

# VENICE 2010

## Third International Symposium on Energy from Biomass and Waste

8-11 November 2010

Fondazione Cini, Venice Italy

*Organized by:*

IWWG, International Waste Working Group

*With the scientific support of:*

Technical University of Dresden (DE)

University of Queensland (AU)

University of Padua (IT)

University of Hokkaido (JP)

University of Rockstock (DE)

R3C, Nanyang Technological University, Singapore (SG)

University of Trento (IT)

*Promoted by:*

BBE, German BioEnergy Association, DE

AEBIOM, European Biomass Association, EU

JSMCWM, Japan Society of Material Cycles and Waste Management, JP

IWMSA, Institute of Waste Management South Africa, ZA

WMAA, Waste Management Association of Australia, AU

AMADES-Morocco, Moroccan Association of Solid Waste, MA

## PRESENTATION

The production of energy from alternative sources and its impact on climate change are among the main strategic tools implicated in the sustainable development of our society. Numerous types of biomass and wastes contribute towards the production of energy and reduction in the use of fossil fuels by means of biological, chemical and thermal processes. Existing biomass and waste to energy technologies are currently undergoing rapid development. Despite growing interest in the use of these technologies, in many countries their implementation remains limited.

The aim of the Venice 2010 Symposium is to focus on the advances made in the application of technologies for energy recovery from biomass and waste and to encourage discussion in these fields. The previous edition of the Symposium, held in 2008, was attended by 600 scientists and operators from 60 different countries.

The third edition of the Symposium will last four days and will include oral sessions, a poster session, a small exhibition by companies working in the field and technical tours.

The Symposium is organized by the International Waste Working Group (IWWG) with the scientific support of the Universities of Dresden, Hokkaido, Padua, Rostock and Singapore.

The IWWG ([www.iwwg.eu](http://www.iwwg.eu)) is a registered not-for-profit organisation aiming to provide an intellectual platform to encourage and support integrated and sustainable waste management and to promote practical scientific development in the field. The group was conceived in 2002 as a think tank, whose work would be based on scientific principles oriented towards practical application. The IWWG is structured in such a way as to allow it to focus on a range of subjects, to react promptly to problems in the field and to communicate efficiently within the professional community. The official journal of IWWG, *Waste Management*, published by Elsevier, has the highest impact factor in the field. Among the activities of IWWG is the organization of the world-renowned Sardinia Symposium (further information on the website [www.sardiniasymposium.it](http://www.sardiniasymposium.it)).

## **THE SYMPOSIUM STRUCTURE**

The Symposium will last four days (three days of scientific sessions and one day for technical tours) and will include oral sessions, a poster session and a small exhibition by companies working in the field and technical tours. The official language of the Symposium will be English.

The Symposium is organised in seven parallel sessions for oral presentations. Each session contains four or five papers. The sub-topics follow a few overall subjects: combustion, anaerobic digestion, biomass to energy, alternative thermal treatments, strategies and policies, other WTE options. During the Symposium one of the sessions will be dedicated to presentations in Italian. Two round tables will be organised: one at the end of the Italian sessions, another (plenary) as a closure of the Symposium. Poster session will always be accessible.

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## Conference Venue and Location

Venice 2010 will be held in Venice in the prestigious setting of the Fondazione Cini on the island of San Giorgio Maggiore (in front of St. Mark's Square). Detailed information on the location of the venue is available from the Symposium website.

Continuously updated information will be also available on the Web site: <http://www.venicesymposium.it>

For further information please contact the e-mail address:  
[\*\*eurowaste@tin.it\*\*](mailto:eurowaste@tin.it)



## DAILY PROGRAMME

### OPENING SESSION

- 8.30 - 10.00 Registration  
10.00 - 10.30 Introduction and welcome address

### SESSION A1

#### **RDF - Production and Characterisation**

11.30 - 11.50

*G. Rettenberger (DE)*

Zero Waste Processes using biological treatment - Examples from several plants in Germany

11.50 - 12.10

*R. Silva, J.M. Novais and S. Martins-Dias (PT)*

RDF biogenic content assesement and interfering materials

12.10 - 12.30

*D. Schingnitz and G. Hoffmann (DE)*

Development of a rapid test for Refuse Derived Fuels

12.30 - 12.50

*P. Beraud and J.P. Rodrigues (PT)*

Integrated Processes for Sludge and RDF recovery - Portuguese Strategy

12.50 -13.10 Discussion

13.10 - 14.30 Lunch

### SESSION B1

#### **AD - Basic Process and Modelling**

11.30 - 11.50

*M. Milke and N. Qamaruz-Zaman (NZ)*

Similarity of first-order rate constants for methane from food wastes in batch and continuous feed systems

11.50 - 12.10

*S.M. Carver, R. Lepistö and O.H. Tuovinen (FI)*

Hydrolysis and metabolism of cellulose by an anaerobic, thermophilic consortium

12.10 - 12.30

*E. Ericson, J. Lindmark, E. Thorin and J. Yan (SE)*

A simplified model for anaerobic digestion of solid waste using real data from a full-scale biogas plant

12.30 - 12.50

*N. Beierlein, K. Golkowska and M. Greger (LU)*

Modelling thermophilic anaerobic digestion of maize silaged

12.50 - 13.10 Discussion

13.10 - 14.30 Lunch

SESSION C1

**Biomass properties for thermal conversion to energy**

11.30 - 11.50

*B. Engler, R. Dietenberger, S. Schönherr, Z. Zhong and G. Becker (DE)*

Suitability of bamboo as an energy resource: Analysis of bamboo calorific value in dependency on the culms age

11.50 - 12.10

*A. García-Maraver, M. Zamorano, A. Ramos-Ridao and L.F. Díaz (ES)*

Thermogravimetric analysis in oxidative environment and chemical composition of olive trees waste

12.10 - 12.30

*V.A.J. Rodrigues, C.M. Silva, A.C. Carneiro, A.A.P. Rezende, L.S. Santos and G.A. Ikawa (BR)*

The use of pulp mill solid wastes for energy production

12.30 - 12.50

*S.R. Teixeira, A.F.V. Peña and R.G. Lima (BR)*

Use of residues from industrial carbonized sugarcane bagasse to produce charcoal briquette

12.50 - 13.10

Discussion

13.10 - 14.30

Lunch

SESSION D1

**Alternative treatment of plastic waste**

11.30 - 11.45

*A. Lopez, I. De Marco, B.M. Caballero and A. Adrados (ES)*

Deactivation and regeneration of HZSM-5 zeolite in catalytic pyrolysis of plastic wastes

11.45 - 12.00

*M.L. Mastellone, D. Santoro, L. Zaccariello and U. Arena (IT)*

The effect of oxygen-enriched air on the fluidized bed co-gasification of coal, plastic and wood

12.00 - 12.15

*U. Arena, F. Di Gregorio, C. Amorese and M.L. Mastellone (IT)*

A techno-economic comparison of fluidized bed gasification of two mixed plastic wastes

12.15 - 12.30

*S. Mehmood, A. Khaliq and S.A. Ranjha (DE)*

The use of post consumer plastic waste for the production of wood plastic composites: A Review

12.30 - 12.45

*M.R. Jan, J. Shah and H. Gulab (PK)*

Catalytic degradation of waste high-density polyethylene into fuel products using BaCO<sub>3</sub> as a catalyst

12.45 - 13.10

Discussion

13.10 - 14.30

Lunch

SESSION E1

**General Strategies in waste management**

**11.30 - 11.50**

*C. Spreafico, S. Bonvino, A. Casula, R. Cossu, F. Simion and A. Vivona (IT)*

Alternative thermal treatments of the unrecycled residues from source segregation of plastics: Environmental and Economic Assessment

**11.50 - 12.10**

*G. Ionescu, A. Badea, M. Ragazzi, C. Marculescu, R. Dal Maschio, T. Apostol, M. Ischia and E.C. Rada (IT)*

Scenarios for valorization of packing waste

**12.10 - 12.30**

*W. Farias, S. Machado Santos and D. Gusmão (BR)*

The environmental ICMS as supporting tool for Pernambuco state solid waste policy: Progress and Prospects

**12.30 - 12.50**

*E. Carvalho, M. Nunes and D. Alves (PT)*

Assessment of municipal waste operators' performance in Portugal since 2004

**12.50 - 13.10**            Discussion

**13.10 - 14.30**            Lunch

SESSION F1

**Biogas treatment and upgrading**

**11.30 - 11.50**

*U. Gayb, A. Stooss, J. Bebrendt and R. Otterpohl (DE)*

Desulphurisation of biogas - Analysis, Evaluation and Optimisation

**11.50 - 12.10**

*M. Crest, C. Chottier, L. Fine, V. Chatain, G. Ducom, J.M. Chovelon and P. Germain (FR)*

On the reliability of sampling and analytical methods to quantify volatile organo silicon compounds (VOSIC) contents in landfill gas

**12.10 - 12.30**

*E. Savamoto, S. Himeno and S. Fujita (JP)*

Development of biogas upgrading process using the DDR-Type Zeolite Membrane

**12.30 - 12.50**

*M. J. Castaldi, M. Kohn and J. Lee (US)*

Greenhouse gas catalytic reforming for landfill gas to energy technologies

**12.50 - 13.10**            Discussion

**13.10 - 14.30**            Lunch

SESSION G1 - *Italian only*

**AD of organic fraction of MSW**

**11.30 - 11.50**

*F. Di Maria, A. Sordi and C. Micale (IT)*

MSW organic fraction solid state anaerobic digestion and bioreactor landfill combined waste to energy system: The Umbria region case study

**11.50 - 12.10**

*M.C. Zanetti, D. Novarino, M. Acri and G. Gilli (IT)*

Anaerobic digestion of OFMSWs prepared with two different mechanical pretreatments

**12.10 - 12.30**

*W. Giacetti, R. Venturi, L. Betelli and C. Garaffa (IT)*

Intensive source separation of residential organic waste and efficient anaerobic digestion: The case of study of ETRA S.P.A.

**12.30 - 12.50**

*L. Tuccinardi, M.R. Boni and S.Sbaffoni (IT)*

Metal effect on fermentative hydrogen production from organic waste

**12.50 - 13.10**

Discussion

**13.10 - 14.30**

Lunch





SESSION A2

**RDF - Utilisation**

**14.30 - 14.50**

*L. Di Matteo (DE)*

State of the art technologies for the handling of RDF and biomass

**14.50 - 15.10**

*A. Bosmans and L. Helsen (BE)*

Energy from waste: Review of thermochemical technologies for Refuse Derived Fuel (RDF) treatment

**15.10 - 15.30**

*G. Hoffmann (DE)*

Characterisation and incineration of shredded light fraction in a stationary fluidised bed part 2: Incineration

**15.30 - 15.50**

*M. Grosso, L. Rigamonti, S. Paoli and G. Teardo (IT)*

Co-combustion of RDF in a coal fired power plant: An evaluation using the Life Cycle Approach

**15.50 - 16.10**

Discussion

**16.10 - 16.40**

Coffee Break

SESSION A3

**RDF - Environmental Aspects**

**16.40 - 17.00**

*K. Haker, K. Kuchta and J. Krüger (DE)*

Conception of a refuse derived fuel (RDF) incineration plant

**17.00 - 17.20**

*S. Rocca, G. Costa and F. Lombardi (IT)*

Composition and environmental properties of RDF gasification and grate-fired incineration bottom ash

**17.20 - 17.40**

*M. Gori, L. Pifferi and P. Sirini (IT)*

Characteristics and treatment options of residues from RDF high-temperature gasification plants

**17.40 - 18.00**

*E. C. Rada, M. Ragazzi and D. Antolini (IT)*

A new approach for the assessment of emissions factors from biological processes applied to waste

**18.00 - 18.20**

Discussion

SESSION B2

**AD - Process Optimisation and Control I**

**14.30 - 14.45**

*F. Lu, L.P. Hao, L.M. Shao, T. Bouchez and P.J. He (CN)*

Release from acid crisis by shifting methanogenesis pathway under thermophilic anaerobic digestion

**14.45 - 15.00**

*K. L. Kovács, Z. Bagi, N. Ács, E. Kovács and G. Rákabély (HU)*

Improvement of biogas production by biotechnological manipulation of the microbial population

