



**newad**  
*Anaerobic Digestion*



# Who are **New AD**?

*New AD is a company focused on the development and support of the Anaerobic Digestion industry.*

New AD is a pioneering company based in the UK whose prime directive is to provide innovative and effective solutions for the global Anaerobic Digestion industry whilst developing opportunities to bring organic fertiliser from AD plants in the UK and Europe to Asia, the Middle East and Africa.

With the know-how that comes from our many years of experience in the renewable energy sector, we are able to offer our clients solutions that are both cost efficient and highly effective.

New AD was founded after a period of extensive research into the anaerobic digestion industry and its functionality. During this research period, patterns surrounding the issues that were being encountered by operators and developers began to become apparent.

By modelling the market potential through mirroring growth rates from other renewable energy technologies, when these problems are amplified accordingly the industry could be in a state of crisis if current business models are not adapted.

## **Our Mission**

Our mission is to develop cost effective solutions to support and proliferate what we believe is a highly important technology in the renewable energy industry; anaerobic digestion.

To achieve this mission, we are utilising our extensive database of contacts for the purpose of acquiring sustainable feedstocks, managing networks for digestate distribution and developing projects.

The feedstocks that we source are selected with only one factor in mind, biogas production at a reasonable price.

Our digestate management services are focused upon identifying avenues for it to be utilised in its whole untreated form which is by far its most common form in the UK. With our teams reach within the anaerobic digestion and related industries we are often made aware of stalled or aborted projects, we are then able to analyse the project and potentially market this project to interested third parties.

We travel to the ends of the earth and employ a constantly innovative attitude to ensure our objectives are achieved to the highest standards.

New AD was founded, to provide a new business model for a constantly developing industry.

*We can create a more sustainable, **cleaner and safer** world by making wiser energy choices.*

# Our Values

*Our vision, working in tandem with our values, underpins everything we do.*

As a business, our vision is to:

- Quickly become the UK's leading broker of feedstock for AD plants and digestate from AD plants.
- Deliver a positive return to our investors based on a sound business model and a clear commercial focus.
- Employ staff of the highest calibre who are committed to the pursuit of the highest possible standards.
- Meet today's environmental challenges with drive and determination and contribute towards a sustainable planet and to the UK's commitments to Europe in the fields of waste management and renewable energy.

**Our values are:**

## Enterprising

We have a unique opportunity to be pioneers in the UK's anaerobic digestion market and to set the standard for converting agricultural crops into clean, renewable energy. We are not scared to defy convention and to push the boundaries of what is possible. We take our responsibilities seriously yet we work with imagination, innovation and accountability at the heart of everything we set out to achieve.

## Relentless

Our single-minded focus is the establishment of relationships with our international contacts and domestic customers that will deliver lasting value for our investors, partners, employees and the communities we operate in.

The energy industry has traditionally postponed or abandoned making difficult decisions about the future. New AD however, will energetically pursue high payoff options while remaining mindful of our commitments to delivery, to employing the brightest and the best people and to our stakeholders.

## Collaborative

The whole is greater than the sum of its parts. To achieve our immediate and long-term vision, we will form solid partnerships both with external organisations and within the New AD framework. This gives us a comprehensive skill-set to optimise how much we can achieve.

We have the courage of our convictions, but we accept valid opinions, tangential thought processes and active debates because collaborating together with a shared focus is how we will achieve excellence.

## Principled

We believe in doing the right thing to benefit the business, our staff and our stakeholders. The Principles are by their very nature subjective, but with honesty, integrity, respect and trustworthiness as our key drivers, we will firmly stand by what we believe in.

In an industry governed by regulation and reputation, it is imperative to operate within the letter and the spirit of the law, to be inclusive and to deliver on our commitments.

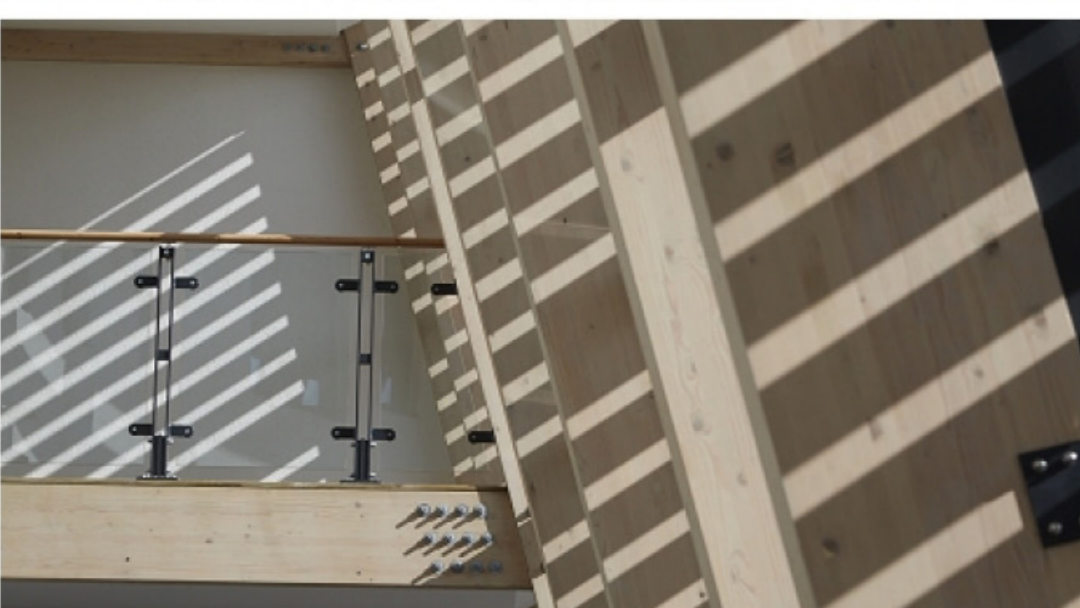
## Passionate

From the Directors down, everyone who works at New AD has an innate passion for what we do as well as a passion for making a difference to future generations and for the sustainability of the planet.

We come to work because that passion drives us to succeed. We will put the hours in, take personal responsibility and satisfy clients and stakeholders with work of the highest quality. Whether that is travelling to the Middle East to inspect a potential feedstock or answering a speculative email, every aspect of what we do is done with pride, professionalism and enthusiasm.

*Securing The **Future** For The Next Generation*





# Our Head Office; **The Re:Centre**

*At New AD we need an office that reflects our ideals of complete sustainability, responsibility, clarity and excellence, this is the Re:Centre located on the campus for the University of Bradford. The building is rated as being in the top 1% in terms of sustainability from all buildings surveyed in world.*

The Re:Centre is a coming together, a confluence, of entrepreneurs, academics, environmentalists, students, national businesses, local businesses and stakeholders. Its function is to be a hub, where knowledge and experience – both practical and theoretical – are shared between all users of the centre and their associates. With this alignment of minds and ideas New AD is able to fully utilise the full capabilities of the university to advance in its aim of diverting waste from landfill and producing sustainable products.

