

FUSION

Linking your business into the
Energy-from-Waste and Bioproducts
supply chains, and beyond

Foreword



**West Midlands
Combined Authority**

**Mayor of the
West Midlands**

The West Midlands has long been a centre of innovation and production; generating new ideas, products and technologies since we led the world's first Industrial Revolution. Our region's strong manufacturing base today is, in-part, a reflection of our rich industrial history. With so many world class products made here,



we face mounting pressure to modernise our production processes and find sustainable energy and waste-management solutions. This pressure has helped to drive our Low Carbon sector, making it the most productive sector in the West Midlands, with GVA per employee far outstripping the national average.

The huge potential that Low Carbon has in our region has prompted me and my team to take a number of actions to support the sector. Our recently-launched regional Industrial Strategy has set a number of targets to help low carbon businesses and organisations meet their full potential. This includes a commitment to clean growth – aimed at inspiring innovative new approaches to energy generation, storage and transmission.

The Fusion Guide, produced by the European Bioenergy Research Institute (EBRI) at Aston University, offers regional businesses a way of linking into the Low Carbon sector. With Energy-from-Waste and Bioproduct supply chains expanding rapidly, businesses need to be made aware of the wide variety of specialisms that our region has to offer. The Fusion Guide does a brilliant job of making this process easier for businesses, and I commend EBRI for their work.

Andy Street

Mayor of the West Midlands

Introduction

Tim Miller

Engagement Director, EBRI

Over the past three years we have been working with business leaders based in the West Midlands to find opportunities to generate energy and develop new products from waste. Over this period the market has grown and developed in response to the changing views of society, the shifting economic picture and changes in incentive structures.

The recognition of the problems caused by plastic waste, the importance of clean air and the increasing role of renewables in the energy mix has seen a move of things that could have been seen as marginal concerns to the mainstream centre stage. The disruption of energy markets combined by the growth of the internet of things has generated completely new fields of opportunity for services that would have been previously unimaginable.

The increasing awareness of possibilities is now driving a focus on the search for new commercial opportunities and business models. Going forward the challenges are to support the drive towards innovation with well-founded market knowledge, scientific and engineering expertise as well as creating a bridge between research activity and the needs of industry.

Over the next three years we shall continue to provide an unbiased and factually grounded assessment of new business and technical concepts and provide access to the knowledge needed to succeed. We shall work with companies to find the skills and resources to help them develop and deliver new competitive products and services.



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Irene Watkinson, EBRI, Aston University.....	84
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Alexander Comley

Tubesheet, Flange and Pipe Fitting Manufacturer

Kingswinford, West Midlands

UK based, globally exporting manufacturing supplier of large, custom flanges up to 2,000 mm Ø. Included tubesheets, filter plates and flanges to international standard e.g. B16.36, B16.47. Delivers complete pipeline packages – flanges, fittings, fasteners, pipe, tube and gaskets. Through our supplier network, products we do not manufacture in house, we can source and deliver alongside.



Products

- ◆ Complete Pipeline Packages
- ◆ Tubesheet | Shell & Tube Heat Exchanger
- ◆ Large & Custom Flanges
- ◆ CNC Machined Components

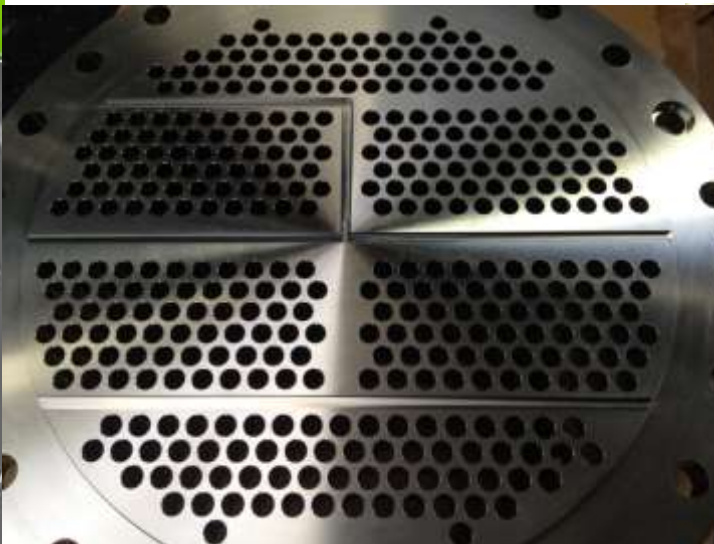
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www.alexandercomley.com

Alexander Comley

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Complete Pipeline Packages	Flanges, fittings, fasteners, pipe, tube and gaskets.	Click here
Tubesheet Shell & Tube Heat Exchanger	Manufacture in house up to 2,000 mm Ø.	Click here
Large & Custom Flanges	To bespoke technical drawings or International Standard e.g. B16.36, B16.47, up to 2,000 mm Ø.	Click here
CNC Machined Components	Turned parts on suite of in-house CNC machines.	Click here



Opportunities

Alexander Comley Ltd is interested in finding new markets. It is currently established in the hydrocarbon sector and is looking to transfer engineering skills to the renewables sector.

Geographical Coverage

Open to enquiries from around the world.

Alexander Comley Ltd

1 Dandy Bank Road
The Pensnett Estate
Kingswinford
West Midlands



Andrew Johnson

T: 01384 401080

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General information

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www.alexandercomley.com



Astwood Design Consultancy

Creative Agency

Bidford on Avon, Warwickshire

Astwood is a multi-disciplined creative agency with over 30 years experience. Our services include design, branding, print, web, exhibition design and graphics as well as digital media work including animation, video and augmented reality.

Our loyal client base includes organisations such as National Composites Centre, NFU, SITA Trust, European Corporate Governance Research Foundation, and Biotechnology and Biological Sciences Research Council.

We have a studio of six full-time creative staff and a bank of trusted freelancers. Supporting this key resource are the account management, finance and office services teams.

Examples of our work can be viewed on the flip book link supplied: <http://astwoodconnect.co.uk/work>

We would be more than delighted to help with any projects you may have, we are just a call away.

Products and Services

- ◆ Creative Design
- ◆ Print
- ◆ Web
- ◆ Animation
- ◆ Augmented Reality

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www.astwood.co.uk

Astwood Design Consultancy

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Creative Design	Our talented creatives are bursting with ideas that exceed expectations time after time.	Click here
Print	First class print at competitive prices, delivered on time, every time.	Click here
Web	Stunning professional bespoke websites that stand out head and shoulders above the crowd.	Click here
Animation	Stunning animation that gets your message across at competitive rates.	Click here
Augmented Reality (AR)	We believe that this will be a huge part of future communications and have created several AR projects to the delight of the clients that commissioned them.	Click here

Opportunities

Astwood is an agency that works both nationwide and in mainland Europe. We would be delighted to hear from any prospective clients that need our expertise.

Geographical Coverage

Open to enquiries from around the UK and Europe.



Astwood Design Consultancy

Astwood House
67 High Street
Bidford on Avon
Warwickshire
B50 4BG



Salim Bhayat

T: 01789 778111

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General information

E: salim@astwood.co.uk

www.astwood.co.uk



Biochar Ltd

Biochar - Producer and Retailer

Bromyard, Herefordshire

Biochar is a form of charcoal, rich in carbon which has a number of uses including:

- ◆ Soil amendment and conditioner e.g. for garden soil and potting compost
- ◆ Water treatment and filtering
- ◆ Odour control e.g. in digestate
- ◆ Industrial applications
- ◆ Carbon sequestration
- ◆ Fuel

Biochar Ltd specialises in manufacturing and selling biochar made from untreated waste softwood offcuts sourced from local timber merchants, and other waste streams such as orchards and farmlands.

The founders of the company have developed their own unique on-site technology and process to create the char. The wood offcuts are chipped and put in an oven to dry using excess heat from a furnace they have built on their Herefordshire site. The chips are then transferred into a pyrolyser and heated to a high temperature in the absence of oxygen, resulting in organic biochar.

Products and Services

- ◆ Biochar manufacturer
- ◆ Biochar retailer

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Biochar Ltd

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Biochar manufacturer	The biochar is manufactured from locally sourced untreated woody biomass.	Call us to discuss further.
Biochar retailer	Organic biochar available to help you nourish soil, enhance growing conditions and obtain better soil structure. See previous page for further uses and benefits.	Call us to discuss further.

Opportunities

Biochar Ltd is open to enquiries from:

- ◆ Anaerobic Digestate (AD) industry
- ◆ Compost Manufacturers
- ◆ Research Institutes
- ◆ Farmers
- ◆ Soil Companies
- ◆ Arboretums
- ◆ Foresters
- ◆ Water Treatment Companies
- ◆ Arborologists
- ◆ Horticulturists

Geographical Coverage

Herefordshire and other parts of the UK.



Biochar Ltd
 Burghope
 Pencombe
 Bromyard
 Herefordshire
 HR7 4RT

Tony Brazier
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Edward Brazier
 T: 07413 386338

E: biochar.ltd@yahoo.com

Biofuel Evolution

Smart Energy

Coventry, Warwickshire

Biofuel Evolution is a clean technology smart energy start-up built on the blockchain.

Our technology converts mixed food and agricultural waste into clean, localised and decentralised bioenergy. The clean energy generated can then either be used by consumers, redistributed back into the energy grid or sold on to third parties via the blockchain.

Our passion is to create a better, more sustainable planet for future generations, by improving the way in which energy is generated, waste is managed and the planet's resources utilised.

Products

- ◆ BeBlock - converts food waste into clean, sustainable electricity
- ◆ Advanced bioethanol and other second-generation biofuels made from mixed food waste
- ◆ Blockchain platform



www.biofuelevolution.com

Biofuel Evolution

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
BeBlock	BeBlock converts food waste that is created in the home and commercial establishments, as well as agricultural waste into clean, sustainable electricity rather than going to landfill or incineration plants.	Click here
Advanced bioethanol and other second-generation biofuels made from mixed food waste	Advanced bioethanol can be utilised as a stand-alone liquid biofuel to power vehicles, heat district buildings, fuel Solid Oxide Fuel Cells (SOFCs), or as a chemical cleaning solvent. We are also exploring the possibility of creating a process which produces biomethanol that can either be used as a stand-alone liquid fuel or to power a Direct Methanol Fuel Cell (DMFC).	Click here
Blockchain platform	Our blockchain technology will be used to build a simple, blockchain-based buying, selling and billing model helping to remove one of the largest barriers currently preventing users from adopting sustainable electricity on a large-scale.	Click here

Opportunities

Biofuel Evolution

- ◆ Companies and organisations seeking our technology to enhance their energy efficiency and reduce their carbon footprint
- ◆ High food-waste producing SME market (B2B) - specifically:
 - Airports
 - Caterers
 - Pubs
 - Public buildings such as academic (schools & universities), hospitals, museums & prisons
 - Golf courses
 - Hotels
 - Restaurants
 - Retail outlets
 - Sports stadiums
 - Food producers (such as growers or processing facilities i.e. agricultural companies)
- ◆ Value-from-waste markets
- ◆ Waste-to-energy markets

Geographical Coverage

Open to enquiries from around the world.



Biofuel Evolution Ltd

The Apex
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General information

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www.biofuelevolution.com



Colin Roach Video Productions

Video Productions

Solihull, West Midlands

Colin Roach is a video production specialist with over 25 years experience in making videos - a hobby that became his full time career.

He has a long association with Aston University having worked 16 years in their media department and now he runs his own video production company which has been producing the latest videos for EBRI.

His company, Colin Roach Video Productions (CRVP), has a relaxed and professional approach to making videos, from training and learning materials to corporate promos and event capture. His company motto is "Work with me to create a video that works for you".