**15.00 - 15.15**

*C. Gonçalves, M. Alves and I. Belo (PT)*

A perspective for OMW valorization through integration of lipase production fermentation and anaerobic digestion

**15.15 - 15.30**

*D. Traversi, R. Degan, E. Lorenzi and G. Gilli (IT)*

Real-time qPCR method to study methanogen communities during wet anaerobic co-digestion of organic wastes

**15.30 - 15.45**

*I.D.B. Oliveira, M. Lageiro, S. Di Bernardino, J. Gominho and E. Duarte (PT)*

Pre-treatment experiments for the use of *Cynara Cardunculus* L. as a substrate for the production of biogas

**15.45 - 16.10**

Discussion

**16.10 - 16.40**

Coffee Break

SESSION B3

**AD - Process Optimisation and Control II**

**16.40 - 17.00**

*T. I. Mohd Ghazi, I. Muhammad Nasir, R. Omar and A. Idris (MY)*

Comparison study between regulated and unregulated of pH in anaerobic digestion of cattle Manure for biogas production

**17.00 - 17.20**

*E. Nordell, S. Hallin, M. Johansson and M. Karlsson (SE)*

The diverse responses on degradation rate of different substrates upon addition of zeolites

**17.20 - 17.40**

*E. Massi, C. Matano, R. Ciccoli, C. Alisi, V. Cigolotti, G. De Gioannis, S.J. Mcphail, A. Muntoni, A. Poletini, R. Pomi, A.R. Sprocati, F. Tasso and A. Moreno (IT)*

Energetic assessment of agricultural residues anaerobic digestion integrated with biogas utilization in fuel cells

**17.40 - 18.00**

*A. Abbassi-Guendouz, E. Trably, C. Dumas, J. Hamelin, J.P. Delgenes, J.P. Steyer and R. Escudie (FR)*

Influence of total solid concentration on anaerobic digestion: from wet to dry technology

**18.00 - 18.20**

Discussion

SESSION C2

**Potential energy generation from crops**

14.30 - 14.50

*I. Librenti, E. Ceotto and M. Di Candilo (IT)*

Biomass characteristics and energy contents of dedicated lignocellulosic crops

14.50 - 15.10

*S. Kalembasa and B. Wisniewska (PL)*

Yielding and nitrogen, phosphorus and potassium content in biomass of Virginia fanpetals (*Sida Hermaphrodita* Rusby) as an effect of varied mineral nutrition in a field experiment

15.10 - 15.30

*D. Kalembasa and E. Malinowska (PL)*

The influence of mineral fertilization on the yield of *Miscanthus* grass, the content of nitrogen, phosphorus, potassium as well as the energetic value

15.30 - 15.50

*M. Negri, P. Baggio, A. Boschetti, M. Scotoni, B. Palubicki, G. Lazzari, J. Sandak, A. Sandak, M. Fellin, E. Pieratti, D. Antolini and J. Ognibeni (IT)*

BIQUEEN - Biomasses Quality for efficient energy production: Wooden biomasses origin, solid and volatile pollutants, efficient combustion for energy production

15.50 - 16.10            Discussion

16.10 - 16.40            Coffee Break

SESSION C3

**Assessment of lignocellulosic of biomass for energy source**

16.40 - 17.00

*A. Sandak, J. Sandak and M. Negri (IT)*

Potential of mid and near infrared spectroscopy for geographical origin recognition of forest based biomasses

17.00 - 17.20

*C.M. Silva, R.M.P. Farage, A.A.P. Rezende, A.C.O. Carneiro and W.G. Nunes (BR)*

The use of wooden residues for energy production in a brazilian industrial furniture stave

17.20 - 17.40

*T. Karjalainen and Y. Gerasimov (FI)*

Energy wood resources in northwest Russia

17.40 - 18.00

*F.M. Yamaji, W. Chrisostomo, L. Vendrasco and W.P. Flores (BR)*

The use of forest residues for pellets and briquettes production in Brazil

18.00 - 18.20            Discussion

SESSION D2

**Gasification technologies comparison**

14.30 - 14.50

*S. Consonni and F. Viganò (IT)*

Comparative analysis of waste gasification technologies

14.50 - 15.10

*L. Lombardi, E. Carnevale, T. Olivieri and A. Corti (IT)*

Comparison of traditional and innovative technologies for energy recovery from waste

15.10 - 15.30

*G. Genon, R. Durante and E. Brizio (IT)*

Environmental performances and energy efficiency: A comparison between incineration and pyrolysis/gasification technologies for MSW treatment

15.30 - 15.50

*A. Karagiannidis, S. Antonopoulos and L. Elefsinotis (GR)*

A new multi-stage gasification scheme for decentralized Waste-To-Energy options

15.50 - 16.10

Discussion

16.10 - 16.40

Coffee Break

SESSION D3

**Pyrolysis of biomass**

16.40 - 17.55

*M. Parveen, M.R. Islam and H. Haniu (BD)*

Characterizations of two agricultural wastes in Bangladesh as potential sources of energy: Possible use of pyrolysis technology

17.55 - 17.10

*N. Sellin, O. Souza, S.H.W. Medeiros and R.K.S. Afuso (BR)*

Characterization of banana culture wastes as a potential energy source

17.10 - 17.25

*K. Pstrowska, J. Walendziewski and M. Stolarski (PL)*

Rapeseed oil cake pyrolysis - Influence of temperature process on yield and products properties

17.25 - 17.40

*R. Omar, A. Idris, R. Yunus and K. Khalid (MY)*

Microwave absorber addition in microwave pyrolysis of oil palm empty fruit bunch

17.40 - 17.55

*C. Sethuraman, K. Srinivas, A. Gnanamani and G. Sekaran (IN)*

Energy recovery during disposal of chromium and refractory organics impregnated proteinaceous solid leather waste

17.55 - 18.20

Discussion

SESSION E2

**National Strategies in Thermal Waste Treatment**

**14.30 - 14.50**

*J. De Greef, T. Casteels, R. De Proft and K. Villani (BE)*

On the alternative supply of heat and power to energy-intensive industries with waste & RDF – Two exemplary cases from Sweden and the UK

**14.50 - 15.10**

*C. Wünsch, M. Hoffmann, B. Bilitewski and J. Jäger (DE)*

CO<sub>2</sub>-Potential for prevention and avoidance costs of German Waste To Energy plants by improvement in energy efficiency

**15.10 - 15.30**

*A. Mentzias, A. Karkazis, N. Gargoulas, S. Skoulaxinou and N. Kyhtreotou (GR)*

The possibility of energy recovery from specific waste streams in Cyprus

**15.30 - 15.50**

*E. Hamatschek, S. Binder and M. Faulstich (DE)*

Current practice of municipal solid waste management in Turkey: Framework for Waste-To-Energy implementation

**15.50 - 16.10** Discussion

**16.10 - 16.40** Coffee Break

SESSION E3

**National Strategies in Bioresources to Energy**

**16.40 - 17.00**

*F. Kraxner, J. Yang, K. Aoki and Y. Yamagata (AT)*

Public opinion on bioenergy – Eco-Model cities' new strategies for reaching a low-carbon society in Japan

**17.00 - 17.20**

*S. Abboud and S. Rabbar (CA)*

Potential for producing renewable natural gas from Canadian wastes

**17.20 - 17.40**

*A. Zentner, A. Schnapke and B. Bilitewski (DE)*

Thermal application of biowaste in Germany

**17.40 - 18.00**

*T. Rydberg, M. Belhaj, M. Lindblad, Å. Sjödin and C. Wolf (SE)*

The role of bio-gas in a fossil-free transportation sector by 2030: The case of Sweden

**18.00 - 18.20** Discussion

SESSION F2

**Biogas - Hydrogen Production I**

**14.30 - 14.50**

*L. Alibardi, A. Boscolo Bomba and R. Cossu (IT)*

Biological hydrogen production from single fractions of organic waste

**14.50 - 15.10**

*G. Cappai, G. De Gioannis, G. Giordano, A. Muntoni, A. Pantano, A. Polettini and R. Pomi (IT)*

Assesment through batch tests of hydrogen production from mixtures of biodegradable residues

**15.10 - 15.30**

*J.H. Chen, K.S. Wang, D.H. Vu, T.C. Chu and C.C. Wang (TW)*

Hydrogen production characteristics by thermophilic anaerobic solid state fermentation process within the wastes

**15.30 - 15.50**

*M. Canul-Chan, E. Salgado-Manjarres, J. Aranda-Barradas and E.I. Garcia-Peña (MX)*

Hydrogen and electricity production from the organic fraction of solid waste

**15.50 - 16.10**

Discussion

**16.10 - 16.40**

Coffee Break

SESSION F3

**Biogas - Hydrogen production II**

**16.40 - 16.55**

*V. Trevisan and L.O. Monteggia (BR)*

Effect of temperature and pH on hydrogen and VFA production from swine waste

**16.55 - 17.10**

*L. Tuccinardi, M.R. Boni and S.Sbaffoni (IT)*

Metal effect on fermentative hydrogen production from organic waste

**17.10 - 17.25**

*E.I. Garcia-Peña, R. Aizpuru-Castro, E. Salgado-Manjarres, J. Aranda-Barradas and S. Carrillo-Tellez (MX)*

Metabolic flux analysis in hydrogen production by *Clostridium* sp. and *Enterobacter* sp.

**17.25 - 17.40**

*I. Ntaikou, S. Senkevich, E. Koutros, M. Kornaros and G. Lyberatos (GR)*  
On the exploitation of lignocellulosic biomass for biohydrogen production using the bacterium *Ruminococcus albus*

**17.40 - 17.55**

*H. Sawamura, T. Nakamura, A. Inoue, Y. Yamamoto, T. Naruoka and T. Ishigaki (JP)*

Application of inoculums on hydrogen fermentation for wide variety of wet biomass waste

**17.55 - 18.20**

Discussion

SESSION G2 - *Italian only*

**AD of wastewater**

**14.30 - 14.50**

*E. Massi, C. Matano, R. Ciccoli, C. Alisi, V. Cigolotti, G. De Gioannis, S.J.Mcphail, A. Muntoni, A. Polettini, R. Pomi, A.R. Sprocati, F. Tasso and A. Moreno (IT)*

Energetic assessment of agricultural residues anaerobic digestion integrated with biogas utilization in fuel cells

**14.50 - 15.10**

*E. Massi, K. Andreocci, R. Ciccoli, A. Polettini, R. Pomi, A. Moreno and A. Ventura (IT)*

Anaerobic codigestion of swine slurry and organic fraction of municipal solid waste: Effects on hydrogen and methane production

**15.10 - 15.30**

*A. Siciliano, M.A. Stillitano and S. De Rosa (IT)*

Yields of biogas production by means of anaerobic treatment of residues of olive oil manufacture

**15.30 - 15.50**

*F. Moedinger, F. Ast, M. Saiani, M. Ragazzzi, P. Foladori, E. Rada and R. Binnig (IT)*

Novel biogas continuous cascade fermentation system

**15.50 - 16.10** Discussion

**16.10 - 16.40** Coffee Break

SESSION G3 - *Italian only*

**Termochemical processes for energy production**

**16.40 - 16.55**

*G. Genon, R. Durante and E. Brizio (IT)*

Environmental performances and energy efficiency: A comparison between incineration and pyrolysis/gasification technologies for MSW treatment

**16.55 - 17.10**

*M. Aiello, D. Bacchi, A. Bellini, M. Puccini, M. Seggiani, S. Vitolo (IT)*

Sewage sludge gasification in a pilot scale plant

**17.10 - 17.25**

*G. Genon, V. Tedesco and P. Urso (IT)*

Assessment of the feasibility of an innovative technology plant aimed at the energetic valorization of municipal waste in the Province of Turin

**17.25 - 17.40**

*M. Grosso, L. Rigamonti, S. Paoli and G. Teardo (IT)*

Co-combustion of RDF in a coal fired power plant: An evaluation using the life cycle approach

**17.40 - 17.55**

*G. Ruoppolo, P. Ammendola, R. Chirone and F. Miccio (IT)*

H<sub>2</sub> rich syngas production by fluidized bed gasification of biomass and plastic fuel

**17.55 - 18.20** Discussion

SESSION A4

**Optimisation of WTE plants**

9.00 - 9.20

*S. Andersson, J. Froitzheim, E. Larsson and J. Pettersson (SE)*

Sulphur recirculation for increased electricity production in MSWI

9.20 - 9.40

*K. Villani and J. De Greef (BE)*

Exploiting the Low-Temperature end of WTE-boilers

9.40 - 10.00

*P. Vainikka, J. Silvennoinen, R. Taipale, C. Van Alphen, A. Moilanen, R. Falcon, P. Yrjas and M. Hupa (FI)*

Next generation waste incineration with the aid of simultaneous dry gas scrubbing during circulating fluidised bed combustion?

