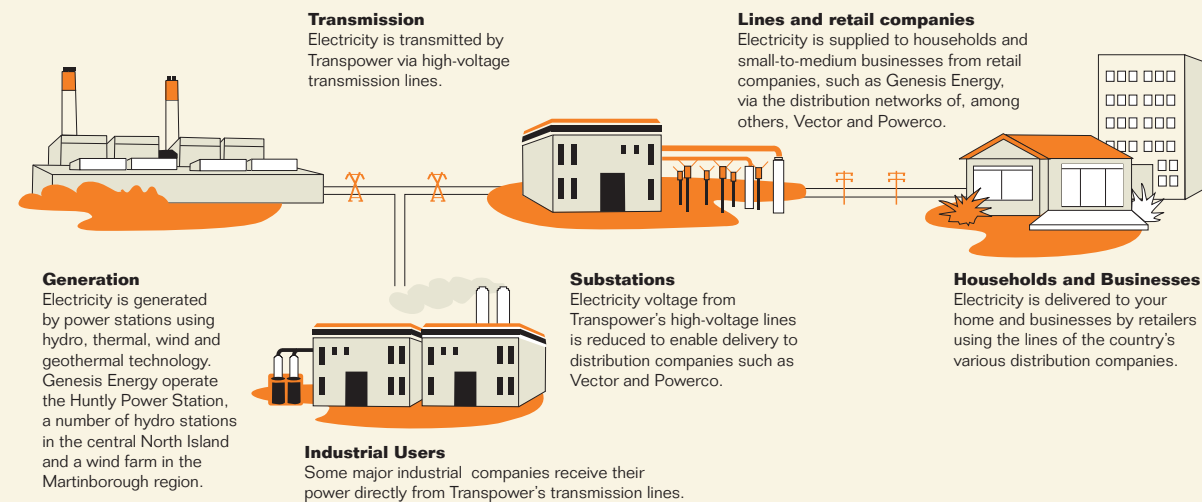


QUESTIONS & ANSWERS

Where does the electricity produced at the Huntly Power Station go?

Electricity generated at the station goes into the national grid. It is then distributed to residential, commercial and industrial customers throughout New Zealand.



How does Genesis Energy look after the environment around Huntly Power Station?

Genesis Energy is very aware of the effects our operations have on the environment. We have a responsibility to better our people, our community and our environment and we take this responsibility seriously.

Environmental activity around the Huntly Power Station includes:

- Environmental monitoring – samples are taken from around the station each month to monitor the air and water.
- A Helper Cooling Tower cools water used in generation and cools it by six to nine degrees before releasing it into the Waikato River. This ensures that during summer months generation can still be provided while complying with maximum river temperature consent conditions.
- Planting of predominantly native trees around the station to improve the visual aesthetic of the station and help to reduce the amount of Carbon Dioxide absorbed into the atmosphere.
- Working with local iwi to improve the natural environment for eels within the Rahui Pokeka – Huntly area.

What does Genesis Energy do to work with the Huntly community?

Genesis Energy believes in giving something back to the communities where we operate. We take pride in forming positive working relationships with councils, local schools, tangata whenua, landowners and government agencies in and around Huntly. A consultative meeting takes place quarterly at the station, where the community is updated about projects happening at the station and has the opportunity to ask questions and give feedback.

Genesis Energy sponsors activities that take place in local schools, including the Duffy Books in Homes programme that teaches children the importance of reading.

Additionally, Genesis Energy works closely with the Huntly Energy Efficiency Trust (HEET) which runs the Curtain Bank – a service which collects and distributes good quality second-hand curtains to families in need.

How many people work at Huntly Power Station?

Approximately 280 people work at the station in a variety of roles. These include industrial engineers, environmental specialists, plant operators and maintenance technicians.

GENESIS ENERGY'S PHYSICAL ASSETS

Some of Genesis Energy's assets include:

Hau Nui Wind Farm



Tokaanu Power Station
Part of the Tongariro Power Scheme



Tuai Power Station
Part of the Waikaremoana Power Scheme



For more information about all of Genesis Energy's assets please visit www.genesisenergy.co.nz

Note: Genesis Energy has obtained resource consents and retains an option to build a gas fired power station in the Rodney District, north of Auckland.



