

Arbor ElectroGen is a proven, biomass-fuelled combined heat and power system that delivers cost-effective, low-carbon heat and power for a variety of applications.

Now available in the UK and Ireland from LowC Communities Ltd, the Arbor ElectroGen range offers exceptional operational performance, with incredibly-low carbon emissions.

Biomass Fuel

Fuelled by 'woody' biomass, it is ideal for customers that have an on-site biomass resource - such as woodland, or easy access to a local feedstock.

The feedstock creation follows a few simple steps by taking newly cut, 'small round wood' or similar, chipping to the required specification (much larger than traditional heat only biomass boilers), drying in the warm extract air from the plant space which is used in the gas cooling process.

There is no requirement for long term storage or chip screening.

Simple Concept

The Arbor ElectroGen system converts wood into a gas that fuels a Combined Heat and Power system (CHP).

Producing an almost equal amount of heat and electricity (in the ratio of 1.5:1), the system offers one of, if not the most cost-effective ways to meet the ever-more stringent demands of both the Code for Sustainable Homes and BREEAM.

This heat to power ratio should be compared with a biomass steam boiler and turbine with a heat to power ratio of 5:1, Stirling engine of 3:1 and high speed turbine of 3:1 - therefore making it far better suited to the matching of power and thermal demands of a building, facility or community network without dumping heat.

Whilst the bulk of the delivery of the UK's built environment continues to focus on producing renewable heat to meet the demands of planning requirements, the LowC Arbor ElectroGen targets renewable electricity – a commodity that, if supplied from the National Grid, is highly carbon intensive as a result of both the fossil fuels used and the efficiency of distribution. Furthermore renewable heating is being generated which offsets the need for gas or oil heating fuels being required onsite for heating purposes.

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Range of Units

The Arbor ElectroGen has three sizes of units available:

- **Arbor ElectroGen 130** – produces 130kW of electricity and 150kW of heat.
- **Arbor ElectroGen 250** - produces 250kW of electricity and 325kW of heat.
- **Arbor ElectroGen 500** - produces 500kW of electricity and 750 kW of heat.

Off-Site Manufacture

The process is completely modular whereby the units can be technically and economically combined into multiples to increase the installed capacity – offering greater levels of savings, resilience and avoidance of business risk through far greater levels of redundancy.

The principle elements are all off-site manufactured, ensuring repeated, quality-assured engineering and a build time on site that is kept to a minimum with a resultant low carbon footprint for the construction process.

Energy Distribution

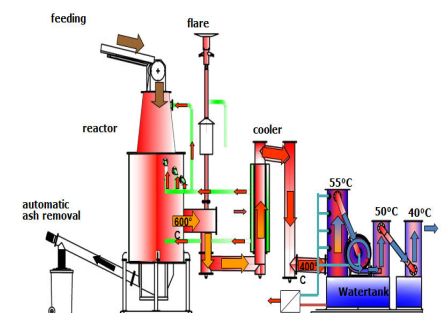
The electricity produced can be used on site, distributed via a private-wire network or simply exported to the grid. Heating, hot water and, if required, chilled water through the integration of absorption chilling, can be distributed as required – internally or via buried network of pre-insulated pipes.

Significant Carbon Savings

Taking the Arbor ElectroGen 500 as an example – annually, it will produce around 4,000 MWh of electricity and 6,000 MWh of heat saving a staggering 3,000 tonnes of carbon emissions (approximate) – from just 3,400 tonnes of renewable fuel. To put it into context – using domestic Solar PV – you'd need around 3,500 homes and an investment of around £35million to reach the same level of carbon savings that the Arbor ElectroGen offers for less than 10% of the capital cost.

Clean and Quiet Process

The Arbor ElectroGen system produces little or no visible smoke plume from its flue, virtually no particulates, virtually zero NO_x and CO₂ emission levels that are 93% lower than that of an equivalent natural gas-fired CHP system. This is due to the process and temperature at which the gas is produced in the vessel – coupled with the fact that the gas is made up of approximately 50% combustible components – a fuel that produces water vapour and small quantities of carbon dioxide when combusted in the CHP system.



Sound levels emitted from an Arbor ElectroGen plant easily achieve normal planning guidelines since the engine is attenuated at source, the gas producing and cleaning plant are contained within a robust building and the on-site chipping (if required) uses a slow-speed device.

