

DAILY PROGRAMME
PROGRAMMA GIORNALIERO

08:00 - 13:00 Conference Registration
Registrazione al Simposio

OPENING SESSION / *SESSIONE DI APERTURA*

09:00 - 09:30 Welcome addresses / *Saluti di benvenuto*

09:30 - 10:00 Opening lecture / *Relazione di apertura*

A. Adami

Environmental Protection in Venice: Past and Present

10:00 - 10:20 *W. Bidlingmaier*

New challenges in Biomass and Waste to Energy by means of biological processes

10:20 - 10:40 *U. Arena*

Sustainable recovery of energy from waste in a recycling society

10:40 - 11:00 Discussion / *Discussione*

11:00 - 11:30 Coffee break

SESSION A1 - Auditorium

h. 11:40 - 13:10

Organic Waste Collection and Valorisation

Chair / Presidente: M. Nelles (DE)

F. Ardente, M. Cellura, F. Di Blasi, M. Fontana, M. Mistretta (IT)

Energy and environmental management protocols of an agro-combined system of biogas production from biomass waste

F. Laureri, R. Minciardi, M. Robba, A. Ruocco (IT)

Optimal planning of wet waste collection: the case of Genova Municipality

I.M.C. Lo, K.S. Woon (HG)

A proposed framework of food waste collection and recycling for renewable bio-gas fuel production in Hong Kong

S. Kusch, C.C. Udenigwe, C. Cavinato, M. Gottardo, F. Micolucci (DE)

First and second generation valorisation of wastes and residues occurring in the food supply chain

SESSION B1 - Theatre Hall

h. 11:40 - 13:10

Biomass Inventory

Chair / Presidente: J.Y. Kim (KR)

J.Y. Cao, D.Z. Chen, X.H. Dai, L.Q. Wu, Y. Zhou, Y.Y. Qi (CN)

Recycle rice straw derived-char as carbon paper and its absorption of organic and inorganic odors

V.I. Okudoh, C. Trois, T.S. Workneh, S. Schmidt, A. Cibati (ZA)

The potential of cassava biomass for energy production in South Africa

P. Giudicianni, P. Bozza, R. Ragucci (IT)

Grinding and drying treatment for better disposal of MSW organic fraction

M. Kułczyński, S. Jabłoński, J. Kaczmarczyk, Ł. Świątek, K. Pstrowska, M. Łukaszewicz (PL)

Thermochemical transformation of biomass for co-firing with brown coal in energetic boiler

G. Iñiguez Couarrubias, J.J. Bernal Casillas, W. Ramtrez Meda, G.I. Covarrubias (MX)

Agave plant leaves as a potential energy source

SESSION C1 - Palazzina Grecale, Room A

h. 11:40 - 13:10

Companies Forum

Chair / Presidente: R. Cossu (IT)

The latest bioenergy innovations and markets trends will be discussed during a forum specifically conceived for companies and firms operating in the field of energy from biomass and waste.

The forum will be freely accessible to all delegates and visitors of the conference, thus representing the perfect chance for companies to gain visibility, meet new potential clients and present products to a seated public.

Confirmed companies:

TECAM srl (IT) - *Treatment of the industrial water*

MWH Global (IT) - *Environmental engineering and water resource management*

Rovereta srl (IT) - *Waste management*

Cavanaugh & Associates P.A. (US) - *Water efficiency and bioenergy*

Celignis Limited (IR) - *Biomass analysis*

Babcock & Wilcox Volund (DK) - *Waste to Energy and biomass*

MK2 Waste Management Consulting (GR) - *Waste management*

SESSION D1 - Room 6

h. 11:40 - 13:10

Bioenergy from Algae

Chair / Presidente: A. Lagerkvist (SE)

I. Krustok, J.G.D. Nieto, M. Odlare, E. Nehrenheim (SE)

Algae biomass cultivation with ammonium rich reject water - The potential for simultaneous wastewater treatment and energy recovery

E.A. Ramos Tercero, L. Alibardi, R. Cossu, A. Bertucco (IT)

Biogas production from lipid-extracted microalgae testing different solvents for extraction

J. Olsson, T. Forkman, E. Nehrenheim, S. Schwede, E. Thorin (SE)

Semi-continuous co-digestion of microalgae and representative mix of sewage sludge

E. Sforza, E.A. Ramos Tercero, A. Bertucco (IT)

Integration of microalgal biomass production and water treatment: experiments and process design

SESSION E1 - Room 7

h. 11:40 - 13:10

Thermal Treatment of Different Substrates

Chair / Presidente: M.C. Zanetti (IT)

G. Ionescu, C. Marculescu, E.C. Rada (IT)

Renewable energy from poultry industry using thermo-chemical process strategies for in-situ power generation

L. Yermán, J. Carrascal, J.L. Torero, I. Farbis, D. Cormier, J.I. Gerhard (AU)

Smouldering combustion as a treatment for human waste

F.F. Marcondes, M.A. Martins Costa, J.A. Carvalho Jr, J.E. Fernandes, A.P. Santos, F.A. Filho, T.G.S. Neto, A.F.M. Costa (BR)

Sampling of gaseous pollutants and fine particulate emitted by combustion of sugarcane bagasse

P. Ninduangdee, V. I. Kuprianov (TH)

Study on burning of oil palm residue with elevated potassium content in a conical fluidized bed using alternative bed materials for preventing bed agglomeration

M. Strada, P. Canu (IT)

Experimental investigation on thermal decomposition of polypropylene and coffee

K. Sornek, M. Filipowicz (PL)

The possibility of high temperature heat generation in biomass-fired boiler for the prototypical small scale CHP system

SESSION F1 - Room 8

h. 11:40 - 13:10

Workshop: Digestion Residues

Chair / Presidente: C. Knoop (DE)

C. Knoop, C. Dornack, N. Dietrich, J. Krümmelbein, T. Raab (DE)

Quality and condition of residues from organic waste fermentation with regard to its usage as soil amendment

D. Thamer, C. Dousset (AT)

Treatment of organic waste digestates: a practical case study

SESSION A2 - Auditorium

h. 14:30 - 16:10

Pretreatment for AD Optimization (I)

Chair / Presidente: M. Ritzkowski (DE)

I. Pecorini, E.A. Carnevale, A. Corti (IT)

Biochemical Methane Potential tests of different autoclaved and microwaved lignocellulosic organic fraction of municipal solid waste

M.R. Boni, E. D'Amato, A. Polettini, R. Pomi, A. Rossi, L. Tuccinardi (IT)

Effect of ultrasonic treatment on anaerobic digestion of organic solid waste

J. Bandelin, K. Koch (DE)

Effect of ultrasonic pre-treatment with tube-reactors on the biogas yield

F.-M. Peller, E. Gidarakos (GR)

Effect of microwave pretreatment on methane potential of lignocellulosic materials

16:10 - 16:40 Coffee break

SESSION A3 - Auditorium

h. 16:40 - 18:20

Pretreatment for AD Optimization (II)

Chair / Presidente: E. Gidarakos (GR)

J. Roussel, N. Bartlett, C. Carliell-Marquet (GB)

Enhancing first-stage hydrolysis in anaerobic digesters through an electric pre-digestion process: manure sludge feasibility test

M. Koyama, S. Yamamoto, K. Ishikawa, S. Ban, T. Toda (JP)

Anaerobic digestion of submerged macrophytes: biomethane potential, pre-treatment and the drawback

X. Liu, R. Bayard, R. Gourdon (FR)

Anaerobic digestion of lignocellulosic biomass pretreated with *Ceriporiopsis Subvermispora*

SESSION B2 - Theatre Hall

h. 14:30 - 16:10

Biomass Quality

Chair / Presidente: R. Raga (IT)

Y. Fujimoto, Y. Hirai, S. Sakai (JP)

Time variation of the biomass fraction in municipal solid waste estimated by the ¹⁴C method - Based on consecutive sampling

D. Hayes (IE)

Use of near infrared spectroscopy for the rapid lowcost analysis of a wide variety of lignocellulosic feedstocks

