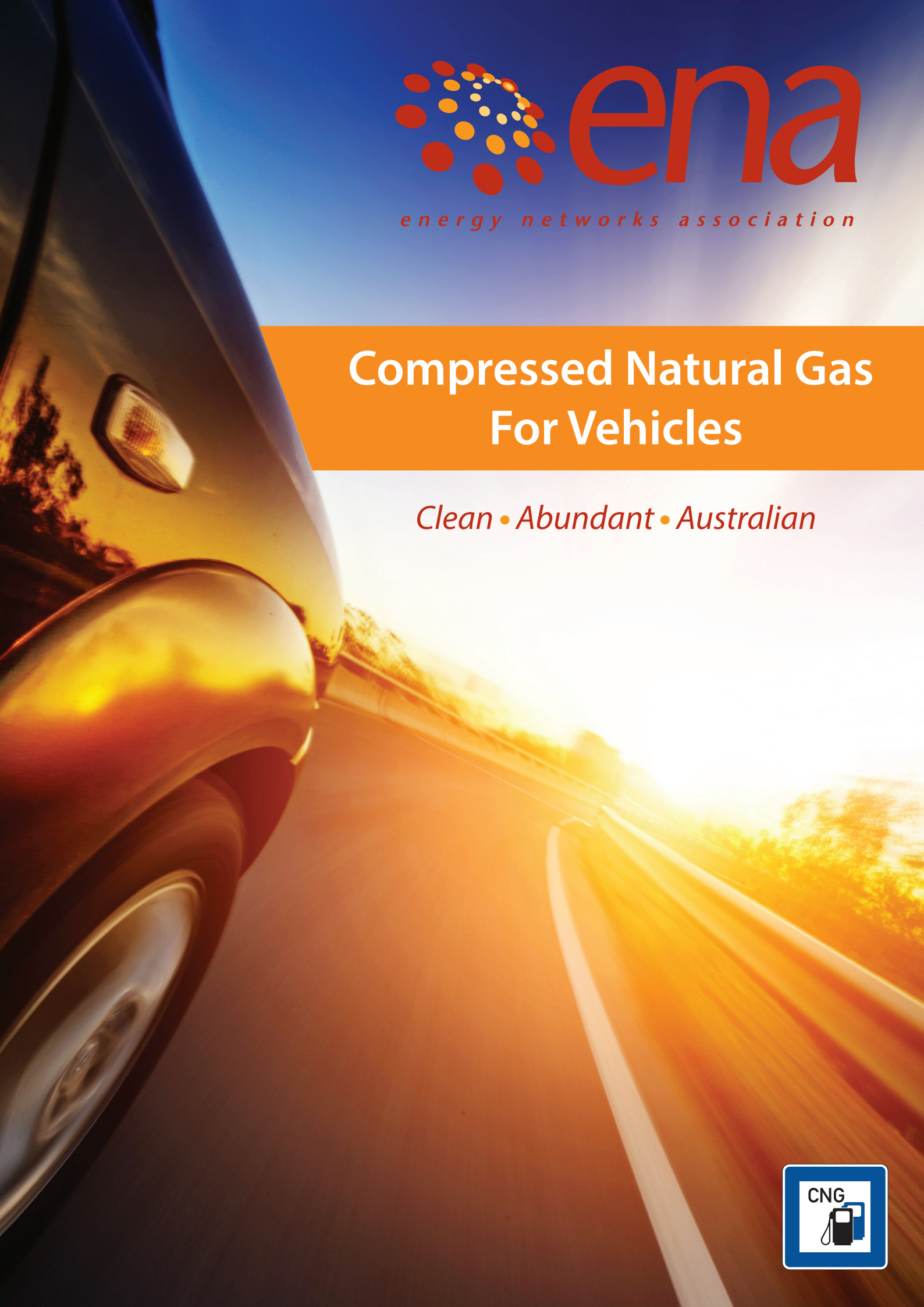
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Compressed Natural Gas
For Vehicles
Clean • Abundant • Australian
CNG

COMPRESSED NATURAL GAS IN AUSTRALIA

Worldwide there are 16.7 million natural gas vehicles (NGV's), most of which operate on compressed natural gas (CNG). The global NGV population has increased more than ten-fold since 2000.

Almost 3,000 of these natural gas vehicles are in Australia and indicators suggest that Australia will match these levels of growth in the coming years.

Our abundance of natural gas (Australia will soon be the largest global supplier of liquefied natural gas, LNG) and our increasing dependence on imported crude oil make natural gas an important option for fleet operators concerned about cost, the environment and security of fuel supply.

Leading manufacturers have been supplying CNG vehicles to Australian fleet operators for more than 10 years.

HOW DOES CNG COMPARE AGAINST OTHER ALTERNATIVE FUEL OPTIONS?

While there are other alternative fuel sources and technologies for transport, these usually have limitations that restrict either the application or the scope of the fuel, or have disadvantages that in some cases outweigh the benefits.

Battery-electric vehicles

While technology is improving all the time, electric vehicles in general have limited driving range and long charging cycles (although rapid charge stations are becoming available) and high up-front costs. While some charging stations are being built, these are still very limited (although there is an opportunity to charge these vehicles at home). The electricity used in these vehicles is generally supplied by the grid which is predominantly coal-fired, so the overall emissions from these vehicles are linked back to coal-fired power generation. The vehicles are generally limited to passenger vehicles.

