

AGL Energy – Wallumbilla LPG Facility

Oil & Gas

The Challenge

Delivering gas, electricity and telecommunications services to 3.95 million residential, business and wholesale customers across Australia is no small undertaking. Doing so through sustainable, secure and affordable energy solutions adds a much larger layer of complexity. But AGL Energy has been doing just that since 1837. Today, they operate Australia's largest electricity generation portfolio: 11.2 MW, nearly 20% of the total generation capacity within Australia's National Electricity Market.

When it came time to replace three aging, natural gas-fired reciprocating engines at the company's Wallumbilla LPG facility, located five hours west of Brisbane, AGL sought an innovative solution that was both better for the environment and helped reduce the high cost of operating and maintaining the generators.

With their installation of a grid-connected, butane-fired microturbine system from Capstone Turbine, they also got improved efficiency, reliability and a dramatic reduction in noise pollution. It's also the first system of its kind in the world.

The Solution

As a byproduct of natural gas production, butane was a readily available, cost-effective choice for fueling the LPG facility's new system, which features a Capstone C1000S microturbine. The plant typically consumes about 200 kW of



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— Burk McCaul, Head of Gas Operations
AGL Energy

Power Profile

Customer

AGL Energy

Location

Wallumbilla, Queensland,
Australia

Commissioned

July 2020

Fuel

Liquefied Petroleum Gas

Technologies

• 1 C1000S Microturbine

Capstone Green Energy Distributor

Optimal Group Australia





A C1000S microturbine at the Wallumbilla LPG facility is the first gas site in the world to use a butane-fired, grid-connected microturbine to generate power onsite for site electricity demand, while exporting excess power to the grid.

electricity for both operations and gas production. This amounts to roughly 20% of the new system’s capacity, so the selection of the C1000 allows AGL to export an excess 800 kW to the grid, which not only benefits consumers, it provides revenue for the company.

In keeping with AGL’s progressive energy strategy, the system is not only the first gas site in the world to use a butane-fired, grid-connected microturbine to generate onsite electricity, it’s also the first Type-B certified butane-fueled microturbine in Australia, and the first microturbine to be connected to the grid in Queensland.

The Results

Replacing reciprocating engines that had been installed in the 1980s has delivered a wide range of benefits for the Wallumbilla plant, including cost savings, increased power reliability, greater efficiency and environmental benefits. The cost savings alone from exporting excess electricity reaches \$800,000 AUD per year without including savings from using a byproduct fuel and dramatically lower maintenance and repair needs.

One of the important side benefits of the new system is that it significantly reduces noise pollution at the plant, so employees and visitors have an easier time communicating, and the site is better able to meet Occupational Health and Safety requirements.

“It’s an innovative environmental improvement initiative,” said Burk McCaul, Head of Gas Operations. “The project improves several operational needs, including the provision of stable secure power for the Wallumbilla facility, as well as ensuring continuity of gas supply to the Queensland network.

The inspectorate was very impressed with the installation and how it integrates into the facility’s other systems.”

The benefits of an innovative system like this one reach beyond those immediately realized by the company into Australia’s communities. From environmental benefits to better power security and reduced energy costs, the system at the Wallumbilla plant serves as a model for future projects, not only because it is a proven reference for using butane as fuel, but because it sets a precedent for obtaining grid connection approval.

Capstone C1000S Microturbine



A C1000S provides up to 1MW of electrical/thermal generation and can be paralleled to generate up to 10MW of clean-and-green power.