



**The Faculty of Electrical and Computer Engineering Rzeszow University of Technology**

**and**

**Polish Society of Theoretical and Applied Electrical Engineering (PTETiS)**

## **FINAL PROGRAM**

**2021 16th Selected Issues of Electrical Engineering and Electronics (WZEE 2021)**

**Poland - Rzeszów 13 – 15.09.2021**

Subsidised from Minister of Education and Science of the Republic of Poland (57 075,00 PLN / 84 167, 00 PLN) in accordance with the contract DNK/SP/467128/2020, 26 June 2020 within „Doskonała Nauka” project entitled: The Organisation of International Conference Selected Issues of Electrical Engineering and Electronics WZEE 2020.



## Welcome to WZEE 2021

It is our great pleasure and honor to welcome you to the 16th edition of the conference Selected Issues of Electrical Engineering and Electronics (WZEE) in Rzeszow, Poland. The organizing committee of WZEE 2021 will continue the tradition established by the previous events. We hope that the meeting in Rzeszow will maintain the high level of technical content of the previous editions and will continue to serve its role as the major forum where university faculty gather together to focus on electrical problems. The importance of WZEE technical content is under auspices of Electrotechnical Committee of Polish Academy of science and confirmed by the sponsorship from the IEEE as well as by the fact that the Symposium papers will be available on the IEEE Xplore.

### Organizing Committee:

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ŁUKANISZYN MARIAN, POLITECHNIKA OPOLSKA PRZEWODNICZĄCY SEKCJI  
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MALINOWSKI MARIUSZ, POLITECHNIKA WARSZAWSKA

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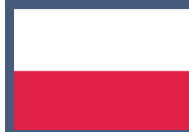
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<https://2021.wzee.pl/>

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Marian P. KAŻMIERKOWSKI,  
Romuald NOWAKOWSKI,  
Marian PASKO,  
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#### Representatives of Societies cooperating with PTETIS:

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#### Editors-in-Chief of scientific journals

Jerzy BARGLIK – Editor-in-Chief of Śląskie Wiadomości Elektryczne,  
Tadeusz SKUBIS – Editor-in-Chief of Pomiary Automatyka Kontrola,  
Sławomir TUMAŃSKI – Editor-in-Chief of Przegląd Elektrotechniczny,  
Krzysztof WOLIŃSKI – Editor-in-Chief of Wiadomości Elektrotechniczne,  
Iwo CHOLEWICKI – Honorary Editor-in-Chief of Śląskie Wiadomości Elektryczne.

#### Venue The official hotel



Hotel Wellness & Spa Nowy Dwór  
ŚWILCZA 146 E, 36-072 ŚWILCZA /K. RZESZOWATEL.  
+48 609 721 105, TEL. +48 17 856 09 90  
<https://hotelnowydwor.pl/>

and venue is Conference Center

Politechnika Rzeszowska, Wydział Elektrotechniki i Informatyki  
ul. Wincentego Pola 2, 35-959 Rzeszów

Aula im. Romana Niedzielskiego sala A61



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Guidelines for Presentations All papers will be orally presented. The authors are requested to prepare a Power Point presentation. Please be aware that the computer equipment only supports standard Windows fonts, and that video clips often cause trouble in a presentation. The presentation has to be transferred to a notebook computer which will be available in each of the session room. The presenting authors are expected to upload their Power Point presentations 10 min. before their respective session starts. There will be technical staff for support. Please use a memory stick to transfer your presentation to the computers. However, your presentation will be erased from the session computer right after the session, so we do not keep your presentation. The oral presentations are scheduled to last not longer than 10-12 minutes. There is an additional 5 minutes for discussion. The session chairs are requested to maintain the session schedule. Guidelines for Session Chairs The session chairs should be present in the session room 10 min. before the session starts so that they can meet the authors. The presentations are scheduled to last not longer than 10-12 min. There is an additional 5 min. for discussion. The session chairs are requested to maintain the session schedule.

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Aula im. Romana Niedzielskiego sala A61

Monday September 13, 2021		
9.00÷10.30 – Registration (A111)		
10.30÷10.45 – Opening of the Conference		
10.45÷12.15 – Keynote Speakers (A61)		
12.15÷12.30 – Coffee break		
12.30÷14.00 – SESSION		
SESSION No. 1. (A61)	SESSION No. 2. (A101)	SESSION No. 3. (A111)
14.00÷15.00 – Lunch (B107)		
15.00÷17.30 – SESSION		
SESSION No. 4. (A61)	SESSION No. 5. (A101)	SESSION No. 6. (A111)
19.00÷24.00 – Gala Diner (Nowy Dwór Hotel SPA)		

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Tuesday September 14, 2021		
9.00÷10.00 – Keynote Speakers (A61)		
10.00÷10.15 – Coffee break		
10.15÷12.00 – SESSION		
SESSION No. 7. (A61)	SESSION No. 8. (A101)	SESSION No. 9. (A111)
12.00÷12.15 – Coffee break		
12.15÷14.00 – SESSION		
SESSION No. 10. (A61)	SESSION No. 11. (A101)	SESSION No. 12. (A111)
14.00÷15.00 – Lunch (B107)		
15.00÷16.30 – SESSION		
SESSION No. 13. (A61)	SESSION No. 14. (A101)	SESSION No. 15. (A111)
18.00÷23.00 - Supper		

