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VENICE 2022

ORGANISED BY:

IWWG / INTERNATIONAL
WASTE WORKING GROUP

iwwg
international waste working group

VENUE:

HOTEL MONACO & GRAN CANAL
VENICE, ITALY / 21-23 NOVEMBER 2022

9TH INTERNATIONAL SYMPOSIUM ON
ENERGY FROM BIOMASS AND WASTE

SYMPOSIUM GUIDEBOOK / DAILY PROGRAMME,
USEFUL INFO, SOCIAL EVENTS, NOTEBOOK

VENICE 2022

9TH INTERNATIONAL SYMPOSIUM ON ENERGY FROM BIOMASS AND WASTE

21-23 November 2022 / Hotel Monaco and Grand Canal, Venice (Italy)

Organised by / *Organizzato da:*



Under the patronage of / *Con il patrocinio di:*



With the scientific support of / *Con il supporto scientifico di:*

Technical University of Denmark (DK)
Hamburg University of Technology (DE)
University of Padua (IT)
The University of Queensland (AU)
University of Rostock (DE)
Tongji University (CN)
Zhejiang University (CN)

Promoted by / *Promosso da:*

US-EPA - United States Environmental Protection Agency (US)
CEWEP - Confederation of European Waste-to-Energy Plants
CNH₂ - Centro Nacional de Hidrógeno (ES)
National Engineering Research Center for Clean Utilization Technology and Equipment of Solid Waste Energy of China (CH)
Institute of Waste Management of Southern Africa (ZA)
SVEBIO - Swedish Bioenergy Association (SE)

Organising Secretariat / *Segreteria Organizzativa:*



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PRESENTATION

PRESENTAZIONE

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 society, particularly in this period where geopolitics and dependence on energy have become such an important issue.

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 use of these technologies however, implementation in many countries remains limited.

The aim of the Venice Symposium is to focus on advances made in the application of technologies for energy recovery from biomass and waste and to encourage discussion in these fields.

The Symposium is organised by IWWG–International Waste Working Group with the scientific support of the Universities of Hamburg, Padova, Queensland, Rostock, Tongji and Zhejiang.

The event is held under the patronage of the Italian Ministry of Ecological Transition.

La produzione di energia da fonti alternative e il conseguente impatto che questo può avere sui cambiamenti climatici sono oggi tra i principali strumenti strategici implicati nello sviluppo sostenibile della nostra società. Numerose tipologie di biomasse e rifiuti contribuiscono infatti, a seguito di processi biologici, chimici e termici, alla produzione di energia e alla riduzione dell'utilizzo di combustibili fossili. Se però da un lato l'interesse della comunità scientifica al riguardo è in continua crescita e le tecnologie esistenti per la generazione di energia da biomasse e rifiuti registrano un rapido sviluppo, dall'altro in molti paesi la loro implementazione rimane ancora limitata.

Lo scopo del Simposio Venice è focalizzare l'attenzione sulle innovazioni e tecnologie per il recupero di energia da rifiuti e biomasse, evidenziarne i progressi più significativi e promuovere la discussione su argomenti quali l'affidabilità dei processi, la loro applicazione su larga scala, i potenziali impatti ambientali ed effetti sulla salute, l'informazione ed il consenso dei cittadini. L'evento è organizzato biennialmente dall'IWWG–International Waste Working Group, con il patrocinio del Ministero della Transizione Ecologica e con il supporto scientifico delle Università di Amburgo, Padova, Queensland, Rostock, Tongji e Zhejiang.

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20 different countries represented in the Scientific Committees

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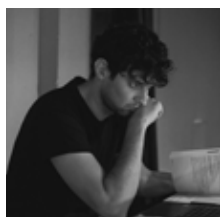
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VENICE 2022 Organising Secretariat:
Eurowaste Srl / Via Beato Pellegrino 23, Padova, Italy / tel. + 39 049 8726986
info@eurowaste.it / www.eurowaste.it / www.venicesymposium.it

SYMPOSIUM STRUCTURE

STRUTTURA SIMPOSIO

The scientific programme of Venice 2022 is structured in 3 parallel tracks. The presentations are organised in Oral sessions, Workshops and Poster sessions for a total of 33 sessions during which about 170 presentations will be delivered.

Oral sessions last 75 min and include 5 presentations (50 min) and a Discussion. Workshops are focused on controversial issues in Waste to Energy; they include few introductory short papers for seeding the debate among participants. Posters will be available digitally, allowing pre-recorded video presentations, download of the individual posters and online discussion with the Authors.

In addition to these traditional sessions, the Symposium includes five plenary Focus Sessions, to be held in the morning and in the afternoon, dedicated to specific themes of high public interest. A moderator, after a state of the art presentation and statement made by 2-3 experts in the field, will guide the discussion among the experts and the audience. The format and the session settings are similar to a "talk show".

Il programma scientifico del VENICE 2022 comprende circa 170 presentazioni distribuite in 3 sessioni parallele.

Le presentazioni sono state organizzate in sessioni orali, workshop e poster. Le sessioni orali avranno una durata di 75 minuti, con 5 presentazioni (50 minuti) seguite da un momento di discussione con il pubblico. I workshop saranno incentrati su temi controversi del Waste to Energy e includeranno brevi presentazioni introduttive per aprire il dibattito tra i partecipanti. La sessione poster sarà resa accessibile digitalmente, consentendo la visualizzazione di video presentazioni pre-registrate, il download dei singoli poster e la discussione online con gli Autori.

Oltre alle sessioni tradizionali, il Simposio prevede cinque momenti di confronto in seduta plenaria: le Focus Sessions, che si terranno tutti i giorni, una al mattino e una al pomeriggio, dedicate a temi specifici di alto interesse pubblico. Un moderatore, dopo una presentazione sullo stato dell'arte e un'introduzione da 2-3 esperti del settore, guiderà la discussione tra gli esperti e il pubblico. Il formato e le impostazioni della sessione saranno simili a un "talk show".

CONFERENCE HALLS / SALE CONGRESSUALI

Session A: Salone del Ridotto - first floor
Session B: Corte Hall - first floor
Session C: Vallarosso Hall - first floor
Poster session: Oppio Room - first floor
Meeting room: Sospiri Room - first floor

INSTRUCTIONS

ISTRUZIONI

INSTRUCTIONS FOR SESSION CHAIRS & SPEAKERS / ISTRUZIONI PER PRESIDENTI DI SESSIONE E RELATORI

Instructions for Chairs of Sessions

On arrival at the Symposium venue Chairs of oral sessions and workshops are kindly requested to contact the Speakers' Desk where curricula vitae of speakers will be provided and any last-minute changes in the programme of the session to be chaired will be notified.

Fifteen minutes prior to the start of the sessions, Chairs should report to the conference room where the session will take place, to meet the speakers.

Chairs are furthermore requested to ensure that all speakers remain seated at the table throughout the entire session and that the timetable is strictly adhered to. This aspect is of extreme importance in order to allow delegates to schedule their attendance in the parallel sessions.

Istruzioni per i Presidenti di sessione

I Presidenti delle sessioni orali e dei workshop sono gentilmente pregati di avvicinarsi allo Speakers Desk al proprio arrivo presso la sede del Simposio affinché vengano forniti loro i curricula vitae dei relatori e vengano comunicate eventuali modifiche al programma della sessione che dovranno presiedere.

Quindici minuti prima dell'inizio delle rispettive sessioni, i Presidenti si presenteranno presso la sala dove si svolgerà la sessione per prendere contatto con i relatori.

I Presidenti di sessione sono inoltre pregati di adoperarsi affinché nessuno dei relatori abbandoni la sala prima della conclusione della sessione e venga rispettata la tempistica prevista. Quest'ultimo aspetto è di particolare importanza al fine di consentire ai partecipanti di seguire le relazioni di loro interesse in diverse sessioni parallele.

Information for Speakers

Speakers should contact the Chair 15 minutes prior to the start of the session in which their paper is to be presented. The Chair will be available in the conference room where the session is to take place. Speakers should be present at the conference table from the beginning of the session and remain for the entire duration. During the presentation commercial advertising should be avoided. Mention of affiliations or company name should be very discreet.

A member of our staff is on hand at the Speakers' Desk for all requirements. Speakers who have not sent a copy of their PowerPoint presentation to the Organising Secretariat are kindly requested to contact the Speakers' Desk in a timely manner, at the latest within the session prior to the one in which their own presentation is scheduled.

If your allotted time runs out, do not under any circumstances hurry to finish the entire presentation but go straight to the conclusions. To this regard, it may be of use to prepare a slide illustrating the conclusions in a synthesized version.

Informazioni per i relatori

I relatori dovranno contattare il Presidente della sessione durante la quale presenteranno la propria relazione almeno 15 minuti prima dell'inizio della stessa nella sala conferenze di riferimento. Gli autori dovranno essere presenti al tavolo della conferenza dall'inizio della sessione e rimanervi per tutta la durata della stessa. Nella presentazione va assolutamente evitata qualsiasi forma di pubblicità. Il riferimento a enti o ditte di appartenenza deve essere molto discreto. Al Banco Relatori sarà sempre presente un incaricato dell'organizzazione per fornire eventuale assistenza. Non sarà possibile utilizzare il computer del banco relatori per preparare le relazioni, ma solo per apportare piccole modifiche e per un controllo finale.

I relatori che non avessero inviato una copia della loro presentazione Power-Point alla Segreteria Organizzativa prima del Simposio sono cortesemente pregati di recarsi al Banco Relatori non oltre la sessione precedente a quella in cui devono presentare la propria relazione (se si tratta di una sessione in programma per la mattina, il termine ultimo per contattare il Banco Relatori sarà la sera prima).

I relatori dovranno assicurarsi che la presentazione sia consegnata allo staff di riferimento secondo le tempistiche indicate.

Durante la presentazione, nel caso stia per terminare il tempo a disposizione, si prega di non accelerare per esporre il resto della relazione ma di passare direttamente alle conclusioni. A tal proposito, potrebbe rivelarsi utile preparare una slide che sintetizzi le conclusioni.

