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Leibniz
Universität
Hannover

Courtyard by Marriott Hannover Hotel
(Germany), June 6 - 9, 2017



XVIII International UIE-Congress

ELECTROTECHNOLOGIES FOR MATERIAL PROCESSING

Program

International
Union
for Electricity
Applications (UIE)

Leibniz Universität
Hannover



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XVIII International UIE-Congress
**ELECTROTECHNOLOGIES
 FOR MATERIAL PROCESSING**
 Hannover (Germany), June 6-9, 2017

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 Electrotechnologies for Material Processing
 Hannover (Germany), June 6 - 9, 2017

USEFUL INFORMATION

The Congress committee gratefully acknowledge
 the support received from:

- **Heat Processing**



- **Leibniz Universität Hannover**



- **Vereinigung zur Förderung des Instituts für Elektrowärme
 der Universität Hannover e.V.**



- **International Union for Electricity Application (UIE)**



- **Association for Microwave Power in Europe for Research
 and Education (AMPERE)**



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 www.ampereurope.org

LOCATION

The Congress events will take place in the following locations:

June 6, Tuesday

- **Registration:** at Courtyard by Marriott Hotel, Hannover Maschsee, Arthur-Menge-Ufer 3, 30169 Hannover
- **Welcome Reception:** at Courtyard by Marriott Hotel, Hannover Maschsee, Arthur-Menge-Ufer 3, 30169 Hannover

June 7, Wednesday

- **Late Registration:** at Courtyard by Marriott Hotel, Arthur-Menge-Ufer 3, 30169 Hannover
- **Congress:** at Courtyard by Marriott Hotel, Arthur-Menge-Ufer 3, 30169 Hannover

June 8, Thursday

- **Congress:** at Courtyard by Marriott Hotel, Arthur-Menge-Ufer 3, 30169 Hannover
- **Congress Dinner:** in the Historical Town Hall of Hannover, Karmarschstrasse 42, 30159 Hannover

June 9, Friday

- **Congress:** at Courtyard by Marriott Hotel, Arthur-Menge-Ufer 3, 30169 Hannover

CONGRESS LANGUAGE

English will be the official language of the Congress.

**XVIII International UIE-Congress
Electrotechnologies for Material Processing
Hannover (Germany), June 6 - 9, 2017**

REFERENCE ADDRESS AND TELEPHONE NUMBERS

Congress Office Address

Institut für Elektroprozess-technik
Wilhelm-Busch-Str. 4, 30167 Hannover

Telephone Numbers

Secretariat +49 (0) 5 11 / 7 62 – 28 72
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Prof. B. Nacke +49 (0) 5 11 / 7 62 – 55 33
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REGISTRATION

Registration of participants will take place on Tuesday, June 6, at Courtyard by Marriott Hotel, Arthur-Menge-Ufer 3, 30169 Hannover, between 17.00 and 21.00. Late registration can be done on Wednesday, June 7, at Courtyard by Marriott Hotel between 8.30 and 9.00.

WELCOME RECEPTION

All participants and registered accompanying persons are invited to the Welcome Reception, which will take place on Tuesday, June 6, at Courtyard by Marriott Hotel, Arthur-Menge-Ufer 3, 30169 Hannover between 18.00 and 21.00.

CONGRESS DINNER

All participants and registered accompanying persons are invited to the Congress Dinner, which will take place on Thursday, June 8, at the Historical Town Hall of Hannover, Karmarschstrasse 42, 30159 Hannover. The dinner starts at 19.30.

