



How Anaerobic Digestion Can Contribute to Net Zero Targets and a More Circular Economy

12 February 2026



BIRMINGHAM CITY
University

STEAMhouse
Delivering growth through collaborative
innovation services

Jan Gilder
Associate Director Partnerships and STEAM
12 February 2026

Housekeeping

- Fire and emergency exits
- WiFi – BCU Open Wifi
- First aid
- Location of toilets
- Photos



About Us – Our why?

- Our purpose: Making the West Midlands region more sustainable, fairer and greener for all
- Our vision: The West Midlands is leading in contributing to the national target of net zero greenhouse gas emissions by 2050 whilst addressing health inequality and driving inclusive growth
- Coordinate and monitor the only existing regional Sustainability Roadmap; a framework to 2030
- Established 23 yrs in Birmingham covering the region, and beyond!
- Independent, not-for-profit company working across all sectors



A community built on:



Membership

- 200+ members
- Promotion through our channels (website, LinkedIn, Newsletter)
- Dedicated consultant account manager
- Advocacy through the management of the regional Roadmap 2030



Consultancy

- Independent, expert advice
- Expertise across all areas of sustainability through our team and partnerships



Engagement

- Focussed on storytelling
- Strong networks throughout the public, private and third sectors



Education

- Sharing best practise case studies
- Delivering workshops and conferences
- Partnering with public and private organisations to share challenges and solutions



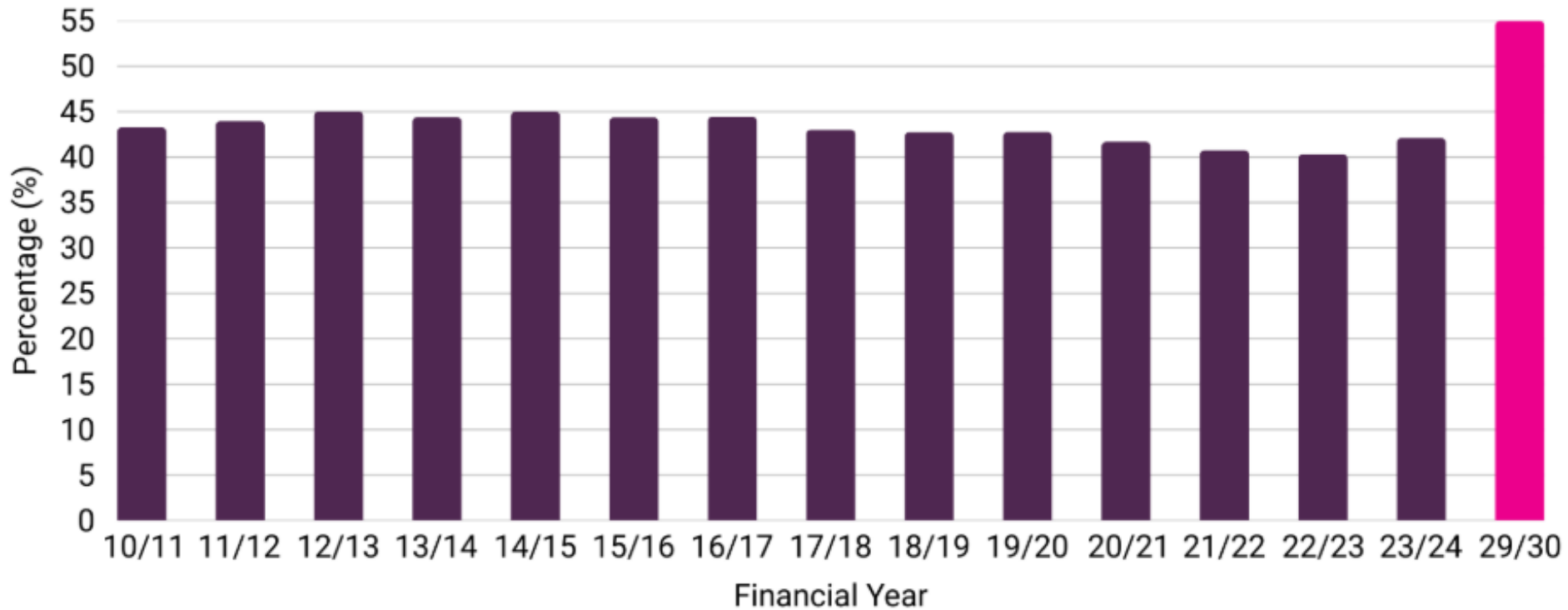
Our Sustainability Roadmap to 2030





By 2030, achieve a household recycling rate of 55% across the West Midlands.

West Midlands Percentage of Household Waste Sent for Reuse, Recycling or Composting



SWM and the circular economy

- West Midlands Resource Reuse Network and the West Midlands Circular Innovation Pipeline with International Synergies Ltd.
- Working with manufacturers on CE and resource efficiency
- Significant experience in the team
 - Chief Exec Anna Bright has 8 years experience in AD and composting
 - SWM Associate Andy Whyle has 20+ years experience at Ricoh in Circular Economy in manufacturing.