10.00 - 10.20

*F. Le Gleau, S. Caillat, E. Perdrix, L. Gasnot, D. Gambier and J.-F. Pauwels (FR)*

Comparative study of flue gas dry desulphurisation and SCR systems in a industrial hazardous waste incinerator

10.20 - 10.40            Discussion

10.40 - 11.00           Coffee break

11.00 - 11.30           Poster presentation

SESSION A5

**Combustion performance of alternative fuels**

11.30 - 11.45

*M.J. Murer, H. Spliethoff, R. Dräger, A. Seitz and O. Goblke (DE)*

Exergetic analysis of heat transfer and efficiency in EFW plant

11.45 - 12.00

*M. Barkhi, M. Tabatabaei, M. Hasheminejad, K. Khoshnevisan, D. Zare, A. Sulaiman, M.A. Hassan, S. Pourmand and Y. Shirai (IR)*

An overview on the effects of nanocatalysts on the combustion performance of biodiesel

12.00 - 12.15

*S. Rocca, E. Lategano and F. Lombardi (IT)*

Evaluation and comparison of the energy efficiency of different waste thermal treatment plants

12.15 - 12.30

*M. Ragazzi, L. Paternoster, E. C. Rada, M. Venturi and M. Maistro (IT)*

Nitrogen oxides from different waste to energy facilities and other sources

12.30 - 12.45

*C. Yu, Q. Wang, M. Fang and Z. Luo (CN)*

The exploration and demonstration of high-alkali biomass circulating fluidized bed combustion technology

12.45 - 13.10           Discussion

13.10 - 14.30           Lunch



SESSION B4

**AD - Process Optimisation and Control III**

**9.00 - 9.15**

*A. Noo, C. Adam, F. Mayer, C. Guignard, L. Hoffmann, P. Delfosse (LU)*  
Monitoring volatile fatty acids production during mesophilic anaerobic digestion exposed to increasing feeding rates

**9.15 - 9.30**

*G. Adam, R. Neyrinck, S. Lemaigre, P. Delfosse and J. Nicolas (BE)*  
Potential of the electronic nose as a tool for the detection of disturbances in anaerobic digestion processes

**9.30 - 9.45**

*F. Haugen, W. Bergland, R. Bakke and B. Lie (NO)*  
H<sub>2</sub> concentration control of an experimental anaerob gas reactor

**9.45 - 10.00**

*M. Altinbas, D.I. Cifci, O.A. Arikian and I. Ozturk (TR)*  
Increasing biomethane potential of waste activated sludge by food waste under mesophilic and thermophilic conditions

**10.00 - 10.15**

*F. Moedinger, F. Ast, M. Saiani, P. Foladori, E. Rada and R. Binnig (IT)*  
Novel biogas continuous cascade fermentation system

**10.15 - 10.40** Discussion

**10.40 - 11.00** Coffee Break

**11.00 - 11.30** Poster presentation

SESSION B5

**AD – Chemical/Physical Pretreatment**

**11.30 - 11.45**

*G. Eliasson (SE)*  
Pre-treatment and digestion of separate collected household waste

**11.45 - 12.00**

*M.C. Zanetti, D. Novarino, M. Acri and G. Gilli (IT)*  
Anaerobic digestion of OFMSWs prepared with two different mechanical pretreatments

**12.00 - 12.15**

*E. Marañón, Y. Fernández-Nava, L. Castrillón, M.T. Pereiro, M.A. Morís, L. Gómez, L.L. García and C. Millán (ES)*  
Effect of ultrasound pre-treatment on food waste solubilization and anaerobic biodegradability

**12.15 - 12.30**

*M. Sezun, R. Marinsek-Logar and V. Grilic (SI)*  
Anaerobic digestion of mechanically and chemically pre-treated lignocellulosic substrate

**12.30 - 12.45**

*M. Vinot, C.A. Perez, P. Tur and A. Maíllo (ES)*  
Improvements in anaerobic digestion units and in pre-treatments performed beforehand

**12.45 - 13.10** Discussion

**13.10 - 14.30** Lunch

SESSION C4

**Biofuels in Developing Countries**

**9.00 - 9.15**

*U. Bagampadde, H. Kalibbala, J. Kinobe, R. Kulabako, C. Nivagaba, M. Ottaviani, R. Pomi and G. Colonna Preti (UG)*

Integrating composting and anaerobic digestion of organic wastes in the tropics: A Community case in Kakiri, Kampala (Uganda)

**9:15 – 9:30**

*V. Torretta, C.M. Quintella, E.A. Torres and G. Urbini (IT)*

Sustainable biofuels for rural areas of developing countries

**9.30 - 9.45**

*C. Collivignarelli, A. Mazzù, M. Vaccari and F. Vitali (IT)*

Comparison of biomass stoves as appropriate technologies for household energy in developing countries

**9.45 - 10.00**

*M. Ragazzi, D. Avesani and E.C. Rada (IT)*

Integrated decentralised anaerobic digestion in DC's

**10.00 - 10.15**

*H.S. Jim, D.L.W. Shen, S.E. Kiat, F.Y.S. Yon, C.W. Hong, Tvn. Padmesh (MY)*

Domestic biogas plants as alternative sources of cooking gas

**10.15 - 10.40** Discussion

**10.40 - 11.00** Coffee Break

**11.00 - 11.30** Poster presentation

SESSION C5

**Production and extraction of biomass for energy production**

**11.30 - 11.45**

*S.H. Shuit, K.T. Lee and A.H. Kamaruddin (MY)*

Reactive extraction for production of biodiesel from *Jatropha Curcas* L. seed using ethanol as alcohol source

**11.45 - 12.00**

*A. Boldrin and T. Astrup (DK)*

Improved recovery of residues and by-products for increasing sustainability of rapeseed-based biodiesel production

**12.00 - 12.15**

*M. Mazzocchi, G. Pongiglione, A. Carrea and E. Arato (IT)*

Effective local solutions for extraction and energy-exploitation of palm oil

**12.15 - 12.30**

*H.A. Van der Sloot and A. Van Zomeren (NL)*

Combination of pH dependence test and geochemical speciation modelling as alternative to sequential chemical extraction for biomass, biomass ash, sediments, soil and waste

**12.30 - 12.45**

*R. Gori, G. Munz, C. Lubello, D. Daddi, N. Biondi and M. Tredici (IT)*

Energy demand and economic evaluation of solid-liquid separation systems used for harvesting and concentration of cultivated microalgae

**12.45 - 13.10** Discussion

**13.10 - 14.30** Lunch

SESSION D4

**Gasification of biomass**

9.00 - 9.20

*M.J. Castaldi and H. Butterman (US)*

Solid carbon (biomass and MSW) to fuels using CO<sub>2</sub>

9.20 - 9.40

*S. Yusup, A. Aminudin, M.T. Azizhan, S.S. Abdullah, K.M. Sabil (MY)*

Improvement of rice husk and coconut shell properties for enhancement of gasification

9.40 - 10.00

*C. Ludwig, M. Wellinger, M. Brandenberger, R.P.W.J. Struis, F. Vogel and O. Kröcher (CH)*

Online quantification of inorganic material flows in biomass processing

10.00 - 10.20

*C.G. Soni, A.K. Dalai, A. Tavasoli and T. Fonstad (CA)*

Gasification of wheat dry distiller's grains using oxygen and steam as gasifying agents in a fixed bed reactor system

10.20 - 10.40 Discussion

10.40 - 11.00 Coffee Break

11.00 - 11.30 Poster presentation

SESSION D5

**Biomass gasification processes**

11.30 - 11.45

*K. Magrini-Bair, W. Jablonski, M. Yung and Y. Parent (US)*

Impact of biomass derived syngas conditioning on Ni/Al<sub>2</sub>O<sub>3</sub> reforming catalyst composition and performance

11.45 - 12.00

*D. Sweeney, B. Christensen and K. Whitty (US)*

Primary methods for reducing tar content in syngas produced from pilot scale fluidized bed biomass gasification

12.00 - 12.15

*T. Tanaka, K. Ichikawa, M. Otaka, T. Shoji and T. Matsui (JP)*

Development of Biomass Carbonizing Gasifier – The results of gasification characteristics and tar formation

12.15 - 12.30

*G. Ruoppolo, P. Ammendola, R. Chirone and F. Miccio (IT)*

H<sub>2</sub> rich syngas production by fluidized bed gasification of biomass and plastic fuel

12.30 - 12.45

*S. Fleck, P. Fertl and T. Kolb (DE)*

Conversion of model fuel in an entrained flow gasifier – Influence of gasification conditions on the syngas quality

12.45 - 13.10 Discussion

13.10 - 14.30 Lunch

## SESSION E4

### Global warming issues in waste management

9.00 - 9.15

*U. Hasanudin, E. Suroso, M. Faisal, H. Kamahara and K. Fijie (ID)*

The potential of palm oil mill waste as a source of energy and green house gases emission reduction

9.15 - 9.30

*R. Baciocchi, G. Costa, L. Lombardi and D. Zingaretti (IT)*

Storage of carbon dioxide captured in a pilot-scale biogas upgrading plant by accelerated carbonation of industrial residues

9.30 - 9.45

*A. Massagué, A. Åkerman, M. Martín and X. Aldea (ES)*

Assessing and reducing the carbon footprint of wastewater treatment plants: Biogas valorisation in boilers and cogeneration engines

9.45 - 10.00

*D. Rosso, R. Gori and C. Lubello (IT)*

Carbon footprint and energy footprint of activated sludge wastewater treatment plants

10.00 - 10.15

*M. Ritzkowski (DE)*

New CDM-methodology for Landfill Aeration

10.15 - 10.40 Discussion

10.40 - 11.00 Coffee Break

11.00 - 11.30 Poster presentation

## SESSION E5

### Role of WTE in global warming

11.30 - 11.45

*M. Kranert, D. Clauss, M. Berechet and N. Escalante (DE)*

Evaluation of waste management systems regarding the balance of carbon dioxide and costs

11.45 - 12.00

*A. W. Larsen and T. Astrup (DK)*

Variation of CO<sub>2</sub> emission factors for incineration of household waste

12.00 - 12.15

*K. Kuchta and M. Tafel (DE)*

Study on the potential of commercial and industrial waste management to contribute to the climate protection goals of the city of Hamburg

12.15 - 12.30

*Tb. Dorn, M. Nelles, J.M. Cai and S. Flamme (DE)*

Burning away - Can waste disposal technology transfer lead to a smaller Chinese Carbon Footprint?