USEFUL INFORMATION

INFORMAZIONI UTILI

WHAT'S INCLUDED IN YOUR REGISTRATION / CHE COSA È INCLUSO NELLA VOSTRA REGISTRAZIONE

- Access to all Symposium sessions and workshops
- Coffee breaks
- Conference Proceedings
- Conference material
- Symposium App
- 50% discount on the cost of the Gala Dinner & Masquerade Party
- On-demand complete videos in the weeks following the event.
- Wi-Fi Internet access

- *Accesso a tutte le sessioni del Simposio*
- *Coffee break*
- *Atti del Simposio*
- *App del Simposio*
- *50% di sconto sul costo della Cena di Gala e Festa in maschera*
- *Accesso on-demand alle registrazioni delle sessioni dopo l'evento*
- *Wi-Fi Internet*

REGISTRATION / REGISTRAZIONI

The Registration Desk will be open in the Conference Centre with the following schedule:

- Monday November 21st: 8:30 - 9:00, 10:30 - 13:00, 14:30 - 18:30
- Tuesday November 22nd: 8:30 - 13:00, 14:30 - 18:30
- Wednesday November 23rd: 8:30 - 13:00, 14:30 - 18:30

Il banco segreteria per la registrazione al Simposio e per tutte le altre informazioni sarà aperto presso il Centro Congressi ai seguenti orari:

- *Lunedì 15 Ottobre: 8:30 - 9:00, 10:30 - 13:00, 14:30 - 18:30*
- *Martedì 16 Ottobre: 8:30 - 13:00, 14:30 - 18:30*
- *Mercoledì 17 Ottobre: 8:30 - 13:00, 14:30 - 18:30*

VIRTUAL PLATFORM & APP

PIATTAFORMA VIRTUALE & APP

Our virtual platform and mobile app, powered by Whova, will allow participants to watch all conference sessions from wherever they are in the world and interact with on-site speakers and delegates.

The platform will be accessible from any device (phones, tablets and computers) and will keep you updated on all conference activities and news.

All delegates will be able to:

- view the agenda, explore sessions and build their personal schedule
- watch all presentations in live streaming
- join live discussions and Q&A chats
- read speakers' profiles and download their conference papers
- network with other attendees via chat and video calls
- share photos and posts on the social wall
- view info and profile of Companies
- browse through all posters and watch the discussions by their authors
- rewatch every session on demand after the conference!

The app will be our main tool to communicate with you!

Please download it now and check it out!

La piattaforma virtuale e la app ufficiale del Simposio, sviluppata da Whova, consentirà a tutti i delegati di seguire tutte le sessioni ovunque si trovino e interagire con gli altri partecipanti sia in presenza che online.

La piattaforma sarà disponibile per tutti i dispositivi (smartphone, tablet e computer) e vi terrà aggiornati su tutte le attività del Venice 2022 (programma scientifico, eventi sociali, ultime notizie, ecc.).

Attraverso la app e la piattaforma, i delegati potranno:

- leggere tutto il programma ed esplorare le sessioni
- creare il proprio programma personalizzato
- guardare le sessioni in diretta
- partecipare alle discussioni e inviare domande ai relatori
- leggere i profili e i CV degli speaker e scaricare gli articoli presentati al SUM
- fare network con gli altri partecipanti tramite messaggi privati, video call o chat di gruppo
- condividere foto e post sulla bacheca
- leggere i profili delle Imprese del Comitato Tecnico del SUM
- ricevere aggiornamenti di programma e ultime notizie in tempo reale
- riguardare tutte le sessioni registrate dopo la fine del Simposio

La App sarà il nostro strumento principale per comunicare con voi!

Si prega di scaricarla subito e di tenerla costantemente monitorata!



INSTRUCTIONS FOR DOWNLOAD

Mobile app (for smartphones and tablets)

The mobile app is available in the App Store and Google Play Store:

- Download the Whova app
- Sign up with the same email address you used for registering in the Symposium
- Click on the event VENICE 2022

Desktop version (for computers)

The virtual platform is accessible at:

https://whova.com/portal/webapp/visef_202211/

To enter the Symposium, log in or click "Sign up here" to create a new profile with your email address.

Please make sure to use the same email address you used when registering for the Symposium and you will automatically log in to the event page.

ISTRUZIONI PER IL DOWNLOAD

La app è disponibile su App Store e Google Play Store:

- Scarica Whova
- Registrati con lo stesso indirizzo email fornito in fase di registrazione al Simposio
- Clicca sull'evento VENICE 2022

Versione Computer (PC e notebook)

La piattaforma virtuale è accessibile da computer al seguente link:

https://whova.com/portal/webapp/visef_202211/

Per accedere al Simposio, si prega di effettuare il log in o creare un nuovo profilo con lo stesso indirizzo email fornito in fase di registrazione al Simposio.

MEMBERS' AREA / AREA RISERVATA

All accepted papers are available for download (PDF documents) from the website members' area (available upon login to registered participants only).

Tutti i paper accettati sono disponibili per il download (file PDF) nell'area riservata del sito ufficiale del Simposio (accesso con login solo per i partecipanti).

SOCIAL PROGRAMME

EVENTI SOCIALI SERALI

Social events have always played a crucial role in the success of our Symposia, representing the chance for all delegates to enjoy the company of colleagues and friends and relax after a full day of conference sessions. VENICE Symposium will be the perfect occasion to meet again after a long time, create new collaborations and friendships, share ideas and have a good time together!

For further details please check the bulletin board in the congress foyer or contact the organising secretariat at the registration desk!

Come tutti sappiamo, negli ultimi tempi abbiamo dovuto ridurre al minimo le interazioni sociali e le attività di gruppo. Il VENICE2022 sarà l'occasione perfetta per ritrovarsi dopo tanto tempo, creare nuove collaborazioni e amicizie, condividere idee e divertirsi insieme!

Per ulteriori dettagli sui singoli eventi serali contattare la segreteria organizzata al banco registrazioni o consultare la bacheca nel centro congressi



Monday / 21 November / h. 19:00

WINE TASTING & WELCOME COCKTAIL

Get the Symposium off to a great start and meet old and new friends in the beautiful setting of Hotel Monaco. A prestigious selection of Italian wines will be served during the evening.

Free event for symposium delegates. Page 28



Tuesday / 22 November / h. 19:00

BACARO TOUR

An alternative & funny way to discover the city by night, around the *sestrieri* of Venice, to enjoy a few glasses of wine with friends. Grouped in 10/12 persons and guided by local friends and members of our staff, we will discover the most authentic *bàcari* of the city. **Book your place!** Page 42



Wednesday / 23 November / h. 20:30

GALA DINNER & MASQUERADE PARTY

DRESS CODE: Black & Venetian Mask!

The event will consist of a seated dinner, a party in typical Venetian style, music and dance entertainment. **Reservation is mandatory.** Page 54

DAY 1 MONDAY
NOVEMBER 21

MONDAY NOVEMBER 21

MORNING

OPENING SESSION / SALONE DEL RIDOTTO / 9:00-12:30

Chair / Presidente: Raffaello Cossu (IT)

WELCOME ADDRESSES / SALUTI DI BENVENUTO

- 9:00-10:00** Raffaello COSSU, *University of Padova (IT)*
Thomas ASTRUP, *Technical University of Denmark (DK)*
Dezhen CHEN, *Tongji University (CN)*
William CLARKE, *University of Queensland (AU)*
Evangelos GIDARAKOS, *IWWG President, University of Crete (GR)*
Michael NELLES, *University of Rostock (DE)*
Rainer STEGMANN *Hamburg University of Technology (DE)*
Paolo RUSSO, *President of Tavolo di Roma (IT)*

OPENING LECTURE / RELAZIONE DI APERTURA

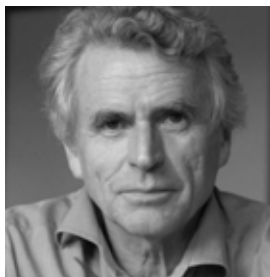
In accordance with a consolidated tradition, the Symposium will be opened by introductory lecture not strictly linked to Waste. The 9th edition of the Venice Symposium will be opened by:

- 10:00-10:30** **Niels BIRBAUMER** / *Institute of Behavioural Neurobiology
University of Tübingen in Germany (DE)*

BRAIN AND ENERGY

The human brain consumes about 30% of the energy (mostly sugar) of the body despite its minimal size. Most of this energy is used by intracortical systems ("thinking"), while sensory input and motor output systems use only about a third of the available energy supply. Waste is mainly eliminated through the glymphatic system around brain arteries and veins. Thinking is generated by neuronal assemblies (recurrent associative networks of dendrites and neurons). Despite the dependency of electrical potentials underlying thinking and emotions and memory on some metabolic processes these psychological phenomena are neuroelectric and not chemical. Through the dynamic mathematical analysis of these energy dependent action potentials and other neuroelectric processes the "reading of thoughts" may become possible. First attempts with brain-computer-interfaces (BCI) in patients suffering from paralysis and the complete locked in state (CLIS) (intact mind without any motor output and no communication) and chronic stroke demonstrate verbal communication directly from the thinking brain without any motor or language mediation. Some ethical and philosophical problems arising from BCI research and the communication with these locked-in people is discussed.

COFFEE BREAK / 10:30 - 11:00



Professor Birbaumer is a psychologist and neurobiologist. He is a leading figure in the development of brain-computer interfaces, a field he has researched for 40 years, with a focus on treating brain disturbances. He has been awarded numerous international honors and prizes, including the Gottfried Wilhelm Leibniz Prize and the Albert Einstein World Award of Science.

INTRODUCTORY LECTURES / RELAZIONI INTRODUTTIVE

11:00-12:30 **Rainer STEGMANN** / *Hamburg University of Technology (DE)*
Giving energy management a higher status in waste management

Evangelos GIDARAKOS / *Technical University of Crete (GR)*
Never let a good crisis go to waste

Thomas ASTRUP / *Technical University of Denmark (DK)*
Any energy left in the public debate in Denmark?

Michael NELLES / *University of Rostock (DE)*
Role of bioenergy in the bioeconomy of the future

William CLARKE / *University of Queensland (AU)*
Incentivising the production of bioenergy from organic waste

Dezhen CHEN / *Tongji University (CN)*
State of Waste to Energy in China

LUNCH BREAK / 13:00 -14:30

MONDAY NOVEMBER 21

AFTERNOON

FOCUS SESSION I

SALONE DEL RIDOTTO / 14:30-15:20

HEALTH RISKS IN WASTE TO ENERGY

Incineration with energy recovery is of great interest to developing countries in addressing the growing volume and challenges of waste. However, there are still many concerns regarding its applicability and potential impacts on health, the environment and, therefore, the climate.