Time Schedule

Tuesday June 6	Wednesday June 7	Thursday June 8	Friday June 9
	9.00 - 9.30 <u>Opening Ceremony</u>		
	09.30 - 11.00 <u>Keynote Presentations I</u>	09.00 - 10.40 <u>Parallel Sessions</u> A3 Magneto-hydrodynamic B3 Induction Heat Treatment I	9.00 - 10.40 <u>Parallel Sessions</u> A7 Measurement Technique B7 Induction Heat Treatment II
	11.00 - 11.30 <i>Coffee Break</i>	10.40 - 11.10 <i>Coffee Break</i>	10.40 - 11.10 <i>Coffee Break</i>
	11.30 - 12.30 <u>Keynote Presentations II</u>	11.10 - 12.50 <u>Parallel Sessions</u> A4 Crystal Growth B4 Tube Heating	11.10 - 12.50 <u>Parallel Sessions</u> A8 Sustainable Processes B8 Process Optimisation
	12.30 - 13.30 <i>Lunch</i>	12.50 - 13.50 <i>Lunch</i>	12.50 - 13.00 <u>Closing Ceremony</u>
	13.30 - 15.10 <u>Parallel Sessions</u> A1 Melting Processes B1 Induction Heating I	13.50 - 15.30 <u>Parallel Sessions</u> A5 Electromagnetic Processing of Materials I B5 Induction Billet Heating	13.00 - 14.00 <i>Lunch</i>
	15.10 - 15.40 <i>Coffee Break</i>	15.30 - 16.00 <i>Coffee Break</i>	
	15.40 - 17.20 <u>Parallel Sessions</u> A2 Cold Crucible Furnace B2 Induction Hardening	16.00 - 17.40 <u>Parallel Sessions</u> A6 Electromagnetic Processing of Materials II B6 Induction Heating II	
	17.20 - 18.20 <u>Poster Session</u>		
17.00 - 21.00 Registration and Welcome Reception (*)		19.30 - 23.00 Congress Dinner (**)	

(*) at Courtyard by Marriott Hotel, Hannover Maschsee, Arthur-Menge-Ufer 3, 30169 Hannover
(**) in the Historical Town Hall of Hannover, Karmarschstrasse 42, 30159 Hannover

Wednesday, June 7, 2017

Opening Ceremony

09.00 - 9.30

E. Baake, *President of UIE and Chairman of the Congress*
B. Nacke, *Head of Institute of Electrotechnology and Chairman of the Congress*

Keynote Presentation I

09.30 - 11.00

Chairman: E. Baake, *Leibniz Universität Hannover (Germany)*

UIE – Past and Future

K. Van Reusel, *Katholieke University Leuven (Belgium)*

An insight into steelmaking processes by computational fluid dynamics

H.-J. Odenthal, *SMS group GmbH (Germany)*

Induction heating: The day after tomorrow

V. Rudnev, *Inductoheat Inc. (USA)*

11.00 - 11.30: **Coffee Break + Exhibition**

Keynote Presentation II

11.30 - 12.30

Chairman: B. Nacke, *Leibniz Universität Hannover (Germany)*

Internet of things – The brave new world of thermo-processing?

A. Seitzer, *Himmelwerk GmbH (Germany)*

Magnetic stirring and sonication of metal melts

G. Gerbeth, *Helmholtz-Zentrum Dresden-Rossendorf (Germany)*

12.30 - 13.30: **Lunch break + Exhibition**

Parallel Sessions

13.30 - 15.10

A1 Melting Processes

Chairman: G. Gerbeth, *Helmholtz-Zentrum Dresden-Rossendorf (Germany)*

A1.1 Numerical simulation of the ingot growth during the Vacuum Arc Remelting (VAR) process

S. Spitans*, H. Franz*, H. Scholz*, G. Reiter*, E. Baake**

**ALD Vacuum Technologies GmbH (Germany)*

***Leibniz Universität Hannover (Germany)*

A1.2 Latest developments in recycling production scrap using coreless induction furnaces

W. Schmitz, A. Hauck

Otto Junker GmbH (Germany)