Proven Technology

Whilst the manufacturers of many woodchip gasification systems have made bold claims and failed to deliver in operation, the Arbor ElectroGen system is a *proven* technology.

It has been developed by one of the world's leading experts in the field over the past 20 years and demonstrated at countless commercially-run sites throughout Europe and further afield on the American and Far East continents.



Not only proven on woody biomass the system can consume other materials such as sewage, fungi, compressed sawdust or straw briquettes etc.

A Sound Economic Case

With a plentiful supply of low-carbon heating, hot water, electricity and - if required - chilled water for air conditioning – the Arbor ElectroGen system offers consumers low-cost energy with almost zero (approximately 4% of a grid-based system) carbon emissions.

As a truly renewable energy generation system, the Arbor ElectroGen range qualifies for payments under both the Renewable Heat Incentive (RHI) and Renewables Obligation Certificates (ROCs).

Available as a fully-financed, turnkey installation - with LowC taking the long-term responsibility for the ownership, operation and maintenance - the site's owner simply contracts to purchase low-carbon energy over a given period.

These long-term contracts for the supply of energy – typically between 15 and 25 years - provide long-term security against both fossil-based energy costs and their availability.

The energy price payable by the customer is guaranteed to be at a rate which is lower than the best traditional grid rates currently available - giving long-term security of costs.

Similarly these systems can provide estate owners with a solid financial revenue for felled timber utilised onsite. Alternatively, capital purchase and shared ownership are other possible procurement methods.

Operation and Maintenance

Remotely monitored from LowC's data-processing centre, all systems are covered by a 24-7 call-out service that ensures the plant is available for operation round-the-clock. With its high level of reliability, resilience and redundancy (depending on installed capacity) the system can be available for continuous operation or up to 51-weeks-per-year – allowing a week for planned annual maintenance where single gasifiers are installed.

Fuel Handling and Management

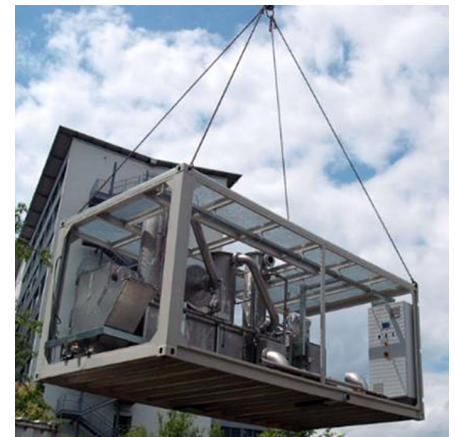
Regardless of whether a site owner has a readily-available supply of feedstock, LowC can provide a fully-comprehensive fuel handling and management service – ensuring the plant is available round the clock. The fuel storage, handling and drying system is a fully integrated component of the Arbor ElectroGen system.



'Off-the-Peg' Solution

At LowC, we don't believe in reinventing the wheel every time we design a plant. We have a standardised layout that has been developed over a number of years, drawing on operational feedback from fully-commercialised sites.

This not only ensures that the plant layout is optimised, but also removes unnecessary costs from the development and planning application process.



Feasibility and Planning Support

LowC works with site owners every step of the way, from initial concept, through the planning approval process – ensuring that a project's transition from drawing board to construction goes as smoothly as possible.

Why LowC?

LowC is an organisation that understands how to integrate renewable energy generation into the built environment – whether it's domestic, commercial or industrial.

By understanding a building or community's operational heating, hot water, cooling and electrical demand and satisfying it with the most cost-effective form of low-carbon energy, LowC has managed to break down the barriers that have, until now, prevented the wider uptake of renewable energy generation technology, and prevented Low Carbon communities from happening.

The renewable energy market is dominated by technologies and approaches which deliver low carbon heat only, or deliver very limited renewable electrical outputs against the demands of typical buildings. High volume onsite electrical generation is often driven by fossil fuel such as gas for CHP units which as a result of their fuel inputs have a comparatively small impact on carbon reduction.

Find out more

To find out how you can reduce both your carbon emissions and your energy costs, please contact LowC on telephone +44 (0)1778 590 074 or email info@lowc.co.uk

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