Modern Waste-to-energy (WtE) or waste-derived fuel combustion (RDF) processes for power generation have the potential to reduce the volume of waste and the number of landfills while providing a renewable energy source.

The Focus Session Health risks in Waste to Energy is aimed at assessing the potential health effects (benefits and risks) of exposure to combustion emissions linked to WtE / RDF. All based on what emerges from the most recent scientific evidence.



Moderator:
Prof. Raffaello Cossu
University of Padova
(IT)

Raffaello Cossu, retired in 2018, is Emeritus Professor of Environmental Engineering at the University of Padova (IT). He is Chairman of "Sardinia" International Symposia on Waste Management and Sustainable Landfilling, and "Venice" International Symposia on Biomass and Waste to Energy. He carried out intensive scientific research on landfilling and designed more than 20 landfills in Italy and abroad. President of IWWG (International Waste Working Group) from 2004 to 2009. From 2009 to 2017 he was Editor in Chief of Waste Management, the international scientific journal published by Elsevier.

Since 2018 he is Editor in Chief of DETRITUS, the new IWWG multidisciplinary journal for Waste Resources and Residues. In 2017 he was recipient of the IWWG "A Life for Waste" Award. He has given a series of talks and presentations in conferences on Waste Management and Landfilling throughout the world. He has authored more than 200 articles and conference papers and co-edited five international books on waste management and landfilling technology, published by Academic Press, Elsevier, EF and Spon.



Panellists:

Prof. Massimo Federico, *oncologist*
University of Modena and Reggio Emilia (IT)



Prof. Margherita Ferrante
University of Catania (IT)



Eng. Toni Lesley Gladding
The Open University (UK)

MONDAY NOVEMBER 21

AFTERNOON

SESSION A1 / SALONE DEL RIDOTTO / 15:30-16:45

MATERIAL VS ENERGY OPTIONS IN WASTE MANAGEMENT

Chair / Presidente: David Bolzonella (IT)

T.F. Astrup, P.F. Albizzati (DK)

Reuse, recycling or energy recovery? Sustainability assessment modelling of food waste management in Europe

K.A. Vogt, L. Wenzel, I. Steinberg (DE)

Analysis of secondary waste from a plastics recycling plant for the production of carboxylic acids

I. Hartmann, S. Formann, T. Schliermann, F. Hoferecht (DE)

Application of biogenic silica for particulate matter precipitation processes out of regenerative heat generation from biogenic residues

G. Cali, F. Parrillo, F. Ardolino, C. Boccia, D. Marotto, A. Pettinau, U. Arena (IT)

Co-gasification of plastics and biomass in a pilot scale fluidized bed reactor

M. Arsic, C.A. O'Sullivan, R.E. Haling, A.P. Wasson, D. Antille, W.P. Clarke (AU)

Beyond "waste-to-energy": Can bioenergy drive sustainable Australian agriculture by integrating circular economy with net zero ambitions?

SESSION B1 / CORTE ROOM / 15:30-16:45

STRATEGICAL APPROACH IN THERMAL TREATMENT TECHNOLOGIES

Chair / Presidente: Marco J. Castaldi (US)

J. Yan (CN)

Overview on strategical approach for increasing direct combustion efficiency

W. Meynendonckx, M. Ishteva, J. De Greef (BE)

Prospective analysis of industrial data from a thermal waste-to-energy plant

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

Challenges for grate fired Waste to Energy plants for the future waste fuels

R. Vandeveld, M. Vanierschot, J. De Greef (BE)

Development of a reactor network model for thermal conversion of solid waste in a grate-fired furnace

A. Singhal, A. Goel, A. Bhatnagar, J. Konttinen, T. Joronen (FI)

Water leaching pre-treatment of different lignocellulosic biomass: a detailed study on process parameters, kinetics, thermodynamic equilibrium modelling, and pyrolysis product yields

COFFEE BREAK / 16:45 -17:15

SESSION C1 / VALLARESSO ROOM / 15:30-16:45 / ITALIAN SESSION

PROCESSI BIOLOGICI DI CONVERSIONE ENERGETICA

Chair / *Presidente*: Salvatore Masi (IT)

G. Dolci, V. Venturelli, M. Grosso, A. Catenacci, F. Malpei (IT)

Valutazione della degradabilità anaerobica di sacchetti per la raccolta del rifiuto organico in carta e bioplastica

F. Marchelli, R. Ferrentino, G. Ischia, M. Calvi, G. Andreottola, L. Fiori (IT)

Progetto Occhio al Bio! - Valorizzazione di bioplastiche di occhialeria via carbonizzazione idrotermica e digestione anaerobica

S. Masi, D. Caniani, M. Cozzi, F. Di Capua, I.M. Mancini, M. Viccaro, S. Romano (IT)

Energia dai liquami: potenzialità ed aspetti ambientali dell'impiego di acque reflue per la produzione di biomasse agro-forestali a fini energetici

A. Catenacci, M Peroni, F. Gievers, M. Mainardis, M. Cascio, D. Soderino, E. Pasinetti, M. Bernardi, F. Malpei (IT)

Ozonizzazione dei fanghi per migliorare la digestione anaerobica: dalla scala di laboratorio alla scala reale

G. Costa, K. Czerwińska, S. Del Pero, G. Farabegoli, L. Lombardi, F. Minniti, A. Polettoni, R. Pomi, A. Rossi, M. Śliz, F. Tatti, M. Wilk, T. Zonfa (IT)

Valutazione ambientale della conversione in bioraffineria del siero caseario

COFFEE BREAK / 16:45 -17:15

MONDAY NOVEMBER 21

AFTERNOON

SESSION A2 / SALONE DEL RIDOTTO / 17:30-18:30

ANAEROBIC DIGESTION OF DIFFERENT FEEDSTOCKS

Chair / Presidente: Deborah Panepinto (IT)

T.F. Astrup, C. Lodato (DK)

Potentials for sustainable supply of biomethane from local feedstocks

G. Dolci, V. Venturelli, M. Grosso, A. Catenacci, F. Malpei (IT)

Evaluation of the anaerobic degradability of food waste collection bags made of paper and bioplastic

A. Ezieke, A. Seranno, W. Clarke, D. Villa-Gomez (AU)

Anaerobic digestion of fruit waste: process resilience upon variations in feeding frequency and organic loading rates

F. Marchelli, R. Ferrentino, G. Ischia, M. Calvi, G. Andreottola, L. Fiori (IT)

Valorisation of eyewear bioplastics through HTC and anaerobic digestion: Preliminary results from the Occhio al Bio! project

I. de Paula Sousa, G. Oliveira Rosa da Cruz, D. Novais Rocha, G. Almeida

Kurtemback, A. Pereira Rosa (BR)

Potential of methane production from the co-digestion of swine wastewater and other organic wastes

SESSION B2 / CORTE ROOM / 17:30-18:30

CARBON CAPTURE AND DECARBONATION IN THERMAL TREATMENTS

Chair / Presidente: Thomas Astrup (DK)

T. Croymans, B. Englebert, A. Wightman, J. Izquierdo (BE)

11 reasons why Carbon Capture should be prioritized in the Waste to Energy sector

A. Guercio, A. Bertacchini (IT)

Application of Organic Rankine Cycle (ORC) and industrial heat pump for energy efficiency and CO₂ reduction in wood industry and decentralised energy from waste

M. Ritzkowski, J. Springer (DE)

Towards carbon neutral waste incineration

K. Kyriakopoulos, G. Kardaras, K.D. Panopoulos, T. Kraia, N. Lestos, N. Perdika-ris (GR)

Decarbonising district heating with alternative fuels

SESSION C2 / VALLARESSO ROOM / 17:30-18:30 / ITALIAN SESSION

COMBUSTIONE DIRETTA DEI RIFIUTI

Chair / Presidente: Umberto Arena (IT)

A. Ribaudò (IT)

Recepimento e applicazione delle BAT al settore degli Impianti di incenerimento rifiuti in Lombardia

F. Viganò, L. Cretarola, M. Spinelli (IT)

Celle a Combustibile a Carbonati Fusi (MCFC) per la cattura del Carbonio negli impianti di trattamento termico dei rifiuti

F. Russo, R. Veropalumbo, S. Malvezzi (IT)

Valorizzazione di ceneri pesanti da termovalorizzatore in miscele di asfalto per pavimentazioni stradali

L. Acampora, G. Costa, A. Falsetti, F. Lombardi, F. Marafioti, C. Mensi, I. Verginelli (IT)

Valutazione del potenziale utilizzo delle frazioni minerali presenti nelle ceneri di fondo degli impianti di incenerimento (test di lisciviazione e analisi di rischio)

MONDAY NOVEMBER 21

SOCIAL EVENT

WINE TASTING AND WELCOME COCKTAIL / DEGUSTAZIONE VINI E COCKTAIL DI BENVENUTO

Hotel Monaco & Grand Canal, h. 19:00 - 20:00

Get the Symposium off to a great start and meet old and new friends and colleagues in the beautiful setting of the conference venue. During the evening a prestigious selection of italian wines will be presented and offered to all participants. *With the kind participation of the following Wineries:*



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Tel. +39 0432 662001

info@antonuttivini.it / www.antonuttivini.it



Bracco 181 Azienda Agricola

Via 24 Maggio 28, 34071 Brazzano di Cormons, Gorizia (IT)

tel. +39 0481 540081 / cell. +39 349 3252518

info@bracco1881.com / www.bracco1881.com



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tel. +39 0481390237

info@gradisciutta.com / www.gradisciutta.eu



Jacuss Società Agricola s.s.

Viale Kennedy 35/a, 33040 Torreano, Udine (IT)

Tel. +39 0432 715147 - Mobile tel. +39 3683955835

jacuss@jacuss.it / www.jacuss.it

For further information please contact: Pietro Casciato

pietro.casciato@gmail.com / +39 333 1614606



DAY 2 TUESDAY
NOVEMBER 22

TUESDAY NOVEMBER 22

MORNING

FOCUS SESSION II

SALONE DEL RIDOTTO / 9:00-9:50

ROLE OF THERMAL TREATMENT IN CIRCULAR ECONOMY

Thermochemical treatments of different kinds of solid waste are today able to provide an efficient recovery of electric and thermal energy, an improved recycling of inorganic materials, and a crucial saving of space for landfilling, in full compliance with the protection of the human health and environment.

