SCIENTIFIC PROGRAM

17th International Conference on Efficiency, Costs, Optimization, Simulation and Environmental Impact of Energy and Process Systems

Hotel Real de Minas

Guanajuato, México
July, 7 – 9, 2004

Organized by:

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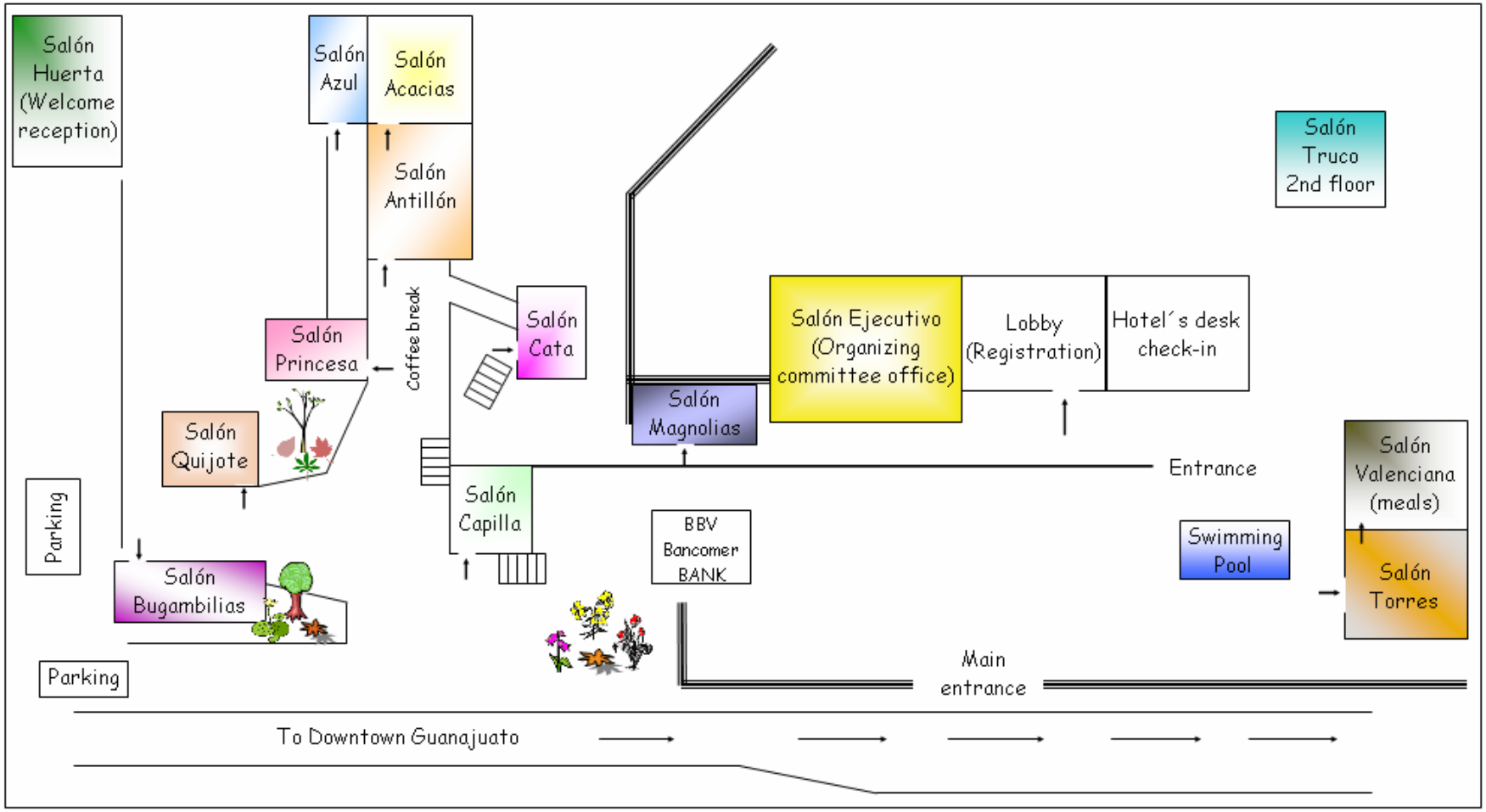
ECOS 2004 **Conference Venue** **Hotel Real de Minas, Guanajuato**



ECOS 2004	July 7 - 9
09:00 - 19:00	Sponsors and Participants Exhibition Area (Torres)

ECOS 2004	Tuesday July 6
12:00 - 18:00	Registration
18:00 - 19:00	ICAT Executive Committee Meeting (Truco)
19:00 - 21:00	Welcome Cocktail (Huerta)