Products and Services

- ◆ Corporate Promotional Videos
- ◆ Graphics and Animation
- ◆ Live Event Capture
- ◆ Training and Learning

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www.crvp.co.uk

Colin Roach Video Productions (CRVP)

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Corporate Promotional Videos	Promote your company's products or services with a professionally made video, personally tailored to how you'd like it.	Click here
Graphics and Animation	Motion graphics can help describe and sell a company's service. CRVP can work with you to create these interesting visualisations.	Click here
Live Event Capture	For staff that can't attend an event, why not have it captured by CRVP for viewing later or even edited into an exciting highlights package?	Click here
Training and Learning	Work with Colin's extensive experience in Education to create suitable learning videos that educate and inform your audience.	



Opportunities

CRVP would like to hear from any UK based SME that is interested in creating video content for their website.

Geographical Coverage

Open to enquiries from around the UK.

Colin Roach Video Productions

36 Langcomb Road
Shirley
Solihull
West Midlands
B90 2PR

Colin Roach

T: 07413 313350

E: colin@crvp.co.uk

www.crvp.co.uk



Eccleshall Biomass

Low Carbon / Renewable Energy Production Plants

Eccleshall, Staffordshire

Eccleshall Biomass develops/ acquires/funds/ builds and operates low carbon or renewable energy production plants.

These plants provide energy to adjacent businesses, and can supply power, heat and/or refrigeration.

Its plant at Eccleshall is able to supply 8 MW of heat at competitive terms, and is adjacent to four hectares of land designated for development

Products

- ◆ Low carbon or renewable energy
- ◆ Wood chips
- ◆ Ash from combustion of wood



Continued on next page...

www.eccleshallbiomass.co.uk

Eccleshall Biomass

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Low carbon or renewable energy	Generation plant located close to point of use to minimise cost of energy transmission.	Click here
Wood chips	BSL accredited supplier of dried and screened wood chips suitable for use in biomass boilers.	Click here
Ash from combustion of wood	Rich in potash, high lime value and is pozzolanic in nature.	Click here



Opportunities

Eccleshall Biomass is open to enquiries from around the UK.

Eccleshall Biomass

Raleigh Hall Industrial Estate
Eccleshall
Staffordshire
ST21 6JL

Craig Ibbetson

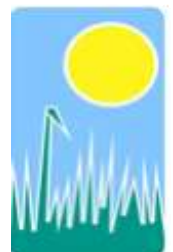
T: 07769 740814

E: craig.ibbetson@regenfuels.co.uk

General information

info@eccleshallbiomass.co.uk

www.eccleshallbiomass.co.uk



Edenviro Biomass

Biomass Fuel and Management of Organic Waste

Clee Hill, Shropshire

Edenviro Biomass specialises in the production and trading of biomass fuel and the management of organic waste.

We offer a range of products, services and solutions designed to help our clients save money and the environment.

Products and Services

- ◆ Wood Chips
- ◆ Small Woody Material
- ◆ Bark
- ◆ Digestate and Digestate Fibre

Continued on next page...



www.edenvirobiomass.co.uk

Edenviro Biomass

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Wood Chips	Wood chips produced from small branches and arisings during site clearance.	Click here
Small Woody Material	Small woody particles screened from wood chips are ideal for making compost.	Click here
Bark	Bark resulting from wood chipping. This product needs to be graded and further treatment to comply with standards.	Click here
Digestate and Digestate Fibre	The digestate is the liquid extracted from an Anaerobic Digester (AD) plant. It is typically rich in nutrients for example Nitrogen. Our site separates the fibres from the liquid. We are looking for opportunities to compost this material.	Click here

Opportunities

Edenviro is interested in seeking new opportunities in new markets.

Geographical Coverage

Open to enquiries from around the West Midlands.



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SY8 3PW

edenviro
BIOMASS

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www.edenvirobiomass.co.uk

Personalised Bottles of Champagne

Eliane Champagne's business activities focus on the sale of personalised bottles of champagne.

It is also involved in the recycling of corks to create a range of useful items. The founder of the business Eliane Yebkal summarises, “I took the decision to enter the recycling market when I decided to diversify to expand the sales of my business. This new activity is an oxymoron idea that links alcohol with the creation of useful items for society”.

The company was founded in 2014, and has since grown its reputation through research and development, cost reduction and market analysis. By linking to several networks it has formed key partnerships and expanded its business to business (B2B) sales.

Previously based in Warwickshire, Eliane Champagne is now based in London.

- Personalised bottles of champagne
- Safety items
- Plus other items under development

Continued on next page...



www.elianechampagne.com

Eliane Champagne

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Personalised champagne bottles	Bespoke bottles of champagne containing personalised labels tailored to your requirements. By including your contact information and branding details on the label, it can make an ideal corporate gift to thank your valuable customers and employees. It is also ideal for other types of marketing promotion such as awareness campaigns and corporate events, as well as special occasions and celebrations with family and friends.	Click here
Safety items, plus other useful items	Under development. Contact elianeyebkal@outlook.com for further details.	



Opportunities

Eliane Champagne is interested in exploring new markets for its products, particularly those that include luxury products in their portfolio.

She is also seeking alliance in the area of Intellectual Property Rights.

Geographical Coverage

Open to enquiries from around the UK, Europe, USA, Asia and Canada.

Eliane Champagne

27 Old Gloucester Street
London
WC1N 3AX

Contact

Eliane Yebkal
T: 07787 513432
E: elianeyebkal@outlook.com

www.elianechampagne.com



Energy Confidence with Phil Beardmore

Energy Management

Birmingham

Phil Beardmore's goal is to give you the confidence to control rising energy and water costs in your home or business.

He can give you the confidence to take action on energy saving that will make a lasting difference—to your financial bottom lines, and to help you “do your bit on climate change”.

Services

- ◆ Energy Management
- ◆ Renewable Energy
- ◆ Water Saving
- ◆ Energy and Water Procurement and Brokering
- ◆ Using Smart Data to Reduce your Running Costs and Increase Profitability

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www.energyconfidence.co.uk

Energy Confidence with Phil Beardmore

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Energy Management	Help on making the business case for saving energy in your company.	Click here
Renewable Energy	Advice on whether renewable energy is right for your business.	Click here
Water Saving	Water saving is often overlooked and can have a very short Return On Investment (ROI).	Click here
Energy and Water Procurement and Brokering	Energy companies give their best prices to customers who use a broker.	Click here
Using smart data to reduce your running costs and increase profitability	Showing you how to use smart metering data effectively and save money.	Click here

Opportunities

Energy Confidence with Phil Beardmore is seeking new opportunities with small businesses who are interested in cost-effective ways of managing their energy and water costs.

Geographical Coverage

Open to enquiries from around the UK.

"Are you worried about rising energy and water costs?

Do you want to do your bit on climate change?

I founded Energy Confidence to help you feel that you are doing the right thing to save energy and water in your home or business.

Contact me today to see how I can help."

Phil Beardmore



ENERGY
confidence
with **PHIL BEARDMORE**



Energy Confidence with Phil Beardmore

The Transfer
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Phil Beardmore

T: 07791 839025

E: hello@energyconfidence.co.uk

www.energyconfidence.co.uk

YouTube



Exergy

Engineering

Coventry



Exergy is an engineering company, which was founded in 2011. We develop, engineer and undertake projects that contribute to our goal of a low carbon, sustainable future. We excel at designing and implementing strategies and technologies that optimise the use of resources in industries and buildings. In the last seven years, we have been heavily involved in research and innovation projects in sustainable processes, green building and cities, plus circular economy sectors.

Products and Services

- ◆ Process Development
- ◆ Process Modelling
- ◆ Scale-up & Plant Design
- ◆ Techno-Economic Assessment
- ◆ Sustainable Building Design & Certification
- ◆ Building Information Modelling
- ◆ Renewable Energy Systems
- ◆ Resource Efficiency & Optimisation

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www.exergy-global.com

Exergy

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Process Development	<p>Our commercial offer and current process development expertise includes, but is not limited, to the following feedstocks, processes, technologies and products:</p> <ul style="list-style-type: none"> • VALORISATION OF FEEDSTOCKS: Municipal solid waste (MSW), wastewater, agricultural waste, food waste, algae, gaseous effluents, pulp and paper, and side streams. • PROCESSES / TECHNOLOGIES: Pre-treatments (e.g. hydrolysis), fermentation, algae cultivation and valorisation, thermochemical conversion (pyrolysis, gasification, incineration), anaerobic digestion, energy and mass optimisation, and downstream processing. • PRODUCTS: Alcohols and acids, building blocks, bioactive compounds, proteins, fertilisers, biopolymers (monomers), biofuels, chemicals. 	Click here
Process Modelling	<p>Process Modelling is the foundational step for further process development, whether it is to demonstrate scalability, repeatability or applicability, or to de-bottleneck, improve and optimise the existing processes. This allows us to predict the behaviour of chemical, physical and other technical processes and unit operations in a simulated environment, providing insight into how a process will behave in reality.</p>	Click here
Scale-up & Plant Design	<p>We provide solutions and guidance through the complex engineering challenges encountered when designing a plant or scaling up a process.</p>	Click here
Techno-Economic Assessment	<p>A techno-economic assessment (TEA) determines the feasibility of a particular process or technology. The result of the evaluation helps determine the next steps of development. For example, whether the process should be progressed to a commercial stage, modified, or researched further. Our team of engineers can evaluate any process at various stages of development.</p>	Click here
Sustainable Building Design & Certification	<p>We deliver robust and future-proof design solutions to maximise the whole life-cycle performance of buildings and minimise the use of and need for critical resources such as energy, water and raw materials.</p>	Click here

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Exergy

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Building Information Modelling	At Exergy, we pride ourselves on improving the speed and efficiency of the construction processes through the use of Building Information Modelling (BIM).	Click here
Renewable Energy Systems	We can help you identify the system that best fits your requirements, ensuring you achieve optimal performance and the expected benefits. From small-scale geothermal installations through to industrial solar farms, and from feasibility studies through to construction-ready designs, we offer our clients comprehensive support, tailored to suit their needs.	Click here
Resource Efficiency & Optimisation	We have developed a proprietary methodology, Galileo's Eye [®] , to analyse the performance of your buildings and processes, providing an optimised strategy to improve their efficiency.	Click here

Opportunities

Exergy is seeking new market opportunities with the following type of organisations:

- ◆ Technology developers
- ◆ Manufacturers
- ◆ Operating plants (from food, pharmaceuticals, chemicals to Oil & Gas)
- ◆ Waste treatment and management companies
- ◆ Research institutes and organisations
- ◆ Industrial R&D departments

Geographical Coverage

Open to enquiries from around the world.

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www.exergy-global.com



Family Business Practice

Business Development

Cleobury Mortimer, Shropshire

Established in 2015, the Family Business Practice is a unique Midlands-based Business Development organisation for owner-managed and family businesses, as well as businesses that supply owner-managed and family businesses.

The Family Business Practice is the brainchild of Peter Roper, the Family Business Man. He wanted to build a network of owner-managed and family businesses who understand that family businesses are different. In doing so, he wanted to help some of the 3 million family businesses in the UK to feel more valued and be more celebrated than they sometimes are.

Today, the Practice has over 90 members in the West Midlands ranging from husband-and-wife consultancies to businesses employing over 200 people. The one thing they all have in common is that they are all family businesses and they think, act and do differently to their corporate equivalents.