International Synergies
industrial ecology solutions



West Midlands
Combined Authority



SWM and the circular economy

- West Midlands Innovation Programme.
 - Driven by the Innovation Alliance WM
 - Includes Flexible Innovation Fund
 - Runs innovation networks
- Innovative Zero Carbon Working Group focusing on
 - Energy
 - **Circular Economy**



INNOVATION ALLIANCE WORKING GROUPS & EVENTS



AI & FUTURE TECH FORUM



INNOVATIVE HEALTH WORKING GROUP



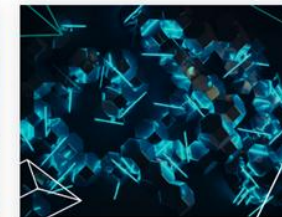
INNOVATIVE ZERO CARBON WORKING GROUP



INNOVATIVE MANUFACTURING WORKING GROUP



INNOVATIVE TRANSPORT WORKING GROUP



CYBER WORKING GROUP



VENTUREFEST WEST MIDLANDS

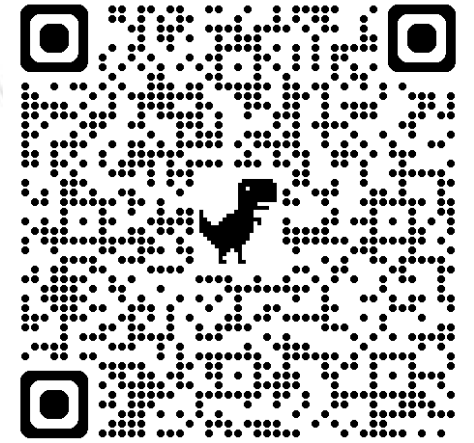


INNOVATION SUPPORT FORUM

Locally-led Innovation Accelerators delivered in partnership with DSIT, Innovate UK and City Regions

SWM and the circular economy – new support available

- Wednesday 04 March
- 09:00 – 11:00
- Birmingham



Circular economy event for SMEs and social enterprises wanting to understand the circular economy.

To include the launch of the free Circular Economy Literacy Training from the WMCA!



Wider context for circular economy

- Impact of Simpler Recycling regulations and greater segregation of food waste
 - Household waste collection will need to be **separated** into 5 waste streams – including a free weekly food waste collection – from **31 March 2026**.
- Implications of expected Circular Economy Growth Plan

Anaerobic Digestion

Tim Yair – February 2026

Midlands Net Zero Hub Objectives

The Midlands Net Zero Hub's objectives are to:

- Increase the number, quality and scale of local clean heat and energy projects
- Enable local areas to attract private or public finance for Net Zero projects
- Raise awareness of the opportunity for, and benefits of, local energy investment
- Support regional co-ordination and collaboration between local partners and share local learning

Anaerobic Digestion Study

A key ambition of the MNZH is to assist local authorities across the Midlands to better understand anaerobic digestion (AD), and its crucial role in generating renewable energy, managing the processing of organic wastes and resolving issues in the renewable energy supply chain.



Anaerobic Digestion in the Midlands

- Building on Horticultural Waste Study from 2022 by **District Eating** and work with **RASE** on “Farm of the Future”.
- Looking to better understand anaerobic digestion; its role in generating energy, managing organic waste streams, and resolving pollution issues in the AD supply chain.
- Supporting greater understanding of Anaerobic Digestion within MNZH partners.



Project Aims

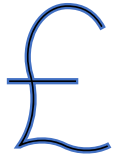


1. To engage with **key stakeholders** to further understand the role of farming, agri-food, and land-based sectors to understand potential ways to decarbonise the Midlands;



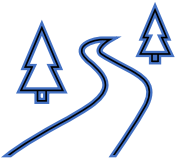
2. The **reporting of findings** to policy makers and wider stakeholders, whilst potentially identifying commercial opportunities for the projects;

3. To **support local authorities** in understanding the opportunities that could arise with undertaking waste treatment through AD;



4. The undertaking of **five studies** to aid understanding in how AD can support these authorities in meeting their declared net-zero/carbon neutrality targets; and

5. To work with project partners to **develop a range of potential AD projects** that may be taken forward for detailed assessment.



Anaerobic Digestion Potential Study – Briefing Paper

- A full description of the AD process, including the different types of AD treatment deployed across Europe, and the products generated from the process.
- The fiscal, political and legislative strategy drivers for AD.
- The current landscape of AD across the Midlands, including feedstock review.
- The locational factors that influence where an AD facility is to be sited.
- The potential adjacencies of AD with other markets, such as the horticultural sector.



