

# RENEWABLE ENERGY ENERGY

ENER·G

optimised biogas utilisation



## THE ENER·G GROUP

At ENER·G we deliver sustainable and energy efficiency technologies for customers around the world. Our four key businesses offer an energy solution for all markets:

### **Cogeneration**

On site generation of electricity, heat and/or cooling for the public and private sector.

### **Energy Management**

Using intelligent building controls and other innovative technologies, we provide risk free energy management with guaranteed savings.

### **Energy from Waste**

Energy recovery of post recycling waste residue – an alternative to landfill.

### **Renewable Energy**

Utilising biogas and biomass to produce 'green' electricity for our clients worldwide.



## RENEWABLE ENERGY

Landfill gas is a resource which should be profitably harnessed – essentially combining utilisation with effective gas management. The methane produced by landfill sites is used as a fuel driving a generator to produce renewable electricity. Turning a potential liability into a lucrative resource.

Natural Power Limited as part of the ENER·G Group is the UK's leading independent expert in the exploitation of landfill gas and has a strong track record in delivering innovative and cost-effective solutions for its customers.



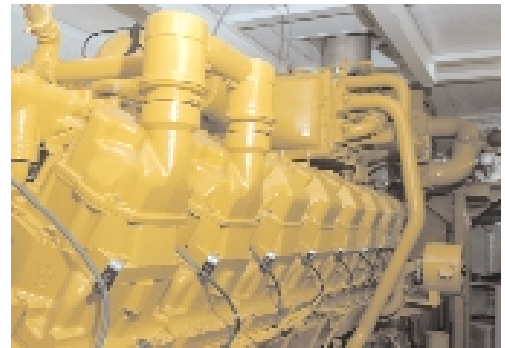
## THE ENER·G APPROACH

Producing 'green' electricity from otherwise harmful Greenhouse Gas fuels is core to the ENER·G Group's renewable energy business.

This electricity qualifies internationally for Government incentives, developed to encourage the generation of renewable power by issuing 'green certificates' (financial incentives on the value of 'green' energy).

What makes ENER·G the UK's leading independent landfill gas generation company?

ENER·G adopts a unique approach to the recovery and utilisation of landfill gas...

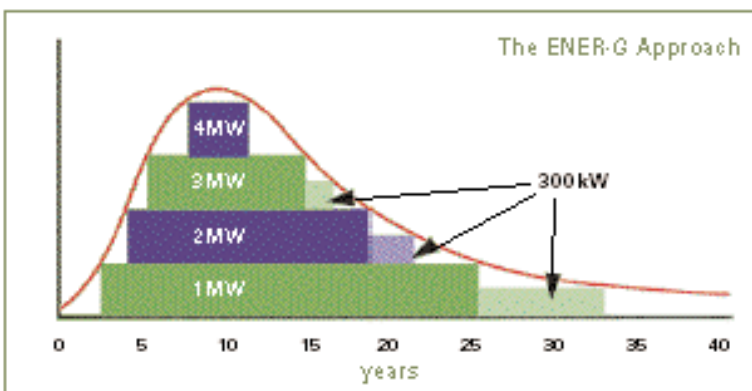
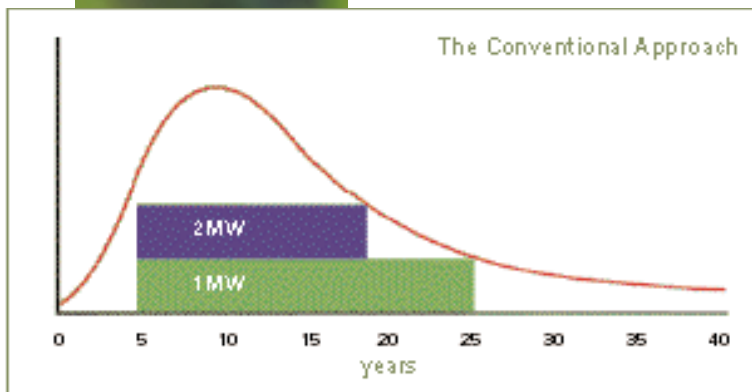


