

TENTH INTERNATIONAL CONFERENCE ON ENERGY FOR A CLEAN ENVIRONMENT

7-9 July 2009
Instituto Superior Técnico
Lisboa - Portugal

SPONSORING ORGANISATIONS



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ABOUT THE CONFERENCE

The Clean Air conference series has taken place in Portugal since 1989. This conference had a large growth of interest since the first editions and is being reorganized with a renovated organizing committee. The conference will deal with interconnected themes covering the reduction of local and global environment degrading emissions and aims to a better integration of supply and demand.

The conference is a platform to describe, compare and evaluate new and innovative technologies, which maximise energy conversion while minimizing undesirable emissions. Attention is also given to the improvement of existing energy systems which will still be used for a long time. Both academic and applied contributions will be welcome but particular efforts will be made to stimulate papers from industry and end users in general.

Objectives

The main objectives of the conference are:

- to promote integrated energy solutions for a better environment;
- to contribute for a sustainable energy economy;
- to encourage discussion of the changing world energy requirements and solutions;
- to promote cleaner energy generation systems within the present scenario of a fossil fuel dependent society;
- to promote the integration of sustainable energy sources in solutions for remote areas and for large population centres;
- to promote the development of clean urban mobility and sustainable transports;
- to promote a forum on the topic of energy technologies for a clean environment, involving industrialists from end-users to equipment manufacturers, developers of control equipment, sensor developers and vendors, software houses, research institutes, universities, policy makers, public administration and environmentalists;
- to promote the interchange of ideas between the European energy sector and the rest of the world (USA, Japan, south-east Asia, central and eastern European countries, emerging economy countries and developing countries);
- to promote the dissemination of new energy technologies within the global market;
- to import from the market the knowledge concerning existing barriers to the implementation of new technologies;
- to disseminate the results of energy and environmental projects.

Topics

The proposed subjects are the following:

- Advancements in clean combustion
- Improvement of existing conventional power plants
- Combustion or gasification of biomass
- Global warming gases abatement
- CO₂ capture and sequestration technologies
- Engine efficiency and pollutant emissions in transports
- Use of alternative fuels in engines
- Reduction of emissions of NO_x, SO_x, CO, particles, heavy metal
- Fuel processing (gasification, reforming) in energy systems
- Utilization of hydrogen as an energy carrier in energy systems
- Integration of biomass and refuse derived fuels in the fuel economy
- Use of polygeneration in industry and houses

Organising Committee

Dr. J. L. Toste de Azevedo, Instituto Superior Técnico, Lisbon, Portugal (Chairperson)

Prof. Roman Weber, Clausthal Technical University, Clausthal, Germany

Prof. Leonardo Tognotti, University of Pisa, Pisa, Italy

Advisory Committee

- **R. Afonso**, Energy and Environmental Strategies, Shrewsbury, USA
- **W. Blasiak**, Royal Institute of Technology, Stockholm, Sweden
- **D. Cipolat**, University of the Witwatersrand, Wits, South Africa
- **P. Coelho**, Instituto Superior Técnico, Lisbon, Portugal
- **M. Costa**, Instituto Superior Técnico, Lisbon, Portugal
- **T. Farias**, Instituto Superior Técnico, Lisbon, Portugal
- **F. Fransen**, CHEC R.C., Technical University of Denmark, Lyngby, Denmark
- **N. Fueyo**, University of Zaragoza, Zaragoza, Spain
- **T. Golec**, Institute of Power Engineering, Warsaw, Poland
- **P. Kilpinen**, University of Kuopio, Finland
- **T. Kolb**, Forschungszentrum Karlsruhe, Germany
- **Y. Levy**, Technion, Israel Institute of Technology, Haifa, Israel
- **K. Lucka**, Oel-Warme Institut, Aachen, Germany
- **P. Meunier**, Gaz de France, La Plaine St. Denis, France
- **J.-B. Michel**, Univ. of Applied Sciences Western S., Yverdon-les-Bains, Switzerland
- **P. Nelson**, Macquarie University, Sydney, Australia
- **I. Obernberger**, Graz University of Technology, Austria
- **C. Pinho**, University of Porto, Porto, Portugal
- **F. Preto**, CANMET Energy Technology Centre, Ottawa, Canada
- **C. Romero**, Energy Research Center, Lehigh University, Bethlehem, USA
- **I. Romey**, University of Duisburg-Essen, Essen, Germany
- **T.A. Sarkus**, U. S. Department of Energy, Pittsburgh, USA
- **B. Soroka**, Gas Institute, National Academy of Sciences, Kiev, Ukraine
- **V. Semiao**, Instituto Superior Técnico, Lisbon, Portugal
- **M. Tamura**, IHI Corporation, Yokohama, Japan
- **W. van de Kamp**, Energy Research Centre Netherlands, Petten, The Netherlands
- **L. Vigevano**, Politecnico di Milano, Milan, Italy
- **M. Xu**, Huazhong University of Science and Technology, Wuhan, China

Key Note Lecturers

P. Barbucci, ENEL, Italy

Activities of the Zero Emission Platform and Implementation of Demonstrations.

Short CV of Ing. Pietro Barbucci, Head of Research Unit, ENEL, Italy.

Dr Pietro Barbucci joined ENEL's Research Department in 1974. He has a nuclear engineering degree from the University of Pisa and a doctorate degree in nuclear safety from the same university. After many years of research in radiation transport and shielding applications, he moved on to fossil fuel conversion technologies dealing in particular with generation system optimization and GT combustion and diagnostics.

In the period 1991-2000 he was involved in a number of research projects, under the Joule and Thermie programs concerning biomass conversion technologies, ranging from biomass co-firing to biomass pyrolysis and gasification to syngas and bio-oil combustion, and managed two demonstration projects in the same areas. He is currently Head of Research Unit, which carries out research on CO₂ capture and sequestration and H₂ production and use. He is co-author of more than 60 scientific publications.

Fleming Fransen, TUD, Denmark

20 Years of Research on Operational Consequences of Formation of Ash, Aerosols and Deposits in Modern Utility Boilers

Short CV of Dr. Flemming Jappe Frandsen, Associate Professor, Technical University of Denmark

1991: M.Sc. (Chem. Eng.), 1994: 6 months visit at University of North Dakota, Energy and Environmental Research Center, 1995: Ph.D. (Chem. Eng.), 1996-1998: Research assistant professor, Department of Chemical Engineering, DTU, 1998-: Research associate professor, Department of Chemical Engineering, DTU.

