# EXPANSION

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News and innovation from LPG Australia

LPG autogas

Fuel of the Future



LPG Australia's technical manager Peter Linahan shows an engine manifold fitted with the latest LPG Autogas injection technology.

# NEW MODELS ARE A GAS

**The LPG Autogas scene is** about to receive a big boost thanks to a flood of new models available with factory-fitted and warranted LPG conversions – all of them featuring cutting-edge fourth-generation injection technology.

Toyota Australia has launched its first all-new HiAce in 15 years, including a factory-developed and warranted LPG option. The sequential multi-port gaseous electronic injection system has been developed in Australia to suit HiAce's all-new variable valve timing 2.7-litre engine with an eye to the future (Euro IV) emission requirements.

Toyota's manager, new business development, product development division, Robert Allen said, "The sequential multi-port gaseous injection system has significant advantages over fumigation-type LPG systems – including no backfire."

"The results from over 150,000 kilometres of local testing suggest there is no noticeable difference in on-road performance between petrol and LPG operation using this system."

Mitsubishi meanwhile has co-operated with Impco Technologies to develop the BRC Sequent injection system for fitment to its Challenger, Pajero, Triton ute, Express van and Magna models.

"All our engineering work on these models has been inspected and satisfies Mitsubishi Australia's engineering targets," said Impco Technologies' business manager, Rob Mercer.

Mitsubishi Australia's Rob Chadwick says fourth-generation LPG engine technology such as the Impco BRC Sequent system overcomes the traditional limitations of running a car on Autogas.

"The performance and fuel economy gains we've seen on our cars fitted with the system make a compelling case for LPG," he said.

Holden meanwhile is about to make the BRC Sequent system available on Rodeo and, significantly, on Commodore.

"The news that Australia's best-selling car will soon be available with the advantages of fourth-generation LPG engine technology is likely to have a considerable positive impact on the public's perception of LPG motor vehicles," said LPG Australia's Marketing Manager, Phil Westlake.

## THE G4 REVOLUTION

Toyota is offering a state-of-the-art fourth-generation LPG conversion on it's all-new HiAce.

**Rapid technological** developments promise to transform the LPG Autogas scene in Australia over the next few years, allowing new LPG-powered models to challenge their petrol-powered equivalents for performance and fuel economy.

Over recent years several new LPG systems have been developed which combine advanced electronic management with various fuel injection technologies. The developments have progressed quickly from single-point throttle body injection through to multipoint port injection – both in timed simultaneous injection and timed sequential injection forms. These systems are generally referred to as third and fourth generation.

The most advanced of these – the multipoint timed sequential systems or fourth generation – are functionally very similar to commonly used petrol injection systems. Advantages include quicker engine response, improved fuel efficiency, lower emissions and the elimination of damaging backfire.

Importantly for manufacturers seeking to offer such systems as original equipment, the new technology allows compatibility with the electronic control unit (ECU) of the base petrol model, meaning no interference with diagnostic or other functions.

# CLEARING THE AIR

**Australian regulators have** traditionally focused on measures to reduce the incidence of photochemical smog. Over recent years, however, two other issues affecting regional air quality have assumed greater importance: the build-up of greenhouse gases in the atmosphere and the health effects of various air toxic substances in vehicle emissions.

LPG Autogas-powered vehicles emit significantly fewer greenhouse gases and other pollutants than petrol-powered equivalents. LPG typically has around 20 per cent less ozone-forming potential (a measure of the tendency to generate photochemical smog), between 10 and 15 per cent lower greenhouse gas emissions and only one fifth of air toxics emissions.

LPG Autogas vehicles operate even more relatively cleanly when the engine is cold. Given that most urban-use vehicles are often used for very short journeys this means a significant reduction in "real world" emissions.

Western Power's Keith Lovatt (left) and Western Australian Energy Minister Eric Ripper with one of the company's new LPG Autogas-powered Rodeos.

# FLEETS GOING GREEN WITH LPG AUTOGAS

Country Energy Fleet manager Martyn Webb with one of the company's LPG Falcons.