12.30 - 12.45

*D. Tonini and T. Astrup (DK)*

Global Warming Potential of a waste refinery using enzymatic treatment

12.45 - 13.10 Discussion

13.10 - 14.30 Lunch

SESSION F4

**Energy potential of different biomass and waste I**

9.00 - 9.20

*S. Leduc, E. Wetterlund and E. Dotzauer (AT)*

Biofuel production in Europe - Potential from lignocellulosic waste

9.20 - 9.40

*A. Schüch, N. Engler, B. Lüdecke, F. Höfs and M. Nelles (DE)*

Potentialities and limits of the anaerobic digestion of Municipal Solid Waste in an agrarian region in Germany

9.40 - 10.00

*X. Gao, W. Wang, Y. Zhou, W. Qia, Y. Sun and Y. Zhang (CN)*

Perspective of bioenergy recovery from municipal biomass waste in megacities of China

10.00 - 10.20

*H. Adwiraab, I. Koerner and S. Oldenburg (DE)*

Biomass potential from urban areas for energy generation – Biomass inventory for the Hamburg city district Bergedorf

10.20 - 10.40 Discussion

10.40 - 11.00 Coffee Break

11.00 - 11.30 Poster presentation

SESSION F5

**Energy potential of different biomass and waste II**

11.30 - 11.50

*S. Ledakowicz, A. Kacprzak and L. Krzystek (PL)*

General characteristics and biochemical methane potentials (BMP) of various energy crops grown in Poland

11.50 - 12.10

*G. Andreottola, S. Ciuta, A. Badea, M. Ragazzi, T. Apostol, E. C. Rada and M. Zandonai (IT)*

Energetic potential analysis of romanian winery industry wastes

12.10 - 12.30

*J. Havukainen, V. Uusitalo, K. Zavaraukas, G. Denafas and M. Horttanainen (FI)*

Potential for vehicle fuels from biodegradable waste in Lithuania

12.30 - 12.50

*A. Schnapke, A. Zentner and B. Bilitewski (DE)*

Alternative utilization of biowaste

12.50 - 13.10 Discussion

13.10 - 14.30 Lunch

SESSION G4 - *Italian only*

**Health and environmental impacts: Biomass**

9.00 - 9.15

*S. Rivilli, N. Pettarin and R. Smidar (IT)*

Numerical predictive evaluation of pollutant dispersion, case study: a waste-to-energy plant working with poultry droppings

9.15 - 9.30

*F. Valerio (IT)*

Environmental and health impacts of Solid Bio-fuels

9.30 - 9.45

*E.C. Rada, E. Mallocci and M. Ragazzzi (IT)*

Levoglucosan as a tracer of wood combustion: An experience

9.45 - 10.00

*M. Ragazzzi, L. Paternoster, E.C. Rada, M. Venturi and M. Maistro (IT)*

Nitrogen oxides from different waste to energy facilities and other sources

10.00 - 10.15

*R. Fontana, D. Fatutto and C. Del Piccolo (IT)*

Landfill leachate treatment plant with active sludge biological treatment, reverse osmosis membranes and concentration through MVR evaporators. Case study Mavrorachi landfill (GR)

10.15 - 10.40

Discussion

10.40 - 11.00

Coffee Break

11.00 - 11.30

Poster presentation

SESSION G5 - *Italian only*

**Health and environmental impacts: Waste**

11.30 - 11.45

*T. Zarra, V. Naddeo, S. Giuliani and V. Belgiorno (IT)*

Odour impact assessment from sanitary environmental engineering plants

11.45 - 12.00

*G. Buonanno, L. Stabile, P. Vigo, P. Avino and P. Massarini (IT)*

On the characterization of ultrafine particles emitted by a Waste-To-Energy plant

12.00 - 12.15

*A. Scipioni, A. Mazzi, M. Niero and M. Savegnago (IT)*

Environmental risk assessment as a decision support tool in MSW incineration

12.15 - 12.30

*R. Baciocchi, G. Costa, L. Lombardi and D. Zingaretti (IT)*

Storage of carbon dioxide captured in a pilot-scale biogas upgrading plant by accelerated carbonation of industrial residues

12.30 - 12.45

*G. Nardin, P. Simeoni, and A. Mattiussi (IT)*

Energy production from poultry manure: Prototypal plant sizing

12.45 - 13.10

Discussion

13.10 - 14.30

Lunch

SESSION A6

**Fuel gas emissions from WTE plants and other sources**

14.30 - 14.45

*T. Vollmeier and A. Castorini (CH)*

Use of a high-tech flue gas treatment system in Waste To Energy plants for the environment protection

14.45 - 15.00

*S. Cernuschi, M. Giugliano, S. Ozgen and S. Consonni (IT)*

Ultrafine particles in flue gas from four WTE plants

15.00 - 15.15

*T. Zarra, V. Naddeo, S. Giuliani and V. Belgiorno (IT)*

Odour impact assessment from Sanitary Environmental Engineering Plants

15.15 - 15.30

*G. Angelucci, W. Tirlor, M., Donegà and W. Bedin (IT)*

Ultrafine particle emissions from MSW incineration and domestic sources

15.30 - 15.45

*F. Valerio (IT)*

Environmental and health impacts of solid bio-fuels

15.45 - 16.10

Discussion

16.10 - 16.40

Coffee Break

SESSION A7

**Emissions from WTE plants**

16.40 - 17.00

*N. Corna and G. Bertulesi (IT)*

The use of oxygen in biomass and Waste-To-Energy plants: A flexible and effective tool for emission and process control

17.00 - 17.20

*F. Bertocchi and F. Meini (IT)*

The SOLVAL® Process: An integrated solution for the flue gas cleaning and the recovery of residues

17.20 - 17.40

*A. Wobleben, E. Gartner and O. Goblke (DE)*

Reducing the primary NO<sub>x</sub> emissions and improving the efficiency of energy from waste plants by means of internal flue gas recirculation

17.40 - 18.00

*C. Riber, T. Hulgaard and D.L. Bann (DK)*

Investigation of increased incinerator SO<sub>2</sub> emission when incinerating temporary stored waste

18.00 - 18.20

Discussion

SESSION B6

**AD – Thermal Pretreatment**

**14.30 - 14.50**

*X. Liu, W. Wang, Z. Deng, Z. Xia, L. Wang and X.H. Guo (CN)*

Effect of thermal hydrolysis pretreatment on organic components composition of Municipal Biomass Waste

**14.50 - 15.10**

*W. Wang, H. Hou, L. Zheng, R. Xun, H. Chen, W.J. Feng, Y. Zhou (CN)*

A pilot-scale study of Municipal Biomass Waste anaerobic digestion with thermal hydrolysis pre-treatment

**15.10 - 15.30**

*G. Antonopoulou, M. Alexandropoulou and G. Lyberatos (GR)*

The effect of thermal, chemical and enzymatic pretreatment on saccharification and methane generation from sunflower straws

**15.30 - 15.50**

*L. Appels, B. Nys, J. Lauwers, J. Van Impe, J. Degreève and R. Dewil (BE)*

Thermal hydrolysis as a pre-treatment for enhancing the anaerobic digestion of waste activated sludge: Influence of sludge characteristics on digestibility

**15.50 - 16.10**

Discussion

**16.10 - 16.40**

Coffee Break

SESSION B7

**AD of different Biomass I**

**16.40 - 17.00**

*J. Lin, J. Zuo, F. Liu and K. Wang (CN)*

Bioenergy recovery from fruit and vegetable waste by anaerobic digestion

**17.00 - 17.20**

*A. Davidsson, A. Bernstad and B. Edner (SE)*

Property close source-separation of fat, oils and grease (fog) from households - Experiences from a swedish full scale experiment

**17.20 - 17.40**

*Å. Davidsson, A. Bernstad, H. Aspegren and J. La Cour Jansen (SE)*

Assessment of biogas production from source-separated fat, oils and grease (FOG) from households

**17.40 - 18.00**

*C. Dornack and B. Bilitewski (DE)*

Digestion of waste milk

**18.00 - 18.20**

Discussion



SESSION C6

**Biodiesel Production I**

**14.30 - 14.45**

*M.A. Kalam and H.H. Masjuki (MY)*

Experimental study on Jatropha-Palm diesel blends as alternative fuels

**14.45 - 15.00**

*H. Kuramochi, K. Maeda, M. Osako, M. Toba and Y. Yoshimura (JP)*

Characterization of trap grease and development of upgrading technology for producing second-generation biodiesel fuel

**15.00 - 15.15**

*M. Xiao, R. Intan and J.P. Obbard (SG)*

Biodiesel production from microalgae oil-lipid feedstock via immobilized whole-cell biocatalysis

**15.15 - 15.30**

*S. Peres, M.A.P. Palba, A. Schuler and V. Amorim (BR)*

The sustainable abattoir – The use of abattoirs residues to produce biodiesel, biogas, biomass and biofertilizer

**15.30 - 15.45**

*L. Umans and K. Briffaerts (BE)*

Comparative Life Cycle Analysis for rendered fat from Category III materials and recycled used edible fats and oils: material recovery or thermal valorisation

**15.45 - 16.10**

Discussion

**16.10 - 16.40**

Coffee Break

SESSION C7

**Biodiesel Production II**

**16.40 - 17.00**

*R. Navia, L. Azocar, G. Ciudad, C. Toro, M. Cea and R. Muñoz (CL)*

Novel alternative catalysts for biodiesel production

**17.00 - 17.20**

*N. Caetano, L. Vilela and T. Mata (PT)*

Biodiesel production from fish oil with high acidity

**17.20 - 17.40**

*M. Tabatabaei, M. Hasheminejad, Y. Mansourpanah, M. Khatamifar and M. Barkhi (IR)*

Glycerin ultra purification; A key to economize biodiesel production

**17.40 - 18.00**

*M. Ikura (CA)*

Vapour phase esterification of free fatty acids using superacids

**18.00 - 18.20**

Discussion

SESSION D6

**Thermal conversion of lignocellulosic biomass**

**14.30 - 14.50**

*E.C. Rada, E. Mallocci and M. Ragazzzi (IT)*

Levoglucosan as a tracer of wood combustion: An experience

**14.50 - 15.10**

*E. Pieratti, D. Antolini, P. Baggio and M. Negri (IT)*

Wood combustion process: Characterization of gaseous and particulate emissions of different parts of a spruce tree by means of a gasfying wood stove

**15.10 - 15.30**

*P. Molcan, S. Caillat, F. Le Gleau, E. Perdrix, J.-X. Morin and G. Gerard (FR)*

Numerical simulation of woodchips combustion in 25 MW spreader stoker boiler

**15.30 - 15.50**

*T. Panne, A. Widenborn and M. Aigner (DE)*

Numerical prediction of wood gasification using a modified equilibrium model

**15.50 - 16.10**

Discussion

**16.10 - 16.40**

Coffee Break

SESSION D7

**Thermal conversion to energy of livestock waste**

**16.40 - 17.00**

*G. Nardin, P. Simeoni and A. Mattiussi (IT)*

Energy production from poultry manure: Prototypal plant sizing

**17.00 - 17.20**

*K. Lesz, G. Eorsi-Tota and L. Tieghi (HU)*

Technical feasibility of poultry manure combustion in Hungary

**17.20 - 17.40**

*A.P. Rosa, G.C.B. Melo, W.L. Santos And A.F. Torres (BR)*

Energetic, environmental and climate feasibility of ruminal content use as biofuel

**17.40 - 18.00**

*S. K. Tyni, M. S. Tianinen, and R. S. Laitinen (FI)*

Leaching of horse manure and bedding material ash

**18.00 - 18.20**

Discussion

SESSION E6

**Economy and Business Opportunities**

14.30 - 14.45

*B. Bilitewski and V. Grundmann (DE)*

Risk-based management of chemicals and products in a circular economy at a global scale

14.45 - 15.00

*F. Romagnoli, I. Džene, A. Barisa, D. Blumberga, A. Blumberga, P. Davidsen and E. Moxnes (LV)*

The use of system dynamics approach for assessing the impacts of policy measures and strategies on wood energy market development in Latvia

15.00 - 15.15

*R. Goldstein and A. Singleton (US)*

A highlight of demonstration projects, tools and resources available from the methane to markets partnership

15.15 - 15.30

*M. Bette, A. Bisso, F. Grasso and P. Marino (DE)*

Integrated biomass to energy chain an overview of technology alternatives for industrial applications

15.30 - 15.45

*P. Dorvil (LU)*

Public Private Finance in Waste Management: the EIB perspective

15.45 - 16.10

Discussion

16.10 - 16.40

Coffee Break

SESSION E7

**Characterisation of Urban Waste**

16.40 - 17.00

*G. Denafas, K. Zavaraukas, D. Martuzevicius, L. Vitkauskaitė, Ch. Ludwig, M. Hoffman, S. Shmarin, V. Mykhalenko, A. Chuson, M. Romanov, E. Negulyaeva, Y. Lednova, Ts. Turkadze, I. Booboidze, B. Butskbrikidze, A. Karagiannidis, J. Antonopoulos, M. Kriipsalu and M. Horttanainen (LT)*

Seasonal aspects of Municipal Solid Waste generation and composition in east-european countries with respect to waste management system development

17.00 - 17.20

*G. Hoffmann (DE)*

Characterisation and Incineration of Shredded Light Fraction in a Stationary Fluidised Bed Part 1: Characterisation

17.20 - 17.40

*I.-S. Antonopoulos, A. Karagiannidis and E. Kalogirou (GR)*

Estimation of Municipal Solid Waste heating value in Greece in the frame of formulating appropriate scenarios on waste treatment

