

THE 11TH INTERNATIONAL SCIENTIFIC SYMPOSIUM
ELEKTROENERGETIKA 2022
September 12–14, 2022, Stará Lesná, Slovak Republic

PROGRAM

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TECHNICAL UNIVERSITY
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THE 11TH INTERNATIONAL SCIENTIFIC SYMPOSIUM

ELEKTROENERGETIKA 2022

September 12–14, 2022, Stará Lesná, Slovak Republic

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PROGRAM OVERVIEW

Sept. 12, Monday	Sept. 13, Tuesday	Sept. 14, Wednesday
HOTEL KONKTAKT: Registration Desk Registration Service starts on Monday, Sept. 12, 2022, from 11:00		
Opening Ceremony Keynote Speech	Oral Presentations of Refereed Papers	
Sessions A1 (CONFERENCE ROOM) D (LONGUE)	Sessions A2 (CONFERENCE ROOM)) B, C (LONGUE)	Sessions E (LONGUE) F (CONFERENCE ROOM)
Keynote Speeches (Conference room)	Free time. Free to rest, walks, hiking, sports or wellness.	The conclusion of the 11 th International Scientific Symposium ELEKTROENERGETIKA 2022
Welcome drink and Gala Dinner	Outdoor Raut, Barbecue (HOTEL KONTAKT)	

SYMPOSIUM GUARANTEE

Dr. h.c. prof. Ing. Michal Kolcun, PhD., Technical University of Košice, Slovakia

SESSIONS CHAIRMEN

Keynote Speech

Prof. Dr. Roman Cimbala, Technical University of Košice, Slovakia

Session A1 THE ELECTRICITY PRODUCTION AND DISTRIBUTION – PART 1

Prof. Dr. Valentin Gyurov, Technical University of Varna, Bulgaria
Assoc. Prof. Dr. Dušan Medveď, Technical University of Košice, Slovakia

Session A2 THE ELECTRICITY PRODUCTION AND DISTRIBUTION – PART 2

Prof. Dr. Alena Otčenášová, University of Žilina, Slovakia
Assoc. Prof. Dr. Ľubomír Beňa, Technical University of Košice, Slovakia

Session B HIGH VOLTAGE TECHNIQUE AND DIAGNOSTICS IN ELECTRICAL POWER ENGINEERING

Prof. Dr. Iraida Kolcunová, Technical University of Košice, Slovakia
Prof. Dr. Dušan Krokavec, Technical University of Košice, Slovakia

Session C POWER SYSTEMS RELAYING, FAULTS ANALYSIS

Prof. Dr. Dušan Krokavec, Technical University of Košice, Slovakia
Prof. Dr. Iraida Kolcunová, Technical University of Košice, Slovakia

Session D POWER SYSTEM CONTROL, LIBERALISATION OF ELECTRICITY MARKET

Prof. Dr. Daniela Perduková, Technical University of Košice, Slovakia
Assoc. Prof. Dr. Karel Máslo, ČEPS, a.s., Prague, Czech Republic

SESSION E: SMART GRIDS AND ELECTROMOBILITY

Prof. Dr. Peter Bracíník, University of Žilina, Slovakia
Assoc. Prof. Dr. Emil Dvorský, University of West Bohemia, Pilsen, Czech Republic

SESSION F: PHD SESSION

Dr. Péter Holcsik, Óbuda University, Hungary
Assoc. Prof. Dr. Jaroslav Petráš, Technical University of Košice, Slovakia

DAILY PROGRAM

Sept. 12, Monday					
Halls		HOTEL KONTAKT		HOTEL KONTAKT CONFERENCE ROOM	
11:00		Registration Desk EE 2022 Office Service			
14:00	15:00			Opening Ceremony & Keynote speech	
15:30				Coffee Break	
Halls		HOTEL KONTAKT LONGUE		HOTEL KONTAKT CONFERENCE ROOM	
15:30	18:00	SESSION D POWER SYSTEM CONTROL, LIBERALISATION OF ELECTRICITY MARKET		SESSION A1: ELECTRICITY PRODUCTION AND DISTRIBUTION PART 1	
19:00		Welcome Drink and Gala Dinner, Hotel KONTAKT			
Sept. 13, Tuesday					
Halls		HOTEL KONTAKT LONGUE		HOTEL KONTAKT CONFERENCE ROOM	
08:30	10:00	SESSION B: HIGH VOLTAGE TECHNIQUE AND DIAGNOSTICS IN ELECTRICAL POWER ENGINEERING		SESSION A2 ELECTRICITY PRODUCTION AND DISTRIBUTION PART 2	
Coffee 10:00	break 10:30				
10:30	12:00				
12:00		Lunch			
14:00	18:00	FREE TIME			
19:00		Outdoor Raut, Barbecue, Hotel KONTAKT			