ECOS 2004	Wednesday July 7						
08:00 -17:00	Registration						
09:00 - 10:30	Opening Ceremony and Plenary: Elias Gyftopoulos (MIT) (Antillón)						
10:30 - 11:00	Coffee Break						
11:00 - 13:00	Advanced Computer Applications (Capilla)	Advances in Internal Heat Integrated Distillation Systems (Magnolias)	Advances in Air Conditioning Systems in Buildings (Cata)	Advances in Energy Management Methodologies (Princesa)	Life Cycle Analysis (Quijote)	Advances in Combustion: Gasification Processes (Acacias)	New Power Generation Applications (Bugambilias)
13:00 - 14:30	Lunch (Valenciana)			PIECE Meeting (Valenciana)			
14:30 - 16:30	Applied Thermoeconomics to Power Systems (Capilla)	Fuel Cell Simulation (Magnolias)	Application of the 3 E´s Model to Industrial Systems (Cata)	Fundamentals of Thermodynamics (Princesa)	Energy Recovery Improvements (Quijote)	CO_2 Emissions Management (Acacias)	Simulation of Heat and Power Systems (Bugambilias)
16:30 - 17:00	Coffee Break						
17:00 - 19:00	Panel Discussion: Internal Heat Integrated Distillation (Acacias)						
19:00 - 20:00	Free						
20:00 -	Music Concert (Teatro Juárez)						

ECOS 2004	Thursday July 8						
08:00 - 17:00	Registration						
09:00 - 10:30	Plenary Session: Frederik Bok (ALSTOM) (Antillón)						
10:30 - 11:00	Coffee Break						
11:00 - 13:00	Fundamentals and Applications of Heat Integrated Distillation (Capilla)	Heat Management in Building Systems (Magnolias)	Energy Management Applications (Cata)	Heat Transfer Equipment Design Methodologies (Princesa)	Application of the 3 E's Model to Power Systems (Quijote)	Sustainable Development through the 3 E´s Model (Acacias)	Applied Exergy Methodology to Metallurgical Industry (Bugambilias)
13:00 - 14:30	Lunch (Valenciana)			IEA Process Integration / NAEWG Meeting (Valenciana)			
14:30 - 16:30	Combustion Systems (Capilla)	Exergoeconomics: Fundamentals and Applications (Magnolias)	Applied Fuel Cell Technologies Analysis (Cata)	Fundamentals of Process Simulation and Process Integration (Princesa)	Solar Energy Applications (Quijote)	Renewable Energy (Acacias)	Applied Exergy Methodology to Cogeneration Systems (Bugambilias)
16:30 - 17:00	Coffee Break						
17:00 - 19:00	Panel Discussion: Process Integration (Acacias)			Panel Discussion: Dynamics of Centralized versus Distributed Power Generation (Quijote)			
19:00 - 20:00	Free						
20:00 -	Callejoneada (Guanajuato Streets)						

ECOS 2004	Friday July 9						
08:00 - 09:00	Registration						
08:30 - 10:00	Plenary: John Panichella (GE) (Antillón)						
10:00 – 10:30	Coffee Break						
10:30 - 12:30	Advances in Separation Process (Capilla)	Applied Exergoeconomic to Multiple Energy Sources/Sinks (Magnolias)	Improvements in Turbine Systems (Cata)	Power Generation Systems (Princesa)	Process Modeling in Petroleum and Petrochemical Industries (Quijote)	Exergy Fundamentals Applied to Chemical Systems (Acacias)	Process Optimization (Bugambilias)
12:30 - 13:30 13:30 – 14:30	Commercial State of the Art Technologies (Acacias)				ENERGY Editorial Board Meeting (Truco) ECOS Scientific Committee Meeting (Magnolias)		
14:30 – 16:30	Closing Ceremony and Luncheon (Antillón)						

Wednesday
July 7

Plenary Session 1

Room: Antillón

9:00 – 10:30	**Thermodynamic Derivation of Reciprocal Relations** Elias Gyftopoulos (MIT)

Technical Session 1

Advanced Computer Applications

Room: Capilla
Session Chairman: Franz Zdravistch

11:00 - 11:30	**Flow Field Simulations of a Gas Turbine Combustor: Influence of N_2 Addition on NO_x Emissions** G. Urquiza and A. Mani
11:30 - 12:00	**Process and CFD Simulation of a Section of a Demonstration Plant Distillation Tower** R. Pulido, Yi Dai, L. Monroy and R. Rivero
12:00 - 12:30	**Numerical Study of the Solid Particle Erosion Rate in a Vapor Turbine Control Stage Stationary Blades** A. Campos-Amezcua, A. Gallegos-Muñoz, A. Romero, Z. Mazur-Czerwiec and R. Campos-Amezcua
12:30 - 13:00	**Large Eddy Simulation of a Flow Past a Square Cylinder** S. Ochoa and N. Fueyo