Dr. Frandsen has several years experience with characterization of fuels, thermal fuel conversion processes, and formation and deposition of ash in utility boilers, has co-authored several major papers on ash and deposit formation as well as corrosion, and has significant experience from EU Joule research projects (e.g. operational problems, trace emissions and by-product

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management for industrial biomass co-combustion, (EEC-DGXII) (1996-98) (JOF3-CT95-0057) and Performance prediction in advanced pulverized coal fired utility boilers, (EEC-DGXII) (1996-98) (JOF-CT95-0005)).

Willem Van DeKamp ECN, The Netherlands

Co-firing, Oxy-fuel, Advanced power generation - An overview of possibilities, trends and problems

Short CV of Ing. Willem Leonard van de Kamp, Manager Heat & Power and senior project manager, ECN

He (M.Sc, Applied Physics) studied at the Technical University of Delft on the subjects of Process Dynamics & Control, and Heat Transfer, and in addition business management and commercial economics; Thesis on radiation and heat transfer optimisation in glass melting furnaces.

From 1987 till 2004 he worked in the field of R&D of (semi-) industrial scale combustion and process engineering at the IFRF in The Netherlands. His activities were concerned with the combustion of gas, oil and coals and biomass, alternative fuels and waste for the electricity generating, the cement, the glass, the refining, and manufacturing industries. He has been manager of the International Flame Research organization during 2 years, and also was managing director of the IFRF Research Station by (1998-2004). In this period of circa 18 years a substantial expertise on applied R&D and the execution and management of more than 25 large European Union projects and many industrial and multiple partner consortium projects was build up.

Since mid 2004 till present (2009) he is working at the Energy research Centre of the Netherlands (ECN) and is as Manager Heat & Power and senior project manager involved in and responsible for the R&D team (20 persons) and a range of projects in the field of energy generation from biomass and coal for a diversity of industries. This includes biomass pre-treatment and feeding, torrefaction, various direct thermal conversion-related aspects (e.g. milling, fuel reactivity, combustion and gasification both experiments and full scale, slagging and fouling, bed agglomeration, tar formation, measurement systems), emissions, gas cleaning (both flue gas and gasifier product gas) and ash quality and utilisation and waste-to-energy.

Publications

All papers are included in a CD and the abstracts in an Abstracts Book, which are available at the time of the Conference. Selected papers will be submitted to the "International Journal on Energy for a Clean Environment".

Technical Sessions

20 technical sessions are planned to start after the key note lecture in the morning and run in parallel rooms. Two poster sessions will be held on the first and second day of the conference during one and half hour.

Social Events

The cost of registration includes:

Tuesday (7th) - Welcome cocktail at the conference site following the poster session.

Wednesday (8th) - Afternoon tour with a visit to a wine cellar of José Maria da Fonseca and a boat tour in Sesimbra with the possibility of watching the sea bed, or another option to stay at the beach in front of the restaurant where the dinner will be served (Restaurant Canhão in the hotel complex).



Thursday (9th) - Visit to the electricity museum in Belem, followed by a farewell dinner.



CONFERENCE PROGRAM**Tuesday, 7th July 2009**

	Auditorium	Room 1
08:30-9:00	Registration	
9:00-9:20	Opening Ceremony	
9:30-10:20	Key Note Lecture 1 – P. Barbucci Activities of the Zero Emission Platform and Implementation of Demonstrations.	
10:20-11:20 (3 papers)	Session 1 Oxy-Combustion	Session 11 Gas Flares
11:20-11:40	Coffee Break	
11:40-12:40 (3 papers)	Session 2 CO ₂ Capture/Storage	Session 12 RDF/Sewage Sludge
12:40-14:00	Lunch Break	
14:00-15:40 (5 papers)	Session 3 NO _x Emissions	Session 13 Flameless Combustion
15:40-16:00	Coffee Break	
16:00-18:00 (6 papers)	Session 4 Boiler Operation	Session 14 Vehicles
18:00-19:00	Poster Session 1 (Session 21)	
19:00-20:00	Cocktail Welcome Reception	

Wednesday, 8th July 2009

	Auditorium	Room
09:00-9:50	Key Note Lecture 2 – Fleming Franssen 20 Years of Research on Operational Consequences of Formation of Ash, Aerosols and Deposits in Modern Utility Boilers	
10:00-11:00 (3 papers)	Session 5 Ash Characterization/Heavy Metals	Session 15 Engines
11:20-11:40	Coffee Break	
11:40-12:40 (4 papers)	Session 6 Fouling/Slagging	Session 16 Gas Flames
12:40-14:00	Lunch Break	
14:00-15:00	Poster Session 2 (Session 22)	
15:00–22.30	Afternoon tour and dinner in Sesimbra*	

Thursday, 9th July 2009

	Auditorium	Room
09:00-09:50	Key Note Lecture 3 – W. Van de Kamp Co-firing, Oxy-fuel, Advanced power generation – An overview of possibilities, trends and problems	
10:00-11:00 (3 papers)	Session 7 Biomass I	Session 17 Fuel Processing
11:00-11:20	Coffee Break	
11:20-12:40 (4 papers)	Session 8 Biomass II	Session 18 Micro CHP Systems
12:40-14:00	Lunch Break	
14:00-15:40 (5 papers)	Session 9 Gasification I	Session 19 Domestic Heating Applications
15:40-16:00	Coffee Break	
16:00-18:00 (5 papers)	Session 10 Gasification II	Session 20 Hydrogen Generation
18:30-20:00	Visit to the Electricity Museum	
20:00-22:00	Conference Dinner	

