

CHP Overview (UCLH)

CHP: An Overview

Combined heat and power is the simultaneous generation of usable heat and power (usually electricity) in one single process. CHP is a highly efficient way of using both fossil and renewable fuels and can therefore make a contribution to sustainable energy goals, bringing environmental, economic, social and energy security benefits.

CHP in its most simplest form employs a gas turbine, an engine, or a steam turbine to drive an alternator, and the resulting electricity can be used wholly or partially on site. The heat produced from power generation is recovered and can be used for heating, hot water generation or for cooling. Due to this utilisation of excess heat, CHP systems can reach efficiencies in excess of 70%, where coal and gas fired power stations have efficiencies of around 38% to 48%.

CHP can result in cost savings; due to high efficiency there is less requirement for primary energy use, fossil fuels are used much more efficiently, therefore less energy is used resulting in significantly lower energy costs, savings vary but are usually between 15-40%. The application of CHP also contributes to lower emissions; less fuel usage results in reduced emission outputs, and CHP can contribute to a reduction in carbon dioxide emissions. CHP systems offer increased fuel security and power quality; CHP can continue to operate and serve operational loads despite breaks in mains power supply, which increases the security of energy supplies.

For an investment in CHP to be worthwhile there must be the need for both heat and power. Buildings that have a constant requirement for energy or run around the clock benefit the most from CHP, and this is why CHP is an attractive option for a hospital where there is a high demand for heat and hot water as well as electrical power. Additionally CHP can feed power into the grid, although this is unlikely within UCLH.

(source: UCLH Carbon Reduction and Sustainability Management Plan)