M. Ragazzi, E.C. Rada, S. Antognoni, S. Zanoni, M. Schiavon, G. Zanetti (IT)

Virgin and treated wood combustion: VOC toxicity analysis

H. Rechberger, T. Schwarzboeck, J. Fellner (AT)

Analysis of the fuel composition of waste to energy plants with respect to the content of biomass and fossil organic matter

L. Benassi, M. Pasquali, A. Zacco, R. Dalipi, R. Cioffi, L.E. Depero, E. Bontempi (IT)

Analysis of wood pellet by means of Total X-Ray Fluorescence and X-Ray Diffraction

A. Pakarinen, M. Kymäläinen (FI)

The effect of biowaste deterioration on bioethanol and biogas yields

16:10 - 16:40 Coffee break

SESSION B3 - Theatre Hall

h. 16:40 - 18:20

Bioethanol Production

Chair / Presidente: M. Ragazzi (IT)

K. Zaafouri, L.A. Fernández Guelfo, C.J. Álvarez-Gallego, I.L. Romero Garcia, S. Sánchez Villasclaras, F. Ben Chaabane, S.I. Olivares Merino, M. Hamdi (TN)

Mediterranean lignocellulosic feedstocks for biofuels production: bioethanol 2nd generation

K. Magrini, W. Jablonski, M. Yung, J. Olstad, Y. Parent, S. Deutch (US)

Pilot scale demonstration of catalytic syngas cleaning for ethanol production from biomass

M. Funaoka (JP)

Rapid refining of lignocellulosic materials into carbohydrates (bioethanol) and lignin-based functional materials (lignophenols)

SESSION C2 - Palazzina Grecale, Room A

h. 14:30 - 16:10

Incineration

Chair / Presidente: C. Cord'Homme (FR)

A. Wohlleben, R. Von Raven, E. Fleck (DE)

Next generation Waste-to-Energy plant

T. Norman, L. Mikkelsen, O. H. Madsen (DK)

Superheater in the furnace for increasing efficiency

J. Van Caneghem, C. Block, C. Vandecasteele (BE)

Is a further reduction of the emission limit value for SO_x in waste incinerators meaningful from an LCA perspective?

H. Hofgren, B. Sundén, L. Wang, T. Norman, M. Mandø (SE)

On heat load estimation in furnaces for waste and biomass combustion

M. Keunecke (CH)

Waste is our energy: efficiency of advanced waste conversion technology

16:10 - 16:40 Coffee break

SESSION C3 - Palazzina Grecale, Room A

h. 16:40 - 18:20

Incineration - Cases and Specific Processes

Chair / Presidente: S. Sakai (JP)

C. Cord'Homme (FR)

International experience of risk sharing between public and private entities in Energy from Waste plant construction

H. Kuramochi, J. Kobayashi, T. Kobayashi, K. Maeda, K. Fukui, M. Osako (JP)

Heat-driven extraction of oils and fats from trap grease and co-combustion with fossil fuel oil

V.E. Schneider, A.R. Rosa, D. Peresin, B. Bittencourt (BR)

Characterization of municipal wastes as a methodology for an analysis of electricity generation potential in an incineration plant

M.A. Matos, A.L. Tarelho, A. Albuquerque (PT)

Performance of fluidized bed particles during biomass combustion

SESSION D2 - Room 6

h. 14:30 - 16:10

Recovery of Energy from Waste - Concepts and Strategies (I)

Chair / Presidente: R. Stegmann (DE)

M. Särkilahti, J. Rahkonen, M. Palmroth, N. Miettinen, J. Rintala (FI)

MSW fractions availability for energy recovery in future cities in Finland and in Germany

N. Tanigaki, Y. Ishida, M. Osada (DE)

Landfill minimization and material recovery via waste gasification in a new waste management scheme

W.G. Simmons (US)

Next generation manure technology - Waste to Energy and environmental revenues

C. D'Alpaos, D. Banzato (IT)

Investing in biogas: incentives schemes vs market prices, from deployment to development?

C. De La Paz (BE)

The LIFE programme and energy sustainability

16:10 - 16:40 Coffee break

SESSION D3 - Room 6

h. 16:40 - 18:20

Recovery of Energy from Waste - Concepts and Strategies (II)

Chair / Presidente: T. Matsuto (JP)

M. Haupt, C. Vadenbo, S. Hellweg (CH)

Material and energy flow analysis of the Swiss waste management system

A.R. Pizarro, M. Münster, S. Petrovic, H. Ravn (DK)

Spatial issues when optimising waste treatment and energy systems - A Danish case study

N. Miettinen, T. Kurka, M. Särkilahti, J. Rahkonen, J. Rintala (FI)

Analysis of future urban energy systems based on official strategies and policies: the role of bioenergy

W.G. Simmons (US)

Farms of the future: seeking agricultural energy independence

SESSION E2 - Room 7

h. 14:30 - 16:10

LCA of Thermal WtE Systems

Chair / Presidente: L. Rigamonti (IT)

L. Lombardi, E.A. Carnevale, A. Corti (IT)

Waste-To-Energy: evaluation of the environmental sustainability for different plant sizes and cogeneration rates

M. Di Gianfilippo, G. Costa, S. Pantini, F. Lombardi, E. Allegrini, T. F. Astrup (IT)

Life cycle assessment of landfilling of two different types of RDF thermal treatment bottom ash

C. Tagliaferri, S. Evangelisti, P. Lettieri, R. Taylor, C. Chapman (GB)

Life cycle assessment of Bio-SNG production from novel waste gasification

M. Danthurebandara, I. Vanderreydt, K. Van Acker (BE)

The environmental performance of plasma gasification within the framework of enhanced landfill mining: a life cycle assessment study

16:10 - 16:40 Coffee break

SESSION E3 - Room 7

h. 16:40 - 18:20

Workshop - WtE Perspectives in Developing Countries

Chair / Presidente: C. Trois (ZA)

Introductory presentation:

M. Afrika, T. Letete (ZA)

The evolution of waste-to-energy in south african local municipalities

SESSION F2 - Room 8

h. 14:30 - 16:10

Workshop: EU LIFE Project Bio.Lea.R

Chair / Presidente: B. Ruggeri (IT)

An efficient waste management plan should focus on prevention, minimization, recycling and reuse and energy recovery. Nevertheless, in spite of the potential environmental impacts on atmosphere, groundwater and land, landfills remain a necessary component of waste management that should not be overlooked. New technologies for bioreactor landfills may contribute towards reducing the above impacts and redefining the opinion of landfill held by the population.

In this context, the project "Full scale use of liquid injection, for innovative control of waste moisture to enhance biogas production in pre treated waste landfill - Bio. Lea.R, co-financed by the European Commission through the LIFE+ programme, is aimed at shortening landfill stabilization processes and enhancing biogas production by means of leachate recirculation. During the workshop, the main technical aspects relating to leachate recirculation, current state-of-the-art and preliminary results from a full-plant application will be presented. Specific emphasis will be placed on the effects of increased moisture of waste on qualitative and quantitative data from biogas production, and open questions will be addressed.

16:10 - 16:40 Coffee break

SESSION F3 - Room 8

h. 16:40 - 18:20

Workshop: LCA of Thermal WtE Systems

Chair / Presidente: P. Lettieri (GB)

Introductory lectures:

P. Lettieri (GB)

A life cycle approach as a decision tool for waste management and energy recovery from waste: examples from the UK.

