amberg/Regensburg, GERMANY	53
5-41	2D Magneto-Thermal Analysis of Synchronous Generator <i>Vilijan Matošević<sup>1</sup>, Željko Štih<sup>2</sup></i> <sup>1</sup> Uljanik TESU d.d., Pula, CROATIA, <sup>2</sup> University of Zagreb, CROATIA	101
5-23	One Approximate Model for Pole Grounding System Analysis <i>Nenad N. Cvetković, Dragan D. Vučković, Aleksa Ristić</i> University of Niš, SERBIA	61

**TUESDAY, June 10<sup>th</sup>, 16:15-16:45 – COFFEE BREAK**

**TUESDAY, June 10<sup>th</sup>, 16:45-18:00**

**Session 5: Optimisation and Design of Magnetic Devices – OPT**

**Chairs: Zlatko Maljković and Peter Vrtič**

5-51	An Innovative Technique for Optimisation of E-I Core Inductor Using Taguchi Design of Experiments <i>Lidija Petkovska, Goga Cvetkovski, Mihail Digalovski</i> Ss Cyril and Methodius University, MACEDONIA	121
5-50	Multiple-Objective Function Optimisation of Permanent Magnet Disc Motor <i>Goga Cvetkovski, Lidija Petkovska</i> Ss Cyril and Methodius University, MACEDONIA	119
5-44	Design of Linear Generators <i>Gregor Srpčič, Sebastijan Seme, Miralem Hadžiselimović, Bojan Štumberger</i> University of Maribor, SLOVENIA	107
5-08	Efficiency Optimisation of Single Phase Motor Using GA Approach <i>Vasilija Sarac<sup>1</sup>, <sup>2</sup>Goga Cvetkovski</i> <sup>1</sup> Goce Delcev University, <sup>2</sup> Ss Cyril and Methodius University, MACEDONIA	31
5-48	Evaluation of Two Global Optimization Techniques for Total Losses Reduction of Distribution Transformer <i>Mihail Digalovski<sup>1</sup>, Lidija Petkovska<sup>1</sup>, Goga Cvetkovski<sup>1</sup>, Paul Lefley<sup>2</sup></i> <sup>1</sup> Ss Cyril and Methodius University, MACEDONIA <sup>2</sup> Leicester University, UNITED KINGDOM	115

**TUESDAY, June 10<sup>th</sup>, 20:30-24:00 – Banquet Dinner, hotel "Holiday Inn"**

**WEDNESDAY, June 10<sup>th</sup>, 9:15-10:45**

**Session 6: Engineering Applications – EA1**

**Chairs: Vesna Arnautovski-Toševa and Sebastijan Seme**

5-30	Auxiliary Systems Consumption in Electric Vehicle <i>Mario Vražić<sup>1</sup>, Oriana Barić<sup>1</sup>, Peter Vrtič<sup>2</sup></i> <sup>1</sup> University of Zagreb, CROATIA, <sup>2</sup> University of Maribor, SLOVENIA	75
5-54	Current-Carrying Capacity Parallel Single-Core LV Cable <i>Lech Borowik, Artur Cywiński</i> Czestochowa University of Technology, Poland	127
5-17	Application of the Electric Circuit Approach in the Analysis of Grounding Conductors <i>Radoslav Jankoski, Andrijana Kuhar, Blagoja Markovski, Marija Kacarska, Leonid Grcev</i> Ss Cyril and Methodius University, MACEDONIA	49
5-03	The First Nuclear Power Plant in Japan <i>Mitsuhiko Toho</i> Polish-Japanese Institute of Information Technology, POLAND	21
5-42	Energy Efficiency and Use of Renewable Solutions <i>Miralem Hadžiselimović, Bojan Štumberger, Sebastijan Seme</i> University of Maribor, SLOVENIA	103
5-24	Equivalent Circuit of Single-Core Cable Line with Ground Return Wire and Variable Earth Resistivity Along its Path <i>Jordancho Angelov, Jovica Vuletik, Mirko Todorovski, Risto Ackovski</i> Ss Cyril and Methodius University, Macedonia	63

**WEDNESDAY, June 11<sup>th</sup>, 10:15-11:15 – COFFEE BREAK**

**WEDNESDAY, June 11<sup>th</sup>, 11:15-12:45**

**Session 7: Engineering Applications – EA2**

**Chairs: Miralem Hadžiselimović and Vasilija Šarac**

<b>5-45</b>	Support of Electricity Generated from Photovoltaic Systems <i>Sebastijan Seme<sup>1</sup>, Željko Hederič<sup>2</sup>, Bojan Štumberger<sup>1</sup>, Miralem Hadžiselimović<sup>1</sup></i> <sup>1</sup> University of Maribor, SLOVENIA, <sup>2</sup> University of Osijek, CROATIA	109
<b>5-10</b>	Applicability of Approximate Green's Functions in MPIE Model of a Horizontal Wire Conductor in Lossy Soil <i>Vesna Arnautovski-Toseva, Leonid Grcev, Marija Kacarska</i> Ss Cyril and Methodius University, MACEDONIA	35
<b>5-15</b>	Methodological Analysis of PEEC and MOM Techniques for Determination of Current Along a Conductor Placed in a Conductive Medium <i>Andrijana Kuhar, Radoslav Jankoski, Leonid Grcev, Lidija Ololoska-Gagoska</i> Ss Cyril and Methodius University, MACEDONIA	45
<b>5-18</b>	Electric Field Calculation Using Partial Element Equivalent Circuit and Mixed Potential Integral Equation <i>Radoslav Jankoski, Vesna Arnautovski-Toseva, Marija Kacarska, Andrijana Kuhar, Blagoja Markovski, Leonid Grcev</i> Ss Cyril and Methodius University, MACEDONIA	51
<b>5-46</b>	The Implementation and Management of Energy Audits <i>Miralem Hadžiselimović, Marko Habjanič, Bojan Štumberger, Sebastijan Seme</i> University of Maribor, SLOVENIA	111
<b>5-16</b>	Transient Analysis of a Buried Conductor Using Partial Element Equivalent Circuit Method <i>Andrijana Kuhar, Radoslav Jankoski, Leonid Grcev</i> Ss Cyril and Methodius University, MACEDONIA	47

**WEDNESDAY, June 11<sup>th</sup>, 12:45-13:15**

**Closing Session**

**Chairs: Lidija Petkovska, Andrzej Krawczyk and Bojan Štumberger**

**WEDNESDAY, June 11<sup>th</sup>, 13:15-14:45 – Farewell Lunch**