### Gas management

- Simple, low cost wells, remotely controlled at the manifold – enables fast and frequent monitoring and optimised adjustment of the gas field
- No wellhead chambers – means minimum impact on cap integrity and access for site after-use
- Frequent monitoring and quick response to potential problems – gives confidence that migration issues are being properly addressed
- A pro-active approach for every project – including managing the gas throughout the site, not just at the engines

### Generator utilisation

- Modular generator units (from 300kW to 1150kW) and a 'hire fleet' approach, ensures, where grid connections allow, a mix of generators can be cost-effectively used – even for short periods – to capitalise on peaks or manage gaps in site gas production
- This flexible use of movable generators means we can maximise use of the gas resource on landfill sites and extend the period of gas utilisation – offering substantially reduced landfill aftercare costs



## PROCUREMENT OPTIONS

As with all ENER·G solutions customers can choose whether or not they wish to invest in the project and take financial risk.

Generators can be leased or purchased by customers – ENER·G then provide an Operations & Maintenance service for both engines and gas field as required.

Customers mostly prefer ENER·G to take the project risk and to finance, build and operate the scheme – in which case the customer will receive a risk-free share of the electricity income.

These projects are funded entirely by ENER·G without third party involvement. We can make decisions quickly and start work on fully funded schemes without delay.



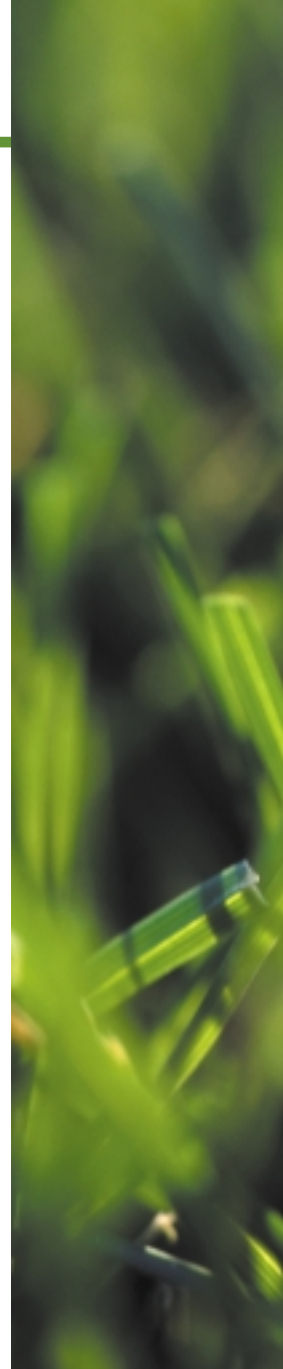
## CUSTOMER FOCUS

Our nationwide Operations & Maintenance infrastructure allows us to develop stand-alone 300kW sites. This provides owners of old or small landfill sites with an opportunity to put existing gas collection systems into use, reducing aftercare costs and, in some cases, turning the site into a profit centre.

ENER·G get involved at site immediately, while developing the power generation scheme. We are also committed to actively manage the gas field to optimise utilisation and ensure effective migration control.

ENER·G enable the landfill operator and owner to exploit the full financial and regulatory benefits.

Using the “selling power” of our growing portfolio we gain best value for renewable electricity generated – including any associated ‘green’ benefits.



## FLEXIBILITY AND SIMPLICITY

ENER·G's philosophy is one of flexibility and as we design and build our own generators we retain build control and this allows us to design in features, which enable more flexibility and simplicity of operation.

Our generating sets are designed to incorporate several features that make them unique:

- Fully enclosed oil banded engine compartment and control room
- Extended oil sumps to increase oil change intervals and reduce downtime
- Sealed oil-pumping lines to make oil changes faster and safer with no risk of spillage
- A comprehensive, patented engine management system, which allows for remote management and monitoring and has been proven in over 500 applications
- Extended vertical exhaust with emission monitoring points. These, plus sound proofed engine compartments, typically reduce sound levels to 68dBa at 10m
- Engine emissions for NOx and CO are TA Luft compliant, and are better than the current and proposed standards for UK gas engine emissions
- Full commissioning tests are carried out at the factory with natural gas-reducing onsite time to re mapping of the fuel system to suit the landfill gas
- Safety features include: isolation points; lifting beam, easy exit from either side of the container



For detailed technical specification sheets on our 300kW and 1150kW generators please email [re@energ.co.uk](mailto:re@energ.co.uk) or contact t: +44 (0)161 745 7450

## THE FUTURE

### Meeting requirements

The ENER·G Group offers the waste management industry a solution that meets its precise requirements and conforms to all current and foreseen legislation. Continual R&D ensures that our systems employ state-of-the-art technology.

