

The Symposium
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21st

International Symposium on
POWER ELECTRONICS Ee 2021
Novi Sad, Serbia



October 27th - 30th, 2021

PROGRAM (Preliminary):

Virtual / Online

27 Oct. 2021. (Wednesday):

09:00h – 09:50h Registration / Testing

09:50h-10:00h Tutorial opening

10:00h – 13:00h Tutorial 1:

TT-1: Huai Wang and Shuai Zhao, Aalborg University, Aalborg, Denmark
“AI-Assisted Condition and Health Monitoring in Power Electronics”

13:00 – 14:00h Lunch Break

14:00h – 17:00h Tutorial 2:

TT2: Miroslav Vasić, Luis Gomez Navajas, Javier Galindos Vicente, Universidad Politecnica de Madrid Center for Industrial Electronics, Madrid, Spain
“Design Challenges for high-performance GaN based converters in multi-MHz applications”

17:30h – 18:30h Testing session: Conference Paper Video Presentations Upload and Testing

28 Oct. 2021. (Thursday):

09:00h – 09:30h Registration / Testing & Upload

09:30h – 10:00h Opening Ceremony

10:00h – 11:30h Key Notes 1:

KN-1.1: Academician, Prof. Dr. Leo Lorenz, ECPE/Infineon and the German Academy of Science, Nuremberg, Germany

“Power Semiconductor Devices - Development Trend and Application Challenges will Silicon be replaced by WB-Technologies?”

KN-1.2: Prof. Dr. Jelena Popović, University of Twente, The Netherlands

“Energy Access – challenges and opportunities for the power electronics community”

KN-1.3: Academician, Prof. Dr. Slobodan Vukosavić, University of Belgrade/Serbian Academy of Sciences and Arts, Belgrade, Serbia

“Integration of Renewable Sources in AC Grids”

11:30h – 11:45h Refreshment Break

11:45h – 13:00h Invited Lectures

IL-1.1: Prof. Dr. Thierry Meynard, Laboratoire LAPLACE, Université de Toulouse, Toulouse, France
“Self-Designing Blocks: Turn your simulation software into a Pre-Design Tool”

IL-1.2: Prof. Alessandro Lidozzi, Roma Tre University, Rome, Italy

“PHIL – Power Hardware in the Loop for the real-time power emulation of electrical machines”

IL-1.3: Dr. Gerald Deboy, Infineon Technologies Austria AG, Villach, Austria

“On the True Value of Wide Bandgap Power Devices for Low and High-Power Applications”

13:00h – 14:00h Lunch Break

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14:00h – 16:00h Topic 1: Session T1.1: Modern Devices in Power Electronics (8 papers)

Lukić	Emilija	Minimization of Commutation Losses in LLC Resonant Converter with GaN HEMTs and Si based MOSFETs	Serbia
Bavi	Danial	Analysis and Modelling of Temperature Dependence of I-V behaviour in Silicon Carbide MOSFETs	Australia
Mocevic	Slavko	SiC MOSFET Junction Temperature Estimation based on Output Characteristics Integrated on Gate-driver	United States
Galindos	Javier	Test Bench Setup for characterization of GaN HEMT	Spain
Folmer	Szymon	GaN And Superjunction MOSFET Transistor Switching In A Resonant Switched-Capacitor Converter	Poland
Szczerba	Piotr	Analytical PFC Boost Inductor Power Loss Calculation Method in CCM	Poland
Szczerba	Piotr	Analytical Design Optimization of PFC Boost Inductor in CCM	Poland
Dankov	Dobroslav	Modelling and simulation of power thyristors in power supply for induction heating with respect to their failure rates and reliability	Bulgaria

14:00h – 16:00h Topic 4: Session T4.1: Control of Modern Converters (7 papers)

Josipovic	Ksenija	Minimum Deviation Controller for Indirect Energy Transfer Converters	Canada
Igney	Jens	Control Algorithms for Matrix Converters with Low Mathematical Complexity	Germany
Stoev	Iordan	Algorithm and block diagram of an electronic system for control of energy flows in residential premises	Bulgaria
Brandis	Andrej	Half-Bridge Voltage Source Inverter Control Development Using HIL System	Croatia
Stojanović	Lazar	Influence of system delay on current controller stability and performance at grid-side inverter with LCL filter	Serbia
Petric	Ivan	Analysis and DSP Implementation of Multi-sampled Three-Phase Current Controllers	Italy
Ciufudean	Calin	Automatic System for Saving Cooking Gas	Romania