Advances in Internal Heat Integrated Distillation

Room: Magnolias
Session Chairman: Masaru Ishida

11:00 - 11:30	**Second Law Analysis of an Internal Heat-Integrated Distillation Column** A. Røsjorde, M. Nakaiwa, K. Huang, K. Iwakabe and S. Kjelstrup
11:30 - 12:00	**Conceptual Design of an Energy Efficient Propylene Splitter** Z. Olujic, L. Sun, A. de Rijke and P. J. Jansens
12:00 - 12:30	**Retrofitting Internal Heat Integration to a Distillation Column** C. Pritchard, T. Caldwell and W. Morton
12:30 - 13:00	**Optimal Allocation of Heat Exchanger Inventory in a Serial Type Diabatic Distillation Column** E. S. Jimenez, P. Salamon, R. Rivero, C. Rendón, K. H. Hoffmann

Advances in Air Conditioning Systems in Buildings

Room: Cata
Session Chairman: Christopher Heard

11:00 - 11:30	**Variable Speed Drives for Flow Control of Chilled Water Pumps in Central Air-conditioning Systems** S. N. Tay, M. Zaw and T. K. Ong
11:30 - 12:00	**Proposal of a New Air-Conditioning System by Combining Ice Thermal Storage and Absorption Refrigeration Technology** M.Ishida.and Y. Morimoto
12:00 - 12:30	**Case Study of Building Energy System's Optimizing Design Method in Hot Summer and Warm Winter Zone of China** G. Ye, B. Hua and W. Hu
12:30 - 13:00	**Recycled EPS (Expanded Polystyrene) from Food´s Packaging as a Thermal Isolation of Roofs** D. S. Medeiros and G. S. Marinho

Advances in Energy Management Methodologies

Room: Princesa
Session Chairman: Enrico Sciubba

11:00 – 11:30	**Modelling Local Energy Systems from a Multicriteria Perspective** M. Catrinu, B. H. Bakken and A. Holen
11:30 – 12:00	**An Iterative Dynamic Procedure for the Optimization of Thermal Power Plants Strategic Supply Offers in the Day-Ahead Electricity Market** C. Carraretto and A. Zigante
12:00 – 12:30	**Thermal Power Plants Strategic Management in the Day-Ahead Electricity Market. Interaction Among Competitive Producers** C. Carraretto and A. Zigante
12:30 – 13:00	**Methodological Aspects of the Definition of a 2 kW Society** P.A. Haldi and D. Favrat

Life Cycle Analysis

Room: Quijote
Session Chairman: René Cornellisen

11:00 – 11:30	**Life Cycle Assessment of Desalination Technologies versus the Ebro River Water Transfer** L. M. Serra, R. G. Raluy, J. Uche and A. Valero
11:30 – 12:00	**Life Cycle Energy Analysis for Bioethanol: Allocation Methods and Implications for Energy Efficiency and Renewability** J. Malça and F. Freire
12:00 – 12:30	**Life Cycle Pollution Exergy Assessment of Power Plant** Y. Yongkui, T. Zhonghua,C. Qinglin and H. Ben
12:30 – 13:00	**Exergy Losses from Atmospheric Emissions Produced by the Fuel Ethanol Life Cycle in Brazil** A. R. Ometto and W. N. L. Roma

Advances in Combustion: Gasification Processes

Room: Acacias
Session Chairman: Ramón Bolado

11:00 – 11:30	**The Development Status and Tendency of Coal Gasification Technology with Dry Coal Feed in China** Y. Ren, S. Xu and S. Gao
11:30 – 12:00	**Heat and Power Production Using Integrated Oxygen Blown Biomass Gasifier Prepared for Future Co-production of Transportation Fuels. Technical, Economic and Environmental Analysis** Å. Marbe and S. Harvey
12:00 – 12:30	**Generation of Synthesis Gas by Partial Oxidation of Natural Gas in a Gas Turbine** R. Cornelissen, E. Tober, J. Kok, T. van de Meer
12:30 – 13:00	**More Efficient Biomass Gasification Via Torrefaction** M. J. Prins, K J. Ptasinski and F. J. J. G. Janssen