A1.3 Features of melting titanium alloys in an alternating electromagnetic field

V. Demidovich*, I. Rastvorova**, V. Timofeev***, M. Khatsayuk***, A. Maksimov***

**St. Petersburg Electrotechnical University (Russia)*

***St. Petersburg Mining University (Russia)*

****Siberian Federal University (Russia)*

A1.4 Approaches for changing of electro vortex flows in DC steel making furnaces

O. Kazak, B. Halbedel

TU Ilmenau (Germany)

B1 Induction Heating I

Chairman: S. Lupi, *University of Padua (Italy)*

B1.1 Optimization of temperature uniformity and process control for inductive Quench and Temper Lines by using booster coil systems

M. Langejürgen, C. Vogt, S. Dappen, H. Krammer, R. Harjes

SMS Elotherm GmbH (Germany)

B1.2 Induction clamping of high-revolution tools by rotation in a system of unmovable permanent magnets

V. Kotlan, P. Karban, I. Doležel

University of West Bohemia (Czech Republic)

B1.3 Hybrid heating methods for efficient and high quality heat treatment processes

B. Nacke

Leibniz Universität Hannover (Germany)

15.10 - 15.40: **Coffee Break + Exhibition**

Parallel Sessions

15.40 - 17.20

A2 Cold Crucible Furnace

Chairman: V. Bojarevics, *University of Greenwich (United Kingdom)*

A2.1 Indirect method of measuring glass temperature in a Cold Crucible Induction Melter

G. Barba Rossa, E. Sauvage, P. Brun

CEA-Marcoule (France)

A2.2 Optimization of the induction heating in the cold crucible by measuring and modeling

J. Kozeny, D. Rot, S. Jirinec, J. Jirinec, A. Podhrazsky

University of West Bohemia (Czech Republic)

A2.3 Coupled field-circuit finite element models of a cold crucible furnace in his environment

P. Brun*, V. Fireteanu**, E. Sauvage*, E. Rousset*, A. I. Constantin*

**CEA-Marcoule (France)*

***Politehnica University of Bucharest (Romania)*

B2 Induction Hardening

Chairman: V. Rudnev, *Inductoheat Inc. (USA)*

B2.1 Pulse induction hardening in the milliseconds range

A. Aliferov*, M. Forzan**, S. Lupi**

**Novosibirsk State Technical University (Russia)*

***University of Padua (Italy)*

B2.2 Modelling and verification of heat distribution in single shot coils for examining concepts to increase lifetime

S. Schubotz*, B. Nacke**

**EFD Induction GmbH (Germany)*

***Leibniz Universität Hannover (Germany)*

B2.3 Advancement in single-shot induction hardening

C. Russel, V. Rudnev, Z. Li, L. Ferguson

Inductoheat Inc (USA)

B2.4 Influence of material properties data on accuracy of mathematical modelling of induction surface hardening

J. Barglik, A. Smagór, A. Smalcerz

Silesian University of Technology (Poland)

Poster Session

17.20-18.20

P02 UO₂ – ZrO₂ melting in a cold crucible induction furnace: simulation and experiments

E. Sauvage, P. Brun, J. Lacombe, L. Aufore

CEA-Marcoule (France)

P03 LES-Study of gas bubbles and liquid metal turbulent MHD-flow for different parameters

S. Pavlovs*, A. Jakovics*, V. Sushkovs*, E. Baake**

**University of Latvia (Latvia)*

***Leibniz Universität Hannover (Germany)*

P04 Particle dispersion in liquid metals by electromagnetically induced ultrasound

I. Kaldre*, A. Bojarevics*, T. Beinerts*, I. Grants*, M. Milgravis*, M. Kalvans*, G. Gerbeth**

**Institute of Physics, University of Latvia (Latvia)*

***Helmholtz-Zentrum Dresden-Rossendorf (Germany)*

P05 Flattening of solid-liquid interface in VGF-GaAs growth by various travelling magnetic fields

R. Zwierz, N. Dropka, A. Glacki, U. Juda, Ch. Frank-Rotsch

Leibniz Institute for Crystal Growth (Germany)

