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WHEN MEASUREMENTS MATTER

Utah: Water-Supply SCADA System

Campbell gear used in municipal water-supply interconnection

In 2010, Trenton and Amalga, two northern Utah towns separated by only a few miles, created a plan to design and build an interconnection between their two municipal water systems. The interconnect system would automatically allow water from Trenton to flow to Amalga and vice versa, allowing the two towns to share water during emergency situations. To accomplish this, the towns worked with JUB Engineers of Logan, who contracted with Intermountain Environmental (IEI), also of Logan, to install a supervisory control and data-acquisition (SCADA) system to allow each town to view the status of their water system and control the interconnect system as needed.

Each town has separate water sources, pump tanks, and distribution systems, so the challenge was to connect them in a way that would easily allow sharing of water. Intermountain Environmental used the CR1000 Measurement and Control System (manufactured by Campbell Scientific) and VTScada software (by Trihedral) as the foundation for the SCADA system. The outcome was independent systems in each town.

The systems connect with numerous sensors via a Campbell multiplexer. They monitor parameters such as flow and pressure from water sources into tanks and from tanks into the towns, tank level, chlorine water in the water, and flood conditions and chlorine gas leaks at the buildings housing the systems. The CR1000 uses a Campbell SDM-CD8S dc device controller to control pumps and valves, with each town controlling the valves to allow or disallow the water flowing to the other.

Case Study Summary

Application
SCADA system monitors and controls water-system interconnection

Location
Trenton and Amalga, Utah

Products Used
AM16/32B, SDM-CD8S, SDM-CVO4, CR1000, CURS100, NL120, RF450

Contributors
Josh Hanks, Intermountain Environmental, Inc. (IEI)

Participating Organizations
Trenton Town, Utah Amalga Town, Utah

Measured Parameters
Water level, pressure, and flow; pump status; door and hatch status; chlorine in water; chlorine gas leaks

Controlled Devices
Pumps, valves

Participating Consultants/ Integrators
Intermountain Environmental

VTScada allows the town water managers to view the status of pumps, water levels, and door and hatch alarms. The software can send out alarms, and allows users to access their system information and control devices over the Internet as if they were sitting at the main PC at the town hall.

Each town received similar equipment and the systems are independent of each other. The CR1000 was used as a remote terminal unit (RTU) at each site and also as the programmable logic controller (PLC) at each base station. The data loggers communicate with each other using Campbell's RF450 spread-spectrum radio. At each town hall there is a master station that consists of a CR1000 and an NL120 Ethernet interface. LoggerNet and VTScada run on Windows 7 PCs and communicate with the CR1000 master unit over Ethernet connections.

The system is now completed and has been in operation since May of 2011.
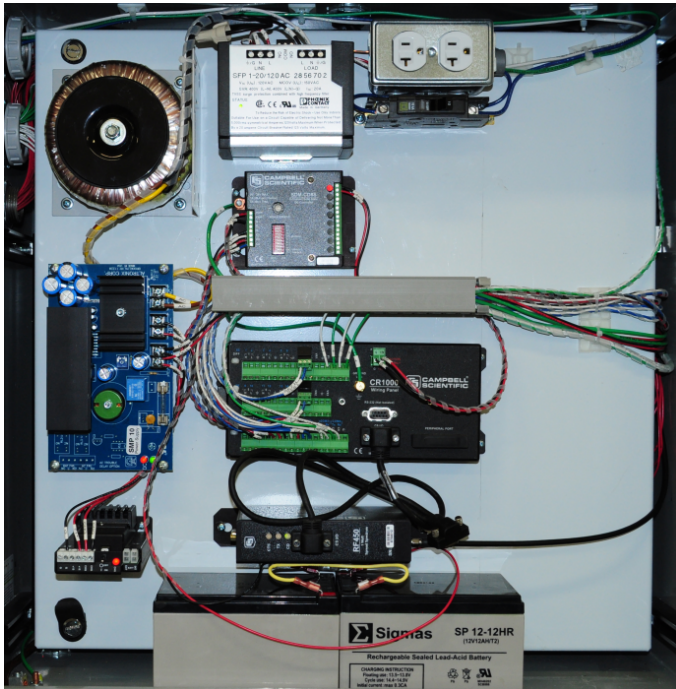
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