Wednesday September 15		
8.45÷10.15 – Keynote Speakers (A61)		
10.15÷10.30 – Coffee break		
10.30÷12.00 – SESSION		
SESSION No. 16. (A61)	SESSION No. 17. (A101)	SESSION No. 18. (A111)
12.00÷12.15 – Coffee break		
12.15÷14.00 – SESSION		
SESSION No. 19. (A61)	SESSION No. 20. (A101)	SESSION No. 21. (A111)
14.00÷15.00 – Lunch (B107)		
15.00÷17.30 – SESSION		
SESSION No. 22. (A61)	SESSION No. 23. (A101)	SESSION No. 24. (Poster SESSION) (A111)
18.00 Supper		

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KEYNOTE SPEAKERS -

Monday September 13, 10:45-12:00

Chairs: Prof. Kluszczyński Krzysztof

Kluska Jacek	Intelligent control and machine learning based diagnostic systems design	Rzeszow University of Technology
Demenko Andrzej	Equivalence of finite difference, finite element, finite integral and network methods in computational electromagnetics	Poznan University of Technology

SESSION No. 1. -

Monday September 13, 12:30-14:00

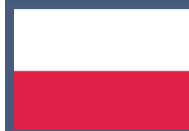
Chairs: Prof. Kluska Jacek

Micek Marta, Madera Michał	Computational intelligence applied to tissue T1 and T2 relaxation time analysis	SoftSystem Sp. z o.o.
Madera Michał, Pietroszek Marcin	Implementation of Gene Expression Programming Algorithm using Tensorflow for improved performance.	SoftSystem Sp. z o.o.
Kwator Tadeusz, Hawro Przemysław	Novel adaptive algorithms with low computational complexity for non-invasive monitoring system of selected objects	PWSTE Jarosław
Kusznier Jacek, Wojtkowski Wojciech	IoT solutions for maintenance and evaluation of photovoltaic systems	Białystok University of Technology
Mazurek Mirosław	Modeling and fault tolerance analysis of selected IoT network protocol	Rzeszow University of Technology

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SESSION No. 2. -

**Monday September 13, 12:30-14:00**

**Chairs: Prof. Demenko Andrzej**

Tulicki Jarosław, Sobczyk Tadeusz	ON AN ALGORITHM FOR STEADY-STATE ANALYSIS IN NONLINEAR ELECTROMAGNETIC DEVICES	Cracov University of Technology
Bogusz Piotr, Korkosz Mariusz, Prokop Jan, Daraż Mateusz	A Switched Reluctance Motor controlled by dependent torque controller	Rzeszow University of Technology

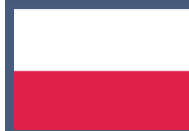
Indira Salihovć, Aida Skamo, Dejan Jokić	RoboDK to Matlab Joint Position Transformation	International Burch University, BiH
Gołębiowski Lesław, Smoleń Andrzej	Innovative construction of the AFPM type electric machine and the method for estimation of its performance parameters on the basis of the induction voltage shape	Rzeszow University of Technology
Kutsyk Andriy, Semeniuk Mykola	Diagnosis of Static Excitation Systems of Synchronous Generators with the Use of Hardware-In-the-Loop Technologies	Lviv Polytechnic National University

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SESSION No. 3. -

**Monday September 13, 12:30-14:00**

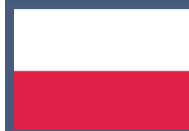
**Chairs: Prof. Łukaniszyn Marian**

Trzop Przemysław	"Technologie Przemysłu 4.0 - nowoczesna intralogistyka"	<b>ASTOR</b>
Dałek Adrian	„Solar Park Management. Zarządzanie oraz regulacja mocy z farm fotowoltaicznych"	<b>WAGO</b>
Benysek Grzegorz	Trendy rozwojowe w transporcie ekologicznym.	<b>EkoEnergetyka</b>

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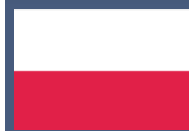
SESSION No. 4. - Monday September 13, 15:00-17:30 Chairs: Ph.D Klepacki Dariusz		
Lukowiak Marcin	Cryptographic engineering for securing data in transit and at rest	Rochester Institute of Technology
Szymański Michał, Kozłowska Anna, Jens Tomm, Huk Roman, Małąg Andrzej and Rusek Marian	From Two- to Three-dimensional Model of Heat Flow in Edge-emitting Laser: Theory and Experiment	1) Institute of Information Technology, Warsaw University of Life Sciences - SGGW, Warsaw, Poland, 2) Łukasiewicz Research Network - Institute of Microelectronics and Photonics, Warsaw, Poland, 3) Max-Born-Institut, Berlin, Germany 4) Science and Technology Park Poland-East in Suwałki Ltd., Suwałki, Poland
Kuta Stanisław, Machowski Witold, Kołodziejcki	Filterless, Digital Class-BD Audio Amplifiers with	AGH Cracow

