

Production and use as biofertiliser of digestate derived from source segregated organic waste

Workshop Programme

2 December 2020

Access recording and presentations from the workshop

- Use the following link to access the workshop recording - <https://register.gotowebinar.com/recording/6256484356680871949>
- Click on the links in each session below to access the workshop presentations received to date.

11.15 - 11.25 Introduction and welcome
 Brian Cox, EO, Bioenergy Association
 Shahana McKenzie, CEO, Bioenergy Australia

European experience of processing organic waste into biofertiliser

International keynote speakers:

11.25 - 11.55 [The UK experience of processing organic waste into biofertilisers](#)
 Nina Sweet, Specialist Adviser, WRAP UK

11.55 - 12.25 [BSI PAS110 and the UK Biofertiliser Certification Scheme](#)
 David Collins, UK Biofertiliser Certification Scheme

12.25 - 12.55 [True circular economy: How food waste and digestate play an important part in the Danish biogas sector](#)
 Claus Mortensen, Innovation Manager in Food & Bio Cluster, Denmark

12.55 – 13.10 BREAK

Opportunities for processing organic waste into biofertiliser

13.10 – 13.30 **The potential for source segregated residual organic wastes in New Zealand**
 Andrew Fisher, Managing Director/Owner, EcoStock

Digestate from anaerobic digestion

13.30 – 13.50 **Anaerobic digestion 101**
 Alistair Broughton, Senior Process Engineer, BPO

13.50 - 14.10 [Pathogens and pasteurisation of digestate](#)
 Alexander Vogelsang, Process Engineer, Aquatec Maxcon

14.10 – 14.30 [Digestate as a fertiliser – improved carbon and nutrient cycle](#)
 Jürgen Thiele, Leader Anaerobic Digestion Services Australasia, Conhur

14.30 – 14.45 BREAK

A joint Bioenergy Association and Bioenergy Australia virtual workshop



Production and use as biofertiliser of digestate derived from source segregated organic waste

Anaerobic digestion of source segregated residual organic waste is gaining substantial interest around the world due to its indisputable economic and socio-environmental benefits; these being the production of renewable energy and fertiliser, reduction of the amount of waste disposed at landfills and the reduction of greenhouse gas emissions.

Anaerobic digestion converts organic material into three beneficial products, i.e. biogas, digestate and sustainable waste management.

If digestate is derived from appropriate source segregated feedstocks and processed under continuously controlled conditions it can be sold as a high quality fertiliser called biofertiliser.

The Bioenergy Association has been developing a Technical Guide based on the UK BSI PAS110 which sets out an approach which leads to production and sale of certified biofertiliser. This Technical Guide (TG8) takes the best of PAS 110 and puts it into a New Zealand context. The ultimate goal is to provide incentives for further investment in anaerobic digestion applications for processing of source-segregated organic waste in New Zealand, Australia and the South Pacific, by improving the awareness of the monetary, social and environmental benefits this technology offers for the treatment of organic waste.

If you are considering processing source separated organic waste into a biofertiliser, or are a regulator, you should participate in the workshop to assist establish a best practice guide for New Zealand, Australia and South Pacific context.

As an outcome of the workshop Bioenergy Association will finalise and publish the Technical Guide.

Guest international speaker – Nina Sweet, WRAP UK

Nina will talk about the UK experience of producing certified biofertiliser from food waste.

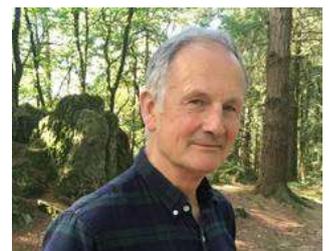
Partner:



Sponsors:



Keynote Speaker:



David Collins

David will talk about the establishment of the UK Biofertiliser Certification Scheme.

A Waste Minimisation Fund project.

Speaker profiles (in order of appearance)

Dr Nina Sweet

Special Adviser, WRAP UK

Email: nina.sweet@wrap.org.uk

Phone: +44 01295 817 870



Nina is an internationally recognised resource management special advisor with a demonstrated history of working with government departments to deliver policy and strategy outcomes.

Experienced policy lead with drafting, consultation and consensus building skills. Has worked in the water and resource management industries as well as several years as an environmental regulator.

Skilled in policy development and delivery, sustainable development, circular economy, bioeconomy, resource management and technical Leadership. Strong environmental professional with an OBE and Doctor of Philosophy (PhD) focused in Environmental Physiology from University of Nottingham.