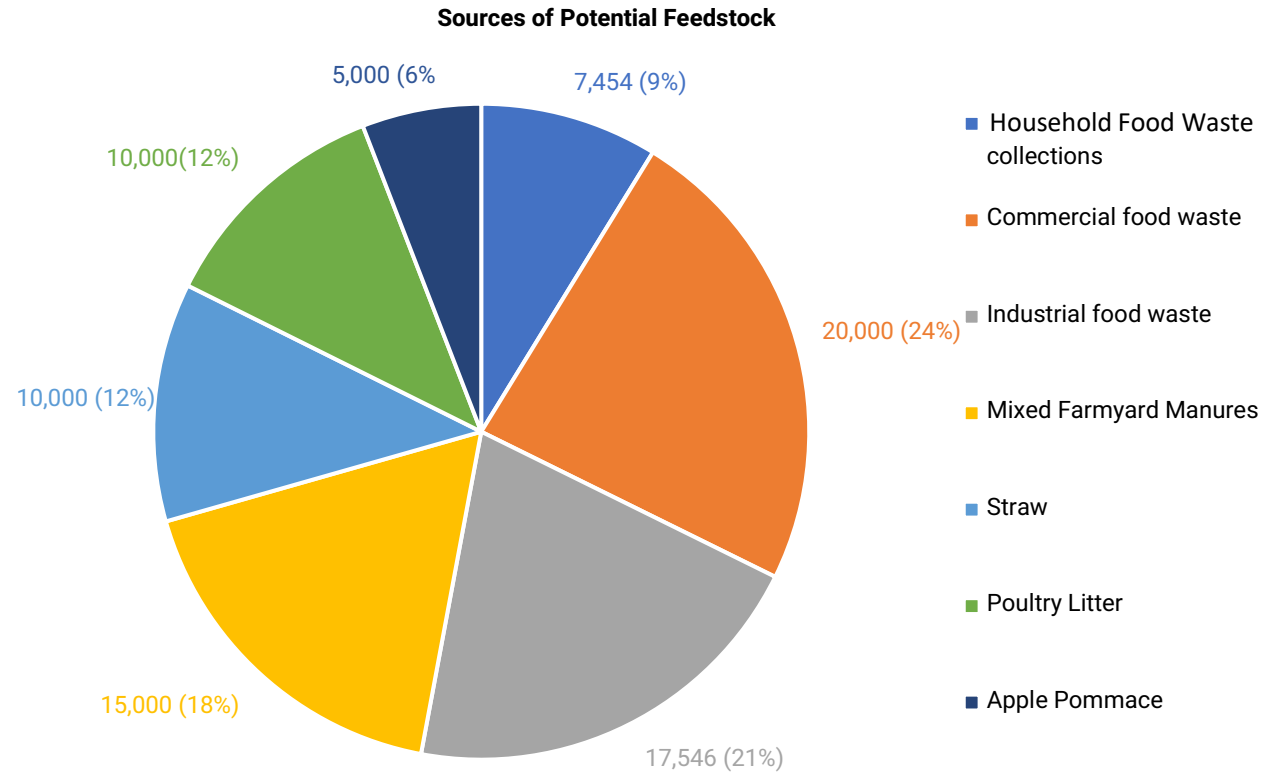
Anaerobic Digestion Feasibility Studies

Topics covered as part of the Feasibility Studies include:

- Feedstock composition, quantity and character.
- Material and energy flows (mass balance modelling)
- Facility design, including plant and equipment considerations
- Gas and electricity grid feasibility
- Site screening - planning and environmental permitting considerations
- Financial assessment, including indicative revenues and OPEX/CAPEX costs of the facility.
- Social value factors and project adjacency opportunities.



Anaerobic Digestion Feedstock



Anaerobic Digestion Site Selection

Site:					Size	4.19ha											
Category	Shall NOT be carried within:	Pass/Fail	Extra comments				Image										
	200 metres of the nearest receptor as measured from any combustion stack or stacks, unless the stacks are at least 7 metres high and the effective stack height of each stack is greater than 3 metres		Around 30m to Clay Lake Caravan Park, 170m to Gordon Boswell Romany Museum, 45m to eastern boundary of Welland Power Limited.														
	250 metres of the nearest sensitive receptor where any further treatment takes place by composting digestate fibre in the open																
	500 metres of a European site (within the meaning of Regulation 8 of the Conservation of Habitats and Species Regulations 2017) or a Site of Special Scientific Interest, including candidate or proposed sites		2000m to Cowbit Wash SSSI														
	a groundwater source protection zone 1 or 2, or if a source protection zone has not been defined then within 50 metres of any well, spring or borehole used for the supply of water for human consumption (including private water supplies)																
	250 metres of the presence of great crested newts, where it is linked to the breeding ponds of the newts by good habitat																
	10 metres of any watercourse		No rivers, small drainage channel running east and south of site														
	50 metres of a Local Nature Reserve, Local Wildlife Site, Ancient Woodland or Scheduled Monument		2900m to Vernatts LNR														
	50 metres of a site that has species or habitats of principle importance (as listed in Section 41 of the Natural Environment and Rural Communities Act 2006) that the Environment Agency considers at risk to this activity, these are also often referred to as priority habitats and		227M to Coastal and Floodplain Grazing Marsh, 635m to deciduous woodland														
	a specified Air Quality Management Area (AQMA)																
Extra notable requirements	Is it within a flood zone?																

AD Techno Economic Modelling

Several scenarios have been developed and assessed in a techno-economic model, integrating the reference AD design to produce financial and technical outputs of the process. Capital cost benchmarking demonstrated that the cost to develop an AD plant were calculated. In this case four of the five modelled scenarios resulted in positive cashflows over the assumed 15-year project timescale, as shown below.

Scenario and Description of Scenario	Average Net Margin Per Annum (£)	Project total - 15-year lifecycle (£)
1a – 100% of produced biomethane injected into the gas grid, claiming GGSS tariff payments.	2,397,029	35,955,440
1b – Scenario 1a however GGSS tariff payments are removed.	-2,955,735	-44,336,020
2a – 50% of produced biomethane injected into the gas grid to claim GGSS tariff payments, and 50% for on-site Bio-CNG fuelling.	2,392,009	35,880,130
2b – 50% of produced biomethane injected into the gas grid is sent to an external Bio-CNG station to earn RTFC and 50% for on-site Bio-CNG fuelling.	1,471,271	22,069,063
3 – 75% of biomethane injected into the grid receives GGSS tariff payments, and 25% is used for on-site Bio-CNG fuelling.	2,388,636	35,829,536

Keep in touch



For all the AD reports

<https://www.midlandsnetzerohub.co.uk/knowledge-hub/toolkits-and-resources/anaerobic-digestion-in-the-midlands-a-policy-briefing-on-renewable-energy-potential/>



Follow us on LinkedIn

<https://www.linkedin.com/company/midlands-net-zero-hub>



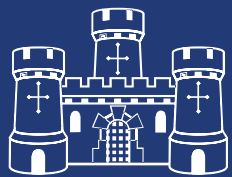
Sign up to our newsletter

<https://public.govdelivery.com/accounts/UKNCC/signup/36453>



Visit our website

<https://www.midlandsnetzerohub.co.uk/>



NEWCASTLE UNDER LYME
BOROUGH COUNCIL

The Borough Recycling All Its Waste

A short presentation on Newcastle-under-Lyme Borough Council's Recycling & Waste Strategy and processes.