New Power Generation Applications

Room: Bugambilias
Session Chairman: Frederik Bok

11:00 – 11:30	**Analysis of Experimental Power and Cooling Production in a Combined Power and Cooling Cycle** D. Martin and D. Y. Goswami
11:30 – 12:00	**Cogeneration of Hydrogen and Electrical Power in an Extended Chemical-looping Combustion** J. Wolf and J. Yan
12:00 – 12:30	**Energy Analysis of Technological Systems Of Gas And Gas-steam CHP Plants** B. Zaporowski
12:30 – 13:00	**Methanol and Ammonia Production by Tri-reforming of Flue Gases from Coal- and Gas-fired Power Stations** M. Halmann and A. Steinfeld

Applied Thermoeconomics to Power Systems

Room: Capilla
Session Chairman: Antonio Valero

14:30 – 15:00	**Analysis of a Repower Proposal to the Power Generation System of a Steel Mill Plant through the Exergetic Cost** M. Modesto, S. A. Nebra and T. Morimoto
15:00 – 15:30	**On the Choice of Accuracy Level in Thermoeconomic Diagnosis of Energy Systems** V. Verda
15:30 – 16:00	**Thermoeconomic Analysis of Figueira Thermal Power Plant** P. A. Vieira and J. A. Velásquez
16:00 – 16:30	**Development of Combined Cycle Power Plant Simulator** A. Jiménez and A. Sánchez

Fuel Cell Simulation

Room: Magnolias
Session Chairman: Signe Kjelstrup

14:30 – 15:00	**Simulation and Exergy Analysis of a Hybrid SOFC – Gas Turbine System. Part I and Part II** F. Calise, M. Dentice d'Accadia , A. Palombo, L. Vanoli
15:00 – 15:30	**A Review of Solid Oxide Fuel Cell Modeling** L. A. Solano, M. A. Rodríguez, R. Rivero and L. A. García
15:30 – 16:00	**Proton Exchange Membrane Fuel Cell Model for a Small Power Plant with Experimental Validation** M. Benetti and A. Lazzaretto

Application of the 3 E´s Model to Industrial Systems

Room: Cata
Session Chairman: Alain Legault

14:30 – 15:00	**Optimization of a Natural Gas Compression Station with the Exergy Methodology** R. Pulido, C. Pineda, C. Rendón, C. Heard and R. Rivero
15:00 – 15:30	**Exergy Analysis of a "CO_2 Zero Emission" High Efficiency Plant** A. Calabrò, G. Girardi, P. Fiorini and E. Sciubba
15:30 – 16:00	**Exergy Efficiency as a Measure of Environmental Impact of Energy Conversion Processes** C. H. Mora and S. de Oliveira Jr
16:00 – 16:30	**Evaluation of the Gaseous Emissions Environmental Global Impact of a Refinery Combustion Processes. Comparison of the Application of the Bubble Concept of a Global Versus a Grouped Detailed Analysis with Aid of the Exergy Methodology and Ecotaxes** R. Pulido, C. Pineda, G. Montero and R. Rivero

Fundamentals of Thermodynamics

Room: Princesa
Session Chairman: Dick Bedeaux

14:30 – 15:00	**The Universal Applicability of the Second Law of Thermodynamics** S. Zhou
15:00 – 15:30	**Application and Conceptual Review of Entropy** A. Beyene
15:30 – 16:00	**Thermodynamic Derivation of Reciprocal Relations** E. Gyftopoulos
16:00 – 16:30	**Energy Postulate and Generalized Expressions of Energy and Exergy** H. Guangze and H. Ben

Energy Recovery Improvements

Room: Quijote
Session Chairman: Andrzej Ziebik

14:30 – 15:00	**A General Strategy for the Optimum Design of Heat Recovery Steam Generators** A. Franco and N. Giannini
15:00 – 15:30	**Energy Recovery from Flare Stacks** S. Rego, P. Gogolek, D. Taylor and J. Thibault,
15:30 – 16:00	**Minimization of Entropy Generation in Stationary Heat Conduction in Anisotropic Solids** Z. Kolenda, J. Donizak , A. Holda and J. Escobedo-Bocardo
16:00 – 16:30	**Entropy Generation Minimization Analysis in a Fluidized Bed Heat Exchanger** A. A. B. Pécora, J. H. Sosa-Arnao and S. A. Nebra

