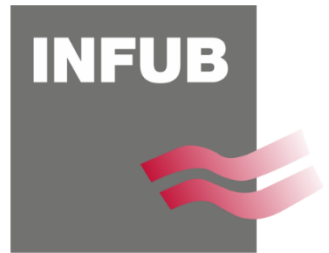

12th EUROPEAN CONFERENCE

ON INDUSTRIAL FURNACES AND BOILERS

10-11 November 2020 | Online/Live



INFUB-12 PROCEEDINGS

Keynote Lectures

A RENEWED AGENDA FOR RESEARCH AND INNOVATION IN EUROPE

Maria da Graça Carvalho
Member of the European Parliament, Portugal

CHALLENGES AND DEVELOPMENT NEEDS IN FLUIDIZED BED TECHNOLOGY

Edgardo Coda Zabetta
Sumitomo SHI FW, Finland

CHALLENGES AND DEVELOPMENTS IN THE CEMENT INDUSTRY - PROCESS DEVELOPMENTS FOR CO-PROCESSING OF WASTE AND CONTROL OF EMISSIONS

Lars Skaarup Jensen
FLSmidth, Denmark

USE OF HYDROGEN AS A FUEL IN INDUSTRIAL FURNACES

Joachim von Schéele
The Linde Group, Shanghai

PHOSPHORUS - A CRITICAL ELEMENT AND A CHALLENGE FOR THERMO-PROCESSING TECHNOLOGY

Harald Raupenstrauch
Montanuniversitaet Leoben, Austria

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G. Ridler, M. Kryjak, S. Billett, F. Gnyp & J. Goldring
RJM International (UK)
- 007 High performance Ultra-low NOx burner for industrial boilers**
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Macchi, ITEA SpA, Polytechnic University of Bari, Centro Combustione Ambiente SpA (Italy)
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W. Rybak & J. Wach (Poland)
Wroclaw University of Science and Technology (Poland)
- 009 Oxygen-enriched Combustion Technology using Self-induced Oscillation Phenomenon to Uniformly Heat a Wide Range in Industrial Furnaces**
M. Yamaguchi, T. Saito, Y. Yamamoto & Y. Hagihara
Taiyo Nippon Sanso Corporation (Japan)
- 010 Flameless Oxyfuel Solutions : Technologies and Results**
J. von Schéele
Linde plc, China
- 011 Combustion using an oxygen lancing in a reheating furnace**
C. Lee, Insu Kim, Junggoo Hong
Hyundai Steel & Kyungpook National University (Republic of Korea)
- 012 Influence of Hydrogen Admixtures and Swirl Intensity on Shape, Stability and Emissions of Premixed CH₄-H₂-air Flames**
M. Hefele, M. Blanas, H. Chaves, S. Eckart & H. Krause
TU Bergakademie Freiberg & University of Massachusetts (Germany/ USA)
- 013 Degassing and Stability Behavior of Oxide Heat Insulation Materials in Vacuum Furnaces**
R. Arnold, M. Gilbert, R. Behrend & H. Krause
Technische Universität Bergakademie Freiberg (Germany)
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M. Schneider, P. Weinbrecht, C. Wieland, C. Weis & D. Trimis
Karlsruhe Institute of Technology (Germany)
- 015 Experimental Investigations on Plasma Assisted Solid Fuel Ignition and Combustion**
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University of Stuttgart (Germany)
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N. Striūgas, A. Tamošiūnas, L. Marcinauskas, R. Paulauskas, K. Zakarauskas & R. Skvorčinskienė
Lithuanian Energy Institute & Plasma Processing Laboratory (Lithuania)
- 017 Effects of microwaves on burning velocity and exhaust gas composition of laminar premixed propane flames**
S. Eckart, R. Behrend, E. Collins & H. Krause
TU Bergakademie Freiberg & Columbia University (Germany/ USA)