Wojciech and Chlastaw Łukasz	Constant Voltage at the CM Output	
Zawadzki Artur	Turbocharger sensor used to monitor operating parameters based on vibration analysis	ABB Corporate Technology Center
Wesołowski Marcin	A new approach for active thermal management in electric vehicles	PW Warszawa
Kabot Ondřej, Fulneček Jan	Clearance and creepage for High Voltage PCBs in Low Pressure and High Temperature Environment	ENET Centre VSB - TUO Ostrava, Czech Republic
Hajovsky Radovan, Pies Martin and Velicka Jan	Design and Implementation of an IoT Sensor for High Temperatures	VSB-Technical University of Ostrava
Dmitruk Krzysztof, Sikorski Andrzej	Predictive SVM Control Method of AC/DC Converter	Białystok University of Technology

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SESSION No. 5. -

**Monday September 13, 15:00-17:30**

**Chairs: Prof. Gołębiowski Marek**

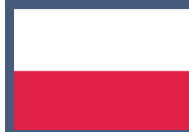
Čonka Zsolt	Power Regulation of Wind Power Plants	Technical University of Kosice
Nowak Marek, Beňa Ľubomír	Analysis of the impact of micro photovoltaic installations on the voltage in the low voltage distribution network	Rzeszow University of Technology/Technical University of Kosice
Pál Daniel, Beňa Ľubomír	Optimization of active power losses in SMART grids using photovoltaic power plants	Technical University of Kosice

Pavlík Marek, Kolcun Michal	Analysis and evaluation of photovoltaic cell defects	Technical University of Kosice
Medved' Dušan	Influence of impurities in electrical contacts on increasing the efficiency of energy transmission	Technical University of Kosice
Taylor Rikin, Beňa Ľubomír	Design of Management system for Smart Grid	Technical University of Kosice
Džmura Jaroslav, Petráš Jaroslav, Oliinyk Maksym, Humeník Jozef	Impact of smart parking construction on the electrical grid	Technical University of Kosice

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SESSION No. 6. -

**Monday September 13, 15:00-17:30**

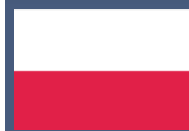
**Chairs: Ph.D Kwiatkowski Bogdan**

ZPUE S.A.	Electricity storage	ZPUE S.A.
Krzysztof Kluszczyński	Smart Grid	Aparator Elkomtech S.A
Fanum	FANUM - the leading European CNC manufacturer. CNC Machines for wood, composites, plastics and aluminium	Fanum
Mościński Marcin, Grzyb Łukasz	SIGMA Technology & Energy Solutions sp. z o.o	Sigma Polska
Rudy Marek, Mazur Damian, Kwiatkowski Bogdan, Pękała Robert, Węgiel Tomasz	Numerical Simulation of Small Hydropower Plant Axial Turbine	Rzeszow University of Technology, Cracow University
Osipowicz Marek	Methods and tools for modeling and simulation of selected automation systems, Smart Industry and Industry 4.0	MB Aerospace

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KEYNOTE SPEAKERS -

Tuesday September 14, 9:00-10:00

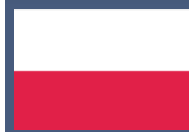
Chairs: Prof. Demenko Andrzej

Grzesiak Lech	Electric powertrain systems, the evolution of technology	Warsaw University of Technology
Sykulski Jan	Advances and trends in design optimization	University of Southampton

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SESSION No. 7. -

Tuesday September 14, 10:15-12:00

Chairs: Prof. Machowski Witold

Sabat Wiesław, Kuryło Kazimierz, Kamuda Kazimierz, Klepacki Dariusz	Influence of measuring method of conducted disturbances generated by LED lamps on compliance with the EN-55015 standard	Rzeszow University of Technology
Vitalii Roman, Matiko Halyna, Kostyk Ihor and Pistun Oleh	Mathematical model of multipath ultrasonic flowmeter for its automated designing	Lviv Polytechnic National University
Pawłowicz Bartosz, Jankowski- Mihułowicz Piotr, Kołcz Sebastian, Kołcz Marek	The use of textronics to support the work of modern washing devices	Rzeszow University of Technology
Kawalec Damian, Jankowski- Mihułowicz Piotr	New look at the synthesis of antenna for UHF RFID transponder	Rzeszow University of Technology

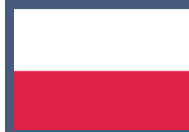
Pies Martin, Velicka Jan, Hajovsky Radovan and Filipec Jakub	Motion detector with IR matrix sensor using IQRF Technology	VSB-Technical University of Ostrava Ostrava, Czech Republic
Worek Cezary, Zapart Mateusz	Design and simulations of the current-fed push-pull parallel resonant inverter for UPS system	AGH Cracow

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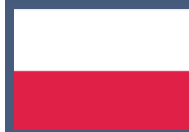
SESSION No. 8. -		
Tuesday September 14, 10:15-12:00		
Chairs: Prof. Gołębiowski Marek		
Moroz Volodymyr	Phenomenological Model of Synchronous Generator with Excitation System	Lviv Polytechnic National University
Humer Matthias, Salzig Christian and Wirsen Andreas	Torque monitoring systems for detection and evaluation of interactions between grid and generator	GB-M / PG-T / Team Metrology Uniper Anlagenservice GmbH 45896 Gelsenkirchen, Fraunhofer Center for Machine Learning, Germany Fraunhofer Institute for Industrial Mathematics (ITWM) 67663 Kaiserslautern,
Nakonechnyi Markiy,an,	Features of the DC Motor with Independent Excitation under the	Lviv Polytechnic