Thomas (Tom) Guilbert-Newell (he/him) - Sustainable Environment Officer (Streetscene & Place)

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Newcastle-under-Lyme Borough Council

Newcastle-under-Lyme Borough Council is a district local authority located in Staffordshire County. The borough is at the heart of the County and is a close neighbour to Stoke-on-Trent. The borough is home to roughly 130,000.

The borough is home to multiple towns and villages such as Newcastle-under-Lyme, Kidsgrove, Talke, Audley, Madeley, Loggerheads and more.

The Council is a workplace of over 450 staff members with 7 main working sites including Brampton Museum, Knutton Lane Depot, Jubilee 2 Leisure Centre, Keele Cemetery, Bradwell Cemetery & Crematorium, and Kidsgrove Townhall. The Council are also responsible for several 100 leased spaces, taxis and over 140 vehicles, machinery and equipment.



NEWCASTLE UNDER LYME
BOROUGH COUNCIL

SESDP Introduction & Background

In April of 2019 Newcastle-under-Lyme Borough Council passed a climate emergency motion and published the Sustainable Environment Strategy 2022-2023. Since then we have made lots of progress on our sustainable aims however must continue and expand to deliver key developments to create a safer and healthier environment for all the Borough to live in. For this the Council have created the Sustainable Environment Strategy & Delivery Plan (SESDP) which is a holistic approach to eliminating pollution, dirty fossil fuels, extreme weather and climate, biodiversity loss which have a multitude of health and economic impacts on our society.

The strategy and delivery plan was developed with inspiration from some of the most successful local authorities in the United Kingdom. This includes inspiration from Westminster City Council and Dublin City Council who had both developed highly successful sustainability strategies.

This allowed Newcastle-under-Lyme Borough Council to apply successful case studies to a smaller district authority and deliver action.



Newcastle-under-Lyme Borough Council Sustainable Environment Strategy & Delivery Plan

The aim of the Sustainable Environment Strategy and Delivery Plan is to drive forward a sustainable society, economy and environment in Newcastle-under-Lyme Borough for the benefit of residents, businesses, visitors and the natural environment by 2050, focusing on the built environment and energy, travel and transport, natural environment and sequestration, and engagement and behaviour change.



Facilitate the development into a **Net Zero Council by 2030** through the decarbonisation of the Council's built environment and fleet.



Facilitate the development into a **Net Zero borough by 2050** through the decarbonisation of housing, businesses, transport and more.



Promote the **natural environment** in the borough to increase biodiversity, carbon sequestration, and storage.



Develop a **service focused strategy and delivery plan** in the Council to engage Council staff and deliver service owned actions.



Engage with **residents, businesses and visitors** through communication networks to create sustainable behaviour change within the borough.



Newcastle-under-Lyme Household Waste Services



58,520

weekly

- 58,520 (refuse and recycling)
- 58,520 (food albeit only 44% participate.)
- 12,500 garden subs (half of fortnightly count / collected peak season / not counting shutdown)

= 129,540 per week, over half a million a month, 6.7m per year....



Household Rubbish - Cobalt Energy EfW

The household rubbish collected from 58,520 households in the borough is transported directly to Stoke-on-Trent's Energy from Waste facility (EfW) to be incinerated for the creation of electricity through boiling water with the combusted waste which turns a turbine that generates electricity. All combustion gases are treated to meet air quality standards.



- In total the facility from 1997 provides safe and efficient treatment for 210,000 tonnes of household rubbish.



- This generates enough electricity to power 30,000 homes.



Recycling - Veolia Four Ashes MRF

The recycling collected from 58,520 households in the borough is transported to the depot then to Veolia's Four Ashes Materials Recovery Facility to be separated through identification machines and then produced into high-quality material for recycled products.