- 018 Experimental study of turbulent Bluff-Body flames stability by simultaneous high speed flame imaging and Particle Image Velocimetry**
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C. Meitzner, E. Specht & F. Herz
Otto von Guericke University Magdeburg & Anhalt University of Applied Sciences (Germany)
- 020 Influence of steam addition on biomass gasification in a drop tube furnace**
T. Rio, R. Ferreira & M. Costa
Instituto Superior Técnico, Universidade de Lisboa (Portugal)
- 021 Numerical and experimental investigation of the spheroidization process of non-spherical particles in a semi-industrial furnace**
H. Gerhardtter, M. Knoll, R. Prieler, C. Hochenauer & P. Tomazic
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Karlsruhe Institute of Technology (Germany)
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J.-B. Michel & M. Simeoni
Race for Water Foundation & ETIA S.A.S. Carrefour Jean Monnet (Switzerland/ France)
- 024 Microwave heated pyrolysis of CFRP - Characteristics of Gas and Oil products**
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Federal University of ABC (Brazil)
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A. F. Ferreira & M. Costa
Instituto Superior Técnico, Universidade de Lisboa, (Portugal)
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E. Kleiber, F. Weigler & F. Herz
Anhalt University of Applied Sciences (Germany)
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F. Miccio, A. Natali Murri, E. Papa, E. Landi & M. Minelli
University of Bologna (Italy)
- 030 Modern concepts for sensor-based process optimization of waste-fired power plants**
F. Graube-Kühne, T. Kehr, S. Grahl & M. Beckmann
Technische Universität Dresden (Germany)

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B. Braga, V. Ferreira, A. Sanches & C. Pinho
DEMEC-FEUP, INEGI & CEFT-FEUP (Portugal)
- 032 Design and Application of Low-NOx Pulverized Biomass Burner over Biomass Grate Furnace**
S. Hamel, K. Zając, P. Kuczmierczyk & A. Santhirasegaran
Steinmüller Engineering GmbH (Germany)
- 033 Single droplet ignition and combustion of jet-A1, hydroprocessed vegetable oil and their blends in a drop tube furnace**
G. Pacheco, A. Silva & M. Costa
Instituto Superior Técnico, Universidade de Lisboa & Aerog-LAETA, Universidade da Beira Interior (Portugal)
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T. Karel, K. Fürsatz, J. Priscak, M. Kuba, N. Skoglund & H. Hofbauer
BEST – Bioenergy and Sustainable Technologies GmbH, TU Wien & Umeå University (Austria/ Sweden)
- 035 Raw Biogas as a Potential Substitute for Natural Gas in Metallurgical Thermal Processes – Impact on Combustion and Pollutant Emissions**
M. Röder, T. Schneider, P. Pietsch, A. Giese, R. Erler & K. Görner
Gas- und Wärme-Institut Essen e.V. & DBI - Gastechnologisches Institut gGmbH Freiberg (Germany)
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M. Gilbert, L. Schmies, C. Knosalla, W. Lippmann & H. Krause
TU Bergakademie Freiberg & TU Dresden (Germany)
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G. Scribano & Manh-Vu Tran
University of Nottingham Malaysia & Monash University Malaysia (Malaysia)
- 038 Multi-fuel Combustion System for Gaseous and Liquid Biofuels with Low NOx Emissions**
M. Röder, D. Möntmann, M. Grote, A. Giese, D. Diarra & K. Görner
Gas- und Wärme-Institut Essen e.V. & OWI Oel-Waerme-Institut gGmbH, Herzogenrath (Germany)
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Federal University of ABC (Brazil)

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Phuc Danh Nguyen, G. Ghazal & V. Cuervo Piñera
ArcelorMittal Global R&D (France/ Spain)
- 041 Numerical Analysis of the Transient Heating Characteristics of a Slab in a Re-Heat Furnace**
Z. Ahmedab, I. T’Jollynab, S. Lecompteab, T. De Raadc & M. De Paepeab
Ghent University, ArcelorMittal Gent & FlandersMake@UGent (Belgium)
- 042 Modelling radiative heat transfer in an industrial furnace using the lattice Boltzmann method**
R. Prieler, P. Burian, M. Landl, C. Schluckner, C. Hochenauer
Graz University of Technology (Austria)
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S. Nadakkal Appukuttan, E. Riber, B. Cuenot, T. Gilles
CERFACS & John Zink Hamworthy Combustion (France/ Luxembourg)

