Integrated water management system takes top environmental engineering award

Specialist power and water consulting firm Entura, Tasmanian Irrigation and Water Solutions Pty Ltd won the Environmental Engineering Excellence Award for the Meander Dam integrated water management system at the 2016 Australian Engineering Excellence Awards in Brisbane last night.

Hosted by Engineers Australia, the Australian Engineering Excellence Awards seek to identify, recognise and reward outstanding achievement in the practice of engineering and service to the profession, promoting industry excellence across engineering projects and engineering professionals.

The Environmental Engineering Excellence Award recognises achievement in sound environmental practice and in the sustainable use of natural resources. It also recognises the significance of the work as a benchmark of Australian environmental engineering and the extent to which the work represents best practice in environmental engineering.

Designed, developed and delivered by Entura, the Meander Dam integrated water management system provides accurate, reliable and easy-to-use information to help Tasmanian Irrigation (TI) effectively manage its Meander Dam water storage and associated hydropower facility in northern Tasmania. The system allows TI to deliver certainty of irrigation supply to water users while also optimising power production, and ensuring dam safety.

“We’re delighted to have partnered with Entura to develop the Meander Dam integrated water management system and are thrilled about winning this national award,” said TI CEO Nicola Morris.

“The value created by the water management system was particularly evident during the 2015–16 irrigation season, in which the region experienced below-average rainfall that resulted in reduced inflows into Meander Dam and increased demand for water supply to irrigators.

“We were able to match demand from predicted storage levels, fulfilling irrigator expectations and retaining sufficient storage capacity to be able to extend the delivery for an additional month. This ensured that irrigators were able to finish final crops and also maintain pasture growth for livestock and dairy activities.”

Meander Dam is the centrepiece of the Meander Valley Irrigation Scheme, one of the largest irrigation schemes in Tasmania. The dam was completed in 2007 and holds 43 000 megalitres of water, supplying five irrigation regions servicing pasture and cropping land.

Complexities of the energy-water nexus a challenge for utilities

"Real-time data and models are critical for utilities facing the challenges of the energy-water nexus," said David Fuller, Principal Consultant Water Management and Technology at Entura. "These tools allow operations to maximise the value of water whilst balancing the demands of electricity generation or use.

"The Meander Dam integrated water management system is an information gathering and processing system, as well as an easy-to-interpret, customised decision-support platform for optimising management and control of an integrated irrigation and hydropower system."

Powered by Entura's own Ajenti Data Management System, the solution developed for TI harnesses real-time rainfall and flow monitoring data captured by a network of catchment telemetry, and integrates this information with short-term and long-term forecasts from the Bureau of Meteorology and a hydrological model of the catchment.

Through a user-friendly dashboard interface, TI has an up-to-date picture of the dam's status and the probability of various possible short-term and long-term scenarios of storage level and hydropower output.

Real-time information from water meters on pumps within the irrigation area is also brought into the system to give the operator a complete water balance in the area fed by the dam.

Ms Morris said that access to such robust and reliable information supported appropriate management decision making, such as whether and when to release water, and the extent and timing of hydropower operation.

"Increased hydropower operation reaps a dual benefit from the water resource, helping to offset our operational costs, enabling greater delivery of service throughout Tasmania, benefitting not only the local community but the whole Tasmanian agricultural sector," said Ms Morris.

Entura works with customers across the Asia-Pacific region and Africa to help them improve the safety and performance of their dams, irrigation schemes, pipelines and pumping stations and to deliver innovative data monitoring, management and analysis solutions.

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About Entura

Entura is one of the world's most experienced specialist power and water consulting firms. As part of Hydro Tasmania, Australia's largest renewable energy producer and water manager, we are backed by more than 100 years of creating energy and maintaining power and water assets. Contributing to the development, operation and maintenance of water and renewable power schemes over their entire lifecycle has given us first-hand insights and a deep understanding of the real-life pressures of owning and operating assets, as has our experience in working closely with other asset owners to manage theirs.

Our strength comes from an ability to partner with clients to deliver practical and commercially sound solutions across the whole lifecycle of power and water assets, helping them to manage risks and achieve valuable outcomes.

From strategy, planning, design and construction through to operation, maintenance, risk management and training, our full range of consulting services covers every aspect of major power and water projects.

We support governments, funding agencies and corporate clients across the Asia-Pacific region and Africa from offices in Australia, India and South Africa.

For more information visit entura.com.au.

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