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Gas-to-liquids

Arabian alchemy

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Qatar finds a new use for its natural gas

THE North Field, in the Arabian emirate of Qatar, is the world's largest reservoir of natural gas. But it is also one of the worst-placed. There are no pipeline networks or eager consumers near at hand, unlike the gas fields of the Gulf of Mexico, say, or Russia. So until now, getting the gas to market has involved cooling it enough to liquefy it, shipping it in special tankers, and converting it back to gaseous form at the destination—which is expensive and capital-intensive. What is more, the market, though growing fast, has been restricted: gas, although less polluting than petrol and other fossil fuels, is used mainly to run power plants, since it is so awkward to store and transport. But on June 6th, for Qatar at any rate, all this will change.

On that day South Africa's Sasol and Qatar Petroleum will unveil a new plant that transforms natural gas into a synthetic fuel similar to diesel, by a process known as gas-to-liquids (GTL). The technology for this dates back to the 1920s. Nazi Germany and South Africa under apartheid used a similar technique to produce diesel from coal, when war and sanctions, respectively, made oil hard to come by.

In theory, GTL diesel has several advantages over liquefied natural gas (LNG). Vehicles can run on it, giving gas producers access to whole new sales possibilities. Better yet, it does not require as much dedicated infrastructure as LNG: it can be shipped in normal tankers, and unloaded at an ordinary port. Nonetheless, most oil companies have assumed that the cost of conversion, which consumes a fair amount of energy, would make GTL less profitable than LNG overall.

A country like Qatar, with lots of gas but little oil, might want to invest in GTL simply for the sake of diversification. But Pat Davies, the head of Sasol, insists the new plant will also make at least as good a return as Qatar's existing LNG facilities. Over the course of decades of production in South Africa, he claims, his company has increased the efficiency, and so improved the economics, of the GTL process. It helps that Qatar has abundant, cheap natural gas.

Qatar Petroleum, at any rate, is convinced. It has come up with half the \$950m investment, rather than resorting to a standard production-sharing agreement, which would require Sasol to put up all the money. It has also agreed to expand the output of the new plant from 34,000 barrels per day to 100,000. Sasol is building another GTL plant in Nigeria with Chevron Texaco, and considering others in Australia and Iran. Royal Dutch Shell and Exxon Mobil, meanwhile, are planning GTL plants of their own in Qatar.

Ultimately, the future of GTL depends on the difference between the prices of natural gas and crude oil,

from which diesel is normally refined. When oil rises relative to gas, GTL becomes more attractive. That will happen, Mr Davies argues, as LNG infrastructure proliferates, creating a more contested market for gas, and so pushing down prices. Cars running on GTL diesel, he points out, also produce fewer nasty chemicals than those using the normal sort. And if GTL proves a success, Mr Davies is keen to promote the trickier and more expensive process of converting coal to liquid fuel.