The new challenge is to move from the status quo of a substantial climate neutral sector to a new status characterized by a further improving of environmental performances in terms of Global Warming potential, able to obtain a negative CO₂ emission balance.

The target of a Carbon Negative sector can be achieved by innovative (post- and pre-combustion) capture of CO₂, that means by adopting Carbon Capture and Sequestration devices in conventional WtE plants or developing innovative waste-to-fuels (WtF) processes and technologies.

Different points of view about these options will be discussed in the Focus Session.



Moderator:

Prof. Umberto Arena
University of Campania
"Luigi Vanvitelli" (IT)

He is full professor of "Solid waste management", "Industrial Pollution Control Engineering", and "Life Cycle Assessment of Industrial Processes" at the University of Campania "Luigi Vanvitelli". He is co-Editor-in-Chief of the Waste Management journal (Elsevier), since January 2018, and Associate Editor of the same journal from 2012 to 2017, with specific competence in thermal treatments and LCA studies for integrated waste management. He has been guest professor in some universities and research centres (Tongji University, Nanyang Technological University of Singapore; Kuwait Institute of Scientific Research of Kuwait City) and lecturer in several international schools. He is Member of the Managing Board of the International Waste Working Group, and, in the same association, the leader of the Task Group on Thermal Treatments. He is author of more than 100 scientific papers published in primary international scientific journals and wrote chapters in multi-authored books dedicated to Fluidized Bed Reactors, with specific attention to Gasification and Pyrolysis of different kind of solid wastes.



Panellists:

Prof. Marco J. Castaldi

The City College of New York (US)



Christophe Cord'Homme

CNIM Faculty of Engineering, Paris (FR)



Prof. Lidia Lombardi

Niccolò Cusano University, Rome (IT)



Eng. Richard Taylor

Advanced Biofuel Solutions Ltd (UK)



Prof. Dezhen Chen

Tongji University (CN)



Prof. Jianhua Yan

Zhejiang University (CN)

TUESDAY NOVEMBER 22

MORNING

SESSION A3 / SALONE DEL RIDOTTO / 10:00-11:15

ANAEROBIC DIGESTION: PROCESS EFFICIENCY

Chair / Presidente: Michael Nelles (DE)

K. Świechowski, E. Syguła, W. A. Razaq, A. Gasinski, J. Łyczko (PL)

Anaerobic digestion of brewers' spent grain with biochar – Biogas production kinetics and process efficiency

W.P. Clarke, S. Toal, A. Johnstone, J. Hart (AU)

Mesophilic and thermophilic dry batch digestion and composting trials for FOGO waste in NSW, Australia

Q. An, D. Chen, Y. Hu (CN)

Research on impacts of N doped hydro-chars on the adsorption of pyrolysis oil and its methane production during the anaerobic digestion process

B. Lemke, A. Nägel, F. Niebling, T. Scheidemann, M. Tietze, G. Wittum, R. Wittum (SA)

Prediction and real-time optimization in biogas production plants with circulating flow

S. Li, A. Salih, N.E. Jones, Z. Zahan, S. Georgiou, M.Z. Othman (AU)

Effect of feedstock solids, composition and C/N ratio on biomethane production from anaerobic co-digestion of chicken wastes with agro-industrial wastes

SESSION B3 / CORTE ROOM / 10:00-11:15

THERMAL TREATMENT: EMISSION CONTROL

Chair / Presidente: Masaki Takaoka (JP)

D. Panepinto, M. Zanetti (IT)

MSW thermal treatment – An overview on the flue gas emissions

M. Schiavon, D. Panepinto, M. Ravina, M. Zanetti (IT)

Overview on air pollution control technologies in waste combustion plants

S. Chen, J. Xu, Y. Chen, D. Chen, L. Yin (CN)

Micro mechanism of competition between HCl and SO₂ in semi-dry flue gas deacidification

F. Galatioto, A. Avveduto, P. Tripodi, G. Spanto (IT)

Advanced scrubber for abatement of particulate matter and treatment of pollution in a municipal solid waste incinerator plant

COFFEE BREAK / 11:15 -11:45

SESSION C3 / VALLARESSO ROOM / 10:00-11:15 / ITALIAN SESSION

GASSIFICAZIONE E PROCESSI TERMICI A BASSA TEMPERATURA

Chair / *Presidente*: Federico Viganò (IT)

G. Cali, F. Parrillo, F. Ardolino, C. Boccia, D. Marotto, A. Pettinau, U. Arena (IT)
Co-gassificazione di plastica e biomassa in un reattore pilota a letto fluido

N. Cerone, F. Zimbardi, L. Contuzzi, M. Carnevale, A. Villone (IT)
Gassificazione di scarti da agricoltura e bioraffineria: effetti dell'ossigeno e del vapore sulla qualità del Syngas

M. Ugolini, L. Recchia, H.E. Wray, J.W. Dijkstra, S. Shah, F. Kruij, I. Lundström, S. Lundkvist, L. Ånnhagen, P. Cobden, C. Wang, T. Hendrickx, D. Witkowska, G.C. Becker, E. Ovsyannikova (IT)
Valutazione ambientale della conversione idrotermica di bioresidui industriali umidi in vettori bioenergetici

A. Masi, G. Costa (IT)
Analisi della trattabilità mediante carbonatazione di diversi tipi di rifiuti alcalini (Progetto BBCircle)

M. Miccio, M. Casa, M. Fraganza, P. Brachi, D. Albanese, B. Tauleigne (IT)
Torrefazione dei residui industriali della lavorazione delle nocciole in vista di una loro valorizzazione in bioraffineria

COFFEE BREAK / 11:15 -11:45

TUESDAY NOVEMBER 22

MORNING

SESSION A4 / SALONE DEL RIDOTTO / 11:45-13:00

ENHANCEMENT OF BIOGAS PRODUCTION IN ANAEROBIC DIGESTION

Chair / Presidente: Rainer Stegmann (DE)

K. Baransi-Karkaby, K. Yanuka-Golub, M. Hassanin, S. Muhsein, N. Massalha, I. Sabbah (IL)

In-situ biological biogas upgrading using Upflow Anaerobic Polyfoam Bioreactor (UAPB): operational and biological aspects

E.S. Lee, S.Y. Park, C.G. Kim (KR)

Feasibility test anaerobically enhancing methane yield under the injection of Hydrogen and Carbon Dioxide

M. Steindl, K. Koch (DE)

Enhanced biogas production of agricultural residues by pre-treatment: Results from lab experiments and implications for large-scale application

X.-Y. Chuang, D. N. Giao Ngo, C. Huang (TW)

Role of sludge derived biochar addition to improving methane production in anaerobic digestion

G.O. Ortiz Vanegas, J. Kim, Y. A Lee, H.-W. Kim (KR)

Effect of cold plasma pre-treatment on thickened sludge for biochemical methane potential enhancement

SESSION B4 / CORTE ROOM / 11:45-13:00

THERMAL TREATMENT RESIDUES: QUALITY AND VALORISATION

Chair / Presidente: Giulia Costa (IT)

F. Russo, R. Veropalumbo, S. Malvezzi (IT)

Valorization of bottom ashes from waste-to-energy plant into asphalt mixtures for road pavements

M. Ike, S. Iijima, Y. Pei, K. Shiota, M. Takaoka (JP)

Principal component analysis of elemental composition for woody biomass ash recycling

L. Acampora, G. Costa, A. Falsetti, F. Lombardi, F. Marafioti, C. Mensi, I. Verginelli (IT)

Evaluation of the utilisation potential of mineral fractions from the treatment of waste incineration bottom ash based on leaching tests and risk assessment

E. Korotenko, H. Rechberger, O. Cencic, J. Jadrný, M. Šyc (AT)

Application of statistical entropy for evaluation of technologies: the FLUWA case study

A. Masi, G. Costa (IT)

Analysis of the treatability by carbonation of different types of alkaline residues within the BBCircle project

SESSION C4 / VALLARESSO ROOM / 11:45-13:00

WORKSHOP: PYROLYSIS OF INDUSTRIAL SEWAGE SLUDGE

Chairs / *Presidenti*: Alberto Pivato, Maria Cristina Lavagnolo (IT)

Currently, the industrial sector is responsible for the production of large quantities of sewage sludges, the majority of which still undergoes a dehydration process and further landfill disposal. In this context, research and industries should work together towards the implementation of new management practices able to achieve a higher degree of economic and environmental sustainability. Among them, thermal treatments, and pyrolysis processes in particular, could play a key role in future management strategies.

For this specific application, technological aspects (e.g., energy efficiency) of pyrolysis will be introduced and discussed together with the achievable improved circularity of materials, different management strategies for solid residues (i.e., biochar) and related carbon neutrality policies.

Introductory lectures:

Alberto Pivato, Maria Cristina Lavagnolo - Department of Civil, Environmental and Architectural Engineering, University of Padua (IT)

Introduction to the workshop

Claudia Mensi, Simone Malvezzi - Laboratory Manager, A2A Life Company (IT)

Management strategies for industrial sewage sludges

Giovanni Beggio - Department of Civil, Environmental and Architectural Engineering, University of Padua (IT)

The role of biochar in a Carbon Negative Economy

Sergio Basso Ricci - Agrimeccanica Srl (IT)

Technologies for sludge pyrolysis

Huanghu Peng - Huzhou University (CN)

ECO Environmental's achievements in oil sludge pyrolysis treatment

Given the background, the main task of the workshop will be to perform, together with the attendants, a preliminary SWOT analysis of the possible full scale application of pyrolysis for the management and treatment of the sewage sludge.

LUNCH BREAK / 13:00-14:30

TUESDAY NOVEMBER 22

AFTERNOON

FOCUS SESSION III

SALONE DEL RIDOTTO / 14:30-15:20

THE CONTRIBUTION OF BIOMASS IN THE ENERGY SYSTEM - COMPETITION WITH FOOD AND MATERIAL USE?

For a climate-neutral society, a 100% renewable energy system and a real circular economy are essential. Within the framework of a sustainable circular bioeconomy, biomass has to make multiple contributions. Among other things (food, feed, material use), bioenergy must be generated as far as possible from biogenic waste and residual materials and used where wind, solar, geothermal and water are not the best solution.

