

# EUROPEAN BIOSOLIDS & ORGANIC RESOURCES CONFERENCE & EXHIBITION

19<sup>th</sup> - 20<sup>th</sup> November 2019

Emirates Old Trafford, Manchester, UK



Conference sponsored by: **BUCHER**  
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## DAY 1 – TUESDAY 19<sup>TH</sup> NOVEMBER

### KEYNOTE

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#### **The future of bioresource management in the UK**

Maddan, A., Agrivert Ltd

### ADVANCES IN ANAEROBIC DIGESTION

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Session sponsored by: **JACOBS**

#### **Full scale validation of a model to predict anaerobic digester performance**

Oxtoby, S.<sup>1,2</sup>, Winter, P.<sup>1</sup>, Smith, S.R.<sup>2</sup>, <sup>1</sup>Thames Water, UK, <sup>2</sup>Imperial College London, UK

#### **Genomics orchestration surpasses biochemical limitations for a new renaissance in anaerobic digestion**

Lee, P-H., Imperial College London, UK

#### **How to Transition from conventional MAD to THP digestion; experiences from Basingstoke**

Merry, J.<sup>1</sup> and Fountain, P.<sup>2</sup>, <sup>1</sup>Stantec, UK, <sup>2</sup>Thames Water, UK

#### **The effects of thermal hydrolysis and ammonia concentration on digestion rates at Basingstoke STW.**

##### **Searching for the sweet spot**

Panter, K.<sup>1</sup>, Fountain, P.<sup>2</sup>, Shana, A.<sup>2</sup>, <sup>1</sup>Cambi, UK, <sup>2</sup>Thames Water, UK

#### **Operating a three-staged thermophilic anaerobic digestion facility**

Parry, D.<sup>1</sup>, Sela, Y.<sup>2</sup>, Rabinowitz, B.<sup>1</sup>, Clark, C.<sup>1</sup>, <sup>1</sup>Jacobs, USA <sup>2</sup>Mey Ezor Dan, Israel

#### **Unravelling the Ephyra sludge digestion technology**

Koornneef, E., Visser, A., Hendriks, A., Royal HaskoningDHV, The Netherlands

### **High biogas production in a conventional mesophilic sludge digestion plant**

Baloch, I., Clark, P., Noble, C., Liang, S., Southern Water

### **The role of ammonia stripping in the enhancement of anaerobic digestion**

Eden, R.<sup>1</sup>, Moulden, M.<sup>1</sup>, Richardson, K.<sup>1</sup>, Thomas, T.<sup>2</sup>, <sup>1</sup>Organics Ltd, UK <sup>2</sup>University of Warwick, UK

### **Process intensifying the circular biosolids economy via hydrodynamic cavitation. Increasing biogas and biomethane yields of secondary sewage sludge AD plants**

Greenwood, E., CaviMax Ltd, UK

## **AMMONIA MANAGEMENT**

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### **Operational experience with treatment of THP-MAD sidestream liquors with the ANAMMOX®-process**

Driessen, W.<sup>1</sup>, Veldhoven, J.T.A.<sup>2</sup>, Janssen, M.<sup>2</sup>, Hobbs, E.<sup>3</sup>, Went, Ch.<sup>3</sup>, <sup>1</sup>Paques bv, The Netherlands, <sup>2</sup>Waterschap De Dommel, The Netherlands, <sup>3</sup>Severn Trent Water, UK

### **Successful commissioning of Basingstoke STW DEMON® liquor treatment plant**

Inkpin, L.<sup>1</sup>, Madden, G.<sup>2</sup>, Merry, J.<sup>3</sup>, Fountain, P.<sup>4</sup>, <sup>1</sup>Black and Veatch Water Europe Division, UK, <sup>2</sup>Costain, UK, <sup>3</sup>MWH Global, UK, <sup>4</sup>Thames Water, UK

### **Ammonia removal with different deammonification technologies from thermal hydrolysis anaerobic digestion dewatering liquors**

Ochs, P.<sup>1,2</sup>, Martin, B.<sup>2</sup>, Germain-Cripps, E.<sup>2</sup>, van Loosdrecht, M.<sup>3</sup>, Stephenson, T.<sup>1</sup>, Soares, A.<sup>1</sup>, <sup>1</sup>Cranfield University, UK, <sup>2</sup>Thames Water, UK, <sup>3</sup>Delft University of Technology, The Netherlands

