



PROGRAM

OF

UIE 2021

XIX International UIE Congress on Evolution and
New Trends in Electrothermal Processes

Congress is supported by



ampere europe asc.

www.ampereurope.org



Organizing Committee

Prof. Ivo Doležel, Chairman

Prof. Jiří Kožený, Chairman

Assoc. Prof. Václav Kotlan, Local Organizer

Assoc. Prof. David Rot, Local Organizer

Dr. Lenka Šroubová, Secretariat

Faculty of Electrical Engineering, University of West Bohemia, Czech Republic

Time schedule of UIE 2021

Wednesday 1.9.

Thursday 2.9.

Friday 3.9.

Registration (8:30 - 9:30)			OS5 (8:30 - 10:00)	OS6 (8:30 - 10:00)
Opening ceremony (9:30 - 10:00)				
Coffee break (10:00 - 10:30)			Coffee break (10:00 - 10:30)	
Invited lectures (10:30 - 11:45)			OS7 (10:30 - 11:30)	OS8 (10:30 - 11:30)
Photo (11:45)			Closing ceremony (11:30 - 12:00)	
Lunch (12:00 - 13:00)			Lunch (12:00 - 13:00)	
IPP (13:00 - 13:50)				
OS1 (14:00 - 15:30)	OS2 (14:00 - 15:30)			
Coffee break (15:30 - 16:00)				
OS3 (16:00 - 17:00)	OS4 (16:00 - 17:00)			
PS1 (17:00 - 18:00)				
Registration (17:30 - 19:00)				
Welcome reception (19:00 - 21:00)	Gala dinner (19:00 - 22:30)			

Registration (17:30 - 19:00)
Welcome reception (19:00 - 21:00)

Information for the Presenters

Poster

- The poster must be printed in A1 size (portrait orientation). Easels and clip pins will be provided for the presentation.

Oral presentation

- Presentations are allowed in Powerpoint or PDF file format (preferred is format 16:9).
- Presentations are 10 minutes in length and must include a brief introduction to the topic and a description of the work itself. There is a 5 minute question period after the presentation.
- Presentations will be uploaded to a laptop prior to the start of the session. If you need any special software for your presentation it is possible to present from your laptop, but please arrange to test the connection beforehand or make sure you have a reduction ready. The on-site projector is equipped with an HDMI connection.

Online presentation

- Record your presentation as a short 10-minute video, ideally in MP4 format. Send this video via WeTransfer (<https://wetransfer.com/>) to “uie2021@fel.zcu.cz” with the subject line “UIE 2021 online presentation”.
- Your video presentation will be played during the conference and then space will be provided for discussion (5 min) via google meet video conferencing.
- Each presenter must be connected to the given video call at the beginning of the session.

Congress venue

Pilsner Urquell brewery – Conference center Secese
U Prazdroje 7, 304 97 Plzeň, Czech Republic

or

online via Google meet 

For participants in the hall, online broadcast will be provided.

Program of UIE 2021

Registration

Wednesday 1.9. 17:30 - 19:00

Pilsner Urquell brewery – Conference center Secese
U Prazdroje 7, 304 97 Plzeň, Czech Republic

Welcome reception

Wednesday 1.9. 19:00 - 21:00

Restaurant Formanka

Opening ceremony

Thursday 2.9. 9:30 - 10:00

Main hall

Google meet: meet.google.com/vuo-yeau-whw

Invited lectures

Thursday 2.9. 10:30 - 12:00

Main hall

Chairman: Ivo Doležel

Google meet: meet.google.com/hvy-yqas-ttq

10:30	Jon Binner, Matthew Porter, Roger Morell, Petra Kumi and Vadim Yakovlev <i>Computational Characterization of Microwave Processing of SiCf/SiC Composites</i>
11:05	Egbert Baake and Bernard Nacke <i>Recent Developments and Future Trends in Electrotechnologies</i>

Common photo

Thursday 2.9. 11:45 - 12:00

Industrial partners presentation

Thursday 2.9. 13:00 - 13:50

Main hall

Chairman: Vaclav Kotlan

Google meet: meet.google.com/rjn-csmr-efr

13:00	Václav Pavlovec , CEO, JUNKER Industrial Equipment s.r.o., OTTO JUNKER - GROUP <i>Transistor Technology for Induction Melting Furnaces</i>
13:25	Stanislav Němeček , CEO, RAPTECH s.r.o. <i>Benefits and Properties of Tools Processed by Laser Beam</i>





