

Can GTL help Australia reach its fuel potential?

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CONVERTING Australia's known natural gas reserves into liquid fuel could power the nation's vehicles for the next half-century. That's the word from Labor opposition leader Kim Beazley, who has been pushing government and industry to foster a commercial gas-to-liquids (GTL) industry.

Australia's entry into GTL has not yet reached the planning stage, but a Sasol-Chevron GTL joint venture has been looking to pin suppliers down and find a suitable location to build a plant in Western Australia for the last five years, and junior Central Petroleum hopes to develop GTL in the deserts of Central Australia.



A GTL plant

Central Petroleum's managing director John Heugh is confident GTL will provide a viable part of the answer to the soaring cost of imported oil.

"Australia has vast reserves of gas to find markets for and if you believe in peak oil, then the world is running out of oil," Heugh said.

"GTL, in my opinion, is going to be a significant part of the next wave of replacement fuels."



A simple diagram showing the GTL process

Sasol Chevron Australia's Perth-based managing director Tony Pytte goes a step further to suggest that by embracing GTL, Australia could become a world leader in the field.

Sasol, in conjunction with Qatar Petroleum, has almost finished building the world's first large-scale commercial GTL plant in Qatar, which has a 34,000-barrel per day processing capacity, and is already laying out expansion plans to build that to 100,000 bopd.

Construction of a Chevron/NNPC plant in Nigeria has also started and is planned for completion by 2009.

"We're keen for Australia to become our third project," Pytte said.

"This country has all the right drivers, including strong government support, a good fiscal regime and vast gas reserves. It needs to develop a combination of LNG and GTL."

Unlike Nigeria or Qatar, Australia has a ready-made consumer market for GTL, according to Pytte.

"Australia is unusual in that it has the potential to be both the producer and the consumer," he said. "This is an added dimension – you're not just making money for Australia, but cleaning up the air as well."

GTL provides a clean-burning, low emission diesel fuel with lower greenhouse gas emissions than gasoline and lower sulphur and particulate emissions than conventional diesel.

Diesel technology is continually improving and with the need to reduce greenhouse gas emissions becoming more urgent, GTL has a bright future, according to Pytte.

Meanwhile, with the help of consulting firm Holt Campbell Payton, Central Petroleum has completed a pre-feasibility study on establishing a 10,000-barrel-per-day GTL plant near Alice Springs, Central Australia.

And the forecast is looking good, according to Heugh.

"Our plans are only conceptual at this stage, but there have been a lot of developments in GTL technology and there's a huge demand for low or zero-sulphur diesel throughout the world," he said.

But **Central** Petroleum must first make a gas discovery of about 200 billion cubic feet of reserves to warrant construction of a GTL plant.

"It isn't that tall an order when you consider that other discoveries in the region have made bigger discoveries, such as Palm Valley with 230bcf and Mereenie with 426bcf plus a further 144bcf of gas equivalent," Heugh said.

"GTL products could be railed from a **Central** Australian plant to Port Darwin for domestic or export markets."

Ongoing technological improvements are cutting the cost per barrel and are slashing the threshold reserves of gas required for a GTL plant, according to Heugh.

While about half a dozen techniques have been developed for gas-to-liquids conversion, they are mostly derivatives of the Fischer-Tropsch (TP) technology, initially developed for coal-to-liquids.

GTL technology involves a four-step process that starts with separating and drying natural gas and the removal of sulphur compounds.

The gas is then reformed to produce a synthesis gas consisting of mainly hydrogen and carbon monoxide. Next, the syngas is fed to the Fischer-Tropsch reactor, where it is reacted over a catalyst and converted to mostly straight chain, waxy paraffins. Hydroprocessing then upgrades this raw product to yield a clean, sulphur-free diesel fuel and naphtha.

In the past, GTL was only considered suitable for locations with gas reserves in excess of one trillion cubic feet. But **Central** Petroleum is now working towards a 200-bcf to 1tcf reserve base to support a plant with 3,500 bopd to 10,000 bopd processing capacity, while BP in Alaska has devised a smaller, 'micro-plant' system, established in-situ on a well-by-well basis. This modular system can operate competitively and profitably at just 200bopd.

Central Petroleum said it could possibly develop one large-scale plant, or several micro ones. But either technology could take several years to implement.

"Hypothetically, it could take us another six to 12 months to prove up sufficient reserves and a further 12 months to three years to get a plant designed and operating either at the large scale or micro-scale," Heugh said.

Sasol Chevron could be looking at even longer, as it continues ongoing confidential negotiations with undisclosed parties and the government.

"All I can say on that front is that discussions are continuing with potential suppliers," Pytte said.

"I'm hoping for a result next year, but nothing's certain at this stage."

But even after decisions and agreements have been drawn up, Pytte says a plant, to be built on the same three-phase model as its counterpart in Nigeria, would take about 3.5 years to construct.

Pytte also says strong support from the Federal and Western Australian governments to define an appropriate industry and fiscal policy would be crucial in transforming GTL from a pipedream into a reality.

"Government has been very supportive," Pytte said.

"The onus is on Sasol Chevron to get the commercial issues resolved with a gas supplier."

The Federal government has formed a GTL taskforce within the Invest Australia division of the Department of Industry, Science and Resources to examine the issues, amid mounting support and interest in this emerging energy sector.

The potential for energy to emerge as a serious political issue at the next Federal election in 2007-08 was demonstrated when Labor outlined its policy for a self-sufficient fuel industry two months ago.

Incentives included tax breaks to establish a network of GTL plants that would pay gas-to-liquids plant operators a share of their investment, to encourage them to target the domestic market rather than send their natural gas overseas.

"In it is a plan for self-sufficiency, by going to alternative fuels and establishing a regime that encourages them to be developed here," opposition leader Kim Beazley said.

"In particular, taking advantage of the massive technological advances in gas-to-liquid conversion and ensuring we have that industry here."

This plan comes as Australia's reliance on imported oil is projected to increase dramatically in the next 15 years. Not only would this create a trade imbalance, but Australia would also be placed in a strategically vulnerable position.

GTL supporters, including Sasol Chevron and **Central** Petroleum, maintain that LNG alone cannot monetise the 130 trillion cubic feet of uncommitted gas off Australia's north coast.

They argue that building a GTL industry would overcome this problem, as well as deliver increased self-sufficiency in transport fuels, provide a new export industry and guarantee Australia a role as a major world fuel supplier in addition to its LNG industry.

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