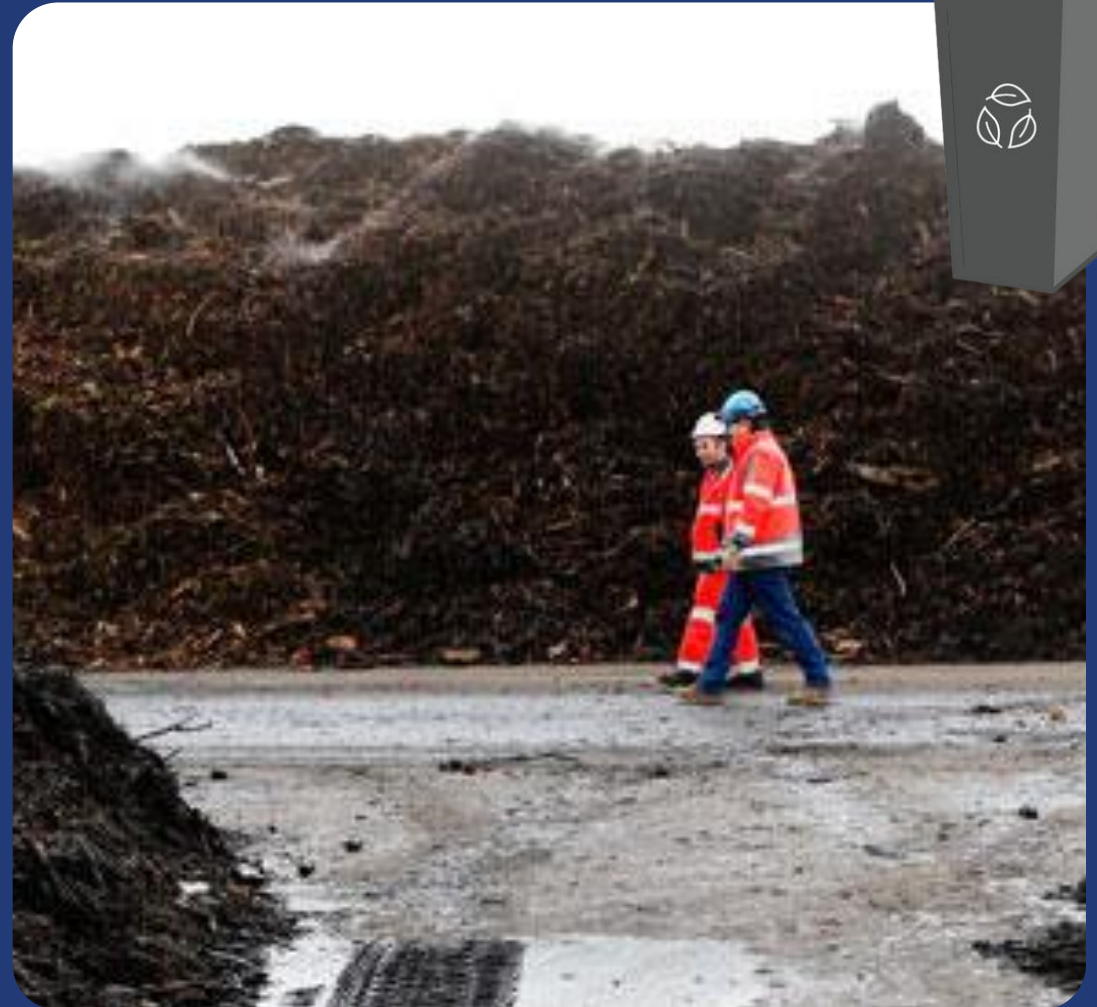
This includes:

- Paper
- Card
- Cans
- Aluminium
- Glass
- Plastic



Garden Waste - Veolia Composting Acton

The garden waste from 12,500 subscribed households is delivered to Veolia's Open Windrow Composting facility in Acton which accepts 30,000 tonnes per year. Here the waste is composted in an open area by shredding and turned enough times, once ready the final compost product is bagged and sold.



Other Waste - Newcastle Recycling Centre

All other waste such as bulky waste, electricals, textiles can be disposed of at Newcastle Recycling Centre.

The Centre now facilitates a recycled paint scheme and bike scheme for residents to ensure products that can still be used are given a second life rather than wasted.



✓ Animal bedding Restrictions apply.	✗ Asbestos Not accepted at this recycling centre.	✓ Batteries Including alkaline and lithium batteries.	✗ Household and garden chemicals Not accepted at this recycling centre.	✓ Ink cartridges and toner	✓ Loft Insulation
✓ Books and magazines	✓ Cans Including tins, bottle tops, tin foil, aerosols, and aluminium.	✓ Car batteries Restrictions apply.	✓ Mattresses	✓ Nappies	✓ Newspapers
✓ Cardboard	✗ Car parts Not accepted at any recycling centre.	✓ Carpets	✓ Non-recyclable household waste	✓ Paint Restrictions apply.	✓ Paper
✓ Coffee cups and waxed cartons Including tetrapaks.	✓ Cooking oil	✗ Dead animals These cannot be taken to any recycling centre.	✗ Petrol and diesel These cannot be taken to any recycling centre.	✗ Plasterboard Not accepted at this recycling centre.	✓ Plastic bags Including plastic film and polythene.
✓ Electricals and electronic equipment Including fridges, freezers, washing machines, tumble dryers, TVs, monitors, game consoles, mobile phones, laptops, and computers.	✗ Engine oil Not accepted at this recycling centre.	✓ Fire extinguisher Restrictions apply.	✓ Plastic bottles	✓ PVC Restrictions apply. Also known as uPVC.	✗ Rigid plastics Including plant pots. Also known as hard plastics.
✓ Fitted items such as doors, window frames and cupboards Restrictions apply.	✓ Fluorescent tubes Includes low energy bulbs and compact fluorescent bulbs.	✓ Furniture	✓ Scrap metal	✓ Soil and hardcore Charges apply. Includes concrete, masonry, rubble, bricks, gravel, sand, stone, tiles, glass, and windows.	✓ Textiles Including clothes, sheets, towels, duvets, paired shoes and linen.
✓ Garden waste	✓ Gas bottles Restrictions apply.	✓ Glass bottles and jars	✗ Tyres Includes car, bike and motorcycle tyres.	✓ Wood and timber Including chipboard, garden shed and fence panels.	



Food Waste - BioteCH4 Hemswell Biogas

All households have access to a free food waste service, however the Borough has a 44% participation which has increased over the last 15 years of food waste service that the Council has facilitated. The waste is dropped at the Depot and collected by BioteCH4 to their Hemswell Biogas Facility where they process 140,000 tonnes of food waste per year. The site sits on 5 acres and can produce biofertiliser and 17MW of renewable biogas.



