

# European Biosolids & Organic Resources Conference & Exhibition

The Royal Armouries Monday & Tuesday 20<sup>th</sup> – 21<sup>st</sup> November 2017: DRAFT PROGRAMME

Day 1, Monday 20<sup>th</sup> November

Bury Theatre		Royal Armouries Hall A&B
<b>THP</b> Chair: Alan Whipps, Pell Frischmann		<b>Maximising energy</b> Chair: Andrea Gysin, Ostara
9.30 -9.55	<b>Unique full-scale configuration of THP combined with thermophilic digestion</b> Luning, L., van de Ven, M. and Edens. J., <i>Sustec (part of DMT), Netherlands</i>	<b>Calcium nitrate dosage results in improved biogas quality in the anaerobic digesters</b> Stoeck, T. <sup>1</sup> , Filker, S. <sup>1</sup> , Breiner, H-W. <sup>1</sup> , Ettl, M. <sup>2</sup> and Doppelbauer, G. <sup>2</sup> , <sup>1</sup> <i>University of Kaiserslautern, Germany</i> , <sup>2</sup> <i>Yara Industrial, Germany</i>
9.55-10.20	<b>Comparing the performance of Thermophilic and Mesophilic anaerobic digestion of THP Pre-treated Sewage Sludge</b> Shana, A., Gurton, L. and Perez, E.R. <i>Thames Water, UK</i>	<b>Optimal operational conditions for conventional anaerobic digestion of sewage sludge</b> Giacalone, S. <sup>1&amp;2</sup> , Winter, P. <sup>1</sup> and Smith SR <sup>2</sup> , <sup>1</sup> <i>Thames Water Utilities, UK</i> , <sup>2</sup> <i>Imperial College London, UK</i>
10.20-10.45	<b>Advanced Digestion of Sludge enhances shift of biosolids management strategy in Beijing</b> Liao, Z. <sup>1</sup> , Zhang, R. <sup>2</sup> and Huang, O. <sup>3</sup> , <sup>1</sup> <i>Cambi Group AS, Norway</i> , <sup>2</sup> <i>Beijing Drainage Group, PR China</i> , <sup>3</sup> <i>Beijing General Design Institute of Municipal Engineering, PR China</i>	<b>Max and Min: An Energy Conundrum</b> O'Brien, L. and Cooper-Smith, G., <i>Eliquo Hydrok, UK</i>
10.45- 11.20	<b>Investment Decisions - Building up a cost for a Thermal Hydrolysis Facility</b> Koodie, A., Strange, G. and Walker C., <i>Black &amp; Veatch, UK</i>	<b>Spark Ignition CHPs – Great performance, but lots to think about</b> Elson, O., <i>Atkins, UK</i>
<b>11.20 -11.50</b>	<b>Morning coffee/ tea break</b>	
<b>Dewatering</b> Chairs: Morning: Afternoon: Tony Koodie, Black & Veatch		<b>Odour</b> Chair: Marie Hart, GHD
11.50- 12.15	<b>Mobile Sludge Thickening: Results from Anglian Water's Shop Window</b> Rushworth, A <sup>1</sup> , Capeau, P. <sup>1</sup> , Patheyjohns, I. <sup>1</sup> , Inman, D. <sup>2</sup> , <sup>1</sup> <i>Orege</i> , <sup>2</sup> <i>Anglian Water Services (UK)</i>	<b>Abatement techniques to treat odorous chemicals</b> Hantoosh S., <i>Environment Agency, UK</i>

