

Wireless Flexible Peer-To-Peer SCADA

DNP3 County Wide Well System

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SUBMISSION TYPE

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SCADA, DNP3, Unlicensed Radio, VTSCADA, Telemetry, IEC 61131-3

ABSTRACT

Custom Controls Unlimited Inc. was contracted by McDavid Associates Inc. to implement a county wide SCADA system for Wayne Water Districts in Goldsboro NC to control 48 wells, 9 booster pump stations, 14 Elevated Tanks, and 4 Water Treatment Plants. We were given the opportunity to select a protocol and SCADA software of our choosing.

Opposed to the traditional “round robin” type SCADA system we choose to utilize DNP3 protocol. Our goals were to make a set of standardized programs, eliminate a singular master controller, allow for easy expansion, and simplify end user interface and usability. Peer-To-Peer functionality as well as unsolicited messaging were utilized throughout the system. Peer-To-Peer messaging allowed each tank (radio repeater) in the system to communicate as its own master controller allowing it to turn on/off any other well/bps/water plant throughout the system. Unsolicited messaging enabled instant alarms and updates of data upon a change of state. Spread spectrum 900 MHz encrypted radios were used in a mesh type self-healing system to increase reliability. VTSCADA from Trihedral Engineering was chosen for the HMI interface. We worked together with the general contractor and end customer to develop graphical displays. Reports were also created and automatically generated for each site using Crystal Reports 2013. Using an unconventional water/wastewater protocol we were able to successfully delivery a user friendly, reliable, and unique SCADA solution.

This presentation will cover: The planning phase and differences from a traditional SCADA system, Implementation of programming and system architecture, challenges and knowledge gained, computer system and HMI interface, and future goals. The audience of this presentation will be primarily water/wastewater owners and operators.

ABOUT THE AUTHORS

Robert Shull PE CAP *Graduated from North Carolina State University in 2010 with a bachelors in Biological Engineering. While in undergraduate studies he began working for Custom Controls Unlimited Inc. In 2012 He finished graduate school with a Masters of Biological Engineering. He is currently a project manager and control systems engineer responsible for design, fabrication, and programming at Custom Controls Unlimited, Inc. Contact: robbie.shull@ccuinc.com.*