U. Arena, F. Ardolino, F. Di Gregorio (IT)

A Life Cycle Analysis of combustion- and gasification-based Waste-to-Energy units

S. Evangelisti, C. Tagliaferri, R. Clift, P. Lettieri, R. Taylor, C. Chapman (GB)

Integrated gasification and plasma for UK waste: a life cycle perspective

SESSION A4 - Auditorium

h. 9:00 - 10:40

AD of Different Substrates (I)

Chair / Presidente: S. Fiore (IT)

T. Cestonaro, M.S.S. de Costa, L.A. de Costa, M.A. Rozatti, D. Pereira, H.E.F. Lorin, L. Carneiro (BR)

The anaerobic co-digestion of sheep bedding

H. Hashim, W.S. Ho, J.S. Lim, C.T. Lee, M.F. Mohamad Shukery, S. Ashina, S. Diego, C.S. Ho (MY)

Palm oil waste as a source of green energy

Y. Arij, S. Fatihah, A.R. Rakmi, Y. Sarifah (MY)

Preliminary work on optimisation of a pilot-scale anaerobic digester for the treatment of leachate

E. Ouahid, M.E. Afilal (MA)

Moroccan digester heated by a photovoltaic system for energy recovery from poultry waste

10:40 - 11:10 Coffee break

11:10 - 11:40 Poster discussion

SESSION A5 - Auditorium

h. 11:40 - 13:10

AD of Different Substrates (II)

Chair / Presidente: F. Lu (CN)

K. Rugele, G. Bumanis, D. Bajare, L. Mezule, P. Pitk (LV)

Effect of glass additive in alkaline granules in anaerobic treatment of whey

B. Ruffino, S. Fiore, C. Roati, G. Campo, M. C. Zanetti (IT)

Valorization of waste from a vegetable processing plant by anaerobic digestion: scale effect

O.K. Choi, K.H. Lee, D.K. Cha, D.W. Kang, J.W. Lee (KR)

Enhancement of anaerobic degradability of wastewater sludge by pre-extraction of biodiesel

T. Emms, B. Dearman (AU)

The start-up and operation of an upflow anaerobic sludge blanket (UASB) reactor treating unamended slaughterhouse effluent using onsite inoculum

I. Pecorini, D. Bacchi, A. Corti, E.A. Carnevale (IT)

Study of the biodegradability of the light fraction from an hydropulper pretreatment of municipal solid waste containing compostable plastic material

SESSION B4 - Theatre Hall

h. 9:00 - 10:40

Biodiesel Production

Chair / Presidente: A. Pivato (IT)

J. Pérez-Munguía, J.X. Velasco, L.R. Tovar (MX)

Business model for biodiesel production from *Jatropha curcas* L. in Mexico

G.P. Maniam (MY)

Ultrasound-aided *in situ* transesterification of oil adsorbed on decanter cake using EFBA and Na_2SiO_3 as catalysts

G. Zuccaro, G. Toscano, G. Caputo, G. Travaglini, A. Yousuf, D. Pirozzi (IT)

Simultaneous saccharification and oleaginous yeasts fermentation to produce biodiesel from lignocellulosic feedstocks

K. Aydin, Ç. Ün (TR)

Production, engine performance and emission studies of medical waste plastic fuel and its blends with diesel fuel

S.Y. Leong, S.R.M. Kutty, A. Malakahmad, C.K. Tan, P. Oliver (MY)

Biodiesel production using *Hermetia Illucens larvae* biomass through organic waste upcycling

10:40 - 11:10 Coffee break

11:10 - 11:40 Poster discussion

SESSION B5 - Theatre Hall

h. 11:40 - 13:10

Biological WtE in Developing Countries

Chair / Presidente: M.C. Lavagnolo (IT)

C. Okello, S. Pindozi, S. Faugno, L. Boccia (IT)

Environmental benefits of valorising cattle manure for household cooking energy in Uganda

F. Schwarz (DE)

Barriers in the implementation of biomass and biowaste technologies for energy production in Tanzania and Uganda

C. Collivignarelli, A. Perteghella, M. Vaccari (IT)

Composting of organic fraction of municipal solid waste: a pilot plant in Maxixe District, Mozambique

G. N. Paranavithana, B. G. N. Sewwandi, T. Saito, K. Kawamoto (JP)

Adsorption characteristics of Cd(II) and Pb(II) onto coconut shell biochar and coconut shell activated carbon as media for permeable reactive barriers in Sri Lanka

C.T. Lee, W.S. Ho, J.S. Lim, H. Hashim, R.K.Y. Goh, C.S. Ho (MY)

Anaerobic digestion of bio-degradable materials as a source for biogas production in Iskandar, Malaysia

SESSION C4 - Palazzina Grecale, Room A

h. 9:00 - 10:40

RDF Characterization

Chair / Presidente: E.C. Rada (IT)

C. Bessi, L. Lombardi, R. Meoni, A. Canovai (IT)

Solid Recovered Fuels: a classification experience and application hypothesis

M. Talola (FI)

Solid Recovered Fuel standards: a toolkit for advanced Waste-to-Energy practices

M. Franzese, F. Lombardi, R. Gavasci, M.C. Di Lonardo (IT)

The role of different particle sizes in the characterization and specification of SRFs

10.40 - 11.10 Coffee break

11.10 - 11.40 Poster discussion

SESSION C5 - Palazzina Grecale, Room A

h. 11:40 - 13:10

RDF - Markets and Quality Optimization

Chair / Presidente: B. Ruggeri (IT)

K. Warren, P. Howes (GB)

An evaluation of arisings and markets for waste derived fuels in Wales

P. Isard, E.A. Stern (CA)

Hydrolyser application and development of a pellet engineered fuel for MSW management in Italy

V. Herbst, L. Streff, A. Humeniuk, G. Burkhardt (DE)

New ways to make MBT sustainable. Case study - Bio-drying for RDF in Sulaimaniyah, Iraq, 2013

D. Thamer, M. Winter (AT)

Waste to Energy with Refuse Derived Fuel (RDF) by efficient drum drying

SESSION D4 - Room 6

h. 9:00 - 10:40

Waste Management Issues in Developing Countries

Chair / Presidente: C. Trois (ZA)

S. Mazo-Nix (US)

Barriers for zero waste implementation in developing countries

V. Inglezakis, L. Rojas, J. Kim, K. Moustakas, A. Aitbekova, A. Ismailova, G. Shorakyzy, A. Kystauova, A. A. Abirov, N. S. Serikbayev (KZ)

Analysis of current situation in municipal waste management and implementation of decision support software in Astana, Kazakhstan

S. Mazo-Nix (US)

Options for implementing municipal solid waste greenhouse gases abatement projects in developing countries

T. Mandigora, M. Mogotsi (ZA)

A paradigm shift in the development of Integrated Waste Management Plans (IWMPs) in South Africa, in order to achieve Chapter 3, Section 11 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)

B. Gu, H. Wang, J. Bi (CN)

Physical compositions of municipal solid waste in China: national perspective

S.A.Batool, M.N. Chaundry (PK)

Hospital waste management in Lahore, Pakistan

10:40 - 11:10 Coffee break

11:10 - 11:40 Poster discussion

SESSION D5 - Room 6

h. 11:40 - 13:10

Workshop: Quality and Treatment of Syngas

Chair / Presidente: D. Chen (CN)

V.F. Kosov, V.A. Lavrenov, V.M. Zaitchenko (RU)

Tarless gas from biomass via two-stage thermal conversion

N. Wang, D. Chen, P. He (CN)

Reforming of MSW pyrolysis volatile on their char and the change of syngas

E. Houshfar, A. Grimshaw, P. Lundstrom (GB)

Syngas production from gasification of waste

R. Cimpoaia, Y. Zhao, M. Haddad, S.R. Guiot (CA)

Compared performance of hyperthermophilic hollow fiber membrane and gas lift bioreactors inoculated with pure carboxydotherrmus hydrogenofomans culture for syngas

A. Comazzi, C. Pirola, C.L. Bianchi, F. Galli, F. Manenti (IT)

Biosyngas conversion by Fischer - Tropsch synthesis: experimental results and multi-scale simulation of a PBR with high Fe loaded supported catalysts

SESSION E4 - Room 7

h. 9:00 - 10:40

Energy Production from Sewage Sludge

Chair / Presidente: G. Ionescu (IT)

