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LP Gas Conversion – benefits & cautions

For an existing petrol engine vehicle, a far better and cheaper alternative than changing over to a Diesel engine is conversion of the existing engine to LP gas. The technology has been well proven and the fuel is available virtually everywhere.

Liquefied Petroleum Gas (LPG) is a hydrocarbon fuel comprising propane and butane. Because Propane liquefies easily at low pressure it can be stored in a relatively small space. When allowed to revert to vapour it expands 270 times its liquid volume. LPG engines work in a similar manner to petrol combustion engines and conversion is therefore a simple process. In Australia over 490,000 vehicles already run on LP gas and this number is increasing all the time. Cars, buses, light and heavy-duty trucks, boats, forklift trucks and generators can be converted to run on the fuel. Virtually all LPG used in Australia is produced here. Substantial quantities of LPG are exported as surplus to our requirements. Known reserves of gas are far greater than those of crude oil from which petrol is derived, therefore LPG should remain readily available indefinitely.

Even before we consider the cost advantages, there are significant environmental benefits too. LPG has a lower level of noxious Oxides of Nitrogen emissions are lower than petrol or diesel. LP gas engines are up to 50% quieter than diesel and can be as much as 70% cleaner and 30% less noisy than a conventional diesel engine. LPG also provides the benefit of much-reduced engine wear.

In terms of safety, although all fuels are volatile, LP gas has an excellent safety record. The fuel tank is much stronger than conventional fuel tanks as proved in crash and fire tests. When the engine is switched off or if the fuel pipe is damaged, an electronic shut-off valve operated and such systems are constantly being improved. Perhaps the greatest improvement has been in the regulation of authorised converters and equipment, removing the “cowboys” from the industry.

Because LPG does not contain the same amount of energy as petrol, both fuel consumption and power will suffer. This is not as prevalent in late model vehicles as older ones, though as a guide, an increase in fuel consumption from 10% with injection systems up to around 30% to 40% otherwise when operating on LPG. However, this is offset by the lower cost per litre of gas so overall, running costs can be reduced by as much as 50% over petrol. It is no wonder the taxi industry has embraced the technology.

The most significant cost is the conversion itself. LPG conversions typically have starting cost from around \$5,500 for a vapour injection system – the type that controls gas flow precisely. Also, there may be government subsidies available to private vehicle owners.

There are many technical factors that will influence the vehicle's suitability. Graeme Cooper Automotive will only install a system they have tested on one of their own vehicles and can therefore advise with confidence the best solution for each situation. In practice, most, but not all, petrol-powered vehicles can be converted effectively to either dual-fuel or dedicated gas operation. A dual-fuel arrangement will be more costly because it requires fitting a replacement petrol tank. However, it is a highly convenient option because it is only necessary to move a switch to change from one fuel to another. Dual fuel overcomes any difficulties of obtaining gas in remote areas and provides a "reserve fuel" factor. Many late model vehicles can be set up to start on petrol then automatically switch to gas.

The new gas system works with the vehicle's existing engine management system. Of course, it makes sense to have the engine professionally tuned to obtain the best possible performance.

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