* Visit to wine cellars, boat trip and dinner with sea view

Tuesday, 7th July 2009*Morning*

	Auditorium	Room 1
08:30-9:00	Registration (also on Monday afternoon)	
9:00-9:20	Opening Ceremony	
9:20-10:10	Key Note Lecture 1 – <i>P. Barbucci</i> Activities of the Zero Emission Platform and Implementation of Demonstrations.	
10:20-11:20 (3 papers)	Session 1 Oxy-Coal Combustion	Session 11 Gas Flares
	44 - NUMERICAL SIMULATION OF AN OXYCOAL SWIRL BURNER: FROM BENCH TO INDUSTRIAL SCALE <i>J. Erfurth, D. Toporov, M. Förster and R. Kneer</i> 66 - NUMERICAL MODEL OF OXY-FUEL EXPERIMENTS IN A SEMI-INDUSTRIAL FURNACE <i>Laura Sorrentino, Chiara Galletti, Leonardo Tognotti</i> 77 - THE IMPACT OF TURBULENCE- AND CHEMISTRY-TURBULENCE INTERACTION MODELS IN THE SIMULATION OF OXY-FUEL FLAMES <i>C. Heymann, A. Richardson and M. Mancini</i>	29 - EFFICIENCY OF BIOGAS BURNING FLARES <i>F. Hormazabal, J. D. Rivera and D. Vargas</i> 40 - HIGH MOMENTUM JET FLAME IN CROSS-FLOW: PREDICTION OF THE FLAME STRUCTURE AND EMISSION CHARACTERISTICS OF FLARES <i>M.S. Lawal, L. Ma, M. Pourkashanian, A. Williams and D.B. Ingham</i> 105 - A FLARE CASE: COMPARISON OF THE RESULTS OF TWO CFD CODES WITH EXPERIMENTAL DATA <i>A. Bennardo, F. Podenzani and L. Borello</i>
11:20-11:40	Coffee Break	
11:40-12:40	Session 2 CO2 Capture/Storage	Session 12 RDF/Sewage Sludge
	65 - CONSIDERATIONS ON CO2 CAPTURE TECHNOLOGIES <i>A. Magalhaes, V. Ferreira, R. Barbosa, F.M. Torres, C. Pinho</i> 57 - CLEAN COAL TECHNOLOGIES PROJECTS IN BRAZILIAN CARBON STORAGE RESEARCH CENTER (CEPAC/PUCRS) <i>Zuleika C. Correa da Silva, Roberto Heemann, João Miguel Faim Martins, Telmo Rodrigo Ferreira, Luis Miguel B. Filipe, João Marcelo M. Ketzer, Rafael Valdetaro Bianchini</i> 83 - GAS STORAGE VERSUS GAS CIRCULATION IN NORTH ATLANTIC AND GONDWANA COAL TYPES <i>C. F. Rodrigues, M.A.P. Dinis and M.J. Lemos de Sousa</i>	25 - COMBUSTION OF REFUSE DERIVED FUEL IN THE LABORATORY SCALE JET FLAMES <i>R. Weber, T. Kupka and K. Zając</i> 54 - EXPERIMENTAL STUDY ON THE DRYING OF ORGANIC SLUDGE FOR SOLID FUEL BY TECHNOLOGY OF EVAPORATIVE DRYING IN IMMERSED HOT OIL(EDIHO) <i>T.I. Ohm, S.H. Moon and D.S. Jang</i> 93 - NOX AND SO2 EMISSIONS DURING CO-COMBUSTION OF THE DIFFERENT SEWAGE SLUDGES <i>G. Hrycaj, K. Król, W. Rybak</i>
12:40-14:00	Lunch Break	

Afternoon

14:00-15:40	Session 3 NOx Emissions	Session 13 Flameless Combustion
	<p>24 - THE EFFECT OF OXYGEN ENRICHMENT UNDER AIR-STAGED CONDITIONS ON NOX EMISSION AND COMBUSTION EFFICIENCY IN PULVERISED COAL COMBUSTION <i>S. Daood, W. Nimmo and B.M. Gibbs</i></p> <p>58 - ABATEMENT OF NITROGEN OXIDES EMISSIONS IN THE POWER BOILER <i>G. Jarquin-López, G. Polupan, M. Toledo-Velázquez, I. Carvajal Mariscal</i></p> <p>81 - NO REDUCTION BY SELECTIVE NON-CATALYTIC REDUCTION BY USING AMMONIA - EFFECTS OF ADDITIVES <i>D. Quang Dao, L. Gasnot, J. F. Pauwels, and A. El Bakali</i></p> <p>87 - NITRIC OXIDE REMOVAL USING A MANGANESE OXIDE (MnO₂) CATALYST AND OZONE <i>Jongsoo Jung and Sungmin Chin</i></p> <p>94 - OPTIMIZATION METHODS IN MINIMIZATION OF EMISSIONS FROM COMBUSTION <i>A. Saario, R. Mäkiranta, A. Backlund and A. Oksanen</i></p>	<p>42 - ON METHANE FLAMELESS COMBUSTION <i>A. Rebola, M. Costa and P. J. Coelho</i></p> <p>55 - APPLICATION OF HTAC TECHNOLOGY TO PULVERIZED COAL BOILERS <i>N. Schaffel, A. Szlęk, M. Mancini, R. Weber</i></p> <p>68 - PREDICTING NO FORMATION IN FLAMELESS COMBUSTION REGIME <i>A. Parente, C. Galletti and L. Tognotti</i></p> <p>95 - PYROLYTIC AND OXIDATIVE STRUCTURES IN HDDI MILD COMBUSTION <i>P. Sabia, M. de Joannon, G. Sorrentino, G. Cozzolino, A. Cavaliere</i></p> <p>104 - NOX FORMATION IN MILD COMBUSTION OF LIQUID HYDROCARBONS <i>M. Derudi and R. Rota</i></p>
15:40-16:00	Coffee Break	
16:00-18:00	Session 4 Boiler Operation	Session 14 Vehicles
	<p>8 - PREDICTION OF PERFORMANCE OF- AND EMISSION FROM-COAL-FIRED UTILITY BOILERS <i>E. Bar Ziv, Y. Berman, R. Saveliev, M. Perelman, E. Korynyi, B. Davidson, B. Chudnovsky</i></p> <p>59 - COMPUTATIONAL EVALUATION OF PERFORMANCE ENHANCEMENT PLATES IN WET FLUE-GAS DESULPHURIZATION PLANTS <i>C. Montañés, A. Gómez and N. Fueyo</i></p> <p>74 - NEURAL NETWORKS AND GENETIC ALGORITHMS AS A TOOL FOR MONITORING OF LOW EMISSION CORROSION AND OPTIMISATION OF UTILITY BOILER PERFORMANCE <i>Slawomir Kakietek, Tomasz Hardy, Tomasz Golec, Włodzimierz Kordylewski</i></p> <p>89 - SOX EMISSION DURING O₂/CO₂ COMBUSTION OF DENSITY SEPARATED COAL FRACTIONS: INFLUENCE OF ORGANIC, INORGANIC SULPHUR AND MINERAL MATTER <i>Dangzhen Lv, Minghou Xu, Hong Yao, Xiaowei Liu, Jiang Wei, and Huilong Cao</i></p> <p>119 - RECOVERY AND UTILIZATION OF HEAT FROM THE FLUE GAS AND OPERATIONAL IMPROVEMENTS: NO-REGRET PATH TO IMMEDIATE REDUCTION IN CO₂ EMISSIONS <i>Nenad Sarunac</i></p> <p>121 - RTO-PILOT PLANT FOR EXHAUST GASES WITH ORGANOSILICON COMPOUNDS – OPERATING BEHAVIOUR IN INDUSTRIAL USE <i>O. Carlowitz, O. Neese, T. Reindorf and B. Ruskamp</i></p>	<p>2 - IMPROVING ENGINE EFFICIENCY AND REDUCING EXHAUST EMISSIONS: THE POTENTIAL ROLE OF MOTOR FUEL TAXATION <i>Richard W. England and Amlan Datta</i></p> <p>35 - EVALUATION OF ENVIRONMENTAL URBAN ACCESSIBILITY <i>A. Vasconcelos and T. Farias</i></p> <p>43 - MONITORING DIESEL VEHICLE FUEL CONSUMPTION AND NOX EMISSIONS <i>G.A. Gonçalves, R.F. Araújo and T.L. Farias</i></p> <p>32 - LOWER EMISSIONS FROM EMULSION-FUELLED DIESEL-BIODIESEL ENGINES WITH AND WITHOUT FUEL-BORNE CATALYSTS <i>Y.Cheng and P.A.Sermon</i></p> <p>30 - FUEL CELL, ELECTRIC BATTERY AND SERIES HYBRID PLUG-IN ROAD VEHICLE SIMULATION MODELS FOR ENERGY CONSUMPTION <i>Bravo, J., Silva, C.M., Farias, T.L.</i></p> <p>33 - IMPACT OF THE INTRODUCTION OF ELECTRIC BASED VEHICLES IN SÃO MIGUEL ISLAND <i>P. Baptista, C. Camus, C. Silva, T. Farias</i></p>
18:00-19:00	Session 21 Poster Session I	
19:00-20:00	Port Wine Welcome Reception	