Sept. 14, Wednesday			
Halls		HOTEL KONTAKT LONGUE	
		HOTEL KONTAKT CONFERENCE ROOM	
08:30		SESSION E SMART GRIDS AND E-MOBILITY	SESSION F PHD SESSION
Coffee 10:00	break 10:30		
10:30	12:00		
12:00		Lunch	
The conclusion of the 11th International Scientific Symposium ELEKTROENERGETIKA 2022			

PRESENTATION SCHEDULE

OPENING CEREMONY & KEYNOTE SPEECH

Sept. 12, 2022, 14:00-15:00

Venue: HOTEL KONTAKT CONFERENCE ROOM

Chaired by: Prof. Dr. Roman Cimbala, Technical University of Košice, Slovakia

Local organizer: Dr. Marek Pavlík, Technical University of Košice, Slovakia

<i>Presenter</i>	<i>Presentation Title</i>
Karel Máslo, ČEPS	The present and future of ENTSO-E
Coffee break	

SESSION A1: THE ELECTRICITY PRODUCTION AND DISTRIBUTION

Sept. 12, 2022, 15:30-18:00

Venue: HOTEL KONTAKT CONFERENCE ROOM

Chaired by: Prof. Dr. Valentin Gyurov, Technical University of Varna, Bulgaria
Assoc. Prof. Dr. Dušan Medveď, Technical University of Košice, Slovakia

Local organizer: Dr. Marek Pavlík, Technical University of Košice, Slovakia

<i>Presenter</i>	<i>Presentation Title</i>
Diahovchenko Illia, Ihor Yevtushenko, Michal Kolcun, Zsolt Čonka, Dušan Medveď, Ľuboš Šárpataky	Operability Satisfaction of Energy Systems with Nuclear Power Plants at Different Photovoltaic Penetration Levels
Novotný Jozef	Statistical Analysis of Photovoltaic Power Plant Production in Second Resolution
Medveď Dušan, Kolcun Michal, Király Jozef, Shavolkin Olexandr, Shvedchykova Iryna	Utilisation of Energy Storage System in Power System
Bejvl Martin, Šimek Petr, Valouch Viktor	Control of Modular Multilevel Converter for Compensation of Unsymmetrical Loads
Sekulov Lyubomir, Pavlov Georgi	Examination and Analysis of the Energy Efficiency of Pesa Swing 122NaSF2 Tram Types
Belik Milan, Rubanenko Olena	Degradation of Monocrystalline PV Panels Differences between Ukrainian and Czech Conditions

SESSION A2: THE ELECTRICITY PRODUCTION AND DISTRIBUTION

Sept. 13, 2022, 8:30-12:00

Venue: HOTEL KONTAKT CONFERENCE ROOM

Chaired by: Prof. Dr. Alena Otčenášová, University of Žilina, Slovakia

Assoc. Prof. Dr. Ľubomír Beňa, Technical University of Košice, Slovakia

Local organizer: Dr. Samuel Bucko, Technical University of Košice, Slovakia

<i>Presenter</i>	<i>Presentation Title</i>
Kim Dmitriy, Georgiev Georgy	A Probabilistic Model for Assessment of the PV Hosting Capacity in LV Grid
Vrban Branislav, Čerba Štefan, Lüley Jakub, Filová Vendula, Nečas Vladimír	On Energy Storage Options for Small Modular Nuclear Reactors
Lüley Jakub, Vrban Branislav, Čerba Štefan, Filová Vendula, Nečas Vladimír	Small Modular Nuclear Reactors for Future Electricity Grids
Pavlík Marek, Kolcun Michal, Bucko Samuel	Analysis and Evaluation of Photovoltaic Cell Defects and Their Impact on Electricity Generation
Coffee break	
Djagarov Nikolay, Milushev Hristo, Djagarova Julia, Panova Evgeniya	Review of the Methods for Reducing Torque Ripple of Induction Motor Direct Torque Control
Kaspirek Martin, Kouba Daniel	Operation of Micro Sources Connected to LV Distribution Grid
Bucko Samuel, Cimbala Roman, Pavlík Marek	Internal Heating of Li-ion Battery Cell With Alternating Current
Morva György, Haddad Richard, Bencsik József	Management system for energy communities
Hatibovic Alen, Haddad Richárd, Morva György	Connection of high-power PV power plants to 110-132 kV main distribution networks
Lunch	