17.40 - 18.00

*I. Vanderreydt and L. Umans (BE)*

Comparison of methods to determine the biomass fraction of waste streams

18.00 - 18.20

Discussion

SESSION F6

**AD – Digestate treatment and utilisation**

**14.30 - 14.50**

*W. Fuchs, F. Wäger, R. Kirchmayr, R. Braun and B. Drosig (AT)*

Digestate treatment: Comparison and assessment of existing technologies

**14.50 - 15.10**

*L. Alibardi (IT)*

Stabilization of digestates from wet and dry anaerobic digestion

**15.10 - 15.30**

*M. Haberbauer and V. Kastner (AT)*

Using aquatic plants for digestate treatment and fermentation of aquatic plants to biogas

**15.30 - 15.50**

*A. Weinbappel, C. Leonhardt, M. Gansberger, A. Brandstetter, E. Pfundtner and P. Liebhard (AT)*

Examination of the distribution risks of selected plant diseases, weeds and plant propagules by digestate of biogas plants

**15.50 - 16.10** Discussion

**16.10 - 16.40** Coffee Break

SESSION F7

**Energy recovery from automotive residues**

**16.40 - 17.00**

*G. Mancini, P. Viotti, L. Lombardi and R. Tamma (IT)*

Thermal process of fluff: Results from a full scale treatment plant experimental campaign

**17.00 - 17.20**

*A. Santini, L. Morselli, F. Passarini, I. Vassura, D. Serrano and J. Doufour (IT)*

Pyrolysis of floated auto shredder residue fractions

**17.20 - 17.40**

*B. Ruffino, S. Fiore and M.C. Zanetti (IT)*

A pre-treatment test for the thermal valorization of asr light fraction

**17.40 - 18.00**

*M.R. Islam, M. Parveen and H. Haniu (BD)*

Feasibility study for thermal treatment of soild tire wastes in Bangladesh by using fixed bed firte tube heating pyrolysis technology

**18.00 - 18.20** Discussion

SESSION G6 - *Italian only*

**Energy Strategies**

**14.30 - 14.45**

*M. Bette, A. Bisso, F. Grasso and P. Marino (DE)*

Integrated biomass to energy chain an overview of technology alternatives for industrial applications

**14.45 - 15.00**

*D. Panepinto and G. Genon (IT)*

Biomass thermal treatment: Energetic recovery and environmental compatibility

**15.00 - 15.15**

*R. Gori, G. Munz, C. Lubello, D. Daddi, N. Biondi and M. Tredici (IT)*

Energy demand and economic evaluation of solid-liquid separation systems used for harvesting and concentration of cultivated microalgae

**15.15 - 15.30**

*I. Librenti, E. Ceotto and M. Di Candilo (IT)*

Biomass characteristics and energy contents of dedicated lignocellulosic crops

**15.30 - 15.45**

*B. Ruffino, S. Fiore and M.C. Zanetti (IT)*

A pre-treatment test for the thermal valorization of ASR light fraction

**15.45 - 16.10**            Discussion

**16.10 - 16.40**            Coffee Break

SESSION G7 - *Italian only*

**Round table**

**14.30 - 18.20**            Discussion



## SESSION A8

### Slag and Ashes from WTE plants

9.00 - 9.20

*A. Karagiannidis, P. Samaras, E. Kalogirou, N. Themelis and ST. Kontogianni (GR)*

An inventory of characteristics and treatment processes for fly ash from Waste-To-Energy facilities for Municipal Solid Wastes

9.20 - 9.40

*T. Marzi, R. Bertling, M. Kubl and W. Auel (DE)*

Bottom ashes from RDF power plants: Investigations of the quality and the aging behaviour

9.40 - 10.00

*T. Sekito, Y. Dote, K. Onoue, T. Nakazawa, K. Nakamura, T. Morishita, S. Tomiyama and H. Sakanakura (JP)*

Variation and correlation of contents and leachability of metals in MSW Molten slag

10.00 - 10.20

*A. Ilyas, M. Badshah, M.V. Praagh and K.M. Persson (SE)*

Evaluation of H<sub>2</sub> gas production from MSWI bottom ash

10.20 - 10.40

Discussion

10.40 - 11.00

Coffee Break

11.00 - 11.30

Poster presentation

## SESSION A9

### Biomass Ash - Characterisation and Utilisation

11.30 - 11.50

*M. Berra, M. Dell'Orso, T. Mangialardi, A.E. Paolini and L. Piga (IT)*

Chemical and environmental characterization of fly ash from woody biomass combustion

11.50 - 12.10

*H. Vanhanen, O. Dahl and R. Strömmer (FI)*

Sustainable use of wood ashes

12.10 - 12.30

*M. Zamorano, D. Rodríguez-Pedrosa, A. García-Maraver and L.F. Díaz (ES)*

Thermal gravimetric study of biomass ash from the combustion of pellets in domestic heating

12.30 - 12.50

*C. W. Purnomo, C. Salim and H. Hinode (JP)*

Solid acid catalyst preparation from begasse fly ash based activated carbon

12.50 - 13.10

Discussion

13.10 - 14.30

Lunch

SESSION B8

**AD of different Biomass II**

**9.00 - 9.15**

*M. Kubaskà, S. Sedla'cek and I. Bodík (SK)*

Studying of usage of biodegradable substrates for biogas production

**9.15 - 9.30**

*F. Andreola, L. Barbieri, A. Berloni, C. Caramiello, I. Lancellotti, G. Mangani, F. Rigbi, F. Tatàno and R. Taurino (IT)*

Anaerobic digestion of selected agricultural and industrial residues: lab-scale system, comparative tests and digestate characterisation

**9.30 - 9.45**

*T. Mahmood and A. Elliott (CA)*

Energy from pulp and paper waste

**9.45 - 10.00**

*O. Pakarinen, S. Bayr, T. Paavola, E. Mäntylä, P. Kaparaju, J. Rintala (FI)*

Methane and hydrogen production of pulp and paper industry primary sludges

**10.00 - 10.15**

*L. Gomez, M.M. Garcia, C. Millan, E. Marañon, L. Castrillon and Y. Fernandez-Nava (ES)*

Methodology to determine the reduction of greenhouse gas emissions from manure co-digestion systems

**10.15 - 10.40**

Discussion

**10.40 - 11.00**

Coffee Break

**11.00 - 11.30**

Poster presentation

SESSION B9

**AD - Co-Digestion I**

**11.30 - 11.50**

*D. Obandja, E. Iacovidou, B. Bajželj, J. Gronow, N. Voulvoulis (GB)*

Co-Digestion of organic wastes in the UK: where are we?

**11.50 - 12.10**

*E. Massi, K. Andreocci, R. Ciccoli, A. Polettini, R. Pomi, A. Moreno and A. Ventura (IT)*

Anaerobic codigestion of swine slurry and organic fraction of municipal solid waste: Effects on hydrogen and methane production

**12.10 - 12.30**

*L. Ferreira, E. Duarte and D. Figueiredo (PT)*

Utilization of wasted sardine oil as co-substrate with pig manure for biogas production - A pilot experience of decentralized industrial organic waste management in a Portuguese pig farm

**12.30 - 12.50**

*A.B. Díaz, I. De Ory, A. Blandino and I. Caro (ES)*

Evaluating a mix of agroindustrial wastes (grape pomace and orange peels) using solid state fermentation for the production of enzymes complexes useful for the hydrolysis of the lignocellulosic biomass

**12.50 - 13.10**

Discussion

**13.10 - 14.30**

Lunch

## SESSION C8

### Bioethanol production from different matrices I

9.00 - 9.15

*C.Y. Gan, A.A. Latiff and K.T. Lee (MY)*

A simultaneous processing of natural product and bioethanol as zero-waste management of lignocellulosic biomass

9.15 - 9.30

*E. Betiku and O.S. Alade (NG)*

Media evaluation for bioethanol production from cassava starch hydrolysate using *Saccharomyces cerevisiae*

9.30 - 9.45

*A. Arshanita, G. Telysheva, T. Dizhbite, I. Barmina and M. Zake (LV)*

Pelletizing process of non-hydrolyzed residues from wheat straw ethanol production and fuel characteristics of pellets obtained

9.45 - 10.00

*J. Ross, V. Ongaro, A. Lanot, D. Vaughan and S. Mcqueen-Mason (UK)*

Establishment of a waste to bioethanol demonstration facility

10.00 - 10.15

*J.-Y. Wang, W. Qi and R. Stegmann (SG)*

Optimization of microbial conversion of lignocellulosic waste to reducing sugars

10.15 - 10.40

Discussion

10.40 - 11.00

Coffee Break

11.00 - 11.30

Poster presentation

## SESSION C9

### Bioethanol production from different matrices II

11.30 - 11.50

*T. Llano, C. Rueda, A. Blanco, A. Andrès and A. Coz (ES)*

Design of a laboratory for the study of the digestion of hardwood chips in order to obtain pulp and sugars for bioethanol production

11.50 - 12.10

*S.S. Vieira, M.M. Marques, T.M. Mata and N.S. Caetano (PT)*

Bio-ethanol production from municipal waste compost

12.10 - 12.30

*B. Rabimian Zarif, M. Azin and M. Gholami (IR)*

Effect of UV radiation on native Strain of *Saccharomyces Cerevisiae* for increasing the Bioethanol Yield and resistance to the Furfural

12.30 - 12.50

*A. Dallos and A. Kondor (HU)*

Bioethanol and biogas production from Jerusalem Artichoke by consecutive processing

12.50 - 13.10

Discussion

13.10 - 14.30

Lunch



SESSION D8

**AD - Concepts and Balances**

9.00 - 9.15

*C. Dornack (DE)*

Accounting of biogas systems - An example of nitrogen and sulphur

9.15 - 9.30

*C. Neiva Correia, F. Vaz, A. Torres and C. Dinis De Sousa (PT)*

General mass and energy balance of a biodegradable waste anaerobic digestion plant in the Lisbon area

9.30 - 9.45

*R. Waltenberger, T. Proell, M. Ortner, A. Schumergruber, R. Kirchmayr, R. Braun and G. Bochmann (AT)*

Energy self-sufficient food processing factories

9.45 - 10.00

*T. Takahashi, N. Osaka, H. Hosono and T. Hasegawa (JP)*

Development of an urban biomass energy system by dry anaerobic digestion system in Japan

10.00 - 10.15

*C. Li, P. Champagne and B.C. Anderson (CA)*

Evaluation of municipal organic waste biogas production potential in anaerobic digestion processes

10.15 - 10.40 Discussion

10.40 - 11.00 Coffee Break

11.00 - 11.30 Poster presentation

SESSION D9

**AD - Case Studies**

11.30 - 11.50

*W. Giacetti, R. Venturi, L. Betelli and C. Garaffa (IT)*

Intensive source separation of residential organic waste and efficient anaerobic digestion: The case of study of ETRA S.P.A.