## **Environmental Features**

The Re:Centre is an exciting and dynamic space with a unique design which has achieved the highest BREEAM rating - Outstanding. BREEAM is the world's leading design and assessment method for sustainable buildings. This means that the building is in the top 1% in the world for its levels of sustainability and environmental effectiveness. Environmental features in the Re:Centre include:

### **Natural ventilation**

In the summer, cool air is drawn through the building into the sunspace and up through the chimneystacks. In the winter, naturally warmed air in the core and sunspace will flow throughout the building.

### **High levels of insulation**

State of the art forms of insulation are employed extensively throughout the building. This ensures that heat is retained within the building rather than lost to the outside world. In winter this ensures that a comfortable working environment is sustained.

### **Photovoltaics & air source heat pump**

Renewable sources of electricity and heat are captured from the surrounding environment utilising photovoltaic and geothermal technology.

### **Build with sustainable materials**

With wood sourced from sustainably grown areas, and recycled plastics and metal products found throughout, the construction of this building started sustainable and its operation is still sustainable.

Visit our website to learn more  
[www.newadltd.com](http://www.newadltd.com)



# New AD Executives

## Faisal Rahman

Managing Director

Faisal sees opportunities. This combined with his keen sense of business acumen has led to the development of many different businesses and a wealth of experience from a plethora of industries. Primarily he has operated within the technology sectors, from telecommunications with the likes of BT to most recently in renewable energies with a number of significant companies.

Faisal worked with BT Global on its development and rollout of the £40bn 21st Century Network. As a result he developed not only a variety of contacts in the UK, but also around the world with a particular emphasis on the Middle East. This network generates numerous opportunities and as a consequence he is often approached to consult on a variety of projects.

## Eric Timmins

Finance Director

Eric is a qualified accountant with many years of senior management experience within a number of major organisations.

These include as a senior business analyst at ASDA plc where he spent 12 years at their meat, dairy and retail operations. He served as a group commercial accountant for 3 years at William Hill plc. He also operated at Northern Foods plc more than 15 years in a variety of accounting roles including Financial Controller at Fox's Biscuits and Financial Director at Batchelors Foods based in Dublin.

Over the Last 5 years Eric has been engaged in energy management control and reporting on a consultancy basis for a variety of companies.

## Bill Elliott

Development Director

Bill has been Chairman or a senior director of companies in the field of waste disposal and renewable energy for over 25 years, including SITA, Envar and Tamar Energy.

He was Development Director of SITA (UK) until 1999 while it grew to be the largest waste management company in the UK and since then has led a number of companies through recovery on their shareholders, mostly Private Equity. He became Executive Chairman of Envar Ltd in 2008 and he led a small development team that concentrated on Anaerobic Digestion, In-Vessel Composting and renewable energy projects. Following a review of its position he moved those projects as well as some new ones into a new company; Tamar Energy Ltd.

## John Richardson

Investments Director

John is an astute entrepreneur who has the ability to focus, understand and communicate at the highest levels of business. He has been involved in numerous government level projects including design and build contracts for The Mid Yorkshire Hospital Trust and the development of a job centre in Wakefield.

His expertise lies within appraising any project, no matter the scale, with an acute awareness for time sensitive delivery. Undoubted is his ability to drive any project to a successful conclusion. Additionally, he has also operated within a sporting environment, being chairman of a rugby club for more than 20 years. With over 40 years experience in the world of business, John is invaluable in today's rapidly evolving world.

## David Border

Technical Director

David Border is a microbiologist with 28 years of research, operational and business experience in the UK and USA. He has committed himself to the commercial development of organic waste recycling using composting and anaerobic digestion. David has published many technical articles and reports and is currently preparing a series of eBooks on anaerobic digestion, composting and microalgae.

He set up David Border Consultancy in 1994 as a vehicle to carry out organic waste related consultancies. He has been a frequent lecturer and writer on matters relating to commercial organic waste composting. He regularly attends international conferences on various technologies used to process organic wastes.

## Dr Shahid Ali

Medical Director

Dr Shahid Ali is a medical leader with strategic vision and a passion to improve health services and achieve better health outcomes for patients and populations. He works as a general practitioner and specialist, and has held senior NHS management roles locally, regionally, and as a national clinical leader.

He is co-founder and a Director of Dynamic Health Systems. Currently he is working on several work streams including empowering and enabling patient centred care using technology, integration of services across pathways and intelligence for commissioning. He is Professor of Digital Health in the University of Salford.

## Charlie Trousdell

Compliance Director

Charlie's early career was in botanical horticulture firstly as a student at RHS Wisley in the mid 1970s, then at Royal Botanic Gardens Kew, where he took part in plant collecting expeditions. He continued a career in amenity horticulture into the late 1980s then studied for a degree in Environmental Science at the University of Brighton in early 1990s.

He then worked as a consultant setting up composting schemes just before landfill tax came into force so was very much a pioneer in the field. He helped establish TJ Composting in 2000 for which he was MD. Has been an active member of the then Composting Association since 1997 and a director and Chairman of AFOR and is now on Steering Group of the ORG within REA.

## Ian Simpson

Sales Director

Ian has more than 45 years experience in the agriculture industry and has been involved in the sales department of all aspects of the industry. This significant level of experience in his field means there is no aspect of the industry that he is at the very least exceedingly proficient.

For 35 years Ian has worked in the animal feeds industry with a focus on sales and procurement. For 20 years Ian has been with one of the leading suppliers of animal feeds and supplements in the UK, NWF Agriculture where he is now the National Sales Director, he has been instrumental in developing sales from 50,000 tonnes a year to more than 550,000 tonnes per year. Prior to becoming involved in the animal feeds industry he worked in the animal slaughter industry as a stock buyer for more than 10 years.

## Amjad Pervez

Strategy Director

Amjad is a prolific businessman with a vast experience in both domestic and international markets. He is currently the International Strategist for NewAD Organics, a Non-Executive Director for the Bradford Teaching Hospitals NHS Trust, a Board Member of Producer city prosperity board, a Founding Partner of Seafresh, a Chair of the Rainbow Trust, a Board Member of Bradford Breakthrough and Chairman of the Jinnah Awards UK.

He has worked with a number of highly successful companies over the past 20 years and has received numerous awards for his work in the business world including Businessman Of The Year 2013 and Business Personality Of The Year 2014.

## Gregg Munton

Informatics Director

As a founding member of New AD Organics, Gregg worked with Faisal in the development of the strategy from a technical and analytical point of view. Gregg studied Electrical Engineering at university and has a relentless interest in Statistical Analysis, Alternative & Renewable Energy Technologies, Nanomaterials and Cutting Edge Sciences.

He has worked with Faisal for a number of years on a variety of projects providing an objective scientific and engineering perspective. His incessant desire for precision in everything he does with his keen sense of business strategy has had a significant influence on the progress of New AD Organics.





# What is Anaerobic Digestion?

*Simply, anaerobic digestion plants will take organic waste and produce renewable power, biofertiliser and water.*

Anaerobic digestion (AD) is a series of natural biological processes whereby organic waste material - known as feedstock - is broken down by microorganisms and converted into energy, known as biogas (a mixture of carbon dioxide and methane).

