

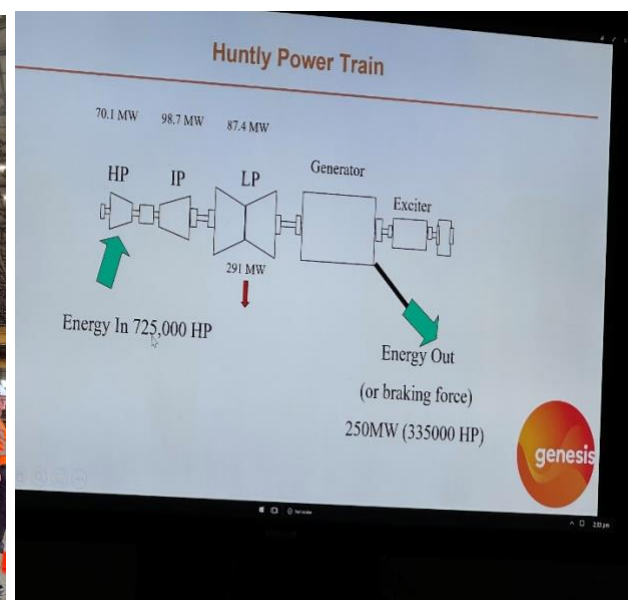
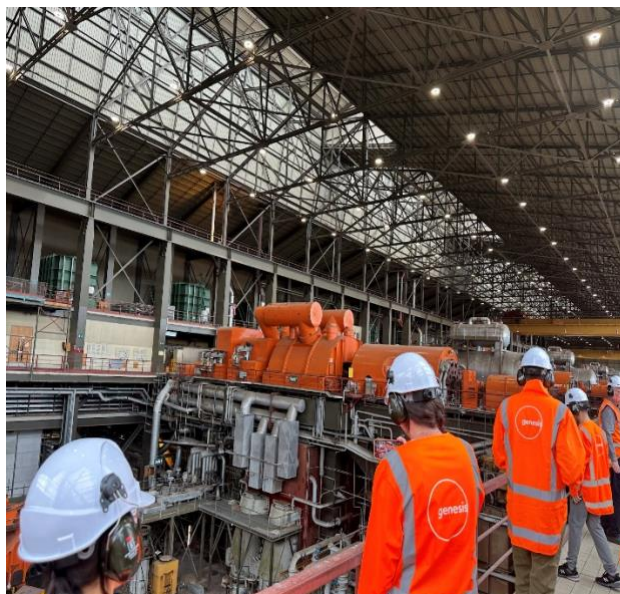
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EGEE 497

Dispatch

### Day 1: Huntly Power Station

After arriving in Auckland, we made our way south to the town of Huntly where we met our guide Simon Hurricks at the Huntly Power Station. Situated along the Waikato River this station consists of five operational (and one decommissioned) generators. The first three operational units each rated at 250MW are traditional; Rankine cycle steam boilers. These have the ability to run on either natural gas or coal. It is worth noting that the coal they use does not come from New Zealand. The coal in New Zealand is seen as high-quality coal and is sold for more money to other industries such as metal refineries. The cheaper coal used in the power plant is imported from Indonesia and comes in through the port at Tauranga. The other two generating units are gas turbines. One is a combined cycle gas turbine which recovers the exhaust heat for additional generation. This generator is rating at an astonishing 400MW. This as well as one of the Rankine boilers were online during our visit. The final unit is an open cycle gas turbine, which is essentially just a modified jet engine which has the ability to fire up in only a few minutes. Additionally, it is able to run on either diesel or natural gas. This versatility makes it important for times when demand spikes, or when other generators are out of service.



The company operating the plant is Genesis who started out as a state-owned entity but were eventually made a public company. The plant was originally commissioned in 1973 and sold to Genesis in 1999. Total output of 1200MW can power 600,000 homes. Much of this power is transmitted to Auckland. The cooling water all comes from the Waikato River with the caveat that they cannot raise the water temperature to 25C. To mitigate this problem in the summer they installed a cooling tower for one of the units. The other emission they have to worry about is from coal. The plant does not have any scrubbers to stop NOx and Sox emissions. They do have ways of collecting the majority of ash and soot emissions so that these are not a problem for the environment. In the future they are testing using wood pellets and biomass as a potential fuel source.