Session 21 - Poster Session I
3 - NATURAL GAS INDUSTRY IN IRAN <i>Hedayat Omidvar</i>
10 - A GIS-BASED APPROACH FOR AN OPTIMUM MSW INCINERATION PLANT SITING <i>G. Tavares, Z. Zsigraiová, V. Semião, M. G. Carvalho</i>
19 - NUMERICAL INVESTIGATION FOR REBURNING FUEL INLET POSITION IN A PULVERIZED COAL COMBUSTOR APPLIED METHANE REBURNING <i>T. Yamamoto and K. Yunoki</i>
26 - BURNING TIME OF WOOD CHAR IN A BUBBLING FLUIDIZED BED <i>N. Rangel and C. Pinho</i>
51 - HYBRID DISTURBED GENERATION SYSTEM WITH FUEL CELL AND SOLAR CELL <i>M. Hikiyashiki and T. Saika</i>
69 - THERMODYNAMIC ANALYSIS OF THE COMBINED ENERGY AND ENVIRONMENTAL EFFICIENCY OF FURNACES BY FUEL COMBUSTION <i>B. Soroka and P. Sandor</i>
61 - EXPERIMENTAL EVALUATION ON DE-SULFURISATION PERFORMANCE AND ASH MODIFICATION BY MICRO-GROUND CALCIUM COMPOUND INJECTION INTO PULVERISED COAL FIRED BOILERS <i>Ryunosuke Itokazu, Masato Tamura, Akira Ohnaka, Tatsumi Tano and Takahiko Terada</i>
62 - MAJOR FACTORS – RAW MATERIALS, ENERGY CONSERVATION AND PROCESS – AFFECTING CO ₂ EMISSIONS: A CASE STUDY OF HYDROGEN PRODUCTION <i>R. Kikuchi</i>
72 - EXPERIMENTAL INVESTIGATION OF NITROGEN OXIDES EMISSION AND HEAT TRANSFER FOR HIGH TEMPERATURE AIR COMBUSTION <i>Amit Kumar Biswas, Lan Zhang, Artur Swiderski, Wassim Nehme, and Weihong Yang</i>
85 - ON THE RELATIONSHIP BETWEEN EQUIVALENCE RATIO AND CHEMILUMINESCENT EMISSION FROM PREMIXED METHANE/AIR FLAMES <i>A. S. Verissimo and M. Costa</i>
80 - A STUDY OF ENERGY PRODUCTION FROM CORK RESIDUES <i>Al-Kassir, J. Gañán, J. Félix González, P. J. Coelho and Raúl Al-kassir Al-karany</i>
92 - ENERGY ANALYSIS OF TECHNOLOGICAL SYSTEMS OF COMBINED HEAT AND POWER PLANTS INTEGRATED WITH BIOMASS GASIFICATION <i>B. Zaporowski, R. Szczerbowski, R. Wróblewski</i>
102 - OXYFUEL COMBUSTION OF COAL BIOMASS BLENDS <i>W. L. van de Kamp, L. Fryda, C. Sobrino</i>
111 - HEAT FLUX DETERMINATION IN THE HORIZONTAL DEPOSITION PROBE <i>Dyjakon A.K., Cieplik M.K., Willem van de Kamp, Wiebren de Jong</i>
112 - EXPERIMENTAL ASSESSMENT OF DEPOSITION AND MODELLING OF PARTICULATE FORMATION IN BLACK LIQUOR RECOVERY BOILER <i>P. Fontes and J. Azevedo</i>
115 - CHARACTERIZATION OF GRATE FIRED COMBUSTION: INITIAL EXPERIMENTAL RESULTS AND MODEL FOR PARTICLE MOTION <i>N. Sousa and J. Azevedo</i>
118 - PLASMA IGNITER FOR OIL BURNER <i>Arkadiusz Dyjakon</i>
36 - AN INNOVATIVE HYDROCARBON FUEL PROCESSING UNIT ON THE BASIS OF COMBINED OPERATION OF A THERMAL PARTIAL OXIDATION REFORMER AND A SELF-REGENERABLE SOOT PARTICLE FILTER <i>A. Loukou, A. Raimondi, D. Fino, D. Trimis</i>