The biogas is used in a combined heat and power plant or cleansed of carbon dioxide and injected into the National Grid.

A by-product of the AD process is digestate. Digestate is a stable, nutrient rich substance that is most commonly used as a renewable fertiliser or a soil conditioner.

## UK Government commitment

For a number of years, the UK government has focused on mitigating climate change and our over-reliance on fossil fuels and expensive energy imports.

The re-use of organic waste material coupled with technological advancements is in line with the Government's 2010 commitment to 'introduce measures to promote a huge increase in energy from waste through anaerobic digestion.'

- By 2020, biological material sent to landfill sites must be at 35% of the levels recorded in 1995.
- By 2014, producers of biodegradable and organic waste face the possibility of their landfill tax (a tax on the disposal of waste to landfill sites) rising to £80 per tonne (up from £40 per tonne in 2009).
- The government's ambition is to move towards a Zero Waste Economy. Not an economy where no waste is produced, rather an economy where all resources are fully valued and there is currently a shortfall in residual waste treatment facilities, such as anaerobic digestion plants.

AD plants have been recognised by the United Nations Development Programme as one of the most useful decentralised sources of the supply of energy since they are more cost effective and readily deployable than large power stations.

## Benefits

Commercial benefits of anaerobic digestion -

- Our AD sites are chosen from a logistical standpoint in order for a network of local producers to be matched to one plant, offering certainty, lower costs and carbon reduction.
- Source-segregating organic waste, and having it collected, saves on Landfill Tax, transportation costs and reduces methane and carbon dioxide emissions.
- AD enhances your organisations brand and green credentials.
- We offer feedstock suppliers a long-term partnership.
- AD plant construction and operation provide local jobs and the creation of new technological skill-sets.

Environmental benefits of anaerobic digestion -

- A contributing factor towards the UK's renewable energy targets.
- Valuable nutrients are recycled back into the land through the production of digestate.
- Digestate may also be used as a feedstock for ethanol production and for low-grade building materials.
- AD provides 'green' jobs and contributes to growth in the UK's 'green' economy.
- Councils are saving significant sums by turning to segregated waste collection, freeing much-needed resources to schools, hospitals and infrastructure.
- By increasing awareness of the food waste we throw away (over 7m tonnes domestically and a further 12m tonnes by the commercial and industrial food industry), householders will buy less, and therefore waste less.local community.

# Wet AD Plant Components

Wet Anaerobic Digestion (AD) plants are a flexible all purpose form of the technology suitable for most applications and environments.

## 01. Mixing Tank

The mixing or collecting tank is used to collect and homogenize the liquid substrates.

## 02. Dosing Unit

The dosing unit is used to introduce solid substrates into the biogas plant. We use the energy-saving liquid feeding method. The silage or solid manure to be digested is mixed with liquid and then pumped into the digester or digesters.

## 03. Digester

The digestion of the substrates takes place in the digester. The digester is heatable, insulated, equipped with weatherproof cladding, accommodates several agitators and has a double membrane roof for gas storage.

## 04. Post Digester

The post digester is a gas-tight storage tank similar to a digester, except for the heating. A further "outgassing" of the fermentation mass takes place in the post-digester. The gas is stored through a double membrane roof system.

## 05. Fermentation Residue Storage Tank

The fermentation residue storage tank is a tank for storing the outgassed or depleted digestate. The gas holder can optionally be supplied with a double membrane roof to provide an optimum gas management and a maximum gas storage volume.

## 06. Pump Container

The pump system allows a free choice of substrate streams, i.e. substrates can generally be pumped from any tank into any other optional tank. Thanks to an integrated multi-chamber solution, the container can also be equipped with a complete control cabinet and plant control technology.

## 07. Separator

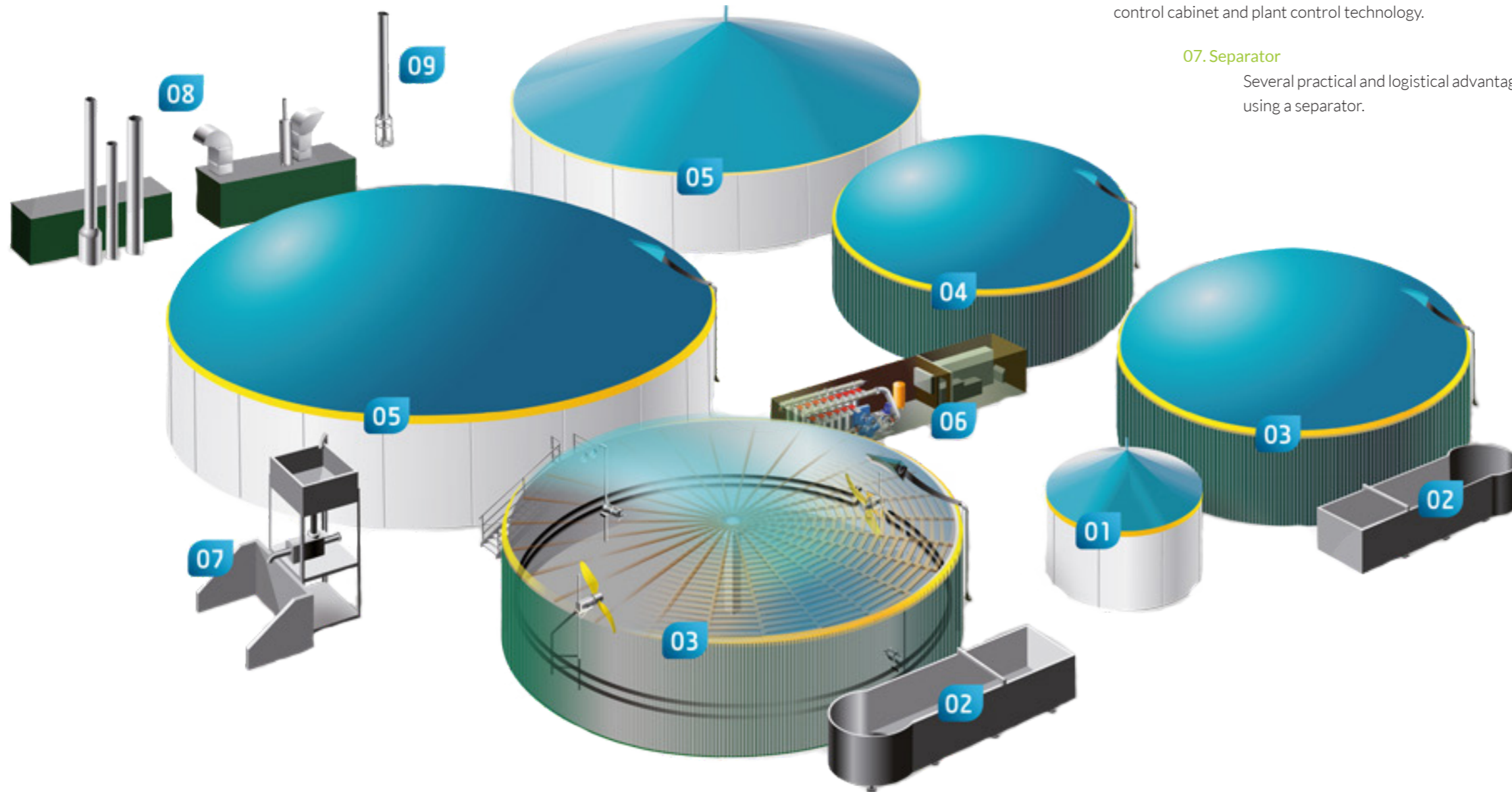
Several practical and logistical advantages can be achieved through solid-liquid separation of the digestate using a separator.