- P06 Properties and structure of magnetic alkali-borosilicate glasses**
A. Naberezhnov*, B. Nacke**, A. Nikanorov**, E. Koroleva*, P. Vanina*, O. Alekseeva*
**Peter the Great St. Petersburg Polytechnic University (Russia)*
***Leibniz Universität Hannover (Germany)*
- P07 Equipment for magnetic glass producing by inductive melting**
P. Vanina*, A. Naberezhnov*, B. Nacke**, A. Nikanorov**
**Peter the Great St. Petersburg Polytechnic University (Russia)*
***Leibniz Universität Hannover (Germany)*
- P08 Simulation algorithm for induction heating of rotated workpieces with complex shape**
E. Mannanov*, S. Galunin*, A. Nikanorov**, B. Nacke**
**St. Petersburg Electrotechnical University (Russia)*
***Leibniz Universität Hannover (Germany)*
- P09 Research of light and dark infrared radiators and low pressure gas discharge radiators in different electric modes**
E. Ptitsyna*, A. Kuvaldin**, D. Ptitsyn*
**Omsk State Technical University (Russia)*
***National Research University (Russia)*
- P10 Numerical simulation and investigation of multilayer strip induction heating**
K. Blinov, S. Galunin, Yu. Blinov
St. Petersburg Electrotechnical University (Russia)
- P11 Electromagnetic and thermal modelling of a hardening process using mobile inductors**
F. Sanz-Serrano*, C. Sagues*, B. Nacke**
**University of Zaragoza (Spain)*
***Leibniz Universität Hannover (Germany)*
- P12 Numerical simulation and optimization of induction surface hardening systems with rotating workpiece**
T. Kozulina*, S. Galunin*, A. Nikanorov**, B. Nacke**
**St. Petersburg Electrotechnical University (Russia)*
***Leibniz Universität Hannover (Germany)*
- P13 Induction heating of graphite disk: a benchmark for multi-physics platform for multi-objective design**
P. Di Barba*, F. Dughiero**, M. Forzan**, M.E. Mognaschi**, E. Sieni**
**University of Pavia (Italy)*
***University of Padua (Italy)*

- P14 Development mutual inductance tomography system for bubble detection in liquid metal**
D. Otte, Th. Wetzel
Institute for Nuclear and Energy Technologies (IKET) (Germany)
- P15 Research on parameters of the electromagnetic "inductor - discrete charge" system**
A. Kuvaldin, M. Fedin, O. Polyakov
National Research University (Russia)
- P16 Comparison of efficiency of steel and plastic pipelines**
N. Khrenkov*, A. Kuvaldin**
**Special Systems and Technologies (Russia)*
***National Research University (Russia)*
- P17 Optimization of parameters and modes of induction heating devices based on katkon**
P. Butyrin, G. Gusev, F. Shakirzianov
Moscow Power Engineering Institute (Russia)

Thursday, June 8, 2017

Parallel Sessions

09.00 - 10.40

- A3 Magnetohydrodynamic**
Chairman: H.-J. Odenthal, *SMS Group AG (Germany)*
- A3.1 Numerical investigation of electromagnetic stirring fields and their impact on the liquid steel flow in a continuous slab caster**
M. Barna
Johannes Kepler University Linz (Austria)
- A3.2 Technical review on the development of EMBR and FC Mold application in slab continuous casting at ABB**
H. Yang, M. Seden, N. Jacobson, J-E. Eriksson
ABB AB/Metallurgy (Sweden)
- A3.3 Numerical simulation of electromagnetic stirring**
L. Marioni, E. Hachem, F. Bay
MINES Paris Tech-PSL (France)

A3.4 Improving glass quality and production efficiency in glass melting tanks using additionally generated Lorentz forces
U. Lüdtke, S. Soubeih, B. Halbedel
TU Ilmenau (Germany)