11.50 - 12.10

*F. Di Maria, A. Sordi and C. Micale (IT)*

MSW organic fraction solid state anaerobic digestion and bioreactor landfill combined Waste To Energy system: the Umbria Region case study

12.10 - 12.30

*C. C. Barrau, S. Lecoq and P. Khairallah (FR)*

Bio methane and hydrogen production for valorisation of biogas from a bioreactor: Projects underway in the Tarn department in France

12.30 - 12.50

*V. Pignatelli, V. Alfano, A. Correnti and A. Farneti (IT)*

An innovative project for the production of biogas by co-digestion of the OFMSW and topinambur at the landfill of Cupinoro (Bracciano, RM)

12.50 - 13.10 Discussion

13.10 - 14.30 Lunch

## SESSION E8

### Decision Tools

9.00 - 9.15

*A. Scipioni, A. Mazzi, M. Niero and M. Savegnago (IT)*

Environmental risk assessment as a decision support tool in MSW incineration

9.15 - 9.30

*M. Luoranen and M. Horttanainen (FI)*

MEFLO – decision AID method for transparent assessment of regional waste management systems

9.30 - 9.45

*C. Mahler, A. Schueler and S. Loureiro (BR)*

Value analysis and fuzzy logic applied to the study of waste energy use

9.45 - 10.00

*I. Džene, F. Romagnoli, A. Barisa, D. Blumberga, A. Blumberga, P. Davidsen and E. Moxnes (LV)*

Building-up a system dynamics model for transforming the Latvian energy market in environmentally sound direction

10.00 - 10.15

*D. S. Kosson, A. Garrabrants, F. Sanchez, P. Kariber, S. Thorneloe, M. Baldwin, G. Helms, H. A. van der Sloot, P. Seignette and O. Hjelmar (US)*

Development and implementation of the leaching environmental assesment framework (leaf) in the United States

10.15 - 10.40 Discussion

10.40 - 11.00 Coffee Break

11.00 - 11.30 Poster presentation

## SESSION E9

### LCA

11.30 - 11.50

*S. Kay and N. Cantborne (UK)*

Using life cycle assessment as a decision making tool

11.50 - 12.10

*T. Astrup and T. Fruergaard (DK)*

Life-cycle assessment (LCA) of Waste-To-Energy technologies

12.10 - 12.30

*R. W. Smith, S. M. Daniels and A. Azapagic (UK)*

The global warming potential of a modern Municipal Solid Waste incinerator co-generating heat and power

12.30 - 12.50

*C. Patel, P. Lettieri and A. Germanà (UK)*

Life Cycle Assessment of forestry waste wood, solid recovered fuel and rapeseed oil combustion plants for the production of energy

12.50 - 13.10 Discussion

13.10 - 14.30 Lunch

SESSION F8

**Innovative WTE technologies**

9.00 - 9.20

*M. Markovic, E. Bramer and G. Brem (NL)*

Reversed combustion of waste on a grate

9.20 - 9.40

*S. Morrin, P. Lettieri, L. Mazzei and C. Chapman (UK)*

Assessment of fluid bed + plasma gasification for energy conversion from solid waste

9.40 - 10.00

*A. Grimshaw and A. Lago (GB)*

Small scale Energos gasification technology

10.00 - 10.20

*D. Mainero, E. Montoneri, V. Boffa and C. Montoneri (IT)*

From compost to chemicals, new perspective from organic fraction treatment

10.20 - 10.40

Discussion

10.40 - 11.00

Coffee Break

11.00 - 11.30

Poster presentation

SESSION F9

**Innovative technologies**

11.30 - 11.45

*B. Keser, S. Schmuck and T. Mietzel (DE)*

Biological Sabatier process and its potential for the electricity industry

11.45 - 12.00

*A. Cot, A. Ametller, J. Vall-Llovera, J. Aguiló and J.M. Arqué (ES)*

'Termosolar Borges': a termosolar hybrid plant with biomass

12.00 - 12.15

*R.L. Keiski, M. Huuhtanen, J. Hiltunen, A. Avila, M.C. Wu, E. Turpeinen and K. Kordás (FI)*

Hydrogen production from ethanol by photocatalysis

12.15 - 12.30

*L. Grimolizzi, M. Capoccia, S. Ogliari, M. Ragazzi and E. C. Rada (IT)*

NO<sub>x</sub> emissions: fuel cell vehicles role

12.30 - 12.45

*J. Shah and F. Mabood (PK)*

Catalytic conversion of waste low density polyethylene into fuel oil

12.45 - 13.10

Discussion

13.10 - 14.30

Lunch

## SESSION G8

### Energy from landfills

9.00 - 9.15

*A. Niskanen (FI)*

Gas treatment efficiency with microturbines in two landfills

9.15 - 9.30

*A.-J. Tinet and L. Oxarango (FR)*

Effect of mechanical settlement on the methane recovery efficiency in bioreactor landfills

9.30 - 9.45

*J.A. Taylor, A. Herr and D.R. Farine (AU)*

Wood waste disposed of in landfills in Australia: An evaluation of the amount and potential use for bioenergy

9.45 - 10.00

*M.C.A.A. Castro and P.P.G. Bello (BR)*

Evaluation of percentage of methane gas generated in the landfill of the Rio Claro City, Brazil: Study of energetic potential

10.00 - 10.15

*P. Kouvo (FI)*

Landfill gas to Energy-combined Engine and ORC-process

10.15 - 10.40

Discussion

10.40 - 11.00

Coffee Break

11.00 - 11.30

Poster presentation

## SESSION G9

### LCA

11.30 - 11.50

*L. Courtaud, C. Peregrina, M. Crest, M.L. Sablayrolles, J.M. Audic and P. Arlabosse (FR)*

Alternative fuels derived from organic waste: The case of sewage sludge characterization as a potential energy source

11.50 - 12.10

*V. Grilc, V. Mislej and S. Salej (SI)*

Thermal utilisation of biologically stabilised and dried waste sludge from wastewater treatment plants

12.10 - 12.30

*M. Aiello, D. Bacchi, A. Bellini, M. Puccini, M. Seggiani, S. Vitolo (IT)*

Sewage sludge gasification in a pilot scale plant

12.30 - 12.50

*Y.P. Ginoris, G.F. Ghesti, F.R. Malafaia, A. Brasil, J.L. Macedo and Y. Itai (BR)*

Evaluation of municipal sewage sludge as a biomass resource for the production of energy by gasification

12.50 - 13.10

Discussion

13.10 - 14.30

Lunch

SESSION A10

**WTE in developing countries**

14.30 - 14.50

*P. Kaur, R.D. Singh and Kamalpreet (IN)*

Municipal Solid Waste Management in developing countries: A case study of Chandigarh

14.50 - 15.10

*A. Almeida, K.C. Das and N. Balagurusamy (MX)*

Biochemical Methane Potential of desert plants: Aloe vera and Opuntia robusta in Comarca Lagunera, Mexico

15.10 - 15.30

*F. Vojdani (IR)*

Biomass and waste characterization as a potential energy sources in Iran

15.30 - 15.50

*A. Karagiannidis, R. Mohee, N. Themelis and S. Kontogianni (GR)*

The mounting problems with managing wastes in rapidly developing islands: the Mauritius case

15.50 - 16.10            Discussion

16.10 - 16.40            Coffee Break

SESSION B10

**AD - Co-Digestion II - Sewage Sludge**

14.30 - 14.50

*R. Degan, D. Traversi, M. Acri and G. Gilli (IT)*

The influence of increased concentration of total solids on the performance of co-digestion process of Organic Fraction of Municipal Solid Waste (OFMSW) and activated sludges.

14.50 - 15.10

*A. Alvarado, S. Chinnasamy, K.C. Das and N. Balagurusamy (MX)*

Opportunities for co-digestion of industrial and agricultural substrates for anaerobic digestion

15.10 - 15.30

*C. Pozza, A. Giannis, E. Gidarakos and R. Cossu (GR)*

Aerobic composting and anaerobic digestion of MSW mixed with sewage sludge and yard trimmings

15.30 - 15.50

*C. Yangin Gomec, B. Horasan, H.T. Ozerol, R.K. Dereli, M.E. Ersabin, A.F. Aydin and I. Ozturk (TR)*

Towards sustainable sewage management by the application of a pilot-scale UASB reactor at sub-mesophilic operating temperatures

15.50 - 16.10            Discussion

16.10 - 16.40            Coffee Break

SESSION C10

**Energy production from algae**

14.30 - 14.45

*M. Buebner and P. Young (US)*

Robust adaptive control for improving biofuel production from microalgae

14.45 - 15.00

*R. Praveen Kumar, S. Palani, R. Selvaraj and I. Regupathy (IN)*

Integrated bioenergy farming system using communal waste water

15.00 - 15.15

*T. Poespowati, B. Moghtaderi and M. Ismay (ID)*

Kinetics and pyrolysis study of *Chlorella* sp. using thermogravimetric analyser

15.15 - 15.30

*E. Nebrenheim, M. Odlare, F. Wallin, E. Thorin, E. Dablquist and J. Yan (SE)*

Algal blooms - An environmental problem or a potential energy resource? The potentials for algae cultivation in Lake Mälaren, an eutrophicated lake in Sweden

15.30 - 15.45

*H. Adwiraab, J. Heerenklage and I. Körner (DE)*

Anaerobic digestion of microalgae - Possibilities and limits

15.45 - 16.10

Discussion

16.10 - 16.40

Coffee Break

SESSION D10

**AD - Hygienical and Toxicological Aspects**

14.30 - 14.50

*E. Carraro, SI. Bonetta, E. Ferretti, SA. Bonetta, G. Fezia and G. Gilli (IT)*

Microbiological contamination of digested products from anaerobic digestion of activated sludge, slurries and organic fraction of MSW

14.50 - 15.10

*S. Bonetta, E. Ferretti, S. Bonetta, F. Parola, F. Scaperrotta, G. Fezia, G. Zicari and E. Carraro (IT)*

Hygienic and physico-chemical characterization of digested products from anaerobic co-digestion of cattle slurry and agricultural by-products

15.10 - 15.30

*X. Goux, L. Bourguet, F. Giraud, E. Cocco, C. Guignard, L. Hoffmann and P. Delfosse (LU)*

Deoxynivalenol concentration decrease during mesophilic anaerobic digestion of wheat flour

15.30 - 15.50

*L. Chomanski, A. Kluk, M. Debowski and M. Zielinski (PL)*

Possibilities of neutralizing waste waters containing bronopol-based chemicals through gasification

15.50 - 16.10

Discussion

16.10 - 16.40

Coffee Break

SESSION E10

**Regional Case Studies**

14.30 - 14.50

*D. Panepinto and G. Genon (IT)*

Biomass thermal treatment: Energetic recovery and environmental compatibility

14.50 - 15.10

*L. Lombardi, E. Carnevale, L. Burberi and A. Corti (IT)*

Energy recovery from waste: Comparison of different technologies combination

15.10 - 15.30

*G. Genon, V. Tedesco and P. Urso (IT)*

Assessment of the feasibility of an innovative technology plant aimed at the energetic valorization of municipal waste in the Province of Turin

15.30 - 15.50

*S. Romano (IT)*

Inefficient or not correctly enforced? Municipal Solid Waste management policies and problems in Naples

15.50 - 16.10            Discussion

16.10 - 16.40            Coffee Break

SESSION F10

**Hydrothermal processes**

14.30 - 14.50

*P. Escot Bocanegra, M.M. Barsan, I.S. Butler, J.A. Kozinski and I. Gökalp (FR)*

Treatment and energy production by hydrothermal gasification of organic wastes

14.50 - 15.10

*I.-H. Hwang, T. Matsuo, H. Aoyama, T. Nakagishi and T. Matsuo (JP)*

Recovery of solid fuel from municipal solid waste using hydrothermal treatment

15.10 - 15.30

*L. Zhang, M. Wishman, P. Champagne and C. Xu (CA)*

Screening of supported transition metals as catalysts for supercritical water gasification of glucose for hydrogen production

15.30 - 15.50

*Q. Wu, E. Weiss-Hortala, S. Bulza and R. Barna (FR)*

Supercritical water gasification of model compounds: Interactions between glucose and glycerol

15.50 - 16.10            Discussion

16.10 - 16.40            Coffee Break

SESSION G10

**Tyres treatment and conversion to energy**

**14.30 - 14.50**

*C. Clauzade (FR)*

Using used tyres as an alternative source of fuel

**14.50 - 15.10**

*P.T. Williams, I. Elbaba, C.Wu and J.A.Onwudili (UK)*

High yield hydrogen from the pyrolysis catalytic gasification of waste tyres

**15.10 - 15.30**

*F.A. López, T.A. Centeno, F.J. Alguacil, B. Lobato, A. López-Delgado and J. Grau (ES)*

Distillation and gasification of scrap tyres for production of electric power

**15.30 - 15.50**

*R. Ciccu and F. Delogu (IT)*

Recycling of end-of-life car tires for clean energy production

**15.50 - 16.10**

Discussion

**16.10 - 16.40**

Coffee Break





## TECHNICAL TOURS

Thursday November 11th is devoted entirely to Technical Tours.

Guided tours of real-scale plants situated in North-east of Italy operating in the production of energy from biomass and waste both by means of thermal and biological processes in a context of integrated waste management will be organised.

Tours will focus on illustrating to delegates available options and technologies for use in the production of energy from biomass and waste. Tours should be booked in advance and delegates should choose one tour only, in line with their specific interests.

A more detailed programme of tours will be available on the official Symposium website: <http://www.venicesymposium.it>



Poster discussion will take place in the Poster Hall in the presence of authors, Tuesday morning and Wednesday morning, from 11 to 11.30.

