



Advanced technology



Combined Heat and Power

Design
Consulting
Installation
Support

Why combined heat and power?

Combined heat and power (CHP) improves energy efficiency by generating heat and power simultaneously. The principle of operation is not dissimilar to a power station, other than there are no electrical transmission losses and in the case of a CHP the heat produced is used in the building and not wasted in a cooling tower. In addition, micro-CHP engines are usually fired by mains natural gas which is around a third of the cost of grid electricity.



Micro-CHP can therefore deliver significant energy cost savings by increasing energy efficiency and reducing the requirement for expensive electricity imports. Micro-CHP systems under 2kW are also

eligible for payments under the Feed in Tariff scheme, meaning that further savings can be achieved.

Environmental and regulatory benefits

Micro-CHP can deliver carbon savings of up to 30% compared to a standard gas boiler/ grid electricity arrangement. It can therefore help to achieve compliance with Part L of the Building Regulations, and can also qualify for exemption from the Climate Change Levy and CRC scheme.

Principle of operation

CHP only delivers financial savings while it is operating, and therefore annual savings are maximized if the unit runs for as long as possible. The savings delivered by a CHP system can be represented by hourly inputs and outputs:



Example: Based upon 4p kW gas tariff and 12p kW electricity, under full design load.

EXAMPLE CHP OPERATION

Applications

Micro-CHP is suitable for any site where there is a sufficiently high energy demand. It is essential that a base thermal load exists so that the heat produced by the CHP can be used on the site at all times, enabling the engine to run constantly and thereby generate low cost electricity; this will maximize the financial viability of the scheme. In some cases the incorporation of absorption cooling can provide an additional heat demand and can represent a good solution.

Examples of suitable applications include:

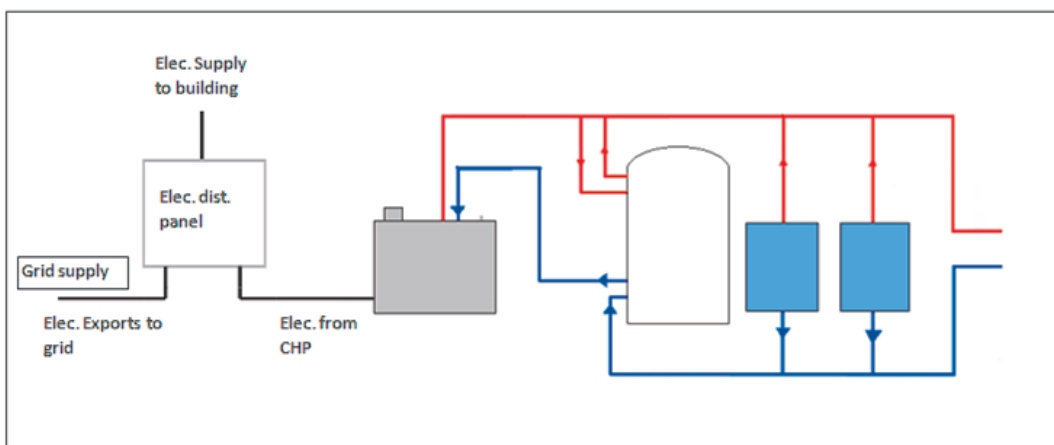
- High density housing
- Sheltered housing schemes
- Swimming pools
- Leisure centre's
- Industrial sites
- Office blocks
- Schools and universities
- Hotels
- Supermarkets
- Housing



System set-up

The micro-CHP unit can be easily integrated into a new or existing low temperature hot water heating system. In order to maximize operating hours, the CHP should be operated as the lead boiler, with gas boilers providing top-up at times of high demand. A buffer tank should also be installed to allow more continuous operation of the CHP and prevent stop/start cycling.

The units are supplied with an integrated electrical interface/ export panel that allows electrical connection to the building's distribution board as well as the national grid. This allows generated electricity to be exported to the national grid when there is insufficient onsite demand, and enables imports when the CHP is unable to meet the site's requirements.



CUSTOM SOLUTIONS

Every CHP installation undertaken by ESP is carefully designed to optimise efficiency and to improve viability.

Establishing a heating base load is key to increased efficiency and through the integration of thermal stores for hot water storage or for example developing load through the use of absorption



WEB SOLUTIONS

Whilst fully remotely monitored solutions are available for your CHP plant, we can provide a SMS based alert system directly to your mobile and web based interface without any monthly charge.



ENERGY MONITORING

ESP can provide metering solutions that comply with your monitoring and targeting objectives or that simply inform you of energy generated, exported or used on site.



ESP CREDENTIALS

- 15 YEARS DESIGN AND INSTALL
- CARBON TRUST CONSULTANTS
- STANDARD £5M DESIGN PI
- MCS ACCREDITED FOR CHP
- NAPPIT ELECTRICAL APPROVED
- REAL APPROVED
- CHAS APPROVED DESIGNER
- CHAS APPROVED CONTRACTOR

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