

## Case Study: The Crowne Plaza Liverpool – John Lennon Airport



### Art Deco hotel requires specialist skills from ENER-G to save carbon and costs

The Crowne Plaza Liverpool – John Lennon Airport, is a former Art Deco airport terminal building that was renovated and adapted to become a luxury, yet energy efficient hotel in a listed Art Deco building.

The hotel opened as the Crowne Plaza Liverpool in August 2008 and is operated by Kew Green Hotels who operate 22 hotels across the UK under five world class internationally renowned brands; Crowne Plaza, Holiday Inn, Express by Holiday Inn, Days Inn Hotel, Courtyard by Marriott and Richmond Hill Hotel.

The original building, known as the Speke Aerodrome, was constructed as the airport terminal in the 1930s, however this was replaced with a more modern building on a different location in 1986, and the Speke site was left derelict for over a decade. It has since been renovated and adapted to become a hotel, opening for business in 2001.

ENER-G had originally installed a CHP unit on site during the initial renovations in 2000 and Kew Green Hotels contacted us in 2010 to review and replace the existing system.

ENER-G had to ensure that the CHP system specified would be of optimal size to meet the demands of the site. This was critical as the system was also required to provide power for ventilation, lighting and other services.

After carefully assessing the site and carrying out detailed design work, ENER-G provided Kew Green with a proposal that included the supply and commissioning of a 110kWe CHP unit that also considered the requirements of the historic site.

The unit was installed in a roof top plant room, however owing to the site being listed with English Heritage, extra care had to be taken as the original Art Deco building could not be altered.



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In order to gain access to the plant room, the exterior wall had to be taken down brick by brick with photographic evidence documenting the process. A crane was then required to lift the unit carefully into place before painstakingly replacing each brick to its original position.

Now in full operation, ENER-G provides Kew Green with an all-encompassing “Premier Plus” maintenance contract, which provides the site owner with round the clock support for the next 10 years. ENER-G operates the hotel on a discount energy purchase scheme, which provides them with annual financial savings of £10,000 and carbon savings of 175 tonnes each year, which is the equivalent of taking 58 cars off the road.

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, energy is also lost along the electrical distribution cables needed to bring the power to site. By using CHP to generate electricity onsite the heat is used to provide heating and hot water for the hotel in the winter.

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

ENER-G delivers small-scale 4kWe to 10MW CHP solutions to customers around the world and it offers the broadest product range on the market, incorporating more than 1,400



Careful installation at the Crowne Plaza Hotel

installed cogeneration systems across the globe.

Our systems can be powered by a variety of different fuels including; natural gas, biogas, propane, biodiesel or pure plant oil (PPO).

The applied CHP technology enables the organisation to generate its own electricity, radically reducing carbon emissions. This method is highly energy efficient (85 per cent) as it recovers heat created in the electricity generation process and avoids transmission losses because the energy is used locally.

Combined heat and power (CHP) is almost twice as efficient as conventional power generation as the majority of heat is recovered and used on site, rather than wasted into the atmosphere. The typical payback period on CHP technology varies between two to four years.



The benefits of CHP in the education sector:

- Offers financial savings over conventional energy supply:
- Avoids Climate Change Levy
- Primary energy savings deliver lower energy bills
- Higher efficiency offers reduces greenhouse gas emissions offsetting the impact of the proposed Carbon Reduction Commitment.
- Greater security of supply and plentiful hot water
- Flexible procurement options
- Zero CAPEX required
- VAT savings
- Incorporate Enhanced Capital Allowances otherwise denied to the public sector
- Possible grant funding

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