CO_2 Emissions Management

Room: Acacias
Session Chairman: Peter Pujado

14:30 – 15:00	**The Reduction of CO_2 Emissions by Use of Groundwater for Cooling and Cold Storage** S. N. Sørensen and B. Qvale
15:00 – 15:30	**Fuel Saving and Carbon Dioxide Emission Avoidance by the Co-production of Iron and Syngas** M. Halmann and A. Steinfeld
15:30 – 16:00	**Development of CDM Project at CST** T. Morimoto, G. C. Abreu, A. R. Barbosa, O. J. Kimrse, C. H. Sampaio, A. A. Régio, R. da Cruz Jr, J. F. Pinho, M. A. Fujihara and C. H. Delpupo
16:00 – 16:30	**Oxygen Efficiency with Regards to Carbon Capture** S. Grönkvist, M. Bryngelsson and M. Westermark

Simulation of Heat and Power Systems

Room: Bugambilias
Session Chairman: Jaime Cervantes

14:30 – 15:00	**Modeling of Refrigeration Plants with Heat-Recovery System** J. Ilsøe, K. T. Kristensen, B. Elmegaard, and B. Qvale and H. Dalsgård
15:00 – 15:30	**Simulation Model of a Compact Circulating Fluidized Bed Boiler Including Internal and External Solids Circulation** D. Häggståhl, S. Weng, and L. Wester
15:30 – 16:00	**Energetic and Exergetic Simulation of AVV1 Power Plant** J. G. S. Fonseca Jr and P. S. Schneider
16:00 – 16:30	**Simulation and Optimisation of Thermal Power Stations by Use of Turabs** A. O. Johansen

Panel Discussion 1

Room: Acacias

17:00 – 19:00	Internal Heat Integrated Distillation

Thursday
July 8

Plenary Session 2

Room: Antillón

9:00 – 10:30	**"Energy Megatrends" (A volatile power Environment)** Frederik Bok (ALSTOM)

Technical Sessions 2

Fundamentals and Applications of Heat Integrated Distillation

Room: Capilla
Session Chairman: Daniel Tondeur

11:00 – 11:30	**Energy and Exergy Features of Internal Phenomena in a Distillation Column** A. Budiman and M. Ishida
11:30 – 12:00	**The Impact of Heat Transfer on Murphree Tray Efficiency** M. Kaeser and C. Pritchard
12:00 – 12:30	**Exergoeconomic Analysis of Diabatic Distillation in a TAME Process** M. García, C. Rendón and R. Rivero

Heat Management in Building Systems

Room: Magnolias
Session Chairman: Christopher Heard

11:00 – 11:30	**The Relative Competitive Positions of the Alternative Means for Domestic Heating** M. Sørensen, N Bahnsen and B. Qvale
11:30 – 12:00	**Integrated Design of Building Energy System with Increased Concurrency** W. Hu, H. Guo and B. Hua
12:00 – 12:30	**Proper Functioning of Domestic Hot Water Circulation in Residential Buildings** J. Wollerstrand and T. Persson
12:30 – 13:00	**Heat Losses from a Novel Type of District Heating Culvert** T. Persson and J. Wollerstrand

Energy Management Applications

Room: Cata
Session Chairman: Martín Picón

11:00 – 11:30	**Proposal of PEACE (Peaceful East-Asia Centered Electricity) Network for Stable Electricity Supply of East - Asia Region** M. Ishida, K. Takeshita,, T.Ohba, S. Lo, N. Kosugi, and S. Watanabe
11:30 – 12:00	**A Decomposition Strategy Based on Thermoeconomic Isolation Applied to the Optimal Synthesis/Design and Operation of an Advanced Tactical Aircraft System** D. F. Rancruel and M. R. von Spakovsky
12:00 – 12:30	**The Energy Dynamics by Fossil Fuels in the Mexico City Metropolitan Area, from 1988 to 2000** M. M. Nava, J. Gasca and U. González
12:30 – 13:00	**Bulk Energy Storage Potential in the USA, Current Developments & Future Prospects** S. van der Linden

Heat Transfer Equipment Design Methodologies

Room: Princesa
Session Chairman: Jaime Cervantes

11:00 – 11:30	**Design Space of Shell and Tube Heat Exchangers by an Improved Method** M. Serna-González,. J. M. Ponce-Ortega, A. J. Castro-Montoya and A. Jiménez-Gutiérrez
11:30 – 12:00	**Optimal Design of Shell and Tube Heat Exchangers Via Mathematical Programming** M. Serna-González, J. M. Ponce-Ortega, A. J. Castro-Montoya and A. Jiménez-Gutiérrez
12:00 – 12:30	**Economic Optimization of Fluid-Coupled Counterflow and Crossflow Heat Exchangers for Heat Recovery** P. Sarkomaa and J. Kaikko
12:30 – 13:00	**CFD Technology Applied to a Circulating Fluidized Bed Heater** Alstom