Wednesday, 8th July 2009

Morning

	Auditorium	Room 1
09:00-09:50	Key Note Lecture 2 – <i>Fleming Fransen</i> 20 Years of Research on Operational Consequences of Formation of Ash, Aerosols and Deposits in Modern Utility Boilers	
10:00-11:00	Session 5 Ash Characterisation Heavy Metals	Session 15 Engines
	4 - LASER-INDUCED BREAKDOWN SPECTROSCOPY FOR COAL CHARACTERIZATION AND ASSESING SLAGGING PROPENSITY <i>Carlos E. Romero, Joseph Craparo, Arel Weisberg, Zheng Yao, Robert De Saro</i> 16 - INFLUENCE OF FUEL TYPE ON PARTICLE AND HEAVY METAL EMISSIONS DURING FIXED BED COMBUSTION OF BIOMASS <i>H. Wiinikka and C. Grönberg</i> <i>Another paper from poster session may be included here from 45, 46 or 47.</i>	6 - EFFECTS OF EGR, AFR AND VCR ON HCCI COMBUSTION OF VARIABLE PRIMARY REFERENCE FUEL BLENDS <i>P. Mendoza-Villafuerte and Z. Peng</i> 17 - THE EFFECT OF FUEL PROPERTIES ON THE START OF INJECTION IN A CI ENGINE FUELLED ON DIESEL AND DME <i>D Cipolat</i> 106 - REDUCTION OF CHARGE EXCHANGE WORK AS A WAY TO IMPROVE EFFICIENCY OF INTERNAL COMBUSTION ENGINE IN PART LOAD <i>Stefan Postrzednik, Zbigniew Zmudka</i>
11:00-11:20	Coffee Break	
11:20-12:40	Session 6 Fouling/Slagging	Session 15 Gas Flames
	49 - ON ASH DEPOSIT FORMATION DURING THE CO-COMBUSTION OF COAL WITH BIOMASS <i>P. Abreu, C. Casaca and M. Costa</i> 7 - FOULING FORMATION IN PULVERIZED-COAL FIRED FURNACES <i>E. Bar Ziv, Y. Berman, R. Saveliev, M. Perelman, E. Korytnyi, B. Davidson, B. Chudnovsky</i> 11 - NEW CHEMICAL TECHNOLOGY USED TO CONTROL SLAG FOR BOILERS BURNING HIGH IRON COAL <i>K. W. Schulz, C. R. Smyrniotis and E. P. Rivera</i> 97 - PARTICLE DEPOSITION COMPUTATIONAL MODEL FOR DIESEL EXHAUST SYSTEMS <i>M. C. Paz, J. Porteiro, E. Suárez, A. Eiris</i>	5 - EFFICIENT COMBUSTION OF LOW CALORIFIC GASES IN MICRO GAS TURBINES <i>A. Al-Halbouni, H. Rahms, A. Giese and K. Görner</i> 34 - BLUFF BODY STABILIZED MICROGASTURBINE COMBUSTION CHAMBER FUELLED WITH LPG AND NATURAL GAS <i>G. C. Krieger Filho, J. Rigoni Jr. and R. C. de Souza</i> 110 - ONE-STEP MODEL FOR DILUTED LEAN CH ₄ /AIR OSCILLATIONS AT LOW TEMPERATURES <i>T. Wada, J.P. Mellado, and N. Peters</i> 100 - EXPERIMENTAL STUDY OF RADIATION HEAT TRANSFER AND TEMPERATURE IN HIGH TEMPERATURE AIR COMBUSTION <i>Lan Zhang, Amit Kumar Biswas, Artur Swiderski, Wassim Nehme, Weihong Yang, and Wlodzimierz Blasiak</i>
12:40-14:00	Lunch Break	
14:00-15:00	Session 22 Poster Session II	
15:00–16.00	Trip from Lisbon to Azeitão	
16:00-17:00	Visit to José Maria da Fonseca Wine Cellars	
17:00-17:30	Trip from Azeitão to Sesimbra	
17:30-19:30	Boat Tour or Beach close to restaurant	
19:30-22:00	Dinner at restaurant “O Canhão”	
22:00-23:00	Trip from Sesimbra to Lisbon	

