ENER-G

Cogeneration

Saving money, saving energy, saving the environment







Proven technology

The demand for energy is ever growing whilst it is becoming increasingly expensive. Businesses and individuals are seeking sustainable and efficient power generation solutions to secure supply and keep energy costs low. Due to its benefits distributed generation, such as cogeneration has become very popular in the UK and Europe in recent years.

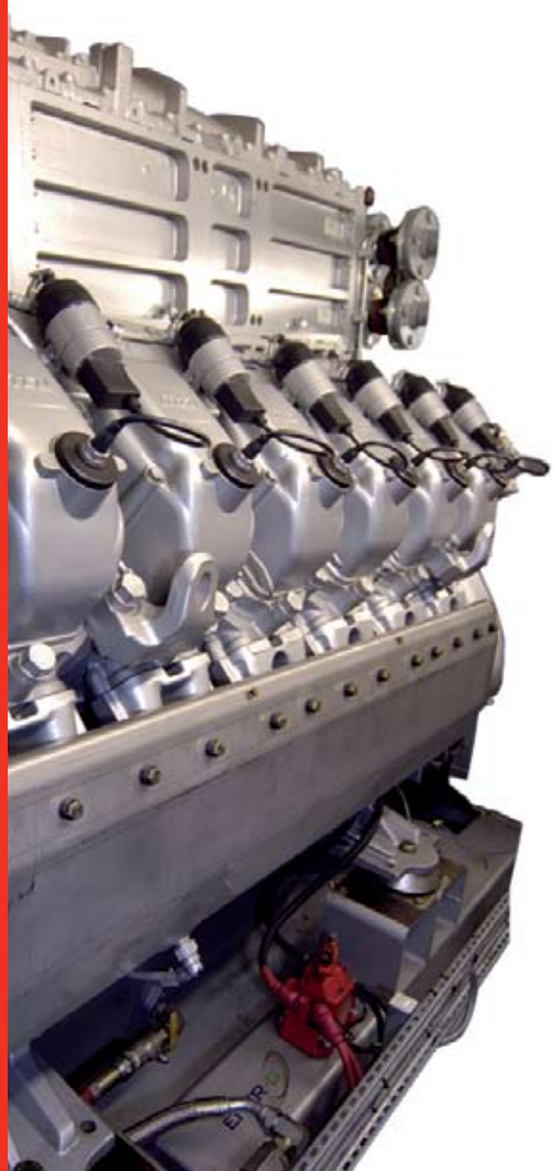
Cogeneration or combined heat and power (CHP) technology converts gas into both electricity and heat in a single process at the point of use. Cogeneration is highly energy efficient and as well as supplying an organisation with power, it can deliver a number of positive financial and environmental benefits.

ENER-G's experience in the cogeneration market dates back to 1984 when we began designing, manufacturing, installing and maintaining cogeneration systems.

We are now firmly positioned as Europe's leading supplier of cogeneration systems from 4kW up to 10MW and bring a wealth of knowledge and experience to all projects we undertake.

Our services include:

- Feasibility study
- System specification
- Design and build
- System testing
- Installation and commissioning
- Ongoing operation and maintenance
- Finance options



"The Quality Management System of ENER-G Combined Power has been approved by ISOQA, to the standard of ISO9001: 2000; including the design, manufacture and service of combined heat and power for hotels, hospitals, leisure centres and industrial applications."

ISOQAR QUALITY ASSURED FIRM

UKAS QUALITY MANAGEMENT 026

Benefits and applications

Cogeneration is a well-proven technology, recognised world wide as a cleaner alternative to traditional centralised generation. Its long-term future in the global energy markets is secured by its ability to provide operational, financial and environmental benefits from a single unit of fuel.

Applying cogeneration

The technology is ideal for applications with consistent demands for thermal energy and considerable electrical base loads.