A. Ben Hassen-Trabelsi, A. Ghrib, A. Friaa, M. A. Masmoudi, S. Naoui, T. Kraiem, H. Belayouni (TN)

Comparative study of gasification and pyrolysis of pre-dried sewage sludge

V.M. Zaitchenko, V.F. Kosov, G.A. Sytchev, O.M. Umnova (RU)

The advanced technologies of energy bio-waste recycling

N. Voulvoulis (GB)

Anaerobic digestion in the nexus of energy, water and food

F. Anastasia, M.C. Lavagnolo, E. Bonacci, G. Andreottola (IT)

Biogas production from an upflow imhoff tank treating concentrated blackwater

A. D. Shana, S. Ouki, M. Asaadi, P. Pearce (GB)

Comparative study of the impact of different sewage sludge treatment process configurations on extracellular polymeric substrates and soluble microbial product in sewage sludge

D. Panepinto, G. Genon, F. Viggiano (IT)

Thermal treatment of wastewater biosolids: evaluation of an Italian case

10:40 - 11:10 Coffee break

11:10 - 11:40 Poster discussion

SESSION E5 - Room 7

h. 11:40 - 13:10

Workshop: Biomethane Potential Test (BMP)

Chair / Presidente: V Torretta (IT)

Introductory lectures:

J. Heerenklage, H. Wedwitschka, J. Pröter, Y. Zhou, Y. He, S. Yan, Q. Zhang, K. Kuchta (DE)

Influential factors on the inoculum quality of bio-methane potential tests

L. Rossi, M. Soldano, C. Fabbri, S. Piccinini (IT)

Biochemical methane potential (BMP) of organic by-products and waste

C. Baccot, V. Pallier, G. Feuillade-Cathalifaud (FR)

Enrichment of a young municipal solid waste leachate with extracted fraction of organic matter: impact on its biochemical methane potential

SESSION F4 - Room 8

h. 9:00 - 10:40

IWWG Workshop: Thermal Treatment

Chair / Presidente: U. Arena (IT)

The workshop of the IWWG-Task Group on Thermal Treatments (TGTT) represents the final stage of a path that begun two years ago, during the last Venice symposium. A selection of papers will be presented during the workshop, as short presentations aimed to stimulate the discussion about specific aspects: the role of thermal treatments in a sustainable waste management; the potential of energy recovery; the advanced solutions in the predominant combustion-based, moving-grate units, but also the recent developments in gasification and pyrolysis units. The second part of the workshop will be dedicated to the discussion aimed to the preparation of a Position Document highlighting the scientific reasons for which the energy-from-waste processes have to be seen as a key option of sustainable waste management, also in a modern recycling society.

Introductory lectures:

P. H. Brunner, H. Rechberger (AT)

Waste to Energy – key element for sustainable waste management

L. Lombardi, E. A. Carnevale, A. Corti (IT)

A review of technologies and performances of thermal treatment systems for energy recovery from waste

D. Chen, L. Yin, H. Wang, P. He (CN)

Pyrolysis technologies for municipal solid wastes: a Review

J. J. E. Martin, R. Koralewska, A. Wohlleben (DE)

Advanced solutions in combustion-based WtE technologies

N. Tanigaki, Y. Ishida, M. Osada (JP)

A case-study of landfill minimization and material recovery via waste co-gasification in a new waste management scheme

10:40 - 11:10 Coffee break

11:10 - 11:40 Poster discussion

SESSION F5 - Room 8

h.11:40 - 13:10

Workshop: Fuel Cells

Chair / Presidente: M. Ragazzi (IT)

M. A. López Zavala, P. R. Torres Delenne, L. Reynoso Cuevas (MX)

Hybrid system for wastewater treatment and simultaneous production of electricity and hydrogen: modeling approach

D. Papurello, L. Tognana, A. Lanzin, M. Santarelli, S. Silvestri, F. Biasioli (IT)

Energy production from biogas to SOFC energy system: pilot plant experience

SESSION A6 - Auditorium

h. 14:30 - 16:10

Anaerobic Process Optimization (I)

Chair / Presidente: W. Clarke (AU)

J. Moestedt, E. Nordell, S. Shakeri Yekta, J. Lundgren, M. Genero Marti, C. Sundberg, J. Ejlerthsson, B.H. Svensson, A. Björn (SE)

Effects of trace element addition on process stability during anaerobic co-digestion of OFMSW and slaughterhouse waste

N. Engler, K. Loewe, K. Elberg, M. Nelles (DE)

Interaction of different feedstocks for biogas plants: superposition effects on biogas yield and kinetics of biogas formation

P.C. Benito, M. Greger, M. Schlien (LU)

Digestion of grass silage in a semi-continuously fed reactor at increasing loading rates - Process stability and kinetics evaluation

C. Akyol, G. Ozbayram, O. Ince, S. Kleinstauber, Z. Cetecioglu, D. Kaya, V. Coban, B. Ince (TR)

Evaluation of the effect of mixing ratio on methane generation during the anaerobic co-digestion of cow manure and *hordeum vulgare*

16:10 - 16:40 Coffee break

SESSION A7 - Auditorium

h. 16:40 - 18:20

Anaerobic Process Optimization (II)

Chair / Presidente: P. Lens (NL)

F. Lü, Y. H. Liu, L. M. Shao, P. J. He (CN)

Steady methanization with high efficiency at pH low to 5.5

O.F. Eze, R. Blanchard, A.D. Wheatley (NG)

An investigation into the potential for improving anaerobic digestion process using solar thermal enhancement

Z. Liu, Y. Dang, C. Li, D. Sun (CN)

Inhibitory effect of high $\text{NH}_4\text{-N}$ concentration on anaerobic biotreatment of fresh leachate from MSW incineration plants

D. Al-Sanioura, S. Ghanimeh, P. Saikaly, M. El-Fadel (LB)

Startup of thermophilic anaerobic digestion systems with high solids food waste influent

SESSION B6 - Theatre Hall

h. 14:30 - 16:10

Alternative Biofuel Production

Chair / Presidente: G. Costa (IT)

J. Tsubota, I. Matsusuhita, Y. Kawata (JP)

Co-production of biogas and biochemicals for economically advantageous waste management

F. Garbo, M.C. Lavagnolo, M. Malagoli, R. Cossu (IT)

Phytotreatment of landfill leachate for alternative energy crops cultivation

J. Kannengiesser, K. Sakaguchi-Söder, T. Mrukvia, J. Jager, L. Schebek (DE)

Generation of biofuels from organic municipal waste with an integration of a percolation process at a composting facility

T. Kraiem, A. Ben Hassen-Trabelsi, S. Naoui, H. Belayouni (TN)

Hydrocarbon biofuels production from waste beef fats via pyrolysis reactor: an environmental approach

F. Zimbardi, E. Viola (IT)

Second generation ethanol from lignocellulosic residues

16:10 - 16:40 Coffee break

SESSION B7 - Theatre Hall

h. 16:40 - 18:20

Biohydrogen Generation (I)

Chair / Presidente: A. Poletti (IT)

I. Moreno-Andrade, S.G. Santiago-Cruz (MX)

Bio-hydrogen and methane production from organic solid waste by a two-step anaerobic digestion process

G. Antonopoulou, G. Dimitrellos, D. Vayenas, G. Lyberatos (GR)

Physicochemical pretreatment of grass and its effect on fermentative hydrogen production

M.Y. Zubkova, V.I. Maslikov, M.P. Fedorov, A.P. Chusov (RU)

Biogas as a potential energy source of hydrogenous fuel for autonomous power supply systems

H. Boucard, S. Takami, E. Weiss-Hortala, R. Barna, T. Adschiri (FR)

Catalytic conversion of black liquor under sub/supercritical conditions for H₂ production

SESSION C6 - Palazzina Grecale, Room A

h. 14:30 - 16:10

Energy from RDF

Chair / Presidente: E.C. Rada (IT)

J. Arenales, V. Perez, R. Ramos, J. M. Sanchez (ES)

Thermal degradation of paper industry wastes from a recovered paper mill using TGA

T. Seljak, T. Katrašnik (SI)

Designing the microturbine engine for waste-derived fuels

E.C. Rada, C. Zatelli (IT)