Ivakhiv Orest and Nakonechnyi Yurii	Action of Alternating Load Mathematical Model Creating	National University
Chebatarova Yevheniia	Development of Building Thermal Model Using Simscape Library	Kremenchuk Mykhailo Ostrohradskyi National University
Slanina Zdenek, Krupa Filip, Nemcik Jakub, Pergl Ivo, Prokop Lukas and Docekal Tomas	Automated Guided Vehicle for Automated Parking House Analysis and Design	VSB-TU Ostrava Ostrava, Czech Republic
Knypiński Łukasz	Performance Analysis of Selected Metaheuristic Optimization Algorithms Applied in the Solution of an Unconstrained Task	Poznan University of Technology
Kowol Marcin, Kołodziej Janusz	Analysis of local magnetic interactions in a coaxial magnetic gear	Opole University of Technology

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SESSION No. 9. -

Tuesday September 14, 10:15-12:00

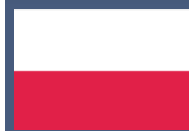
Chairs: Ph.D. Bolanowski Marek

Dökel Lukas	"Integration of machines and systems into the "Internet of Things" with the WAGO IoT Box"	WAGO
Madera Michal	Has the software development process undergone the fourth industrial revolution?	SOFTSYSTEM
Piotr Grzejszczak, Kornel Wolski, Marek Szymczak, Marek Jasiński	Design and Evaluation of 20-kW SiC-Based Three-Phase Bidirectional AC/DC converter	ISEP PW

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**PAN**

SESSION No. 10. -

**Tuesday September 14, 12:15-14:00**

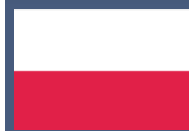
**Chairs: Ph.D. Bolanowski Marek**

Drafus Grzegorz, Mazur Damian and Czmił Anna	Automatic detection and counting of blood cells in images using convolutional neural networks	Rzeszow University of Technology
Knapik Piotr, Trybus Bartosz	Using Azure cloud technology for machine learning in urban traffic applications	Rzeszow University of Technology
Paszkiewicz Andrzej, Pawłowicz Bartosz, Salach Mateusz, Trybus Bartosz	Traffic lights and lane direction control with a usage of RFID and 5G network	Rzeszow University of Technology
Dymora Paweł	A comparative analysis of selected predictive algorithms in control of machines process	Rzeszow University of Technology
Bednarz Mateusz, Hawro Przemysław	An adaptive real-time signals estimation algorithm using sparse measurements	PWSTE Jarosław

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SESSION No. 11. -

Tuesday September 14, 12:15-14:00

Chairs: Prof. Sobczyk Tadeusz, PhD. Knypiński Łukasz

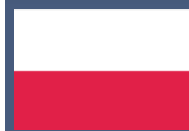
Smaka Senad, Bečirović Vedad and Smajkić Amer	Calculation of the rated power of a photovoltaic solar power plant to be connected to a low-voltage network	University of Sarajevo
Slanina Zdenek, Krupa Filip, Nemcik Jakub and Vlcek Jan	Cooling Regulation of Hydrogen Operation Technology	VSB-TU Ostrava
Lezhniuk Petro, Buslavets Olga and Rubanenko Olena	Compensation of the influence of non-uniformity of RES generation on the mode's and balance reliability of power system	Vinnitsia National Technical University
Matiko Fedir, Yevhen Pistun,	Computer-aided designing the natural gas energy metering systems	Lviv Polytechnic

Lesovoi Leonid and Byts Oksana	based on differential pressure flowmeters	
Rubanenko Oleksandr, Miroshnyk Oleksandr, Rubanenko Olena and Hryshchuk Maksim	Determination of Power Transformers Technical Condition of According AFC	Vinnitsia National Technical University
Volodymyr Pazyi, Oleksandr Miroshnyk, Oleksandr Moroz, Andriy Pavlov, Anatolii Sereda, Roman Buinyi	Development of simulation model of single-phase circuit lock in the DiGSILENT PowerFactory program	Kharkiv Petro Vasylenko National Technical University of Agriculture

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SESSION No. 12. -

Tuesday September 14, 12:15-14:00

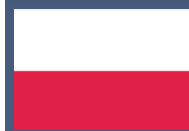
Chairs: Ph.D. Ziemba Robert

Białek Adam	PGE Rzeszów	
Gąsior Jacek	PGE Rzeszów	
Moskwa Tadeusz	PGE Rzeszów	

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SESSION No. 13. -

Tuesday September 14, 15:00-16:30

Chairs: Prof. Węglarski Mariusz

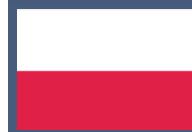
Barszcz Krzysztof	NFC as a part of smart wcharges in smart car	BURY
Nowak Krzysztof	Modern EV charging by green energy	BURY
Pyt Patryk, Jankowski- Mihułowicz Piotr, Węglarski Mariusz	Powering beacons with the use of heat losses generated by electronically marked industrial objects	Rzeszow University of Technology
Balawejder Marcin, Kwater Tadeusz	A neural predictor for hard-to-measure signals	PWSTE Jarosław

