



WANDA goes down under

GHD is an international professional services company. We provide clients with complete solutions across a range of areas including engineering, architecture and environmental services.

We employ over 6,500 people in a network of more than 100 offices throughout Australia, New Zealand, Asia, the Middle East, the Americas and Europe. We serve clients in the global market sectors of Infrastructure, Mining & Industry, Defence, Property & Buildings and the Environment.

GHD's Perth Office in Western Australia has been using WANDA since 2006. GHD chose WANDA mainly for its ability to model control of pumps and valves in water systems, but also for its user friendly graphical interface and the integration of new research and development into WANDA over time.

The reason GHD acquired WANDA was a modelling project for the Water Corporation of Western Australia. The objective of the project was to determine the feasibility of proposed control systems of pump stations and control valves in Perth's metropolitan water supply system.

Perth's metropolitan water supply system is a complex water supply system which delivers water from a large number of sources to customers that are directly connected to the system. Water from the different sources is distributed throughout the system by three major pump stations and two major regulating valves that supply water into a common pipe system.

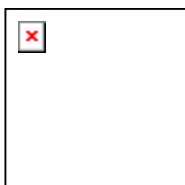
WANDA was used to build an integrated model of the hydraulic system and the control systems of the pump stations and regulating valves. The simulations showed that the control systems of the pump stations and regulating valves are robust enough to cope with a total failure of one of the pump stations, provided that the control systems were tuned with appropriate control settings.

This project titled "Integrating Perth's Water Supplies" has been awarded with an Engineers Australia Engineering Excellence Award in 2007.

One of GHD's recent modelling projects is the water hammer analysis for an innovative CETO Wave Power Demonstration Plant. The concept of the wave power plant consists of a "wave farm" of 40 to 60 CETO units that pump water to shore through under high pressure through a subsea pipeline. The high pressure is then converted into energy using generators or used to desalinate water.

The challenge of this installation is to achieve a relatively constant flow rate at the on-shore generators or desalination plant, starting from highly pulsating and somewhat chaotic flow rates at the wave farm. For the initial stage of this project GHD has been in contact with Deltares to discuss ways to model the behaviour of the CETO units. In response to the discussions Deltares has developed a new positive displacement pump component that will be included in the soon to be released WANDA 3.70.

GHD is very satisfied with WANDA's hydraulic modelling capabilities as well as the open communication with Deltares. The number of WANDA users in the GHD's Perth Office has grown from one expert user to 6 users over the last two years and GHD is looking into acquiring a network license for use across Australia.





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Photo 1: GHD team on site at Perth's largest pump station, Nicholson Road Pump Station



Photo 2: Water Systems Engineer Eelko van der Vaart with the WANDA model of Perth's water supply system