Session 22 - Poster Session II
12 - FEASIBLE INTEGRATION OF AUTOMOBILE FUEL PRODUCTION WITH MANAGEMENT OF PROBLEMATIC SOLID WASTE <i>R. Kikuchi, R. Gerardo, T. Yamamoto and S. Santos</i>
13 - SCALE-UP EFFECT OF WASTE GASIFICATION-SMELTING UNIT ON QUALITY OF BY-PRODUCT SYNGAS <i>R. Kikuchi, J. Kukačka, T. Yamamoto, R. Raschman and J. Lederer</i>
15 - CHARACTERISATION OF PARTICLES IN THE SYNGAS DURING PRESSURISED BLACK LIQUOR GASIFICATION <i>H. Wiinikka, C. Grönberg and O. Öhrman</i>
31 - DESIGN OF CLEAN VEHICLES <i>J. Loureiro and M. Crisóstomo</i>
45 - AN EXPERIMENTAL STUDY OF THE FATE OF ZN IN TYRE/COAL CO-COMBUSTION <i>S. Singh, W. Nimmo, B.M Gibbs and P.T Williams</i>
46 - PETROGRAPHIC CHARACTERIZATION OF THE ECONOMIZER FLY ASH <i>Bruno Valentim, James C. Hower, Sandra Soares, Alexandra Guedes, Cândida Garcia, Deolinda Flores and Álvaro Oliveira</i>
47 - VARIATIONS IN FLY ASH COMPOSITION WITH SAMPLING LOCATION <i>Bruno Valentim, James C. Hower, Alexandra Guedes, Cândida Garcia, Deolinda Flores and Álvaro Oliveira</i>
48 - SEM/EDS OF LOW-SULPHUR COAL FLY ASH <i>Bruno Valentim, James C. Hower, Alexandra Guedes, Deolinda Flores</i>
56 - ENERGETIC AND ENVIRONMENTAL ANALYSIS OF DAILY JOURNEYS OF UNDER GRADUATE STUDENTS <i>M. Faria, A. Vasconcelos and T. Farias</i>
60 - STATUS OF PM10 IN KATHMANDU VALLEY, NEPAL <i>G. Bhandari</i>
82 - HIGH TEMPERATURE SORPTION OF HEAVY METALS IN GASIFICATION ATMOSPHERE <i>M. Rieß and M. Müller</i>
88 - PHOTOACTIVITY OF TITANIUM OXIDE NANOPARTICLES SYNTHESIZED BY A THERMAL DECOMPOSITION PROCESS <i>Sungmin Chin and Jongsoo Jurng</i>
96 - EXPERIMENTAL AND NUMERICAL SIMULATION OF FINITE AMPLITUDE PRESSURE PULSE PROPAGATION IN ENGINE EXHAUST PIPE DISCONTINUITIES <i>M. C. Paz, A. Eiris, M. Concheiro and D. Simón</i>
98 - EXPERIMENTAL SET UP FOR THE DETERMINATION OF FOULING BEHAVIOUR IN DIESEL ENGINE EXHAUST GAS RECIRCULATION SYSTEMS <i>M. C. Paz, E. Suárez, A. Eiris and C. Castaño</i>
107 - TWOFOLD ROLE OF CATALYTIC CONVERTER AT INTERNAL COMBUSTION ENGINE OPERATION <i>Zbigniew Zmudka and Stefan Postrzednik</i>
120 - SPECTRAL INFORMATION OF DIESEL, BIODIESEL AND NATURAL GAS FLAMES: AN ANALYSIS OF CURRENT PASSIVE OPTICAL TECHNIQUES FOR THE SPECTRAL DETECTION <i>L. Arias, R. Betancourt, O. Farias, S. Torres</i>

Thursday, 9th July 2009

Morning

	Auditorium	Room 1
09:00-09:50	Key Note Lecture 3 – W. Van de Kamp Co-firing, Oxy-fuel, Advanced power generation – An overview of possibilities, trends and problems	
10:00-11:00	Session 7 Biomass I	Session 17 Fuel Processing
	23 - AIR AND FUEL STAGED CO-COMBUSTION OF BIOMASS WITH COAL <i>S. Munir, W. Nimmo and B.M. Gibbs</i> 75 - EXPERIMENTAL STUDY ON GRINDING CHARACTERISTICS OF WOODEN BIOMASS AND ITS FIRING PERFORMANCE FOR COAL FIRED BOILERS <i>Masato TAMURA, Shinji WATANABE, Ryunosuke ITOKAZU, Yuusuke KUBOTA, Naoya KOTAKE and Masahiro HASEGAWA</i> 101 - BIOMASS CO-FIRING IN HIGH PERCENTAGES - DUTCH R&D CONSORTIUM PUSHING THE LIMITS <i>J.H.A. Kiel, M.K. Cieplik, W.L. van de Kamp, A. Saraber and R.J. van Eijk</i>	53 - INVESTIGATIONS OF A COMBINED FLAME TRAP- ANDMIXING-SYSTEM AS SURFACE BURNER SUPPORT FOR LEAN HYDROGEN-AIR COMBUSTION <i>S. Voss, D. Trimis</i> 108 - NUMERICAL STUDY OF METHANE TPOX WITHIN INERT POROUS MEDIA: REFORMING PERFORMANCE IMPROVEMENT <i>M. Mendes, J. M. C. Pereira, J. C. Pereira</i> 37 - DEVELOPMENT OF ETHANOL-FUEL POROUS BURNER FOR APPLICATION IN A HT-PEM-FUEL CELL SYSTEM <i>B. Stelzner, A. Al-Zoubi, C. Löbel and D. Trimis</i>
11:00-11:20	Coffee Break	
11:20-12:40	Session 8 Biomass II	Session 18 Micro CHP Systems
	50 - DEVELOPMENT OF THE ADVANCED BIOMASS AND COAL DEVOLATILIZATION (ABCD) MODEL <i>M. Falcitelli, E. Biagini and L. Tognotti</i> 63 - IS BIOMASS SOOT DIFFERENT FROM HYDROCARBON SOOT? AN IN SITU STUDY USING ATOFMS (Aerosol Time of Flight Mass Spectrometry) <i>M.T. Baeza-Romero, J. Wilson, E. Fitzpatrick, J. Jones and A. Williams</i> 67 - A STUDY OF ALKALI AEROSOL FORMATION IN BIOMASS-COAL CO-COMBUSTION WITH A MECHANISTIC APPROACH <i>E. Castellani, M. Falcitelli, L. Tognotti</i> 117 - COMBUSTION EVALUATION OF TORREFIED WOOD-PELLETS FOR DOMESTIC APPLICATIONS <i>Jean Bernard Michel</i>	90 - OPTIMIZATION OF GAS PROCESSING IN A HIGH TEMPERATURE-PEMFC (PROTON EXCHANGE MEMBRANE FUEL CELL)-BLOCK HEAT AND POWER PLANT ON THE BASIS OF THE NUMERICAL PINCH-METHODS. <i>Anger, H. Krause, J. Nitzsche, D. Trimis</i> 39 - MICRO SCALE COMBINED HEAT AND POWER SYSTEM FOR LIQUID FUELS <i>G. Yildiz, J. vom Schloss, K. Lucka, H. Koehne and F. J. Schulte</i> 38 - PRELIMINARY OPERATIONAL RESULTS OF A DOMESTIC SOFC BASED MICRO-CHP SYSTEM <i>D. Trimis, S. Voss, O. Posdziech, J. Valldorf</i> 91 - SURVEY OF DEVELOPMENT AND OPERATION OF A PEM FUEL CELL SYSTEM FOR LOW EMISSION ENERGY SUPPLY FOR HOUSES <i>R. Steinbrück, K. Grosser, C. Hildebrandt, H. Krause, J. Nitzsche, D. Trimis</i>
12:40-14:00	Lunch Break	

