ON A CHALLENGING PATH TO 100% RENEWABLE ENERGY

Aratiatia, Waikato River, 92 MW

New Zealand is fortunate to have a wide range of natural resources available to power its industry and homes. Hydropower is the main renewable resource, supplying 62% of the total.

New Zealand has committed to 100% renewables by 2035 and this trend is expected to lead to a doubling of electricity demand by 2050. This poses a significant challenge. New Zealand's 5,381 MW of installed hydro is entirely conventional, with no pumped storage. Most of the hydropower plants in New Zealand were installed between the 1940s and 1980s. As a result, the bulk of recent capacity growth has been the refurbishment of existing plants, along with the installation of smaller run-of-river schemes. With lower environmental impact, run-of-river schemes and small storage schemes continue to be the favored option for new hydro. Consequently, uprating and refurbishment of existing hydro plants will also likely continue in the medium term.

In order to reach the ambitious renewables goals, much of the new capacity development will be focused on geothermal and wind. Nonetheless, to perform vital grid control functions, such developments will require the higher performance, flexibility and reliability available from traditional sources of generation like hydropower.

ANDRITZ HYDRO IN NEW ZEALAND

ANDRITZ has contributed to the development of hydropower in New Zealand since its early beginnings. Subsequently, through the mid-20th century, ANDRITZ supplied 50% of the installed capacity in the country.

The ANDRITZ team in New Zealand is passionate about delivering fit-for-purpose engineering solutions to customers. The supply and installation of new equipment on a "from water-to-wire" basis is the team's core expertise. The ANDRITZ portfolio in New Zealand

Piripaua, Lake Waikaremoana, 42 MW

Whakamaru, Waikato River, 128 MW

Upper Fraser, Fraser River, 8.1 MW

includes major refurbishments of electro-mechanical equipment and valves, turbine governing and excitation control, as well as services. Systems condition assessment, spare parts supply and installation, detailed engineering calculation and advice on technical issues, as well as troubleshooting are all part of this strong portfolio.

NEW OFFICE

ANDRITZ has recently relocated to a larger office and warehouse facility. Located in Christchurch on the South Island, the new office allows for business expansion, more storage on site, and room for a small workshop area for the growing service team.

Karapiro (90 MW): In 2019, ANDRITZ was awarded a contract for the major refurbishment of three Kaplan units to improve reliability, efficiency and output. It is the first water-lubricated Kaplan hub to be supplied in New Zealand. Installation is scheduled to be completed and commissioned by April 2024.

Piripaua (42 MW): In 2019, a contract for the supply of two replacement butterfly main inlet valves was awarded to ANDRITZ. and completed in the same year.

Aratiatia (92 MW): In 2015, ANDRITZ won a contract for three generators, one Francis runner including model test, and three turbine governors with a significant increase in efficiency and reliability. Project completion is expected by mid-2020.

Whakamaru (128 MW): In 2013, a contract for the supply of four Francis turbine runners, head covers, bottom rings, guide vanes, and the complete replacement of the governing equipment was awarded to ANDRITZ. With a new turbine design system, the turbine rating rose to just under 32 MW – an increase of 22%. Completion of the project is scheduled for mid-2020.

Upper Fraser (8.1 MW): In 2019, ANDRITZ was awarded a contract for one vertical, five-jet 8.1 MW Pelton compact turbine, main inlet valve, generator, excitation system and ancillary plant. Commissioned in July 2019 and with a gross head of 475 m, it is a power station with one of the highest heads in New Zealand.

Tekapo B (160 MW): In 2016, a contract for new Francis turbine runners, guide vanes and associated parts, along with refurbishment and installation of all equipment at site was awarded to ANDRITZ. The project objective is to improve reliability, hydraulic stability and efficiency. Completion is expected in 2020.

AUTHOR

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A Karapiro, Waikato River, 90 MW
B Tekapo B, Lake Pukaki, South Island, 160 MW

GENERAL FACTS

Population: **4.794 million**
Access to electricity: **100%**
Installed hydro capacity: **5,381 MW**
Share of generation from hydropower: **58%**
Hydro generation per year: **24,928 GWh**
Technically feasible annual hydropower potential: **77,000 GWh**

ANDRITZ Hydro:
Total installed / rehabilitated capacity: **3,131 MW**
Total installed / rehabilitated units: **134**
Location: **Christchurch**
E-Mail: **contact-hydro.nz@andritz.com**