

# MicroCHP for the work place.



*Illustration courtesy of EC Power*

Combined Heat & Power (CHP) units burn gas or oil in an engine, which drives a generator that produces electricity. The heat generated provides hot water or in some cases steam, for heating or washing. Power Stations operate in a similar way only on a huge scale, the difference is that the heat generated, typically between 35-60% is normally thrown away either to the atmosphere via cooling towers or to the sea. Transmission losses add to this waste, typically between 3-5%, and by the time it reaches the point of use, 65% of the primary energy that was in the original fuel has been wasted !

CHP machines are designed to recover this wasted heat, from exhaust gases as high as 650°C, and from the engine casing, often over 100°C, significantly improving the efficiency of these machines. They range from large systems serving small communities to small 'microCHP' machines for the workplace.

Whilst the primary purpose of a Power Station is to produce electricity, the prime purpose for installation of a microCHP 'boiler' should be the production of heat as more heat energy is produced than electricity. Recent entrants to the microCHP market offer heat to power ratios as low as 1.5 to 1 but some can be as high as 15:1, hence to be efficient and to maintain a steady electricity generation there must be constant, year round demand for the heat these machines will produce.

With microCHP therefore, heat is the governing factor and the primary purpose for installation, with electricity coming as a bonus. It is important that the machine be sized accordingly.

Until recently these machines burned only fossil fuels but with versions now available that use bio-diesel as a fuel they now offer a carbon neutral form of generating electricity and heat that is ideally suited for small/medium sized commercial operations such as health clubs, schools, care-homes, hotels, food processing and commercial laundry & washing operations.



*Illustration courtesy of Baxi-Dachs*

Grid connection will be required so that during periods when the microCHP is off electricity can be sourced from the grid. However, it is beneficial that they run at maximum output for as much time as possible and hence there may be periods when the unit creates a surplus of electricity. At such times this can be sold to grid hence a suitable contract with a company that rewards generation of 'green energy' should be sought.

Overall annual efficiency of microCHP systems is good, 90% being quoted from some manufacturers with annual fuel bill savings of 25%. Running these machines on bio-diesel will also earn Renewable Obligation Certificates (ROC's) whilst cutting Carbon emissions and other harmful gases, reducing CCL carbon taxes.

## **Planet Energy Solutions**

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