B3 Induction Heat Treatment I

Chairman: A. Seitzer, *Himmelwerk GmbH (Germany)*

B3.1 Induction heat treatment of automotive core components
A. Ulferts, F. Andrä
Inductoheat Europe GmbH (Germany)

B3.2 Building the materials database to unlock the potential of induction heat treating
R. Goldstein*, R. Cryderman**
**Fluxtrol, Inc. (USA)*
***Colorado School of Mines (USA)*

B3.3 Investigation of the influence of electromagnetic and Marangoni forces on the displacement of Al-Si coating during the press hardening process
T. Opitz*, T. Steinberg**, B. Nacke**
**Volkswagen AG (Germany)*
***Leibniz Universität Hannover (Germany)*

B3.4 Investigation of gear heat treatment by use ELTA 7.0
V. Bukanin, A. Ivanov, A. Zenkov
St. Petersburg Electrotechnical University (Russia)

10.40 - 11.10: **Coffee break + Exhibition**

Parallel Sessions

11.10 - 12.50

A4 Crystal Growth

Chairman: M. Forzan, *University of Padua (Italy)*

A4.1 Growth of large scale silicon crystals by the rf-heated Float Zone technique
F. Zobel*, F. Mosel**, J. Sörensen**, P. Dold*
**Fraunhofer CSP (Germany)*
***PVA Crystal Growing Systems GmbH (Germany)*

A4.2 TMF optimization in VGF crystal growth of GaAs by artificial neural networks and Gaussian process models
N. Dropka*, M. Holena**, Ch. Frank-Rotsch*
**Leibniz Institute for Crystal Growth (Germany)*
***Institute of Computer Science (Czech Republic)*

A4.3 Three dimensional modelling of interface shapes in floating zone silicon crystal growth
M. Plāte, A. Krauze, J. Virbulis
University of Latvia (Latvia)

A4.4 Crystal diameter stabilization during growth of Si from a granulate crucible
R. Menzel, K. Dadzis, N.V. Abrosimov, H. Riemann
Leibniz Institute for Crystal Growth (Germany)

B4 Tube Heating

Chairwoman: Yu. Pleshivtseva, *Samara State Technical University (Russia)*

B4.1 Removal of residual strains and stresses in stainless welded pipes by induction heating
V. Kotlan, R. Hamar, D. Pánek, I. Doležel
University of West Bohemia (Czech Republic)

B4.2 Advanced induction heat treatment technologies of lengthy rolls and tubes
V. Demidovich, F. Tchmilenko, B. Nikitin, V. Andrushkevich, Yu. Perevalov, P. Sitko
St. Petersburg Electrotechnical University (Russia)

B4.3 Numerical modelling and investigation of high frequency welding of clad pipes
W. Ebel*, M. Kroll**, A. Nikanorov*, E. Baake*
**Leibniz Universität Hannover (Germany)*
***TU Chemnitz (Germany)*

12.50 - 13.50: **Lunch break + Exhibition**

Parallel Sessions

13.50 - 15.30

A5 Electromagnetic Processing of Materials I

Chairman: A. Jakovičs, *University of Latvia (Latvia)*

A5.1 Magnetically induced cavitation for the dispersion of nanoparticles in liquid metals

M. Sarma*, G. Gerbeth*, I. Grants*, I. Kaldre**, A. Bojarevics**
*Helmholtz-Zentrum Dresden-Rossendorf (Germany)
**Institute of Physics, University of Latvia (Latvia)

A5.2 Optimization of liquid metal flow pattern generated by rotating magnetic field and the effect on solidification structure of wrought aluminium alloys

D. Rübiger*, B. Willers*, S. Eckert*, M. Rosefort**, T. Dang*,
H. Koch**
*Helmholtz-Zentrum Dresden-Rossendorf (Germany)
**TRIMET Aluminium SE (Germany)

A5.3 Visualization of Gallium crystallization process under the influence of EM fields by means of neutron radiography