Food Waste Sorting Facility

Hydrolysis Tanks

Pasteurisation Tanks

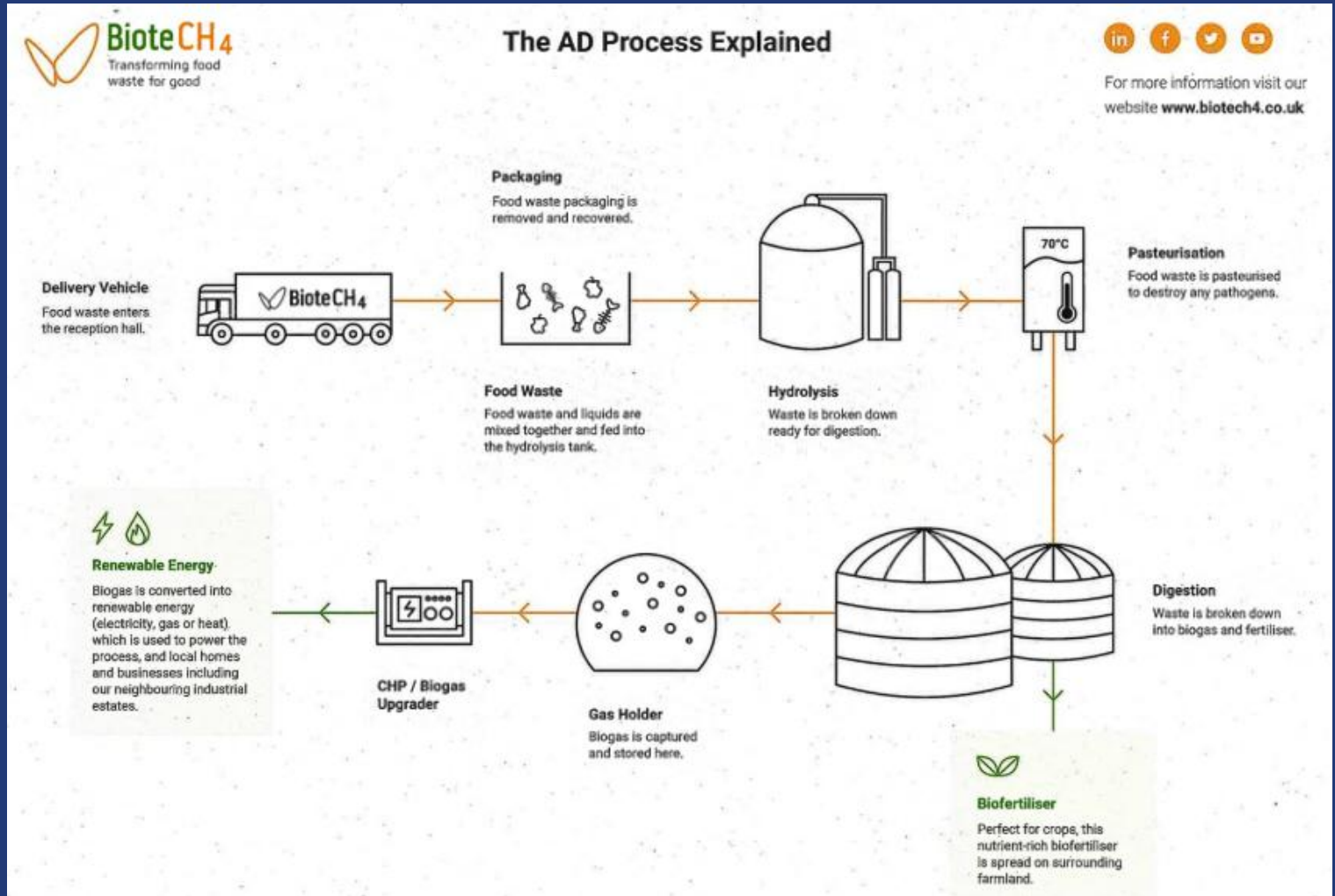
Digester Tanks

Digester Gas Bag



Anaerobic Digestion at Biotech4 Hemswell Biogas

Let's watch its journey after you throw it away!



The Anaerobic Digestion Process

Enzymatic Hydrolysis

In the hydrolysis tank, the slurry undergoes enzymatic hydrolysis, where larger molecules are broken down into smaller ones, for example complex carbohydrates break down into simple sugars, proteins are broken down into peptides and amino acids, whilst fats break down into glycerol and short fatty acids.

Pasteurisation

The liquid slurry is then pasteurised in one of our three pasteuriser tanks to 70 degrees C for an hour. In doing so, we ensure that any material entering the digester tanks is completely sterile and free of harmful pathogens. This is especially important for the biofertiliser we produce as part of the process, as it ensures it is safe to be spread, giving local farmers confidence in using the material on their crops.

Acidogenesis

During the Acidogenesis (literally translated to 'the birth of acids') stage, these compounds are further transformed into volatile fatty acids. During this process, the available oxygen is used up, leaving an oxygen-free (or anaerobic) environment.

Acetogenesis

The Acetogenesis stage sees the fatty acids broken down into acetates and hydrogen. However, the acetogenic bacteria cannot survive in a hydrogen-rich environment.

Methanogenesis

The final stage, methanogenesis, converts the acetates and hydrogen into methane (CH₄) and carbon dioxide (CO₂). The gases rise to the surface and are captured in a gas storage system, while the remaining digestate is separated for use as biofertiliser.



Benefits of Anaerobic Digestion



Anaerobic digestion of food waste has multiple outcomes that contribute towards sustainability:

- Biogas – The methane (CH₄) generated during the process is purified to be utilised as biogas, and injected into the national gas grid.
- Electricity – Through combined heat and power (CHP) units, the methane is converted into electricity. The electricity produced is enough to power the entire anaerobic digestion process, with surplus electricity distributed to nearby businesses. The CHP units also generate heat, which helps maintain the 70 degrees C needed in the pasteurisation tanks.
- Biofertiliser – The nutrient-rich digestate remaining at the end of the process is a great biofertiliser. Stored in covered lagoons, and distributed to local farmers during the spreading season, supporting sustainable agriculture.

