

Nottingham City Transport

Biogas Double Deck Bus Fleet



Nottingham City Transport

- The major inner city bus operator in Nottingham
- Current fleet 320 buses, 225 double deck and 95 single deck / midi buses, average age 6½ years
- 66% Euro V & VI; 34% Euro III & IV; diesel and gas
- Nottingham is one of the 5 Cities outside London to have a mandatory Clean Air Zone
- UK Bus Operator of the Year 2012, 2014 and 2016



Challenges

- Desire to specify a Euro VI Double Deck bus that is both clean and as close to carbon neutral as possible, on a 'well to wheel' + 'whole life' basis
- Range – needs to be >250 miles
- Must be commercially sustainable
- Needs to have a 'wow' factor – Customer appeal
- The bus we wanted didn't exist!



Alternatives Investigated

- Diesel – complicated exhaust treatment for Euro 6 and limited impact on carbon footprint
- Electric – insufficient range, concerns regarding battery life / costs and depot impact:
- <https://youtu.be/A6DD2qK1sAs>
- Hybrid – a ‘jack of all trades’ or a master of none?
- Biomethane gas bus achieves our objectives



Timing

- Planning and engineering phase throughout 2016
- OLEV project approved July 2016
- Infrastructure installation start Dec 2016
- Phase 1 buses (30-off) into build Jan 2017 – launch May
- Infrastructure commissioned June 2017
- Buses in service 4th July 2017 – 30 buses now in service
- Phase 2 buses (23-off) due March/April 2018



Results

- Buses cleaner, quieter, smoother running
- Customer and driver acceptance very good
- No technical problems on introduction – conventional driveline, minimal engineering training necessary
- Fuel consumption meets expectations
- Infrastructure operating trouble free
- Requirement to purchase at least 67 further buses



Challenges

- Funding support is still required whilst infrastructure investment is needed and buses are more expensive
- Biogas buses can make a huge contribution towards providing clean, de-carbonised public transport. Electric is not the 'silver bullet', even if it is London's preference.
- CO₂ reduction is a global issue and buses are part of the solution, but the cost cannot be borne by the operator alone – it needs Government support.



Other Air Quality Improvements

- Clean Air Zone due in 2020 – very little time!
- All Euro III / IV ‘big’ buses to be replaced with new Euro VI biogas double decks
- 180 Euro V diesel buses will require exhaust retrofit systems to achieve Euro VI equivalent NOx
- By 2020 the operational fleet will then be Euro VI biogas or Euro V + retrofit



Buses



Buses



Infrastructure



Thank You