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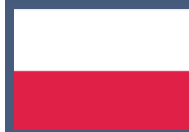
SESSION No. 14. - Tuesday September 14, 15:00-16:30 Chairs: Prof. Gołębiowski Marek		
Ralf Patrick Alexander, Kreischer Christian	Procedure for Optimization of a Magnetostatic Shield for mobile Applications	Helmut Schmidt University / University of the Federal Armed Forces Hamburg
Pavlík Marek	Analysis of shielding effectiveness of electromagnetic field for various shielding materials	Technical University of Kosice
Daraż Mateusz, Bogusz Piotr	Influence of DC / DC converter on current ripple of the drive source with SRM machine	Rzeszow University of Technology
Pakla Bartłomiej, Korkosz Mariusz, Prokop Jan	Frequency Analysis of Partial Short-Circuit Fault in BLDC Motors with Combined Star-Delta Winding	Rzeszow University of Technology
Pakla Bartłomiej, Korkosz Mariusz, Prokop Jan	Analysis of Partial Short-Circuit Fault in DCBLDC Motors with Combined Star-Delta Winding	Rzeszow University of Technology
Yuriy Varetsky, Mykhajlo	Modelling PV Impact on Energy Loss in Local MV Grid	Lviv Polytechnic

Seheda, Volodymyr Konoval, Andriy Kozovyy		National University
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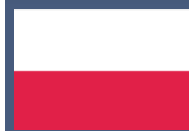
SESSION No. 15. - Tuesday September 14, 15:00-16:30 Chairs: PhD. Klepacki Dariusz		
Lihic Meris, Lubura Slobodan and Jokić Dejan	Frequency locked loops in estimating active, reactive and apparent powers with DC offset elimination	International Burch University, BiH
Shevchenko Sergiy, Potryvai Andrii, Danylchenko Dmytro, Asadov Elman and Miroshnyk Oleksandr	Corona Discharge Loss Reduction Method Developed on the Basis of a Three-Dimensional Model of Power Line Strength	National Technical University "Kharkiv Polytechnic Institute"
Čerkez Amer, Smaka Senad, Hanjalić Selma, Helać Vahid and Hanjalić Merisa	Power quality improvement of small hydropower plant located in the industrial area	Faculty of Electrical Engineering University of Sarajevo Sarajevo, Bosnia and Herzegovina
Shaleva Volodymyr, Matiko Fedir and Krykh Hanna	Algorithm for operating the system of monitoring the technological process parameters using mobile communication networks	Lviv Polytechnic National University, Lviv, Ukraine

Dvorský Petr, Fiedler Petr	Increasing resilience of an embedded design	FEEC BUT Brno
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KEYNOTE SPEAKERS -

Wednesday September 15, 8:45-10:15

Chairs: Prof. Machowski Witold

<b>Malinowski Mariusz</b>	Fault tolerant smart transformer in distributed energy systems – opportunities and challenges	Faculty of Electrical Engineering, Warsaw University of Technology
<b>Węglarski Mariusz, Jankowski-Miśkiewicz Piotr, Kamuda Kazimierz, Pitera Grzegorz, Lichoń Wojciech, Chamera Mateusz, Pyt Patryk, Ciejka Cezary</b>	Synthesis of RFID sensors for monitoring photovoltaic modules integrated with glazing units,	Rzeszów University of Technology
<b>Shchur Ihor, Makarchu Oleksandr</b>	Brushless dc drive system based on dual three-phase fractional slot and concentrated winding configuration surface pm motor	Lviv Polytechnic National University

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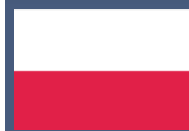
SESSION No. 16-		
Wednesday September 15, 10:30-12:00		
Chairs: Prof. Węglarski Mariusz		
Filik Kamil, Karnas Grzegorz, Masłowski Grzegorz, Oleksy Mariusz, Oliwa Rafał and Bulanda Katarzyna	Testing of flame-resistant conductive composites using electrical impulses representing lightning effects	Rzeszow University of Technology
Ziemba Robert	Grounding systems of renewable energy sources (PV and WT)	Rzeszow University of Technology
Ballas Rüdiger G.	Demonstration of a Versatile Modeling Method in Electromechanics – The Canonical Equivalent Circuit Representation a Clamped-Free Multilayered Piezoceramic Bending Actuator	Wilhelm B`uchner University of Applied Sciences Darmstadt, Germany
Borkowski Mariusz	On solving two-dimensional Laplace problems in multiply connected domains by the direct Trefftz method	Rzeszow University of Technology

Maczka Mariusz, Pawłowski Stanisław	A selfconsistent solution of Schrödinger–Poisson equations in superlattices structures using a polynomials approximation	Rzeszow University of Technology
Pociask-Biały Małgorzata	Polyethylene Protective Coating of Silicon Photovoltaic Cells with Anti-Reflective Properties	Uniwersytet Rzeszowski, Kolegium Nauk Przyrodniczych

