

CASE NOTE

Gold Coast desalination plant, Australia



The Gold Coast desalination plant is one of the largest of its kind on Australia's eastern seaboard.

The plant, which uses the reverse osmosis desalination process, has the capacity to provide drinking water to 665,000 people in South East Queensland.

— Gold Coast desalination plant in Tugun, Australia (source: Veolia Water)

Gold Coast desalination project

The Gold Coast desalination project, owned by the government statutory authority Seqwater, was the first large scale desalination facility on Australia's eastern seaboard. Located in Tugun, it has the capacity to provide drinking water to 665,000 people in South East Queensland, one of Australia's worst drought-affected regions.

The plant, constructed by the Gold Coast Desalination Alliance (Veolia Water, John Holland, SKM, Cardno and the facility owner), produced the first desalinated water in November 2008.

High consistency refining system

The Gold Coast desalination plant uses a process called reverse osmosis, where pressurized intake water is forced through a semi-permeable membrane. The membrane filters block the salt, leaving concentrated brine on one side of the membrane and drinking water on the other.

ABB – a reliable partner

ABB supplied a wide range of automation and power products and systems for the Gold Coast desalination plant which ensure that the plant is operated at the highest levels of efficiency and reliability.



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01
AMA motors, powering
the energy recovery
booster pumps



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01

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02
ACS1000 variable speed
drives controlling the
high pressure and
energy recovery
booster pumps



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02

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03
11 kV vacuum casted
(VCC) dry type VSD
supply transformers



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03

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04
ACS800 variable speed
drives controlling the
intake, booster, filter
backwash and potable
water pumps



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04

ABB scope of supply

ABB supplied the following products and systems for the Gold Coast desalination plant in Queensland, Australia.

Variable speed drives

ABB supplied variable speed drives with a total power of 40.3 MW for various processes in the desalination plant:

- ACS800 low voltage drives in the power range between 1.1 kW and 710 kW to control intake, booster, filter backwash and potable water pumps
- ACS1000 medium voltage drives in the power range of 1,120 kW and 4,800 kW to control high-pressure and energy recovery booster pumps

Motors

ABB supplied induction motors with a total power of 28.8 MW:

- M3BP low voltage motors rated at 550 kW
- HXR high voltage motors rated at 800 kW
- AMA high voltage motors rated at 1.1 MW
- AMI630 high voltage motors rated at 4.8 MW

Transformers

- 11 kV vacuum casted (VCC) dry type variable speed drive supply transformers rated at 1.5 MVA and 6 MVA, phase shifted for 24-pulse operation
- 11 kV VCC dry type distribution transformers, rated at 1 MVA, 2.5 MVA, 3.5 MVA and 4 MVA

Power quality products

ABB supplied the following equipment to meet the power factor requirements and improve the power quality of the installation:

- Metal-enclosed capacitor banks (MECB), each rated to deliver 4 Mvar at 11 kV. Each of the 4 Mvar banks has 2 steps of 2 Mvar each. The capacitors are provided with detuning reactors to protect them from possible harmonic overloading.
- PQFS active harmonic filters, rated at 415 V, 120 A

Motor protection and control

Low voltage softstarters PSTB 370 and 470 for booster pumps rated at 355 kW and 450 kW / 690 V, including integrated bypass contactors, flexible bus communication and torque control for less mechanical wear.

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