

**THERMAL GAS TURBINE LOCATED
IN CENTRAL QUEENSLAND**

Mackay Gas Turbine



About Stanwell

Stanwell is a Queensland Government owned corporation with an energy portfolio comprising coal and hydro facilities throughout Queensland. Currently, Stanwell trades more than 30 per cent of the State's electricity requirements.

Statistics

Capacity	34 MW
Powered Equivalent	340,000 x 100 watt light bulbs
Commissioned	1975



Mackay Gas Turbine is located in the western regions of Mackay in Central Queensland.

> About the project

Mackay Gas Turbine is a remote controlled power generator that is operated for short periods when customer demand for electricity is high. The gas turbine's ability to start quickly is important in ensuring a secure, reliable power supply for distribution to consumers.

It was commissioned in 1975 and recently underwent refurbishment to ensure continued reliable operations.

> Environment

Site operations are managed within an Environmental Management System certified to ISO 14001. Stanwell ensures sulphur emissions are minimised by the use of low-sulphur oil.

> Fuel supply

Mackay Gas Turbine uses 352 litres of low-sulphur oil to generate one megawatt-hour of electricity. Fuel is delivered to the site by tanker trucks and stored on site in two 400,000-litre fuel tanks.

> Operation

Mackay Gas Turbine uses open cycle turbine technology. Two jet engines, similar to those found in the Concorde aircraft, create the energy to rotate the power turbines that are coupled to the alternator, also called the generator.

Using diesel oil as fuel, the gas turbine has a capacity to generate 34 megawatts (MW) of electricity.

The blades of the turbine rotate at high speed (as fast as 7,000 revolutions a minute) to compress and heat the air. Fuel oil, in the form of a high-pressure spray, is injected into the hot air. The burning fuel oil heats the air further, causing it to expand and drive the compressor. The exhaust gases intensify and are directed through the power turbines to drive the electrical generator.

At less than 20 per cent operating capacity, open cycle turbine technology is inefficient and is therefore used only for short periods when the demand for electricity is high.