



SIMMAX BI-FUEL SYSTEMS

SIMMAX BI-FUEL SYSTEMS SAFELY CONVERT INDUSTRIAL DIESEL ENGINES TO BI-FUEL OPERATION BY SUBSTITUTING DIESEL FUEL WITH UP TO 70% GASEOUS FUEL. THE SYSTEM IS COMPOSED OF FOUR CRUCIAL COMPONENTS – THE COMAP CONTROL PANEL, GAS TRAIN, DENOX KNOCK PREVENTION SYSTEM AND ENGINE SENSORS.

The process of converting a diesel engine to run efficiently on both diesel and gaseous fuel is achieved by introducing the gaseous fuel into the combustion air stream prior to reaching the engine's turbochargers. A gas train is correctly sized and fitted with components that are responsible for modulating the gas flow, balancing gas flow between engine banks and shutting gas flow off when the system demands it. The ComAp bi-fuel controller installed as part of the SIMMAX Bi-Fuel System, continuously monitors key parameters of the operation and modulates the gas substitution over the entire engine load range. The DENOX knock prevention system and engine sensors allow for constant monitoring of key engine temperatures and pre-detonation – two of the most important safety concerns when gas is introduced to a diesel

engine's operation. If the system detects any safety limits are being overreached, depending on the severity, it will either pull back on the gas substitution or shut bi-fuel operation off and seamlessly revert back to 100% diesel mode. There are two basic types of bi-fuel systems on today's market, static systems and dynamic systems. Static systems rely mainly on set values and limited controller functionality to govern the bi-fuel operation. Dynamic systems, such as the SIMMAX system, offer direct communication with the engine ECM and through PLC logic can monitor and control vast amounts of data. This level of functionality allows a dynamic system to constantly adjust the gas substitution as the engine load increases and decreases, ultimately gaining maximum fuel savings.

The benefits of installing SIMMAX Bi-Fuel Systems include:

- *Substantial reduction in diesel consumption*
- *Lower emissions - Substantial reduction in particulate matter and NOX*
- *Best in class ComAp engine protection*
- *No de-rating of engine power output*
- *Extended run times*
- *Fuel flexibility – 100% diesel operation is always available*
- *No modifications to the engine, this is a completely stand-alone system*

SIMMAX Bi-Fuel Systems may be installed on any high-speed diesel engine and requires the following conditions for safe operation:

- *Gas pressure must be within the acceptable range.*
- *Engine temperature measurements must be taken to ensure the intake and exhaust temperatures are below the set limits.*
- *DENOX module must be active and showing an acceptable level of vibration.*
- *A minimum of 18% engine load and the minimum required diesel portion is known.*

To date, Simson Maxwell has converted over 20,000 HP to run on SIMMAX Bi-Fuel Systems. Applications include well fracturing units, well servicing equipment and prime power generators. Bi-fuel kits are available on new engines and as retrofits on existing engines.

