



**COMPRESSED NATURAL GAS AS FUEL
FOR FIXED AND MOBILE ENGINES**

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Cool5000™ Technology

IntelliGas is a Queensland based Australian owned company which specialises in the application of compressed natural gas (CNG) fuel solutions for mobile and fixed engines.

IntelliGas has developed a family of components known collectively as Cool5000™ that positions CNG as a credible and economic alternative to diesel as a fuel for Heavy Duty trucks and other applications.

The displacement of diesel with CNG via the IntelliGas system also delivers significant environmental

COMPONENTS OF THE Cool5000™ SYSTEM

- *Cool5000™ Integrated CNG Re-fuelling Module*
- *ChillFill™ CNG Cylinder Filling Process*
- *350 barg Chilled CNG Dispenser*
- *CNG Fuel Pack*
- *CNG Booster for Westport HPDI engine equipped vehicles*

In early 2007 the IntelliGas technical team filed a patent application for a CNG transfer system known as PLIGATS (**P**ressurised **L**iquid **G**as **T**ransfer **S**ystem). This system enabled the transfer of CNG into a HPDI (High Pressure Direct Injection) engine at the pressure required. The PLIGATS application avoids pressure decay (as CNG is drawn from a storage cylinder) by the injection of hydraulic fluid into the cylinder as the CNG is used.

The PLIGATS patent application also described a re-fuelling method for PLIGATS equipped vehicles wherein the on-vehicle CNG cylinders are filled with a liquid before re-fuelling. The liquid is then displaced from the cylinder with a back pressure valve holding 350 barg on the out-flowing liquid.

This process enables reliable fill to 100% of 350 barg nameplate capacity of the on-vehicle CNG storage cylinders, with up to 80% more CNG on board than fast-fill 200/250 barg conventional CNG re-fuelling systems can deliver.

The application of PLIGATS on our first two test vehicles enabled hundreds of hours of operation of the hydraulic transfer system, resulting in a number of improvements in fixed re-fuelling applications.

The PLIGATS system worked well over thousands of kilometres on the iGas prototype trucks, however it suffers from cost and complexity relative to conventional CNG systems. It is now being replaced with the IntelliGas CNG Fuel Pack and IntelliGas Booster system which are fitted to the demonstration truck.

The PLIGATS process of hydraulic gas management has been retained in the IntelliGas re-fuelling system and, having been enhanced with a number of improvements that were not possible in vehicle applications, PLIGATS remains at the core of the Cool5000™ system.