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SESSION No. 17-

Wednesday September 15, 10:30-12:00

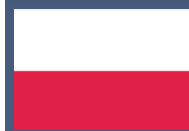
Chairs: Prof. Różowicz Antoni

Wachta H., Tereszkiewicz K., Kulig Łukasz	Assessment of intramuscular fat content using luminance distribution surface measurement	Rzeszow University of Technology/ Kielce University of Technology
Leśko Marcin, Wachta Henryk, Różowicz Antoni, Różowicz Sebastian	The forming of luminous intensity distribution of luminaires with limited direct component of luminous flux	Rzeszow University / Kielce University of Technology
Różowicz Sebastian, Włodarczyk Maciej	Application of incomplete order elements in modeling ignition systems	Kielce University of Technology
Różowicz Antoni, Deląg Mariusz	Design and testing of an EL Tri Color combination lamp for emergency and technical vehicles	Kielce University of Technology
Kulig Łukasz	Luminance distribution surface measurement applied to assessing intramuscular fat content	Rzeszow University of Technology

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SESSION No. 18-

Wednesday September 15, 10:30-12:00

Chairs: Prof. Mazur Damian

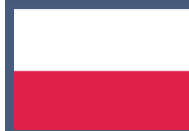
Rudy Marek	Electrification Simcenter EMAG (SIEMENS)	GM SYSTEM
Środoń Jacek	Automatyka budynkowa	Projektowanie i prefabrykacje rozdzielnic elektrycznych
Machniak Jacek	Kompensacja mocy biernej	Elektromontaż Rzeszów S.A.
Bajorski Stanisław	Fotowoltaika	PZL Sędziszów

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SESSION No. 19-

Wednesday September 15, 12:15-14:00

Chairs: Prof. Gołębiowski Marek

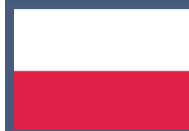
Serhii Dudnikov, Oleksandr Miroshnyk, Oleksandr Moroz, Oleksandr Savchenko, Iryna Trunova, Volodymyr Pazyi	Substantiation of algorithms of functioning of the combined power supply system with renewable sources	Petro Vasylenko Kharkiv National Technical University of Agriculture
Kuchanskyy Vladislav	Evaluation of the effect corona on the parametric optimization of the operating modes of the bulk electrical networks	Institute of Electrodynamics of NAS of Ukraine
Mandic Zorana	Industrial Temperature Control Implemented on PLC	University of East Sarajevo
Sykora Tomas	Conversion of KPIs depending on the profitability of production	Brno University of Technology
Kopchak Bohdan	Approximation of Fractional Order PID- controller Transfer Function Using Chain Fractions	Lviv Polytechnic National University

Husák Michal	Application-of-body- posture-recognition- algorithm	Brno University of Technology
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SESSION No. 20-

Wednesday September 15, 12:15-14:00

Chairs: Prof. Korkosz Mariusz

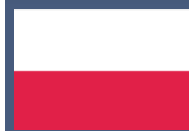
Sztajmec Elżbieta, Pakla Bartłomiej, Parfianowicz Kamil	Analysis of multichannel brushless permanent magnet motor with reduced coil pitch	Rzeszow University of Technology
Parfianowicz Kamil, Pakla Bartłomiej, Sztajmec Elżbieta	A study of multichannel brushless generator with permanent magnets	Rzeszow University of Technology
Podskarbi Grzegorz, Korkosz Mariusz, Prokop Jan, Kutsyk Andriy	Analysis of the influence of the pole winding shape on the properties of a multi-pole switched reluctance motor	Rzeszow University of Technology/ Lviv Polytechnic National University

Podskarbi Grzegorz, Korkosz Mariusz, Prokop Jan	The influence of a partial inter-turn short-circuit on the properties of switched reluctance motors	Rzeszow University of Technology
Kalandyk Dawid	Reinforcement learning in car control: A brief survey	Rzeszow University of Technology
Pakla Bartłomiej, Korkosz Mariusz, Prokop Jan	Analysis of the BLPM structure intended for multi-channel power supply	Rzeszow University of Technology
Nowak Marek	Preliminary study of the prototype six-phase induction machine with symmetrical winding distribution	Rzeszow University of Technology

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SESSION No. 21-

Wednesday September 15, 12:15-14:00

Chairs: Ph.D Pękala Robert

Kwaśnicki Paweł	Modern techniques of material characterization in order to improve efficiency of PV cells	ML SYSTEM
Bober Michał	Stacje ładowania pojazdów elektrycznych	ElectricMobility .store
Czarnota Kamil	Produkcja nowoczesnych pionowych turbin wiatrowych	HIPAR
Maślanka Piotr	Producent elektroniki	Elmak
Cichosz Piotr	Projektowanie, modelowanie, analizy, testowania, badania i rozwój technologii w lotnictwie	RC-TEC
Piecuch Grzegorz	Diagnosing the process of washing insulated containers by a vision system	EDOCS Systems