David Collins

UK Biofertiliser Certification Scheme

Email: biogas@me.com



Head of REA Biogas and the Biofertiliser Certification Scheme at the Renewable Energy Association. Formerly from the Oil & Gas industry, David took an MSc in Environmental Technology and Economics at City University in London and joined the renewable energy industry in 1995, gaining practical biogas experience with UK biogas company Greenfinch Ltd.

He then established REA Biogas as part of the Renewable Energy Association and this organisation has represented the UK Biogas industry since 2004. Currently working on issues to remove barriers to development of AD in the UK, including Biomethane to Gas Grid, Renewable Heat Incentive, Feed-in Tariffs, Digestate Standard and others.

David Collins was appointed an Executive Board Member of EBA in 2014.

Claus Mortensen

Business Developer, Food & Bio Cluster Denmark

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Mobile: +45 40304820



Food & Bio Cluster Denmark is a non-profit organisation with 300 member organisation and a broad network in Denmark and outside. Our purpose is to create value and impact in the agrifood and bioresource sector by facilitating R&D, innovation and commercial partnerships.

Claus Mortensen has worked in the bioenergy sector for 10 years acting as a business developer building bridges between Danish universities, government institutions and companies and foreign colleagues. Claus is also a member of the Danish Export

Association – Bioenergy Network and currently runs a partnership project with Danish Energy Agenda and The Danish Trade Council called Biogas Go Global aiming at promoting biogas as a key solution for green transition.

An outline of your activities/interests in relation to waste-to-energy: Network to academia, companies and public stakeholders in Denmark within the agrifood and bioenergy sectors. Access to knowledge and experiences.

Andrew Fisher

Managing Director/Owner, EcoStock

Email: andrew.fisher@ecostock.co.nz**Mobile:** +64 (0)21 486455

As founder and director of EcoStock, Andrew has made a big impact on the waste minimisation sector in a relatively short amount of time.

His previous experience as an Engineering Officer (1993-2000) and Special Air Services Officer (2000-04) with the NZ Army, and as Managing Director, NZ Chemical Care and Storage (2004-07) prepared him for an innovative leadership role in his own company.

He undertook tertiary level training at the Royal Australian Army School of Military Engineering, and after re-entering civilian life in 2004, he studied business papers through Massey University.

Alistair Broughton

Senior Process Engineer, BPO Limited

Email: alistair.broughton@bpo.nz**Mobile:** +64 022 0435 004**Alexander Vogelsang**

Process Engineer, Aquatec Maxcon Group

Email: alexander.vogelsang@aquatecmaxcon.com.au**Mobile:** +61 (0) 431 495 918

Alexander is an accomplished process engineer with over 5 years' experience in the waste to energy industry. He recently decided to move to Australia when the waste to energy market started to evolve, offering numerous opportunities for him to apply his knowledge and expertise.

In Europe, the Masters program is based on the production of energy carriers, from biomass and hydrocarbon containing waste of all kinds. It provides both profound technical knowledge and an economic and ecologic assessment of raw material flows.

Prior to joining our team in Melbourne, Alexander had previously worked alongside Aquatec Maxcon for Weltec Biopower on various partnership projects. Alexander has designed digesters for agricultural and organic waste material.

His process skills include:

- Designing of anaerobic digestion plants for agricultural and organic waste material
- Selection of feeding technologies,
- Calculation of heat and mass balances
- Specification of program sequence for system control
- Identification and evaluation of risks
- Consideration of country-specific standards for electrical and mechanical components
- Responsible for technical plant equipment
- Upgrading technologies for biomethane production
- Pre-treatment and feeding technologies, and
- Digestate treatment technologies (separation, drying, total processing).

Jurgen H Thiele

Leader Anaerobic Digestion Services Australasia, Conhur

Email: jurgen@conhur.com**Phone:** +64 27 258 6376

Jürgen has over 40 years anaerobic digestion process research, biotechnology, design, implementation and digester system process commissioning experience in Europe, North America, Australia, SE Asia and New Zealand. He has applied this knowhow (Microbial Biotechnology) to a wide range of anaerobic digester systems – mainly on aspects of digester mixing, AD process design & optimisation, economics, operation performance improvements, start-up and customised processes for fat, oil and grease waste (FOG) digestion.