The complex question of what biomass can and should be used in the future sustainable energy system needs to be addressed. In the focus session, arguments will be exchanged and the role of energy recovery from biogenic waste and residues will be discussed in particular.



Moderator:
Prof. Michael Nelles,
University of Rostock
(DE)

He is an environmental engineer and studied Technical Environmental Protection (Technical University of Berlin) with 25 years of experience. Since 2006 he is full professor of Waste Management and Material Flow of the Faculty of Agricultural and Environmental Sciences of the University of Rostock, Germany. Since 2012 Prof. Nelles is also the Scientific Director of the German Biomass Research Center (DBFZ) in Leipzig. His research activity is based on: fundamental and applied aspects of waste management with focus on technological, environmental and economic aspects to mechanical, biological and thermal treatment systems of waste and biomass in different recycling and recovery routes.

He is a member of national and international Advisory Boards of organisations, conferences and journals in the field of waste management and biomass utilisation.

He is author of over 400 articles and chapters in books and journals since 1993



Panellists:

Prof. William Clarke

University of Queensland (AU)



Prof. Luca Fiori

University of Trento (IT)



Eng. Susan Thorneloe

US-EPA, Environmental Protection Agency (US)

TUESDAY NOVEMBER 22

AFTERNOON

SESSION A5 / SALONE DEL RIDOTTO / 15:30-16:45

ANAEROBIC DIGESTION OF WASTEWATER AND SLUDGE

Chair / *Presidente*: William Clarke (AU)

J. Olsson, J. Andersson, S. Bramstedt, F. Bäckbom, T. Crispin, M. Harding (SE)
Anaerobic digestion of primary sludge with recuperative thickening for increased capacity

M. Namburath, B.J. Alappat, T.R. Sreekrishnan (IN)
Anaerobic treatment of high-strength organic wastewater using an inverse fluidized bed bioreactor

G. Manthos, D. Zagklis, C. Zafiri, M. Kornaros (GR)
Technoeconomic and environmental sustainability assessment of anaerobic digestion of olive mill wastewater

A. Catenacci, M Peroni, F. Gievers, M. Mainardis, M. Cascio, D. Soderino, E. Pasinetti, M. Bernardi, F. Malpei (IT)
Sludge ozonation to enhance anaerobic digestion: a comprehensive approach from lab to full-scale

SESSION B5 / CORTE ROOM / 15:30-16:45

THERMAL TREATMENT: PYROLYSIS

Chair / *Presidente*: Umberto Arena (IT)

S.S. Ail, G. Chaudhry, M.J. Castaldi, L. Dorazio, J. Shi, J.C. Fu, C.P. Kelkar (US)
Investigations into the catalytic cracking of pyrolysis oil obtained from plastic wastes

J.A. Meyer, C.A. Strydom, J.R. Bunt, R.C. Uwaoma (ZA)
Pyrolysis products derived from co-processing of coal fines and microalgae

D. Venta Noriega, M. Gomez, P. Villegas, O.D. Gutiérrez (CO)
Characterization of ilmenite mining residue for its potential use as a geocatalyst in pyrolysis processes

R.C. Uwaoma, C.A. Strydom, J.R. Bunt, R.H. Matjie (ZA)
Co-pyrolysis and co-gasification reactivities and kinetics of blends of hydrochar from municipality waste residue and South African density separated coal

COFFEE BREAK / 16:45 -17:15

SESSION C5 / VALLARESSO ROOM / 15:30-16:45

WORKSHOP: WASTE TO ENERGY PERSPECTIVES IN LOW INCOME COUNTRIES

Chair / *Presidente*: Michael Nelles (DE)

For developing countries, the establishment of waste management structures is a challenge. This workshop will focus in particular on how energy recovery and disposal can be integrated into waste treatment in developing countries. Examples are the combined energy and material recovery of biowaste and the thermal treatment of hospital waste, which will be presented in expert lectures.

Introductory lectures:

J. Srafke, M. Lenhart, M. Pohl, A. Nassour, M. Nelles (DE)

Challenges of waste management in Ethiopia and East Africa

M. Ragazzi, V. Torretta, A. Castellucci, P. Castellani, E.C. Rada (IT)

An example of synergies in PhD research on thermal treatment of healthcare waste in low-income countries

COFFEE BREAK / 16:45 -17:15

TUESDAY NOVEMBER 22

AFTERNOON

SESSION A6 / SALONE DEL RIDOTTO / 17:15-18:30

BIOHYDROGEN PRODUCTION

Chair / Presidente: Rainer Stegmann (DE)

M. Materazzi, S. Chari, A. Sebastiani (GB)

Waste-to-Hydrogen: challenges and opportunities in the UK scenario

D. Dong, J. Lee (KR)

Recovery and reuse of ionic liquid as a pretreatment agent for hydrogen fermentation of rish husk

J. M. Lee, G. Kim, J. C. Shin, M. Lee, W. J. Kim, H. Song, S. D. Kim (KR)

Simultaneous removal process of hydrogen sulfide(H_2S) and siloxanes and field application of iron hydroxide desulfurization agent for green hydrogen production from biogas

R. Savio, G. Ferrari, A. Pezzuolo, F. Marinello, M. Guidolin, M.C. Lavagnolo (IT)

Potential biohydrogen production from agricultural residues

L. Bartolucci, E. Bocci, S. Cordiner, E. De Maina, F. Lombardi, V. Marcantonio, P. Mele, V. Mulone, D. Sorino (IT)

Modelling of energy polygeneration system for conversion of silviculture waste into hydrogen and drop-in biofuels

SESSION B6 / CORTE ROOM / 17:15-18:30

GASIFICATION: PROCESS AND QUALITY CONTROL OF OUTPUTS

Chair / Presidente: Johan De Greef (BE)

N. Tanigaki, T. Kashiwabara, N. Fukuda, T. Izumiya (JP)

Operation results and the measures for low emissions at the largest waste gasification plant

V. Messerle, A. Ustimenko, O. Lavrichshev (KZ)

Numerical analysis and experiment on plasma gasification of biomass

T. M. Ismail, K. Yoshikawa, T. Kobori, K. Kanazawa, F. Takahashi, M. Abd El-Salam (EG)

Reaction rate of electron injected air on biomass gasification

N. Ann Kubota, Y. Kashima, M. Sonoda, T. Kurooka (GB)

Landfill site regeneration reference of Fluidized-bed Gasification and Melting EfW System

SESSION C6 / VALLARESSO ROOM / 17:15-18:30

WORKSHOP: CARBON CAPTURE IN WASTE TO ENERGY PLANTS

Chair / *Presidente*: Thomas Astrup (DK)

Within recent years, carbon capture has received considerable attention in relation to waste to energy plants. From a situation when waste to energy in many countries provided a net carbon emission reduction, more renewables and less dependence on fossil fuels in the energy sector have decreased the climate benefits of waste to energy. As a consequence, focus is placed on reducing the carbon emissions.

However, there are many open questions. For example: Which techniques are most suited for carbon capture in waste to energy facilities? In which situations should carbon capture be promoted and when not? Should the captured carbon be utilised and if so how? Or is carbon capture simply yet another emission control feature that has to be commercialised, implemented, and associated with limit values in regulation?

Introductory lecture:

F. Viganò, L. Cretarola, M. Spinelli (IT)

Molten Carbonate Fuel Cells (MCFC) for the carbon capture in Energy-from-Waste (EfW) plants

TUESDAY NOVEMBER 22

SOCIAL EVENT

BACÀRO TOUR WITH THE SYMPOSIUM STAFF / TOUR DEI BACARI VENEZIANI CON LO STAFF

Meeting point: Hotel Monaco & Grand Canal, h. 19:00

On Tuesday 22 November join the Symposium staff in a “Bàcaro Tour”, a typical Venetian itinerant ritual!

The Bàcaro tour is an alternative and funny way to discover the city by night, going from bacaro to bacaro, around the *sestieri* (districts) of Venice, to enjoy a few glasses of wine or spritz with friends.

Bàcaro is a typical venetian tavern characterized by a warm and familiar atmosphere, where glasses of wine (*ombre*) are served along with appetizers (*cicheti*). Cicchetti are small snacks or side dishes, similar in concept to Spanish tapas. Common cicchetti include tiny sandwiches, plates of olives or other vegetables, halved hard boiled eggs, small servings of a combination of seafood, meat and vegetable ingredients laid on top of a slice of bread or polenta, and very small servings of typical full-course plates.

Generally “bacari” have a good price/quality ratio, compared to touristic bars.

Grouped in 10/12 persons and guided by local friends and members of our staff, we will discover the most authentic “bacari” of the city.

All participants will pay for their own drinks and snacks.

In order to organize the groups, please book your place at the registration desk on your arrival.



DAY 3 WEDNESDAY
NOVEMBER 23

WEDNESDAY NOVEMBER 23

MORNING

FOCUS SESSION IV

SALONE DEL RIDOTTO / 9:00-9:50

STATUS AND PERSPECTIVES OF BIOHYDROGEN INDUSTRIAL APPLICATION

Hydrogen is one of a handful of new, low carbon solutions that will be critical for developed countries' transition to net zero. As part of a deeply decarbonised, deeply renewable energy system, low carbon hydrogen produced from waste could be a versatile replacement for high-carbon fuels used today – helping to bring down emissions in vital industrial sectors and providing flexible energy for power, heat and transport. If coupled with carbon capture and storage (CCS), hydrogen from waste also represents the most effective and practical carbon sequestration solution that will be needed to offset emissions from sectors which are difficult to be decarbonised.

This session will discuss the challenges and opportunities related to the deployment of waste to hydrogen technologies.



Moderator:
Prof. Raffaello Cossu
University of Padova
(IT)

Raffaello Cossu, retired in 2018, is Emeritus Professor of Environmental Engineering at the University of Padova (IT). He is Chairman of "Sardinia" International Symposia on Waste Management and Sustainable Landfilling, and "Venice" International Symposia on Biomass and Waste to Energy. He carried out intensive scientific research on landfilling and designed more than 20 landfills in Italy and abroad. President of IWWG (International Waste Working Group) from 2004 to 2009. From 2009 to 2017 he was Editor in Chief of Waste Management, the international scientific journal published by Elsevier.