12.15- 12.40	<b>Quantification of EPS and the role PSD and EPS play on dewaterability of THP digested sludge</b> Molokwu, O. <sup>1</sup> , Masse, A-L. <sup>1</sup> , Gavory, M. <sup>2</sup> and Moreira, L. <sup>2</sup> , <sup>1</sup> Thames Water, UK, <sup>2</sup> ENSCR, France	<b>Managing and mitigating odour at Anaerobic Digestion facilities</b> Wise, S., Wood plc, UK
12.40-13.05	<b>A rough guide to trial/mobile thickeners and dewaterers</b> Sims, J., Huber, UK	<b>Abatement of odours from WWTP sludge processes by a system consisting of a biotrickling filter and an activated carbon unit</b> Sempere, F. <sup>1</sup> , Winter, P. <sup>2</sup> , Waalkens, A. <sup>1</sup> , Hühnert, N. <sup>2</sup> , Cranshaw, I. <sup>3</sup> , Beigi, B. <sup>4</sup> and Thorpe, R.B. <sup>4</sup> , <sup>1</sup> Pure Air Solutions, Netherlands, <sup>2</sup> Thames Water, UK, <sup>3</sup> MWH Ltd (part of Stantec), UK, <sup>4</sup> University of Surrey, UK
<b>13.05-14.05</b>	<b>Lunch break</b>	
14.05-14.35	<p><b>PLENARY</b> <b>Chair: Steve Bungay, Helix ECL</b></p> <hr/> <p><b>From incineration to digestion over 10 years</b> Jolly, M.<sup>1</sup> and Taylor, T. <sup>2</sup>, <sup>1</sup> Black &amp; Veatch, <sup>2</sup> Yorkshire Water, UK</p> <p>Yorkshire Water have a plan to close down four sewage sludge incinerators that have been the main disposal route for sludge produced in the Yorkshire area since the 1990s. The incinerators are being replaced by thermal hydrolysis and mesophilic anaerobic digestion (MAD). Black &amp; Veatch are currently working on a scheme to build a new sludge treatment facility at Knostrop in Leeds to treat up to a maximum of 48 000t/yr of sewage sludge. This involves MAD followed by lime addition and liquor treatment by the DEMON process.</p>	
	<b>Dewatering- continues</b> <b>Chair: Tony Koodie, Black &amp; Veatch</b>	<b>Process efficiency</b> <b>Chair: Flavia Macedo, Thames Water</b>
14.40- 15.05	<b>Comparison of sludge-dewatering technologies on Cambi hydrolysed digested sludge</b> Vliegen, J., GEA, Germany	<b>BioWin modelling to reduce the Avonmouth digester commissioning programme from 6 months to 6 weeks</b> Forgacs, G. <sup>1</sup> , Smyth, M. <sup>1</sup> , Law, I. <sup>2</sup> and Amot, T. <sup>3</sup> , <sup>1</sup> Aqua Enviro, UK, <sup>2</sup> Wessex Water Enterprises trading as GENeco, UK, <sup>3</sup> Water Innovation & Research Centre, University of Bath, UK
15.05-15.30	<b>Advanced dewatering using Floccformer: results from Scottish Water demonstration trials</b> Schröder, C. <sup>1</sup> Ashton, S. <sup>2</sup> , Moir, I. <sup>2</sup> , <sup>1</sup> Aquen, Germany, <sup>2</sup> Suez, UK	<b>The Grit Problem: Contamination of AD Feed Materials</b> O'Loan, R., CDEnviro, UK
15.30 -16.00	<b>Afternoon Tea/ coffee</b>	
16.00- 16.25	<b>Next generation high performance cationic dewatering flocculants</b> Ades, J.C. and Van Rossum, R., Kemira, Finland	<b>The application of Lean/ Six Sigma principles to improve process quality at Ireland's largest Biosolids treatment facility</b> McCausland, C. and O'Connor F., CAW, Republic of Ireland
16.25-16.50	<b>The Future of Sludge Thickening &amp; Dewatering is DFMA</b>	<b>Controlled Sludge Stream at Swindon STW: Initial results</b>

	Foster D, Huber, UK	Masse, A-L. and Shana, A., Thames Water, UK
16.50-17.15	<b>A new decanter system for high performance and cost-efficient sludge dewatering</b> Steiger, W., Flottweg SE, Germany	