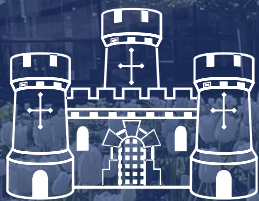


An aerial photograph of an industrial or commercial site. The central focus is a large, dark blue building with a flat roof. To its left and right are several large, orange-roofed structures, likely warehouses or storage buildings. The site is surrounded by paved areas, parking lots filled with cars and trucks, and some greenery. The overall scene depicts a busy industrial or commercial complex.

Conclusion

Thank you for Listening!

Learn more at newcastle-staffs.gov.uk or send me an email at thomas.guilbert-newell@newcastle-staffs.gov.uk.



NEWCASTLE UNDER LYME
BOROUGH COUNCIL

Scan to learn more!





Creating a New Circular Economy in the Midlands



12 February 2026

Steven Jackson

Bennamann's Vision

Leading a local
clean energy revolution



Bennamann's History



Founded by Chris Mann in 2013

80 Employees

6 sites installed /
being commissioned

Focus in the Midlands

CNH Global



9 brands



40 plants



49 R&D centres



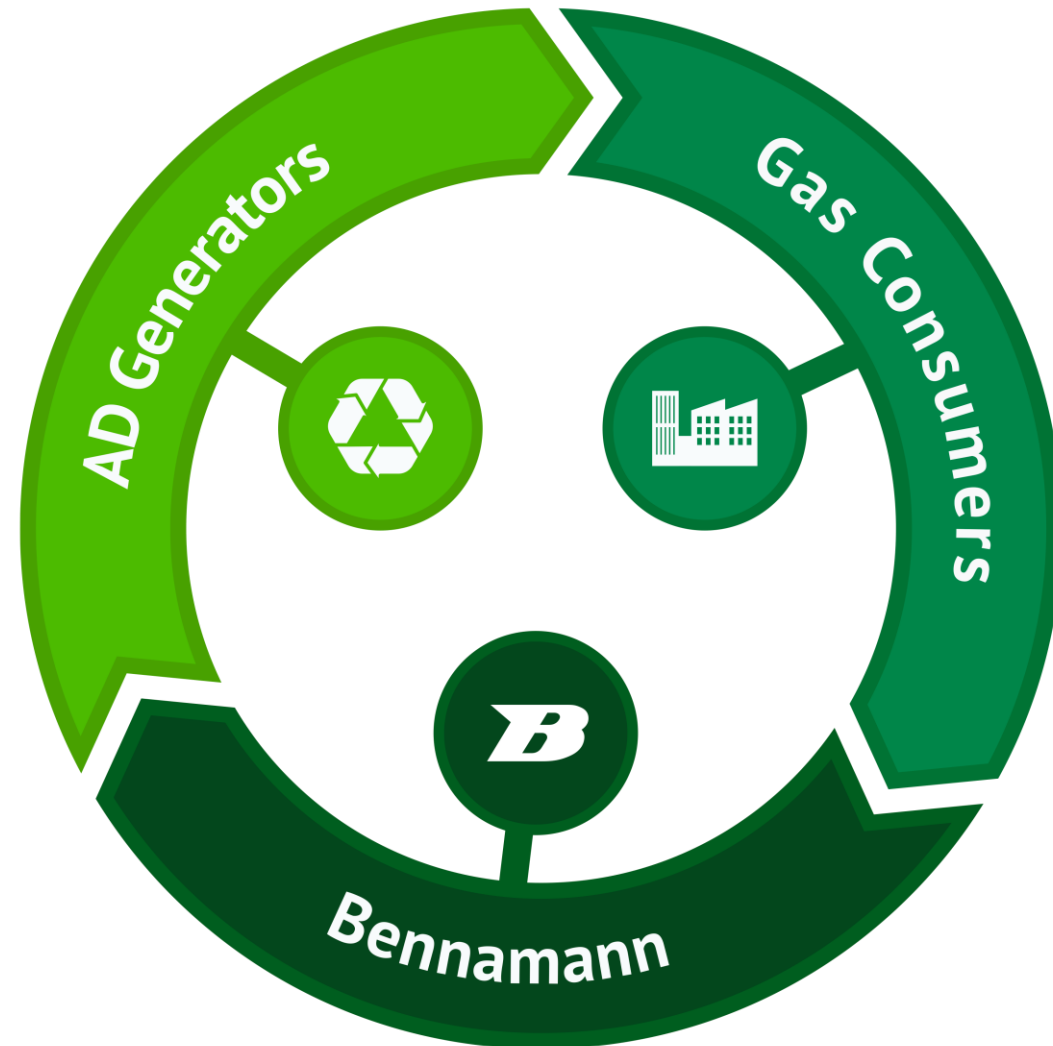
35,000 employees



11,000 patents

\$19.86b

Consolidated
revenues



Why?

There
is **No**
Planet B



Why?

**£5.9
billion**



Why?

50.4%

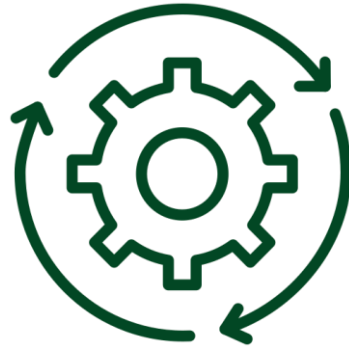
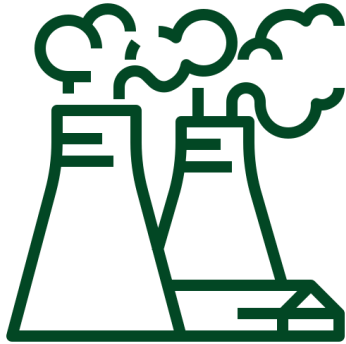
Renewables generated over half of the UK's electricity in 2024 for the first time on record.*



* The Renewable Energy Institute Link [HERE](#)

■ Renewables ■ Fossil Fuels

What Does This Mean To You?