Since 2018 he is Editor in Chief of DETRITUS, the new IWWG multidisciplinary journal for Waste Resources and Residues. In 2017 he was recipient of the IWWG "A Life for Waste" Award. He has given a series of talks and presentations in conferences on Waste Management and Landfilling throughout the world. He has authored more than 200 articles and conference papers and co-edited five international books on waste management and landfilling technology, published by Academic Press, Elsevier, EF and Spon.



Panellists:

Massimiliano Materazzi

UCL University College London (UK)



Eng. Franziska Müller-Langer

*DBFZ German Biomass Research Center gGmbH
(DE)*



Prof. Rainer Stegmann

Hamburg University of Technology (DE)

WEDNESDAY NOVEMBER 23

MORNING

SESSION A7 / SALONE DEL RIDOTTO / 10:00-11:15

SPECIFIC BIOMASS MANAGEMENT

Chair / Presidente: Marco Schiavon (IT)

G. Bacchetta, G. Cappai, G. De Gioannis, G. Farru, M.L. Manca, M. Manconi, A. Muntoni, A. Orsini, M. Perra, M. Piredda, C.I.G. Tuberoso (IT)

Combined valorization of grape pomace

W. Campbell, S. Daneshamouz, R. Evitts (CA)

Canola Dockage – Feedstock assessment and preliminary results of continuous torrefaction

G. Markou, D. Arapoglou, L. Chaikalis, D. Antonopoulos (GR)

Biogas production from crude glycerol through a fed-batch strategy using sunflower oil-cake residues as a microbial attachment matrice

G. Costa, K. Czerwińska, S. Del Pero, G. Farabegoli, L. Lombardi, F. Minniti, A. Polettini, R. Pomi, A. Rossi, M. Śliz, F. Tatti, M. Wilk, T. Zonfa (IT)

Preliminary environmental evaluation of cheese whey biorefinery

S. Baumberger (FR)

Lignin biorefinery: a way to improve the sustainability of bioenergy production?

SESSION B7 / CORTE ROOM / 10:00-11:15

PYROLYSIS AND GASIFICATION OF DIFFERENT SUBSTRATES

Chair / Presidente: Dezhen Chen (CN)

L. Santa, N. Montes, O.D. Gutiérrez (CO)

Pyrolysis of sugar cane bagasse assisted with acidified natural clinoptilolite

A. Buelvas, O. Vanegas, A. Bula, A. González (CO)

Gasification of solid biomass or fast pyrolysis bio-oil: comparative energy and exergy analyses using aspen plus ®

N. Cerone, F. Zimbardi, L. Contuzzi, M. Carnevale, A. Villone (IT)

Gasification of agricultural and biorefining waste: effects of oxygen and steam equivalence ratios on syngas quality

G. Yuan, W. Zhou, R. Yang, K. Yin, D. Chen (CN)

Tar removal from syngas of refuse gasification by catalytic reforming

F. Viganò, A. Conversano, D. Di Bona, D. Sogni, S. Consonni (IT)

Valorisation of plastic waste: Waste-to-Chemicals processes vs. co-combustion in cement kilns

COFFEE BREAK / 11:15 -11:45

SESSION C7 / VALLARESSO ROOM / 10:00-11:15

WORKSHOP: HIGH-TEMPERATURE VS LOW-TEMPERATURE CONVERSION PROCESSES

Chair / *Presidente*: Luca Fiori (IT)

High-temperature processes are usually classified depending on the amount of oxidant agent fed with the biomass: none for pyrolysis, sub-stoichiometric for gasification, and super-stoichiometric for combustion. Their advantages include being able to convert 100% of the biomass and taking place on a short timeframe, but the involved operating conditions usually pose safety issues. While combustion has been employed for centuries and is a widely established technique, gasification and pyrolysis still have more uncertain aspects and are still not fully deployed on the industrial scale. Low-temperature processes include several different techniques, most of which take place in liquid water. While hydrothermal carbonisation (HTC) and liquefaction (HTL) convert the biomass through thermochemical reactions, anaerobic digestion employs microorganisms. Other minor processes include torrefaction and other types of fermentations. Despite the constantly rising interest in the last years from the scientific community, HTC suffers from some limitations that hinder its diffusion on a large scale, while HTL still has to reach the technological level of HTC. Anaerobic digestion is the most consolidated low-temperature technology, but the use of the digestate is limited in some countries. Combinations of low-thermal processes may overcome the issues related to the single technologies. The aim of this workshop is to discuss the pros and cons of the application of high- and low-temperature technologies and propose interesting interactions between the processes.

Introductory lecture:

G. Ischia, F. Marchelli, L. Fiori (IT)

High-temperature vs low-temperature conversion processes

Pannellists:

Luca Fiori - University of Trento (IT)

Evangelos Gidakos - Technical University of Crete (GR)

Michele Miccio - University of Salerno (IT)

Federico Viganò - Polytechnic University of Milan (IT)

COFFEE BREAK / 11:15 -11:45

WEDNESDAY NOVEMBER 23

MORNING

SESSION A8 / SALONE DEL RIDOTTO / 11:45-13:00

WORKSHOP: BIODIESEL FROM DIFFERENT LIPIDS SOURCES

Chair / *Presidente*: Blake A. Simmons (US)

The issue of geopolitics and dependence from fossil energy sources is becoming of paramount strategic relevance, pushing up the demand for alternative energy sources. Further to solar and wind sources, a huge variety of feedstocks are increasingly considered for producing energy by different conversion processes, either biological, thermal and chemical. Among these, transesterification of lipids for production of biodiesel has been receiving in the last decades a significant attention both at research and applicative level. Critical aspects include the need of finding alternative lipids sources other than energy crops, which are competing with the use of agriculture for food production, and cleaner biodiesel production processes. The workshop focus on these aspects, trying to provide sustainable solutions.

Introductory lectures:

D. Caniani, R. Cossu, P. Falabella, A. Franco, V. Grossule, M.C. Lavagnolo, S. Masi, V. Pucciarelli, R. Salvia, C. Scieuzo (IT)

Lipids deriving from *Hermetia Illucens* larvae as a feedstock for biodiesel production: relevance and perspectives

A.H. Al-Muhtaseb, F. Jamil, A. I. Osman, R. Al-Hajri (OM)

Novel catalyst synthesised from waste glass and eggshells for cleaner fuel production

SESSION B8 / CORTE ROOM / 11:45-13:00

LOW-TEMPERATURE TECHNOLOGIES: PROCESS AND EMISSIONS

Chair / *Presidente*: Luca Fiori (IT)

R.P. Ipiates, D.C. Pimentel, A.F. Mohedano, E. Díaz, M.A. de la Rubia (ES)

Effects of process water recirculation in hydrothermal carbonization products

M. Ugolini, L. Recchia, H.E. Wray, J.W. Dijkstra, S. Shah, F. Kruip, I. Lundström, S. Lundkvist, L. Ånnhagen, P. Cobden, C. Wang, T. Hendrickx, D. Witkowska, G.C. Becker, E. Ovsyannikova (IT)

Environmental assessment of hydrothermal treatment of wet industrial bio-residues into intermediate bioenergy carriers

Z. Mei, D. Chen (CN)

Choice of waste-derived char as a methanation support: effect of carbonization temperature

E. Syguła, M. Hejna, A. Białowiec (PL)

The dark side of the biochar derived from RDF and lignocellulose biomass: volatile organic compounds emission

I. Moukazis, E. Gidakos (GR)

Microwave hydrothermal carbonization of rabbit manure

SESSION C8 / VALLARESSO ROOM / 11:45-13:00

WORKSHOP: ENHANCEMENT OF WASTE TO ENERGY PLANTS

Chairs / Presidenti: Damir Zibrat, Matthias Lukic (AT)

In this workshop, basic theory of unique method of combustion optimization in waste to energy and biomass to energy plants will be explained. Case studies from plants will be explained and by the need in detail discussed. Technical details will be described and discussed in questions and answers after the introductory presentation.

Introductory lecture:

D. Zibrat, M. Lukic (AT)

Enhancement of combustion capacity in waste to energy and biomass to energy plants by implementation of modern optimization systems (theory and case studies)

LUNCH BREAK / 13:00-14:30

WEDNESDAY NOVEMBER 23

AFTERNOON

SESSION A9 / SALONE DEL RIDOTTO / 14:30-15:45

BIOFUELS FROM DIFFERENT FEEDSTOCKS

Chair / Presidente: Luísa M. Martins (PT)

P. Kongjan, R. Jariyaboon, K. Rattadilok Na Phuket, A. Reungsang, S. Malibo (TH)
Bioethanol production from oil palm trunk and frond using *Kluyveromyces marxianus* tistr 5925

F. Zimbardi, E. Viola, M. Morgana, N. Cerone, A. Romanelli, V. Valerio (IT)
Using waste of biorefining lignocellulosics to produce building blocks for biofuels

M. Triantafyllou, T. Kokkalis, G. Kardaras, Tz. Kraia, K.D. Panopoulos (GR)
"Refueling" regional economy: innovative collection of used cooking oil for advanced biofuels

B.A. Simmons (US)

Flying the future: advances in sustainable aviation fuels at the Joint BioEnergy Institute (JBEI)

SESSION B9 / CORTE ROOM / 14:30-15:45

LOW-TEMPERATURE TECHNOLOGIES IN BIOREFINERIES AND WASTE RECYCLING PERSPECTIVES

Chair / Presidente: Nicole Berge (US)

W.A. Rasaq, B. Matyjewicz, K. Swiechowski, Z. Lazar, P. Kupaj, M. Valentin, A. Białowiec (PL)

Proof of the concept: the food waste transformation yeast biomass due to combined hydrothermal carbonization and biological treatment – A novel approach to waste recycling

G. Ischia, D. Scrinzi, L. Fiori (IT)

How can hydrothermal carbonization upgrade actual plants to biorefineries?

D. Moloeznik Paniagua, J.A. Libra, V.S. Rotter (DE)

Napier Grass carbonization treatment for enhancing fuel properties a comparison of vapothermal carbonization and hydrothermal carbonization

M. Miccio, M. Casa, M. Fraganza, P. Brachi, D. Albanese, B. Tauleigne (IT)

Torrefaction of hazelnut industry residues in a biorefinery perspective: flow-sheeting and simulation

E. Syguła, K. Świechowski, G. Natkaniec, A. Białowiec (PL)

Technological parameters of brewers spent grain torrefaction

WEDNESDAY NOVEMBER 23

AFTERNOON

FOCUS SESSION V

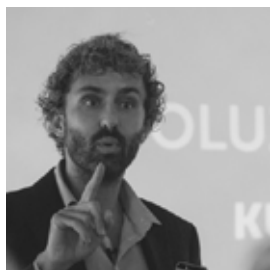
SALONE DEL RIDOTTO / 16:00-17:00

COMMUNICATION AND PUBLIC ACCEPTANCE IN WASTE TO ENERGY

The scope of the discussion presented in the focus session can be easily limited by resorting to three key terms: waste management, opposition to large-scale works, and environmental communication.