### New technologies

Looking to the future we are investing in the development of solutions for power generation schemes associated with emerging waste management technologies such as anaerobic digestion, gasification and pyrolysis.

Gasification and Pyrolysis offer an alternative to mass burn incineration or landfill of waste that cannot be recycled. Gasification involves the careful control of oxygen, whilst



Pyrolysis occurs in the complete absence of oxygen. Both gasification and pyrolysis are classed as Advanced Conversion Technologies, having the ability to produce a clean, high calorific value gas from a wide variety of waste and biomass streams. The electricity produced from both technologies qualifies in the UK as renewable energy.

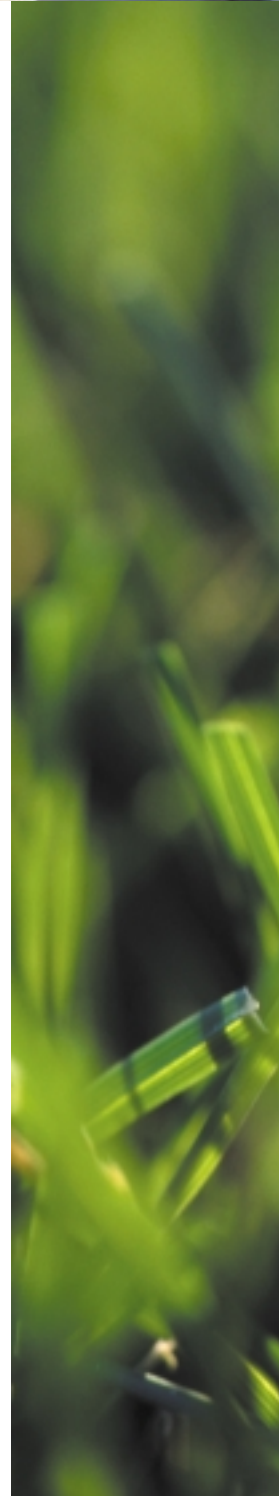
For more information on The ENER·G Group's Energy from Waste offering please visit our website at [www.energ.co.uk](http://www.energ.co.uk)

### Other fuels

Our technology and experience is also applied to range of gas fuels, including coal mine methane and well-head gas.

### International commitment

ENER·G offers its landfill gas and waste gas power generation expertise internationally, with a number of projects active in Europe and beyond. For local contacts please visit our website at [www.energ.co.uk](http://www.energ.co.uk)





## POLLUTION PREVENTION & CONTROL (PPC)

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ENER·G's landfill gas utilisation equipment conforms to all regulatory requirements under the PPC Regulations.

ENER·G is committed to improving environmental performance of its business and continually develops its landfill gas utilisation equipment so that it remains at the forefront of environmental technology. This includes:

- Enclosed in acoustic containers
- 110% fully banded engine and transformer enclosures
- Compliance with emissions standards set out by the Environment Agency in the 'Guidance for Monitoring Landfill Gas Engine Emissions'
- Fitting of extended exhaust stacks and monitoring locations with permanent access platforms to allow emissions monitoring
- Innovative in-situ cleaning of engine combustion chambers to maintain efficiency and emissions compliance in a very cost effective manner
- Silicon removal from lube oil with centrifugal clarifiers
- All equipment is ATEX compliant to current regulations

For further information on how ENER·G are addressing the requirements of the PPC Regulations and for our Environmental Policy please email: [re@energ.co.uk](mailto:re@energ.co.uk)

## THE ENER·G GROUP WHAT MAKES US NUMBER ONE

- We are world leaders in the field of delivering sustainable and energy efficient technologies with a wealth of experience and a proven track record
- Our unique combination of in house technology and services gives us great flexibility to optimise solutions for each customer requirement
- From energy efficient generation to management of energy consumption we have a solution to help your business
- Our financial stability offers you long-term security
- We are able to offer the best financial, operational and environmental benefits with or without capital investment
- Continual Research and Development means we offer the very latest technology in the industry

## ENER·G



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