D. Musaeva*, E. Baake*, V. Ilin**, A. Köppen*
*Leibniz Universität Hannover (Germany)
**Kazan State Power Engineering University (Russia)

A5.4 Microstructure evolution in AA 7039 alloy cast developed using sand casting, die casting and in-situ microwave casting

R.R. Mishra, A.K. Sharma
Indian Institute of Technology Roorkee (India)

B5 Induction Billet Heating

Chairman: J. Barglik, *Silesian University of Technology (Poland)*

B5.1 Implementation experiences on automatic temperature control of ingots before the die forging process

W. Zborowski*, A. Zborowski*, G. Jarczyk**
*TERMETAL (Poland)
**Engineering Consulting (Germany)

B5.3 MagnHeat Prototype: 500 kW permanent magnet heater for taper heating of aluminium billets

M. Zerbetto, F. Dughiero, M. Forzan
University of Padua (Italy)

B5.4 Three-criteria numerical optimization as a base for designing induction mass heating

Yu. Pleshivtseva*, E. Rapoport*, P. Di Barba**, B. Nacke***,
A. Nikanorov***, E. Sieni****, M. Forzan****, S. Lupi****,
*Samara State Technical University (Russia)
**University of Pavia (Italy)
***Leibniz Universität Hannover (Germany)
****University of Padua (Italy)

15.30 - 16.00: **Coffee break + Exhibition**

Parallel Sessions

16.00 - 17.40

A6 Electromagnetic Processing of Materials II

Chairman: U. Lüdtkke, *TU Ilmenau (Germany)*

A6.1 Silicon material purification using AC magnetic field

V. Bojarevics*, M. Forzan**, S. Eckert***, G. Djambazov*
*University of Greenwich (United Kingdom)
**University of Padua (Italy)
***Helmholtz-Zentrum Dresden-Rossendorf (Germany)

A6.2 Liquid metal homogenization and crystallization under low frequency alternating magnetic field

R. Baranovskis, M. Milgravis, A. Bojarevics, I. Kaldre
Institute of Physics, University of Latvia (Latvia)

A6.3 Lattice Boltzmann simulation of the bubble flow in electroconducting liquid under the action of the external magnetic field

A. Tatulcenkovs*, A. Jakovics*, B. Nacke**
*University of Latvia (Latvia)
**Leibniz Universität Hannover (Germany)

A6.4 EOF library: open-source Elmer and OpenFOAM coupler for simulation of MHD with free surface

J. Vencels, A. Jakovics, V. Geza, M. Scepanskis
University of Latvia (Latvia)

Friday, June 9, 2017

B6 Induction Heating II

Chairman: V. Demidovich, *St. Petersburg Electrotechnical University (Russia)*

B6.1 Inductive strip heating

J. Lovens*, P. Weber*, M. Anderhuber**

**Inducto Therm Coating Equipment (Belgium)*

***ArcelorMittal Maizieres (France)*

B6.2 Effects of holes in blanks for press hardening process due to induction heating

A. Dietrich*, B. Nacke*, F. Pfeifer**, T. Marten**, T. Tröster**

**Leibniz Universität Hannover (Germany)*

***University Paderborn (Germany)*

B6.3 Electrotechnology of non-thermal modification of polymeric materials in a microwave electromagnetic field

S. Kalganova, Yu. Arkhangelskiy, V. Lavrentyev, S. Trigorly,

I. Artyukhov, S. Stepanov

Yuri Gagarin State Technical University of Saratov (SSTU) (Russia)

B6.4 Numerical and practical investigation of tailored heating process for forging parts

M. Baldan, T. Steinberg, E. Baake

Leibniz Universität Hannover (Germany)