## **LANDBANK SECURITY**

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### **Landbank security issues in the United States**

Pepper, I., Water & Energy Sustainable Technology (WEST) Center, The University of Arizona, USA

### **Overview of biosolids legislation, production and management in developed and developing countries worldwide**

Salazar-Espitia, J.D.<sup>1</sup>, González, A.F.R.<sup>1</sup>, Vasco, J.M.N.<sup>2</sup>, <sup>1</sup>National University of Colombia, <sup>2</sup>Catholic University of Manizales, Columbia

### **Recontamination of dewatered biosolids by *E. coli***

Svennevik, O.K.<sup>1,2</sup>, Jonassen, K.R.<sup>1</sup>, Svensson, K.<sup>2</sup>, Dadgar, F.<sup>2</sup>, Hagen, L.H.<sup>1</sup>, Westereng, B.<sup>1</sup>, Solheim, O.E.<sup>2</sup>, Nilsen, P.<sup>2</sup>, Horn, S.<sup>1</sup>, Bakken, L.<sup>1</sup>, <sup>1</sup>Norwegian University of Life Sciences, Norway, <sup>2</sup>Cambi Group AS, Norway

### **The Biosolids Assurance Scheme: new clothes for the Emperor?**

Tompkins, D., Aqua Enviro, UK

### **Phosphate Acceptance Map: A new research tool for determining land suitability for application of biosolids**

Wadsworth, R., Hallett, S., Sakrabani, R., Cranfield University, UK

### **Environment Agency Sludge Strategy – looking to the future**

Foster, S. and Davis, M., Environment Agency, UK

## **Biosolids management in Scotland – a regulator’s perspective**

Aitken, M., SEPA

## **Towards a quality-by-design approach to produce PAT-based bio-products through nutrient recovery from (digested) wastes**

Vaneckhaute, C., Université Laval, Canada

### ***Open discussion session***

## **PRE-TREATMENT**

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### **Techno-economic analysis of anaerobic digestion pre-treatment technologies for a UK site**

Smith, R.W., and Rus, E., Jacobs, UK

### **Exelys, a simple & continuous TH technology, initial feedbacks from two installations start-up**

Bigot, B.<sup>1</sup>, MacBeath, S.<sup>1</sup>, Nielsen, E.<sup>2</sup>, <sup>1</sup>Veolia Water & Technologies UK, <sup>2</sup>Veolia Water & Technologies, Biosolids Techno BU, Denmark

### **Prediction of viscosity based on sludge type and characteristics and its significance for thermal hydrolysis economy**

Svensson, K. and Dadgar, F., Cambi Group AS, Norway

## **MAKING BIOGAS PAY (MORE) – MARKETS FOR BIOMETHANE AND CO<sub>2</sub>**

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### **Biogas Policy – Past, Present and Future**

Hopwood, L., NNFC, UK

### **Making biomethane pay – CO<sub>2</sub> capture and the potential to be carbon negative**

Scott-Kerr, J., Future Biogas, UK

### **Biomethane and CO<sub>2</sub> market development and whole value chain - a UK and European Perspective**

Hurren, D., Air Liquide advanced Business & Technology UK

### **Energy production from biogas: responding to current and future opportunities**

Horne, P.<sup>1</sup>, Richards, S.<sup>2</sup>, Pogson, J.<sup>2</sup>, Pennick, A.<sup>1</sup>, <sup>1</sup>United Utilities, UK, <sup>2</sup>Jacobs/United Utilities, UK

### **Gastop, optimization of the design of anaerobic digestion with reduced safety area and quality of the biogas produced**

Simonsen, N.<sup>1</sup>, Bigot, B.<sup>2</sup>, Kjaer, R.<sup>1</sup>, <sup>1</sup>Krøger A/S, Denmark, <sup>2</sup>Veolia Water Solutions & Technologies, UK

### **Full-scale digester micro-aeration studies to improve biogas quality**

Kraakman, B.<sup>1,2</sup>, Diaz, I.<sup>2</sup>, Muñoz, R.<sup>2</sup>, <sup>1</sup>Jacobs, UK, <sup>2</sup>Institute of Sustainable Processes, University of Valladolid, Spain