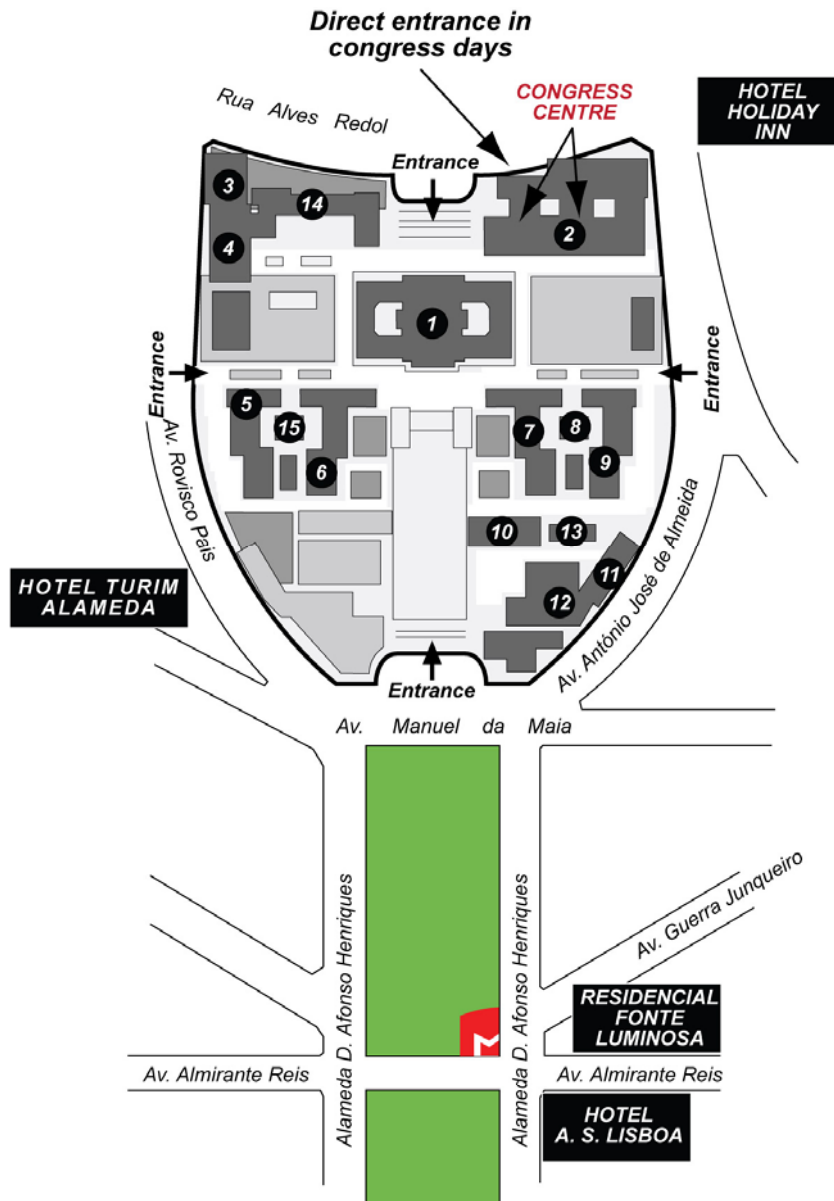
Afternoon

14:00-15:40	Session 9 Gasification I	Session 19 Domestic Heating Applications
	<p>78 - HIGH TEMPERATURE GAS FILTRATION AND PARTICLES CHARACTERIZATION DURING STEAM-OXYGEN BLOWN GASIFICATION OF BIOMASS FUELS <i>E. Simeone, M. Siedlecki, M. Nacken, S. Heidenreich and W. de Jong</i></p> <p>79 - PROCESS MODELING AND PERFORMANCE ANALYSIS OF A PGM GASIFIER <i>Q. Zhang, L. Dor, K. Umeki, W. Yang and W. Blasiak</i></p> <p>76 - CFD STUDY ON MODEL PARAMETERS FOR BIOMASS CHAR GASIFICATION <i>S. Hafner and U. Riedel</i></p> <p>71 - CFD SIMULATION OF GASIFICATION PROCESS WITH ETHYLENE GLYCOL AS MODEL SUBSTANCE FOR BIOMASS BASED PYROLYSIS OIL <i>A. Rashidi and U. Riedel</i></p> <p>109 - OPTIMISED IGCC CONCEPTS FOR ENERGY AND HYDROGEN PRODUCTION IN REFINERIES <i>K. Hornsby and I. Romey</i></p>	<p>1 - PARTICULATE MATTER EMISSION FROM OIL FIRED DOMESTIC HEATING APPLIANCES <i>R. Edenhofer, K. Lucka, H. Köhne</i></p> <p>14 - EFFECTS OF THE ACCESS OF THE SECONDARY AIR ON THE OPERATION OF AN ATMOSPHERIC BURNER <i>A. Zbogar-Rasic, G. Mrazic, F. Issendorff, S. Ausmeier, D. Trimis</i></p> <p>28 - PYRINNO: PRACTICAL RESULTS OF A SMALL SCALE BURNER DEVELOPMENT <i>J. vom Schloss, L. Paesler, C. Jaschinski, K. Lucka, H. Koehne, Kulisiewicz, S. Ausmeier, A. Delgado</i></p> <p>41 - COMBUSTION OF LOW CALORIFIC VALUE GASEOUS FUELS IN A POROUS BURNER: EFFECT OF THE FUEL COMPOSITION ON FLAME STABILITY AND POLLUTANT EMISSIONS <i>R. W. Francisco Jr., F. Rua, M. Costa, R. C. Catapan, A. A. M. Oliveira</i></p>
15:40-16:00	Coffee Break	
16:00-17:20	Session 10 Gasification II	Session 20 Hydrogen generation
	<p>9 - GASIFICATION MELTING CHARACTERISTICS OF AUTOMOBILE SHREDDER RESIDUES <i>Woohyun Kim, Sangin Keel, Jinhan Yun, Taijin Min, Seonah Roh</i></p> <p>27 - SYNGAS FROM BIOMASS-BASED SLURRY ENTRAINED-FLOW GASIFICATION <i>Thomas Kolb, Nikolaos Zarzalis</i></p> <p>22 - TRACE ELEMENT IN THE SYNGAS DURING PRESSURISED BLACK LIQUOR GASIFICATION <i>C. Grönberg, H. Wiinikka, R. Öhman, F. Granberg, and J. Jönsson</i></p> <p>18 - HYDROGEN ORIENTED UNDERGROUND COAL GASIFICATION <i>K. Stańczyk J. Rogut and K. Kapusta</i></p>	<p>64 - OVERALL ANALYSIS OF THERMOCHEMICAL CYCLES FOR HYDROGEN PRODUCTION <i>D. Silva, A. Magalhães, R. Barbosa, V. Ferreira, F.M. Torres, J. Campos, C. Pinho</i></p> <p>52 - HYDROGEN GENERATION SYSTEM WITH CRACKING AMMONIA <i>Y. Aoki, H. Mitsui, T. Nohara, Y. Saito, M. Iwami and T. Saika</i></p> <p>113 - REVIEW OF STEAM REFORMING ACTIVITIES AT INSTITUTO SUPERIOR TECNICO <i>R. Neto and J. Azevedo</i></p>
17:30-17:45	Closing ceremony	
18:30-19:00	Transport from IST to Museu da Electricidade	
19:00-20:00	Visit to Museu da Electricidade	
20:00-22:00	Dinner at Museu da Electricidade	
22:00-22:30	Transport to the hotels	