### A. Anaerobic digestion

**A1** *A. Jeihanipour and M. J. Taberzadeh (SE)*

Enhancement of initial rate of solubilisation in anaerobic digestion of cellulose by nmno pretreatment

**A2** *T. Mackulak, J. Prousek and I. Bodök (SK)*

Possibility of biogas production increasing by the use of pre-treated hay and leaves with the utilization of wood-rotting fungi

**A3** *S. Zuin, M. Beggio, P. Scanferla, P. Barbierato, P. Girotto, R. Pella and A. Marcomini (IT)*

Innovative process to produce energy from sewage sludge and selected biomass: the "ONLY ENERGY" project

**A4** *M. Tornainen and L. Maunuksela (FI)*

Phytotoxicity of anaerobic digestion residues

**A5** *M. Simonetti, G. Rossi, V. Cabbai and D. Goi (IT)*

Experimental tests of ultrasonic pretreatment on organic fractions for anaerobic co-digestion

**A6** *J.-H. Bae, E.-Y. Lee, A.-H. Heo, H.-K. Kim, J.-H. Kim and S.K. Park (KR)*

Treatment of garbage leachate with a pilot-scale two-phase anaerobic digestion with ultra filtration

**A7** *M. Zimaglia, E. Conti, D. Fino and R. Conti (IT)*

Energy recovery from biomass in the Langhe and Roero district

**A8** *S. Beszédes, N. Pap, E. Pongrácz, C. Hodúr and R.L. Keiski (FI)*

Concentration of meat processing industry wastewater by reverse osmosis and anaerobic digestion of the concentrate

**A9** *W. Qiao, C. Peng, W. Wang and P. Han (CN)*

UASB treatment of supernatant of sewage sludge by hydrothermal pre-treatment

**A10** *L.R. Tovar, R.A. Castro, M.E. Gutierrez and R. Estrada (MX)*

What if the organic fraction of the wholesale Central Market of Mexico City (Central de Abasto del D.F.) is anaerobically digested?

**A11** *F. Mayer, A. Noo, C. Hermes, S. Lemaigre, L. Hoffmann and P. Delfosse (LU)*

Evaluation of the biomethane potential of silages, animal effluents and their mixtures used in biomethanation plants

- A12** *J. Kaczmarczyk, J. Trawczyński and J. Walendziewski (PL)*  
Desulfurization of biogas using activated carbon adsorbents
- A13** *A.I. García, X. Gómez, A. Morán and M. Otero (ES)*  
Anaerobic co-digestion of sewage sludge and organic fraction of Municipal Solid Wastes: Different proportions of sludge in the mixture
- A14** *K. Bulkowska, T. Pokój, Z. Gusiatin and E. Klimiuk (PL)*  
Kinetics release of organics (SCOD) from *Miscanthus Sacchariflorus* through alkali treatment
- A15** *T. Pokój, E. Klimiuk, Z.M. Gusiatin and K. Bulkowska (PL)*  
Methane yield of biomass plants estimated on their chemical composition and continuous digestion studies
- A16** *C.M.D.S. Cordovil, E.A. Duarte and L. Ferreira (PT)*  
Recovery of nitrogen levels in burned soil after application of digest pig slurry

## **B. Pyrolysis and gasification**

- B1** *L.F. Calvo Prieto, C. Escribano, M.E. Sanchez and D. Blanco (ES)*  
Influence on the torrefaction process of the type of fertilizer used on an energy crop (*Populus Nigra*, L.)
- B2** *M. Kawase and M. Ohtaka (JP)*  
Hot syngas cleaning of biomass gasification using molten carbonate
- B3** *T. Yamagishi and S. Igawa (JP)*  
Spent mushroom bed gasification and steam production
- B4** *A. López, A. Adrados, I. De Marco and B.M. Caballero (ES)*  
Pyrolysis of packaging plastic wastes: Comparison of real industrial waste streams with simulated plastic wastes
- B5** *D. Castello and L. Fiori (IT)*  
Thermodynamic modelling of biomass gasification in supercritical water
- B6** *A. Paganella, L. Fiori, P. Zambelli, C. Lora, L. Florio, D. Castello, R. Spinelli, M. Grigante and M. Ciolli (IT)*  
Forest residues in the autonomous Province of Trento: Energetic valorization through combustion and gasification
- B7** *J.F. González, C. Rayo, S. Román, C.M. González-García and B. Ledesma (ES)*  
Modelling non-isothermal degradation of olive solid waste: Influence of variables and kinetics

- B8** R.L. Keiski, E. Turpeinen and M. Huubtanen (FI)  
Reforming of metallurgical industry's CO<sub>2</sub> containing process flue gases
- B9** M. Ragazzi, M. Ischia, R. Dal Maschio, E.C. Rada, M. Grigiante and M. Baratieri (IT)  
Disposal of PVC by pyrolysis: Characterization of the process and lab scale reactor tests
- B10** M.R. Hernández, F.J. Valdés, A.N. García, A. Gomez-Siurana and A. Marcilla (ES)  
Analytical pyrolysis for the identification of microalgae species
- B11** L. Catalá, J.C. García-Quesada, M. López and A. Marcilla (ES)  
Pyrolysis of biomass obtained from culturing the microalgae *Phaeodactylum Tricornutum*
- B12** A. Marcilla, M. León, A.N. García, E. Bañón and P. Martínez (ES)  
Pyrolysis of tannery wastes in a fluidized bed reactor
- B13** A. Marcilla, A.N. García, M. León, P. Martínez and E. Bañón (ES)  
Characterization of tannery wastes by analytical pyrolysis using PY/GC-MS system
- B14** A. Marcilla, A. Gómez-Siurana, A.N. García, M.R. Hernández and A. Castellano (ES)  
Energetic valorization of the plastic fraction of urban solid wastes through pyrolysis
- B15** L. Catalá, Jc. García, M. López and A. Marcilla (ES)  
Thermogravimetric kinetic model of the marine microalgae *Phaeodactylum Tricornutum*
- B16** K. Ichikawa, M. Otake and C. Hawthorne (JP)  
Tar pyrolysis characteristics during the wooden biomass carbonizing gasification process

### C. Hydrogen

- C1** J.A. Menendez, B. Fidalgo and A. Arenillas (ES)  
From biogas to biosyngas using a microwave based process
- C2** A. Arenillas, L. Zubizarreta and J.A. Menendez (ES)  
Hydrogen storage in solid materials
- C3** E. David and J. Kopac (RO)  
Development of palladium/ceramic membranes for hydrogen separation
- C4** E. David and I. Stefanescu (RO)  
Fuel gas from thermochemical processing of biomass

**C5** *G. Peixoto, J.A.B. Agnelli, J.L.R. Pantoja Filho, M.B. Pasotto, M.D.M Innocentini and M. Zaiat (BR)*

Hydrogen and methane production from domestic and industrial wastewaters

**C6** *D. Ochs and V. Kastner (AT)*

KOMBIGAS: Combined methane and hydrogen production for the application in a stationary motor

**C7** *J.F. González, C. Rayo, S. Román, G. Engo and C. Godoy (ES)*

Optimizing the catalyst type during steam gasification to maximize hydrogen production

## **D. Biofuel and Bio - electricity**

**D1** *A. Massart and A.-L. Hantson (BE)*

Optimisation of the medium composition of the microalga "Dunaliella Tertiolecta Butcher" in order to combine high cell density and accumulation of lipids for biodiesel production

**D2** *Z.M. Ramirez, A. Jeihanipour, L. Cárregui De Cárdenas and M.J. Taberzadeh (SE)*

Optimization of enzymes concentration in hydrolysis of alkaline-pretreated cotton-based waste textiles

**D3** *D.S. Lee, J. Ok, D. Park, C. Kim, M.W. Lee and S.H. Woo (KR)*

Bioelectricity production using seaweed biomass in microbial fuel cell

**D4** *J. Lindorfer, H. Steinmüller, A. Jäger and B. Nidetzky (AT)*

Agricultural residues as new raw materials for bioethanol & biogas via process integration and optimized pretreatment

**D5** *J.M. Encinar, J.F. González, G. Martínez and N. Sánchez (ES)*

Biodiesel production from animal fast having high free fatty acids

**D6** *J.H. Ryu, Y.H. Jia, W.K. Lee, C.H. Kim, H.T. Tran and D.H. Ahn (KR)*

Loop configuration microbial fuel cells for electricity generation and its application in wastewater treatment

**D7** *T.I. Mohd. Ghazij, M.F.M. Gunam Resul and A.Idris (MY)*

Production of an improved bio-based lubricant from *Jatropha Curcas* as renewable source

**D8** *Y.-H. Chang, S.-K. Lin, G.-M. Chen, H.T. Hsueh and Y.-F. Wang (TW)*

Proteome survey on changes of fatty acids metabolic pathways by electron deprivation in *Cyanobacterium Thermosynechococcus* sp. Cl-1

**D9** *M. Mazzocchi, M.J.A. Romero Rivas, B.A. Banjaque and M. Arroyo Ulloa (IT)*

Vegetable oils for energy self-sufficiency and better living conditions in rural communities

**D10** *C.S. Gob, K.T. Lee and S. Bhatia (MY)*

An assessment of cellulose enzymatic hydrolysis strategy via response surface methodology (RSM) to recover sugar from oil palm fronds (OPF) pre-treated with hot compressed water (HCW) for bio-ethanol production

**D11** *M. Kulażynski, J. Walendziński and F. Czechowski (PL)*

Influence of vegetable oil quality on the properties of fatty acid methyl esters

**D12** *Y. Hernández, L. Casas, C. Mantell, M. Rodríguez, N. Casdelo and E. Martínez De La Ossa (ES)*

Biodiesel from cachaza oil-wax: Transesterification with methanol

### E. Environmental Aspects

**E1** *S. Bhoobibhoyaa, R.K. Maskeya and S.N. Khanalb (IT)*

Potentiality for reducing green-house gas emission through thermal building insulation in mountains regions

**E2** *M. Odlare, J. Abubaker, J. Lindmark, M. Pell, E. Nebrenheim and E. Thorin (SE)*

Emissions of N<sub>2</sub>O and CH<sub>4</sub> from two types of agricultural soils amended with biogas residues

**E3** *D. Almarcha, J. Caixach, E. Jiménez-Coloma, M. Almarcha and O. Palacios (ES)*

Determination of odoriferous compounds in the emissions from a thermal dry treatment of leachates in a urban solid waste landfill

**E4** *D. Almarcha, G. Sánchez-Santos, J. Caixach and J. Feliubadaló (ES)*

Analytical research of characteristic profiles in the air of different zones of mechanical biological treatment (MBT) facilities

**E5** *N. Niskala, S. Pitkääho, S. Ojala and R.L. Keiski (FI)*

FTIR flue gas emission measurements in biomass fired combustion plants

**E6** *A. Karagiannidis, J.R. Barton, C. Karkanias, E. Kalogirou and A. Papageorgiou (GR)*

Estimation of the climate change impact of municipal solid waste management: The case study of Athens greater area

- E7** *M.A. Ibrahim, W. Hogland, E. Elmberg, A. Lönnermark, H. Person and D.R. Nammari (SE)*  
Storage techniques for municipal solid waste, frequency of fires, and their related emissions
- E8** *D.R. Schneider, M. Kirac, A. Hublin and Z. Bogdan (CR)*  
Greenhouse gas emission reduction and energy potential in waste management in Croatia
- E9** *M. Vítková, V. Ettler, J. Hyks and T. Astrup (CZ)*  
Assessment of leaching behaviour of fly ash from a cobalt smelter, Zambia
- E10** *M. Alberti, D. Cantaboni and G. Tomasoni (IT)*  
Issues of the goal and scope definition phase of an LCA of a new technology for the inertization of MSW fly ash
- E11** *L. Morselli, A. Santini, F. Passarini, I. Vassura and L. Ciacci (IT)*  
LCA as decision tool for sustainable auto shredder residue (ASR) management
- E12** *D. Avi, M. Scotoni, A. Salviati, E. Pieratti, D. Antolini, M. Dimauro and A. Boschetti (IT)*  
A multi technique approach for gas monitoring in biomass thermal conversion processes
- E13** *A. Takahashi, T. Kameyama, S. Hoshina and Y. Katayama (JP)*  
Pre-treatment method in a bio-degradation system for extracting polychlorinated dioxins from contaminated soil and sediments
- E14** *G. Andreottola, I.A. Istrate, A. Badea, M. Ragazzi, T. Apostol and E.C. Rada (IT)*  
Soil contamination due to energetic activities
- E15** *A. Marcilla, A. Gómez-Siurana, D. Berenguer, I. Martínez-Castellanos and M.I. Beltrán (ES)*  
Reduction of toxic compounds in tobacco smoke by zeolites and other catalyst
- E16** *A. Marcilla, A. Gómez-Siurana, M. Beltrán, I. Martínez and D. Berenguer (ES)*  
Comparisson of toxicity of the smoke generated during the pyrolysis and combustion of 10 commercial tobacco brands
- E17** *A. Marcilla, A. Gómez-Siurana, M. Beltrán, I. Martínez and D. Berenguer (ES)*  
Catalytic effect of MCM-41 in the pyrolysis and combustion processes of tobacco. Effect of the aluminium content