Macroscopic social phenomena, such as the growing suspicion towards almost every intervention on the territory, the mistrust of expert knowledge, and the recourse to paternalistic decision-making processes pose enormous challenges to those who deal with communication, within which recurring problems that have never been fully resolved are mixed with new ones: how can a solid relationship of trust with public opinion be built? What communication tools should one focus on? How to contain distortions and disturbances (noise) that physiologically afflict any communication process? What strategies should be followed to arrive at decisions that are as participatory and shared as possible? But first of all: which variables influence tensions and conflicts between science, media, politics and society?

Relying on a multidisciplinary group of academics and professionals, the focus session will try to provide empirical evidence, critical reflections and good practices to begin to answer these questions.



Moderator:
Prof. Giuseppe Tipaldo, University of Torino (IT)

Giuseppe Tipaldo is an associate professor at the Department of Cultures, Politics and Society of the University of Turin, where he teaches "Sociology of Technology" and "Social Media Analysis and Big Data". His main research area is the conflicts between science, politics, media and society and the mutations they are undergoing in contact with digital media. He has dealt with opposition to major projects for over a decade, focusing in particular on the field of urban waste disposal plants.

He has published over thirty research products referenced in national and international journals, being invited as a speaker to more than one hundred conferences.

In 2015 he founded Quaerys, an innovative start-up and academic spin off that offers Data Science services for scientific research and business



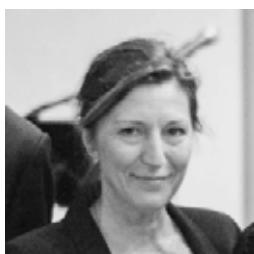
Panellists:
Antonio Cianciullo
Huffington Post (IT)



Dr. Alessandra Fornetti
VIU - Venice International University (IT)



Prof. Giovanni de Feo
University of Salerno (IT)



Prof. Maria Cristina Lavagnolo
University of Padova (IT)



Vito Tartamella, journalist
Focus Magazine (IT)

WEDNESDAY NOVEMBER 23

SOCIAL EVENT

GALA DINNER AND MASQUERADE PARTY / CENA DI GALA E FESTA IN MASCHERA

Hotel Monaco & Grand Canal, h. 20:30

This year, for the first time, we will close the Venice Symposium with an exciting social event in the beautiful setting of Salone del Ridotto in the Hotel Monaco & Grand Canal, historically known for hosting the wildest parties and entertainment in Venice during the XVII century.

To make these spaces relive the glories of the past, on Wednesday 23 join the Gala dinner and celebrate with us the closure of the conference with a dancing party in typical Venetian style. **DRESS CODE: Black & Venetian Mask!** The event will consist of a seated dinner, music and dance entertainment.

50% of the price is included in the Symposium entrance fee. The remaining 50% will be paid by each delegate and amounts to € 50,00 + VAT 22%.

Accompanying persons should purchase the full ticket (€ 100,00 + VAT 22%) from the Secretariat.

In order to take part in the event, **reservation is mandatory**. Please book your place at the registration desk on your arrival. Tickets should be collected from the Secretariat desk starting from Tuesday, 22 November.

FIND YOUR MASK AT KARTARUGA

We are honoured to partner with Kartaruga, a prestigious artisan workshop that creates wonderful Venetian handmade masks for theatre, cinema productions and haute couture shows.

Discover the creativity of its workshop in their studio "Il Canovaccio" (address: Castello 5369 - Calle delle Bande, few steps from Piazza San Marco) and find your exclusive mask to wear at our party. Prices starting from € 20, special reductions (15-20%) reserved only for Symposium delegates!



POSTER SESSIONS
SESSIONI POSTER

POSTER SESSIONS

SESSIONI POSTER

Posters will be accessible to Symposium delegates at all times in digital format. A designated computer is always available in the Oppio Room (first floor) to browse through all posters (PDF files) and watch the pre-recorded presentations by their authors.

These materials will be available also on our virtual platform and Symposium app. Delegates will be able to send questions to the authors via chat, Q&A or video call through the virtual platform.

La sessione Poster sarà accessibile digitalmente per l'intera durata del Simposio, attraverso la nostra piattaforma virtuale. Una postazioni pc con videoproiezione sarà sempre disponibile nella Sala Oppio al primo piano, per visualizzare tutti i poster in PDF, guardare le presentazioni pre-registrate degli autori e inviare le proprie domande tramite la sezione Q&A e la chat.

Sarà inoltre possibile contattare direttamente gli autori per incontrarsi di persona o virtualmente e approfondire la discussione del poster.

P01 / T. Woraruthai, C. Supawatkorn, P. Uthaipaisanwong, K. Kusonmano, T. Wongsurawat, P. Jenjaroenpun, N. Weeranoppanant, P. Chaiyen, T. Wongnate (TH)

Biohydrogen production by a novel strain of *Enterococcus faecalis* isolate VT-H1

P02 / D. Pokorna, Z. Varga, D. Andreides, P. Benes, J. Zabranska (CZ)

Biological upgrading biogas to biomethane in pilot-scale trickled bed biofilm reactor

P03 / N. Wongfaed, A. Reungsang (TH)

Biomethane potential of sugarcane leaves ensiled with hydrogenic effluent

P04 / J. Kim, G.O. Ortiz Vanegas, Y.A. Lee, H.-W. Kim (KR)

Confirming organic matters removal in wastewater by cold plasma treatment and reuse removed carbon dioxide to culture microalgae

P05 / P.M.S.M. Rodrigues, F. David, E. Soares, E. Monteiro, N. Melo, J. Gregório, R. Rodrigues (PT)

Economic aspects of a collection solution of biowaste in an association of municipalities in Portugal

06 / D. Ryu, D. Kim, K. H. Jang, J. W. Lee (KR)

Effect of hydrothermal carbonization to improve combustion properties of bio-fuel from Empty Fruit Bunches

P07 / A. Karlsson, N. Svensson, J. Ejlertsson, F. Ometto (SE)

EffiSludge for Life: Increased resource efficiency in industrial wastewater treatment

P08 / *M. Carone, M. Zanetti, V. A. Riggio (IT)*

Evaluation of microalgae CO₂ bio-fixation efficiencies under controlled growth conditions in a closed pilot-scale planar photobioreactor

P09 / *A. Mellalou, B. Abdelaziz, O. Abdelkader (MA)*

Experimental investigation on the drying of olive pomace waste in a modified hybrid greenhouse dryer

P10 / *C.I. Fabreti Calciolari, F.G. Fernandes da Silva Rossato (BR)*

Feasibility of energy self-sufficiency by biomass production in a Brazilian state

P11 / *Y. Jo, J. Park, G.-B. Kim, S.-H. Kim (KR)*

High-rate activated sludge (HRAS) process for biogas recovery in sewage treatment

P12 / *T. Ender, V. Shettigondahalli Ekanthalu, M. Nelles (DE)*

Hydrothermal carbonization of sewage sludge – an effective approach to treat and manage sewage sludge in rural areas of Germany

P13 / *J. Kumpiene, J. Forsberg (SE)*

Impact of wastewater treatment on PFAS compounds in sludge

P14 / *L. Sillero, M. Perez, R. Solera (ES)*

Improvement of sewage sludge treatment by anaerobic co-digestion with agri-food wastes (wine vinasse and poultry manure)

P15 / *C.J. Cobo-Ceacero, J. Alonso-Azcárate, A. Conde-Sánchez, B. González-*

Corrochano, A.B. López-García, C. Martínez-García, A.M. Martínez-Rodríguez, J.M. Moreno-Maroto, A. Rentero López, M. Uceda-Rodríguez, M.T. Cotes-Palomino (ES)

Manufacture of lightweight aggregates from mixtures of kaolin and iron-rich waste

P16 / *M. Lee, K. Yoo, S. Kim, K.-G. Song, J. Park (KR)*

Metagenomic and Metatranscriptomic Identification of Active Methane Production Microbial populations and Pathways in AnMBR with Rotary disks and Floating media

P17 / *I. Saleh, M. Abu-Dieyeh (QA)*

Novel Prosopis juliflora leaf ethanolic extract effectiveness for extending postharvest shelf-life of strawberries and cucumbers

P18 / *K. Sreeyod, P. Plangklang, A. Reungsang, S. Sittijunda (TH)*

Optimization of succinic acid production from molasses by newly isolated bacteria

POSTER SESSIONS

SESSIONI POSTER

P19 / *C. Ferro Callil Nascimento, H. J. Martez Esquire Nogueira, A. F. Machado Leitão Bento, D. dos Santos Lima, I. C. Tessaro, N. R. Marcilio (BR)*

Organic template-free synthesis of ZSM-5 Zeolite using rice husk ash as silica source

P20 / *A.F. Machado Leitão Bento, R.R. de Souza Xavier, C.F. Callil Nascimento, D. dos Santos Lima, N.R. Marcilio, I.C. Tessaro (BR)*

Preparation and characterization of flat ceramic membrane supports from rice husk ash and alumina

P21 / *L. Sillero, M. Perez, R. Solera (ES)*

Production of biohydrogen, biomethane and biofertiliser by anaerobic tridigestion with temperature phase separation

P22 / *Y. A Lee, H.-W. Kim (KR)*

Proposal of smart strategic management system for cold plasma process using ORP monitoring and OH radical correlation

P23 / *S. Seyffert, N. Schmeißer, C. Cuhls (DE)*

Recovery of nutrients from animal slurry by solid-liquid separation, stripping and fixation of ammonia, precipitation of phosphorus and flocculation

P24 / *S. Ochiai, K. Ishii, T. Furuichi (JP)*

Study on decarbonization of the dairy farming system using biomass crops as cattle bedding

