

## Examples of Small scale cogeneration in public buildings

Eur. Ing. Dr. Crispin D. Webber  
Managing Director  
Thames Energy Ltd  
United Kingdom



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## Langdon Hills Housing Estate

- Type of contract - DBFO
  - Addressing inadequate heating provision on estate
  - 12 yr CEM contract with Thames Energy Ltd
  - Co-financed between the LA and the ESCO
  - Contract for energy management and Combined Heat and Power plant (CHP)



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## Langdon Hills Housing Estate

- Work carried out
  - Feasibility study to improve the poor heating system and to identify the most cost effective solution:
  - Recommendations on upgrading the plant in boiler house, distribution pipework and building fabric insulation
  - The scheme includes the use of 2 No. 210 KWe Gas CHP units integrated with 2 x 2MWth boiler systems in the energy centre.



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## Langdon Hills Housing Estate

- Technical Benefits:
  - Installation of new boilers, Blr Hse equipment
  - Installation of 2 x 210KWe CHP Units
  - Roof insulation, D/G Windows, wall insulation
  - Estimated CO<sub>2</sub> savings per year: 11011 tonnes
  - After refurbishment, the Energy Performance rating for the 556 houses improved from **35** to **105 (max 120)**



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## Langdon Hills Housing Estate

- Financial Benefits:

- Cost and benefit analysis showed that of all options, refurbishment with CHP had the lowest whole life cost and the least running costs to both residents and housing authority.
- The CHP project also offered Government grants and fiscal allowance incentives for Third Party Funding through contract energy management.
- Payback period of the scheme: 4.75 years
- Introduction of a prepayment metering system for residents with the benefit of budgeting and of halting the Council's rising debt problem due to a previous credit metering system



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## Woking Borough Council

- Type of contract - EPC

To overcome the private / public partnership issues, Woking Borough Council has set its own joint partnership ESCO to deliver its energy and environmental strategies and targets.

ESCO has thus allowed it achieve much more savings than could have been achieved with the Council on its own.



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## Woking Borough Council

- Work carried out:  
District heating and cogeneration
  - 1.46 MWe of CHP
  - 1,4 MW of heat fired absorption cooling and 160m<sup>3</sup> of thermal storage distributed over 5 buildings in Woking Town Centre
  - 200kw Fuel cell

Buildings are interconnected with heat and chilled mains and high voltage/low voltage private wire networks



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## Woking Borough Council

- Technical Benefits:
  - Savings in energy consumption per year: 118,864,195 kWh
  - CO<sub>2</sub> emissions savings per year: 64,310 tonnes
  - Private Wire for supply of electricity - In the event of a power cut, the system continues to operate in 'island' mode



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## Woking Borough Council

### - Financial Benefits:

- The CHP system achieves a minimum of 130% sustainability in electricity (having satisfied its own demand, the site exports a minimum of 30% surplus power).
- Current annual saving of £700,000 a year



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## Brent Town Hall - EPC Contract

- Work carried out
  - Feasibility study and recommendations
  - Installation of a CHP system to act as the primary heating/ hot water system
  - Replace electric heating system in annex building with an economy 7 heating system and associated metering
  - Install of zone controls and a Building Energy Management System



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## Brent Town Hall

- Develop an energy improvement strategy and action plan
- Install light movement sensors for infrequently used areas
- Improve control of PCs and small electrical equipment
- Install double glazed windows throughout the building



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## Brent Town Hall

- Technical Benefits:
  - Estimated kWh savings per year: 1,713,195
  - Estimated Carbon dioxide savings per year: 633.85 tonnes



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## Brent Town Hall

- Financial Benefits:
- Estimated annual savings: £51,009
- Payback period: 7.8 years
- Contract period – 15 yrs



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## Crystal Palace Leisure Centre

- Type of contract

Crystal Palace currently has a management contract with the London Borough of Greenwich for the purchase and monitoring of its utility services. Electricity and Gas consumption are recorded on a monthly basis. However it seems that feedback from Greenwich Council is irregular and patchy, leading to ineffective site monitoring and targeting



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## Crystal Palace Leisure Centre

- Work carried out:

### Feasibility study and recommendations

- Review of capacity and tariff structures
- Installation of automatic pool covers for both swimming pools
- Replace the 800 KWth boiler with 470 KWe (702 KWth) CHP unit



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## Crystal Palace Leisure Centre

- Install energy controls and a BEM system
- Install solar hot water for use in the lodge building
- Develop a site energy improvement strategy and action plan



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## Crystal Palace Leisure Centre

- Technical Benefits:
- Energy savings per year: 1,640,368 kWh
- Estimated savings of CO<sub>2</sub> per year: 1,516.5 tonnes



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## Crystal Palace Leisure Centre

- Financial Benefits:
- Estimated savings per year: £107,767
- Payback period: 6.5 years
- Contract Period – 15 yrs



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## Other potential ESCO schemes

- Kings Cross area based ESCO-£22M!!!
- Biomass Boilers in Schools
- Biomass Boilers and CHP in Tower blocks
- Vale Farm Leisure Centre
- Sheltered Blocks for Local Authorities



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