- Contributing to local authority and council targets
- Reducing Scope 3 emissions
- Creating new efficiencies in waste management

Technology Enablers



**Alternative
Fuels**



Electrification



Automation



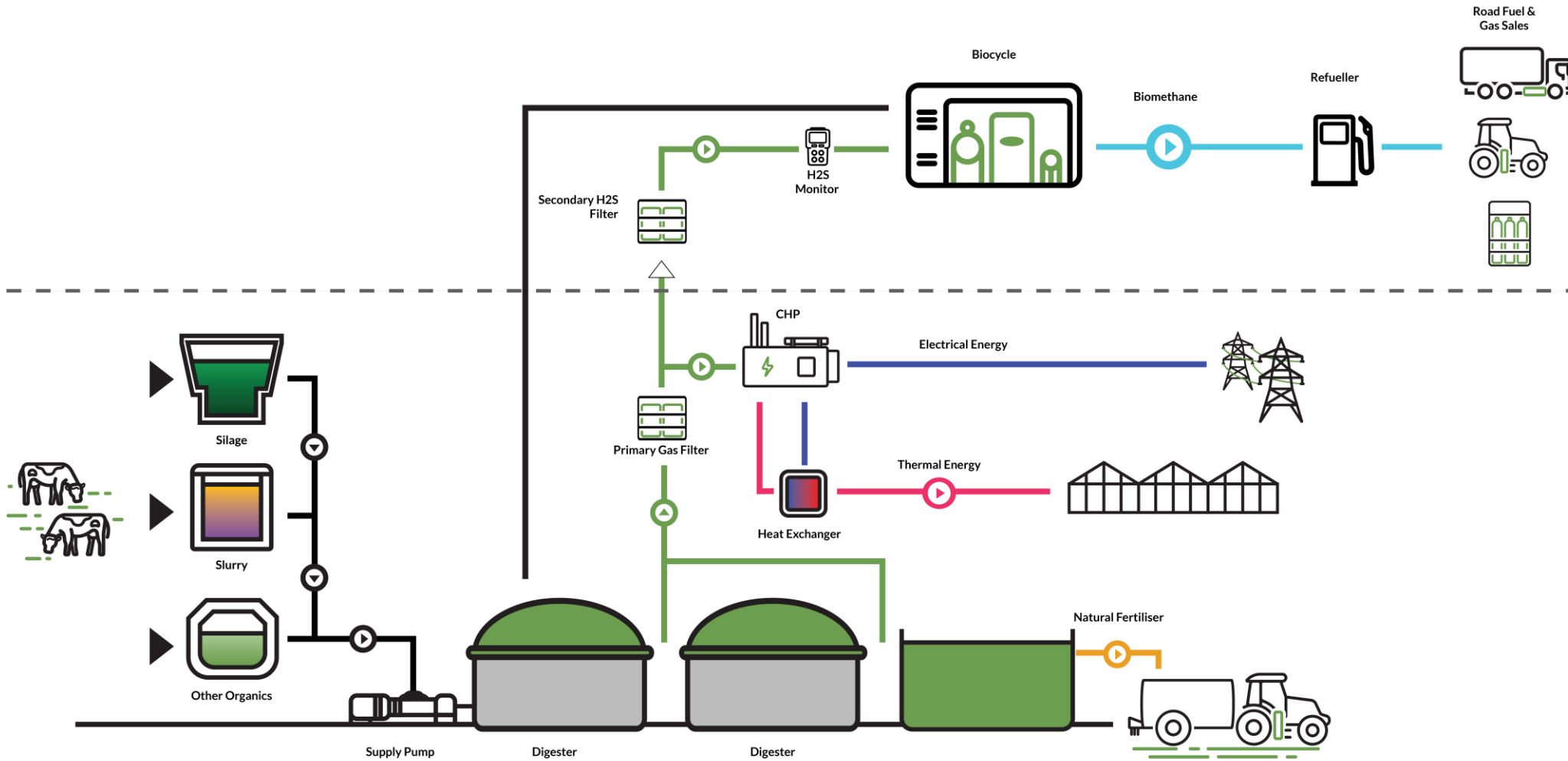
**Precision
tech**



Autonomy



How Does Bennamann Do It?



Bennamann
Upgrading
Solution

Existing
AD Plant
Infrastructure

How Does Bennamann Do It?



Biogas Upgrader



Storage



Refueling



Off-Grid Power

Taking Action

Connect with Bennamann
Connect with AD plant owners
Connect with fleets

Let's Start The Conversation



Panel: Opportunities for Anaerobic Digestion to Contribute to Net Zero Targets and a Circular Economy



Tim Yair
Midlands Net Zero Hub



Thomas Guilbert-Newell
Newcastle-under-Lyme
Borough Council



Shaune Walsh
Bennamann



Paul Trickett
Iveco South West
Truck & Van

Roundtable Discussion

Generally – share your understanding/best practice, ask questions of each other!

- What is your organisation doing with anaerobic digestion, circular economy and transport decarbonisation
- What is your organisation thinking about doing with the above?
- What challenges do you foresee?

Thank you!

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www.swm.org.uk

LinkedIn: [Sustainability West Midlands](#)