Application of the 3 E's Model to Power Systems

Room: Quijote
Session Chairman: Miguel A. Rodríguez

11:00 – 11:30	**Ecological Optimization for Complex Systems: Case of the Perugia University. Part A - Analysis of the Current Situation** L. Barelli and G. Bidini
11:30 – 12:00	**Ecological Optimization for Complex Systems: Case of the Perugia University. Part B – Design of the Optimized System** L. Barelli and G. Bidini
12:00 – 12:30	**Specific Energy Actions for Thermoelectric Power Plants Optimisation: Three Latin-American Pilot Cases** S. Scarpellini, L. M. Romeo and A. Valero
12:30 – 13:00	**Multi-Criteria Optimization of an Advanced Combined Cycle Power Plant Including CO2 Separation Options** H. Li, F. Maréchal, M. Burer and D. Favrat

Sustainable Development through the 3 E's Model

Room: Acacias
Session Chairman: Gerard Hirs

11:00 – 11:30	**Thermo economic Optimization and a Possible Criterion for Ecological Taxes** M. A. Barranco-Jiménez and F. Angulo-Brown
11:30 – 12:00	**Eco Taxes and their Impact in the Costs of Steam and Electric Energy Generated by a Gas Turbine System** G. Montero, R. Pulido, C. Pineda and R,. Rivero
12:00 – 12:30	**Analysis of the Energy Costs and Potential Saving in a Polymer Industry. Case Study and Methodology** A. Aranda, I. Zabalza, S. Scarpellini and A. Valero
12:30 – 13:00	**Oligomeric Chain Extenders for Economic Reprocessing and Recycling of Condensation Plastics** M. Villalobos, A. Awojulu, T. Greeley and G. Deeter

Applied Exergy Methodology to Metallurgical Industry

Room: Bugambilias
Session Chairman: Zigmunt Kolenda

11:00 – 11:30	**Repowering of Metallurgical CHP Plant Fired with Hard Coal and Low-calorific Fuel Gases** A. Ziębik and M. Warzyc
11:30 – 12:00	**An Economic Optimization of the Structure and Parameters of Combined Cycle CHP Fired with Corex Gas** M. Liszka and A. Ziębik
12:00 – 12:30	**A Comparison of the Indices of Cumulative Energy Consumption and Thermo-ecology of a Blast-furnace Process and COREX Process** A. Ziębik and W. Stanek
12:30 – 13:00	**Thermo-ecology Analysis of the Influence of Metallurgy upon the Depletion of Non-renewable Natural Resources** W. Stanek

Combustion Systems

Room: Capilla
Session Chairman: Ramón Bolado

14:30 – 15:00	**Limitations and Possibilities of Improving of IC Engines Operating Parameters** S. Postrzednik and Z. Zmudka
15:00 – 15:30	**Operation Aspects of Automotive Catalytic Converter Application** Z. Zmudka, S. Postrzednik and A. Ciesiolkiewicz
15:30 – 16:00	**Simulation of a CHP Plant Based on Diesel Engines Using the Aspen Plus Shell** M. Reini and R. Taccani
16:00 – 16:30	**Burner Modifications for the Control of Particulate Emissions in Thermoelectric Power Stations** M. Huerta, A. Mani-González, J. Espinoza, A. Méndez and C. A. Romo-Millares

Exergoeconomics: Fundamentals and Applications

Room: Magnolias
Session Chairman: Silvio de Oliveira

14:30 – 15:00	**Exergoeconomic in a Condenser** M. Amidpour and O. Hamidkhani
15:00 – 15:30	**Basics of a Microscopic Representation of the Exergy Cost Theory** V. Rangel, S. Uson, A. Valero. and C. Cortes
15:30 – 16:00	**An Overview of Methods for Splitting Physical Exergy** D. Paulus, G. Tsatsaronis and T. Morosuk
16:00 – 16:30	**The Application of Genetic Algorithms for the Thermoeconomic Optimization of Combined Cycle Gas Turbine Power Plants** M. D. Duran, A. Rovira de Antonio and M. Valdés

Applied Fuel Cell Technologies Analysis

Room: Cata
Session Chairman: Noam Lior

14:30 – 15:00	**Exergy Analysis of Integrated Fuel Processor and Fuel Cell System** E. R. Delsman, C. U. Uju, M. H. J. M. de Croon, J. C. Schouten and K. J. Ptasinski
15:00 – 15:30	**Operational Issues of Proton Exchange Membrane Fuel Cells at Residences for Combined Heat and Power** C. A. Massie, D. D. Massie and D. D. Boettner
15:30 – 16:00	**A Pinch and Exergy Analysis of the Configuration of a Stationary Polymer Electrolyte Fuel Cell System** C. Wallmark and P. Alvfors