SESSION B: HIGH VOLTAGE TECHNIQUE AND DIAGNOSTICS IN ELECTRICAL POWER ENGINEERING

Sept. 13, 2022, 8:30-10:00

Venue: HOTEL KONTAKT LONGUE

Chaired by: Prof. Dr. Dušan Krokavec, Technical University of Košice, Slovakia
Prof. Dr. Irida Kolcunová, Technical University of Košice, Slovakia

Local organizer: Dr. Ján Zbojovský, Technical University of Košice, Slovakia

<i>Presenter</i>	<i>Presentation Title</i>
Havran Peter, Cimbala Roman, Kurimský Juraj, Dolník Bystrík, Bucko Samuel	Influence of Alternating Electric Field Intensity on the Dielectric Response of Hybrid Nanofluid-Paper Insulation System
Pavlov Ľuboš, Skurčák Ľuboš, Hluchý Ladislav, Kvassay Marcel, Krammer Peter, Kremler Martin	Use of Artificial Intelligence to Determine the Degree of Environmental Pollution
Skurčák Ľuboš, Pavlov Ľuboš, Bojda Peter, Gbelec Ján	Aerial Diagnostics of High-Voltage Lines Using Modern Diagnostic Systems
Petráš Jaroslav, Džmura Jaroslav	Anti-static Coating Electrical Parameters After Ageing Process
Zbojovský Ján, Kolcunová Irida, Kurimský Juraj, Cimbala Roman	Additive magnetic coatings for the purposes of shielding the electromagnetic fields
Coffee break	

SESSION C: POWER SYSTEMS RELAYING, FAULTS ANALYSIS

Sept. 13, 2022, 10:30-12:00

Venue: HOTEL KONTAKT LONGUE

Chaired by: Prof. Dr. Dušan Krokavec, Technical University of Košice, Slovakia
Prof. Dr. Irida Kolcunová, Technical University of Košice, Slovakia

Local organizer: Dr. Ján Zbojovský, Technical University of Košice, Slovakia

<i>Presenter</i>	<i>Presentation Title</i>
Hromádka Aleš, Martínek Zbyněk	Shutdowns Assessment of Biomass Burned Unit
Máslo Karel, Koudelka Jan, Vyčítal Václav	Model of Unsymmetrical Three-Phase Power System
Diahovchenko Illia, Kolcun Michal, Čonka Zsolt, Bucko Samuel, Medved' Dušan	Reliability Estimation of High Voltage SF ₆ Circuit Breakers, Considering Uneven Wear
Krokavec Dušan, Filasová Anna	Data driven approaches in fault detection of wind turbines
Šmidovič Rastislav, Kohan Vladimír, Čonka Zsolt, Kolcun Michal, Havran Peter, Štefko Róbert	The Use of WAMS in Solving Major Faults
Lunch	

SESSION D: POWER SYSTEM CONTROL, LIBERALISATION OF ELECTRICITY MARKET

Sept. 12, 2022, 15:30-18:00

Venue: HOTEL KONTAKT LONGUE

Chaired by: Prof. Dr. Daniela Perduková, Technical University of Košice, Slovakia
Assoc. Dr. Prof. Karel Máslo, ČEPS, a.s., Prague, Czech Republic

Local organizer: Assoc. Prof. Zsolt Čonka, Technical University of Košice, Slovakia

<i>Presenter</i>	<i>Presentation Title</i>
Perdukova Daniela, Fedor Marek, Fedor Pavol	Various Approaches for a Design of the Hydraulic Turbine Model
Máslo Karel	Inverter-Based Resources Modelling and Simulation
Knápek Jaroslav, Horák Martin, Králík Tomáš, Vávrová Kamila, Outrata David	Possible Role of Biomass in Energy Transformation -- Economic Competitiveness and Policy Implications on Case Example of the Czech Republic
Hába Tomáš, Rychlý Oldřich, Máslo Karel	Equivalent Dynamic Model of the Continental Europe Synchronous Area for Frequency Stability Assessment
Koltsaklis Nikolaos, Knápek Jaroslav	The Role of Flexibility Resources in The Energy Transition
Poničan Ján, Sadloň Matej, Janíček František, Čerba Štefan, Vrban Branislav, Lúley Jakub, Nečas Vladimír, Filová Vendula	Implementation of the Requirements Guidelines for New Electricity Generation Units in the EU to Operation Electricity System and Electricity Balancing
Chudý Michal, Cvacho Peter, Kurcz János, Laurinec Peter, Praščák Mikuláš, Štrkolec Juraj	Smart Battery as Elementary Asset of Virtual Power Plant -- Data From Pilot Operation

SESSION E: SMART GRIDS AND ELECTROMOBILITY

Sept. 14, 2022, 8:30-12:00

Venue: HOTEL KONTAKT LONGUE

Chaired by: Prof. Dr. Peter Bracíník, University of Žilina, Slovakia
Assoc Prof. Dr. Emil Dvorský, University of West Bohemia, Pilsen, Czech Republic