## **CONVERTING GENETIC INFORMATION INTO ACTION – PROGRESS AND PROBLEMS**

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### **Can we predict microbial responses in anaerobic digestion?**

Chong, J., University of York, UK

**Title tbc**

Rossa, C.A., University of Surrey, UK

**The genomic diversity of UK industrial anaerobic digesters resolved from metagenomes**

Quince, C., University of Warwick, UK

**Organic loading rate: A promising microbial management tool in anaerobic digestion**

Villa, R., De Montford University, UK

**Title tbc**

Sierocinski, P., Research Fellow, Environment and Sustainability Institute, University of Exeter, UK

**The importance and potential for optimising the biology within AD systems – an industry view**

Taylor, T., Yorkshire Water

**DAY 2 – WEDNESDAY 20<sup>TH</sup> NOVEMBER****KEYNOTE**

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**Nutrient recycling in Germany: current and future approaches**

Christian Kabbe, Managing Director, EasyMining Germany

**PROCESS MODELLING AND CONTROL**

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**Simulation as a tool for assessing digestion and liquid stream interactions in the context of new regulations**

Conidi, D. and Dold, P., EnviroSim Associates Ltd, Canada

**Automation, control and optimisation of the sludge line at WwTP Utrecht with Aquasuite Mine**

Heijkoop, D., Post, B., Koorneef, E., Royal HaskoningDHV, The Netherlands

**Utilizing integrated software, proven algorithms and decades of chemical applications experience to continuously automate and optimize an already advanced municipal dewatering operation in Denmark**

Jonker, E., Kemira Chemicals Germany GmbH

**THICKENING AND DEWATERING**

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**Why dewaterability of sewage sludge occurs upstream – a model to quantify the effects**

Kopp, J., Kläranlagen Beratung Kopp, Germany

**Vivianite & struvite: growing challenges for bioresources & wastewater operations**

Smyth, M., Aqua Enviro, UK

**Techno-economic analysis of post THP+AD dewatering options for a UK site**

Rus, E., Jacobs, UK

### **Predicting dewatered cake solids after conventional AD, Pre-AD THP and Post-AD THP**

Svennevik, O.K.<sup>1,2</sup>, Beck, G.<sup>3,4</sup>, Rus, E.<sup>5</sup>, Westereng, B.<sup>1</sup>, Higgins, M.<sup>6</sup>, Solheim, O.E.<sup>2</sup>, Nilsen, P.<sup>1,2</sup>, Horn, S.J.<sup>1</sup>, Svensson, K.<sup>2</sup>, Dadgar, F.<sup>2</sup>, <sup>1</sup>Norwegian University of Life Sciences, Norway, <sup>2</sup>Cambi Group AS, Norway, <sup>3</sup>Norwegian University of Life Sciences, Norway, <sup>4</sup>NIBIO, Norwegian Institute of Bioeconomy Research, Norway, <sup>5</sup>Thames Water, UK, <sup>6</sup>Bucknell University, Lewisburg, USA

### **The practical implementation of reducing sludge dewatering whole life costs**

Sims, J.<sup>1</sup> and Parker, D.<sup>2</sup>, <sup>1</sup>Huber Technology, UK, <sup>2</sup>Kier Services, UK

### **Biocage™ sludge thickening - operational experience from two water companies**

Thomas, P., Crouch, J., Field, A., Afeco, UK

### **Demonstration of a continuous TORWASH® pilot plant for dewatering of sewage sludge**

Nanou, P., Pels, J.R., Sebastiani, F., van der Meijden, C.M., Kuipers, H., Driessen, W., Vogelaar, J., TNO, The Netherlands

### **A look in the rear-view mirror after more than 10 years of Bucher presses operation on biosolids dewatering**

Mischler, J-F., Bucher Unipektin, Switzerland

## **2020 AND BEYOND**

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### **UK AD through the crystal ball. AD and the Climate Action Imperative**

von Scheven, D., AcrEnergy

### **Maximising efficiency when you are not starting from scratch...**

Cherry, L., Severn Trent Water, UK

### **Lithium tracer testing across 12 sludge treatment centres to inform United Utilities' resilience strategy for AMP7**

Herron, D.<sup>1</sup> and Croft, J.<sup>2</sup>, <sup>1</sup>Aqua Enviro, UK, <sup>2</sup>United Utilities, UK