## Day 2, Tuesday 21<sup>st</sup> November

Bury Theatre		Royal Armouries Hall A&B	Wellington Suite- 1 <sup>st</sup> Floor
Pre-treatment Chair: Ester Rus Perez, Thames Water		Material Use: Morning Chair: Dr Lindsey Gove, Anglian Water	Liquor Treatment Chair: Céline Vaneeckhaute, Université Laval
9.00-9.30	<b>AD pre-treatment – Pulsed Electric Fields in comparison to other pre-treatment methods (THP, enzymatic, steam explosion etc)</b> Tooke, M., 2gb Consulting, UK	<b>Norwegian Sludge and Fertiliser Regulation Revision: A Post-Brexit Model?</b> Tornes, O. <sup>1</sup> and Whipps, A. <sup>2</sup> , <sup>1</sup> IVAR IKS, Norway <sup>2</sup> Pell Frischmann, UK	<b>Anammox for Sidestream Treatment of Wastewater Effluent</b> Pepper, I. <sup>3</sup> , Field, J., <sup>1</sup> Sierra, R., <sup>1</sup> Prevatt, J., <sup>2</sup> Foster, A., and <sup>3</sup> Ikner, L., <sup>3</sup> . <sup>1</sup> University of Arizona, Department of Chemical & Environmental Engineering, <sup>2</sup> Pima County Regional Wastewater Reclamation Department, <sup>3</sup> University of Arizona, Water & Energy Sustainable Technology (West) Center, USA
9.30 -9.55	<b>Class A Biological Hydrolysis: Adapting a Proven Technology for Global Markets</b> Theodoulou, M., Penny J. and Hong, Y., Suez Water Technologies & Solutions, Canada	<b>Water 2020 Future Strategy – Thinking systemically to drive future bioresources strategy</b> Roach, N. and Penny, M., Business Modelling Associates, UK	<b>The assessment of risk in the selection of post THP sludge liquor treatment</b> D. Nemtsov, D., Poznanska-Chapman, K. and Hopkins S., Mott MacDonald Bentley, UK
9.55-10.20	<b>Advanced Digestion – from Concept to Commissioning</b> Powell, C. <sup>1</sup> and Plaza M. <sup>2</sup> , GHD, UK	<b>HACCP for bioresources: a reality check</b> Tompkins, D., Aqua Enviro, UK	<b>Treatment of thermal hydrolysis dewatering liquors using the Amtreat process at Leigh WwtW, UU</b> Bungay, S. <sup>1</sup> and Edgington, R. <sup>2</sup> , <sup>1</sup> Helix ECL, UK, <sup>2</sup> United Utilities, UK
<b>10.20 -10.50</b>	<b>Morning coffee/ tea break</b>		
10.50-11.15	<b>Thermal Hydrolysis of Waste Activated Sludge Only at the Psyttalia WWTP in Athens: Operation Feedbacks</b>	<b>Meeting BAS &amp; Regulatory Requirements while Generating Income from Biosolids</b>	<b>Liquor Treatment Technologies Advancement over AMP 5 &amp; 6</b> de Mooij, H. Sweco, Netherlands

