

TRIAL OPERATION OF VOLVO B5RH HYBRID BUS ON NEWLANDS COACH SERVICES ROUTES JANUARY – FEBRUARY 2016

OUTLINE OF THE TRIAL

A Volvo B5RH hybrid bus provided by Motor Truck Distributors (NZ) Ltd was operated by Newlands Coach Services on normal route services on the Newlands and Churton Park routes, between 13 January and 12 February 2016. The bus ran 5,432 kilometres during the trial.

Volvo monitored an extensive range of performance parameters for the hybrid bus by telemetry, including fuel consumption and the extent to which the bus operated with the diesel engine switched off.

Newlands Coach Services monitored the amount of fuel issued to the hybrid bus and, as a comparison, fuel issued to the fleet of buses which operated the remainder of the Newlands and Churton Park services during the trial period.

The Newlands and Churton Park routes are particularly hilly. Both include the long steep Ngauranga Gorge section of State Highway 1, which is where the maximum passenger loadings occur. Both routes also traverse the 'Golden Mile' through Wellington's CBD, which involves slow speed running with frequent stopping and starting for bus stops and traffic signals. The weather during the trial period was unusually warm for Wellington, with ambient temperatures in the mid-twenties on most days.

Taking terrain, ambient temperature and loading profile together, the trial operation was considerably more demanding than is typical of urban bus operations in New Zealand.

FUEL CONSUMPTION

Newland's fuel issues data showed that the hybrid bus's fuel consumption was 40.8% less per kilometre run than the consumption of the comparison fleet which operated the same routes during the trial period¹.

OPERATION IN ELECTRIC MODE

The hybrid bus was configured to operate in electric only mode (ie with the diesel engine automatically switched off) when it was stationary and when it was running at less than 20 km/h, subject to sufficient battery charge.

Volvo's telemetry data showed that the hybrid bus operated 23% of the time in electric mode and 3% of the distance run was in electric mode. Given the stop-start nature of running though the

¹ Newlands, Volvo and MTD have shared absolute fuel consumption data on a confidential basis, but Newlands will not agree to the public release of this data, to ensure that fuel consumption data for its own fleet is not made available, either directly or indirectly, to potential competitors for bus operating contracts in Wellington.

Wellington CBD and the high pedestrian traffic in this area, this will have generated a significant reduction in public exposure to exhaust emissions near to bus stops and intersections, relative to emissions from standard diesel buses.

BUS PERFORMANCE

The hybrid bus coped with the demanding inclines on the Newlands and Churton Park routes with full loads without any difficulty.

BUS RELIABILITY

There were no problems with the hybrid bus drive train, or any other mechanical problems, during the trial.

The fire warning and suppression system fitted to the engine bay gave false fire warnings on two occasions, which resulted in the bus being taken out of service each time. The cause of these false warnings was eventually found to be a faulty electrical relay. This problem was not connected in any way to the hybrid drive system, the fire warning system having been fitted to the bus by its Australian body builder to meet Australian requirements.

PUBLIC RESPONSE

The drivers of the hybrid bus reported that customer reaction was very positive and that public interest remained high throughout the trial. Their perception was that passengers saw the hybrid bus trial as something special that they were pleased to be part of - even to the extent of not littering the bus as much as usual!

The trial received ongoing positive coverage in the local community press, subsequent to the extensive coverage that the launch of the trial received in the daily press and on national television.

DRIVER RESPONSE

MTD gave training to a small group of drivers in the optimum style of driving the hybrid bus in order to maximise fuel savings and electric mode running. The drivers reported that it was necessary to remain conscious of the required driving style, but that the bus was as easy to drive as a standard modern diesel bus. They commented favourably on the quietness of the hybrid bus relative to standard diesels.

CONCLUSION

The trial was a resounding success in terms of demonstrating that the hybrid bus could operate satisfactorily in normal service on a demanding hilly route, demonstrating excellent fuel savings, giving Newlands staff experience in operating a hybrid bus and raising public interest in hybrid technology.

This success was supported by the enthusiastic efforts of a number of organisations and people. Special thanks are due to

- MTD and Volvo for providing the bus,

- Greater Wellington Regional Council councillors and staff for hosting the launch function for the trial and arranging publicity,
- Clive Jones of MTD for facilitating and supporting the trial,
- Newlands drivers Paul Fairs and Glen Johns for driving the bus with aplomb and great skill,
- Ray Good and the team at Newlands depot for managing the day to day operation of the trial.



Ian Turner
Acting Chief Executive