When to consider cogeneration:

- Designing a new building
- Installing new boiler plant
- Existing site re-development
- Continuity of power supply
- Increasing energy efficiency
- Improving financial performance
- Positive environmental impact
- Supporting the company's green image

Typical applications:

- Hotels and leisure centres
- Hospitals
- District heating schemes (i.e. offices, residential)
- Industrial and commercial facilities
- Universities and colleges
- Government sites
- Airports
- Military bases
- Waste water treatment
- Horticulture

Sunderland Aquatics Centre, 185kWe ENER-G CHP

Benefits of CHP

Operational benefits	Environmental benefits
• Base load electrical supply • Additional security of supply • Increased diversity on heating and hot water • Steam raising capabilities on larger units • Trigeneration, using absorption chillers for cooling	• Reduced primary energy use • Reduced CO_2 emissions • Help with Carbon Reduction Commitment • Reduced transmission losses • Lower SOx emissions with the use of natural gas as a fuel
Financial benefits	**Legislative benefits**
• Reduced primary energy costs • Flexible procurement options • Stabilised electricity costs over a fixed period • Reduced investment in surrounding plant e.g. boilers • Tax effective asset management • Avoid Climate Change Levy • Possible eligibility for upcoming Feed-in Tariffs (FIT)	• Helps with Part L compliance • Helps in meeting Carbon Reduction Commitment targets • Helps in reducing the carbon footprint

Solutions

We offer a wide range of cogeneration solutions both in terms of the technology and procurement options available.

The technology

ENER-G cogeneration systems are available from 4kW to 10MW. Typical applications run on natural gas, however, systems can also be fuelled by biogas, propane, diesel or biodiesel.

In the range up to 2MWe capacity; units can be delivered packaged as a single unit with the controls, heat recovery units and engine within neat, compact, acoustically insulated enclosures suitable for either internal of external installation.

We can also offer a trigeneration solution which provides heat, power and cooling. This technology provides comfort cooling in the building by using CHP in conjunction with an absorption chiller.

Above 1MWe, each one of our cogeneration units is bespoke, with engine and system carefully designed to meet each specific application.

Energy Centres

We offer bespoke turnkey Energy Centre solutions for large industrial, commercial and public sector applications generally including cogeneration in addition to other technologies that are available from the ENER-G Group.

Such solution based schemes may include the provision of a dedicated Energy Centre together with all necessary infrastructure enhancements needed to fully optimise the energy requirements of a site.

In addition to turnkey project delivery we are able to offer a full range of comprehensive support services, which enables customers to outsource operational risk.

ENER-G procurement solutions

At ENER-G we thoroughly commit to making our products available to every business whether or not they have the capital to invest.

Purchase the system

We can provide you with a fixed cost for a complete turnkey package, including supply, installation and commissioning. A separate Operation and Maintenance package is offered in parallel and we can operate and maintain the system throughout its life.

Purchase the energy
Discount Energy Purchase (DEP)

ENER-G will install, operate and finance the cogeneration installation, without capital outlay and simply sell the energy produced at a discounted rate.

Energy Services Performance Contracting (ESPC)

ENER-G undertake to promise real reductions in utility consumption associated with the provision and operation of various energy efficient technologies. This turnkey approach can be provided at no capital outlay by the customer.

Flexible finance and project funding

ENER-G also facilitate bespoke project specific funding, which we are happy to discuss on an individual customer basis. In all cases our flexible approach to alternative financial solutions provide both quantifiable and tangible transfer of risk together with real and demonstrable value for money.

Long term care

ENER-G maintains the largest fleet of cogeneration systems in Europe. Our Customer Care Department, co-ordinates our engineering teams 7 days throughout the year.

We offer a range of standard service packages. However, we take a flexible approach and are able to tailor service packages to suit the client and the site.

Service packages can also be offered independently of ENER-G installations, as our service technicians are fully trained in all aspects of engine maintenance, including complete engine overhauls.

Research & Development

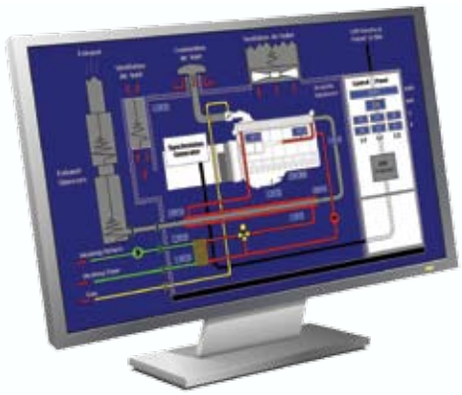
Our continual dedication to research and development mean clients can guarantee that they are embracing up-to-the-minute technology with tried and tested methods.