Local organizer: Dr. Jozef Király, Technical University of Košice, Slovakia

<i>Presenter</i>	<i>Presentation Title</i>
Farkaš~Smitková Miroslava, Janiček František	Modelling of Sulphur-Iodine Water Splitting Cycles for Hydrogen Production
Király Jozef, Kolcun Michal, Medved' Dušan	Influence of EV Charging Stations to Grid Operation
Rybárik Marek, Bracíník Peter, Roch Marek	Modelling of SLBESS Application in the Distribution Grid with the Help of a Benchmark Model
Dvorsky Emil, Rakova Lenka, Hejtmankova Pavla, Sitar Vladislav	Operation Control of Photovoltaic Power Plants in Smart Grids
Gyurov Valentin, Chikov Vladimir, Makedonski Nikola, Yordanov Yuliyán	Concept for the Use of the Existing Trolleybus Power Supply Networks as Infrastructure for the Electric Vehicle Charging Stations
Coffee break	
Tarpov Ilko, Tomcheva Martina	Analysis of the Two-way Power Transmission and Recuperation Efficiency of Solaris Trollino 18 Trolleybuses
Gyurov Valentin, Parushev Plamen, Makedonski Nikola, Duganov Milen	Simulation Study of the Electric Consumption Regimes in Trolleybus Power Supply Networks
Vojtek Martin, Mastný Petr, Morávek Jan, Drápela Jiří, Vrána Michal	VVerification of Photovoltaic Inverters Properties and Their Compliance With Grid Code Requirements in the Czech Republic
Čerba Štefan, Vrban Branislav, Lúley Jakub, Filová Vendula, Nečas Vladimír, Poničan Ján	On Influence of Smart Grid Technologies on the Safe Operation of NPPs
Holcsik Péter, Nieberl Norbert, Páfi Judith	Phases of the Smart Low-Voltage Distribution Network Implementation by System Theory Approach
Lunch	

SESSION F: PHD SESSION

Sept. 14, 2022, 8:30-12:00

Venue: HOTEL KONTAKT CONFERENCE ROOM

Chaired by: Dr. Péter Holcsik, Óbuda University, Hungary
Assoc. Prof. Dr. Jaroslav Petráš, Technical University of Košice, Slovakia

Local organizers: Miloš Šárpataky, Ľuboš Šárpataky, Technical University of Košice, Slovakia

<i>Presenter</i>	<i>Presentation Title</i>
Šárpataky Ľuboš, Dolník Bystrík	Research of the Influence of Humidity and Contamination on Glass and Silicon Rubber Insulating Materials by Leakage Current Measurement
Štefko Róbert, Šárpataky Ľuboš, Šárpataky Miloš, Beňa Ľubomír, Čonka Zsolt, Džmura Jaroslav, Kolcun Michal, Pavlík Marek	Case Study of the Design of Renewable Energy Sources for Microgrid Systems
Šárpataky Miloš, Kurimský Juraj, Rajňák Michal, Krbal Michal, Pelikán Luděk	Comparative Study of Dielectric Properties of Mineral Oil, Synthetic Ester and Natural Ester
Jurák Viktor, Topolánek David, Orságová Jaroslava	Testing of the Faulty Phase Earthing System Using Real-Time Simulator
Kurcz János, Poničan Ján, Chudý Michal, Šály Vladimír, Janíček František, Gebura Marek	Dynamic Changes of Photovoltaic Power Plants Power Supply
Kubín Adam, Králík Tomáš, Vašíček Jiří	Impacts of EU Taxonomy Implementation on the Energy Sector
Coffee break	
Jablonská Šárka	The Compliance of Green Hydrogen Targets
Vrtal Matěj, Toman Petr	Application of Digital Twin Technology in Distribution Networks
Krcal Vit, Topolánek David	Fault Detection in Mesh Network Utilizing Measured Data from MV/LV Transformer Stations
Taylor Rikin, Čonka Zsolt	Electric Vehicle Charging Management System in the Residential Streets for Individual Houses Using a Smart Controller in a Present Grid
Bodnár Dávid, Biľanský Juraj, Ďurovský František	Methodology of Battery Life Prediction for Hybrid Energy Storage System in Electric Vehicles
Blazek Vojtech, Kedron Pavel, Slanina Zdenek, Pergl Ivo	Concept of Testbed Vehicle-to-Home Technology in a Household Off-Grid System Environment
Kabot Ondřej, Fulneček Jan, Fulnečková Denisa	Impact of Selected Parameters on Results of Dielectric Frequency Response
Lunch	