16:00h – 16:15h Refreshment Break

16:15h – 18:15h Topic 1: Session T1.2: DC/DC Converters (8 papers)

Tahmaz	Oguz	Analysis, Modeling, and Simulation of the Multiple Output Flyback Converter used in Various Motor Drive Applications	Turkey
Vračar	Darko	Active-Clamped Flyback DC-DC Converter in Three-Phase Application	Germany
Birtek	Gizem	Analysis, Modeling and Simulation of Two Stage Buck-Boost Converter with Switched-Capacitor	Turkey
Ionici	Cristian-Valentin	A New Tapped Inductor Quadratic DC-DC Converter	Romania
Rahman	M. I.	Generalised Fourier Series Model for Dual Active Bridge DC/DC Converter based on Triple Phase Shift Modulation Method	United Kingdom

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Botila	Delia-Anca	A Buck Converter Suitable in Low Step-Down Applications	Romania
Lopušina	Igor	Comparative Analysis of Input-Series-Output-Series Partial Power Rated DC to DC Converters	Austria
Toader	Dumitru	The Transient Regime of a DC Relay Supplied a Charged Capacitor	Romania

16:15h – 18:15h Topic 7: Session T7.1: Renewable Energy Sources and Grids (5 papers)

Stevanovic	Branislav	Multi-Level, Partial Power Processing and WBG Devices - Future of 1500-V Photovoltaic Systems	Spain
Mišurović	Filip	Probabilistic load flow calculation using Halton quasi-random numbers in modern power systems with wind and solar generation	Montenegro
Šćekić	Lazar	Siting and Sizing of Renewable Energy Sources: A Case Study on Montenegro	Montenegro
Cvetanovic	Ruzica	An Improved Direct Voltage Component Extraction Method for Grid Connected Converters	Serbia
Špica	Sanja	GIS for Public Lighting Installations	Serbia

18:15h Social Activities (Virtual Welcome Party)

29 Oct. 2021. (Friday): (Online)

08:00h – 09:00h Registration / Testing & Upload

09:00h – 10:30h Topic 2: Session T2.1: Automotive and Industrial Drives (6 papers)

Hanschek	Andreas J.	Analysis of power distribution systems based on low-voltage DC/DC power supplies for automated guided vehicles (AGV)	Austria
Ekim	Melih Nafi	Analysis of Non-Regenerative Resistive Dynamic Braking Behaviour of PMSM	Turkey
Janković	Filip	Matlab/Simulink Based Energy Consumption Prediction of Electric Vehicles	Montenegro
Vukajlovic	Nikola	Modelling of three-phase interleaved DC-DC converter for hybrid energy storage application in electric vehicles	Serbia
Stanić	Luka	Extended SVM for direct matrix converter-based drive operating under unbalanced grid conditions	Serbia
Bebić	Milan	Revitalization and Modernization of Dragline Excavators with Limited Budget	Serbia

09:00h – 10:30h Topic 6: Session T6.1: Power Quality (5 papers)

Sun	Jianxia	Calculation and Spectral Analysis of DC-Link Current for three phase PWM inverter	China
Katić	Vladimir	Voltage Sags Duration Probability Distribution Function	Serbia
Badak	Ufuk	Comparison of Sinusoidal PWM Techniques in Terms of Harmonic Analysis in Three and Five Level Diode Clamped Inverter	Turkey
Trifunjagić	Viktor	Application of the PV systems for non-linear load current compensation	Serbia
Turović	Radovan	Training an LSTM Voltage Sags Classifier on a Synthetic Dataset	Serbia

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10:30h – 10:45h Refreshment Break

10:45h – 11:45h Key Notes 2

KN-2.1: Dr. Branislav Kisačanin, Nvidia Corp., Santa Clara, USA/Centre for AI, Novi Sad, Serbia
“Transformers’ for Artificial Intelligence”

KN-2.2: Prof. Dr. Huai Wang, Aalborg University, Aalborg, Denmark
“AI Applications for Power Electronics – Challenges and Opportunities”

11:45h – 13:00h Invited Papers

IP-1.1: Assoc. Prof. Dr. Dušan Gajić, University of Novi Sad, Novi Sad, Serbia
“Blockchain-based Smart Decentralized Energy Trading for Renewable Energy Systems”

IP-1.2: Caio R. D. Osório, Typhoon HIL Inc., Novi Sad, Serbia
“Advancements on Real-Time Simulation for High Switching Frequency Power Electronics Applications”