Services

- ◆ Family Business Planning
- ◆ Family Business Succession Planning
- ◆ Family Business Sales Development
- ◆ Family Business Development Strategy
- ◆ Family Business Staff Development
- ◆ Family Business Multi Generation Development
- ◆ Family Business Values and Purpose
- ◆ Family Business Communication
- ◆ Family Business Social Responsibility
- ◆ Family Business Networking Development

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www.familybusinesspractice.com

Family Business Practice

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Planning	Creating the route map for the family within the business.	Click here
Succession Planning	The analysis, implementation and development of future generations within the business.	Click here
Sales Development	Learning to create a clear definable strategy for making the most sales as a family business.	Click here
Development Strategy	A clear plan of the business and where it is headed.	Click here
Staff Development	How to maximise the talents of all staff members to the benefit of the business and its workers.	Click here
Multi Generation Development	How to create a road map for future generations of family and non family members.	Click here
Values and Purpose	How to maximise the business opportunity though a consistent message and ethos.	Click here
Communication	How to develop and consistently promote the family business image within its market place.	Click here
Social Responsibility	How to identify, promote, engage and implement both staff and local communities in a cohesive and consistent way.	Click here
Networking Development	How to create and implement an effective networking strategy with all clients, suppliers and partners.	Click here

Opportunities

Open to enquiries from around the UK.



Family Business Practice

Cleobury Country Centre
Love Lane
Cleobury Mortimer
Shropshire
DY14 8PE

Peter Roper

T: 01299 382000

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General information

E:

membership@familybusinesspractice.com

www.familybusinesspractice.com



Freeland Horticulture

Soil and Compost

Kent, plus locations around the UK, including Coventry

Freeland Horticulture Ltd has nine soil blending operations situated throughout England and Wales, and two composting operations in Doncaster and Cardiff. These sites collectively produce approximately 400,000m³ of soils for the landscape, construction and housing markets. We are also the largest purchaser of 0-10mm PAS 100 compost.

Freeland Scientific Ltd has a site in East Sussex for the manufacture of CompostManager and Preventit monitoring equipment.

Products and Services

- ◆ Bulk Soil - to agreed specifications
- ◆ Bagged Soils
- ◆ Preventit - for early detection of fires in waste piles
- ◆ CompostManager
- ◆ Temperature Probes for stockpiles
- ◆ PAS 100 compost
- ◆ Specialist Soils – design and specification
- ◆ On-site Blending

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www.freelandhorticulture.co.uk

Freeland Horticulture

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Bulk Soil - to agreed specifications	Made to BS3882 and reliable.	Click here
Bagged Soils	Made to BS3882 and reliable. Delivery to your door.	Click here
Preventit - for early detection of fires in waste piles	Thermal datalogging probes and strings.	Click here
CompostManager	Unique system for management of composting windrows and PAS 100 compliance.	Click here
Temperature Probes for stockpiles	Wireless temperature probes for monitoring storage piles.	Click here
PAS 100 compost	Supply of PAS 100 compost for horticultural applications to replace peat.	Click here
Specialist Soils – design and specification	Unique bespoke soil requirements for specific requirements.	Click here
On-site Blending	Manufacture of bespoke soils on site.	Click here

Opportunities

Freeland Horticulture would like to be involved in fire protection of waste management sites as part of fire prevention plans, and is interested in trading in the following geographical areas:

Geographical Coverage

UK: Soils, CompostManager and Preventit **Europe:** CompostManager and Preventit
USA, New Zealand and Australia: Freeland Horticulture have products in many countries - agents would be helpful.



Freeland Horticulture Ltd and Freeland Scientific Ltd

Rosedale Nursery
 College Road
 Hextable
 Kent
 BR6 7LT



Philippa Lambourne

T: 01322 667076

E: philippa@freelandhorticulture.co.uk

www.freelandhorticulture.co.uk



FuturEnergy

Renewables Technology and Energy Generation

Stratford-upon-Avon, Warwickshire

FuturEnergy is a systems integration and research and development company operating within the renewables technology and energy generation sectors. Design and manufacturing services are offered for one-off, prototype and productionisation of client units.

A waste-to-energy plant processing end-of-life tyres (also suitable for plastics) at up to 1t/hr is now in operation.

Products include the AirForce[®] 1 and AirForce[®] 10 small-wind turbines, both using in-house designed and manufactured generators. The 1kW unit is aimed at battery charging and off-grid installations with the 10kW suitable for on or off-grid applications. A Turbine Monitoring and Automatic Stop System (TMASS) provides full system protection.

Products and Services

- ◆ Research, design, and manufacturing services to renewable technologies
- ◆ AirForce[®] 1 1kW small wind turbine (domestic)
- ◆ AirForce[®] 10 10kW small wind turbine (domestic and small industrial)
- ◆ Turbine Monitor and Auto-Stop Switch (TMASS)
- ◆ Design for certification consultancy and design services

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www.futureenergy.co.uk

FuturEnergy

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Research, design and manufacturing services to renewable technologies	Fast prototyping, productionisation and systems integration.	Click here
AirForce® 1 1kW small wind turbine (domestic)	Robust, reliable, proven, durable, (over 7,000 in service).	Click here
AirForce® 10 10kW small wind turbine (domestic and small industrial)	Suitable for class IIa wind areas with >20-year operational design life.	Click here
Turbine Monitor and Auto-Stop Switch (TMASS)	Monitor and automatic turbine protection system with web monitoring.	Click here
Design for certification consultancy and design services	Modification of designs to achieve certification (pre-production units).	Click here

Opportunities

FuturEnergy is seeking new market opportunities in the following area:

- ◆ Exploitation of emerging bio-tech and ag-tech processes.

Geographical Coverage

Open to enquiries from around the world.



FuturEnergy Ltd

Ettington Park
Business Centre
Stratford-upon-Avon
Warwickshire
CV37 8BT

FUTUREENERGY

Steve Harrison

T: 01789 451078

E: steve.harrison@futureenergy.co.uk

General Information

E: sales@futureenergy.co.uk

www.futureenergy.co.uk

Gemidan Ltd (Gemidan Ecogi A/S)

Food Waste Pre-treatment Technology

Whitchurch, Shropshire

ECOGI, developed by Gemidan Ecogi A/S, is a top performing pre-treatment technology for source separated food waste that produces a superior quality substrate for biogas production using Anaerobic Digestion (AD).

ECOGI's independently verified and commercial scale tested key performance outcomes include:

- ◆ ability to treat feedstocks that contain over 20% physical contamination
- ◆ organic materials capture rate of over 95%
- ◆ substrate purity from physical contamination of 99.96%

ECOGI's substrate is proven to enhance gas yield, reduce digester retention time and produce a virtually contamination free digestate.

Gemidan Ecogi A/S's service package includes bespoke design, manufacture, installation and on-going maintenance for ECOGI installations.

Products and Services

- ◆ ECOGI food waste pre-treatment technology
- ◆ ECOGI food waste pre-treatment technology – independently verified key performance outcomes.
- ◆ Be-spoke layout design service
- ◆ Fully automated operation and process management system
- ◆ Remote process monitoring and fault identification
- ◆ Customer defined service support and maintenance packages



Continued on next page...

www.ecogi.dk

Gemidan Ltd (Gemidan Ecogi A/S)

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
ECOGI food waste pre-treatment technology	One stop shop for Danish high-performance technology - manufactured, installed and commissioned.	Click here Also click here
ECOGI food waste pre-treatment technology – independently verified key performance	Awarded EU Environmental Technologies Verification 'Statement of Verification February 2016'.	Click here
Bespoke layout design service	ECOGI installations individually designed to meet client's individual space and operational needs.	Click here
Fully automated operation and	Lower operational costs due to reduced	
Remote process monitoring and fault identification	Facility for 24/7 remote operations monitoring via internet connection.	
Customer defined service support and maintenance packages	Supporting customers to maximise their processing potential.	

Opportunities

Gemidan is seeking new market opportunities in the following areas:

- All bioresource recovery initiatives requiring the pre-treatment of waste streams containing organic materials to remove physical (non-organic) contaminants.
- New opportunities in the food waste Anaerobic Digestion and biogas sector
- Developing new bio-resource recovery processes from food waste feedstocks
- Initiatives to recover energy or material resources from mixed residual municipal waste

Geographical Coverage

Open to enquiries from around the UK.

Enquiries from all around the world welcomed with a response within 48 hours.



Gemidan Ltd (Gemidan Ecogi A/S)

The Hollies
Chester Road
Whitchurch
Shropshire
SY13 1LZ



Tony Pickess

T: 07718 982610

E: tony@gemidan.dk

www.ecogi.dk

Glued

Marketing and Graphic Design

Leamington Spa, Warwickshire

We work on organisational pride, through a combination of culture and brand. If you are an SME leader or owner/manager and are concerned your people don't get it OR that your customers underestimate the value you deliver... then we dig deep within and around your organisation and discover the insights that prove the valuable difference made.

We express that in a compelling and engaging way to motivate your people and suppliers, and attract customers and prospects.

Services

- ◆ Insight Research
- ◆ Insights Workshops
- ◆ Re-branding
- ◆ New Branding
- ◆ Marketing and Design

Continued on next page...



www.gluedlimited.co.uk

Glued

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Insight Research	Understanding people's motivations and perceptions in and around your business.	Click here
Insights Workshops	Develop a deeper understanding of your competitive positioning.	Click here
Re-branding	Realising and re-telling your story for new circumstances.	Click here
New Branding	Articulating and marketing a new proposition.	Click here
Marketing and Design	Solve complex branding challenges.	Click here



Opportunities

Glued would like to be involved in the engineering, manufacturing and professional services markets.

Geographical Coverage

Open to enquiries from the West Midlands.

Glued Ltd

The Warehouse
44 Oxford Street
Leamington Spa
CV32 4RA



Rob Harrison

T: 07787 557197

E: robharrison@gluedlimited.co.uk

www.gluedlimited.co.uk

YouTube



Harrington Woodfuel

Firewood / Biomass Production

Wythall, Worcestershire

Harrington Woodfuel specialises in firewood and biomass production for the UK market.

Products

- ◆ Standard size logs (9.5")
- ◆ Boiler logs (20")
- ◆ Pizza logs (10")
- ◆ Hobbit logs (8")
- ◆ Oxford Gourmet Charcoal Company

Continued on next page...



www.harringtonwoodfuel.co.uk

Harrington Woodfuel

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Standard size logs (9.5")	Kiln dried, Woodsure/Ready to Burn certified and consistent size.	Click here
Boiler logs (20")	Cut and split specifically for domestic Biomass Boilers in the UK.	Click here
Pizza logs (10")	Certified fuel for the restaurant industry, specifically for woodfired ovens.	Click here
Hobbit logs (8")	Cut and split specifically for small domestic stoves/ camping stoves.	Click here
Oxford Gourmet Charcoal Company	Grown in Britain certified charcoal.	Click here

Opportunities

Harrington Woodfuel is seeking new market opportunities in the following area:

- ◆ Energy-from-waste

Geographical Coverage

Open to enquiries from the West Midlands and all other parts of the UK.



Harrington Woodfuel Ltd

Avaro
Glenfield
Middle Lane
Worcestershire
B38 0DG



Contact

Matthew J. Downes
T: 01564 795188
E: mail@harrington-wf.com

www.harringtonwoodfuel.co.uk



Jones Newton

B2B SME Business Performance and Growth Support

Nuneaton, Warwickshire



Jones Newton is a UK consultancy helping growing SMEs to take their business to the next level. Our mission is to be your champion and supporter, to deliver tools to help accelerate your business's growth in new and existing markets.