	Zikakis D. <sup>1</sup> , Chauzy J. <sup>2</sup> , Droubogianni I. <sup>1</sup> and Georgakopoulos A. <sup>1</sup> , <sup>1</sup> Aktor S.A., (Greece) <sup>2</sup> Cambi AS (Norway)	O'Riain, G. <sup>1</sup> and Stack, J. <sup>2</sup> , <sup>1</sup> Compass Informatics, Republic of Ireland, <sup>2</sup> Severn Trent Water, UK	
11.15-11.40	<b>Chemistry mass balance across THP digesters (recirculation loop and feed) in five different Sewage Treatment Works</b> Ghafori, M. <sup>1&amp;2</sup> , Fountain, P. <sup>2</sup> , Shana, A. <sup>2</sup> , Macedo, F. <sup>2</sup> , Higgins, M. <sup>3</sup> and Tillahun, D. <sup>2</sup> , <sup>1</sup> Thames Water, UK, <sup>2</sup> University of Bradford, UK, <sup>3</sup> Bucknell University, USA	<b>Co-digestion and food waste AD: BioWin modelling to optimise OLR and HRT on the Avonmouth food waste digesters</b> Forgacs, G. <sup>1</sup> , Smyth, M. <sup>1</sup> , Law, I. <sup>2</sup> and Arnot, T. <sup>3</sup> , <sup>1</sup> Aqua Enviro, UK, <sup>2</sup> Wessex Water Enterprises trading as GENeco, UK, <sup>3</sup> Water Innovation & Research Centre, University of Bath, UK	<b>Treatment of Dewatering Liquors Using Innovative Expanded Bed Biofilm Reactor Technology</b> Dempsey, M., Advanced Bioprocess Development Ltd and Manchester Metropolitan University, UK
11.40-12.05	<b>Exelys™ Continuous Thermal Hydrolysis – from concept to reality to DFMA</b> Bigot, B., Gilbert, A. and Froom, M., Veolia Water Technologies, UK	<b>Balancing the benefits and impacts of spreading waste derived materials to farmland</b> Davis, M. and Martin, I., Environment Agency, UK	<b>The Potential of Resource Recovery at Effluent Treatment Plants</b> Hendrickx, T and Driessen, W., Paques, Netherlands
<b>12.05-13.05</b>	<b>Lunch break</b>		
13.05- 13.50	<b>PLENARY: Panel debate: Biosolids: has land application had its day?</b> Led by Dr David Tompkins, Aqua Enviro and including: <ul style="list-style-type: none"> <li>• John Williams, ADAS,</li> <li>• Mike King, GENeco</li> <li>• Prof Stephen Smith, Imperial College</li> </ul>		
13.50 -13.55	<b>Cambi to present student poster award</b>		
14.00- 14.25	<b>New Markets &amp; Materials</b> <b>Chair: Paul Fountain, Thames Water TBC</b> <hr/> <b>Industrial Scale Plant for Sewage Sludge Treatment by Hydrothermal Carbonization in Jining/ China and Phosphate Recovery by TerraNova Ultra HTC Process</b> Buttmann, M., Terranova Energy, Germany	<b>Material Use continues</b> <b>Afternoon Chair: Mark Penny, Business Modelling Associates TBC</b> <hr/> <b>Biosolids, Biogas and the Realisation of the Circular Economy in Norway</b> Tornes, O. <sup>1</sup> and Whipps, A. <sup>2</sup> , <sup>1</sup> IVAR IKS, Norway <sup>2</sup> Pell Frischmann, UK	<b>End-of-Waste seminar RRFW logo</b> <b>Chair: Dr David Tompkins, Aqua Enviro</b> <hr/> Changing the regulatory status of your material from waste to product can be an essential first step in market acceptance. Hear first-hand how companies have taken materials through the end of waste process, how the EU fertiliser regulations may change the playing field, and how the process is driven by data.  <b>A regulator's perspective</b> Clive Humphreys, Environment Agency:

14.25-14.50	<b>A US Perspective on Alternative Uses of Thermal Processes</b> Burrowes, P., Williams, T. and Lukicheva, I., <i>CH2M, Canada</i>	<b>Roadmap for implementation of optimal nutrient recovery treatment trains at WRRFs</b> Vaneekhaute, C. <sup>1</sup> , Belia, E. <sup>2</sup> , Meers, E. <sup>3</sup> , Tack, F.M.G. <sup>3</sup> , and Vanrolleghem, P.A., <sup>1</sup> <i>BioEngine, Université Laval, Canada</i> , <sup>2</sup> <i>Primodal Inc., Canada</i> , <sup>3</sup> <i>EcoChem, Ghent University, Belgium</i> , <sup>4</sup> <i>modelEAU, Université Laval, Canada</i>	<b>A legal perspective</b> Esther Kiddle, TK Associates:  <b>A standard approach: End of Waste for compost and digestate</b> Justyna Staff, REAL
14.50-15.15	<b>Three phase separation of thermal hydrolysed waste activated sludge</b> Van de Ven, M., Luning, L. and Edens, J., <i>Sustec (part of DMT), Netherlands</i>	<b>Maximizing digestate quality in co-digestion applications</b> Theodoulou, M., Macloud G., Malpica de la torre, J. and Penny J., <i>Suez Water Technologies &amp; Solutions, Canada</i>	<b>Achieving a bespoke End of Waste position, and the importance of data to support your case</b> Michael Daly, Ostara:  <b>Incentivising illegal practices? A business perspective</b> Anne Velenturf, Leeds University  <b>EU Fertiliser Regulations, what do they mean for future end of waste approaches?</b> Kristy Blakeborough-Wesson, Secanim:
15.15-15.45	<b>Afternoon Tea/ coffee</b>		
15.45-16.10	<b>Waste and wastewater characterisation to minimise Opex and maximise energy generation</b> Burgess, A., Smyth, M., Forgacs, G. and Elliott, C., <i>Aqua Enviro, UK</i>	<b>Will dried sludge from fish farming become a contributor or competitor to the utilization of municipal sludge?</b> Rohold, L., <i>Scanship, Norway</i>	<b>End-of-Waste seminar continues</b>
16.10-16.35	<b>Sludge drying – Overview of market drivers, hints and pitfalls.</b> Bouchy, L. and Arauzo, I., <i>Suez Water Technologies &amp; Solutions</i>	<b>Land remediation using a wide range of organic residues</b> Gibbs, P., Whyatt, P., Holt, M. and Roberts, G., <i>4R Group, UK</i>	
16.35- 16.50	<b>Davyhulme site Visit Preparation talk,</b> Matthew Smyth, Aqua Enviro	<b>ReFood AD site visit preparation talk</b> Dr David Tompkins, Aqua Enviro	

**Young Professionals and Student Posters: £200 prize kindly donated by Conference sponsor Cambi -Logo**

**Biosolids Assurance Scheme (BAS): The successes and challenges met whilst delivering and implementing on Dwr Cymru Welsh Waters (DCWW) identified Sludge Treatment Centres (STCs)**

Provost, C., Ward, F., *Dwr Cymru, UK*

**The Power B-Ind Sludge Visualisation**

Plant, C., *Business Modelling Associates, UK*

**Birth of a biotechnology outside the fields of application of medical research or Agronomy**

D'Alexandris, J-M., Lyseconcept, France

**Formulation of novel fertilisers from bioenergy wastes: nutrient fractionation, dewaterability and stability of anaerobic digestate and biomass ash mixes.**

Lag-Brotans, A.<sup>1</sup>, Marshall, R.<sup>1</sup>, Herbert, B.<sup>2</sup>, Hurst, L.<sup>2</sup>, Ostle, N.<sup>1</sup>, Dodd, I.C.<sup>1</sup>, Quinton, J.<sup>1</sup>, Surridge, B.<sup>1</sup>, Aiouache, F.<sup>1</sup>, Burgess, A.<sup>3</sup>, Tompkins, D.<sup>3</sup> and Semple, K.T.<sup>1</sup>,  
<sup>1</sup>Lancaster University, UK, <sup>2</sup>Stopford Energy and Environment, UK, <sup>3</sup>Aqua Enviro, UK

**Enhanced In-situ Biodelignification & Methane Generation in Model Lignin Wastes**

Muazz-Us-Salam, S., Cleall, P.J. and Harbottle, M.J., Cardiff University, UK