Fundamentals of Process Simulation and Process Integration

Room: Princesa
Session Chairman: Colin Pritchard

14:30 – 15:00	**Network Pinch Analysis in PIECE, a Process Integration Program for North American Mobility in Higher Education** Z. Périn-Levasseur, M. A. Rodriguez-Toral, R. Rivero, J. Paris
15:00 – 15:30	**Usefulness of Unit Processes for Energy Comparison of Plants – Example from the Pharmaceutical Industry** S. Svensson and B. Moshfegh
15:30 – 16:00	**Seeking Synergy in Process Intensification: the Key Issue in Process Design and Operation** M. Nakaiwa, K Huang, K. Iwakabe, A. Endo, T. Ohmori, T. Yamamoto and A. Tsutsumi
16:00 – 16:30	**The Use of Microcontrollers for Control and Data Acquisition as an Alternative for Chemical Process Modeling, Using a Neural Network Paradigm for It's Programming** E. Vazquez-Zamora, A. Gómez-González, R. Mendoza-Serna and E. Loyo-Arnaud

Solar Energy Applications

Room: Quijote
Session Chairman: Bjørn Qvale

14:30 – 15:00	**Visible Light Assisted Hydrogen Production Using Undoped/Doped γ-Bi_2O_3 Semiconductor Powders** K. Gurunathan and S. Velumani
15:00 – 15:30	**Experimental Data on Solar - Powered Adsorption Refrigerator for Ice Production Using Activated Carbon-methanol Pair** A. P. F. Leite, M. B. Grilo, R. R. D. Andrade, F. A. Belo and F. Meunier
15:30 – 16:00	**Study of Forecasting Solar Irradiance Based on Neural Networks Combined with Wavelet Analysis** J. Cao, and S. Cao
16:00 – 16:30	**Environmental Assessment and Extended Exergy Analysis of a "Zero CO_2 Emission", High-efficiency Steam Power Plant** A. Corrado, P. Fiorini and E. Sciubba

Renewable Energy

Room: Acacias
Session Chairman: Daniel Favrat

14:30 – 15:00	**System Analysis of Hydrogen Production from Gasified Black Liquor** E. Andersson and S. Harvey
15:00 – 15:30	**Promoting Development of Renewable Energy Resources in Guangdong Province** Y. Yue, B. Hua and Z. Tian
15:30 – 16:00	**Reducing Greenhouse Effect from Waste Management System** A. Corti and L. Lombardi
16:00 – 16:30	**Wind Energy- improving Dynamics Performance through Advanced Control** N. W. Miller

Applied Exergy Methodology to Cogeneration Systems

Room: Bugambilias
Session Chairman: Vittorio Verda

14:30 – 15:00	**Thermodynamic and Exergetic Cost Analysis of Two Steam-based Cogeneration Schemes proposed for a Brazilian Sugar Mill**. M. G. Sánchez and S. A. Nebra
15:00 – 15:30	**Performance Optimization of Natural Gas and Sugar Cane Bagasse Based Cogeneration System** L. Zamboni, S. Oliveira Jr and A. Tribess
15:30 – 16:00	**Exergoeconomic Optimization of a Small-scale Cogeneration System Using the Exergetic Cost Theory** C. P. R. Rücker and E. Bazzo

Panel Discussion 2

Room: Acacias

17:00 – 19:00	Process Integration

Room: Quijote

17:00 – 19:00	Dynamic of Centralized versus Distributed Power Generation

Friday
July 9

Plenary Session 3

Room: Antillón

8:30 – 10:00	**Global Water Challenge** John Panichella (GE Infrastructure Americas)

Technical Sessions 3

Advances in Separation Process

Room: Capilla
Session Chairman: Peter Salamon

10:30 – 11:00	**Couette-Taylor Contactor for Radioactive Solutions Filtration** E. Dluska, G. Zakrzewska-Trznadel and S. Wroński
11:00 – 11:30	**Conventional Process or Reactive Distillation?: Naphtha hydrodesulfurization problem** A. D. Estrada-Villagrana, G.B. Quiroz-Sosa, M.L. Jiménez-Alarcón, L.O. Alemán-Vázquez and J.L. Cano-Domínguez
11:30 – 12:00	**Application of Exergy Analysis to Design of Multi-stage Process for Carbon Isotope Separation** K. Takeshita and M. Ishida
12:00 – 12:30	**Effect of Reflux Ratio in the Design of Azeotropic Distillation Columns** A. Jiménez and C. Gutiérrez