**The introduction of fourth-generation LPG Autogas technology to** Australia has been given a major boost with the announcement that Western Australia's government-owned energy utility Western Power is likely to add up to 200 LPG-powered vehicles to its fleet. The company says it will replace its diesel-engined light commercial vehicles with LPG Autogas-powered equivalents using electronic fuel injection (EFI) if a pilot program confirms the success of earlier trials.

Six EFI LPG-equipped Holden Rodeos and one Mitsubishi Magna are being tested in the six-month-long pilot program. The gas injection technology improves fuel consumption and performance and lowers the emissions of the LPG Autogas-powered vehicles.

Announcing the pilot program, Western Australia's Energy Minister Eric Ripper said soaring petrol and diesel prices meant the new technology made financial as well as environment sense. Initial tests showed fuel bills could be halved.

"The on-road and fuel consumption performance of the pilot vehicles is similar to a vehicle using unleaded petrol and without the smog-related problems associated with diesel," said Mr Ripper.

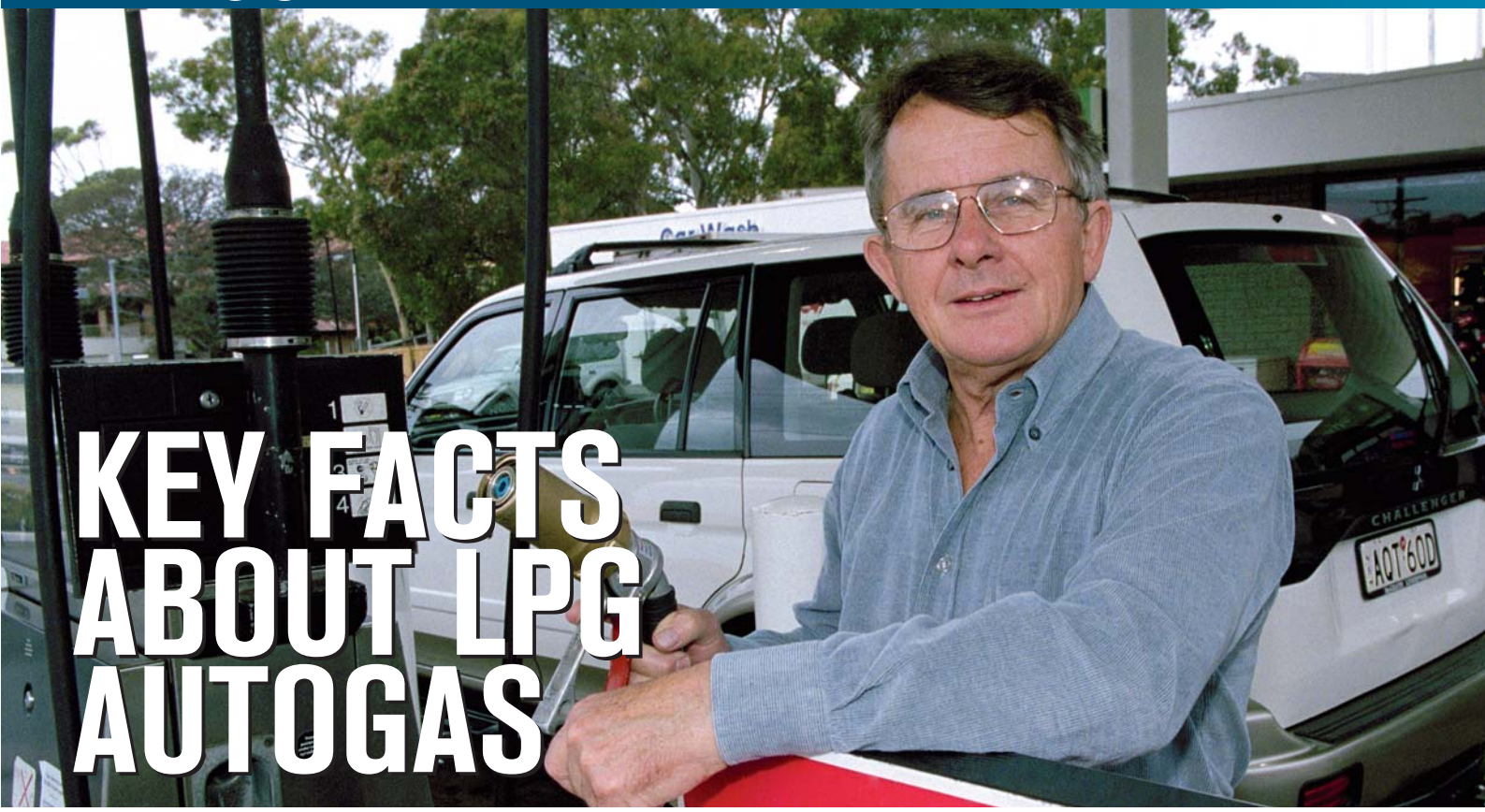
"We're well placed to have the cleanest and greenest motoring fleet in Australia."