WITH AN OUTPUT OF 1448MW, HUNTLY POWER STATION IS THE LARGEST POWER STATION IN NEW ZEALAND AND IS OWNED BY GENESIS ENERGY.



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HELLO TOMORROW



THERMAL GENERATION

Thermal Generation refers to the process of generating electricity by burning fuels.

Genesis Energy owns and operates the Huntly Power Station, a thermal power station which can use coal, gas or both simultaneously as fuel. Coal is delivered to the station via conveyor belt or by truck. Gas comes from the Taranaki region.

Thermal generation accounts for up to 40 per cent of New Zealand's electricity needs, with the remainder made up of a combination of hydro and wind generation.

Renewable energies such as hydro and wind power can be limited by natural events such as droughts or lack of wind. Genesis Energy has a strategy of having a mix of thermal, hydro and wind generation to ensure we have a secure supply of electricity, now and well into the future.

At a glance

| | UNITS 1-4 | UNIT 5 | UNIT 6 |
|-------------------------------|----------------------------------------------------|--------------------------------|-----------------------------------|
| Year Commissioned: | 1981 - 1985 | June 2007 | June 2004 |
| Total Capacity: 1448MW | 1,000MW total (4 x 250MW) | 400MW | 48MW |
| Generation Units | Combustion Engineering Boilers and Parson Turbines | Mitsubishi M701F Combine Cycle | GE LM 6000 Engine Brush Generator |



HUNTLY POWER STATION: KEY FACTS

- With a present capacity of 1448MW, Huntly Power Station is New Zealand's largest thermal power station and can provide up to 20 per cent of the country's electricity.
- The station has four separate generating units of 250 MW, which utilise conventional boiler and steam turbine technology. These units (commonly referred to as Units 1-4) can burn coal, natural gas or a combination of the two. It also has two gas turbines. Unit 5 is a 400MW Mitsubishi 701F combined cycle gas turbine while Unit 6 is a 48MW open cycle gas turbine.
- The site area of Huntly Power Station is 71 hectares.
- The two chimney stacks for Units 1-4 are 150 metres tall.
- The boilers can burn up to 3.6 million tonnes of coal per year.



HOW ELECTRICITY IS PRODUCED AT HUNTLY POWER STATION

UNITS 1-4

The 1,000MW steam power plant is made up of four identical 250MW units, which consist of a boiler and a turbine.

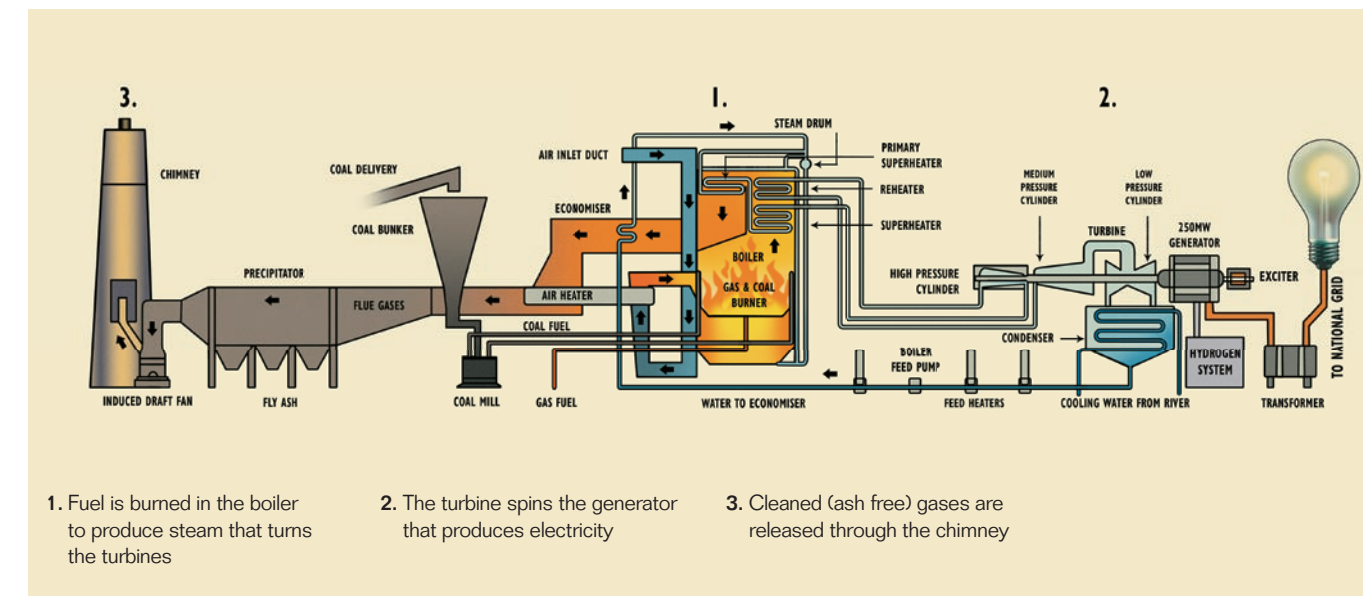
Coal is put into several large grinders, crushed into a fine powder and blown into big boiler furnaces. If gas is used, it is piped into the furnaces and then burned in the boilers. A series of pipes in the upper region of the burner contain water which turns to steam under the incredible heat produced by the burning coal and/or gas.

