



CERES POWER

Fuel Cell Development Company

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Chairman

Ceres' History

- 1990's Imperial College materials research.
£4m grants from EPSRC
- 2001 Company spin out £4m V.C equity
- 2002 Crawley facility
- 2003 Second round funding £6m V.C +
Carbon Trust
- 2004 Expansion / pilot production
£16m AIM flotation, blue chip institutions
- 2005 Engineering & commercialisation
Relationships with BOC & Centrica
- 2006 1kW stack Centrica / DTI relationship

Government Support 2003-7

- 2 Carbon Trust grants completed £390k
 - 2 DTI grants completed £370k
 - 1 Carbon Trust grant ongoing £200k
 - 3 DTI grants ongoing £1600k
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- £2.6M
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- Carbon Trust Equity £1M
 - Carbon Trust – Overall Winner 2003
 - “credentializer”
 - Quantum of funding vs. foreign countries

Fuel Cells

- Electrochemical reaction
- No combustion
- Gas (H_2/CH_4) + Air (O_2)
➔ Power + Heat



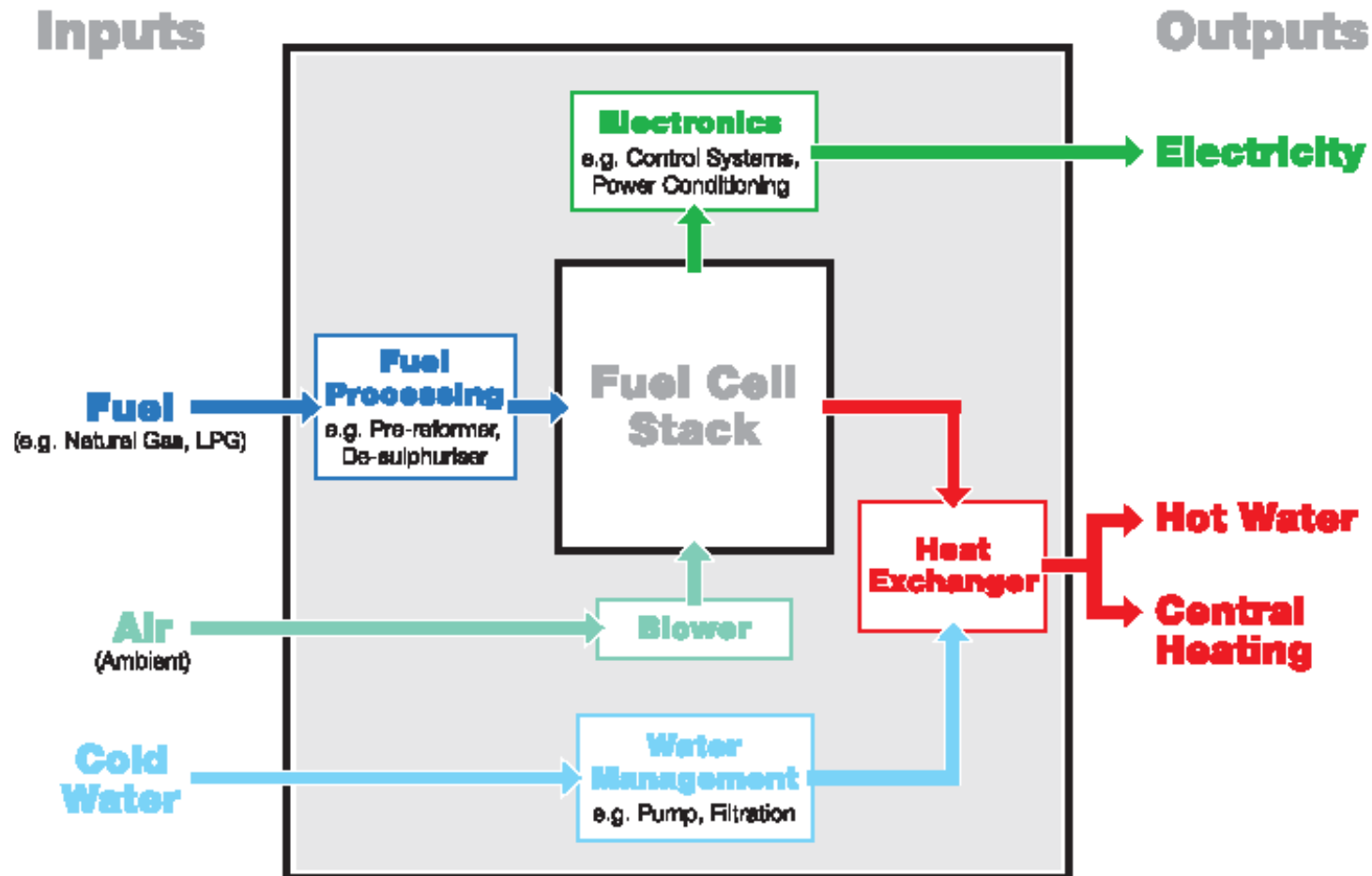
A Fuel Cell Stack



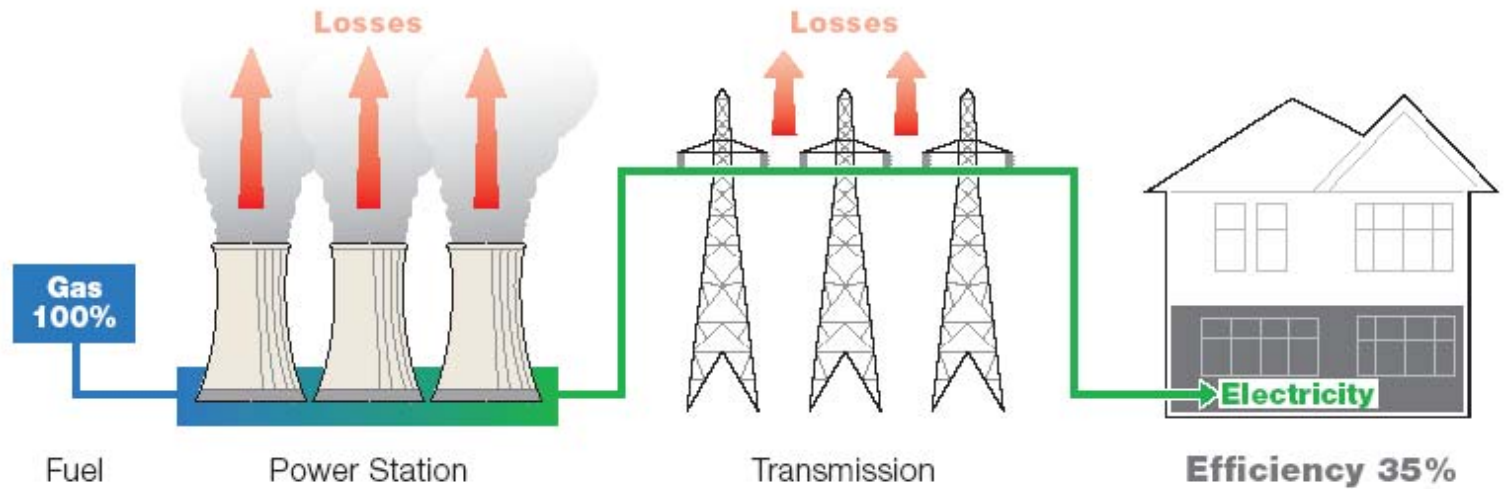
Uses for Ceres' fuel cells

- Combined Heat + Power (CHP)
Distributed Generation (DG) / Micropower
- Off grid generation e.g. construction sites
- Hybrid Vehicles i.e. auxiliary power units (APU)
for trucks and cars