Oral session 1

Thursday 2.9. 14:00 - 15:30

Red lounge

Chairman: Egbert Baake, Andris Jakovics

Google meet: meet.google.com/aov-obzz-eqb

14:00	OS1 - 1	Martin Ennen, Egbert Baake and Igor Niedzwiecki <i>Tailored Heating Of Billets For Hot Forming Using An Induction Heating Approach</i>
14:15	OS1- 2	Reinis Baranovskis, Didzis Berenis, Ilmars Grants, Andris Bojarevics and Toms Beinerts <i>New contactless aluminum degassing system - GaInSn model experiments with a numerical study</i>
14:30	OS1 - 3 	Jerzy Barglik, Adrian Smagór and Albert Smalcerz <i>Electrical Efficiency of Induction Contour Hardening Systems</i>
14:45	OS1 - 4 	Alexandr Ivanov, Vladimir Bukanin and Alexei Zenkov <i>Simulation Problems of Internal Inductors</i>
15:00	OS1 - 5 	Mihails Birjukovs, Juris Vencels, Juhani Kataja and Peter Raback <i>Microwave Heating of Water in a Rectangular Waveguide: Validating EOF-Library Against COMSOL Multiphysics and Existing Data</i>
15:15	OS1 - 6 	Suraj Murali, Christian Bothen, Srivijay Manjunath, Ebrahim Bagheri, Mohamed Loukil, Daniel Pelikan, Kristiaan Pelckmans and Dragos Dancila <i>Energy Efficient Solid-State Microwave Curing of Carbon Fiber Reinforced Composites</i>

Oral session 2

Thursday 2.9. 14:00 - 15:30

Main hall

Chairman: Alexander Fröhlich, Ulrich Lüdtké

Google meet: meet.google.com/zbm-hbiz-pqr

14:00	OS2 - 1	Koen Van Reusel <i>Exposure to electromagnetic fields produced by industrial processes</i>
14:15	OS2- 2	Bernard Nacke and Marco Baldan <i>Induction tempering of surface hardened components</i>
14:30	OS2 - 3	Jonas Kimme, Josephine Zeisig, Alexander Fröhlich and Verena Kräusel <i>Technology development for manual laser cladding of high-alloy tool steels with simultaneous inductive preheating for crack prevention</i>
14:45	OS2 - 4	Patrick Rochala, Christian Hofmann, Martin Kroll, Maik Wiemer and Verena Kräusel <i>Chip-level bonding for microelectronic components by induction sintering of micro structured Ag particles</i>
15:00	OS2 - 5	David Rot, Michal Knedlik, Jakub Jirinec, Jiri Hajek, Jiri Kozeny and Antonin Podhrazky <i>Cost reduction opportunities in induction surface hardening processes for smaller diameter cylindrical loads</i>
15:15	OS2 - 6	Vaclav Kotlan, Roman Hamar, Karel Slobodnik and Ivo Dolezel <i>Modeling of temperature patterns and hardness of surfaces obtained by additive technique</i>

Oral session 3

Thursday 2.9. 16:00 - 17:00

Main hall

Chairman: Bernard Nacke, David Rot

Google meet: meet.google.com/mqv-rggu-edu

16:00	OS3 - 1	Valters Dzelme, Andris Jakovics and Egbert Baake <i>Liquid metal layer dynamics in transverse alternating magnetic field</i>
16:15	OS3- 2	Sergej Belik <i>Development of high-performance air heater based on an inductively heated packed bed</i>
16:30	OS3 - 3	Ulrich Lüdtke and Andreas Löhlein <i>Temperature and flow distribution of liquid metal fin in refractory of induction crucible furnaces</i>
16:45	OS3 - 4	Igor Sokolov, Evgeniy Shvydkiy and Gennady Losev <i>Liquid metal flow generating by unsymmetric traveling magnetic field</i>





