



Matthias Kühle-Weidemeier (Herausgeber)

Michael Balhar (Herausgeber)

Waste-to-Resources 2015

VI International Symposium MBT and MRF

Matthias Kuehle-Weidemeier, Michael Balhar

Waste-to-Resources 2015
VI International Symposium
MBT and MRF

Energy and resources from MSW and organic waste

Proceedings

5th – 7th of May 2015

Organisers



Silver Sponsor



Cuvillier Verlag Göttingen
Internationaler wissenschaftlicher Fachverlag

<https://cuvillier.de/de/shop/publications/6958>

Copyright:

Cuvillier Verlag, Inhaberin Annette Jentzsch-Cuvillier, Nonnenstieg 8, 37075 Göttingen, Germany
Telefon: +49 (0)551 54724-0, E-Mail: info@cuvillier.de, Website: <https://cuvillier.de>



Content

I Anaerobic treatment of special organic waste fractions

Biogas production from sugarcane filter cake: Start-up strategies, co-digestion with bagasse and plant design 1
Leandro Janke, Athaydes Leite, Marcell Nikolausz, Walter Stinner

Recycling and energy recovery of incontinence waste (INKOCYCLE): Anaerobic treatment of adult diapers. 3
Johanna Heynemann, Steffen Herbert, Thomas Luthardt-Behle, Harald Weigand, Ulf Theilen

II Experience, technical optimization and new methods of utilizing organic waste

Increase of Functionality and Energy Efficiency in Organic Waste Recovery 14
Klaus Fricke, Axel Hüttner, Thomas Turk

Peripheral fermentation of organic waste – Insights and data from practice 39
Stephan Hinterberger

Development of a rotating fermentation reactor for biogas production from organic waste 49
Felix Brück, Ulf Theilen, Harald Weigand

First year biomethane plant of BSR in Berlin: From biowaste to biofuel 61
Karsten Kanning, Ketel Ketelsen

Experiences with Power-to-Gas – upgrading technology for sewage treatment plants? 86
Rüdiger Eckel

III Minimizing emissions from biological processes

Recommendations for the Limitation of Greenhouse Gas Emissions from Open Windrow Composting Facilities 93
Jürgen Reinhold

Emission situation of bio-waste digestion 112
Jaqueline Daniel-Gromke, Walter Stinner, Jan Liebetrau, Michael Nelles



IV Legal aspects of the treatment of MSW and separately collected organic waste

Obligatory Biowaste Container? Wide Margin of Judgement 125
Natalie Hildebrandt

Expansion to a Comprehensive Bin Collection System for Biowaste in Germany - Current situation and perspective for the combined recycling 133
Peter Krause, Rüdiger Oetjen-Dehne

V MBT in the context of changing legal and economic requirements

Effect of Recycling Bin and Recycling Rates on the Composition of Residual Waste 146
Gabriele Becker, Sigrid Hams

Development of waste- and material flow management taking the Hanover region as an example 154
Roland Middendorf

Status and new trends / perspectives of MBT in Germany 165
Ketel Ketelsen, Michael Nelles

VI Energy efficiency and environmental performance of the MBT

Energy Efficiency in MBS Plants 187
Holger Lingk

Optimized biological drying for a stable quality of RDF 196
Ralf Ketelhut

VII Utilization of solid recovered fuels (SRF) in practice

Utilization of alternative fuels in substitute fuel, cement and coal-fired power plants in Germany 210
Dirk Briese, Jens Gatena, Anna Esper

Use of SRF in cement plants 221
Martin Oerter

Evaluation of the potential of different waste fractions for the preparation of Solid Recovered Fuels 229
Diego Garcés, Salvador Ordóñez, Eva Díaz, Herminio Sastre, José Manuel González

VIII Technical development of mechanical-biological treatment plants (MBT)

Comparison of MBT plants with and without upstream Anaerobic Digestion (AD) in terms of moisture management and achievement of landfill disposal criteria 241

Aurel Lübke, Roman Lugmayr

Percolate anaerobic digestion plant as component of MBT Erfurt Ost 654

Hagen Hilse, Sebastian Otto, Marco Schmidt, Thomas Bertram

Conversion of the MBT plant at Gescher into a combined residual and organic waste treatment plant 253

Martin Idelmann

Re-establishment of EC-Conformity after modification or expansion of machinery 262

Thorsten Heinze

IX Hydrothermal carbonization (HTC) is ready for practice

Hydrothermal Carbonisation – Applications and Potentials 271

Katja Wiedner

HTC: Key technology in Biomass waste treatment 282

Alfons Kuhles

The APECS-biomass model 291

Jan Mumme, Benjamin Wirth

X Case studies, practical examples and recent developments in MBT

SolidWasteSim – Simulation of solid waste treatment 293

Bertram Zwisele, Carsten Böhm

Application of paper sludge for co-fermentation in MBT 305

Meike Walz, Corinna Hentschke, Achim Loewen, Christian Bienert

Waste management centre in Gipuzkoa 319

Antton Lete, Rolf Sieksmeyer

From Selective Collection to Solid Recovery Fuel and 50% recovery achievement: two Italian case studies 336