## 08. CHP / Gas Upgrading

Electricity or Biomethane: We develop the appropriate upgrading concept for the biogas produced. New AD uses specially modified gas-engine combined heat and power plants (CHP). The highly efficient units for the cogeneration of heat and power are delivered ready-to-connect and integrate. In addition to electrical energy, it is also possible to make practical use of the combustion engine's thermal energy in local and district heating systems. We help you select the perfect gas upgrading method for your location.

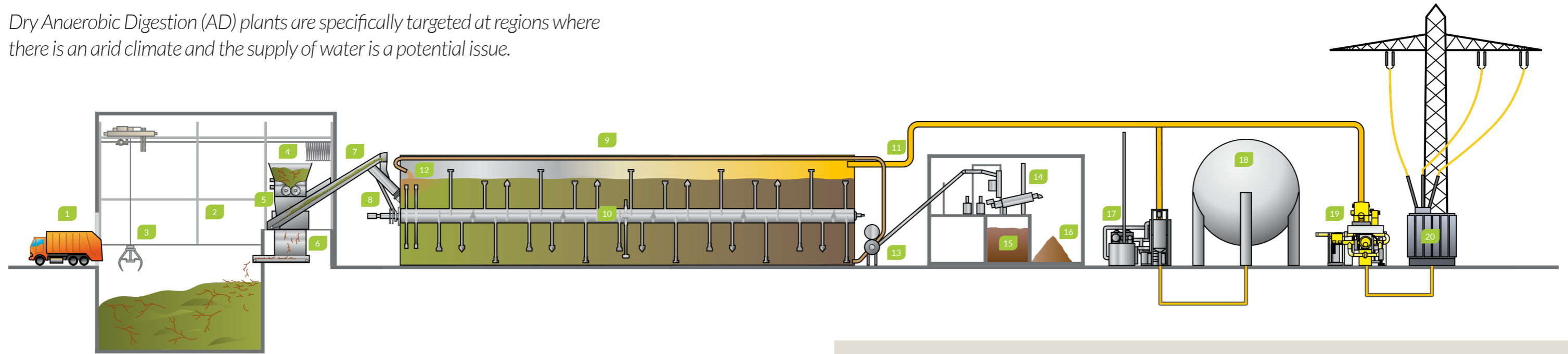
## 09. Gas Flare

The gas flare is part of New ADs extensive safety concept.



# Dry AD Plant Components

Dry Anaerobic Digestion (AD) plants are specifically targeted at regions where there is an arid climate and the supply of water is a potential issue.



## Reception and pre-treatment

All organic waste is unloaded in a pit bunker using an odor trap. An automated crane is used to convey the organic mass to the next station. Employing a pit bunker and crane enables fully automated feeding of the dry AD plant, also at night and weekends. Alternatively, arriving organic waste can be received in a special tipping and delivery flat area. To prepare for anaerobic digestion, a shredder chops the organic matter into small pieces which then are sieved to a maximum particle size of 60mm. The prepared substrate is then automatically conveyed to the digester feed-in point.

## Anaerobic digestion process

The digester is the heart of the dry AD plant facility. Here, thermophilic microorganisms decompose the organic matter and produce carbon-neutral biogas in an anaerobic environment. A temperature of 55°C and an anaerobic digestion period of 14 days ensure that spores and bacteria are eliminated. This way the digestate is completely sanitized during processing, and the gas potential is fully exploited.

A feed-screw conveyor transports the prepared organic matter into the digester. The digestate which is rich in microorganisms is added to immediately activate and accelerate the anaerobic digestion process (inoculation). At the same time, the addition of process water creates the optimal consistency for decomposition.

A specially developed heating system regulates the temperature during processing. The organic material is transported inside the digester in what is known as the plug-flow process. Here the material moves horizontally through the digester before it is discharged. A slowly turning agitator ensures that the digestate is optimally mixed and that biogas is released.

The digester is available in two models: the concrete form and the steel form only with a throughput capacity of about 20,000 t/a. Multiple digesters are installed in parallel to process higher waste quantities in larger plants. Thanks to their compact design, individual dry AD plant digesters are also ideal for expanding existing composting facilities.

## Energy utilization

After pre-treatment, the raw biogas from the dry AD plant digester is either upgraded and fed into the gas grid as biomethane or used directly to generate electricity and heat in a combined heat and power unit. Burning natural gas, a fossil fuel, would produce five times the greenhouse gas emissions for the same amount of electricity and heat. A certain amount of the heat produced is used to maintain the temperature in the digester, and the rest can either be used to heat buildings nearby or be fed into district heating networks.

Waste Receiving & Storage		Anaerobic Digestion	Discharge	Energy Utilisation
1	Waste receiving	4	12	17
2	Waste bunker	5	13	18
3	Waste crane	6	14	19
		7	15	20
		8	16	21
		9		
		10		
		11		

## Discharge and post-treatment

**Dewatering:** A screw press separates the fermented residue into solid and liquid digestate. The press can be set to produce the desired amount of dry matter in the solid digestate. Once it has been sieved, the solid digestate can be used directly in agriculture as an organic fertilizer or soil conditioner. Alternatively, it can be further processed into compost. The liquid digestate can be used directly as organic fertilizer.

**Partial stream anaerobic digestion:** An alternative is partial stream anaerobic digestion, where only the energy-rich component of the organic waste is fed into the digester, with highly structured material bypassing the anaerobic digestion process and subsequently being mixed into the digestate leaving the dry AD plant digester. This mixture then undergoes anaerobic treatment in a composting process. Depending on the plant's design, the mixture can also be processed further. In this case it undergoes closed composting to stabilize it and enhance its quality.

## Exhaust air treatment

The entire process takes place in a completely enclosed system to prevent the emission of gases and odors. To ensure nothing escapes untreated into the surrounding environment, all exhaust air from the plant's work areas and other spaces is collected and cleaned in an acid scrubber. A biofilter made of torn root wood and tree bark then neutralizes all odors biologically. The purified air is subsequently released into the atmosphere.

**95%**  
of the available  
energy is captured

**14 days**  
retention time in  
the digester

**99.5%**  
methane purity



# Anaerobic Digestion For Industry

*Anaerobic digestion as a technology is an incredibly valuable tool when applied with complementary technologies & operations and there are a number of applications for its use in the public and private sectors.*

With the ability to break down a variety of organic feedstocks and its consistent & predictable supply of clean, renewable energy there are numerous industries where the use of anaerobic digestion is significantly advantageous.

