

## Zero inlet runs, zero problems

High flow accuracy using the world's first full bore electromagnetic flowmeter without mounting restrictions



North East Water (NEW) provides drinking water, sewerage, recycled water and trade waste services to a population of more than 100,000 people and 4,000 businesses in Victoria's North East, Australia.

NEW manages more than 2,900 kilometers of water and sewer mains covering a total land area of 20,000 square kilometers. They operate a range of assets, including 21 water treatment plants, 21 wastewater treatment plans and 1 trade waste facility.

North East Water are committed to support the health and prosperity of their region by providing sustainable water solutions to customers and communities.



Endress+Hauser Promag W 300 (DN400) 0 x DN full bore flowmeter installed downstream of DN300 to DN400 expansion joint and directly upstream of a DN400 gate valve.

**North East Water (NEW) are an Australian State Government owned public water utility providing drinking water, sewage treatment, trade waste treatment and recycled water services for residents and businesses.**

NEW operate and maintain multiple water pump stations in their network to ensure that bulk water supplied to residents or business meets their pressure and flow requirements. Due to growing population demands and ageing infrastructure, NEW continuously invests in network upgrades to future proof services for their customers. These upgrades generally contain a range of online instrumentation to optimise process control, including flow, pressure, level and water quality.

**The Challenge:** Accurate flow measurement in water pump stations is crucial for optimal process control, monitoring and efficiency. Electromagnetic flowmeters have long become the industry standard for flow measurement in pump stations since their introduction over 35 years ago. Technology has evolved exponentially since then, as industry standards become more stringent and utilities demand ever-increasing accuracy under challenging conditions. Standard electromagnetic flowmeter installations require at least five straight run pipe diameters upstream and two pipe diameters downstream from the electrode plane to comply with the specified accuracy. Why? Electromagnetic flowmeters like stable flow profiles.

For the NEW raw water pump station (RWPS) upgrade, the intended

flowmeter installation location contained several flow obstructions, including a DN300 to DN400 expansion joint directly upstream and a gate valve directly downstream. In this project, engineers had a choice: comply with the standard upstream and downstream straight run length requirements by installing a costly pipe re-route, or install a flowmeter that can sufficiently handle the changing flow-profile.

**Our solution:** Endress+Hauser offered the Promag W 0 x DN flowmeter – the world’s first electromagnetic flowmeter without measurement tube restriction to allow reliable flow measurement independent of the flow profile and mounting location. With its full bore design and multiple electrode measurement pairs – there is no pressure loss across the flowmeter. It can easily handle the swirling flow profile caused by the expansion joint upstream of the flowmeter, whilst guaranteeing an accuracy of at least  $\pm 0.5\%$  o.r. By eliminating the requirement of pipe re-routing, NEW was able to minimise installation costs.

Endress+Hauser also supplied an onboard self-verification tool in the form of Heartbeat Technology. This provided fast, fully traceable and documented verification of flowmeter functionality during the commissioning stage. Verification was completed via the in-built web server in a fraction of the time required for a typical standard verification. Since Heartbeat Verification is fully



Commissioning of the North East Water Raw Water pump station, installation location of the Promag W 300 0 x DN flowmeter.

traceable to TUV standards, it could be used in handover documentation to NEW following commissioning. Costs savings were possible in both reduced commissioning time and avoiding call-out costs for a specialist technician.

**Results:** Installation of Promag W 300 (DN400) 0 x DN full-bore flowmeter for completely unrestricted pump station flow measurement provided several benefits, including:

- Reduced installation costs – since the flowmeter was installed without the typical upstream and downstream pipe lengths, no pipe re-routing was required

- Guaranteed flow measurement accuracy of  $\pm 0.5\%$  o.r. in restricted installations – multiple measurement electrode pairs allowed high accuracy even in variable flow profiles
- Reduced commissioning costs – Heartbeat Technology provided fully traceable, documented flowmeter verification at a fraction of the time of typical external verifications

#### Products / solution components

- Promag W 300, 0 x DN full bore option, inclusive of Modbus RS485
- Full order code = 5W3B4H-AA 9IMABEFAAHM3K0AA1+AAEB

*This article is not intended to imply any exclusive contractual relationship with Endress Hauser and North East Water, or in any way bind North East Water to select any particular vendor for future projects.*

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