Energy content of SRF from RMSW in the Trentino Province as a results of bio-waste collection strategies

16:10 - 16:40 Coffee break

SESSION C7 - Palazzina Grecale, Room A

h. 16:40 - 18:20

Gasification and Pyrolysis Technologies

Chair / Presidente: D. Chen (CN)

U. Arena, F. Di Gregorio (IT)

Energy from industrial biomass and wastes in a pilot scale fluidized bed gasifier

P. Harvey, C. Spinazzi (IT)

Birmingham Bio Power Project

P.T. Williams, C. Wu, C. Efica (GB)

Hydrogen-rich syngas from wastes and biomass using a two-stage pyrolysis-reforming gasification

S. Ciuta, F. Patuzzi, M. Baratieri, M.J. Castaldi (US)

Reaction sequence understanding during pyrolysis and gasification of biomass via intra-particle gas sampling

J. Szałatkiewicz, R. Szewczyk, E. Budny (PL)

Pyrolysis of multimaterial Tetra Pak packages – Investigation of key process parameters

N. Cerone, F. Zimbardi, L. Contuzzi, A. Villone, V. Valerio (IT)

Gasification of lignin rich solid waste and production of hydrogen in a 200 KWTH pilot plant

SESSION D6 - Room 6

h.14:30 - 16:10

Thermal Treatments Experiences in Developing Countries

Chair / Presidente: M. Ragazzi (IT)

M. R. Berríos - Godoy (BR)

Recovering energy from municipal solid waste in Brazil. Potential situation and current reality

F. Vitali, A. Perteghella, M. Pilotelli, M. Vaccari (IT)

Agricultural waste as energy source: a technology to exploit rice husk in effective-improved-cookstoves

M. A. López Zavala, D. Muñoz Leyva, L. Reynoso Cuevas (Mx)

Degradation of biodegradable infectious hazardous wastes from hospitals by using a thermal composting process

16:10 - 16:40 Coffee break

SESSION D7 - Room 6

h. 16:40 - 18:20

Assessment of Environmental Economic Sustainability in WM Systems

Chair / Presidente: C. D'Alpaos (IT)

L. Rigamonti, I. Sterpi, F. Lovato, M. Grosso (IT)

An indicator to assess the environmental and economic sustainability of integrated MSW management systems

L. Rigamonti, S. Ferreira, M. Grosso, R.C. Marques (IT)

Cost-benefit analysis of the packaging waste management system in the Lombardia Region

S. Sakai, J. Yano, Y. Hirai (JP)

Energy recovery and greenhouse gas reduction potentials from municipal solid waste including food waste in Japan

K. Oluoti (SE)

The Nigerian wood waste: a renewable and dependable and fuel option for electricity production

SESSION E6 - Room 7

h. 14:30 - 16:10

Workshop: Hydrothermal Carbonization

Chair / Presidente: L. Alibardi (IT)

Introductory lectures:

D. Basso, F. Patuzzi, E. Weiss-Hortala, E.C. Rada, D. Castello, M. Baratieri, L. Fiori (IT)

Waste to biofuel through hydrothermal carbonization

16:10 - 16:40 Coffee break

SESSION E7 - Room 7

h. 16:40 - 18:20

Brazilian Case Studies on Biomass Potential

Chair / Presidente: V. Schneider (BR)

S. Peres, M. A. P. Palha, J. F. T. Juca, E. Azevedo, W. R. P. Bezerra, A. Codeceira Neto (BR)

The platform for the energetical valorization of the biomass residues for the bio-gas and electricity production in the state of Pernambuco - Brazil

V.E. Schneider, A.R. Rosa, C. Lazzaretti, S.L. Santos (BR)

Assessment of the potential to generate electricity through anaerobic digestion for three cities in Southern Brazil

V. E. Schneider, T. Bortolin, S. Carra, I. Donazzolo (BR)

Biogas and energy potential generation through swine manure in Northeast of Rio Grande Do Sul State, Brazil

SESSION F6 - Room 8

h. 14:30 - 16:10

Workshop: Energy Recovery from Exhausted Oil

Chair / Presidente: L. Lombardi (IT)

Exhausted vegetal oils from selective collection - or used cooking oils (UCO) - are renewable resources which are collecting increasing interest at international level. The aim of the workshop is to summarize the state of the art with respect to the collection methodologies of used oils and to the technical possibilities for their energy recovery.

Introductory lectures:

M. Colombo (IT)

Direct use of exhausted oils in reciprocating engines

E. Facci (IT)

RECovered waste cooking OIL for combined heat and power production (LIFE RECOIL project)

S. Sordeti (IT)

Collection methods and exhausted oils market

L. Lombardi, C. Bessi, F. Facchini, R. Meoni, A. Canovai (IT)

Used cooking oil: energy recovery through integration into MSW waste treatment plant

16:10 - 16:40 Coffee break

SESSION F7 - Room 8

h. 16:40 - 18:20

Workshop: RDF Production and Use

Chair / Presidente: E.C. Rada (IT)

RDF offers an alternative strategy to direct combustion of waste, opening to multiple scenarios of energy exploitation.

This workshop is aimed at debating the main issues concerning RDF and the expected development of this sector. In particular, the effect of the recent evolution of some regulations will be dealt with.

The discussion will be oriented to the analysis of the economic concerns of the sector too.

Participants will be invited to share their personal experience in this field.

SESSION A8 - Auditorium

h. 9:00 - 10:40

Anaerobic/Aerobic Treatment

Chair / Presidente: W. Bidlingmaier (DE)

C. Springer, W. Bidlingmaier (DE)

Energy efficiency and CO₂-balance of aerobic and anaerobic biological waste treatment

A. Borello (IT)

Environmental and economical sustainability of OFMSW treatment systems: anaerobic digestion for the production of biomethane versus composting

S. Akizuki, C. Niwa, T. Toda (JP)

Simultaneous methanogenesis and denitrification of marine biofouling organisms in anaerobic-aerobic batch reactors with effluent recirculation

A. Bayrakdar, E.T. Mohammed, B. Çalli (TR)

Hydrogen sulfide removal from biogas by autotrophic denitrification

10:40 - 11:10 Coffee break

11:10 - 11:40 Poster discussion

SESSION A9 - Auditorium

h. 11:40 - 13:10

LCA of Biological WtE Systems

Chair / Presidente: L. Rigamonti (IT)

J. Yano, T. Aoki, K. Nakamura, H. Hori, S. Sakai (JP)

Life Cycle Assessment of biodiesel fuel production using the catalytic cracking and hydrogenation method

M. Collotta, P. Champagne, W. Mabee, M. Alberti, G. Tomasoni (IT)

Use of wastewater and CO₂ in biodiesel from microalgae process: a LCA analysis

C. Cuhls (DE)

Emission of greenhouse gases from composting and fermentation of biowaste in Germany

M. de Barros Miranda Gomes, J. Benedito Sacomano, A. Formigoni, I. Persio de Arruda Campos (BR)

Lifecycle production electricity in landfills: considerations about the Bandeirantes Landfill

SESSION B8 - Theatre Hall

h. 9:00 - 10:40

Landfill Gas Generation and Process Control

Chair / Presidente: P. He (CN)

M. Santos, C. Romanel, A.G.P van Elk (BR)

Re-evaluating biogas generation in landfills operating as CDM projects in Brazil

J.-K. Kim, J.-M. Choi, Y.-C. Cho, S.-K. Han, J.-H. Song, C.-Y. Lee, J. Park (KR)

Initial biodegradation characteristics of livestock carcass under different operational conditions: results from lysimeter studied

D. Megalla, P.J. Van Geel, A. Gladish, B. Gunay (CA)

Impacts of aerobic and anaerobic biodegradation on the heat budget for landfills operating in Northern climates

J.P.A. Hettiaratchi, P.A. Jayasinghe, E.M. Bartholameuz, A.K. Mehrotra (CA)

