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22 February, 2023

Genesis' biomass trial successful; will explore local production and supply chain

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Genesis has successfully completed a biomass burn trial as it looks at alternative fuel options for Huntly Power Station.

The objective of the week-long trial was to prove the technical viability of operating a Rankine unit solely on biomass. That was achieved with a Rankine running only on biomass for several hours. It followed significant research and work over the past year to identify the most suitable type of biomass to use, securing a supply of it from offshore, understanding the adjustments needed to operate the Rankine and putting in place robust health and safety guidelines.

International experts involved in converting coal-fuelled power stations to biomass assisted the Genesis team.

Interim Chief Executive, Tracey Hickman, said the trial is important for Genesis and the country given Huntly was built to provide vital back-up to New Zealand's highly renewable electricity generation.

"We see Huntly's back-up role continuing for some time and it's important we explore more sustainable and cost-effective alternatives to coal, especially if we're able to adapt existing plant that can be used to 2035 and extended to 2040. It makes sense for the country in terms of reducing emissions, security of supply and financially," Hickman said.

"Eventually, new technology or an over-supply of new renewable generation might be able to provide security of supply, but that is some time away and not yet certain."

Biomass is increasingly being used offshore as an alternative to coal. It can deliver a similar amount of energy and can be stored outside. Genesis will analyse the findings from the trial over coming months, including the critical issue of exploring the viability of a local and sustainable supply chain.

There is currently no local source of the type of pellets needed for Huntly and Genesis will talk with businesses in a similar position that might provide the scale to support a reliable local supply chain.

"We believe it's worth some focus by government and business to see if a sustainable local supply chain can be developed. Compared to some other decarbonisation solutions, biomass conversion could be implemented much sooner to the benefit of the country," said Hickman.

Findings are being shared with government officials and other large commercial businesses also working on decarbonisation.

"The trial has provided an opportunity to show other businesses what we've done, what we've learnt and to hear from international experts experienced in helping businesses move from coal to biomass," Hickman said.

The trial used black torrefied biomass sourced from Canada. During torrefaction, wood residue is heated slowly without oxygen to between 200°C - 300°C. The process creates a solid uniform product with lower moisture and about 30% more energy than raw biomass. Using torrefied biomass generally produces less than 10% of the emissions of coal.

ENDS

FAQs

What is the difference in emissions between burning coal at Huntly and biomass?
The exact quantity of emissions from advanced biomass relative to coal can't be determined until the final plant design and logistics are known. However, it is likely to provide a reduction in emissions of at least 90%.

How much more biomass than coal do you need to use to get the same energy output?
The fuel we have used in the trial has an energy content similar to coal. The difference in energy on a volume basis for our trial is however lower. For our trial we need in the order of 25% more biomass fuel than coal in order to get the same energy output.

How soon could local biomass be used at Huntly?
We are not putting a timeline on that as there is a lot to work through before any decision is made. While we assess the trial findings from an engineering point of view we will also be working with Fonterra, which is in a similar position, to look at whether a local supply chain for the pellets required is feasible. Biomass plants built overseas have typically taken 18 months to construct, however allowances also need to be made for securing agreements, consenting and commercial arrangements.

With no local supplier, won't importing biomass be counter-productive to reducing emissions?
There is sufficient coal to provide back-up support for the country's system until at least 2024 under normal market conditions (ie: no dry year and/or gas supply constraints). We are hopeful that between now and then we will know whether a local supply chain is feasible.

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