

A Fleet of Biomethane Buses in Reading, UK

Clean Fleets case study

- 34 certified biomethane EEV buses
- Lower life cycle costs
- 30-50% less NOx emissions than comparable Euro V diesel buses



Contract tendered

- Purchase of CNG buses by Reading Transport (public transport operator)
- Initial supply of 14 buses, with 20 further buses purchased following successful introduction. 34 CNG buses now in operation, biggest fleet in the UK

Targets and planning considerations

Reading Borough Council's local transportation plan includes the goal of addressing air quality issues. A tender was announced for a 10 bus service contract, with a minimum requirement to meet the Euro IV emission standard, but additional points awarded for even better performance. In future, environmental requirements are also likely to become stricter.

In consideration of longer term sustainability requirements, Reading Transport was already considering the use of alternative fuelled vehicles. They had previously had the opportunity to trial a new MAN CNG bus for 8 weeks. Despite reservations based on earlier poor performance of CNG buses from 20 years previously, the MAN bus trial proved a very positive experience – with high reliability and low fuel costs. It was decided to bid for the service contract based on the use of CNG buses.

Procurement approach

A tender was published for CNG buses, specifying minimum Euro V, together with standard technical elements, which apply to all new buses.

Award was based on both life cycle cost and quality, including technical compatibility with a diesel fleet.

In addition to the buses, it was necessary to convert the vehicle depot to cater for CNG buses, and the refuelling infrastructure. A considerable amount of work was done on health and safety, which required some rebuilding work (a new extraction canopy, together with ventilation system, and an alarm system).



Results

- There were two bids received: from MAN and Scania. The Scania bid was accepted, in part due to the technical similarity with the existing diesel fleet
- Both bids offered EEV standard – better than required
- 34 CNG buses now in operation (since May 2013), biggest fleet in the UK
- The buses run on biogas (biomethane), which was brought in by tanker daily until the refuelling infrastructure was up and running. Now they use gas from the national grid and pay for the amount of biomethane they use to be injected into the national grid.
- Reading Transport decided to brand the new bus service with the name ‘greenwave’ to highlight their environmental credentials to passengers. The buses carry the message: ‘gas power... quieter, cleaner, greener’.
- Passenger numbers have increased by 20% per year so an additional 2 CNG buses have been added to the greenwave contract, other routes converted to gas operation and frequencies further improved.

Costs

The CNG buses cost just under 20% more than a conventional diesel bus, but over a 10 year lifetime, this is more than compensated by lower fuel costs, even with the new infrastructure investments required.

The company already had 31 diesel-electric hybrid buses on the road when the gas buses were tendered for but it was calculated that, without the previous government subsidy, the reduced fuel costs did not make up for a 50% higher purchase price.

Environmental impacts

NO_x had been identified by the Borough Council as a local pollution problem. The CNG buses have a 30% to 50% reduction in NO_x emissions. Particulate emissions are negligible.

Natural gas-driven CNG buses do not give a significant benefit in terms of CO₂ reductions (can even lead to a small increase). Therefore, Reading Transport decided to run the buses on certified bio-methane from agricultural products, under the Green Gas certification scheme. This allows biogas producers to feed the gas directly into the gas mains, for which it receives a certain number of certificates which can then in turn be sold to customers such as Reading Transport.

CNG buses are also smoother and quieter than their diesel counterparts – particularly important for early morning routes.

Lessons learned

- CNG has proven to be the commercially best solution, aside from any of the environmental benefits achieved, and can be considered a win-win for the operator, the council and the local population

Contact information

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More information on this case study from the perspective of Reading Borough Council can be found here :



http://ec.europa.eu/environment/gpp/pdf/news_alert/Issue40_Case_Study85_Reading_biomethane_buses.pdf



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