Waste degradation enhancements in sustainable waste cells

10:40 - 11:10 Coffee break

11:10 - 11:40 Poster discussion

SESSION B9 - Theatre Hall

h. 11:40 - 13:10

Landfill Gas Management in Different Countries

Chair / Presidente: R. Raga (IT)

A.N. Chusov, K.V. Vorob'ev, Y.A. Lednova, D.V. Molodtsov (RU)

Assessment of the environmental microbiological contamination by biogas emissions from MSW landfills in Russia

B.S. Tawabini, O.K.M. Ouda, S.A. Raza (SA)

Investigating waste to energy potential as a renewable energy resource in Al-Hasa Region, Saudi Arabia

N. Abdelmonem, I. El Sersy, S. Elshishini, I. Ismail (EG)

Estimation of landfill gases in Egypt - Evaluation and validation of different models

M. Al-Sarawi, N. Sarawi, A. Al-Enezy (KW)

Rehabilitation of municipal solid waste in enclosed landfill for waste to energy project - Al-Qurain, Kuwait

SESSION C8 - Palazzina Grecale, Room A

h. 9:00 - 10:40

Gasification Technologies

Chair / Presidente: P. Canu (IT)

H. Wang, L.J. Yin, D.Z. Chen, X.B. Ma, P.J. He (CN)

Heat transfer characteristics of MSW and its plastics component in a rotary kiln during pyrolysis

Q. Chen, S. Hu, J. Xiang, L. Sun, S. Su, L. Jiang, L. He, H. Han, B. Xu (CN)

Performance improvement of oxygen carriers by physical structure modification for biomass chemical looping gasification process

M.T. van t'Hoff, H.W.J. Könnemann (NL)

Advanced gasification, gas cleaning and product gas utilization

D. Schweitzer, V. Stack, A. Gredinger, M. Lorenz, H. Dieter, G. Scheffknecht (DE)

Dual fluidized bed steam gasification of dried sewage sludge

L. Jiang, S. Hu, L. Sun, S. Su, Q. Chen, L. He, B. Xu, J. Xiang (CN)

Dual catalytic effects of inherent alkali and alkaline earth metallic species on biomass gasification process

K. Kawamoto, B. Lu (JP)

Development of a process for gasification/reforming/gas conversion of biomass waste using a novel catalytic technology

10:40 - 11:10 Coffee break

11:10 - 11:40 Poster discussion

SESSION C9 - Palazzina Grecale, Room A

h. 11:40 - 13:10

Gasification of Different Substrates

Chair / Presidente: U. Arena (IT)

V. Pérez, J. Arenales, J.M. Murillo, A. Pascual, R. Ramos, J.M. Sánchez (ES)

Thermal degradation of pine, poplar and brassica using TGA

A. Ben Hassen-Trabelsi, A. Ghrib, M. A. Masmoudi, S. Naoui, H. Belayouni (TN)

Syngas production from co-gasification of almond shells and coffee grounds in a fixed-bed reactor

F. M. V. Silva, A. F. Nascimento Jr., A. D. Gusmão, S. Peres (BR)

The energy production potential using the gasification of the civil construction biomass residues in Recife- Brazil

A. Akinrinlade (GB)

Is there anything useful in that? High value product extraction from *Artemisia annua* l in the spent leaf and waste streams

SESSION D8 - Room 6

h. 9:00 - 10:40

Bottom Ash Quality and Management

Chair / Presidente: T. Astrup (DK)

A. Maresca, T. Astrup (DK)

Leaching from biomass combustion ash

X.L. Sun, W.Y. Lin, L. Ge, I.J.R. Ho, O.A. Mohamed Noh, K.S. Heng, S.Y. Choy, M.Q. Nguyen, X.D. Zhou, T. Aung, A. Liu, J.-Y. Wang (SG)

Sampling and characterization of Singapore's municipal solid waste incineration bottom ash

F. Chen, Y. Hu, J. Li, D. Chen (CN)

Migration characteristics of heavy metals in solid waste gasification-incineration plant

A. Polettini, R. Pomi, A. Stramazzo (IT)

Carbon sequestration capacity of BOF slug as affected by particle size distribution

A. Purgar, J. Fellner, M. Hahn, S. Hartmann, J. Lederer, H. Rechberger, F. Winter (AT)

Mercury in Vienna's waste incineration cluster and related problems for fly ash disposal

10:40 - 11:10 Coffee break

11:10 - 11:40 Poster discussion

SESSION D9 - Room 6

h. 11:40 - 13:10

Anaerobic Co-Digestion

Chair / Presidente: P. Pavan (IT)

E. Nordell, B. Nilsson, S. Nilsson Pålgedal, K. Karisalmi, J. Moestedt (SE)

Co-digestion of swine-, dairy manure and industrial waste - The effects of trace element addition

K. Koch, M. Plabst, B. Helmreich, J. Drewes (DE)

Co-digestion of food waste in municipal wastewater treatment plants: effect of different mixtures on the methane yield

T.T. Vgenis, A. Kopsahelis, M.A. Dareioti, C. Zafiri, M. Kornaros, T. Manios (GR)

Anaerobic co-digestion of waste activated sludge with olive mill wastewater or cheese whey

SESSION E8 - Room 7

h. 9:00 - 10:40

Workshop: Alternative and Innovative Biofuels Production

Chair / Presidente: E. Arato (IT)

Introductory lectures

Y. Joshi, M. Wang, H. De Vries, W. De Jong (NL)

Torrefaction of agricultural residues to 'bio-coal'

M.J.A. Romero, A. Pizzi, G. Toscano, G. Busca, B. Bosio, E. Arato (IT)

Deoxygenation of non-edible and waste vegetable oils for the production of bio-fuel: comparison between batch and semi-batch processes

K.P. Shadangi, K. Mohanty (IN)

Bio-oil from thermo-catalytic conversion of non edible oil seeds

10:40 - 11:10 Coffee break

11:10 - 11:40 Poster discussion

SESSION E9 - Room 7

h. 11:40 - 13:10

Workshop: Resource Recovery from Bottom Ash

Chair / Presidente: T. Astrup (DK)

Bottom ashes represent the main solid output by mass from incineration of municipal solid waste. The recent decade has seen significant focus on recovery of metal resources from bottom ashes, and new interests into utilization of the remaining mineral fraction.

Large variations in practice exist; in some countries bottom ashes are mainly land-filled, while in others almost all ashes are sorted, upgraded and utilized. Metal recovery from the ashes generally offer significant environmental benefits by offsetting virgin metal production; however, the toxic emissions from the remaining mineral fraction of the ashes may still be important overall.

Important questions are for example: how efficient is the metal recovery from bottom ashes and what is the quality of the recovered metal, for which purposes can this metal be utilized and how does incineration + recovery compare with current options for metal recovery prior to incineration of mixed waste? How much emphasis should be placed on the mineral fraction as a resource?

Introductory lecture:

R. Stegmann (DE)

Bottom ash treatment and utilization - An interim balance

G. Costa, M. di Gianfilippo (IT)

Assessment of the leaching properties of bottom ash in view of selecting suitable recovery options

SESSION F8 - Room 8

h. 9:00 - 10:00

Biohydrogen Generation (II)

Chair / Presidente: W.P. Clarke (AU)

L. Alibardi, R. Cossu (IT)

Effects of carbohydrate, protein and lipid contents of OFMSW on hydrogen potential productions and fermentation rates

G. De Gioannis, M. Friargiu, E. Massi, A. Muntoni, A. Polettini, R. Pomi, D. Spiga (IT)

Batch and semi-continuous anaerobic digestion of cheese whey for combined H_2 and CH_4 production

A. C. Luongo Malave, M. Bernardi, D. Fino, B. Ruggeri (IT)

Bioenergy ($H_2 + CH_4$) production from a sweet product residue (SPR) via two-stage anaerobic digestion (AD)

10:40 - 11:10 Coffee break

11:10 - 11:40 Poster discussion

SESSION F9 - Room 8

h. 11:40 - 13:10

IWWG Workshop: Biohydrogen Management

Chair / Presidente: A. Muntoni (IT)

The role of hydrogen as energy carrier and storage has now come under discussion due to the increase in number and wider distribution of renewable sources, as well as new batteries and capacitors. The positive environmental implications associated to hydrogen generation from renewable sources and through non energy-intensive processes may contribute to a new impetus on renewable energy production.