Hybrid vehicles

There are a number of hybrid vehicles on the market and these are also generally limited to passenger vehicles. These can reduce local pollution problems through the use of the electric motors. The hybrid system does limit the performance of vehicles and they are generally not suitable for heavy duty operations.

Hydrogen vehicles

Hydrogen vehicles have moved into limited production in Japan, Europe and the US. Within Australia, hydrogen cars have been used for trial purposes only. While hydrogen vehicles have no point source emissions, they do have high emissions from the production of hydrogen, especially if that is linked back to the power grid that is mainly supplied by coal. It is unlikely that hydrogen vehicles will be able to be recharged at home so it will require a large roll out of infrastructure for it to become a practical transport solution.

Biofuels

Biofuels are already in wide use in most Australian transport fuels, usually as ethanol or biodiesel blends. The overall environmental benefit and the actual net greenhouse gas reduction is highly dependent on the type of biofuel and its production process.

NATURAL GAS VEHICLES IN AUSTRALIA

Almost all of the vehicle manufacturers operating in Australia produce natural gas vehicles internationally. Those with CNG products currently available in Australia include **Isuzu, Iveco, Mercedes-Benz, Dennis Eagle,** and **Scania.** Other suppliers have indicated that they will make CNG product available in Australia subject to demand.

Natural gas vehicles offer a number of benefits:

- Reduced CO_2 emissions
- Reduced air pollution
- Increased safety
- Increase in domestic energy security
- Lower cost fuel.

CNG Mercedes Econic supplied for the Toll Ipec fleet

CNG VEHICLES IN AUSTRALIA

Many global major car manufacturers produce CNG vehicles ranging from passenger vehicles to vans to buses to heavy duty trucks. The availability of CNG vehicles in Australia is currently limited to light duty and heavy duty vehicles, including buses. Most CNG vehicles in Australia belong to fleets that have their own private refuelling stations. There are a small number of publically accessible CNG refuelling stations across the country.

Though Australia does not have a broad public CNG refuelling network at the moment, this does not exclude fleet operators from using CNG in their fleets.

The most viable operations for CNG in Australia are currently either back-to-base arrangements, where vehicles return to the same depot each day, such as bus fleets, or point-to-point operations between bases. In these situations, the fleet operator may own or lease CNG refuelling equipment or contract a specialist fuel supplier to supply fuel to the vehicles. Your local gas network operator can help identify how the gas network can be utilised for fleet operators.

A small but growing network of private and public CNG refuelling stations is supporting growth of CNG vehicles in Australia.

USEFUL LINKS

Vehicle Manufacturers

Dennis Eagle	www.dennis-eagle.com.au
Isuzu	www.isuzu.com.au
Iveco	www.iveco.com.au
Mercedes-Benz	www.mercedes-benz.com.au
Scania	www.scania.com.au

Other Resources

Envirotrans	www.envirotrans.com.au
Energy Networks Association	www.ena.asn.au

CLEAN VEHICLES FOR CLEAN LINEN

Shepparton based linen provider, Gouge Linen, operates a fleet of 19 trucks, servicing the hospitality and health care industry in regional Victoria. Of the fleet, four of the trucks, Isuzu FSR's and one Hiace van operate on CNG. Company Director, Phil Priestly, says the CNG vehicles were first introduced to the fleet in 2009 and have proved reliable performers since. The trucks currently cover a total of 300,000 kms a year on CNG, while the van is just used for local errands.

The vehicles are refuelled on-site, using fast-fill equipment that can refuel all five vehicles simultaneously.

Priestly says that the company is pleased with the performance of the CNG fleet. The business is already a high user of natural gas so has access to favourable natural gas tariffs. Even with compression costs taken into account, and even with the current low price of diesel (as at February 2016), Gouge is still able to supply its own CNG fuel at a lower price than diesel. As well as the financial savings, the company also enjoys the benefits of reduced CO_2 and air pollutant emissions.

A Gouge Linen CNG Isuzu with their on-site CNG refuelling compressor.

FREQUENTLY ASKED QUESTIONS

What is the payback period for CNG vehicles?

The lower fuel price of CNG relative to diesel or petrol can result in overall savings to fleet operators. This depends on the distance travelled by the vehicles each year and the price differential between CNG and diesel or petrol. Taxis for example can have payback periods of just over 6 months, medium duty trucks of 2 years and passenger vehicles between 2 and 4 years.

How does CNG differ from LPG?

LPG is both a by-product of oil and gas refining processes and is sometimes sourced from natural gas fields whereas natural gas occurs naturally and requires little processing before use. CNG produces fewer emissions and harmful pollutants than LPG. CNG is considered safer than LPG, diesel or petrol as it has narrower flammability ranges and is lighter than air, allowing it to disperse in the case of an accidental leakage.

Is it true that you can't drive as far as a diesel or petrol vehicle on CNG?

No. CNG is a gaseous fuel it has a lower fuel density compared to conventional liquid fuels so it merely means you *may* need to refuel more often. High density CNG and liquefying the gas provides a greater fuel density allowing longer distances to be travelled using gas.

How do I get a gas supply for our fleet operation?

Depending on your location, members of ENA can help you decide the best gas option for your business.

Where else can gas be used in transport?

Gas as a transport fuel has already been demonstrated for road transport. Liquefied Natural Gas (LNG) can also be used for trains and shipping.

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