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SESSION No. 22-

Wednesday September 15, 15:00-17:30

Chairs: Ph.D Trybus Bartosz

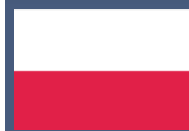
Wlazło Kamil, Trybus Bartosz	Software architecture of surface exploration system using mobile robots	Rzeszow University of Technology
Ślowski Gabriel, Trybus Bartosz	Performance study of selected non-relational database management systems	Rzeszow University of Technology
Cieszynski Michal, Salach Mateusz	Examples of controlling Intelligent Building components	Rzeszow University of Technology
Sondej Adrian, Trybus Bartosz	Applying machine learning in virtual simulations to create autonomous vehicles	Rzeszow University of Technology
Skuba Marcin, Swieicki Mariusz, Trybus Bartosz and Wais Piotr	Data acquisition and processing for testing physical activity and cardiopulmonary endurance	Rzeszow University of Technology
Rak Krzysztof, Salach Mateusz	Methods of rotational speed measurements	Rzeszow University of Technology

Żurawski Kacper, Cierpicki Norbert and Salach Mateusz	Screws and nuts sorting machine using CoreXY kinematics, SCADA visualization and AI object detection on images,	Rzeszow University of Technology
Siwiec Karol, Piotr Storek Salach Mateusz	Automatic mission using unmanned aerial vehicle	Rzeszow University of Technology
Piecuch Grzegorz	Diagnosing the milling process by computational intelligence methods - research methodics	Rzeszow University of Technology
Błądziński Filip, Salach Mateusz	Single engine drone	Rzeszow University of Technology
Goral Marcin	Smart navigation in warehouses	Rzeszow University of Technology
Paszkiewicz Andrzej, Salach Mateusz, Strzałka Dominik, Budzik Grzegorz, Witek Marcin, Nikodem Alicja, Wójcik Hubert	Education of digital techniques in the era of Industry 4.0 based on VR technology	Rzeszow University of Technology

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SESSION No. 23

Wednesday September 15, 15:00-17:30

Chairs: Prof. Smusz Robert

Jankowki-Mihułowicz Piotr, Węglarski Mariusz, Lichoń Wojciech, Chamera Mateusz, Pyt Patryk and Ciejka Cezary	Synthesis of antennas for active glazing packages with photovoltaic modules	Rzeszow University of Technology
Michał Osuchowski, Dorota Bartusik-Aebisher, David Aebisher	The use of 5-Aminolevulinic acid in photodynamic therapy of low-risk localized prostate cancer	University of Rzeszow
Łukasz Ożóg, Dorota Bartusik-Aebisher, David Aebisher	Evaluation of unconventional methods of generation and detection 102 in medical diagnostics	University of Rzeszow
Pękalski A., Kaczmar I., Kuźma M.	Characteristics of the BLDC mechanical motor	East European State University in Przemyśl

Maciąg A., Orłów A., Kuźma M.	CdO layers obtained by pyrolysis	East European State University in Przemyśl
Pociask-Biały Małgorzata	Ion Milling Method for Revealing the HgCdTe MBE-grown structure	University of Rzeszow
Smusz Robert	Numerical analysis of contact in a ball check valve	Rzeszow University of Technology
Żyłka Łukasz, Babiarz Robert, Płodzień Marcin	Diagnostic of grinding wheel dressing process using acoustic emission signal	Rzeszow University of Technology
Bolanowski Marek	Fault prediction in distributed systems	Rzeszow University of Technology
Szlachta Anna	Application of vision systems in measurements	Rzeszow University of Technology
Kossowski Tomasz, Szczupak Paweł	Response of drone electronic systems to the standardized lightning pulse	Rzeszow University of Technology
Gołębiowski Marek, Gołębiowski Lesław,	A system of multiple wind turbine driven, double-fed induction generator operating in island grid	Rzeszow University of Technology

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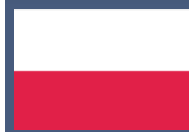


Kwiatkowski Bogdan		
Gołębiowski Marek, Gołębiowski Lesław, Kwiatkowski Bogdan	Wind turbine driven, double-fed induction generator island grid operation	Rzeszow University of Technology
Binkowski Tomasz	Synchronization of the photovoltaic converter with the on-board high frequency grid	Rzeszow University of Technology
Szczerba Zygmunt, Szczerba Piotr, Szczerba Kamil	Sensitivity of the pressure sensors to acceleration	Rzeszow University of Technology

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SESSION No. 24 POSTER Sesion

Wednesday September 15, 15:00-17:30

Chairs: Prof. Bogusz Piotr

Sobczyński Dariusz, Pawłowski Piotr	Energy storage for renewable energy sources	Rzeszow University of Technology
Suliga Mateusz	A preliminary study of a prototype dual-channel induction machine (2x3f).	Rzeszow University of Technology
Podhajecki Jerzy	Effect of two types magnetostriction on stator deformation in BLDC motor	Akademia im. Jakuba z Paradyża w Gorzowie Wielkopolskim
Selwa Jan	Designing exhaust system of a special vehicle	
Selwa Jan	Project of a cooling system in a server room	
Szot Wojciech	Analysis of energy efficiency of various types of solar panels	
Szot Wojciech	A project and a technological analysis of the mixer in a chamber with an acid environment	

