IN NEED OF RENEWABLE POWER

Guthega, New South Wales, 45 MVA

GENERAL FACTS

Population: **24,992 million**
Access to electricity: **100%**
Installed hydro capacity: **8,044 MW** incl. PSPP
Share of generation from hydropower: **6.7%**
Hydro generation per year: **17,452 GWh**
Technically feasible hydro generation potential per year: **60,000 GWh**

ANDRITZ Hydro:
Total installed / rehabilitated units: **98**
Total installed / rehabilitated capacity: **1,502 MW**
Location: **Sydney**
E-Mail: **contact-hydro.au@andritz.com**

Australia

One of the largest countries in the world, Australia has a strong economy and a GDP growth that is stable at around 2.9%. Well-known for its numerous wonderful beaches, beautiful landscapes and diverse wildlife, Australia forms its own continent.

One of the longest transmission lines in the world is found in Australia, covering the east coast from the far north of Queensland to South Australia, the network stretches about 6,500 km. Most of Australia's installed generation capacity comes from ageing coal- and gas-fired power stations distributed strategically within the National Electricity Market. Australia is going through an energy transition though, continuously building large new wind and solar farms. A clear trend towards a zero-carbon emission is underway by pursuing the decommissioning of fossil-fuelled power stations by 2050. Total electricity generation in Australia was estimated to be 261,405 GWh in 2018; renewable sources contributed 49,339 GWh (19%) and the largest source of renewable generation was hydropower with 36% of the total. At the end of 2018, Australia had 14.5 GW of ongoing renewable energy projects under construction or financially committed.

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Pumped storage hydro technology is not only a sustainable approach to bulk energy storage, it also provides important ancillary services, such as voltage and frequency control and black start capability. These services are needed for a stable grid and help to avoid major blackouts caused by intermittent renewable energy generation. In July 2019, the Australian Energy Market Operator (AEMO) published a forecast showing that the country

will need to exceed 15 GW of storage capacity by the early 2040s. Currently installed capacity of pumped storage is 1.49 GW.

ANDRITZ HYDRO IN AUSTRALIA

ANDRITZ is closely engaged with Australia's energy transition and is ready to supply suitable products for even the most sophisticated pumped storage hydro plant. This includes synchronous condensers for grid stability purposes, for example.

ANDRITZ is also deeply involved in the servicing and rehabilitation of existing hydropower plants. Australia has a total installed and/or rehabilitated capacity of about 8.04 GW.

Taking over GE Hydro in 2009 provided an opportunity to build on a basic structure. Strategically positioned in Sydney, the local organization is more than prepared to monitor and respond to changing business activities and the electricity market.

Paloona (31.5 MW), **Meadowbank** (31.5 MW): Hydro Tasmania awarded ANDRITZ a contract for the rehabilitation and upgrade of two oil-free Kaplan units in 2011. Both units have been already successfully commissioned.

Repulse (34 MW) and **Cluny** (22.9 MW): Hydro Tasmania awarded ANDRITZ in 2014 with a contract for design, manufacture and supply of turbine and governor equipment for a Kaplan upgrade. The last unit was commissioned end of 2019.

Control and governor frame contract: Hydro Tasmania signed a frame contract with ANDRITZ to jointly develop a control standard model to be installed first on Tungatinah and subsequently on all of Hydro Tasmania's 26 hydropower stations totaling 56 units.

Cethana (113 MVA), **Fisher** (48 MVA): In 2013, ANDRITZ received a contract from Hydro Tasmania for the supply of new generator stators and auxiliary equipment.

Generator rehabilitation program (12 × 11–66 MVA): Hydro Tasmania and ANDRITZ signed in 2015 a frame agreement for a generator rehabilitation program, which forms part of Hydro Tasmania's overall upgrade program – a contract lasting until 2028. ANDRITZ agreed to supply seven stators, five stator windings and four pole sets for 12 generators in eight different hydropower plants.

A Repulse, Tasmania, 34 MW
B Fisher, Tasmania, 48 MVA
C Cluny, Tasmania, 22.9 MW

Guthega (45 MVA): Snowy Hydro awarded ANDRITZ in 2017 a contract for design, delivery and installation of a completely new generator, which was successful commissioned end of 2019.

Shoalhaven Scheme: In 2019, Origin Energy contracted ANDRITZ with design, delivery and installation of four new digital and hydraulic governor systems. The installation of the first two sets is scheduled for 2020, for the second two sets installation is planned in 2021.

AUTHOR

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Installation works, Guthega, New South Wales, 45 MVA