



Final Programme
Infub-12 Online/Live
10th -11th November

Important: All time are GMT time zone (Lisbon, UK)

Tuesday, 10th of November

9:00 - 9:30 **Welcome to Participants - Organizing Committee**
A Tribute to Prof. Mário Costa

Viktor Scherer
Ruhr Universität Bochum, Germany

Neil Fricker
University of South Wales, UK

Albino Reis
Cenertec – Centro de Energia e Tecnologia, Portugal

9:30 - 11:00 **Keynote Presentations (Zoom Keynote Room)**

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

11:00 - 12:00 Parallel sessions

| Room 1 Combustion & Heat Transfer Chair: H. Raupenstrauch | Room 2 Alternative Fuels Chair: N. Fricker | Room 3 Modelling Chair: V. Scherer |
|---|--|---|
| 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) | Pressurized steam pyrolysis of grape residues for production of valuable liquid hydrocarbons F. Miccio, A. Natali Murri, E. Papa, E. Landi & M. Minelli University of Bologna (Italy) | 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) |
| 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) | Carbonization of grape pomace A. F. Ferreira & M. Costa Instituto Superior Técnico, Universidade de Lisboa, (Portugal) | 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) |
| Energy Efficient Coil Coating Process - ECCO M. Schneider, P. Weinbrecht, C. Wieland, C. Weis & D. Trimis Karlsruhe Institute of Technology (Germany) | Valorisation of plastic wastes by pyrolysis for energy production J.-B. Michel & M. Simeoni Race for Water Foundation & ETIA S.A.S. Carrefour Jean Monnet (Switzerland/ France) | Large Eddy Simulation of Reactive Flow on the Fire Side of a Steam Cracking Furnace S. Nadakkal Appukkuttan, E. Riber, B. Cuenot, T. Gilles CERFACS & John Zink Hamworthy Combustion (France/ Luxembourg) |

12:00 - 12:45 Break

12:45 - 14:15 Parallel sessions

| Room 1 Combustion & Heat Transfer Chair: H. Raupenstrauch | Room 2 Green challenges and renewable future Chair: N. Fricker | Room 3 Modelling Chair: V. Scherer |
|--|--|---|
| Experimental and numerical investigations of a high-power density sulphur burner M. Fedoryk, F. Zhang, H. Heidarifatasm, N. Sebbar, S. Harth, D. Trimis & H. Bockhorn Karlsruhe Institute of Technology (Germany) | Challenges for the Future Combustion of Green Fuels J.G. Wüning WS Wärmeprozesstechnik GmbH (Germany) | 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) |

| | | |
|--|--|--|
| <p>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)</p> | <p>Thermodynamic and lifecycle analysis of a CO₂-based methanol synthesis M. Dierks, F. Möllenbruck, G. Oeljeklaus & K. Görner University of Duisburg-Essen (Germany)</p> | <p>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. Giani, 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)</p> |
| <p>Thermal performance of a domestic boiler burning briquettes made with agricultural wastes B. Braga, V. Ferreira, A. Sanches & C. Pinho DEMEC-FEUP, INEGI & CEFT-FEUP (Portugal)</p> | <p>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)</p> | <p>Large Eddy Simulation of pulverized coal combustion under oxy atmospheres using tabulated chemistry H. Nicolai, A. Samim Doost, F. di Mare, C. Hasse & J. Janicka Technische Universität Darmstadt & Ruhr-Universität Bochum (Germany)</p> |
| <p>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)</p> | <p>Negative CO₂ Emission Technologies – A New Trend in Energy Research? T. Pröll University of Natural Resources and Life Sciences (Austria)</p> | <p>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)</p> |

Wednesday, 11th of November

9:00 – 11:15 Keynote Presentations

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

Christoph Ponak & Harald Raupenstrauch
Montanuniversitaet Leoben, Austria

11:30 - 12:30 Parallel Sessions

| Room 1 Alternative Fuels Chair: N. Fricker | Room 2 Monitoring/ Modelling Chair: V. Scherer | Room 3 Gasification, Combustion and product treatment Chair: J.-B. Michel |
|--|--|---|
| <p>Tail biogas flame stabilization by assistance of thermal plasma reformer N. Striūgas, A. Tamošiūnas, L. Marcinauskas, R. Paulauskas, K. Zakarauskas & R. Skvorčinskienė Lithuanian Energy Institute & Plasma Processing Laboratory (Lithuania)</p> | <p>In-furnace thermal imaging for process optimisation and NOx reduction Christopher Leonard and Neil Simpson Ametek Land & Simpson Combustion</p> | <p>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)</p> |
| <p>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)</p> | <p>Temperature Measurements by Means of SO₂ Spectra and Differential Optical Absorption Spectroscopy in Two Full-Scale Boilers T. Leffler, S. Badiei & P. Kallner Vattenfall AB (Sweden)</p> | <p>Effects of CO₂-H₂O dilution on non-premixed turbulent oxygen enriched flames in a swirl burner T. Boushaki, H. Zaidaoui, J.C. Sautet, B. Sarh University of Orleans & Normandie University (France)</p> |
| <p>Experimental study of turbulent Bluff-Body flames stability by simultaneous high speed flame imaging and Particle Image Velocimetry N. Valdez, C. Lacour, B. Lecordier, A. Cessou, D. Honore Normandie Univ (France)</p> | <p>Comparison of the Dynamic Behaviour between Bubbling and Circulating Fluidized Bed Combustors G. Martinez Castilla, R. M. Montañés, D. Pallarès & F. Johnsson Chalmers University of Technology (Sweden)</p> | <p>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)</p> |

12:30 – 13:15 Break

13:15 – 14:15 Parallel sessions

| Room 1 Pollutant emissions Chair: N. Fricker | Room 2 Modelling Chair: J.-B. Michel |
|--|--|
| Reduction of thermal and fuel NO-formation with Multi-Stage Flameless Oxidation N. Schmitz, L. Giesler, E. Cresci, J.G. Wuenning & H.Pfeifer RWTH Aachen University & WS Waermeprozessechnik GmbH (Germany) | A two-dimensional pyrolysis model for thermally thick particles Q. N. Hoang, M. Vanierschot, T. Croymans, R. Pittoor & J. Van Caneghem Group T Leuven campus, KU Leuven & Keppel Seghers Belgium NV (Belgium) |
| Issues relating to the Combustion of High Asphaltene Heavy Fuel Oils. A.R. Lea-Langton, K.D. Bartle, F.A. Atiku, J.M. Jones & A. Williams University of Manchester & University of Leeds (UK) | 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) |
| Influence of operation mode of a drop-feed-pellet domestic boiler on gaseous and particulate emissions A. Martinez, C. Lacour, J. Yon & A. Coppalle Normandie University (France) | Novel heat recovery system for ceramic furnaces using high-temperature phase change materials and integration based on multicriteria analysis development P. Royo, L. Acevedo, A. J. Arnal, M. Diaz-Ramírez, T. García-Armingol, V. J. Ferreira, G. Ferreira & A. M. López-Sabirón Research Centre for Energy Resources and Consumption (CIRCE) & CIRCE Institute (Spain) |

14:15 – 14:30 Closing session - Organizing Committee

Viktor Scherer
Ruhr Universität Bochum, Germany

Neil Fricker
University of South Wales, UK

Albino Reis
Cenertec – Centro de Energia e Tecnologia, Portugal