## Treatment of sewage

In the north-east of England alone, there are more than 400 sewage treatment works that all produce varying amounts of sewage sludge. This material has to be removed from every works but inevitably, it is problematic to handle and, to say the least, malodorous.

To make this sludge stable for further degradation and (almost) odour free whilst producing a form of renewable energy, water treatment companies have long employed anaerobic digestion techniques for a significant portion of its sludge. In the last five years however, technology has advanced significantly and techniques have been perfected that can do this much more efficiently. The most significant advances consist of two pre-digestion processes.

These two main pre-digestion processes that used in the United Kingdom are thermal hydrolysis or enzymatic hydrolysis. Currently, there are a number of examples of each in operation and under construction in the UK.

Regardless of which process is used, the key to the AD process is a phase that significantly enhances the breakdown of organic materials by, for example, breaking down cell walls.

The result is a far greater conversion of organic matter into biogas when the material is transferred into the anaerobic digestion phase. Following this digestion phase, there is a 50% reduction in sludge volumes, combined with the additional biogas/CHP-derived energy being produced, and ultimately a better quality bio-solids fertiliser.

Using AD reduces the mass of material which is required to be transported off site and offers the benefit of nutrient recovery from materials which are presently wasted. Some particularly difficult materials, such as food wastes under the Animal By-Products Order (ABPO), need the conditions of AD to render them safe.

## Industrial Applications

It is common knowledge that in the manufacturing industry the energy requirements are substantial and with governments worldwide implementing policies aimed at curbing excessive carbon emissions numerous companies are looking at alternate ways to provide their energy needs.

Other renewable energy generating technologies such as solar and wind certainly have their place in this equation however their energy output is highly dependant on external factors which are inherently unpredictable. Anaerobic digestion in this respect is unique in that its output of energy is dependant solely on the provision of a suitable feedstock which is much more controllable creating a more sustainable and predictable supply of energy.

In the UK there are a growing number of large scale industrial and manufacturing companies that are utilising AD to supply their energy needs which is therefore reducing their operating costs and will over time have a significant impact on their operating efficiency as global energy prices continue to rise. These companies range from quarries to cement factories and from cheese production to sewage treatment as previously discussed.

At New AD we see this as an enormous opportunity for large scale industrial facilities in countries where the current supply of energy can at times be unreliable or even intermittent. Where the loss of power is an ever present problem the introduction of AD to provide a steady supply of energy could have a considerable impact on the operating efficiency of the facility.

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# Feedstock Procurement

*The supply of suitable feedstock might seem like an obvious factor within the AD plant operations, however, maintaining the supply lines with a feedstock capable of significant biogas production is a contentious issue for developers and operators.*

Current projections suggest that there is not enough land for traditional farming purposes and for supplying AD plants. This has led to a number of leading figures in various industries, including politicians and environmentalists, calling for land appropriated for traditional farming not to be used for the production of feedstock for AD plants. This is expected to lead to increased prices for both land rental and agricultural products that already have shown progressive growth over the past 10 years.

The plants already in operation are calculated by the NNFCC to need 17,000ha of land a year to provide crop-based feedstock, but if all crop-based AD plants currently under development went into production, the UK AD industry's land requirement for feedstock crops would rise to 60,000ha by 2017. This approximately represents in excess of an astonishing 1% of the UK arable land area.

With regard to the waste industry, outside of government bodies such as local council contracts for the procurement of food waste and organic fines are currently only being offered short-term (2-3 years) creating instability in the business plan of many plants. The primary reason for these short contracts is because waste management and food manufacturing companies are unwilling to commit themselves to contracts that in the very near future may be considered financially detrimental. These contracts may be considered detrimental because as the use of organic waste as a fuel continues to grow the competition for these contracts is likely to increase which in turn will increase the value of their waste.

In today's society the public is much more aware of the quantity of waste that they are producing and are much more conscious of the effect that this has on the environment and are looking to be more environmentally proactive. Additionally, with the situation surrounding the economy, people are constantly looking to make their money go further which means the ratio of percentage of products consumed to percentage of products thrown away has dramatically increased since 2008.

These factors combined with standard business practices of waste reduction has led to a reduction in the amount of food waste available to waste management companies by 21% in the past 5 years. What this means is that a company using a waste model for its AD plant without a long-term contract (15+ years) must constantly acquire new contracts to sustain the flow of feedstock making these contracts more valuable.

By utilising our vast array of contacts across multiple industries we are able to source, secure and supply whatever feedstock you require.

For agricultural feedstocks we have excellent links with numerous agricultural product buyers who can locate and procure large quantities of a multitude of products in a very short space of time. We also have direct contact with contract growers across the country to provide long-term stable supply chains for AD plant operators and developers.

With regard to the waste industry, we have established relationships with a number of large and small companies within the waste industry, food manufacturers, local authorities and retail establishments. In addition, we are always developing our database of relationships, which allows us to be highly flexible in the delivery of our services. This allows us to be constantly aware of precisely what is available, where it is located, the quality of the product and how this can benefit your organization.

Thanks to our dedicated team, at New AD we specialize in sourcing and maintaining these supply lines and ensuring that your plant is never short of feedstock.

*Energy is **essential** for development, and sustainable energy is **essential** for sustainable development.*

# Digestate Management

*The management of the digestate is a growing concern for AD operators, as on the surface, it seems simple, however the price being paid for the digestate does not fully reflect its true value as a fertiliser and transporting it is a gargantuan problem.*

For waste plants, without the waste being source segregated it is inordinately difficult to be approved for PAS110 allowing the digestate to be spread on land as a fertilizer. This means that without the PAS110 certification its only current domestically viable destination in the quantities that the AD industry produces and is anticipated to produce is quantities is landfill. With the constantly increasing landfill prices and rising haulage costs this has a significant effect on the profitability of the plant, even if a generous gate fee is obtained. Naturally, not all will need to go to landfill as farm based models utilise a proportion of this fertiliser however; in respect to the total amount produced this is not the solution to the problem.

On the other hand, even if you are able to achieve PAS110 certification the prices that the digestate is achieving does not reflect the quality of the product.

Additionally, unless the destination for the digestate is relatively close to the plant, the transportation costs associated are far too high due to the quantities involved and the form of the product. This is due to the limited time in which the spreading of the digestate is possible, spreading is usually restricted to a few months a year, meaning that six months accumulation of digestate must be transported in a very short space of time. In wintertime it is normally not permitted as excess precipitation during these months can cause the fertiliser to run off the land and potentially contaminate local water sources, so a large storage capacity is needed to buffer the flow of digestate.

With the anticipated growth in the number and capacity of AD plants to be developed digestate solutions including enhancement technologies are gaining more attention in the AD community. Most of these technologies rely on the ability to transform the digestate into a product that can achieve the PAS110 certification whereas the solutions will typically negate these certifications such as through alternative uses, however each have their own complications.