Key outcomes were improved systems for high rate biogas production from industrial waste, high rate biogas production from fat, oil and grease and targeted use of recuperative thickening to increase anaerobic digester treatment capacities.

Recent projects were for municipal water companies in Victoria, Tasmania, New Zealand on trade waste and food waste co-digestion in municipal digesters, value recovery from high fat content waste in the dairy industry and start-up of thermophilic digesters.

Rob Tinholt

Resource Recovery Manager, Watercare Services

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Acting Project Manager: Steering Group for updating the Guidelines for the Beneficial Use of Organic Materials on Land.

Alzbeta Bouskova

Convener of the Biogas Interest Group, BANZ

Email: alzbeta_bouskova@hotmail.com**Phone:** 0220435018

I am a process engineer by qualification, a wastewater treatment planner by job title and a keen waste-to-energy enthusiast by heart.

I have been involved with the Bioenergy Association (BANZ) for over 10 years and in the Biogas Interest Group convener role for the last 3 years.

I am passionate about all aspects of the environment and sustainable development of our planet, society and economy.

I have worked in the water and wastewater industry for my entire career and have both extensive academic knowledge and operational experience of anaerobic digestion for both solid and liquid waste

Tiana Nairn

Policy Group Manager, LMS Energy

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LMS is Australia's largest emissions reducer and most experienced energy from waste company, operating 50 biogas facilities across Australia and New Zealand – see www.lms.com.au.

Brian Cox

Executive Officer, Bioenergy Association (BANZ)

Email: brian.cox@bioenergy.org.nz**Mobile:** +64 274 771 0148

Brian has been a long-standing champion of using NZ's renewable natural resources for the creation of sustainable communities and has assisted the Bioenergy Association for the last decade. Brian is often called upon as a commentator to provide insight into matters of biogas, wood energy and liquid biofuels.

As the Executive Officer, Brian assists Bioenergy Association members to build their businesses and grow the sector. The organisation maintains a clear, strong voice in advocating the benefits of bioenergy and biofuels and a reminder that New Zealand already relies on bioenergy for 11% of its energy needs. The Association estimates that bioenergy and biofuels could supply up to 27% of New Zealand's energy needs by 2050, with 15% reduced greenhouse gas emissions, and that it has the potential to generate around \$6 billion in annual revenue for the country's economy.

Brian has helped build confidence within industry in order to encourage conversion from coal to biomass fuel, and utilisation to produce biogas, biofertiliser and liquid biofuels from organic wastes from agriculture, food processing and municipal sources. His focus has been on developing consistent supply chains of wood fuel, and utilisation of biogas, while working with organisations to increase understanding of how bioenergy can be good for business, communities as well as the environment.

Shahana McKenzie

CEO, Bioenergy Australia

Email: shahana@bioenergyaustralia.org.au

Shahana has a strong track record of driving public, government and consumer campaigns for the non profit sector over the last 15 years. She joined Bioenergy Australia in August 2017 and is committed to driving growth in the Bioenergy sector and advocating for Bioenergy as a key renewable energy solution for the future.

Since joining Bioenergy Australia, Shahana has led the renewal of the organization and successfully delivered a merger with the Biofuels Association of Australia, resulting in a joining of forces to drive Industry growth for the sector. Since August 2017, under her leadership the organization has launched a new logo and website, significantly increased the membership base and increased the organisations engagement with Government, the media and Industry.

Shahana has the responsibility for leading Bioenergy Australia's contribution on matters such as climate science, jobs creation, regional development, and energy supply, to ensure national benefits for the next decade and beyond. An immediate priority for Bioenergy Australia is to ensure bioenergy features prominently in considerations at all levels of government as they plan and implement energy strategies and policies.