19.30 - 23.00: Congress Dinner in the Historical Town Hall of Hannover

Parallel Sessions

09.00 - 10.40

A7 Measurement Technique

Chairman: F. Bay, *Mines ParisTech (France)*

A7.1 Neutron imaging for advanced diagnostics in metallurgical innovations

K. Thomsen, E. Lehmann, P. Trtik, C. Grünzweig, P. Vontobel

Paul Scherrer Institut (Switzerland)

A7.2 High-temperature superconducting magnet systems for Lorentz Force Velocimetry

O. Vakaliuk, M. Weidner, B. Halbedel

TU Ilmenau (Germany)

A7.3 Numerical and neutron radiography investigation of liquid metal flow

V. Dzelme*, M. Scepanskis*, A. Jakovics*, M. Sarma**, P. Vontobel***,

K. Thomsen***, P. Trtik***, T. Beinerts****

**University of Latvia (Latvia)*

***Helmholtz-Zentrum Dresden-Rossendorf (Germany)*

****Paul Scherrer Institut (Switzerland)*

*****Institute of Physics, University of Latvia (Latvia)*

A7.4 Numerical modelling of Lorentz Force Velocimetry including bubbles in liquid metal

N. Tran, U. Lüdtke

TU Ilmenau (Germany)

B7 Induction Heat Treatment II

Chairman: I. Doležel, *University of West Bohemia (Czech Republic)*

B7.1 Design criteria for single shot channel coils with focus on automotive components

Ch. Krause, D. Schlesselmann

EMAG eldec Induction GmbH (Germany)

B7.2 Maximizing quality & equipment flexibility in induction scan hardening applications

C. Russel*, V. Rudnev*, F. Andrä**, A. Ulferts**
*Inductoheat Inc. (USA)
**Inductoheat Europe GmbH (Germany)

B7.3 Automatic optimization in designing of induction heaters based on numerical techniques

S. Galunin*, A. Nikanorov**
*St. Petersburg Electrotechnical University (Russia)
** Leibniz Universität Hannover (Germany)

B7.4 Numerical investigation of generative manufactured magnetic flux concentrators for induction heating applications

T. Steinberg, M. Baldan, A. Nikanorov, E. Baake
Leibniz Universität Hannover (Germany)

10.40 - 11.10: Coffee break + Exhibition

Parallel Sessions

11.10 - 12.50

A8 Sustainable Processes

Chairman: G. Jarczyk, *Engineering Consulting (Germany)*

A8.1 Numerical simulations in the development of the French radioactive waste vitrification processes using induction furnace

E. Sauvage, P. Brun, A. Bonnetier, R. Didierlaurent, G. Barba Rossa
CEA-Marcoule (France)

A8.2 Numerical modeling of an induction heating process for packed rods with adjacent airflow

S. Belik
German Aerospace Center (Germany)

A8.3 Process concept and lab-scale test of CO₂-free methane cracking via liquid metal technology

L. Stoppel, T. Geißler, Th. Wetzler
Karlsruhe Institute of Technology (Germany)

A8.4 Numerical simulation of bubble dynamics in liquid metal for optimized flow control in CO₂ free production of hydrogen

T. Fehling, T. Steinberg, E. Baake
Leibniz Universität Hannover (Germany)

B8 Process Optimisation

Chairman: K. Van Reusel, *Katholieke University Leuven (Belgium)*

B8.1 Open foundry information system for production process optimization

M. Spichartz, D. Mitschulat, St. Andorf, T. Schreiter
ABP Induction Systems GmbH (Germany)

B8.2 Ionic liquids for low temperature aluminium recycling

M. Kaempgen, J. Ball, N. Kamp
Novelis Deutschland GmbH (Germany)

B8.3 Modelling and optimisation of electromagnetically coupled solid manufacturing processes - A global computational modelling tool

F. Bay*, J. Alves**, J. Barlier**
*Mines ParisTech (France)
**Transvalor S.A. (France)

Closing Ceremony

12.50 - 13.00

13.00 - 14.00: **Lunch**

End of the Congress