At New AD we focus upon being able to utilise the digestate in its natural form as the majority of plants do not have drying or pelletizing facilities and to ask all operators and developers to invest in additional equipment is unfeasible. Our methods can provide a cost effective solution to this problem and can alleviate significant problems for our customers and in the process make their plants more effective environmentally, and crucially, more profitable.

It is our universal responsibility to pass a healthy earth onto future generations.

Visit our website to learn more  
[www.newadltd.com](http://www.newadltd.com)





# Waste Management Solutions

Between budgetary constraints, EU regulations and constantly shifting public opinion local authorities are under immense pressure to reform their waste management strategies.

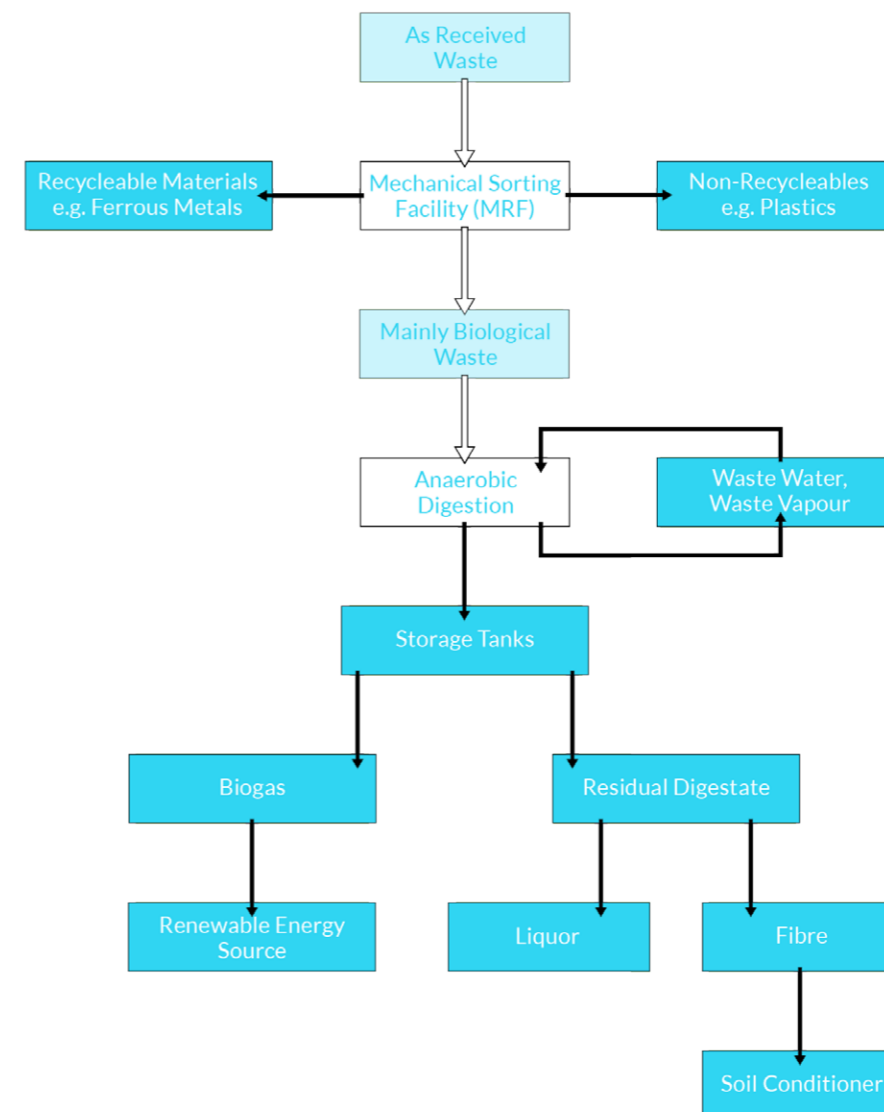
At New AD we have been working with a number of local authorities to present a solution that is not only cost effective but also environmentally responsible.

AD is not a new process; it is well established in the wastewater industry and more recently it has been used for the treatment of biodegradable municipal waste (BMW). All of the outputs created by the AD process can be affected by the quality of the feedstock that is put into the AD digester. This is why AD may be used alongside other treatment methods, such as after a material sorting facility (MRF).

The MRF could be used to remove the non-organic fraction of the waste (e.g. plastics) as a digester would not be able to process these. This stage often includes the use of a shredder to uniform the size of the material (12mm required for Animal By-Product Regulations) going into the digester this can help aid the digestion of the waste.

When sorting technologies, such as MRFs and biological technologies like AD and composting are combined in this manner, the systems are termed mechanical biological treatment (MBT).

MBT is a process that could help the UK to meet its obligations under the Landfill Directive (EC/31/1999), of diverting biodegradable municipal solid waste from landfill to help protect the environment and reduce the amount of greenhouse gas emitted from landfill sites. MBT describes a number of different processes dealing with the biological treatment of waste and is an established waste treatment technology in many European countries such as Germany and Austria.



MBT is commonly used to treat municipal solid waste (MSW); it is capable of dealing with both mixed waste and source-separated waste.

The aim of the mechanical process is that the remaining waste, after the mechanical separation, is the organic rich fraction or the biodegradable fraction, which will be ideal for biological treatment.

The MBT process is quite complex with a number of variables giving considerable flexibility. MBT systems can be a modular design which means they can be switched from processing mixed MSW to processing source separated organic waste, which may need to occur if the collection system is changed from a mixed waste collection system to a source segregated collection.

Sites processing both mixed/residual MSW and to an increasing extent separately collected biowaste are often known as "double duty" sites, these sites, are quite diffused across Europe, and may provide a flexible answer to the need to tackle changes in schemes and of local strategy.

# Food Waste Collections

*In government there is a growing focus upon the need to recycle food waste, this can be reflected in the Scottish Governments Zero Waste Regulations.*

As climate change is becoming more and more apparent in the modern world, and mankind's responsibility (at least partially) for such a change being more and more convincing, governments worldwide are looking to create better waste strategies. In an effort to reduce mankind's effect a number of governments have employed, or are in the process of drafting, a zero waste policy, meaning that all waste that it is possible to recycle must be recycled rather than being sent to landfill. This includes food waste, which in Scotland it is already in effect, and soon will be brought into effect in both England and Wales.

Under these regulations it will be mandatory for most businesses (in particular the catering and food manufacturing industries) to separate food waste for recycling in energy from waste projects, there will also be a ban on macerating food waste and dumping in the sewers. Soon, recycling food waste will soon be as common as bottles, cans and paper - we aim to make it just as simple.

## Reduced Costs

Just as traditional recycling methods have helped us see the amount of waste we produce and in turn curb our waste generation, so will food waste manufacturing. When you can physically see precisely how much and where waste is being produced from your business, this can help the business become more efficient in the way it operates.

This means that your costs associated with traditional waste disposal will be greatly reduced, but also, you should experience reduced costs on the raw materials used as you become more efficient. This will make your business, more efficient, environmentally proactive and crucially, more profitable as a consequence.

## Traditional Recycling

We also look to recycle not only food waste, but also other more traditional recyclables such as glass. For restaurants and catering services this can often be a very large quantity and consequently a large expense. It need not be though.