### **Preparing for the future – NI Water's sludge strategy**

Auty, D.<sup>1</sup> and McArthur, J.<sup>2</sup>, <sup>1</sup>PROJEN Ltd, UK, <sup>2</sup>Northern Ireland Water

## **RESOURCE RECOVERY / NEW PRODUCT DEVELOPMENT**

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### **Design of fired-clay brick prototype from biosolids generated in an Andean municipal WWTP in Colombia**

Salazar-Espitia, J.D.<sup>1</sup>, Ossa-Galvis, G.A.<sup>1</sup>, González, F.A.C.<sup>1</sup>, Orjuela, A.M.Z.<sup>1</sup>, Rios, A.N.<sup>1</sup>, Benites, D.G.<sup>1</sup>, Vasco, J.M.N.<sup>2</sup>, Yopez, O.D.C.<sup>1</sup>, Rubio, O.A.P.<sup>1</sup>, Salazar, M.T.J.<sup>3</sup>, Cardona, J.A.<sup>3</sup>, Baena, J.E.<sup>4</sup>, Arango, L.A.<sup>4</sup>, Buitrago, M.<sup>4</sup>, Montoya, A.L.<sup>5</sup>, Izaza, I.C.C.<sup>5</sup>, <sup>1</sup>National Learning Service of Colombia, <sup>2</sup>Catholic University of Manizales, Columbia, <sup>3</sup>Caldas University, <sup>4</sup>Tejares Terracota of Colombia S.A., <sup>5</sup>Aguas de Manizales S.A. E.S.P.

### **ABC economy – a three phase approach to valorising food production waste**

Kleemann, R. and Murphy, F., University College Dublin, Ireland

### **Compact phosphorus precipitation and capture technology with operational and ecological benefits for wastewater treatment plants with anaerobic digestions**

Dittmann, M., O'Brien, L., Knörle, U., Eliquo Water Group

### **Biosolids and biogenic fertilisers: developing a circular economy**

Whipps, A.<sup>1</sup> and Hammond, A.<sup>2</sup>, <sup>1</sup>Pell Frischmann, UK, <sup>2</sup>CCm Technologies Ltd, UK

### **Futurethinking the sludge value chain**

Lake, A., Iwaki, M., Hughes, S., Jacobs, UK

### **Rigenera sewage sludge innovative treatment for the production of organic biosolids**

Cavallino, R.M. and Campi, F., Rigenera S.r.l., Italy

### **Can we feed the world with resource-recovered sewage sludge?**

Heitmann, M.<sup>1</sup>, Fowler, G.<sup>1</sup>, Perrault, A.<sup>2</sup>, <sup>1</sup>Imperial College London, UK, <sup>2</sup>Thames Water Utilities Ltd, UK

## **POSTERS**

**Student and Young Professionals' Poster Award** – *sponsored by:*



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### **Microplastics from waste water treatment sludge in soil – What's the story?**

Lam, M., Ricardo Energy and Environment, UK

### **Phosphorus in agricultural soils: the role of biofertilisers and their derivatives**

Tompkins, D., Aqua Enviro, UK

### **Disrupting dewatering... dredging and subsequent microplastic removal**

Pring, W., KCP Ltd, UK

### **Anaerobic digestion of solid residue from lignocellulose catalysis**

Hurst, G., Peeters, M., Tedesco, S., Manchester Metropolitan University, UK

### **Microplastics on land: is sewage sludge the problem?**

Radford, F., University of Southampton, UK

### **Identifying rate limiting enzyme steps**

Robson, J., University of York

### **Exploring the possibility of using hemoglobin as bioflocculant in dewatering of biosludge**

Ghazisaidi, H.<sup>1</sup>, Garcia, R.<sup>2</sup>, Tran, H.<sup>1</sup>, Mayer, T.<sup>1</sup>, Nieman, C.<sup>2</sup>, D. Allen, G.<sup>1</sup>, <sup>1</sup>University of Toronto, Canada, <sup>2</sup>Agricultural Research Service (ARS), US Department of Agriculture

### **Simultaneous Biogas Enhancement and Reduction of Landfill Leachate Toxicity Supported by Carbon Dioxide Microbubble in an Anaerobic Co-digestion of Food Waste-Landfill Leachate**

Nugroho, W.A., Desai, P., Zimmerman, W.B., University of Sheffield, UK

Supporting Organisations