Our Strategic Marketing approach is a process of assessment and decision-making to review and to bring new power to your business. Our significant industrial experience means that we work alongside you more effectively to establish clarity and focus in your decision making, help you secure the market intelligence that you need, and to invest in your team's skills and knowledge.

Services

- ◆ Market-focussed business strategy - team workshops and one-to-one sessions.
- ◆ First-time coaching - support for members of your team who are doing sales or marketing for the first time.
- ◆ Market research - desk research and management of outsourced primary research projects.
- ◆ Marketing review - a comprehensive assessment of the key messages that you are actually communicating, how well they align with your strategy and how to raise your game.

Continued on next page...

www.jonesnewton.co.uk

Jones Newton

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Market-focussed business strategy - team workshops and one-to-one sessions.	Will help you to understand not only what has made you successful to date, but how to create real value for your customers in the future.	Click here
First-time coaching - support for members of your team who are doing sales or marketing for the first time.	Tailored training and guidance to improve business performance and accelerate results.	Click here
Market research - desk research and management of outsourced primary research projects.	Maximise your ROI - ensure your research objectives fully support your business objectives.	Click here
Marketing review - a comprehensive assessment of the key messages that you are actually communicating, how well they align with your strategy and how to raise your game.	Refresh your marketing messages - over time marketing materials and content can become disconnected from a business's strategy.	Click here

Opportunities

Open to enquiries from around the West Midlands and UK.



Jones Newton
360 Higham
Lane
Nuneaton
Warwickshire
CV11 6AP

Jones Newton®

Jenny Rohde
T: 07767 205969
E: jenny.rohde@jonesnewton.co.uk

www.jonesnewton.co.uk



Kew Projects

Renewable Energy

Aldridge, Walsall

We are an innovative renewable energy business, currently constructing a first of a kind advanced thermal conversion plant, which will accept a range of waste and biomass types and convert them into a range of energy vectors, including electricity, heat, renewable diesel and Hydrogen.

Our modular build plant is small scale, operating economically and efficiently at < 10MWe. It is ideally suitable for embedding into industrial facilities, energy parks or residential areas to provide cheap and renewable low carbon energy vectors, from local waste types.

Products and Services

- ◆ Renewable Electricity
- ◆ Renewable High Temperature Heat
- ◆ Renewable Diesel
- ◆ Modular Build
- ◆ Operates at Pressure
- ◆ Flexible Feedstock
- ◆ Small Scale – Easy to obtain consent
- ◆ Planning and Permit Consent
- ◆ Ultra Low Emissions
- ◆ Operational Flexibility

Continued on next page...



www.kew-tech.com

Kew Projects

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Renewable Electricity	Low Carbon / Renewable / Cheap / Local / Ultra low emissions.	Click here
Renewable High Temperature Heat	Low Carbon / Renewable / Cheap / Local / Ultra low emissions.	Click here
Renewable Diesel	Low Carbon / Renewable / Ultra low emissions to replace fossil derived diesel.	Click here
Modular Build	Quick, easy and simple to assemble reducing construction risks.	Click here
Operates at Pressure	Operating at Pressure results in a far smaller plant footprint.	Click here
Flexible Feedstock	The plant, subject to permit, can accept a wide range of waste types including hazardous waste.	Click here
Small Scale – Easy to obtain consent	The plant is able to operate under a simple local authority SWIP.	Click here
Planning and Permit Consent	The regulatory consent was secured in under 12 weeks with zero opposition.	Click here
Ultra Low Emissions	The plant can operate within Air Quality Control Zones (Wednesbury).	Click here
Operational Flexibility	The plant can seamlessly switch from producing electricity to producing Hydrogen.	Click here

Opportunities

Kew Projects are seeking opportunities in any renewable energy market or replacing fossil fuels in an industrial process. The decarbonisation of the HGV fleet is also of interest with our renewable KEW diesel being a perfect fossil fuel substitute.

Geographical Coverage

Open to enquiries from around the world.

Kew Projects Ltd

Ashlar House
115 Walsall Road
Aldridge
WS9 0AX



Mark Johnson

T: 07534 839093

E: mjohnson@kew-tech.com

www.kew-tech.com



Warwick

A word cloud with 'MARKET RESEARCH' in large, bold, white capital letters on a red brushstroke background. Surrounding this central text are various business-related terms in different sizes and orientations, including: 'analysis', 'invest', 'strategy', 'identify', 'opportunities', 'information', 'area', 'threats', 'strategy', 'invest', 'analysis', 'research', 'markets', 'business', 'invest', 'strengths', 'opportunities', 'potential', 'success', 'invest', 'strategy', 'market', 'analysis', 'weaknesses', 'distribution', 'consumer', 'information', 'investigation', 'organization', 'industry', 'product', 'invest', 'analysis', 'identify', 'business', 'opportunities', 'information', 'area', 'threats', 'strategy', 'invest', 'analysis', 'research', 'markets', 'business', 'invest', 'strengths', 'opportunities', 'potential', 'success', 'invest', 'strategy', 'market', 'analysis', 'weaknesses', 'distribution', 'consumer', 'information', 'investigation', 'organization'.

- Market Research
- Finding Partners
- Sales and Marketing
- Setting Up
- Joint Ventures / Mergers and Acquisitions (M&As)
- Interim Management

Continued on next page...



Aston University
BIRMINGHAM UK

Konduit

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Market Research	Gaining a detailed understanding of the market and its opportunities.	Click here
Finding Partners	Search and select the most suitable partners for each project opportunity.	Click here
Sales and Marketing	Finding and communicating with customers and building relationships.	Click here
Setting Up	Building a strong market presence.	Click here
Joint Ventures / Mergers and Acquisitions (M&As)	Finding and negotiating suitable investment opportunities.	Click here
Interim Management	Cost-effective and flexible, including trouble-shooting.	Click here



Opportunities

Konduit is working in a number of sectors with sustainability at its core, and is open to new approaches / opportunities.

Geographical Coverage

Open to enquiries from around the world.

Konduit Ltd
Innovation
Centre
Technology Park
Warwick
CV34 6UW



Wolfgang Dieter
T: 01926 623280
E: wdieter@konduit.co.uk

General information
E: info@konduit.co.uk

www.konduit.co.uk



Lodge Cottrell

Energy-from-Waste Systems

Halesowen



Suppliers of innovative small-scale Energy-from-Waste systems.

Products and Services

- ◆ Energy-from-Waste systems

Continued on next page...

www.lodgecottrell.com

Lodge Cottrell

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Energy-from-Waste systems	Our Energy-from-Waste (EfW) systems convert any bio-organic feedstock into valuable energy outputs.	Click here

Thermo-Catalytic Reforming (TCR®)



Key Innovations

- Self-replenishing catalyst
- Tar avoidance
- High product quality
- Robust for industrial use
- >80% energy efficiency
- Low emissions

Opportunities

Lodge Cottrell is seeking new opportunities in any industrial market that could use Energy-from-Waste (EfW) conversion technology.

Geographical Coverage

Open to enquiries from around the UK.



Lodge Cottrell
Trinity Point East
Halesowen
B63 3HY

Maurice Bottomley
T: 0121 504 9200
E: mbo@lodgecottrell.com

www.lodgecottrell.com



Low Volume Buying & Design

Low Volume Buying, Product Design and Prototypes

Coventry

Here at Low Volume Buying we help our clients take their ideas and turn them into reality with low volumes, prototypes and sensible costs and quality.

- ◆ Are you a Manufacturing, Engineering company, Entrepreneur or Academic?
- ◆ Do you feel frustrated by the lack of companies that will help you, or of the high cost of parts when sourcing low volumes?
- ◆ Do you feel annoyed by the lack of response from large companies that never respond to you?
- ◆ Could your business benefit from reduced costs, quality parts, on time delivery?
- ◆ Are you looking for procurement support and design of your products all under one roof?

We offer:

- Low volume parts and materials at sensible prices with on time deliveries
- A professional in-house procurement and design service
- Total cost management review for your company / product
- We have a comprehensive, global buying network
- We can turn your prototype idea into reality and production

Products and Services

- ◆ Low volume buying
- ◆ Product design
- ◆ Prototype production
- ◆ R&D tax credits
- ◆ Material and supplier reduction
- ◆ Assistance with ISO 14001



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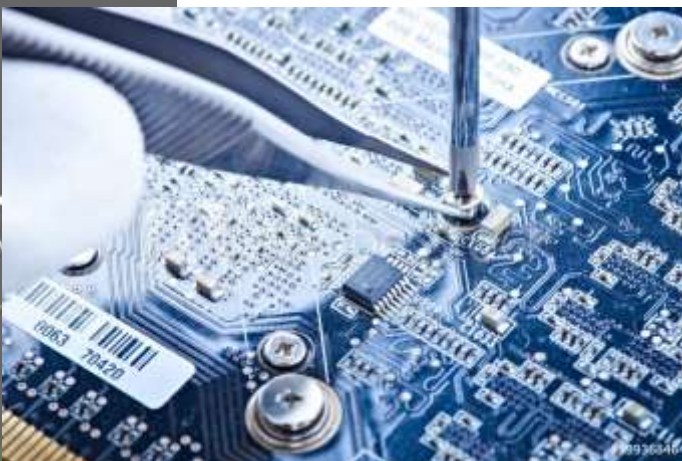
www.lowvolumebuying.co.uk

Low Volume Buying & Design

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Low Volume Buying	We support various industries with low volumes up to 10,000 units per annum.	Click here
Product Design	We take our clients' ideas and turn them into CAD (Computer Aided Design) with the help of Solidworks®.	Click here
Prototype Production	When we have the client's sign-off on the CAD we then obtain costs and source components for testing and	Click here
R&D Tax Credits	We keep a comprehensive record of our client's R&D project and then help them to recover some of their costs.	Click here
Material and Supplier reduction	Many clients just buy ad-hoc materials from many suppliers, Low Volume Buying can help keep control on costs, materials and suppliers.	Click here
Assistance with ISO 14001	Having introduced ISO 14001 Environmental accreditation to a local company in the Midlands, we can do this for you too.	Click here

Opportunities

Open to enquiries from around the UK, Europe and the USA.



Low Volume Buying & Design Ltd
Low volumes for great Ideas

Low Volume Buying & Design Ltd

35 Larkfield Way
Allesley Green
Coventry
CV5 7QB

Ian Hughes

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E: ian@lowvolumebuying.co.uk

www.lowvolumebuying.co.uk



The Marketing Engineer

Marketing Services

Birmingham

Discover How to Grow Your Business in a Sustainable Way

Growing your business can be difficult. There is a lot of competition and noise in the marketplace. You can feel overwhelmed by the various off-line and on-line marketing options. When you do breakthrough, new customers and clients are often understandably untrusting.



There is now a proven way to grow your business with the customers and clients you want in a sustainable way. We can help you:

- Devise your marketing strategy and plan
- Develop your campaign calendar which shows who does what and when over the year, and train your staff in how to do it
- Produce your key content of a variety of marketing and communication tools
- Craft your copywriting

The Marketing Engineer works with professionals and technology companies who have a pretty full order book and want to take their business to the next level. We are different to your usual marketing consultancy. Our lead Marketing Engineer has a PhD in electronic engineering and brings a systematic approach to marketing which resonates with technology companies.

We have also developed the TechWork. This is a growing membership group in the West Midlands which helps companies to understand technology and the solutions it offers.

If you have ever wondered why marketing can be so difficult and how you can make it much easier, then go to our website and watch our free 5-minute video on the Big Marketing Secret. Contact us to discuss our special marketing strategy and plan package - your first step to sustainable and predictable business growth.