Dąbrowski Kamil	Supervision system for projectors in lecture halls	
Dąbrowski Kamil	Evaluation of Internet of Things solution in environmental pollution monitoring	
Czerwińska Karolina	Analysis of the operation of electrically powered vehicles	
Ciejka Paulina	The use of hydrogen in medical transport	
Ferenc Filip	Cybersecurity of energy and ICT networks	
Bartman Jacek	Using Hellwig's method to select features of electrical equipment for the needs of NILM	University of Rzeszow
Pękała Robert	Electromagnetic and temperature field analysis in the ferromagnetic medium	University of Rzeszow
Twaróg Bogdan	Registration and analysis of a pilot's attention using a mobile eyetracking system	University of Rzeszow
Gómułka Zbigniew	Fractional Backpropagation Algorithm - convergence for the fluent shapes for the neuron transfer function	University of Rzeszow
Żesławska Ewa	The concept of the ALMM Solver Knowledge Base retrieval using Protégé environment	University of Rzeszow

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Żabiński Tomasz, Piecuch Grzegorz	Diagnosing the devices of intralogistic systems	
Żabiński Tomasz	Practical aspects of Industry 4.0 implementation in manufacturing companies,	
Kurdyła Rafał	Wpływ instalacji fotowoltaicznych na stan pracy sieci dystrybucyjnej nN	Rzeszów University of Technology
Parfianowicz Kamil	Analiza porównawcza wielopoziomowych falowników napięcia służących do zasilania pięciofazowego silnika synchronicznego z magnesami trwałymi PMSM	Rzeszów University of Technology
Bąk Kamil	Regulator PID zaimplementowany na mikrokomputerze Raspberry Pi działającym jako platforma PLC wzbogacona o analogowe moduły EtherCAT	Rzeszów University of Technology
Bąk Kamil, Salach Mateusz	Mikrokomputer Raspberry Pi jako sterownik PLC, komunikujący się z modułami I/O firmy Beckhoff	Rzeszów University of Technology
Bytnar Janusz	Impact of the selection of key parameters on the correct operation of neighbor-list algorithms in molecular dynamics simulations	

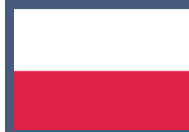
Krzywdzińska Krystyna	Economic, legal and technical conditioning oil heating in the residential buildings.	
Pryjda Damian	Zaprojektowanie i budowa drukarki 3D z wymiennymi narzędziami	
Krzywdzińska Krystyna	Energy efficiency analysis of BIPV systems	
Gawinek Agnieszka	Bezpieczeństwo ppoż instalacji PV	
Pryjda Damian	Development of the controlling for the servo driver, based on the PLC SIEMENS controller	
Mazur Dominika	Energy storage systems in home PV installations	
Krajewski Dariusz, Kamil Czech, Mariusz Oleksy, Rafał Oliwa, Katarzyna Bulanda	The influence of matrix modification on the electrical conductivity of epoxy composites	Rzeszów University of Technology
Wiśniewski Jan	Statistical temporal features of high mental intensity tasks of EEG signals	UR Rzeszów
Dymora Paweł, Mazurek Mirosław	Open-source applications in prediction and data mining process - comparative analysis of AdaBoost and	Rzeszów University of Technology

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	„Sklearn's Perceptron” neural network algorithm	
Stasieńko Justyna		PWSTE Jarosław
Imielowski Andrzej	Optimization of the corporate cluster structure using the tabu Search Method	PWSTE Jarosław
Zuzanna Bober, Dorota Bartusik-Aebisher, David Aebisher	TRACKING BY magnetic resonance imaging.	University of Rzeszow
Klaudia Dynarowicz, Dorota Bartusik-Aebisher, David Aebisher	THE ROLE OF MAGNETIC RESONANCE IMAGING OF LEŚNIEWSKI-CROHN'S DISEASE EX VIVO	University of Rzeszow
Natalia Leksa, Dorota Bartusik-Aebisher, David Aebisher	Carotid blood flow analysis before and after endarterectomy and balloon angioplasty with stent implantation"	University of Rzeszow
Joanna Gustalik-Nowicka,	The microscopy to breast cancer diagnostics"	University of Rzeszow

Dorota Bartusik-Aebisher, David Aebisher		
Lidia Bieniasz, Dorota Bartusik-Aebisher, David Aebisher	"The use of ELISA in detection of larynx tumor- a review"	University of Rzeszow
Dominika Leś, Dorota Bartusik-Aebisher, David Aebisher	The use of light in time detection	University of Rzeszow
Adrian Truszkiewicz, Dorota Bartusik-Aebisher, David Aebisher	Influence of the partial volume on the assessment of the T1 relaxation time in magnetic resonance imaging	University of Rzeszow
Przemysław Bartkowski	Analiza błędów oceny układu hamulcowego pojazdu w SKP	
Przemysław Bartkowski	Widoczność wybranych elementów odblaskowych u pieszego uzależnione od rodzaju światła samochodu osobowego	

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**During the Selected Issues of Electrical Engineering and Electronics WZEE 2021, training sessions (tutorials) will be conducted every day by invited companies from each of the four thematic areas presented at the conference. (B300, B305)**

**During the Selected Issues of Electrical Engineering and Electronics WZEE 2021, two best papers from each of the thematic areas presented at the conference will be awarded by the representatives of the Scientific Committee**

**Plenary meeting of the PTETiS Board (conference room in Hotel Nowy Dwór - Monday September 13, 18.00-19.00)**

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