Applied Exergoeconomic to Multiple Energy Sources/Sinks

Room: Magnolias
Session Chairman: Enrico Sciubba

10:30 – 11:00	**Performance of the Dutch Energy Sector Based on Energy, Exergy and Extended Exergy Accounting** K. Ptasinski, M.N. Koymans and H.H.G. Verspagen
11:00 – 11:30	**Influence of the Climate and the Reference Conditions on the Thermoeconomic Analysis of a Small Scale CHP Plant** J. A. Matelli, E. Bazzo and N. R. de Moura
11:30 – 12:00	**Auxiliary Equations for the Determination of Specific Exergy Values** D. Paulus and G. Tsatsaronis

Improvements in Turbine Systems

Room: Cata
Session Chairman: Bjørn Qvale

10:30 – 11:00	**High Fogging Systems: Advantages and Drawbacks of Cold and Hot Water Injection** D. Klaesson, M. Assadi, S. Savic and F. Ferrari
11:00 – 11:30	**Power Generation through Recovery of Natural Gas Pressure Loss and Waste Heat Energy of Steam Power Plant in Expansion Turbine** H. Sadeghi, H. Fouladi and H. A. Kazemi
11:30 – 12:00	**An Evaluation of the Thermodynamic Potential of High-pressure Part-flow Evaporative Gas Turbine Cycles** M. A. Bartlett and M. O. Westermark

Power Generation Systems

Room: Princesa
Session Chairman: Christopher Heard

10:30 – 11:00	**How to Design Water Treatment for Success in your Power Plant** L. Carvalho
11:00 – 11:30	**Cogeneration Concepts for Highest Operational Flexibility** K. Brühlmann, K. Iffländer and J.F. Bok
11:30 – 12:00	**Analysis of a Combined Power and Refrigeration Cycle by the Exergy Method** A. Vidal, R. Best, R. Rivero and J. Cervantes
12:00 – 12:30	**The Effect of Cool Storage on Operation Strategy of Cogeneration System** Z. Zuo and B. Hua

Process Modeling in Petroleum and Petrochemical Industries

Room: Quijote
Session Chairman: Jules Thibault

10:30 – 11:00	**Device to Separate Solid-liquid-gas Mixtures** R. Nicolas, V. Casariego, N. Estévez, L. A. Ortiz and M. G. García
11:00 – 11:30	**Kinetic Modeling for Thermal and Hydrothermal Cracking of Maya Crude Oil** M. L. Jiménez-Alarcón, J. A. González-Herrera, L. Alemán, G. Quiroz-Sosa, F. Silva-Sánchez and J. L. Cano-Domínguez
11:30 – 12:00	**Heat Transfer in a Twin-screw Multiphase Pump: Thermal Modeling and one Application in the Petroleum Industry** C. Y. Nakashima, S. de Oliveira Jr and E. F. Caetano
12:00 – 12:30	**Energy Reduction in Water Cooling Networks through the Minimisation of Water Flow Rate. A Case Study** M. Picón-Núñez, C. Nila-Gasca and A. Gallegos-Muñoz

Exergy Fundamentals Applied to Chemical Systems

Room: Acacias
Session Chairman: George Tsatsaronis

10:30 – 11:00	**Standard Chemical Exergy Updated. Part I and Part II.** R. Rivero and M. Garfias
11:00 – 11:30	**A New Approach to Energy-utilization Diagrams (EUDs) for Evaluation of Energy or Chemical Systems** M. Ishida, T. Ohba
11:30 – 12:00	**The Relation of Transfer and Interconversions between Different Forms of Exergy in Electromagnetic Fluids** S. P. Wang, Q. L. Chen and B. Hua
12:00 – 12:30	**The Unified Benchmark Evaluating the Thermodynamic Performance of Energy Utilization Systems** S. Zhou

Process Optimization

Room: Bugambilias
Session Chairman: Peter Salamon

10:30 – 11:00	**Optimizing the Integrated Design of Boilers - Simulation** K. Sørensen, C. M. S. Karstensen, T. Condra and N. Houbak
11:00 – 11:30	**Optimizing Design and Operation of Boilers with Respect to Dynamic Performance** K. Sørensen, T. Condra and N. Houbak
11:30 – 12:00	**Batch Process Optimization by Managing Interactions Between Output Products** F. Aubé and S. Millette
12:00 – 12:30	**On Thermodynamic Optimization of Oxidative Phosphorylation** L. A. Arias-Hernández, R. T. Páez-Hernández and F. Angulo-Brown

Commercial State of the Art Technologies

Room: Acacias
Session Chairman: Martín Picón

12:30 – 13:10	GE
13:10 -13:50	ALSTOM
13:50 – 14:30	Fluent