**E18** *A. Cardoso and B. Mendes (PT)*

The extended producer responsibility in medicine packaging waste - Portuguese approach

### F. Waste and energy aspects

**F1** *G. Genon and D. Panepinto (IT)*

Perspectives for MSW energetic destination: Problems and technological improvements

**F2** *H. Zhang and T. Matsuto (JP)*

Mass balance and cost of composting facilities for different types of organic waste

**F3** *M.N. Rojas-Valencia (MX)*

Strategies for the mitigation of climate change from domestic waste in Mexico

**F4** *M.N. Rojas-Valencia, H. Najera, J. Castanon and J. Figueroa (MX)*

Treatment of leachates from the landfill in Tuxtla Gutierrez, Chiapas, Mexico

**F5** *M. Hoffman, D.M. Hartono, E. Novita, J. Jager, A. Blumschein and I. Gusniani (DE)*

Development for the implementation of an integrated semi-centralized waste management model, in Depok, Indonesia

**F6** *H. Kurishima and Y. Genchi (JP)*

Estimating acceptability of facility for food waste recycling and effect of facility information provision

**F7** *I. Wojnowska-Baryla, S. Kasinski and K. Bernat (PL)*

Efectiveness of municipal waste stabilization in passive air flow systems

**F8** *G. Tavares, A. Beijoco, Z. Zsigraiová and V. Semião (PT)*

Minimisation of operation costs by vehicle fleet routes optimisation in waste collection activities

**F9** *G. Mancini and P. Viotti (IT)*

Impact of landfill disposal of waste from steel production

**F10** *E. Merta and M. Arnold (FI)*

Optimised energy recovery from wastewater sludge

**F11** *D. Ubavin, Z. Vojnovic, G. Vujic, B. Batinic and N. Stanisavljevic (RS)*

Influence of ambience temperature to methane production at MSW landfill of Novi Sad

**F12** *F. Wanschers and A. Pacchiarotti (IT)*



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**F13** *L. Krzystek, A. Zawadzka, P. Stolarek and S. Ledakowicz (PL)*  
Biological drying of municipal solid waste and sewage sludge:  
Mass and energy balances

**F14** *J. Silva and D. Alves (PT)*  
The role of the regulation in promoting efficient recycling - An  
overview on the Portuguese model

**F15** *J. Walendziewski and M. Kaluzynski (PL)*  
Processing of oil fractions from waste polyolefine cracking

**F16** *R. Fontana, D. Fatutto and C. Del Piccolo (IT)*  
Landfill leachate treatment plant with active sludge biological  
treatment, reverse osmosis membranes and concentration  
through MVR evaporators. Case study Mavrorachi landfill (GR)

## **G. Biomass and energy aspects**

**G1** *S. Mehmood, A. Khaliq and S.A. Ranjha (DE)*  
The use of post consumer wood waste for the production of  
wood plastic composites: A Review

**G2** *J.R. Portela Miguélez, M.B. Garcia-Jarana, V. Vadillo, J. Sanchez-  
Oneto and E. J. Martínez De la Ossa (ES)*  
Hydrothermal processes for energy production from oily  
wastes and winery wastewaters

**G3** *M.J. Murer, H. Spliethoff, C.M.W. De Waal, T. Schäfer and O.  
Gohlke (DE)*  
Relative dependency of measurement uncertainty for boiler  
and plant efficiency

**G4** *J.M. Encinar, J.F. González, A. Pardal and G. Martínez (ES)*  
Transesterification of rapeseed oil with methanol in the pre-  
sence of various co-solvents

**G5** *T.S. Farrow and C. E. Snape (UK)*  
Devolatilisation behaviour and combustion reactivity of bio-  
mass fuel under oxy-fuel conditions

**G6** *R. Ylönen, E. Muurinen and R. L. Keiski (FI)*  
The effect of the superheaters' structure on fouling related  
phenomena - A CFD based evaluation

**G7** *J.F. González, B. Ledesma, A. Alkassir and J. González (ES)*  
Study of the influence of the composition of several biomass  
pellets on the drying process

# INFORMATION

## Official Language

The working language of the Symposium is English. This year, for the first time, a session will be held entirely in Italian.

## Proceedings

The Symposium proceedings will be published in a CD to be distributed to participants at the time of registration.

## Entrance fees

### Conference

The registration fees are as follows:

On-site Full Delegate Registration	€ 1000 +VAT 20%
Regular Delegate Registration	€ 900+VAT 20%
Students with University certificate <sup>(1)</sup>	€ 500 +VAT 20%
Delegates from Low/Middle Income Countries <sup>(2)</sup>	€ 500+VAT 20%

Please note that, in accordance with Italian law, VAT must be paid by all participants, irrespective of country of origin.

*(1) Undergraduate or official PhD students.*

*(2) This fee is applicable only to affiliates to public bodies (Ministries, Municipalities, Universities, Agencies, etc.) from Low/Middle Income Countries (Source: World Bank Developing Nations).*

IWWG Members are entitled to a 10% discount on the above fees. IWWG membership costs 150 € (VAT free) and affords numerous benefits, including yearly subscription to the international scientific journal “Waste Management”, published by Elsevier as official journal of IWWG. IWWG membership information is available on the website: **[www.iwwg.eu](http://www.iwwg.eu) and [www.elsevier.com](http://www.elsevier.com)**

Registration fee includes:

- Participation in conference sessions;
- Conference Proceedings and other conference material;
- Coffee breaks;
- Working lunches.

### Payment

The enclosed application form should be filled in and returned to EuroWaste Srl. Registration will be considered effective only after receipt of the respective fee.

EuroWaste Srl will reimburse participant registration fees already paid if written request or cancellation is submitted. Reimbursement will be as follows: 80% before **30 September 2010**, 50% before **20 October 2010**. No refund will be possible after this date.

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or by **on line credit card payment ([www.venicesymposium.it](http://www.venicesymposium.it))**

Please send proof of payment to EuroWaste by fax:

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### Company Exhibition

A small commercial exhibition will be held during the conference where organisations and companies can display technical literature and associated material. For further information please contact:

#### **Giulia TESTOLIN**

EuroWaste Srl

Via Beato Pellegrino 23 - 35137 Padua - Italy

Tel. +39.049.8726986 - Fax +39.049.8726987

e-mail: [eurowaste@tin.it](mailto:eurowaste@tin.it)

### Registration

Conference Registration will take place in the Fondazione Cini on Monday November 8th 2010, from 08.00 - 13.00 and from 14.30 - 16.00.

### Travel

All delegates should make their own travel and hotel arrangements.

The nearest airports are VENICE - Marco Polo (the main airport in Venice) and Treviso - the low-cost airport. Saint Mark's Square and surrounding area can be reached via water directly from Marco Polo airport or by bus from Treviso airport.

### How to reach the conference venue

The Conference will be held in the FONDAZIONE CINI on the island of San Giorgio Maggiore.

### On arrival at the Airport

Delegates should travel by Alilaguna water bus or water Taxi to Saint Mark's Square. From here (S.Zaccaria stop) they can take Vaporetto n. 2 to San Giorgio (2 min. crossing).

**ALILAGUNA water bus - € 13.00 one way or water TAXI - € 120.00 for up to 6 persons.**

### On arrival by car in Piazzale Roma

Delegates should travel by vaporetto (lines n. 2 or 51) to Saint Mark's Square. From here (S.Zaccaria stop) they can take Vaporetto n. 2 to San Giorgio (2 min. crossing).

### On arrival by train at Venice - Santa Lucia railway station

Delegates should travel by vaporetto from Ferrovia (lines n. 1/2 or 3) to Saint Mark's Square. From here (S.Zaccaria stop) they can take Vaporetto n. 2 to San Giorgio (2 min. crossing).

*n.b. - A single vaporetto crossing from Zaccaria to San Giorgio costs € 6.50 – we strongly advise that delegates purchase a tourist ticket (€ 23.00 for 36 hours; € 28.00 for 48 hours and € 33.00 for 72 hours) allowing unlimited crossings (NOT valid on ALILAGUNA services).*

### Hotel Accommodation

The Organising Committee has arranged for special hotel rates for Symposium delegates at a number of hotels situated in the immediate vicinity of St. Mark's Square in Venice.

Rates are illustrated on the table below. Delegates are kindly requested to contact the hotel of their choice directly, quoting the event name (VENICE 2010) to ensure the promotional rate is applied.

Hotels have assigned a limited number of rooms to this offer. Delegates are therefore advised to book their accommodation as soon as possible.

All rates listed are per room per night (NOT per person). Rates quoted include room, breakfast, local charges and taxes. Extras (transfers, mini bar, telephone charges and meals) are not included.

On booking accommodation hotels will request your credit card details to guarantee reservation. Under no circumstances may the Symposium Organisers be held responsible for issues pertaining to hotel accommodation. Any complaints should be addressed directly with the hotel.

### **Hotel LONDRA PALACE\*\*\***

Riva degli Schiavoni - Tel. (0039) 041-5200533 – Fax (0039) 041-5225032

info@hotellondra.it - Contact: Stefania Vaccari

€ 210 euro - *Standard*

€ 300 euro - *Laguna view (deluxe)*

### **Hotel CA' DEI CONTI \*\*\*\***

Castello, 4429 (0039) – Tel. 041-2770500 - Fax (0039) 041-2770727

info@cadeiconti.it - Contact: Marco D'Alpaos

*Price double room for Single use € 120 euro*

*Price double room for two person € 150 euro*

### **Hotel SAVOIA & JOLANDA \*\*\*\***

Riva degli Schiavoni, 4187 - Tel. (0039) 041-5206644 - Fax (0039) 041-5207494

info@hotelsavoiajolanda.com - Contact: Francesca Martini

€ 200 euro - *Standard*

€ 320 euro - *Junior Suite (Laguna view)*

### **Hotel VILLA IGEA \*\*\***

Campo San Zaccaria - Tel. (0039) 041-2410956 - Fax (0039) 041-5206859

info@hotelvillagea.it - Contact: Reception

*Price double room 155 euro*

### **Hotel CAMPIELLO \*\*\***

Campielo del Vin, Castello 4647 - Tel. (0039) 041-5205764 - Fax (0039) 041-5205798

campielo@hcampielo.it - Contact: Reception

*Price single room € 60 euro*

*Price double room € 95 euro*

*Price double room economy € 85 euro*

*Price triple room € 110 euro*

*Price quadruple room € 130 euro*

### **Hotel PAGANELLI \*\*\***

Riva degli Schiavoni, 4182 – Tel. (0039) 041-5224324 - Fax (0039) 041-5239267

info@hotelpaganelli.com - Contact: Massimo Veronese

90 Euro - *Superior (vista corte interna)*

140 euro€ - *Deluxe (vista laguna)*

95 Euro - *Superior (vista corte interna)*

145 Euro – *Deluxe (vista Laguna)*

### **Hotel PAGANELLI (Dipendenza)**

30 m from the main Hotel, vicino a Campo S. Zaccaria 4687

*Price single room € 55 euro*

*Price double room € 80 euro*

### **Hotel LOCANDA VIVALDI \*\*\*\***

Castello 4150 / 4152 30122 - Tel. (0039) 041-2770477 - Fax (0039) 041-2770477

info@locandavivaldi.it - Contact: Reception

*Price double room single use € 170 euro*

*Price double room two persons € 200 euro*

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# VENICE 2010

## Third International Symposium on Energy from Biomass and Waste

8-11 November 2010

Fondazione Cini, Venice Italy

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