High-pressure steam passes through pipes into steam turbines, which spins the turbine blade and in turn rotates

the generators which generate electricity. After the steam has passed through the turbines, it is cooled back down to water and used again.

The energy produced by the generators is passed through a transformer and into the national grid transmission lines which carry the electricity across the country.

At sub-stations, the electricity passes through transformers again, converting it into voltage that can be used in homes, schools, offices and various industries.



NB: The original steam plant uses water from the Waikato River to cool the condensers. The resource consent requires that the maximum temperature of the river downstream of the station is less than 25°C. During summer, when the river temperature upstream of the station can exceed 24.5°C, the station must reduce the generation to remain within the temperature constraints.

This has meant that Huntly Units 1-4 has been reduced to 0MW total output at times on very hot days. To alleviate this problem Genesis Energy constructed a 'helper' cooling tower, which cools the water before it discharges back to the river. This cooling tower enables one 250MW unit to operate without heating the river downstream.

UNIT 5

Huntly Unit 5 (formerly known as e3p: Energy Efficiency Enhancement Project') is a combined cycle gas turbine (CCGT) power plant that was built at the Huntly Power Station site in 2007. It uses natural gas as its fuel source and is able to generate up to 400MW of electricity – enough to power approximately 370,000 households.

Where the existing plant at Huntly uses boiler steam to generate electricity, Unit 5 uses a gas turbine first and then uses what would otherwise be waste heat to generate more electricity using a steam turbine.

Its combined cycle technology is regarded as the most technically advanced means of converting natural gas into electricity that is available today. This combination of high efficiency and lower CO2 emissions has enabled Genesis Energy to reduce its CO2 intensity from the Huntly Power Station site by one third. In one year Unit 5 can save up to 1.8 million tonnes of CO2.

Unit 5 consists of:

- **Gas turbine**
The gas turbine cycle is one of the most efficient cycles for the conversion of gas fuels to mechanical power or electricity. The gas turbine used on Unit 5 comprises an inlet air filtration system, multi-stage air compressor, fuel supply and burner arrangements, a turbine and outlet exhaust gas system.
- **Heat recovery steam generator (HRSG)**
The HRSG forms the backbone of combined cycle power plants, providing the link between the gas turbine and the steam turbine. The heat from the gas turbine exhaust is used to generate steam by passing it through a labyrinth of water-filled finned tubes. The HRSG will produce steam at three separate pressure levels for use in each pressure section of the turbine.

• Steam turbine

The steam turbine is used to convert heat energy of steam to mechanical energy. Steam produced in the Unit 5 HRSG runs through a multi-stage turbine to spin an output shaft that drives the plant's generator.

• Cooling tower

Hot water from the Unit 5 steam turbine condenser is pumped to the top of the cooling tower structure and flows down through plastic partitions inside the system to produce water droplets. The water droplets are cooled off by an upwards current of air and fall into a basin at the base of the tower. After that process, the water flows back into the steam condensing process to work as a coolant again.



UNIT 6

Unit 6 consists of a General Electric LM6000 aero-derivative gas turbine. This 48MW turbine has two concentric rotor shafts; the low pressure shaft accommodating the low pressure compressor and turbine, and the high pressure shaft accommodating the high pressure compressor and turbine. Between the compressor and turbine stages is a single annular combustor feed via 30 fuel nozzles which can either supply gas or diesel fuel. The gas turbine drives a brush generator via a reduction gearbox.