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www.TheMarketingEngineer.co.uk

The Marketing Engineer

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Marketing strategy and plan	Create your one-page marketing strategy and plan-attract the clients you want in the volume you need using our proven 12-step process.	Click here
Campaign calendar	Develop your campaign calendar which shows who does what and when over the year, and train your staff in how to do it.	Click here
Production of Key content	Produce your key content, e.g. presentations, articles, e-books, videos, whitepapers etc. which educate your prospects in how your solutions can help them.	Click here
Copywriting	Craft your copywriting e.g. website, brochure, direct mail campaigns etc. which persuades your prospects to take action.	Click here



Opportunities

The Marketing Engineer is interested in seeking new opportunities with:

- Universities, Research Institutes, LEPs, Catapults etc. who want to engage with SMEs in the manufacturing, engineering and technology sectors.
- The professional service sectors who want to expand their client base and engage with companies in the manufacturing, engineering and technology sectors.

Geographical Coverage

The Marketing Engineer has professional clients across the UK. The focus of its work with Universities, LEPs, Catapults etc. is currently limited to the West Midlands but we are looking to grow.



The Marketing Engineer

The Colmore Building
20 Colmore Circus
Birmingham
B4 6AT

Richard Fallon

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M: 0778 9952251

E: rfallon@TheMarketingEngineer.co.uk

www.TheMarketingEngineer.co.uk



Midland Automation Technology (MATL)

Electrical, Control, Automation & Engineering Solutions

Worcester

Design and Engineering Consultants

Incorporated in 1993, MATL is a family-owned and well organised limited company with many years of electrical, control, automation and engineering solutions experience specialising in driving high quality information management, eliminating design errors and reducing change through early planning, so delivering a successful project. We are ISO 9001/14001 but are flexible, professional and approachable through building up strong and long-lasting relationships.



Bespoke engineering and technological solutions

Our expertise ranges from optioneering, procedural improvements, compliance, technical specifications through to full design and build solutions. Although we specialise in delivering automation and control systems, developing the most suitable options in harmony with the client, user and legislative requirements, we remain open-minded to options that can meet the balance of cost, quality and time.



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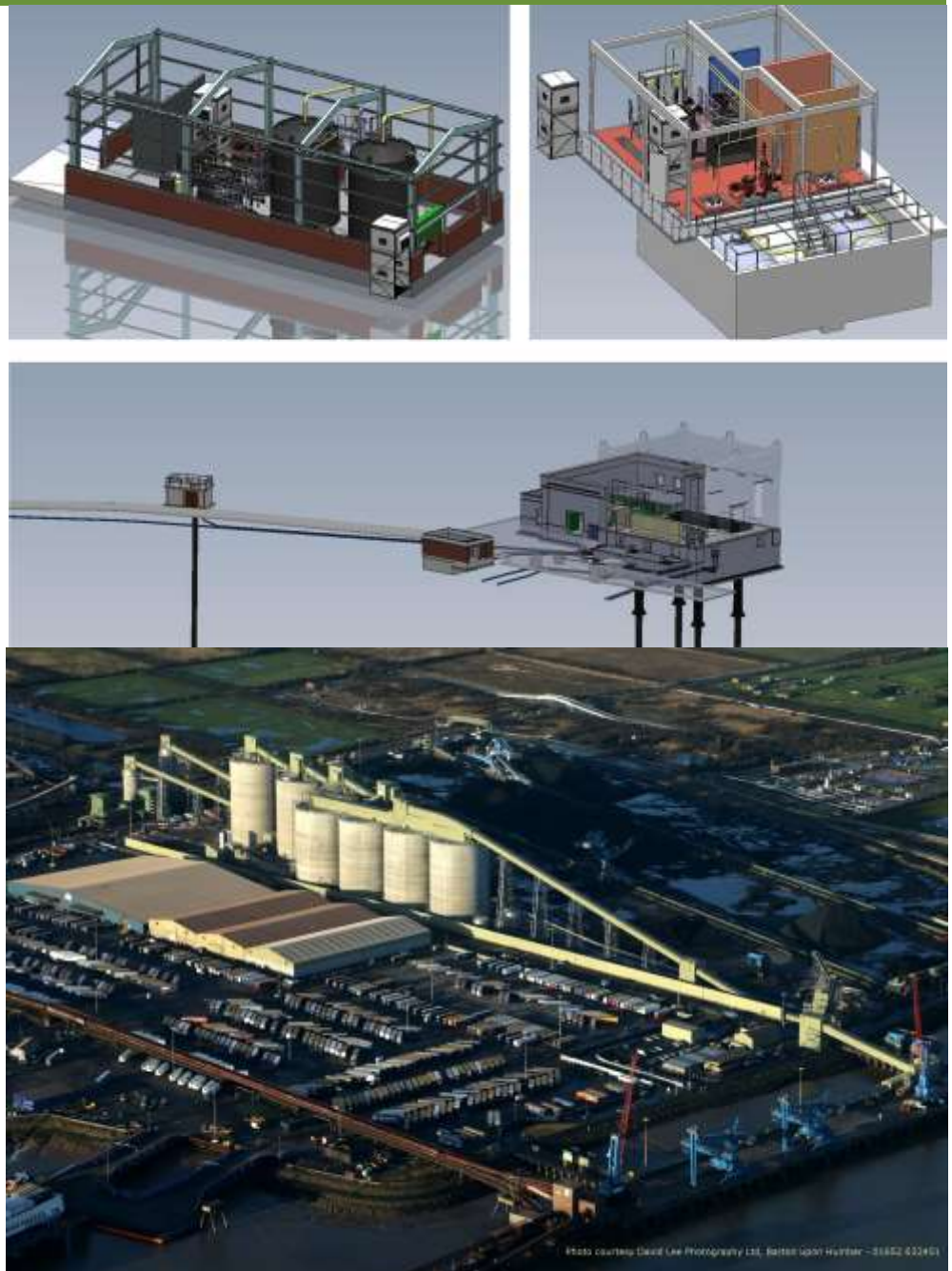
www.matl.co.uk

Midland Automation Technology (MATL)

Product / Service	Benefit / Unique Selling Point
Conception and Outline Design	With our bespoke design service, we develop the initial concept proposals through feasibility and further designs to provide a rapid agreement of the workable options, targeted costs and programmes for the project in full collaboration with the project owner.
Assessment Consultancy	Essential for maintenance, MATL provides a survey, inspection and reporting service to identify plant conditions, state, operation and potential complications, and offer potential solutions to keep your plant or system running efficiently.
Detailed Automation Design	From the outline information, we develop detailed design of automation systems using specifications, schedules and drawings to enable procurement, construction, commissioning validation, operation and maintenance of plant functional control systems within safe parameters.
Mechanical and Services Design	Where solutions require alternative approaches we develop designs through drawing, modelling and specification to resolve. We also detail design and plan layouts of essential services to enable procurement, construction, testing and maintenance of pneumatic, hydraulic and electrical services.
3D Modelling	To enhance visual evaluation of a project, we develop virtual models of equipment, plant and services using up-to-date 3D modelling software. Our extended development team enables you to see and experience the project prior to construction, ensuring improved collaboration between design disciplines.
Regulation and Conformity	A structured approach to compliance management is critical to meeting the regulatory requirements. MATL can equip you with the strategy for applying CE Certification through conformance analyses and organisation of the technical file to ensure you meet compliance criteria.
Safety and Risk	Utilising risk estimation and evaluation, MATL can provide the information required to identify and incorporate inherent safety, safety functionality and additional safety requirements into the early stages of the developing design.
Manuals and Operational Documentation	Accurate and comprehensive operational documentation is vital for good maintenance and minimal downtime. Technical packs and O&M documentation are often left to last. In collaboration with the team, we collate, manage and assemble the documents so that operational and maintenance information is available at the right time.

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Midland Automation Technology (MATL)



Opportunities

MATL is looking to expand and develop existing expertise in the following fields:

- ◆ Biomass handling and processing
- ◆ Energy-from-waste
- ◆ Water and wastewater treatment
- ◆ Chemical processes
- ◆ Materials and aggregate handling
- ◆ Information management

Geographical Coverage

Open to enquiries from around the world.

Midland Automation Technology Ltd

Broadfield Crescent
Fernhill Heath
Worcester
WR3 7TN

Peter Francis

T: 01905 888174

E: engineering@matl.co.uk

General information

E: engineering@matl.co.uk

www.matl.co.uk



Millson Engineering

Pelleting and Process Equipment

Kidderminster

Suppliers of pelleting and process equipment to the biomass industry. We specialize in biomass pelleting and associated plant, and have supplied and installed equipment and complete turnkey plants for the production of wood pellets as well as supplying equipment and expertise for many other successful biomass ventures. We offer spare parts and consumables, as well as pellet die refurbishment and roll shells.

Products & Services

- ◆ Pellet Press (new / used)
- ◆ Turnkey Projects
- ◆ Die Refurbishment / Replacement
- ◆ Roll Refurbishment
- ◆ Consultancy
- ◆ Contract Pelleting

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www.millsonengineering.com

Millson Engineering

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Pellet Press (new / used)	Create more storage capacity / reduce transport costs / higher bulk density / reduce moisture content.	Click here
Turnkey Projects	Design, build and commission full turnkey projects.	Click here
Die Refurbishment / Replacement	Prolonging the useful life of the pellet die.	Click here
Roll Refurbishment	Millson carry a large range of roll shells and bearings in stock to ensure a quick turnaround.	Click here
Consultancy	50+ years in the pelleting industry. 12 years in the biomass industry.	Click here
Contract Pelleting	Millson Engineering have the ability to carry out contract pelleting of customer products to allow formulation variations to be validated, or new products to be evaluated.	Click here



Opportunities

Millson Engineering is seeking new markets in the area of biomass pelleting.

Geographical Coverage

Open to enquiries from around the UK.



Millson Engineering Ltd

Coppice Trading Estate
Kidderminster
DY11 7QY

Ian Hemmings

T: 07785 956709
E: ian@millsonengineering.com

General Enquiries

T: 01562 823900
E: sales@millsonengineering.com

www.millsonengineering.com



Modus Waste & Recycling

Waste Management & Recycling

Stourbridge, West Midlands

Recycling advice & collection services for businesses & organisations

Conveniently based in the Black Country, we collect a range of business waste in our local area. We are a passionate company when it comes to your waste, we believe that it is a resource that should be considered very carefully when deciding how to handle and dispose of it.

Recycling is a complex issue, we can advise on the most practical method while also focusing on the environmental impact. A great benefit of being located in the same area is that we can always visit you and offer any further requirements you may need with a quick response. Great for busy times.

Services include:

- General waste collection
- Recycling collection
- Food waste collection



Continued on next page...



www.moduswaste.co.uk

Modus Waste & Recycling

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
General Waste Collection	<p>Focused on reducing waste and maximising recycling. We are dedicated to finding the waste our community creates and giving it a new life. We believe in not just managing and collecting your waste, but in the value of the material you are disposing of. Your business waste can become green renewable energy, or even a new product.</p> <ul style="list-style-type: none"> • Glass Recycling • Food Waste • Dry Mix Recycling • Paper Recycling • Cardboard Recycling 	Click here
Recycling Collection	<p>Everyday items such as cardboard, paper, plastics and metal tins can be stored together in the same container. The recyclable waste from your business can then be easily collected, from there it will go on to be processed into usable everyday items once again.</p>	Click here
Food Waste Collection	<p>Can be bagged up just like general waste into separation bins. The food waste you produce can become rich nutritious fertilizer to grow more food with. And the gas that's created during this process can become Green Clean Energy.</p>	Click here



Opportunities

Modus is interested in finding new opportunities in recycling and food waste separation programmes.

