Case Studies:

Electric and Hybrid Vehicles

Overview

Electric and hybrid vehicles that utilise energy stored in batteries to either completely or partially propel the vehicle, are now a well established, well accepted vehicle technology internationally.

In Australia, these vehicles still have significant market growth opportunities. Below are some examples of how electric and hybrid technologies have been successfully and cost effectively applied within a variety of organisations.

Plug-in Electric Vehicles

The Adelaide City Council currently operates the pure electric bus, Tindo, which uses batteries recharged by solar photovoltaics. Fuel costs are 50% of diesel buses (per kilometre), maintenance is cheaper, and approximately 70 tons of CO^2-e is being saved each year.

The global freight company, TNT, replaced part of its diesel fleet with 7.5 ton electric trucks through the UK Freight Best Practice program. Fuel cost savings were around 80% per electric vehicle by replacing diesel with off-peak electricity.

The ELTIS Urban Mobility Portal illustrates an example of Estonian Local governments using 500 electric light vehicles for use by social workers. Positive driver feedback and cheaper operating costs were reported.

New Zealand's Wellington City Council conducted a 2 year trial of electric vehicles, and found they were ideal for most urban transport needs and fuel costs were dramatically reduced.

A Transport Canada evaluation of replacing petrol delivery trucks with electric vehicles has projected annual savings of C$600-700 per vehicle, based on fuel and maintenance costs.

One of the most significant studies of electric vehicle opportunities currently taking place is the Victorian Electric Vehicle Trial. The Mid Term Report summaries the experiences, utility and future of electric vehicles to date.

Hybrid Electric Vehicles

In Sydney, the Green Truck Partnership program compared hybrid-electric and conventional diesel vehicles performing local pick-up and delivery services. The hybrids achieved a 21% fuel benefit, saving 6.6 litres per 100 kilometres.

The NSW State Government trialled hybrid bus technologies for urban applications and found that high performance diesel technologies may have a better emissions performance than the hybrid systems, and that capital costs may be prohibitive at the current time.

Barnett Couriers in Australia realised a 32 per cent fuel saving in its initial three months of operation. The hybrid was compared with a similar-sized conventional diesel truck on the same route and reduced fuel use by around 9 litres per 100 kilometres.

The Alternative Fuels Data Centre within the US Department of Energy evaluated hybrid buses against conventional diesel and compressed natural gas (CNG) buses.

Further information:
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As a 12-month average the hybrids were 34-40 per cent more efficient than conventional diesel and 60-120 per cent more efficient than the CNG buses.

Hybrid Hydraulic Vehicles

Whilst gaining less attention to date, hybrid hydraulics can play a role in increasing vehicle efficiencies. The US EPA has demonstrated how a courier company developed a hydraulic hybrid delivery vehicle to ascertain its ability to reduce emissions.

Laboratory tests showed that the hydraulic hybrid could achieve 60 to 70 per cent more kilometres per litre than a conventional truck operated by the courier.

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See Also:

- *Plug-In Electric Vehicle Technology Fact Sheet*
- *Hybrid Electric Vehicle Technology Fact Sheet*
- *Case Study: Ecodriving*
- *Case Study: Alternative Fuels*
- *Case Study: Fleet Efficiency*
- *Case Study: Biodiesel – Adelaide Metro bus fleet*

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