CHP System

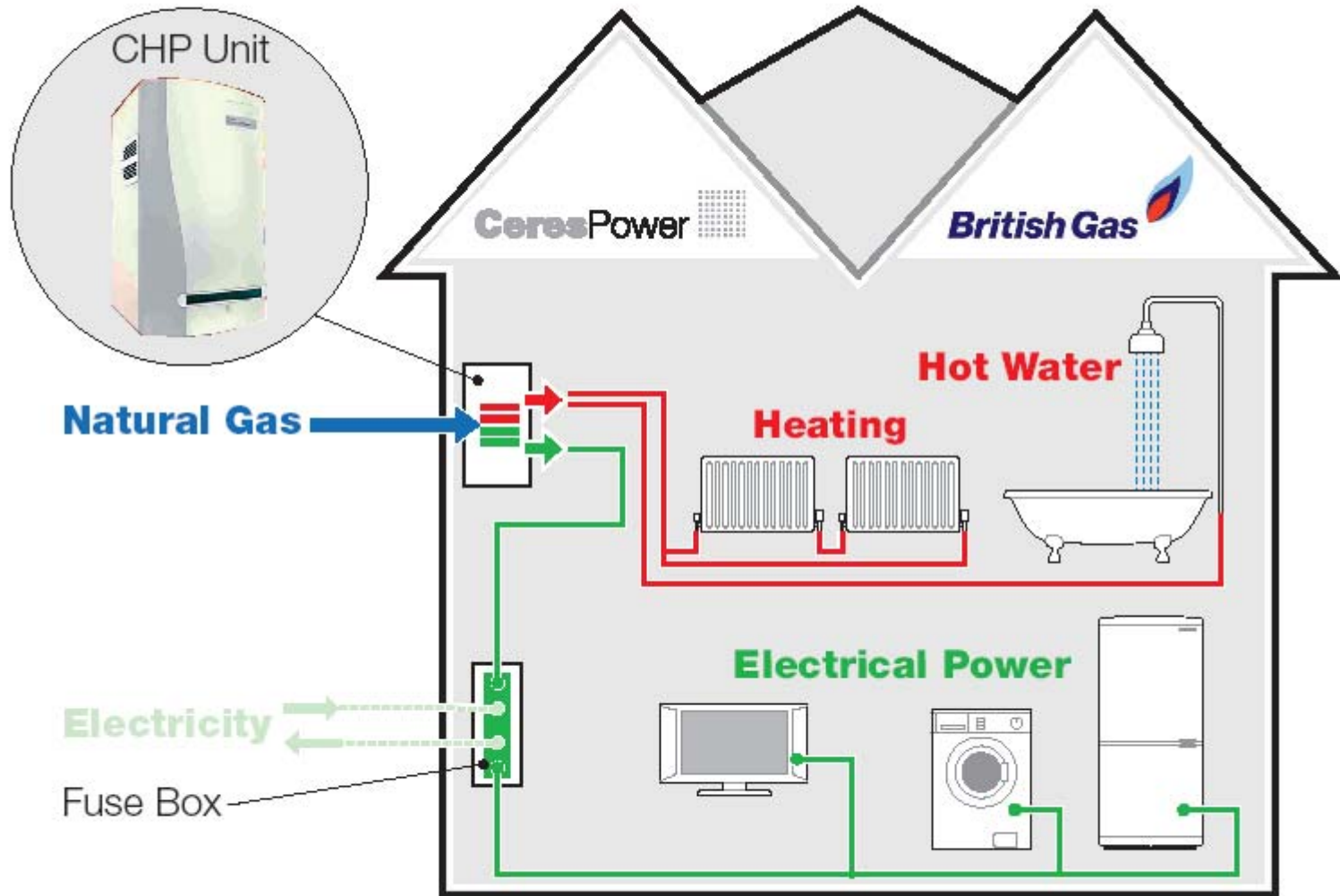


Centralised Generation



Distributed Generation





Advantages of fuel cells / CHP / DG

- Higher energy efficiency
- 1 input, 2 outputs
- Lower household energy bills
- Lower energy imports / greater security
- Much reduced CO₂
- Zero NO_x, SO_x, acid rain
- Reduced need for power stations
- Much reduced demand on grid
- Dependable power
- Near term applicability
- No long term subsidies

Renewables & Low Carbon

- Renewables – great emphasis and support
- Low Carbon
 - Little support
 - Potentially far broader application
- Low Carbon
 - Environmentally friendly
 - Energy security
 - Fuel poverty benefits
- BUT
 - structural problems
 - Low carbon does not fit into renewables 'box'
 - ROCs just renewables – why not wider?

Lack of Department of Energy

- Overarching responsibility for crucial industry
- Cabinet representation needed
- Currently
 - DTI/Defra/ODPM/EST/CT
 - Not always 'joined up'
 - Ramifications for high technology and innovation

Public Sector Buying Power

- Construct and operate extensive property portfolio
- Procurement policy is focused on short term costs and prices
- Biased against
 - Innovation
 - Green
 - Strategic
 - Long term

Innovation Challenges

- Converting technology to commercialisation
- Supporting research base
- Engineering and technology infrastructure
- Ensuring rapid uptake
- Employment of graduates & technicians

Possible Solutions

- Reclassification of low carbon
- Low/nil VAT
- Capital grants
- Guaranteed export pricing / offtake
- Regulatory regime
- Relationships with regulator & utilities

A Choice between Futures

- Low prices in the short term
Modest investment and R&D
Missing environmental targets
Threats to energy security
- Long term integrated energy strategy
Credible, sustainable solutions
Affordable
Greater emphasis on technology, innovation and investment