Elena Cristina Rada, Vincenzo Torretta



Case study of an MBT producing SRF for cement kiln co-combustion, coupled with a bioreactor landfill for process residues	345
<i>Mario Grosso, Stefano Dellavedova, Lucia Rigamonti, Sergio Scotti</i>	

XI Waste management and mechanical and biological processes in international context

Latest North American Perspective on Integrated Solid Waste Management	355
<i>John Carlton, Ljupka Arsova</i>	

Integrated Waste Management System including Waste-to-Biofuels in Western Canada	367
<i>Christian Felske</i>	

XII Application of MBT in landfill mining and for production of compost like material

Landfill mining option: MBT role and landfill potential danger	375
<i>Giorgia Passamani, Elena Cristina Rada, Marco Ragazzi, Vincenzo Torretta</i>	

Landfill mining in practice: Dismantling of the old dump Kössen / Austria	387
<i>Martin Steiner</i>	

Compost-like material or thermal valorization – impact on MBT Plant economics and environmental aspects – Case studies in Portugal and UK	393
<i>João Rita, Joel Braga, Chris Mannall, Simon Goldsmith, Hans Kübler, Torsten Rahn, Stephan Schulte</i>	

XIII MBT and waste management in Brazil

National Waste Policy in Brazil: its repercussion after 4 years	405
<i>Christiane Pereira, Klaus Fricke</i>	

Finep and its role in Urban Solid Waste Management in Brazil	412
<i>Erick Meira de Oliveira, Diego de Carvalho Frade</i>	

MBT in Brazil – a solution for the current challenges	426
<i>Jussara Oliveira do Nascimento, Ana Cristina G. Malheiros Pereira, Maria José, Lopes de Araujo Saroldi</i>	

Capacity Building and Fundamental Research to Develop and Implement a Mechanical Biological Treatment Facility with an Integrated Fermentation Stage in Jundiaí-SP, Brazil	435
<i>Aguinaldo Leite, Klaus Fricke, Christiane Pereira</i>	

XIV MBT and waste management in Turkey

Municipal Solid Waste Management in Turkey: Status, Challenges and Future Strategies 450

Hasan Sarptas, Ertugrul Erdin

Improving operations of a large MBT plant in Turkey 461

Theo Schneider

Experiences during the elaboration of Waste management concepts for eight waste management unions in Turkey 472

Jan Skajaa, Rolf Zurl

XV International application of MBT

MBT demonstration project in Tunisia 484

Wolfgang Müller, Aziz Belherazem, Romain Revol, Patrick Winckel, Thouraya Chantou, Ayman Elnaas, Abdallah Nassour, Elyes Guesmi; Hamza Jbili, Mehrez Chakchouk; Ridha Brahim, Habib Omrane, Bernd Hasel, Wolfgang Pfaff-Simoneit

Material-specific waste treatment as an integrated component of RETech export 494

Karin Opphard, Abdallah Nassour, Michael Nelles

XVI Treatment and utilization of residues from biological treatment

Experimental check of digestate processing via vermicomposting 508

Romana Cvrcková, Barbora Lycková, Silvie Heviánková, Radmila Kucerová, Alena Kašpárková

Post-treatment of Composting Leachate by Photocatalytic Process 518

Alireza Ranjbari, Nader Mokhtarani

XVII MBT technology

From Waste to Resources – MBT Technology Through The Ages 530

Rolf Sieksmeyer, Jürgen Martens

System for mixing the contents of a biogas digester by means of cyclically drawing off the product gas 541

Yves Bertrand



3D-Geospatial Data using Unmanned Airborne Vehicles <i>Werner Mayr</i>	548
Mechanical Biological Waste Treatment - Integration among traditional businesses, existing waste facilities and new technologies can trigger environmental and economic benefits <i>Gian Francesco Galanzino</i>	557
Operation experiences at the MBT Maresme, the latest wet anaerobic digestion plant for MSW built in Spain <i>Jacobo Moreno Lampaya, Martin Ernst, Ottokarl Muck, Stephan Schulte</i>	571
Efficient Treatment of Municipal Solid Waste by Percolation and Dewatering <i>Peter Schalk</i>	580
The dry anaerobic DRANCO technology applied to the organic fraction of MSW <i>Winfried Six, Luc De Baere</i>	594
Liquid Digestate-free Anaerobic Digestion with the HZI-KOMPOGAS[®] plug flow digester <i>Raiko Kolar</i>	604
Dry fermentation of organic waste by BEKON technology <i>Rolf Liebeneiner</i>	610
Recovery of value from MSW and SSO by press extrusion and waste cleaning <i>Karl Dirkes, Astrid Severin</i>	617
MBT Ljubljana: In Slovenia arises one of the largest and most modern plants in Europe <i>Gerhard Pilz</i>	625
<u>XVII Poster</u>	
The relevance of the context for greenhouse gas emissions from residual municipal solid waste management <i>Adele Clausen</i>	638
Percolate anaerobic digestion plant as component of MBT Erfurt Ost <i>Hagen Hilse, Sebastian Otto, Marco Schmidt, Thomas Bertram</i>	654