CONFERENCE VENUE

IST Campus

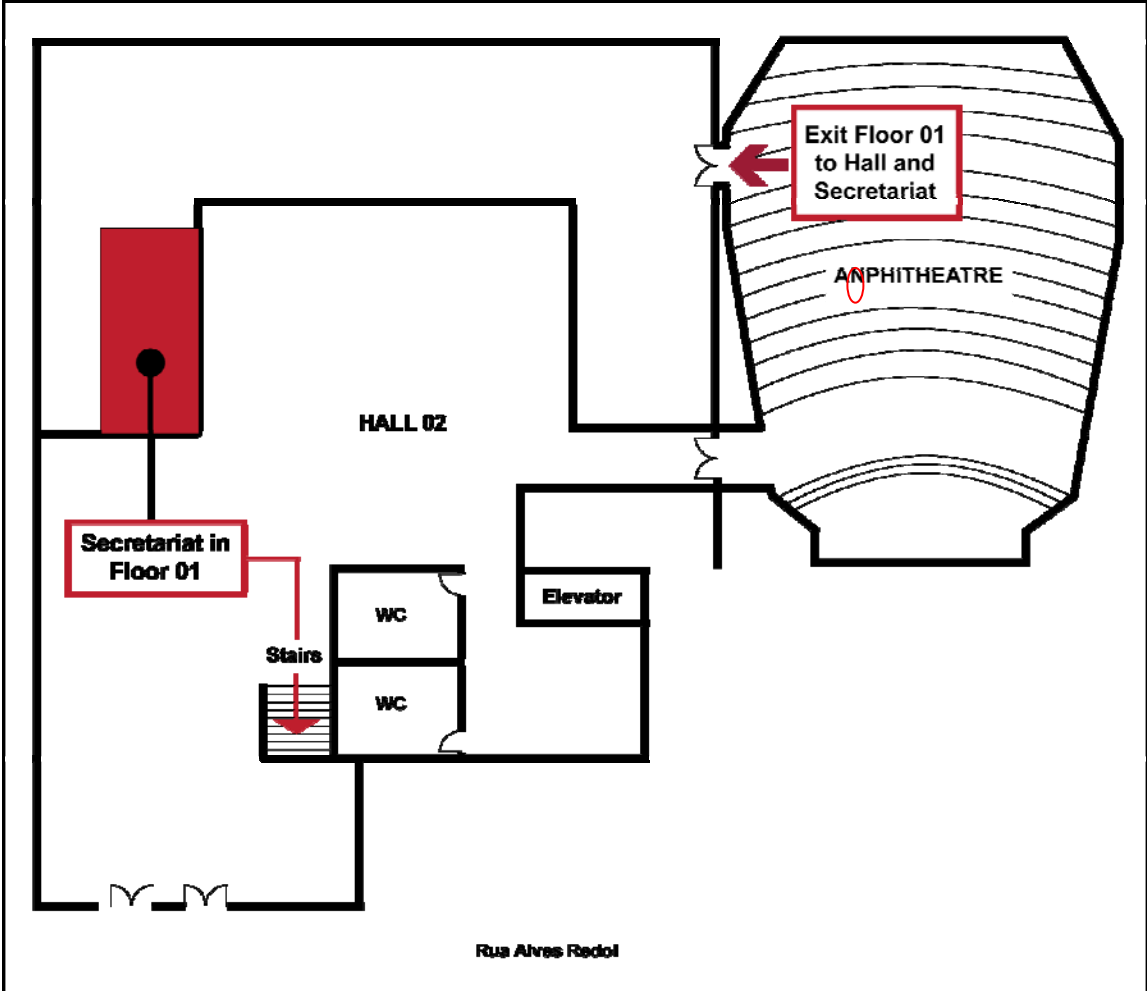
The Clean Air conference is held at Instituto Superior Técnico (IST) congress centre. The following figure is a sketch of IST campus indicating the location of hotels and self service restaurants within the campus. There is also a restaurant at the 2nd basement of the north tower and several within less than 5 minutes walking distance.



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|---|---|
| <ul style="list-style-type: none"> 1 - Main Building 2 - Civil Eng. Building 3 - Science Building 4 - Post-Graduation Building 5 - Mining Building 6 - Chemical Building 7 - Mechanical Eng. Building I 8 - Tower (North) 9 - Electricity Building | <ul style="list-style-type: none"> 10 - Mechanical Eng. Building III 11 - New Undergraduate Courses Building 12 - Mechanical Eng. Building II 13 - Mechanical Eng. Building IV 14 - Research Institute 15 - Tower (South) |
|---|---|
- Alameda Underground Station

Congress Centre

You may access the congress centre directly from Av. Alves Redol to level 02 or from IST campus through the Civil Eng. building in level 0 and descend stairs or elevators to the underground levels. The secretariat is located in level 01 where there is also an access to the amphitheatre. The sessions will take place in the auditorium, room 1 and hall 02 all located in level 02. The poster session, coffee breaks and welcome cocktail will be in hall 02.



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