Geographical Coverage

Open to enquiries from around the West Midlands.

Modus Waste & Recycling

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DY8 3NY

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E: oliverlloyd@moduswaste.co.uk

www.moduswaste.co.uk

Op-tec Systems

Control and Automation System Solutions

Operate across UK

Creating control and automation system solutions: giving you the best by understanding your process fully, designing programs conscientiously, processing data precisely, testing outcomes thoroughly, recording histories exhaustively and presenting results clearly so that performance may be verified, problems corrected, and the plant is allowed to reach its full potential.



Products and Services

- ◆ Control systems design, integration, security, data acquisition and software maintenance.

Continued on next page...



www.op-tec.co.uk

Op-tec Systems

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Control systems design, integration, security, data acquisition and software maintenance.	Innovative hardware, stable software, creative programming, accurate control, flawless operation.	Click here



Opportunities

Op-tec Systems is interested in finding new markets in the renewable energy, agriculture and food production sectors.

Geographical Coverage

Open to enquiries from around the UK.



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www.op-tec.co.uk



PyroGenesys

Thermal Renewable Energy Technology

Birmingham

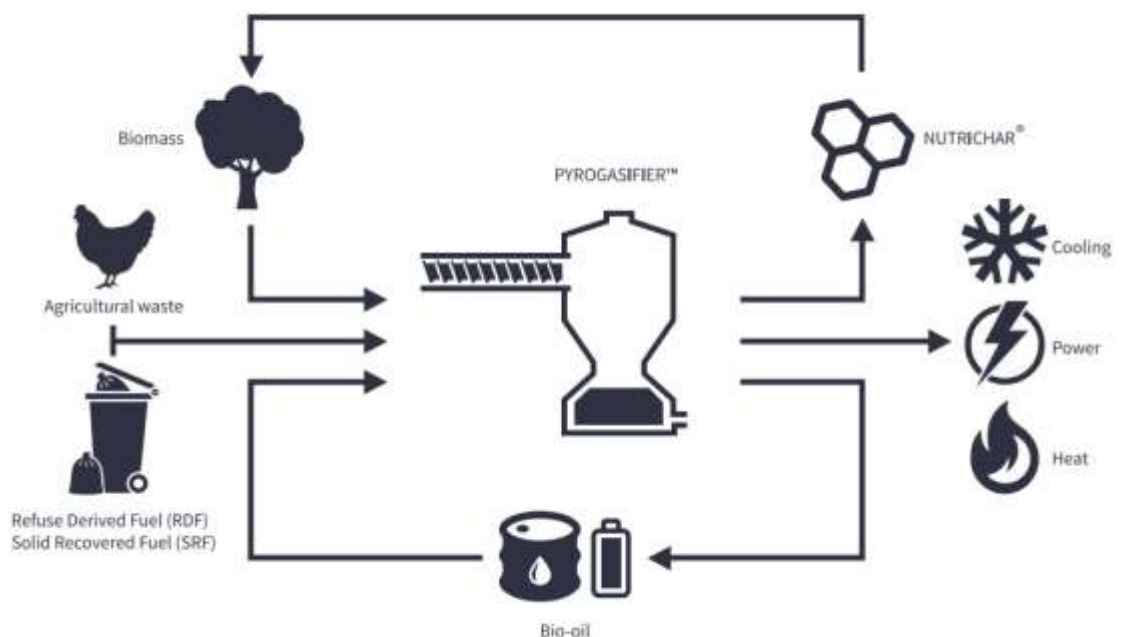
PyroGenesys is developing an advanced thermal renewable energy technology to convert waste biomass and co-products into renewable heat, electricity and value-added commodities. Once our prototype has been successfully tested, we will be seeking companies that are interested in hosting pilot plants on potential demonstration sites that produce between 1 to 250 tonnes per day (wet or dry) of waste biomass and/or co-products. An energy-from-waste and bioproducts feasibility study will be produced for all partners that host a PyroGenesys pilot plant.



Products and Services

- ◆ Bioenergy Project Consultancy
- ◆ Turn-key bioenergy projects
- ◆ Cost-effective biochar alternatives

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www.pyrogenesys.com

PyroGenesys

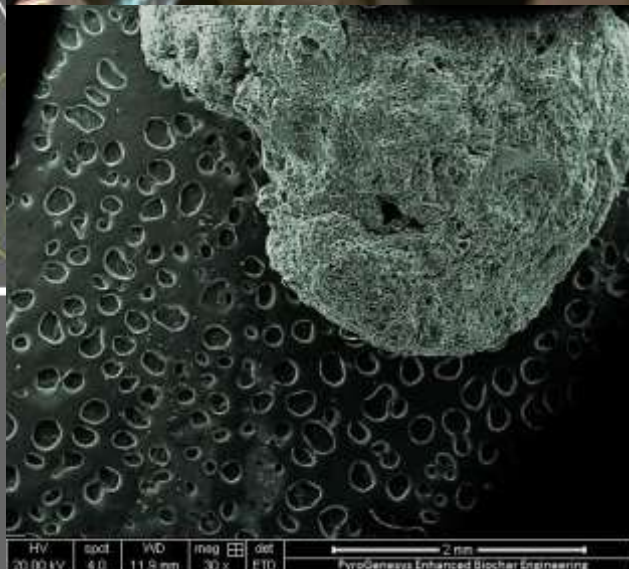
Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Bioenergy project consultancy	Specialist engineering expertise in pyrolysis; gasification; sludge treatment; process design; emissions monitoring and control; HAZOP and environmental impact assessments.	Click here
Turn-key bioenergy projects.	Using our proprietary (patent pending) technology, PyroGenesys will soon offer businesses the ability to convert their waste biomass and co-products into renewable heat.	Click here
Cost-effective biochar alternatives	PyroGenesys will soon commence production of a variety of engineered biochar alternatives, to replace the use of costly commodities such as activated carbon.	Click here

Opportunities

PyroGenesys is seeking new opportunities in the following areas: Brewing and distilling industries / Food and bakery manufacturers / Poultry rearing (egg and meat) / Wastewater sludge processing / Anaerobic digestate processing / Refugee camps

Geographical Coverage

Open to enquiries from around the UK, Europe, China, Middle East, Sub Saharan Africa, South Asia and the Caribbean, and other parts of the world.



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Rowleys Commercial Energy Assessment

Energy Assessment Services

Grantham, Lincolnshire and nationwide

Rowleys Commercial Energy Assessment Limited is a leading provider of energy assessment services nationwide. We complete all forms of energy assessment, calculations and certification as required by the Energy Performance of Buildings Directive (EPBD) Regulations and related legislation. This includes energy calculations for new build projects (BRUKL, SAP and SBEM), assessments of existing buildings (EPC, DEC, ACEI, Section 63 Action Plans, MEES) and whole organisation assessments (e.g. ESOS). Our team of experienced accredited assessors are available to assist you with achieving compliance during even the most bespoke and demanding projects. Contact us now for further information or assistance.

Products and Services

- ◆ Air Conditioning Energy Inspections
- ◆ Building Regulations
- ◆ Display Energy Certificates
- ◆ Energy Performance Certificates
- ◆ Specialist Energy Consultancy

Continued on next page...



www.onestopepc.co.uk

Rowleys Commercial Energy Assessment

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Air Conditioning Energy Inspections (ACEI / TM44)	Required where buildings are fitted with 12kW or more of cooling, our assessors cover both Level 3 & 4 systems allowing us to provide a full range of independent assessments.	Click here
Building Regulations Part L Energy Calculations	Commonly known as BRUKL, SAP or SBEM, our team can provide a full range of calculations covering domestic and non-domestic buildings.	Click here
Display Energy Certificates (DEC)	Monitor your building's energy consumption and compare it to other similar organisations to keep your costs under control.	Click here
Energy Performance Certificates (EPCs)	Accurate domestic and non-domestic EPCs to meet your business needs.	Click here
Specialist Energy Consultancy (ESOS, MEES & Section 63)	Bespoke expert support to achieve compliance whilst minimising cost and business disruption.	Click here

Geographical Coverage

Rowleys Commercial Energy Assessment is open to enquiries from around the UK.



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YouTube



Severn Group

Mechanical and Electrical Contractors

Stourport

Severn Group are mechanical and electrical contractors with over 50 years of experience. Our expertise is employed in the commercial sector with a comprehensive range of electrical and mechanical services. Coupled with this, we have comprehensive experience in the Anaerobic Digestion sector having installed and commissioned over 12 large sites across the UK and counting.



Products and Services

- Mechanical Heating and Hot Water Systems (Gas / Oil / Biomass)
- Electrical Installation and Maintenance (PV)
- Ventilation
- Plant Room Re-fits
- Pipefitting and Welding
- Air Conditioning
- Automatic Controls and BMS
- Emergency Call-Outs

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www.severn-group.co.uk

Severn Group

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Mechanical Heating and Hot Water Systems (Gas / Oil /	One-stop-shop for all services with one point of contact.	Click here
Electrical Installation and Maintenance (PV)	One-stop-shop for all services with one point of contact.	Click here
Plant Room (Re-fits – Upgrades)	One-stop-shop for all services with one point of contact.	Click here
Pipefitting and Welding	One-stop-shop for all services with one point of contact.	Click here
Maintenance Packages for Compliance and Servicing	One-stop-shop for all services with one point of contact.	Click here

Opportunities

Severn Group is seeking new opportunities in the following areas:

- ◆ LED lighting installation in factories and the education sector
- ◆ Electric Vehicle charging points
- ◆ Biomass boiler installation
- ◆ Plantroom upgrades

Geographical Coverage

Open to enquiries from around the UK.



Severn Group Ltd

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www.severn-group.co.uk



Tudor Griffiths Group

Biomass Fuel

Shropshire

Tudor Griffiths Group is made up of the following divisions; a network of eight builders merchant branches, 12 ready-mixed concrete plants, two sand and gravel quarries, a sea-dredged sand operation, electrical services, renewable energy, biomass facility, skip hire, recycling services and waste management.

Products and Services

- ◆ Biomass Fuel: Virgin Chip, G30 – G50
- ◆ Sawdust
- ◆ Animal Bedding
- ◆ Biomass Fuel: Recycled Grade A Shred
- ◆ Animal Bedding
- ◆ Drying Facilities

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www.tgggroup.co.uk

Tudor Griffiths Group

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Biomass Fuel: Virgin Chip, G30 – G50	Virgin wood supplied from sustainable and reputable (FSC certified) sources, all within 50 miles of the biomass plant. The virgin wood is then chipped on site.	Click here and here
Sawdust Animal Bedding	Sourced directly from our (FSC certified) supply chain and dried on site in our 3,000 sq. m. drying facility to the required moisture for use as animal bedding.	Click here
Biomass Fuel: Recycled Grade A Shred	Using material recovered through our waste management process and also directly sourced from the industry, all processed on site to produce a 40mm shred.	Click here
Animal Bedding	Grade A fines used for animal bedding, a bi-product from the screening of the 40mm Grade A shred.	Click here
Drying Facilities	Our 3,0000 sq. m. biomass plant and drying facility has seven 1 x megawatt boilers that can offer a drying service for the drying of logs, kiln dry timber and contract woodchip drying.	Click here and here

Opportunities

Tudor Griffiths would like to be involved in biomass fuels, animal bedding and drying opportunities.