With New AD's innovative solutions we can reduce the amount your business spends on waste management and recycling whilst keeping it simple for your employees.

An estimated **15 million tonnes** of food wasted in Britain from the plough to the plate.

Visit our website to learn more  
[www.newadltd.com](http://www.newadltd.com)





# AD Consultancy.

*At New AD we want to use our expertise to help the wider AD community by restoring operations at non-functional or inefficient plants.*

As it is in all walks of life, nothing worth doing is ever easy and at the moment there are a number of non-functional AD plants in this country. Most of this is due to the number of operations involved to ensure a successful operation and the logistics involved in ensuring that all these operations work together in unison.

As all AD plant owners and operators know, there are three major areas which dictate whether a plant operates successfully; technology, finance and the supply of feedstock. At New AD we have departments and a number of staff that specialise in all these areas and we can use these resources to get your plant back on the right path.

New AD and its partners can provide a number of services, and with our teams vast array of areas of expertise we will be able to find what is the most applicable way to use your available assets. We are there to help in matters relating to the daily operation of your plant. We pride ourselves on the high efficiency and reliability of our biogas plants. So that they stay that way, our service people are always ready to help.

These services include;

- Feedstock Supply
- Digestate Disposal
- AD Project Recovery
- Biological Analysis
- Site Feasibility Survey
- Plant Development

## Feedstock

The majority of non-functional AD plants in this country are due to an insufficient supply of feedstock, to most this would appear to be a simple problem to solve. Unfortunately, the logistics involved in securing the kind of quantities needed for an AD plant are quite complex. At New AD we have excellent links with contract growers both here in the UK and internationally, this allows us to source large quantities of sufficient feedstock in a much shorter timeframe than would typically be available.

## Digestate

The digestate issue is one of great concern within the whole AD industry, especially for waste-to-energy plants. At New AD we have devoted considerable resources to finding the solution to this problem and after a significant amount of research we have discovered a number of avenues for the digestate. Utilising these avenues we can save AD operators a considerable amount of money, especially if they currently have to send the digestate to landfill.

## Technology

With all modern technology comes a need for a certain amount of expertise even in just the day-to-day operations of the plant. We offer a complete service that includes monitoring the synergy between all the components as well as providing servicing contracts to ensure that all components run as smoothly as possible with the minimum amount of downtime. This is particularly important in plants that are operating inefficiently as the most common cause is a technological problem, whether that is a component not operating correctly or a number of components not working together properly.

With these resources at our disposal, we feel confident that no matter the situation, we can find a solution.

*You can't solve a problem using the **thinking** that caused the **problem** in the first place*

# Global Solutions.

## *Diverting organic waste from landfill and transforming it into renewable energy*

New AD has signed long-term contracts with a large number of industry leading developers and operators of AD plants to provide feedstock and export digestate to and from overseas markets. We currently supply in excess of 500,000 tonnes each year of digestate with supply levels anticipated to reach more than 1,000,000 annually within 3 years. By analysing our own and our clients development strategies, our current 5-year projection shows a supply in excess of 2,000,000 tonnes of digestate available each year from one single client and more than double that figure available from New AD as a whole.

New AD are now using their experience to advise clients outside the UK on solutions for the recycling of organic waste with the intention of vastly increasing the use of anaerobic digestion technology in countries outside of the EU with a particular emphasis on Asia, the Middle East and Africa.

New AD is a renewable energy business. We are aiming to develop an international network of anaerobic digestion plants to generate in excess of 100MW of clean renewable energy whilst diverting food waste from landfill to produce a valuable biofertiliser.

This material cannot only act as a substitute for artificial fertilisers, but, given both its organic content and its water content, could also be used to build soil structure. This would be of significant benefit to local agriculture and would also reduce the cost of producing and using desalinated water.

Simply, our anaerobic digestion plants will take organic waste and produce renewable power, biofertiliser and water.

Anaerobic digestion (AD) is a series of natural biological processes whereby organic waste material – known as feedstock – is broken down by micro-organisms and converted into energy, known as biogas (a mixture of carbon dioxide and methane).

The biogas is used in a combined heat and power plant or cleansed of carbon dioxide and injected into the national grid.

A by-product of the AD process is digestate. Digestate is a stable, nutrient-rich substance that is most commonly used as a renewable fertiliser or a soil conditioner.

New AD has the ability to take feedstock from a number of sources, including; organic waste from the food processing industry, organic waste from agricultural sources and post-consumer organic waste. Post-consumer waste can be broken down into municipal, household waste and waste from industrial and commercial sources including hotels, supermarkets, prisons, schools and hospitals.

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# Government Guarantees

*The guarantees are the most enticing part of this project. Additionally, OFGEM will purchase as much energy as can be produced, therefore giving this business model a 100 percent guaranteed return.*

## Government Guaranteed Subsidies

The Renewable Heat Incentive (RHI) is a pioneering scheme to provide long-term support for renewable heat technologies and to encourage a seven-fold increase in renewable heat sources in the next decade. For the non-domestic sector broadly speaking, it provides a subsidy, payable for 20 years, to eligible, non-domestic renewable heat generators and producers of biomethane for injection based in Great Britain. The subsidy is fixed and index linked from the date of commissioning and paid through general government spending.

By providing a long-term financial incentive, the objective of the Non-Domestic RHI is to significantly increase the proportion of heat generated from renewable sources. By driving change in a heat sector currently dominated by fossil fuel technologies, the RHI can help the UK meet EU targets to reduce carbon emissions and improve energy security.

Biomethane producers are treated differently to other participants in the Non-Domestic RHI. This is because the Government has decided that the regulations and standards currently in place for biomethane injection are sufficient to ensure that the Non-Domestic RHI requirements are met, so no further RHI-specific accreditation standards are necessary. As a result, the Regulations describe the process for biomethane producers as 'registration' rather than 'accreditation'.

The Feed-in Tariff (FIT) scheme is a government programme designed to promote the uptake of a range of small-scale renewable and low-carbon electricity generation technologies. FITs were introduced on 1 April 2010 and replaced UK government grants as the main financial incentive to encourage uptake of renewable electricity-generating technologies. The UK Government's Department for Energy and Climate Change (DECC) makes the key decisions on FITs in terms of government policy. The energy regulator OFGEM administers the scheme.

The FIT scheme is available through licensed electricity suppliers. It requires some of them to make tariff payments on both generation and export of renewable and low carbon electricity. Generation and export tariff rates are index-linked which means that they will increase or decrease with inflation. Ofgem accredit all hydro and Anaerobic Digestion (AD) installations, as well as solar PV and wind with a Declared Net Capacity (DNC) greater than 50kW. They also verify the status of installations that are applying for community or school benefits and are responsible for ensuring suppliers comply with the FIT scheme requirements.

## Ofgem Guarantees Sustainability

OFGEM's duty to contribute to the achievement of sustainable development was introduced in 2004. In 2008, the Energy Act promoted this duty, placing it on an equal footing with their duties to meet reasonable demand and financing authorised activities. The Act also highlighted that their principle objective, to protect the interests of consumers, refers to future as well as existing consumers. These changes underline OFGEM's important and developing role in shaping the future of gas and electricity industries in a sustainable manner.

