Fuel cell Micro CHP

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Case study installation of fuel cell micro-CHP

CIBSE Headquarters

300L hot water tank

FC-micro-CHP
Objectives of project

• To improve awareness of the technology.

• To facilitate the commercialization of fuel cell m-CHP by creating and transferring knowledge to stakeholders.

• To gaining practical experience of installing and operating a fuel cell micro-CHP in an office building.
Key considerations before installation

• Building heat and power demand profile.
• Fuel cell m-CHP heat and electrical efficiencies
• Requirement for supplementary heating
• Maintenance requirements
• Run hours per annum
• Can the fuel cell m-CHP be safely integrated with the building.
• All are interlinked and impact the viability
Fuel cell m-CHP concept
• Seven days cumulative data showing hot water requirement throughout the day
• Average domestic hot water requirement is 260L/day
• Fuel cell m-CHP generates 200L hot water per a day
Cost and estimated payback time

- Fuel cell micro-CHP (BlueGen) price including tax £11,000
- Installation cost £4,500
- Total system cost £15,500
- Feed in tariff income about £2,053/pa
- Maintenance cost about £520/pa
- Payback less than 7 years
Practical operational experience

Start-up
- Commissioning was successfully completed it takes about 24h to heat up the stack to operating temperature.

System control
- System is remotely controlled any issue in relation to the operation of the system is handled remotely by the manufacturer
- In our experience the fuel cell system is running smoothly.

Plumbing
- Minor adjustments to the plumbing, i.e. removing air lock in the heat recovery loop.

System in comparison with domestic boilers
- It is difficult to compare fuel cell m-CHP with conventional systems such as Combi boiler.
Some lessons learnt

• Lack of awareness about the technology by building maintenance engineers.
  o It is important to involve building managers and key maintenance team throughout the process.

• Gas safe operation
  o Gas supply shutdown due to power outage resulting in fuel cell m-CHP forced shutdown.
  o The issue was resolved by installing automatic gas supply restoration device.
Thank you!

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