Geographical Coverage



Tudor Griffiths Group

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YouTube



Unicorn Power

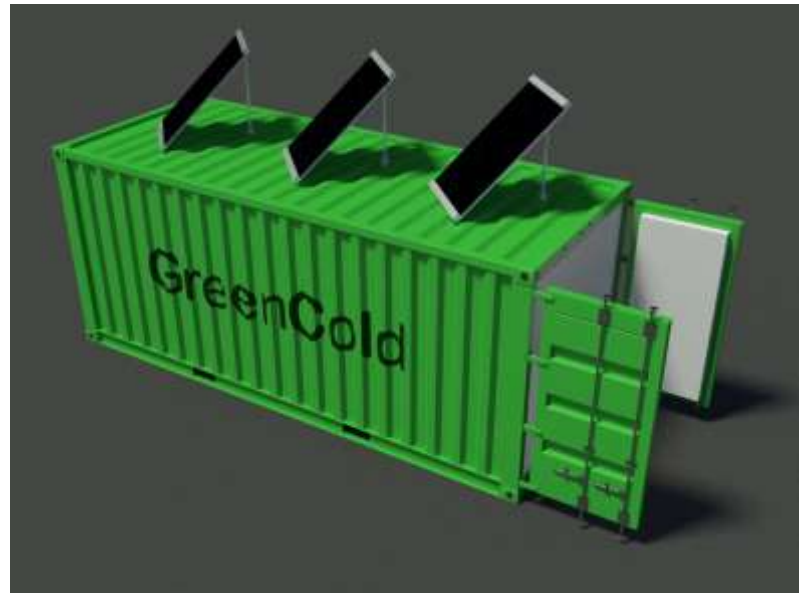
Clean Energy and Hydrogen Equipment

Leamington Spa

Development and production of patented, clean energy and hydrogen equipment (30-3000 kW_e), using mixed wastes as feedstock.

Participation in community-scale energy projects worldwide.

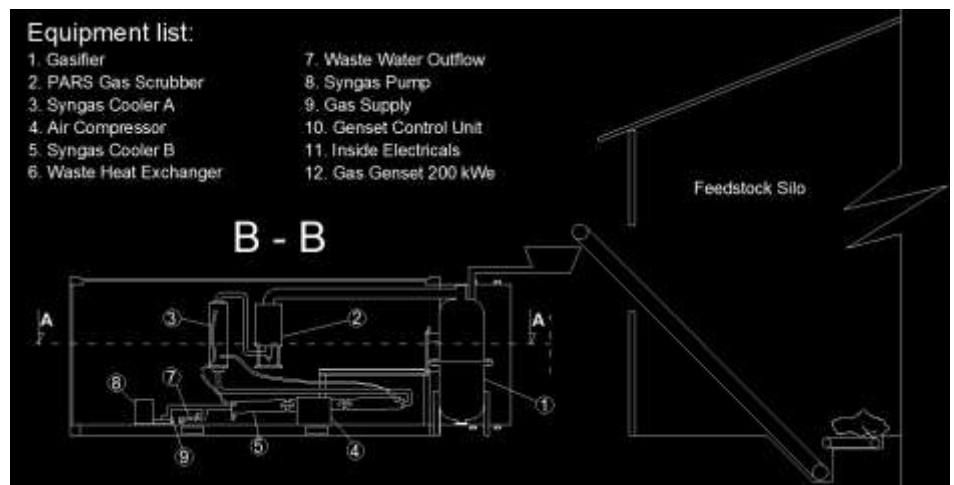
Promotion and marketing of solar cooling equipment, clean diesel engines using hydrogen doping and direct-drive vertical axis wind turbine (VAWT) generators.



Products and Services

- ◆ Containerised CHP generator (30-3000 kW), using mixed waste as feedstock
- ◆ Containerised solar/waste heat chiller for foods and human comfort
- ◆ Containerised CHP hydrogen generator (10-1000 m³/h), using mixed wastes as feedstock
- ◆ Clean diesel engines using only native fuel
- ◆ Brushless electric motor/generator, especially for VAWT wind turbines

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www.landgenerator.com

Unicorn Power

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Containerised CHP generator (30-3000 kW), using mixed waste as feedstock	Inexpensive, emissionless, containerised, modular, on/off-grid, financing.	Click here
Containerised solar/waste heat chiller for foods and human comfort	Inexpensive, no fuel cost, containerised, modular, off-grid, financing.	
Containerised CHP hydrogen generator (10-1000 m ³ /h), using mixed wastes as feedstock	Inexpensive, emissionless, containerised, modular, on/off-grid, financing.	Click here
Clean diesel engines using only native fuel	On-board hydrogen doping, native fuel only, 5x more efficient than electrolysis.	
Brushless electric motor/generator, especially for VAWT wind turbines	Enables direct, transmission-less turbine drivetrain, inexpensive, easily customised, 1 kW - 5 MW size, superior reliability - low maintenance, non-round embodiments possible.	



Geographical Coverage

Open to enquiries from around the world, and would particularly like to be involved in North and South America, Asia, Africa and Australia.



Unicorn Power

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www.landgenerator.com



United Travel

Travel Services

Birmingham

United Travel specialises in travel services to China and the Far East, such as business trips, private tours and visa arrangements. The company has been established for over 30 years, and is the UK's leading specialist tour operator to China.

United Travel specialises in tailor made holidays according to your requirements - so you're not just admiring the top sights but truly discovering them. You can trust that we will expertly guide you through your travel adventure, wherever you choose to explore.

Products and Services

- ◆ China Visa Service
- ◆ Business Travel
- ◆ Private Travel
- ◆ Hotel and Conference Arrangements
- ◆ Flight Bookings
- ◆ China and Far East Tours

Continued on next page...



www.united-travel.net

United Travel

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
China Visa Service	United Travel provides Visa arrangement services, saving you from all that hassle, and meaning more time to do what you want.	Click here
Business Travel	From flights and visas to accommodation and transportation. United Travel has got the expertise and knowledge you need to make your business trip a success.	Click here
Private Travel	As experts in tailor-making holiday experiences for those who know and enjoy the finer things in life, why not add some extra special items to your holiday booking?	Click here
Hotel and Conference Arrangements	United Travel is devoted to making your trip extra special, which is why we can help with accommodation to suit every budget, as we've negotiated the best deals with our hotel partners especially for you.	Click here
Flight Bookings	United Travel can tie in hotels, flights, upgrades to ensure you get the most enjoyable journey, so that you	Click here
China and Far East Tours	UK's leading specialist tour operator to China and the Far East, saving you time, money and hassle.	Click here

Opportunities

United Travel is open to enquiries from around the world, and would like to be involved with:

- Businesses looking to start / expand into China and the Far East
- Companies seeking assistance with their trips abroad / nationwide
- Those looking for assistance with travel arrangements and visas between the UK and China
- Department stores / retail outlets / museums interested in targeting overseas visitors visiting the UK



聯合旅遊



United Travel

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www.united-travel.net



Waterman Biocare Technologies

White Biotechnology

Lichfield, Staffordshire

BIOCare® products provide the latest in white biotechnology and bring clean solutions directly to help you address your 'Environmental Challenges'. Our specialty microbial and chemical cleaning products incorporate the latest "White Microbial Technology" to provide all your cleaning requirements for industrial and professional use.

We also have products containing the latest Reactive Barrier Technology. This is a specialised micro emulsion which provides an optional sustained release system – this means that the reactive barrier can be turned on or off depending on the situation giving you added Biosecurity and protection between cleans.

Products and Services

- ◆ Biocare General Purpose Cleaner
- ◆ Biocare Odour Neutraliser
- ◆ Biocare MicroCleanPlus
- ◆ Biocare Toilet Cleaner & Descaler
- ◆ RWT – Recycled Water Treatment
- ◆ Steri-7 Xtra Multi-Purpose Cleaner
- ◆ Steri-7 Hand Wash
- ◆ Steri-7 Hand Rub
- ◆ Steri-7 Biocidal Hand Wipes
- ◆ Legionella Control Advice

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www.watermanbiocare.co.uk

Waterman Biocare Technologies

Product / Service	Benefit / Unique Selling Point	Web page / YouTube link
Biocare General Purpose Cleaner	Biocare GPC is a biodegradable, environmentally safe and efficient all-in-one product for cleaning, deodorising, and removing stains from hard and soft surfaces.	Click here
Biocare Odour Neutraliser	Comprises a unique and highly effective modern chemistry with a specialised blend of natural bacterial cultures to instantly encapsulate any malodour molecule and render it undetectable whatever its source.	Click here
Biocare MicroCleanPlus	A unique, highly dilutable liquid concentrate for degreasing and cleaning a variety of hard surfaces.	Click here
Biocare Toilet Cleaner & Descaler	A unique bio-based, descaling toilet cleaner combining a widely approved biocide.	Click here
RWT – Recycled Water Treatment	A water-based liquid that consists of highly biodegradable surfactants, builders and selected bacterial cultures which makes any oils, hydrocarbons and organics readily available to the bacteria, encouraging biodegradation, and resulting in a very effective cleaning and odour control programme.	Click here
Steri-7 Xtra Multi-Purpose Cleaner	Containing Reactive Barrier Technology this multi-purpose High Level Disinfectant Cleaner works in seconds as is proven to kill the most life threatening of pathogens.	Click here
Steri-7 Hand Wash	This range of fast acting (non-alcohol based) foaming hand wash provides an extraordinarily high-level of hygienic protection in the battle against infection.	Click here
Steri-7 Hand Rub	Perfect for when water is not available, this hand rub is highly effective against E.Coli, Salmonella, Listeria, MRSA & C.Diff.	Click here
Steri-7 Biocidal Hand Wipes	These wipes can be used wherever the highest standard of disinfection is required and contains Reactive Barrier Technology.	Click here
Legionella Control Advice	A one-stop shop for all your Legionella Control needs.	Click here



Waterman Biocare Technologies

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www.watermanbiocare.co.uk



Opportunities

Waterman would like new opportunities in Cleaning Companies, Healthcare & NHS, Schools & Academies, Facilities Management, Industrial & Commercial, Washroom Supplies.

Geographical Coverage

Open to enquiries from around UK and Europe.



Food Waste: from diagnosis to solutions

Dr Nikolaos Venetsaneas, EBRI

According to a [report](#) from the Food and Agriculture Organization of the United Nations (FAO), the world loses or wastes nearly a third of the food produced for human consumption. This fact has sent shock waves across the globe and led to calls for action by world leaders and civil society groups. What magnifies the concern is that the food loss and waste is occurring at a time of increasing food prices and worsening food insecurity for many. The issue is of high importance for FAO and governments in their efforts to combat hunger, food insecurity and malnutrition, at the same time enabling inclusive and efficient agricultural and food production systems.

During agricultural production, post-harvest handling and storage, processing, distribution and consumption of food, large amounts of wastage are accumulated. Food losses and waste have a negative impact on the environment since they represent a waste of production factors and energy resources, and contribute to greenhouse gases emissions.

Anaerobic digestion is a process that involves the breakdown of biodegradable organic material, in the absence of oxygen, by micro-organisms. It is broadly used to treat organic wastes, such as manures, energy crops, as well as, domestic and commercial food waste. Typically, two streams are produced: biogas and digestate.

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Food Waste: from diagnosis to solutions

...continued



The biogas is mainly a mixture of 60% methane (CH₄) and 40% carbon dioxide (CO₂). The biogas can be combusted directly in a combined heat and power (CHP) plant to generate electricity and heat to power on-site equipment, and the excess electricity can be exported to the National Grid. Alternatively, it can be upgraded to biomethane - through the removal of carbon dioxide - that leaves a product similar to natural gas (with greater than 95% methane content), which can be injected in the gas grid and be used as a vehicle fuel.

“Gaseous renewable energy carriers, such as renewable ‘green gas’ can have a considerable impact on future energy systems, and play a key role in decarbonising heat and transport.”