- 044 Effects of surrounding radiation on the lifetime of radiant tubes in a vertical strip galvanizing line**
D. Büschgens, N. K. Karthik, C. Schubert, N. Schmitz, W. Lenz & H. Pfeifer
RWTH Aachen University, (Germany)
- 045 Simulation of a turbulent combustion and structural mechanics in radiant tube burner using OpenFOAM**
Z. Raonic, D. Nikolaenko, C. Spijker, H. Raupenstrauch
Montanuniversitaet Leoben (Austria)
- 046 CFD modeling: a powerful tool for high efficiency burner design**
A. Saponaro, O. Senneca, F. Cerciello, D.J. Brand, M. Torresi, F. Cesareo, M. Valenzano, S. Siena, G. Rago, G. Rossiello, G. Volpi, M. Penati, R. Dadduzio, T. Gianì, M. Rogora, L. Fortunato & V. Panebianco
Centro Combustione Ambiente S.p.A, ITEA S.p.A, Istituto di Ricerche sulla Combustione (IRC), University, Politecnico di Bari, AC BOILERS S.p.A (Italy/ South Africa)
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Technische Universität Darmstadt & Ruhr-Universität Bochum (Germany)
- 048 Impact of the charging strategy, the cohesive zone and a varying blast volume flow on the conditions in the hearth: Transient DEM-CFD simulations of an industrial blast furnace**
H. Merten, F. Bambauer, S. Wirtz, V. Scherer, H. Bartusch & R. Lin
Ruhr-University Bochum, Bochum, VDEh-Betriebsforschungsinstitut, Department Process Optimisation Iron and Steel Making & AG der Dillinger Hüttenwerke (Germany)
- 049 A two-dimensional pyrolysis model for thermally thick particles**
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Group T Leuven campus, KU Leuven & Keppel Seghers Belgium NV (Belgium)
- 050 Studies on the Waste Feeding Process in large-scale Waste Incineration Plants**
M. H. Zwiellehner, R. Warnecke & F. Grafmans
SAR Elektronik GmbH & GKS Gemeinschaftskraftwerk Schweinfurt GmbH (Germany)
- 051 Thermal process for energy recovery from Waste Electronic and Electrical Equipment under the premise of bromine recycling**
M. Dunker, A. Hiller & M. Beckmann
Technische Universität Dresden (Germany)
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B. Hallak & E. Specht
Otto von Guericke University Magdeburg (Germany)
- 053 Novel heat recovery system for ceramic furnaces using high-temperature phase change materials and integration based on multicriteria analysis development**
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Research Centre for Energy Resources and Consumption (CIRCE) & CIRCE Institute (Spain)
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N. Meynet & G.-A. Grandin
Engie Lab Crigen (France)
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A. Mankonen, E. Vakkilainen, J. Kaikko & V. Sergeev
Lappeenranta-Lahti University of Technology LUT & Peter the Great St.Petersburg Polytechnic University, (Finland/ Russian Federation)

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G. Martinez Castilla, R. M. Montañés, D. Pallarès & F. Johnsson
Chalmers University of Technology (Sweden)
- 057 Development of Process Model for the Manufacturing of Sanitary Ware in Tunnel Kiln**
D. M. Alex, T. Redemann & E. Specht,
Otto von Guericke University Magdeburg (Germany)
- 058 Coupled Computational Fluid Dynamics and Discrete Element Method modelling of shaft furnace, including nitrogen emissions,**
C. Spijker, R. W. Pollhammer & H. Raupenstrauch
Montanuniversitaet Leoben & K1-MET GmbH (Austria)
- 059 Impact of flow maldistribution on performance of shell-and-tube heat exchangers**
T. Dorau, R. Schab, S. Unz, R. Malayeri & M. Beckmann
Technische Universität Dresden (Germany)

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J.G. Wüning
WS Wärmeprozestechnik GmbH (Germany)
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M. Dierks, F. Möllenbruck, G. Oeljeklaus & K. Görner
University of Duisburg-Essen (Germany)
- 062 Negative CO₂ Emission Technologies – A New Trend in Energy Research?**
T. Pröll
University of Natural Resources and Life Sciences (Austria)
- 063 Bioefficiency: The Challenging Way Towards the Next Generation of Biomass-fired Combined Heat and Power Plants**
H. Spliethoff, T. de Riese, L. Hansen, R. Nowak Delgado, S. Fendt
Technische Universität München & Bayerisches Zentrum für Angewandte Energieforschung e. V (Germany)
- 064 Design of an energy efficient heating system for integrated oxygen production using ceramic membranes**
F. Scheck, N. Schmitz, H. Pfeifer & R. Kriegel
RWTH Aachen University & Fraunhofer Institute for Ceramic Technologies and Systems IKTS (Germany)

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Christopher Leonard and Neil Simpson
Ametek Land & Simpson Combustion
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T. Leffler, S. Badieli & P. Kallner
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RWTH Aachen University & WS Waermeprozessstechnik GmbH (Germany)
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University of Manchester & University of Leeds (UK)
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Normandie University (France)
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T. Redemann & E. Specht
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T. Boushaki, H. Zaidaoui, JC. Sautet, C. Chauveau
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