



**AUSTRALIAN SECURITIES EXCHANGE
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Hythane Company to Develop Dedicated Syngas Generator Sets

Following requests from major potential US customers, Eden Energy's US subsidiary, Hythane Company, has begun development of a spark-ignited engine conversion system to allow operation on hydrogen-rich renewable biogas.

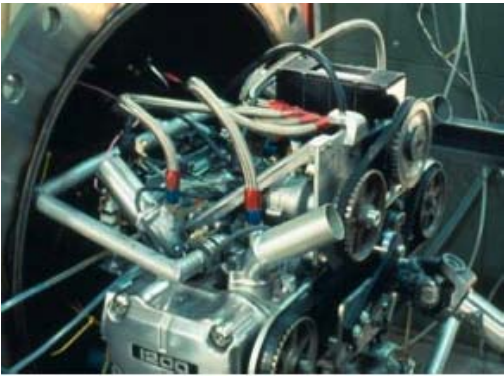
Many sources of biogas can contain large percentages of methane and hydrogen, along with inert components like nitrogen or carbon dioxide, and these gaseous fuel blends generally allow operation in conventional spark-ignited engine generator sets (gensets) intended for natural gas fuel, with a few simple modifications. However, new gasification equipment technology developed for cellulosic or wood-based biomass has the capability to produce a syngas composition with over 60% hydrogen. Syngas can also be produced from fossil fuels.

This syngas fuel requires careful, precise fuel handling and control, with control strategies and systems similar to dedicated pure-hydrogen engines. Extensive knowledge and experience with hydrogen-fuelled internal combustion engines makes Hythane Company uniquely qualified to develop and market these engine conversion systems for large stationary generator sets used for distributed electrical systems or combined heat and power (CHP) production.

Large volumes of mixed syngas and air must be avoided in the engine intake system with such a large hydrogen concentration in the syngas fuel, because hydrogen has a very wide flammability range and low ignition energy, making pre-ignition and intake backfires a significant risk. The possibility of abnormal engine operation, or even mechanical damage, precludes the use of conventional air mixer/carburetion systems on most large industrial natural gas engines. Over the years, Hythane Company and its predecessor, Hydrogen Components, Inc., have developed fuel systems for many internal combustion engine projects, and this in-depth understanding of hydrogen engine combustion and control was patented in June 2010.

Hydrogen engine projects from the early 1990s to present include a 1.5L Honda engine for an unmanned Navy submersible, four 2.5L Ford Ranger pickups (one turbocharged, three supercharged) for Xerox in California, a 70kW generator set in a Bluebird hybrid electric bus for the 1996 Olympics in Atlanta, six 2.3L Mercedes Sprinter vans in Germany, and two 125kW Cummins genset engines in 2002 (see photographs below).

The new dedicated hydrogen/syngas genset control system under development will target the range from 200kW to 2000kW.



As was recently reported, Hythane Company has expanded the markets for the current OptiBlend™ kit to include the conversion of stationary diesel engines to dual-fuel diesel/biogas or syngas fuel feedstocks, displacing up to 70% of the diesel fuel consumption with hydrogen-rich renewable biogas. The new dedicated syngas engine and fuel control systems will complement this new OptiBlend™ market with spark-ignited generators that do not need *any* fossil fuels for operation. Many remote or developing areas of the world use relatively small engine generator sets running on diesel fuel for power generation, and the diesel fuel must be shipped or air-lifted in small tanker trucks or drums at a very high cost. Besides general electrical service to homes and businesses in remote or island communities, many of these diesel-based power plants primarily exist to provide power to agricultural industries that can provide plenty of waste material for production of their own renewable biogas, such as timbermills or food processing plants or syngas production facilities using syngas they produce.

Concerns with climate change, fossil fuel use, and energy independence, along with recent advancements in biogas production equipment performance and cost (and rapidly rising diesel fuel prices) have made investment in renewable biogas conversion systems both environmentally and financially attractive.

A handwritten signature in black ink that reads "Gregory H Solomon".

Gregory H Solomon
Executive Chairman