Meanwhile, New South Wales energy supplier Country Energy says a decision to switch to LPG Autogas-powered fleet vehicles is saving the company substantial amounts of money and helping to protect the environment.

Fleet manager Martyn Webb says the much lower cost of LPG Autogas compared to petrol or diesel has reduced Country Energy's total fuel bill by at least $15,000 per month.

The company decided four years ago to convert as much of its vehicle fleet as possible to run on LPG Autogas, in line with its suite of environmental policies and initiatives.

"We were attracted to LPG Autogas because it substantially reduces a vehicle's greenhouse gas emissions – and the purchase of LPG vehicles is an integral part of our corporate commitment to environmental sustainability," Mr Webb said.



# KEY FACTS ABOUT LPG AUTOGAS

- **Over 10 million vehicles worldwide use LPG Autogas.**
- More than 500,000 LPG Autogas vehicles are on our roads – the largest "green" automotive fleet in Australia.
- 16,000 taxis in Australia enjoy the cost savings associated with LPG Autogas.
- Last year, the Federal Government announced LPG Autogas would remain excise-free until 2011. Even after that date, excise will be gradually applied in annual increments of 2.5 cents-per-litre until it reaches a ceiling of 12.5 cents. In comparison the excise on petrol is currently 38.1 cents-per-litre.
- Running costs for LPG Autogas vehicles are substantially lower than petrol-powered equivalents:

| Annual Vehicle Mileage | Potential Annual Fuel Savings* |
|---|---|
| 30,000 | $1520 per annum |
| 40,000 | $1956 per annum |
| 50,000 | $2400 per annum |

- LPG Autogas is readily available throughout Australia thanks to a network of more than 3200 service stations. A motorist driving the Pacific Highway from Sydney to Brisbane for example would come across an LPG Autogas outlet an average of every nine kilometres.
- LPG Autogas reduces overall engine wear. This is particularly the case when cold starting, as the vehicle does not require a choke cycle to warm up. In addition LPG Autogas does not wash the protective lubricant from cylinder walls and also significantly reduces carbon build-up on internal engine components.
- LPG Autogas is as safe as any other form of fuel used to power motor vehicles. Insurance companies do not charge a higher premium for a vehicle powered by LPG Autogas. The installation and use of LPG Autogas is strictly controlled by national codes and State government regulations.

** Based on 11L/100km ULP fuel consumption at $0.99 and 14L/100km LPG consumption at $0.40*

# ABOUT US

**Since 1958 the Australian Liquefied Petroleum Gas Association has** been committed to representing and promoting the interests of all sectors of the LPG industry in Australia.

The association now uses the LPG Australia moniker and its members include merchants and producers of liquefied petroleum gas, companies engaged in its transportation and/or the manufacture, assembly, installation, marketing or distribution of LPG utilisation systems, LPG Autogas equipment, or services to the LPG industry.

The association is committed to promoting LPG Autogas and the benefits it can provide for the environment and the economy.

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