We are facing a future that involves increased geopolitical risks to energy security, potentially higher energy prices and the need to do much more to reduce greenhouse gas emissions while making sure everyone can afford to adequately heat their homes.

*In reality, studies show that **investments** to spur renewable energy and boost energy efficiency **generate** far more **jobs** than oil and coal.*



# Government Incentives

There are several policies that can benefit the anaerobic digestion industry;

## Feed-in Tariffs (FITs)

Since April 2010, Feed-in Tariffs (FITs) have provided a guaranteed price for a fixed period to small-scale electricity generators. FITs are intended to encourage the provision of small-scale, low carbon electricity. Only AD facilities with less than 5MW capacity, completed after 15 July 2009, are eligible for FITs. The Government offers preliminary accreditation for AD, with a guarantee that the project will be eligible for the tariff payable at the time of accreditation. Each tariff runs for 20 years.

There are two elements to the scheme; the generation tariff for every kWh of electricity generated, and the export tariff for every kWh of electricity exported to the national transmission network.

Tariffs are Retail Price Index (RPI) linked, see the Ofgem website for a table of annual RPI linked increases to FITs. From April 2014, there will be a baseline degression in tariff rates of 5% per year, which would accelerate or decelerate based on annual deployment numbers.

## Renewable Heat Incentive (RHI)

The RHI provides a fixed income (per kWh) to generators of renewable heat, and producers of renewable biogas and biomethane. AD facilities completed after 15 July 2009 are eligible for the RHI. The lifetime of the tariff is 20 years.

## Levy Exemption Certificates

Combined heat and power (CHP) generated from eligible renewable resources is exempt from the Climate Change Levy (CCL). CHP Levy Exemption Certificates (LECs) are the primary evidence that suppliers use to demonstrate to HM Revenue & Customs the amount of electricity supplied from certified 'Good Quality' CHP sources to non-domestic customers in the UK.

## Renewable Transport Fuel Obligation

The Renewable Transport Fuel Obligation (RTFO) requires suppliers of fossil fuels to ensure that a specified percentage of the road fuels they supply in the UK is made up of renewable fuels. Biomethane is eligible for Renewable Transport Fuel Certificates provided that it is dutiable and produced wholly from biomass.

## Renewables Obligation (RO)

The Renewables Obligation (RO) is the main support scheme for large-scale (>5MW) renewable electricity projects in the UK. A Renewables Obligation Certificate (ROC) is a green certificate issued to an accredited generator for eligible renewable electricity generated within the United Kingdom and supplied to customers within the United Kingdom by a licensed electricity supplier.

Anaerobic digestion is among the technologies that receive additional support in the form of multiple ROCs. An anaerobic digester will receive 2 ROCs/ MWh until April 2015, this will then fall in line with DECC estimations of costs to 1.9 ROCs/MWh in 2015/16 and 1.8 ROCs/MWh in 2016/17.

Generators are accredited by The Office of Gas and Electricity Markets (OFGEM). In 2014, the Feed-in Tariff Contracts for Difference (FIT CFD) will be introduced as part of the Electricity Market Reform and new generators will have the option to claim the RO or the new FIT CFD. After 2017 the RO will close to all new generators.

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# Governing Bodies & Industry Institutions

Detailed below is a brief of the bodies that oversee and regulate the AD industry along with institutions that help to develop the industry as a whole.



## Department of Energy & Climate Change

The Department of Energy & Climate Change (DECC) works to make sure the UK has secure, clean, affordable energy supplies and promote international action to mitigate climate change.

The DECC are responsible for:

- *Energy security* – making sure the UK has secure supplies of energy
- *Action on climate change* – leading government efforts to mitigate climate change, both through international action and cutting UK greenhouse gas emissions
- *Renewable energy* – sourcing at least 15% of our energy from renewable sources by 2020
- *Affordability* – delivering secure, low- carbon energy at the least cost to consumers, taxpayers and the economy
- *Fairness* – making sure the costs and benefits of our policies are distributed fairly so that we protect the most vulnerable and address competitiveness problems faced by energy intensive industries
- *Supporting growth* – delivering our policies in a way that maximises the benefits to the economy, including by making the most of our existing oil and gas reserves and seizing the opportunities presented by the rise of the global green economy
- Managing the UK's energy legacy safely, securely and cost effectively



## Ofgem

Ofgem is the Office of Gas and Electricity Markets. They are a non-ministerial government department and an independent National Regulatory Authority, recognised by EU Directives. Their principal objective when carrying out their functions is to protect the interests of existing and future electricity and gas consumers. They do this in a variety of ways including:

- Promoting value for money
- Promoting security of supply and sustainability, for present and future generations of consumers, domestic and industrial users
- The supervision and development of markets and competition
- Regulation and the delivery of Government schemes.

They work effectively with, but are independent of, government, the energy industry and other stakeholders within a legal framework determined by the UK government and the European Union.

They support the vision of a competitive, secure and sustainable European energy market that brings affordable and secure energy supplies to consumers.

They are working within the European Regulators' organisations (CEER and ACER) to develop the requirements of a comprehensive regulatory framework for cross-border competition and investment.



## National Grid

National Grid are an international gas and electricity company based in the UK. They play a vital role in connecting millions of people safely, reliably and efficiently to the energy they use.

They are at the heart of one of the greatest challenges facing our society – delivering clean energy to support our world long into the future.

With their stakeholders they work to promote the implementation and development of sustainable, innovative and affordable energy solutions.

National Grid owns and manage the grids that connect people to the energy they need. They run systems that deliver electricity to millions of people, businesses and communities. They play a vital role in delivering electricity efficiently, reliably and safely.

All gas in the UK passes through National Grid's national transmission system on its way to consumers. Their UK distribution networks deliver gas to around 10.9 million consumers.

Their transmission system is linked by interconnections to transmission systems in France, the Netherlands and Northern Ireland. This means that 'spare' electricity generated in those countries can be used to meet demand in Great Britain, and vice versa.



## Food and Agriculture Organisation

Achieving food security for all is at the heart of FAO's efforts – to make sure people have regular access to enough high-quality food to lead active, healthy lives.

Their three main goals are: the eradication of hunger, food insecurity and malnutrition; the elimination of poverty and the driving forward of economic and social progress for all; and, the sustainable management and utilization of natural resources, including land, water, air, climate and genetic resources for the benefit of present and future generations.

An intergovernmental organization, FAO has 194 Member Nations, two associate members and one member organization, the European Union. Its employees come from various cultural backgrounds and are experts in the multiple fields of activity FAO engages in. FAO's staff capacity allows it to support improved governance inter alia, generate, develop and adapt existing tools and guidelines and provide targeted governance support as a resource to country and regional level FAO offices.

FAO's activities comprise five main areas:

- Putting information within reach and supporting the transition to sustainable agriculture
- Strengthening political will and sharing policy expertise
- Bolstering public and private collaboration to improve smallholder agriculture



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