Diesel LPG Breakthrough with the Diesel/Gas Australia System

Rudolf Diesel was granted a patent in 1898 for his internal combustion engine. The diesel engines of today are improved versions of his original concept and are used in ships, locomotives, large trucks, generating plants and small passenger and commercial vehicles. Although the diesel engine exists since the late 1800s it has taken until the early 21st century for LPG to be used in conjunction with the diesel fuel to improve the engines efficiency being demonstrated by the Diesel/Gas Australia system.
1 Introduction

The concept of using Liquefied Petroleum Gas (LPG) in conjunction with diesel engines particularly in large trucks is not new. In the 1990’s crude attempts of introducing LPG into diesel engine often referred to as Torque Topping has been seen. In this process LPG was introduced via a length of hose direct into inlet manifold manually by the driver turning on an LPG cylinder usually sitting on the seat next to him in the truck. This process would give the truck a large increase in power and in most cases ended in disaster.

The Australian company Diesel/Gas Australia has developed and patented a system that strictly controls the amount of LPG introduced into the vehicle. It does this via an electronic controller which reads the following inputs from the engine to ascertain its situation at all times:

- manifold pressure via a manifold absolute pressure sensor (MAP) for turbo powered vehicles, Figure 1
- throttle position via a throttle position sensor (TPS) for a normally aspirated vehicle
- tachometer speed – picked from the alternator, fuel pump, diagnostic plug or cam angle sensor.

Either a MAP or TPS signal plus a tachometer signal must be present at all times for the system to power up the two gas locks (one on the tank and the other on the reducer) to allow the LPG to flow.

Other sensors that the system monitors to ensure the safety are maintained and the system works at its optimum level:

- LPG fuel pressure via a sensor connected to the LPG reducer:
  This ensures that if an open fuel supply hose becomes detached the resultant drop in fuel pressure will immediately switch the system off, Figure 2.

Figure 1: Filter assembly showing manifold and fuel pressure sensors

Figure 2: Software screen showing coolant and fuel pressure set-up

Figure 3: Software MAP showing injector duty cycle