Oral session 4

Thursday 2.9. 16:00 - 17:00

Red lounge

Chairman: Pablo Guillén, Václav Kotlan

Google meet: meet.google.com/vfc-fonj-hnf

16:00	OS4 - 1 	Sean Muyskens and Robert Goldstein <i>Physical Simulation of Soft Magnetic Composite Impeder Performance for use in Induction Tube Welding Systems</i>
16:15	OS4 - 2 	Yuriy Perevalov and Victor Demidovich <i>Induction heat treatment of large rolls with two independent power sources</i>
16:30	OS4 - 3 	Tareq Eddir, Robert Goldstein and Robert Haun <i>Investigating the Benefit of Soft Magnetic Composite Inserts on Energy Efficiency in Cold Wall Billet Casters Using Computer Simulation</i>
16:45	OS4 - 4 	Mihails Birjukovs, Pavel Trtik, Anders Kaestner, Jevgenijs Telicko, Jan Hovind, Dariusz Jakub Gawryluk, Imants Bucenieks, Knud Thomsen and Andris Jakovics <i>Dynamic Neutron Imaging of Argon Bubble Flow in Liquid Gallium in Horizontal or Vertical Magnetic Field</i>

Poster session 1

Thursday 2.9. 17:00 - 18:00

Red lounge

Chairman: Pavel Trtik, Jakub Jirinec

17:00 - 18:00	PS1 - 1	Imants Kaldre and Andris Bojarevics <i>Directional solidification of metallic alloys and composites under electromagnetic interaction</i>
	PS1 - 2	Nikolay Khrenkov <i>Load capacity of cables insulated materials of high thermal conductivity</i>
	PS1 - 3	Jan Hrbek, Bence Mészáros, Mykhaylo Paukov and Martin Kudláč <i>Density of the System Al₂O₃-ZrO₂ in a Liquid Phase</i>
	PS1 - 4	Maxim Khatsayuk, Viktor Demidovich and Viktor Timofeev <i>The destruction model of cylindrical billet's hard shell during heating and melting by internal heat sources</i>
	PS1 - 5	Stefan Schubotz <i>Research of multicentric ring coils in comparison to classic ring coils</i>
	PS1 - 6	Ervīns Blumbergs, Janis Freibergs, Eriks Platacis, Mihails Majorovs and Vera Serga <i>Model experiments using slag during CdO recovery</i>
	PS1 - 7	Yuriy Perevalov, Victor Demidovich and Ivan Vegera <i>Advanced Induction Heat Treatment Systems of Pipes</i>
	PS1 - 8	Vasiliy Frizen, Ivan Smolyanov, Fedor Tarasov and Salavat Fatkullin <i>Refined Model of Induction Heater Taken into Account Static Characteristics of Inverter</i>
	PS1 - 9	Evgeniy Shmakov, Ivan Smolyanov and Juris Vencels <i>Calculation Fluid Dynamic of Induction Pump Using Open Source Software</i>
	PS1 - 10	Alexander Lepeshkin, Alexander Kuvaldin and Stepan Lepeshkin <i>Investigation of Heating of Rotating Disks in an Electromagnetic Field Using Strong Permanent Magnets</i>
	PS1 - 11	Marina Rashevskaya, German Lipinskiy and Alexey Kulikov <i>Applicability of calculation methods of minimum and maximum short circuit currents in grid with voltage up to 1 kV</i>

PS1 - 12	Jan Kohout and Lenka Sroubova <i>Modeling of the heat transfer in the switchboard cabinet</i>
PS1 - 13	Eduard Vinter, Mikhail Pervukhin and Viktor Timofeev <i>Numerical simulation of conduction refining of molten aluminum in the casting launder</i>
PS1 - 14	Malvine Strakova, Vadims Geza, Mihails Scepaniskis and Alvis Eimuss <i>Computer Simulation of Steel Microstructure Composition for Induction Hardening of a Splined Shaft for Various Cooling Rates</i>
PS1 - 15	Ivan Smolianov, Vaclav Kotlan and Ivo Dolezel <i>Approaches to Modernize Induction Heater for Purpose of Heat Treatment of Titanium Alloys</i>

Gala dinner

Thursday 2.9. 19:00 - 21:00

Main hall

Oral session 5

Friday 3.9. 8:30 - 10:00

Main hall

Chairman: Stefan Schubotz, Jan Hrbek

Google meet: meet.google.com/owh-pahh-udh

8:30	OS5 - 1	Yuliya Pleshivtseva, Ilya Levin, Bernard Nacke, Martin Ennen and Alexander Nikanorov <i>Time-Optimal Feedback System with Identifier to Control Induction Heating Process</i>
8:45	OS5 - 2	Francois Bay, Jesus Oswaldo Garcia, Jose Alves and Julien Barlier <i>Error analysis in finite element modelling of induction heating processes</i>
9:00	OS5 - 3	Alexander Nikanorov, Yulia Pleshivtseva, Anton Popov, Marco Baldan and Bernard Nacke <i>Optimal programmed control of mass induction heating with guaranteed quality</i>
9:15	OS5 - 4	Patrick Rochala, Alexander Fröhlich, Martin Kroll and Verena Kräusel <i>A inductive joining technology for production of hybrid material composites</i>
9:30	OS5 - 5	Jakub Jiřinec, Lenka Raková and David Rot <i>Controlled Ventilation of Interior Spaces Using a Central Recuperation Unit</i>
9:45	OS5 - 6	Jakub Jirinec, Michal Knedlik and David Rot <i>Possibilities of Using an Energy Surplus of Photovoltaic Power Plants</i>