The workshop is aimed at discussing and addressing the main issues related to hydrogen storage and the potential developments in this field, the state of the art of hydrogen use in fuel cells and the next innovative solutions, as well as the challenges and potentialities of hydrogen production through biological treatments of biodegradable substrates. Questions that still remain unaddressed or to be further explored will be the subject of the workshop.

Introductory lectures:

M. Guarnieri (IT)

Hydrogen Storage

V. Di Noto (IT)

Hydrogen use in fuel cell

W. Clarke (AU)

Perspectives of bio-hydrogen production

CLOSING SESSION

h. 14:30 - 16:40

New European Perspectives on Waste Hierarchy

Chair / Presidente: R. Cossu (IT)

European waste management strategies are based on a hierarchical structure of actions, treatments and disposal. However, in moving towards a more circular economy where recovery of resources plays the leading role, this hierarchical approach is rendered obsolete and controversial. New waste challenges and products are thus presented, which require in-depth discussion with both the regulators and the operators.

Participants (invited):

EU Representatives

Luciano Butti, *University of Padova (IT)*

Anders Lagerkvist, *Lulea University of Technology (SE)*

Raffaello Cossu, *University of Padova (IT)*

Rainer Stegmann, *Hamburg University of Technology (DE)*

Rosanna Laraia, *ISPRA (IT)*

Christian Holzer, *Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management (AT)*

Claudio Galli, *Hera Ambiente Spa (IT)*

Alessandro Bratti, *Environment Commission - Italian Chamber of Deputies (IT)*

TECHNICAL TOURS

Three guided technical tours of real scale plants operating in the production of energy from biomass and waste both by means of thermal and biological processes have been arranged for Thursday 20th November:

1. Bio Treatment plant in Camposampiero (approx. 1hr from Venice), managed by Etra Spa
2. Anaerobic Digestion plant in Bassano del Grappa (approx. 1hr 30mins from Venice), managed by Etra Spa
3. MSW Incineration plant in Brescia (approx. 2hrs from Venice), managed by Aprica Spa

Coaches will be provided by the Organizers.

VISITE TECNICHE

Nella giornata di Giovedì 20 Novembre sono previste tre visite tecniche ad i seguenti impianti di produzione di energia da biomasse e rifiuti attraverso processi termici e biologici:

1. *Impianto di trattamento biologico di Camposampiero (a circa 1 ora da Venezia), gestito da Etra Spa*
2. *Impianto di digestione anaerobica di Bassano del Grappa (a circa 1 ora e mezza da Venezia), gestito da Etra Spa*
3. *Impianto di termoutilizzazione dei rifiuti solidi urbani di Brescia (a circa 2 ore da Venezia), gestito da Aprica Spa*

Il trasporto verso e dagli impianti è a carico dell' Organizzazione del Simposio.

POSTER SESSION

Poster presentations will be accessible to Symposium delegates at all times. Poster discussion will take place in the presence of authors on Monday, Tuesday and Wednesday morning from 11:10 to 11:40.

SESSIONE POSTER

Le presentazioni poster saranno sempre accessibili ai partecipanti al Simposio. La discussione dei poster avverrà alla presenza degli autori, lunedì, martedì e mercoledì mattina dalle 11:10 alle 11:40.

A. Biogas

A01_ R. Molaey, R.O. Sürmeli, A. Bayrakdar, E. Sahinkaya, B. Calli (TR)
Biogas production from chicken manure: co-digestion with poppy straw

A02_ I. Pecorini, F. Baldi, E.A. Carnevale, A. Corti (IT)
Autoclave and microwave pre-treatments to enhance anaerobic digestion of different lignocellulosic organic fractions of municipal solid waste. A pilot scale study

A03_ T. J. Mönkäre, M. R. T. Palmroth, J. A. Rintala (FI)
Characterization of fine fraction from landfill mining for evaluating methane potential

A04_ F. Lü, T. Cai, L. M. Shao, P. J. He (CN)
Fractionation and characterization of liquid digestate from food and kitchen waste digestion

A05_ H. Joo, S. Akizuki, M. Koyama, N. Norio, T. Toda (JP)
Effect of short-period resting operation on microorganism accumulation in anaerobic digestion

A06_ J.K. Lee, X. Zhao, J. Han, J.Y. Kim (KR)
Effect of substrate particle size on biochemical methane potential of crop residues

A07_ S. Y. Oh, M. J. Kim, Y. M. Yoon, C. H.- Kim (KR)
Ammonia inhibition level of anaerobic microbe acclimated in the anaerobic digester treating pig slurry under the high ammonium nitrogen

A08_ S. Y. Oh, H. Kim, C. H. Kim, Y. M. Yoon (KR)
Population dynamics in the anaerobic digester treating hydrolysate by hydrothermal carbonization of poultry slaughterhouse sludge cake

A09_ S. H. Kim, K. S. Shin, Y.M. Yoon (KR)
Characterization of organic matter using double first order kinetics in the anaerobic digestion of animal byproducts

A10_ *K. S. Shin, Y.K. Sonn, H.C. Chun, Y. M. Yoon (KR)*

The determination of anaerobic biodegradability and organic fractionation of agricultural byproducts by biochemical methane potential assay using double first-order kinetic model

A11_ *A. Comazzi, F. Galli, C. Pirola, C.L. Bianchi, F. Manenti (IT)*

Low temperature and pressure biogas upgrading by water washing, experimental data in a micro-pilot absorption column

A12_ *M.S.S. de M. Costa, J. de Lucas Jr., L.A. de M. Costa, , A.C. Amorim Orrico (BR)*

Potential for biogas production and macronutrients concentration in the biofertilizer from anaerobic digestion of young bulls manure

A13_ *J.M. Matter, M.S.S. de M. Costa, L.A. de M. Costa, A. de Varennes, D. Tessaro (BR)*

Use of waste of agro industry for bioenergy production in the anaerobic co-digestion - Batch phase

B. Biofuels

B01_ *A. Lallai, A. Campus, E. Fois (IT)*

Economic optimization of a dual purpose plant by using biofuels

B02_ *J. Jáuregui-Rincón, V. R. Durán-Padilla, N.A. Chávez-Vela, J.A. Lozano-Alvarez, I.E. Medina-Ramírez, G. Dávila-Vázquez (MX)*

Butanol production using a tolerant mutant strain of *Clostridium acetobutylicum* employed whey

B03_ *H. Giani, C. Clausen, A. Feil, T. Pretz (DE)*

Fine grain separation for the production of biomass fuel from mixed municipal solid waste

B04_ *E. Viola, F. Zimbardi, G. Arcieri, V. Valerio (IT)*

Ethanol from straw via steam explosion, saccharification and fermentation

B05_ *A.L.V. Cubas, M.M. Machado, A. R.A. Dutra, E.H.S. Moecke (BR)*

Biodiesel production from fatty acid derived from the food industry using plasma corona discharge technology

B06_ *F. Saïdane-Bchir, A. El Falleh, E. Ghabbarou, M. Hamdi (TN)*

3rd generation bioethanol production from microalgae isolated from slaughterhouse wastewater

B07_ *A. Pivato, S. Vanin, M.C. Lavagnolo, R. Raga (IT)*

Insects for life: a new international collaboration for manure management and biofuel production using maggots

C. Biomass

C01_ *B. Bergfeldt, G. Pfrang-Stotz, J. Reichelt (DE)*

The influence of ash preparation temperatures on the ash-melting behavior of different biomass fuels

C02_ *G. Pfrang-Stotz, J. Reichelt, B. Bergfeldt, H. Seifert, M. Seitz, S. Ruck (DE)*

