

CASE STUDY

ABB helps drive new LPG plant to completion

ABB's integrated motor and drive package gives Todd Energy matched system assurance



With the expansion of their LPG plant in Taranaki, Todd Energy required an electric motor and variable speed drive matched system package to maximise reliability and minimise lifecycle maintenance and operation costs.

Todd Energy's LPG plant expansion

The new liquid petroleum gas (LPG) plant, based at Todd Energy's McKee production station site in Taranaki, New Zealand, is an important addition to Todd Energy's investment portfolio and will produce 27,000 tonnes of LPG a year, sourced from its Mangahewa and Pohohura fields.

They will deliver the LPG through their 50,000 customer-strong retail company, Nova Energy, across the North and South Islands.

Transfield Worley was engaged to undertake the front end engineering design (FEED) and detailed design for the expansion project.

At an early stage in the FEED it was decided that the feed gas and sales gas compressor drivers would need to be electric motors, rather than reciprocating gas engines, in order to maximise reliability and minimise lifecycle maintenance and operation costs, as well as to better exploit onsite generation facilities.

Capacity control was also required, which made it necessary for the feed gas and sales gas compressor drivers to be variable speed drives, which would also address starting issues, as available power to the site is of limited capacity.

ABB's drives solution

Twelve of ABB's drives were supplied to Transfield Worley for the McKee LPG plant project. These included two ACS1000i medium voltage industrial variable speed drives (3.3 kV output), and 10 ACS800 low voltage industrial variable speed drives.

The ACS1000i medium voltage drives, along with ABB's medium voltage 3.3 kV motors, were integrated and used as a drives and motor compressor package. The compressor packages are used to pressurise and bring external gas, feed gas, into the plant, after the gas has been processed. It then extracts the gas, sales gas, from production, pressurises it and readies the gas for export from the plant. ABB was able to provide the complete drive train, consisting of hazardous area motors certified for variable speed drive



ABB's ACS1000i 3.3 kV medium voltage drive uses a drive cubicle in which transformer, contactor and on-board auxiliary power supply are built-in.

operation. By having a matched system, the motor and the variable speed drives from the same supplier, ensures that optimum performance of the products is achieved.

The ACS1000i drives are connected directly to the 11 kV supply network, as they are fitted with an internal transformer; eliminating the need for an external transformer which greatly reduces cabling and installation costs. The internal transformer has a 24 pulse design, which minimises harmonic currents and ensures utility harmonic requirements are met.

The medium voltage drives were commissioned by ABB's New Zealand drives service engineers.

The total number of ABB's ACS1000 drives installed in New Zealand is now 12, including both internal transformer and external transformer versions, and both air and liquid cooled versions. All are supported by ABB NZ certified drives service engineers.

The ACS800 low voltage drives included wall mounted standard drives, and a 200 kW low harmonic cabinet based drive. This low harmonic drive allowed utility harmonic requirements to be met without external filtering, thus simplifying installation and commissioning.

Todd Energy is the largest electricity generator, from efficient gas-fired co-generation facilities, in New Zealand, with locations in Edgecumbe Kapuni, Whareroa and New Plymouth. Todd Energy's LPG plant at the McKee Production Station was officially opened by Prime Minister John Key on 15 September 2011.