

The Canadian Experience: Using DNP3-WITS Water Telemetry Standard for Gathering Flow and Pressure Data from District Metered Areas

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FORMAT

20 minute presentation plus paper

KEYWORDS

DMA, Leakage, Telemetry, Water Efficiency, DNP3-WITS, Auditing, Distribution, Flow Modelling, Pressure

SHORT ABSTRACT (100 WORDS)

In 2016, Guelph Water Services, a Canadian drinking-water utility with a service population of 140 000, embarked on a project to upgrade and expand district metered areas (DMAs) in its distribution system. The talk covers how DNP3-WITS (water industry telemetry protocol) is now used to gather flow and pressure data from magnetic flowmeter units located throughout the city. Guelph Water is the first deployment of DNP3-WITS protocol in Canada. The DNP3-WITS protocol features automatic time-stamping of data, built-in store/forward data-logging, and remote configuration/diagnostics. The DMA flow and pressure data is used to track leakage, audit customer metering, prioritize piping repairs/replacement, and for the city's hydraulic model.

LONG ABSTRACT

In 2016, City of Guelph Water Services, a public drinking water utility in Guelph Ontario Canada with a service population of 140 000, embarked on a project to upgrade and expand the district metered areas (DMA) in its distribution system. Started in 2013, the DMAs have been created by closing specific street valves, so water usage in DMAs can be monitored by 2 or 3 flowmeters installed on the inlets to each DMA. Guelph selected a DMA metering system that uses magnetic flowmeters installed into valve chambers located throughout this city. Each flow meter is accompanied with a flush-to-the-ground boulevard box which contains a battery powered transmitter, complete with a built-in data-logger and cellular data modem.

The topic of this paper is the new DMA flowmeter telemetry system that was deployed as part of the 2016-2017 upgrade. Based on the UK's Water Industry Telemetry Standard (DNP3-WITS), the new telemetry system now allows the city to remotely manage the configuration of its DMA flowmeters and easily gather/store DMA flowmeter data into its SCADA system. The DNP3-WITS system is used to track system leakage, audit customer metering, prioritize distribution piping for repair/replacement, and feed data into the city's hydraulic model.

The DNP3-WITS protocol is an industry-standard protocol that has been developed by water utilities in the UK who wanted a standardized telemetry protocol that is tailored to the needs of the water industry (www.witsprotocol.org). Features of DNP3-WITS include remote configuration management of

flowmeters and other instrumentation, ability to remotely manage RTU/PLC configurations, automatic store/forward data-logging built right into the protocol, detailed telemetry diagnostics, and automatic calculation of min/max/average/totals for process values.

The presentation will provide an overview of Guelph's DMA flowmeter system, a review of the flowmeters used, how the DNP3-WITS telemetry system was deployed, and an introduction to the many technical benefits of using the DNP3-WITS protocol. Guelph Water represents the first deployment of DNP3-WITS protocol in Canada.

ABOUT THE AUTHOR



Graham Nasby, P.Eng, PMP, CAP holds the position of Water SCADA & Security Specialist at City of Guelph Water Services, a publicly-owned water utility located in Guelph, Ontario, Canada. He is an active member of the AWWA and WEF, and currently sits on the Automation Committee of the Ontario Water Works Association. Graham is co-chair of the ISA112 SCADA Systems Standards committee with the International Society of Automation, and a voting member of both ISA18 Alarm Management and ISA101 HMI Design standards committees. During the past 15 years, he has published over 40 papers on a wide range of automation topics. Contact: graham.nasby@guelph.ca