Correlation between biomass fuel and slagging in the combustion chamber as well as formation of deposits on heat exchanger surfaces using the example of the BMHP plant Pforzheim, Germany

C03_ *J. Latosińska, J. Gawdzik (PL)*

The evaluation of the mobility and leaching of heavy metals from sewage sludge ashes

C04_ *M.A.M. Costa, C. Affonso, J.A. Carvalho Jr, S.S. Amaral, J.E. Fernandes (BR)*

Adaptive Neuro-Fuzzy Inference System (ANFIS) applied to biomass combustion

C05_ *P.L. Côrtes (BR)*

Comparative bibliometric study of the international scientific production on “Energy, Biomass” and “Energy, Biomass and Waste”

C06_ *M.I. Nunes, V. Pereira, T. Nunes, A.A. Matos, L. Tarelho (PT)*

Biomass ashes potential for the atmospheric carbon sequestration

C07_ *D.J. Carvalho, W.A. Bizzo (BR)*

Evaluation of lignin bagasse and sugarcane trash as fuel for steam generation

C08_ *A. Severoglu, B. Ozturk, B. Saygi Yalcin, S.E. Acikyildiz, H. Sarac (TR)*

Determining the effective parameters on moisture content for solid biomass pellets produced by *Astragalus* and *Verbascum Thapsus*

C09_ *I.A. Borghetti, J.C. Carvalho, J.A. Vieira Costa, C. Rodrigues, M. Borges, P. Habibi, R.A.P. Faria, C.R. Soccol (BR)*

Cultivation of microalgae *Chlorella minutissima* in culture medium with cassava wastewater

D. Strategies

D01_ *A. Kopsahelis, C. Zafiri, M. Kornaros (GR)*

Gate-to-gate LCA analysis of biosurfactants and bioplasticizers production via biotechnological exploitation of fats and waste oils

D02_ *E. David, J. Kopac (Ro)*

Industrial wastes possible source of raw material for applications in energy conservation and environmental protection

D03_ *S. Serranti, G. Bonifazi (IT)*

The European Project Life12 ENV/IT/356 "Resafe": innovative fertilizer from urban waste, bio-char and farm residues as substitute of chemical fertilizers

D04_ *H. Kurishima, K. Takahashi (JP)*

Measurement of changes in consciousness of waste-to-energy facility siting through provision of simple informations

D05_ *M.A.G. de Figueiredo, C.A. Henriques, C.V.R.O. Corrêa (BR)*

Use of technical analysis: HAZOP and vulnerability assessment for a typical scenario of a modern wastewater treatment plant in a oil refinery

D06_ *M.P.K Caldas, V.T. Moraes, J.A.S. Tenório, D.C.R. Espinosa (BR)*

Study of hydrometallurgical route aiming silver and tin extraction from PCB solder waste

D07_ *W.G. Simmons (US)*

Waste to worth - How a pig farm generates environmental revenue

D08_ *W.G. Simmons (US)*

Money to burn? How to capitalize on BioCNG at your wastewater plant

D09_ *K. S. Heng, W. Y. Lin, X. L. Sun, J.- Y. Wang (SG)*

Effect of washing and accelerated carbonation on the leaching behaviour of copper from MSW incineration bottom ash

D10_ *A.N. Chaudhry, G. Jilani, M. Azeem, M.F. Adil (PK)*

Microbial dynamics in the poultry litter under stockpile and composting situations

D11_ *J. Chiabai Junior, J.M.S. Caulyt, P.R.L. Romanha, F.P. Puget (BR)*

Harnessing of aviculture waste to produce electric power

D12_ *C. Milano, E. Pugliesi (BR)*

Reverse logistics: studies and complementation

D13_ *R. Rajarao, N. Saha-Chaudhary, V. Sahajwalla (AU)*

Synthesis and characterisation of silicon carbide and silicon nitride nanoparticles by using wastes

D14_ *S. Oleszek, M. Grabda, E. Shibata, T. Nakamura (JP)*

Application of TBBPA-containing waste plastics in energy-Efficient recycling of metallurgical dust

D15_ S.K. Sossou, M. Sou/Dakoure, N. Hijikata, R. Ito, H.S. Darimani, A.H. Maiga, N. Funamizu (BF)

Sanitizing of finished compost from composting toilet by solar heating in a local solar box

D16_ J.C. Ramirez-Perez, P. Strom (EC)

Selecting stability and maturity indicators for biodegradation process

D17_ G. Perkoulidis, C. Karkanias, D. Rossios, N. Moussiopoulos (GR)

A decision support tool for sustainable municipal solid waste storage, discharge and collection services in crisis affected countries

D18_ S.M. Ruiz Peñalver, J. Philippe, M. Rodríguez Molina, J.A. Camacho Ballesta (ES)

How does the Spanish paper industry contribute to hazardous waste generation?

D19_ H. Sahu, K. Mohanty (IN)

Preparation and application of MgO doped $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ heterogeneous catalyst derived from waste fish bone

E. Environment

E01_ A. Malamakis, D. Logothetis (GR)

Environmental protection through utilization of recycled glass as fluxing agent in the structural ceramics industry

E02_ M. Schiavon, M. Scapinello, P. Tosi, M. Ragazzi, V. Torretta, E.C. Rada, P. Caruson (IT)

Non-thermal plasma treatment of VOC mixtures in air and potential applications to the waste sector

E03_ M. Schiavon, E.C. Rada, M. Ragazzi, V. Torretta, P. Caruson (IT)

Comparison between the environmental impacts of biotrickling filters and biofilters applied to waste bio-drying

E04_ T. Tabata, D. Chiba (JP)

Environmental impact assessment of municipal solid waste treatment system by combining with biogas production that uses sewage sludge

F. Pyrolysis/Gasification

F01 *P. Martinez, E. Bañon, A. N. Garcia, M. Leon, A. Marcilla (ES)*

Flash pyrolysis of footwear materials in a vertical lab scale reactor

F02 *E. David, I. Stefanescu, C. Sandru, A. Armeanu (RO)*

Catalytic removal of biomass tar to increase the efficiency during thermochemical processing

F03 *G. Stravinskas, N. Striūgas (LT)*

Thermal analysis on pyrolysis and combustion of biomass and sewage sludge with evolved gas analysis

F04 *K.P. Shadangi, K. Mohanty (IN)*

Enhancing the fuel properties of Karanja seed pyrolytic oil through copyrolysis with waste polystyrene

G. Case Studies

G01 *E. Ranieri, C. Montanaro, S. Masi (IT)*

Trend of selective collection in an Italian tourist area

G02 *N.R. Marcilio, A. M. S. Pereira, M. Godinho, B. M. Wenzel (BR)*

Solid waste incineration of the footwear industry in southern Brazil

G03 *J. L. Moraes (Br)*

Difficulties for energy recovery through Municipal Solid Waste incineration in Brazil

G04 *R.B. Mahar, A.R. Sahito, D. Yue (PK)*

An appraisal of energy potential of crop residue and animal dung through anaerobic co-digestion process in Pakistan

G05 *W. Khan, V. Inglezakis, S. Ishtiaque, K. Moustakas (KZ)*

Use of decision support software tool in assessment of practices in solid waste management in Karachi, Pakistan

G06 *S. Peres, M. A. P. Palha, A. Freire Jr., T. D. Caires, L. H. P. Silva (BR)*

The potential of electricity production using the Caruaru (Brazil) sewage treatment station biogas

G07 *N.R. Marcilio, A.M.S. Pereira, D. Caldeira, L.E.F. Da Rosa (BR)*

Waste management of building construction from the works for World Cup 2014 in Porto Alegre - Brazil and sustainable solution to organic waste generated during the event

G08 *F. Hossain, H.Z. Lea (BD)*

Solid waste management in Dhaka City, Bangladesh

G09 *S. Kontogianni, C. Karkanas, A. Malamakis, E. Feleki, L. Somakos, K. Aravossis, N. Moussiopoulos (GR)*

Pay-as-you-throw: modern pilot application in Greece