Remote monitoring

An integral part of every ENER-G cogeneration unit is the patented on-board **G*k***ontrol system. The system monitors and manages the unit and is programmed to optimise its operation to suit the demands of the site.

Every day the system automatically communicates with our Head Office to upload recorded operating data and, in the event of a problem, takes the appropriate corrective action.

Before travelling to a site, engineers can communicate with the system to assess the problem in more detail and, wherever possible, correct and restore the unit remotely.



Case study - hospital

A £5 million energy efficiency programme has been switched on at Birmingham Heartlands Hospital and is expected to save £688,000 a year, reducing carbon emissions and boosting resources for patient care

Birmingham Heartlands

The combined heat and power (CHP) scheme delivered by ENER-G enables the hospital to generate its own electricity in a purpose designed Energy Centre, cutting emissions of CO_2 by 5,600 tonnes per year – the equivalent of a forest of 560,000 trees – as well as reducing other harmful green house gases such as Sulphur Dioxide.

Birmingham Heartlands is a major general hospital managed by Heart of England NHS Foundation Trust in Bordesley Green, East Birmingham.

At the heart of the scheme is a new, aesthetically designed Energy Centre located near the hospital's landmark main entrance.

The new Energy Centre, which was installed by ENER-G Combined Power, replaced ageing coal fired boilers which had served the Trust well for many years.

The new system comprises a state-of-the-art gas fired 'trigeneration' system that creates electricity, steam or hot water for the winter heating and chilled water for use in the air conditioning systems during the warmer summer months.

Improving the chilled water system has allowed cool air to reach parts of the hospital that were not previously serviced, increasing comfort for patients as well as hospital staff.

Birmingham Heartlands Energy centre

The £5 million programme, financed by ENER-G was structured around the principles of a Public Private Partnership contract, and included a £403,000 grant from the Carbon Trust under the Government's Community Energy Programme. ENER-G provides the trust with a guaranteed level of performance for the system over a 15 year period.

ENER-G installed and maintains the purpose-built Energy Centre that houses a highly efficient combined heat and power system (CHP) plus other plant including steam raising boilers and an absorption cooling system.

The CHP system generates electricity and recovers the majority of the heat created in the process. In conventional power stations this heat is simply wasted into the atmosphere through power station cooling towers, much energy is also lost along the many miles of electrical distribution cables needed to bring the power to site. Instead, by using CHP to generate electricity on site the heat is used to provide heating, steam and hot water for the hospital in the winter, and, via the absorption cooling system, to also provide chilled water for air conditioning in the summer months.

The new Energy Centre accommodates an 1,165 kilowatt CHP unit that uses an MTU gas engine. Chosen due to its compact and efficient design, this is capable of producing steam and is connected to the hospital's main heating system. This unit is also connected to a 300 kilowatt absorption chiller to produce chilled water from waste heat in the warmer months. This means the existing electrically powered chillers will run much less frequently during the summer and that spare cooling capacity can be used to provide air conditioning to areas of the hospital which had not previously benefited from this.

Work has also been carried out to upgrade lighting with 1800 high efficiency, low energy fittings, which also further reduce emissions and energy costs.

About ENER-G

ENER-G provides customers with a variety of technologies ranging from the generation of energy to the management of energy use, delivering sustainable energy solutions and technologies on a business-to-business basis worldwide.

Established in Salford, Greater Manchester in the 1980s, the company offers a 'one-stop-shop' for all commercial and industrial energy requirements, from the efficient generation of energy to the equally efficient control of consumption. The company has partners across the globe.

Our solutions include combined heat and power (CHP), biogas utilisation, heat pump technologies, efficient lighting, controls, metering and data solutions and energy from waste. This is accompanied by our wide range of energy and water consultancy and procurement services.

ENER-G is 100% dedicated to the development of its products and markets, and over the years has seen rapid growth, both organically and through acquisition to achieve a strong global presence within the energy industry. Currently ENER-G operates in the UK, the Netherlands, Norway, Poland, Hungary, Lithuania, Spain, Italy, Romania, Mexico and South Africa.

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