Name		Organisation
Sarah	Clack	Agriculture Victoria
Ann	McDowell	Agriculture Victoria
Xie	Jiang	Anaergia Singapore Pte Ltd
Anthony	Davey	Aquatec Maxcon Pty Ltd
Shaun	Rainford	ARUP
Elena	Izaguirre	Auckland Council
Matt	Stewart	Barwon Water
Trip	Allen	BTS BIOGAS ASIA PACIFIC
Colm	Kavanagh	C-Loop Power & Thermal
Phillip	Woodford	CNF & Associates
Michael	Bambridge	CST Wastewater Solutions Pty Ltd
Brendon	Cane	CTL
Damien	Bassett	Delorean Energy Pty Ltd
Jeff	Smith	Ecogas
Grant	Smith	Ecogas
Malcolm	Spencer	Ecostock Supplies Limited
Richard	Goldberg	Gaia EnviroTech
Jesse	Scharf	GGCS
Mike	Muffels	GHD
Andrew	Cohen	Gravitas Energy Group
Roger	Pattison	Helmont Energy Pty Ltd
Chris	Little	HRS Heat Exchangers Pty Ltd
Georgina	Deng	Hydroflux Industrial Pty Ltd
Marc	Stammbach	HZIA Australia Pty Ltd
Jonathon	Varcoe	LMS Energy
Chelsea	Veitch	Mackeys Morgan Pty Ltd
Paul	Sharp	Nutrition Services Ltd
Bryan	Johnson	Organics
Molly	Rogers	REAL
Golnaz	Nazem	Rotorua Lakes Council
Suren	Wijeyekoon	Scion
Paul	Smith	Soil Carbon
Rachael	Nuttall	SUEZ
Cecilia	Wu	SUEZ
Kelly	Wickham	Sustainability Victoria
Anna	Calley	Sustainability Victoria
Andrew	Dougall	Sustainability Victoria

Richard	Wallis	The CarbonCycle Company Limited
Tim	Overland	TRILITY
Adrian	Blinman	TRILITY
Andrew	Ward	University of Queensland
Bernadette	McCabe	University of Southern Queensland
Hannah	Churton	USQ
Stephen	Todd	Volt Farmer
Chris	Williamson	Volunteer Service Abroad (VSA)
Asaf	Rachmani	Waikato University / Rawhiti Environmental Park Ltd
Stephanie	Salinas	Yarra Valley Water

Attendee profiles

Ann McDowell **Agriculture Victoria**
 Email: ann.mcdowell@agriculture.vic.gov.au

Sarah Clack **Agriculture Victoria**
 Email: sarah.clack@agriculture.vic.gov.au

Provide an outline of activities / interests in relation to waste-to-energy / Biogas

I work with Dairy farmers on effluent management and energy based in northern Victoria.

What are you interested in finding out at the workshop?

The potential of anaerobic digestion in producing biofertiliser for utilisation on farms to close the loop by returning nutrients to farms.

Xie Jiang **Anaergia Singapore**
 Email: jiang.xie@anaergia.com

Anthony Davey **Aquatec Maxcon**
 Email: anthonyd@aquatecmaxcon.com.au

Shaun Rainford **ARUP**
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Elena Izaguirre **Auckland Council**
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Matt Stewart **Barwon Water**
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Trip Allen **BTS Biogas Asia Pacific**
 Email: tallen@bioenergydevco.com

Colm Kavanagh **C-Loop Power & Thermal**
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Phillips Woodford BE (Mech), MIE Aust, CP Eng, RPEQ, VBA. **CNF & Associates**
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Phil Woodford has more than 25 years' experience working across a range of industries including the petrochemical, food, pharmaceutical, water treatment, trigeneration, renewable energy, fuel systems, hydrogen as well as chemical handling & storage.

With offices in Sydney and Perth, CNF have undertaken various anaerobic digestion projects. Phil believes that Anaerobic Digestion has an important role to play in closing the loop for many manufacturing and

processing operations. The resulting biogas and recovered solids can reduce both plant operating costs and carbon footprint.

It is accepted that biogas provides an economic benefit a feedstock for boilers & co-gen systems. So far, CNF have only encountered digestate on one system and would like to learn more so that it can be applied more widely.

Michael Bambridge

CST Wastewater Solutions

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Brendon Cane

CTL

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Damien Bassett

Delorean Energy

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Jeff Smith

Ecogas

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Grant Smith

Ecogas

Email: grantsmithstrategy@gmail.com

Malcolm Spencer

EcoStock Supplies

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Phone: 09 263 6719 | Mobile: 021 528 036

Associated with Ecogas AD at Reporoa. Currently reassembling and commissioning SCION research AD to allow specific trials around digestate makeup.

What are you interested in finding out at the workshop?

Hoping to understand more about effect of biomass variation on digestate make up and getting market acceptance to use this product

Asaf Rachmani

Environmental Park Ltd

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Richard Goldberg

Gaia EnviroTech

Email: richardg@gekkos.com

Jesse Scharf

GGCS

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Mike Muffels

GHD

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Andrew Cohen

Gravitas Energy Group

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Roger Pattison

Helmont Energy

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Chris Little

HRS Heat Exchangers

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Georgina Deng

Hydroflux Industrial

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Phone: +61 2 9089 8833

What are you interested in finding out at the workshop?

