



London's H2 project programme

CHIC Project Launch, 4th November 2010

Who we are and our experience, past and present

- London Buses is the part of the Transport for London family responsible for over 8000 buses which run every day in the capital.
- We have previously participated in trials of hydrogen buses under the CUTE and HyFLEET CUTE programmes running 3 buses in Central London from 2004-2007.
- We now plan to expand our experience in the CHIC project by demonstrating new hybrid hydrogen buses operating on the same high profile route. This route known as the RV1 runs past many famous sites and key landmarks in London and is operated by First Group.



The CUTE bus



The buses

We have begun by ordering 5 fuel cell hybrid vehicles, with the option to purchase an additional 3 to operate the full route on hydrogen buses.

The vehicles are based on:

- 1) A 12m **Wrightbus** chassis
- 2) With a 75 kW fuel cell from **Ballard**
- 3) This is hybridised with ultracapacitors and integrated by **ISE Corporation**



The buses – initial tests have been carried out with positive results

Over the past 4 months the first vehicle has been tested in the UK and has achieved promising results so far at the test track. These results include:

- 1) Successfully passing the legal requirements for certification in the UK
- 2) Promising early indications of fuel efficiency
- 3) Positive feedback from the drivers trialling the vehicle



A new refuelling compound is near completion, with a second site planned as part of the project



- The first refuelling compound is being built by Air Products and is near completion.
- This facility is based on a delivered hydrogen solution with innovative new technology in the form of a “hydra” trailer capable of delivering liquid or high pressure gaseous hydrogen
- There is cascade storage permanently on site.with capability to refuel buses with 20-30 kg in under 10 minutes
- Two dispensers are available for use



A new maintenance workshop will support the vehicles

- A new maintenance workshop has been constructed to support the buses in service.
- Operations will be run from this facility in the same format (as far as possible) as a conventional diesel busdepot.



Transport for London and the Mayor are committed to the development of a sustainable London

- The Mayor has ambitious strategies for:
- 1) Air Quality
- 2) CO₂ reduction
- 3) and noise reduction.

We here at London Buses recognise the benefits hydrogen technology can offer now in terms of air quality and noise and look to continually improve the CO₂ footprint of our day to day operations.

In the short term we have been carrying out diesel hybrid trials as the first step in this process, however, we recognise the importance of investigating the potential for larger step changes in technology and look towards these options for the future.



Aims of this project from a strategic perspective

- Under the previous trials the vehicles only operated for part of the day – under this new project we plan to see if the vehicles can operate under the conventional duty cycle.
- By proving the technology can be practically used by our operators, the hydrogen buses will take a key step forward towards becoming a commercial proposition
- Only then can we move forward to find a business case for these vehicles in our fleets.

Thank you for your attention