Oral session 6

Friday 3.9. 8:30 - 9:45

Red lounge

Chairman: Valters Dzelme, Imants Kaldre

Google meet: meet.google.com/rhr-hosq-eqn

8:30	OS6 - 1	Matteo Lazzarin, Michele Forzan and Fabrizio Dughiero <i>Thermal behaviour of synthetic countertop used as cooker surface over induction hobs</i>
8:45	OS6- 2 	Alexandr Ivanov, Vladimir Bukanin, Alexei Zenkov, Valentin Vologdin and Vladislav Vologdin <i>A New Approach to Induction Heating Control</i>
9:00	OS6 - 3 	Sergio Lupi, Michele Forzan, Paolo Di Barba, Maria Evelina Mognaschi and Elisabetta Sieni <i>Optimal Synthesis of Dual Frequency Transverse Flux Induction Heating of Metal Strips</i>
9:15	OS6 - 4	Pablo Guillén, Héctor Sarnago, Óscar Lucía and José Miguel Burdío <i>Efficiency-Oriented Comparison of Modulation Strategies of a Multi-Output ZVS Resonant Inverter for Domestic Induction Heating</i>
9:30	OS6 - 5 	Mario Perez-Tarragona, Héctor Sarnago, Óscar Lucía and José M. Burdío <i>PFC Rectifier for High Power Quality and High Efficiency Domestic Induction Heating Appliances</i>

Oral session 7

Friday 3.9. 10:30 - 11:30

Main hall

Chairman: Koen Van Reusel, Ivo Doležel

Google meet: meet.google.com/hxy-einv-jgn

10:30	OS7 - 1	Ivan Smolyanov, Evgeny Shmakov and Juris Vencels <i>Numerical Approaches to Analyzing of MHD Processes Occuring to Induction Pump</i>
10:45	OS7 - 2 	Mattia Guglielmi, Marco Baldan, Egbert Baake and Martin Schulze <i>Influence of Double-Frequency Lorentz Force Component in Modeling Electromagnetic Stirring of Molten Metals</i>
11:00	OS7 - 3 	Sergejs Pavlovs, Andris Jakovics and Alexander Chudnovsky <i>Melt Electrosvortex Flow in DC EAF Model with Two Bottom Electrodes in Axial Magnetic Field</i>
11:15	OS7 - 4 	Andrey Zhurkin, Sergey Nekhamin, Michael Pogrebisskiy and Irina Martynova <i>AC arc electrical load model for new power supply analysis</i>

Oral session 8

Friday 3.9. 10:30 - 11:30

Red lounge

Chairman: Martin Kroll, Lenka Šroubová

Google meet: meet.google.com/hmu-vipf-xaw

10:30	OS8 - 1	Martin Kroll, Wladimir Ebel, Peter Birnbaum, Jonas Gruner and Verena Kräusel <i>Electro-thermo-mechanical simulation of the longitudinal HFI-welding process of carbon steel tubes</i>
10:45	OS8 - 2	Amar Al-Obaidi, Martin Kroll and Verena Kräusel <i>FEM Simulation of Hot Single Point Incremental Forming Assisted by Induction Heating</i>
11:00	OS8 - 3	Guillaume Wasselynck, Huu-Kien Bui, Antoine Pierquin, Didier Trichet, Gérard Berthiau, Banda Kane, Javad Fouladagar and Abdoulaye Ba <i>Welding of Carbon Fibers Composite by Induction Heating</i>
11:15	OS8 - 4	Pablo García Michelena, Xabier Chamorro Sanchez, Emilio Ruiz Reina and Nuria Herrero Dorca <i>Multiphysical modelling and validation of VIM for Inconel 718 heating and melting</i>

Closing ceremony

Friday 3.9. 11:30 - 12:00

Main hall

Google meet: meet.google.com/jtn-zqtm-biu