IP-1.3: Henrique Magnago, Typhoon HIL Inc., Novi Sad, Serbia
“HIL-Based Certification for Converter Controllers: Advantages, Challenges and Outlooks”

13:00h – 14:00h Lunch Break

14:00h – 15:45h Special Session - Industry Session

IS-1.1: Typhoon HIL Presentation



IS-1.2: Brose Presentation



15:45h – 16:00h Refreshment Break

16:00h – 18:00h Topic 3: Session T3.1: Electric Machines (6 papers)

Duvvuri	S.S.S.R. Sarathbabu	Non-linear Observer Based Stator Inter-turn Short-circuit Fault Detection in 3-Φ Induction Motor	India
Mekhilef	Aymen Abdelmounaim	FCS-MPC of a DMC-fed Induction Machine with Unity Input Power Factor Using Rotating Vectors	Algeria
Obradović	Katarina	Design Procedure for High-Frequency Transformer in LLC Resonant Topology	Serbia
Mihic	Dragan	Influence of phase coupling on the performance of 8/6 SRM	Serbia
Vučković	Mladen	Inductance Identification of the Surface Permanent Magnet Synchronous Machines with sinusoidal voltage test signals	Serbia
Zaskalicky	Pavel	Minimization of an Electromagnetic Torque Ripple of a Five- Phase IM Operated under One-Phase Fault	Slovakia

16:00h – 18:00h Topic 4: Session T4.2: Control and Measurement in Power Electronics (7 papers)

Rivera	Marco	Predictive Control of an Induction Machine Fed by a Voltage Source Inverter	Chile
Rivera	Marco	The Selection of Cost Functions in Model Predictive Control Applications	Chile
Nicola	Marcel	Improvement of PMSM Control Using Reinforcement Learning Deep Deterministic Policy Gradient Agent	Romania

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Nicola	Marcel	Tuning of PI Speed Controller for PMSM Control System Using Computational Intelligence	Romania
Serov	Andrey	Approaches to Reducing of the Active Power Measurement Error for a Method Based on Averaging of Instantaneous Power	Russian Federation
Serov	Andrey	Method of Reducing of the Complex Spectrum Measurement Error In Case of Applying of the Quadrature Demodulation Technique	Russian Federation
Vojvodić	Nikola	Analysis of the influence of non-simultaneous sampling on the measurement of three-phase instantaneous power	Serbia

18:00h – 18:30h Awards Session (Media sponsor - Journal *Energies*)

- Best Paper Award (300\$, sponsored by *Energies*)
- Best Student Paper Awards (free registration fee at Ee2022, sponsored by Ee conference)
- National Best Paper Award - for Serbian authors only (sponsored by Power Electronics Society of Serbia)
- Special Issue of *Energies*: “Smart Power Electronics – Selected papers from the 21st International Symposium on Power Electronics (Ee 2021)”: Announcement of the selected papers.



18:30h Social Activities (Virtual Party)

30 Oct. 2021. Saturday: (Online)

08:00h – 09:00h Registration / Testing & Upload

09:00h – 10:00h **XXI Savetovanje Energetska elektronika / 21st National Conference on Power Electronics (5 radova)**

10:00h – 11:00h Key Notes 3

- KN-3.1: Asst.Prof. Dr. Minjie Chen, Princeton University, Princeton, USA
“Managing Power Complexity for Extreme Performance: Circuit, Architecture, and Magnetics”
- KN-3.2: Kevin Hermanns, PE-Systems GmbH, Darmstadt, Germany
“Component Data - The Key to Unleash the Potential of Design Automation for Power Electronics”

11:00h – 11:15h Refreshment Break

11:15h – 12:45h Topic 1: Session T1.3: Power Electronics Converters (6 papers)

Grbovic	Petar	Analysis and Design of Partial-Power Rated Single-Phase Diode Boost Rectifier	Austria
Di Nezio	Giulia	Design of a SiC MOSFET 6-Phase Boost Rectifier	Italy
Strobl	Simon	Braking energy recovery by Modular Multilevel Converters in MVDC Railway Electrification Systems	Switzerland
Anuchin	Alecksey	Increasing Current Loop Performance Using Variable Accuracy Feedback for GaN Inverters	Russian Federation
Penczek	Adam	New Three-Level Soft Turn-off T-type NPC Inverter	Poland
Serrano	Diego	1:1 Resonant Switched Capacitor with Capacitive-based Isolation	Spain

12:45h **Godišnja skupština Društva za energetska elektroniku Srbije**

13:15h Conference closing