P25 / *M.T.M. Nogueira, A.P.C. Ribeiro, L.M.D.R.S. Martins (PT)*

Synthesis of a bioplastic from agri-food waste

P26 / *E. Syguła, K. Świechowski, G. Natkaniec, A. Białowiec (PL)*

Technological parameters of brewers spent grain torrefaction

P27 / *L.S.S. Hulkko, T. Chaturvedi, M. Hedegaard Thomsen (DK)*

Valorisation of salicornia waste biomass through green biorefinery

P28 / *D. dos Santos Lima, O. W. Perez-Lopez (BR)*

Waste eggshell as a catalyst for the oxidative coupling of methane to light olefins: effect of metal impregnation

P29 / *A. Leal Vieira Cubas, L. de Souza, A. Paggi Matos, E.H. Siegel Moecke (BR)*

Non-thermal plasma changes fatty acid composition and lignocellulosic content in *Scenedesmus* biomass

P30 / *A. Leal Vieira Cubas, F. da Silva Osório, E.H. Siegel Moecke, M. Medeiros Machado (BR)*

Plasma technology as an alternative for biodiesel production

- P31** / *L. Azócar, F. Valdebenito, S. Alejandro-Martin, R. Muñoz (CL)*
Biopropane production through a thermal process by using carboxylates produced from waste frying oil
- P32** / *M. Ferrante, G. Oliveri Conti, A. Cristaldi, L. Falqui, E. Pulvirenti (IT)*
Microplastics and waste water, development of an effective tool in water treatment
- P33** / *G. Farru (IT)*
Integrated treatment of cheese whey and hi-tech waste: a demonstration of synergistic waste management in a circular economy perspective
- P34** / *E. David, A. Armeanu (RO)*
Optimizing the parameters of the slow pyrolysis process of biomass waste to obtain products with improved characteristics
- P35** / *D. Li, M.K. Manu, J.W.C. Wong (HK)*
The role of biochar in anaerobic digestate composting
- P36** / *C. Zhang, J. Zou, S. Ge (CN)*
Study on the pyrolysis of three kinds of digestates in a pilot scale pyrolysis reactor targeting for producing fertilizer
- P37** / *B. Tonanzi, S. Crognale, A. Gianico, S. Della Sala, P. Miana, M.C. Zaccone, S. Rossetti (IT)*
Full-scale mesophilic anaerobic sludge digester: microbial community dynamics from start-up to steady state
- P38** / *G. Oliveira Rosa da Cruz, I. de Paula Sousa, P. Viana Araújo, A. Carraro Borges, C. Leite de Souza, A. Pereira Rosa (BR)*
Organic matter conversion routes in a covered lagoon biodigester treating swine wastewater
- P39** / *J.-Y. Nam, E. Jwa, N. Jeong (KR)*
Electrochemical removal of calcium and magnesium ions in reverse electro-dialysis
- P40** / *C.S. Psomopoulos et al. (GR)*
Critical comparison of selected open LCA databases/tools for waste management

**COMPANIES,
ORGANISERS &
MEDIA PARTNERS**

**AZIENDE,
ORGANIZZATORI &
MEDIA PARTNER**

COMPANIES

AZIENDE

BPC INSTRUMENTS AB

BPC Instruments AB (former Bioprocess Control AB) is a Swedish-based technology company that develops and sells automated, analytical instruments that allow for more efficient, reliable, and higher quality research and analysis in a wide range of industries (e.g., biogas production, biodegradability of bioplastics and other polymers, wastewater treatment, animal nutrition, bioethanol production, biohydrogen production, etc). The result is significant reductions in time and labour and more efficient use of manpower resources. Product portfolio:

- Gas Endeavour (GE)
- Automatic Methane Potential Test System (AMPTS II)
- BioReactor Simulator (BRS)
- BPC Go

BPC Instruments AB has over a thousand customers from nearly 500 organizations in 70 countries, covering both academic research institutes and industrial players in biogas sector. Currently, there are about 800 scientific publications based on data generated by our smart instruments and more are added each month.

A selection of scientific articles, in which our smart analytical instrument was used, are listed at our website: bioprocesscontrol.com/scientificreferences



Contacts / *Contatti:*

Mobilvägen 10

SE-223 62 Lund

Sweden

Tel. +46 (0)46 163950

Website: bioprocesscontrol.com

Email: info@bpcinstruments.com

Contact person:

Mihaela Nistor, PhD

Email: mn@bioprocesscontrol.com

E&CHEM SOLUTION CORP.

Since its establishment in 2007, E&Chem Solution Co., Ltd. has developed the technology for the removal process and adsorbent of harmful gases (moisture, hydrogen sulfide, ammonia, siloxane, etc.) contained in biogas generated from anaerobic digestion facilities and landfills. They are actively participating in the biogas energy conversion project, one of the Korean policies for converting waste into energy, and are expanding their business areas as a pre-treatment facility for anaerobic digestion facilities and a supplier of adsorbents.

In addition, they are carrying out a waste recycling project to build a foundation for a resource-recycling society. They are researching and developing a new concept of high-level treatment and complex odors generated from environmental infrastructure, and are conducting research, technology development, education and training on technologies and products to improve the atmospheric environment through industry-university cooperation.



Contacts / *Contatti*:

94-38 1-gil, Yongjeongjeokje-ro,
Gunnæ-myeon 11154, Pocheon-si,
Gyeonggi-do, Korea
Tel. +82 31 791 9471
Email: catalite1@hanmail.net
Website: www.enchem.co.kr

COMPANIES

AZIENDE

GEOS ENVIRONMENT SRL

Founded in 1987 as an environmental protection services firm, Geos Environment S.r.l. has been continually adapting to the copious changes of this important sector, occurred in our society over the past 25 years; specifically to the more stringent legal and social requirements that have nowadays become the fundamental milestones of our future environmental behaviour. Today, the Company is a truly European operator with excellent human capital, technological capabilities and business references; it states itself as a benchmark in this field, due its capacity to meet clients' needs and develop customized, open-ended solutions to the problems they encounter in the areas of waste management optimizing. Geos Environment Ltd. has the resources and expertise to deal with all of the environmental concerns of Local Authorities and Industrial Companies offering a range of services designed to protect the environment and make our clients much more competitive and self-assured within their areas of influence.

Among the leading National and European operators Geos Environment is capable to provide a complete range of waste management services, covering the entire waste cycle: urban cleaning services, soil and site remediation, collection, sorting, transfer, treatment and recycling-recovery. As priorities the Company is committed to modelling and intensifying its integrated municipal and industrial waste management services, lengthening its lead in waste treatment technology and continuing the industrialization of processes in order to recycle more and more resources. Geos Environment Ltd. is therefore committed to the following goals: reducing the pollutant load of waste in order to mitigate the environmental impact of rising waste production besides, pushing forward with recycling and recovery as prerequisites of its future growth. As global regulations prioritize environmental protection the full value of its mission becomes clear.



1987 | 2022
SERVIZI &
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L'AMBIENTE

Contacts / *Contatti*:

GEOS ENVIRONMENT

via Monti 8, 20123 Milano, Italy

Tel. +39.0823872028

Fax +39.0823883214

Email: info@geosgroup.it

Website: www.geosgroup.it

TECHNIKGRUPPE

Technikgruppe is an Austrian engineering company with 40 employees having international experience and worldwide engagement. Due to its long experience in Energy-from-Waste and biomass Technikgruppe also acts as an independent consultant for technical and commercial issues.

Every combustion line is unique and is a complex technical system. Every combustion line should be individually adjusted to optimize its operation. Their tailor-made automation systems use extremely powerful control processors and extremely fast software to individually optimize each grate system to deliver a state-of-the-art combustion system that optimizes the combustion of waste to deliver:

- enhanced profitability
- enhanced reliability
- enhanced availability

Technical information: <http://www.technikgruppe.com/technology-of-fire/>



Contacts / *Contatti*:

Hauptstrasse 229

8141 Premstaetten, Austria

Tel. +43 (0) 316 255536-0

Email: matthias.lukic@technikgruppe.com

Website: www.technikgruppe.com

ORGANIZERS

ORGANIZZATORI

EUROWASTE Srl

Eurowaste Srl was founded to manage communication and educational tools in connection with research activities performed in the field of environmental engineering by the University of Padova. Over time it has become a service agency that works in national and international context in the scientific events organization.

Its activities is addressed to the entire Scientific Community in order to support it in conceiving and organising congress, symposia, meetings, workshops and all kind of events.

For the past 25 years Eurowaste has been organising International Symposia registering the participation of up to 1000 delegates from dozens of different countries worldwide.

Since 2005 Eurowaste has set up a collaboration with IWWG-International Waste Working Group, established in 2002, following a world-wide demand, to serve as a forum for the scientific and professional community.

Eurowaste Srl nasce per gestire gli strumenti di comunicazione e divulgazione scientifica connessi alle attività di ricerca svolte dell'Università di Padova nel campo dell'ingegneria ambientale. Nel tempo è diventata un'agenzia di servizi che opera a livello nazionale ed internazionale nel settore dell'organizzazione di eventi di carattere scientifico.

Da oltre 25 anni Eurowaste organizza simposi internazionali che in alcune edizioni hanno visto la partecipazione di oltre 1000 delegati provenienti da tutto il mondo.

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Dal 2005 Eurowaste collabora stabilmente con l'IWWG, un'associazione senza fini di lucro nata nel 2002 con l'obiettivo di costituire un forum internazionale di discussione scientifica sulle tematiche connesse alla gestione dei rifiuti solidi.



Contacts / *Contatti:*

EUROWASTE SRL

via Beato Pellegrino 23

35137 Padova, Italy

Tel +39 049 8726986

Email: info@eurowaste.it

Website: www.eurowaste.it

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For further information please contact:

Marco Ritzkowski

c/o Hamburg University of Technology

Harburger Schlosstr. 36 20179 Hamburg, Germany

tel. +49 040 428 78 20 53 / fax +49 040 428 78 23 75

Email: info@iwwg.eu

Website: www.iwwg.eu

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An official journal of IWWG
Editor in Chief: Raffaello Cossu
Published by: Cisa Publisher



Contacts / *Contatti*:

DETRITUS EDITORIAL OFFICE

General manager: Giacomo Gallinaro
Via Beato Pellegrino 23, 35137 Padova, Italy
tel: +39 049 8726986
email: editorialoffice@detritusjournal.com
website: www.detritusjournal.com



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