- Opportunities for specification of pellet boiler installations.
- Reasons for barriers to uptake of pellet boilers.
- How can we ensure procurement across government departments, specifically the Ministries with significant chunks of the Crown Estate, deliver on the aspirations & targets set out in the Zero Carbon Act and other climate related bills.
- What do we need to do to drive the residential and smaller scale commercial market for biomass heating, especially using wood pellets.
- How can we normalise and extend the use of renewable energy fuels in delivering thermal loads in buildings, especially those that have not been built yet.

Marc Stambach

HZIA Australia

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Jonathon Varcoe

LMS Energy

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Chelsea Veitch

Mackeys Morgan

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Paul Sharp

Nutrition Services

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Bryan Johnson

Organics Group

Email: bryan.johnson@organics.co.uk

Phone: +61 3 5294 0193

An outline of your activities/interests in relation to waste-to-energy:

Organics supplies systems that remove and recover ammonia from anaerobic digesters. Aqueous ammonia is produced with the process, which can be used as high-quality fertilizer in the range of 10% to 20% nitrogen concentration.

What you are interested in finding out at the workshop?:

I'd like to learn more about how bio-fertilizer use in Australia, New Zealand and Europe compares to fertiliser production and use in North America.

Molly Rogers REAL
 Email: molly@realschemes.org.uk

Golnaz Nazem Rotorua Lakes District
 Email: golnaz.nazem@rotorualc.nz

Suren Wijeyekoon Scion
 Email: suren.wijeyekoon@scionresearch.com

Paul Smith Soil Carbon
 Email: paul@pipinui.co.nz

Rachael Nuttall SUEZ
 Email: rachael.nuttall@suez.com

Cecilia Wu SUEZ
 Email: cecilia.wu@suez.com

Andrew Dougall Sustainability Victoria
 Email: andrew.dougall@sustainability.vic.gov.au

Andrew is the Industry Development Lead for Recycled Organics with Sustainability Victoria (SV). SV is a statutory organisation with an objective to facilitate and promote environmental sustainability in the use of resources in Victoria, Australia. Andrew's role is to work with industry to grow markets for recycled organics, and increase the capacity of recycled organics businesses to produce more high-quality valuable products. Prior to his role with SV, Andrew held various agronomic research and advisory roles in the cotton and sugarcane industries in Australia and South East Asia.

Kelly Wickham Sustainability Victoria
 Email: kelly.wickham@sustainability.vic.gov.au

Anna Calley Sustainability Victoria
 Email: anna.calley@sustainability.vic.gov.au

Richard Wallis The CarbonCycle Company
 Email: richard@carboncyclecompost.com
 Mobile: 027 504 8764

As the inventor of the CarbonCycle compost boxes, Richard is recognised as an expert in distributed localised composting systems/capacity. He sees this as essential urban community infrastructure for food security given current predictions that within 30-60 years agricultural soils globally will be so degraded as to be incapable of growing crops and supporting livestock.

These predictions are based on the decline of soil organic carbon below the 2% level. His interest is to gain a better understanding of what digestate is and what it does and how AD of food waste will improve soil organic carbon levels so as to aid in restoring productivity to depleted and exhausted soils and drawdown CO₂ and store carbon in the soil

Tim Overland **TRILITY**
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Adrian Blinman **TRILITY**
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Andrew Ward **University of Queensland**
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Bernadette McCabe **University of Southern Queensland**
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Hannah Churton **University of Southern Queensland**
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Stephen Todd **Volt Farmer**
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Chris Williamson **Volunteer Service Abroad (VSA)**
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Stephanie Salinas **Yarra Valley Water**
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Continuing Professional Development (CPD):

The Bioenergy Association supports members by providing opportunities such as this workshop that contribute towards CPD credits and maintaining registration as a Registered Biogas Adviser. Contact the executive officer for more details at executive@bioenergy.org.nz

Administration:

Any questions should be addressed to admin@bioenergy.org.nz or telephone +64 4 (0)274 771 048.

The workshop material and presentations will be posted on the Bioenergy Association website for a brief time on public access then moved to the members only section.

Workshop Booklet

Please contact admin@bioenergy.org.nz for any amendments to this document.

We welcome your involvement in this workshop.

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