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# The European Bioenergy Research Institute

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# Introduction

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**Aston University has been committed to the research and development of bioenergy technologies and solutions since the 1970s.**

In 2013, this was accelerated when a brand new European Bioenergy Research Institute (EBRI) was opened on the Aston campus in Birmingham city centre.

Consisting of a purpose-built state-of-the-art facility, and a team of internationally renowned scientists and business specialists, EBRI delivers world-class bioenergy and energy systems research and solutions.



# About EBRI

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**The Institute acts as a focus for worldwide activities on scientific and technological aspects of biomass production, conversion and utilisation of products for renewable power, heat, transport fuels, hydrogen and chemicals. EBRI works to extract the maximum value from all types of biomass, including waste resources.**

The £21 million Institute has seven laboratories, meeting spaces and a pilot plant using technology developed by EBRI researchers. The CHP engine in the pilot plant can provide the heat, electricity and cooling needs of the building and part of the University's campus. It is the first demonstration plant of its kind in the UK, incorporating interoperable distributed energy technologies which can support the traditional energy system through demand side grid management.

## Research equipment includes:

- Pyroformer™ intermediate pyrolysis unit;
  - 400 kg/h fluid bed gasifier;
  - 400 kWe CHP engine;
  - A wide range of laboratory scale pyrolysis, gasification and hydrothermal processing reactors;
  - Catalyst design, production and characterisation, and testing facilities;
  - Product upgrading facilities for biofuel production;
  - Extensive product analysis and characterisation equipment;
  - Biorefinery and biofuel synthesis and evaluation;
  - Algae production and biomass pretreatment and characterisation;
  - Distributed energy technologies;
  - Electric vehicle-to-grid charging system.
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# Practical help for businesses

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**In 2016, EBRI was awarded a £2.74m project ‘Business Investment in Research’ jointly funded by the EU European Structural and Investment Funds (ESIF), and Aston University.**

The main objective of this three year initiative is to accelerate small business innovation in the application of energy and energy systems to drive new growth, employment and export opportunities in the Midlands region and beyond.

Companies can benefit from specialist support, cutting-edge technologies and bespoke events, such as workshops and seminars, to help stimulate business start-up and growth, plus the development of new products.

It aims to build on the success of a similar project which EBRI ran from 2012 to 2015, with European Regional Development Fund (ERDF) funding, when the Institute assisted over 200 organisations. According to HM Treasury “Green Book” methodologies, the economic impact of this business support was £9m in Gross Value Added (GVA)\*.

EBRI also leads the 5BIO project in the Energy Research Accelerator (ERA) and this ESIF project will help us to bring the benefits of ERA to regional SMEs.

\*EBRI Interim Evaluation Report published June 2015.



# Bioenergy and Energy Systems

## EBRI can help companies:



Create new value from waste products by turning them into energy;



Produce new high value materials from waste, which can be commercialised;



Generate new value from better management of energy use and generation, using advanced control systems to optimise heating, cooling and electricity;



Develop new opportunities in emerging and disruptive market places, such as the 'internet of energy'.

## EBRI offers businesses the following opportunities:



### Technology Business Support

Gain access to EBRI's pyrolysis and gasification test facilities, as well as help with feedstock analysis.



In addition to this, company reports on viability and technology requirements can take place at your premises and/or at EBRI's laboratories.



### Economic Feasibility Studies

EBRI can provide you with an assessment of the nature of the proposed technology, and economic assessments of risk and return.



### Events

EBRI will be holding a series of tailor-made workshops and seminars specifically for business decision makers and entrepreneurs to build awareness of bioenergy, energy systems and their applications.



**European Union**  
European Regional  
Development Fund

# Research

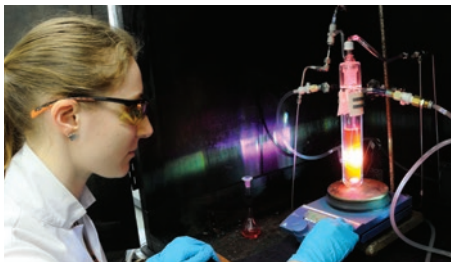
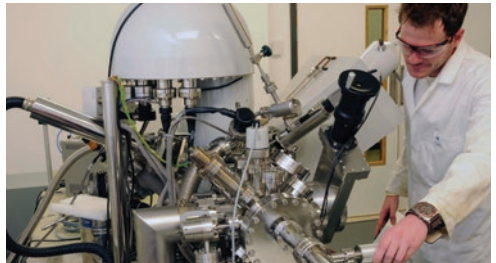
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**EBRI's team of internationally-renowned researchers focuses on methods of generating energy, fuels and chemicals from biomass, wastes and residues.**

Research topics include:

- Catalyst development; production and characterisation;
- Thermal process development;
- Biofuels and chemicals production;
- Heat and power system evaluation;
- Bioenergy markets;
- Feedstock assessment;
- Energy systems.

EBRI's current bioenergy research grant funding is in excess of £16m.



# Research

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## Current EBRI Projects

- 5BIO (biomass, biorefining, bioenergy, biofuels and bio-products) in the Energy Research Accelerator (ERA)
- Business Investment in Research (ERDF ESIF)
- CASCATBEL (Cascade Deoxygenation Process Using Tailored Nanocatalysts for the Production of Biofuels from Lignocellulosic Biomass)
- Catalytic Pyrolysis of Biomass for Biofuels
- Catalytic Routes to Intermediates for Sustainable Processes
- European Energy Research Alliance (EERA) Bioenergy
- EnergyHarvest (turning agricultural waste into energy in India)
- GB3-Net (the Global Bioenergy, Biofuels and Biorefining network)
- Ionic Liquid Biorefining of Lignocellulose to Sustainable Polymers
- ITHECA (Intelligent Transport, Heating and Electrical Control Agent)
- PCATDES (photo-catalytic materials for the destruction of recalcitrant organic industrial waste)
- PyroAD (integration of intermediate pyrolysis and anaerobic digestion)
- Pyrochem (biopolymers 13C tracking during fast pyrolysis of biomass)
- ReShip (sustainable biofuel for the shipping industry)
- Solar Fuels via Engineering Innovation
- SUPERGEN Bioenergy Hub including pyrolysis, gasification, biofuels and aviation fuels, techno-economic assessment
- Tuning Catalyst Surfaces to Control Aldol Reactions in Biomass Conversion
- UK Catalysis Hub



# Contact EBRI

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We welcome collaboration opportunities with academia, government bodies and industry from around the world.

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