The digestate can be used as a fertiliser, as it is rich in nutrients such as nitrogen, phosphorus and other elements required for healthy plant growth and fertile soil. There are strict standards governing the materials that can be used to produce quality compost and biofertiliser for use in agriculture. These are defined in the British Standards Institution’s Publicly Available Specification 100 (PAS 100) for compost and PAS 110 for biofertiliser.

Additionally, composting can be used to treat food and garden waste mixtures. An efficient composting unit ensures that composting takes place in an enclosed environment, with precise temperature control and monitoring. Facilities which process organic waste, according to BSI PAS 100 and the Quality Protocol for compost, produce products that are no longer considered a waste by the Environment Agency.

As modern society moves towards an increasing level of urbanisation, accompanied by a growing population that constantly demands higher consumption of goods and greater energy needs, the topic of waste management and energy/material/nutrient recovery from waste becomes central for future scenarios of sustainable development.



Dr Nikolaos Venetsaneas,
Business Research
Associate, Biological
Processes, EBRI



Waste and Recycling Developments

The role of advanced thermal treatment

Dr Konstantina Stamouli, EBRI

In the UK during the past 15 years there has been an ongoing demand and drive to update and change the waste and recycling sectors. With the current target for the recycling rate from all household waste, being set at **50%** by **2020**, the UK is on track to meet this. However, to this day the current recycling rate remains still at **45.2%**¹, leaving space for further improvement and best practice to be applied.

Following the principle of waste hierarchy, with prevention being the preferred option and landfill being the least favourable option since it includes no recovery of either materials or energy, there have been a number of initiatives across a variety of sectors. The impact of these initiatives has

affected not only the waste and recycling sectors but also a number of other areas such as supply chain, research, energy generation, policy, transport /logistics, engineering and manufacturing, as well as alternative sustainable biomaterial production, and has even crossed over fields such as bioenergy that a few years ago would be unthinkable.

The role of advanced thermal technologies, in this aspect sits within tertiary recycling practice as it not only recovers materials, but can also create new products and facilitate ease of handling. Waste materials such as multi-layer packaging, residual mixed waste², waste tyres or mixed waste plastics are not easily separated and in

Continued on next page...

Waste and Recycling Developments *continued...*

most instances not even recycled, but can be converted into gas or liquid fuels, or separated into different material streams eventually allowing material recovery. Pyrolysis and gasification are processes that have the capacity to treat such tricky waste streams, and both can play a part in the waste hierarchy. Although, there is not an abundance of successful commercial examples, there are a number of planned installations that are aiming to recover materials such as aluminium from multi-layer packaging, carbon black from waste tyres, and even convert waste plastics into liquid fuels, to name a few.

At the moment, there are a number of planned gasification plants in the UK, that once operational will contribute to the UK versatile energy generation matrix, making use of support incentives like Contract for Difference (CfD), Renewables Obligation Certificates (ROCs) and most recently the Renewable Transport Fuel Obligation (RTFO) scheme, which incentivises fuel generation from residues. These technologies are perceived to be cleaner in comparison to combustion, but could also hold a dual role, in energy generation and tertiary treatment of non-recyclable waste fractions. Slowly and steadily, the world of waste is

changing into a world of opportunities, whether that is recovering and recycling materials, generating energy, preventing waste generation by raising awareness, or even changing the packaging materials produced and substituting them with sustainable biopolymers. The future landscape will not be the same. Production of sustainable bioproducts from waste materials such as coffee cups made from the waste coffee husk; new packaging materials made from biopolymers extracted from potato starch or shrimp shells; charcoal production from agricultural waste that is incorporated into beauty products and eco-friendly organic fertilisers are only a number of exciting developments that are transforming the way we see waste and its hidden value.

References

¹ [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746642/](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746642/UK_Statistics_on_Waste_statistical_notice_October_2018_FINAL.pdf)

[UK_Statistics_on_Waste_statistical_notice_October_2018_FINAL.pdf](#)

² Residual mixed waste refers to the waste that cannot be further separated and in some instances is used to create what is known as Refuse Derived Fuel (RDF) or Solid Recovered Fuel (SRF) which is used in Energy from Waste (EfW) applications like combustion or gasification.

“Pyrolysis and gasification are processes that have the capacity to treat tricky waste streams, and both can play a part in the waste hierarchy.”



Dr Konstantina Stamouli
Business Research Associates, Thermal Processes, EBRI



SMART CITY

A View of the UK's New Energy System

Dr Ana Cortes, EBRI

The organisation of society has been and will continue to be steered by access to energy. This will not change in the future, however, resources and consumption patterns have been extremely dynamic during the 21st century and will continue to change rapidly. Driven by social, environmental, political and economic concerns, the integration of renewable sources of energy is already astonishing and the energy revolution is beginning to turn into potentially one of the most radical and accelerated technology transitions in modern history. Although fossil fuels are still the main source of energy in Europe (77% of the energy mix), the integration of renewable resources has been increasing rapidly. In 2010, solar photovoltaics (also known as solar PV) was the largest source of new installed capacity with wind installations in third place (after gas). This means that it is likely that the targeted reduction of 20% in greenhouse gas (GHG) emissions by 2020 (compared to 1990 levels) will be met¹,

which has been confirmed by data collected by the European Environmental Agency (EEA).

In the UK, fossil fuel dependency has gone down from 91 to 80%, with the largest contribution to this reduction coming from the energy generation sector. As in the rest of Europe, transport keeps being the sector with strongest dependency on petroleum derived fuels (see pie charts on next page). The progressive integration of renewable resources into energy generation already has shown astounding results, with record breaking renewable generation shares observed during the last two years. Since the introduction of the Climate Change Act in 2008, the share of low carbon energy generation increased from 19% to a record of 53% in the spring of 2017. The 21st of April 2017 was the first day since the industrial revolution where the energy system was free from coal powered generation. A new record was

Continued on next page...

A View of the UK's New Energy System *...continued*

UK Power Generation Facts

↓ 57%

Total emissions from energy supply decreased 57% between 1990 and 2016, and CO₂ emissions decreased 36%.

53% ↑

Low carbon energy generation increased from 19% in 2008 to a record 53% between April and May 2017.

3 DAYS

For the first time after 1882, all coal-fired power plants were offline for 3 days in a row (April 2018).

↓ 66%

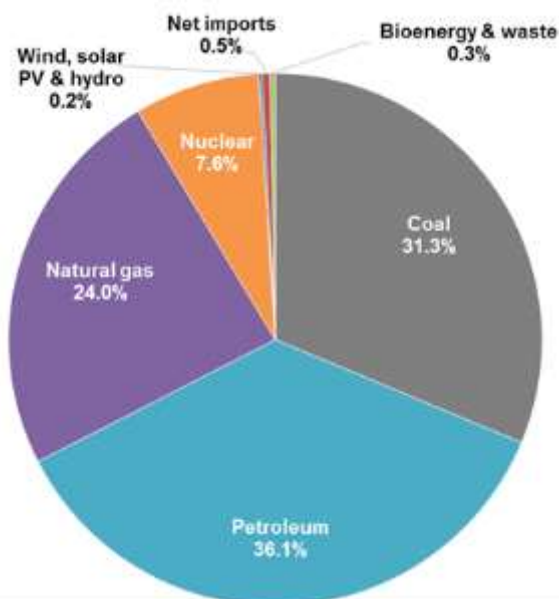
Transmission connected capacity is now on average below 66% of the total generation capacity.

established in April 2018 when all coal-fired plants were offline for three days in a row. These changes have translated into a significant reduction in general emissions, reaching 43% in GHG and 38% in carbon dioxide during 2017 compared to 1990. Total emissions from energy generation processes were cut 57% during the same period². Most of the generation capacity available in the UK can now be classified as low carbon and transmission generated capacity is now only 55 to 66% of the total generation

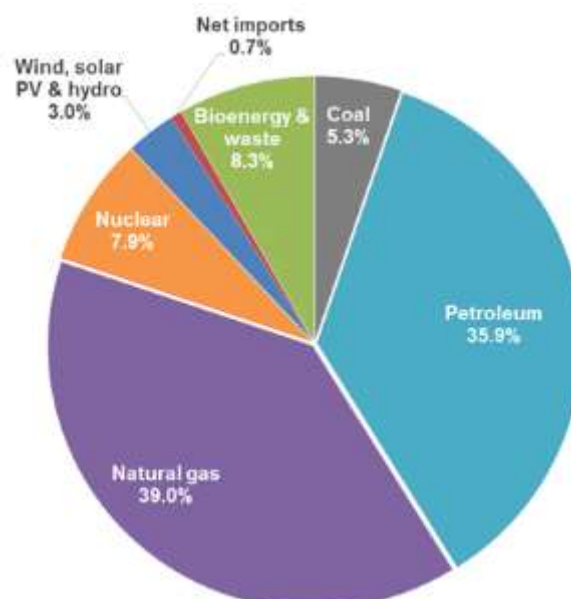
capacity, with the rest being covered by distributed or localised generation systems.

The UK's adoption of more sustainable energy resources has changed the role of the consumers, including residential consumers, businesses, organisations and district network operators. They have gradually abandoned their passive role within the energy system, evolving into generators and managers of their own

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UK primary fuel consumption in 1990



UK primary fuel consumption in 2017

Progress in UK share of primary fuels—1990 vs. 2017

A View of the UK's New Energy System *...continued*

energy. Together with the uptake of distributed generation and electric vehicles, this new consumer role has resulted in new challenges for the existing energy system. The importance of local networks has grown significantly, turning distribution network operators (DNOs) into distribution system operators (DSOs) who are capable of not only maintaining the network, but also managing local electricity generation and use.

A large number of innovative smart solutions will be required as the system turns more decentralised, disaggregated and multivector, where many solutions will have to come together for the system to work and all the stakeholders benefit from it. New technical and business challenges are arising as new roles and interactions are created in the transition towards a low carbon energy system. The development and integration of innovative solutions within different levels of the energy system are an opportunity to provide technologies and services that were not required before. These solutions have to consider the system as a whole to make sure they are all compatible and synergistically improve the efficiency of the energy system.

A good example of new business opportunities arising is the smart integration and management of electric vehicles (EVs), which will not only be



key in breaking transport's dependency on fossil fuels, but also represents an opportunity to provide flexibility to the energy system. Different business models are being developed so EVs can provide grid services from which owners can also get an extra income, such as demand response and active network management. The implementation of bi-directional charging, commonly referred to as vehicle-to-grid (V2G), could also provide the system with additional balancing services by enabling the use of the power in the vehicle's battery. Smart solutions will allow to charge the EVs when demand is low and there is an excess of electricity, and will discharge the battery providing support power when demand surpasses supply. The use of V2G will be more relevant as the share of intermittent renewable generation from solar PV and wind increases, with a potential flexible capacity of 370GW from all EVs on UK roads³.

References

¹ EEA Report No 16/2018. Trends and projections in Europe 2018 - Tracking progress towards Europe's climate and energy targets.

² Digest of United Kingdom Energy Statistics (DUKES) 2018.

³ EEA Report No 16/2018. Trends and projections in Europe 2018 - Tracking progress towards Europe's climate and energy targets.



Dr Ana Cortes
Business Research
Associate, Energy
Systems, EBRI

"According to the EEA, registration of battery EVs went from 700 in 2010 to 97,000 in 2017. Uptake keeps increasing, with sales growing 51% between 2016 and 2017. The UK, together with France and Germany, are the countries with highest uptake in recent years."

Editor

This guide was designed, edited and produced by:

Irene Watkinson, Marketing and Communications Manager
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It is also available in printed format:

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