

Versatile HMI/SCADA Application Reduces Operational Costs

Application Challenge

The water resource department of the Town of Tonawanda, NY maintains hundreds of miles of water and sewer lines. Each year billions of gallons of water drawn from the Niagara River are treated, distributed, collected and cleaned. In order to serve their residents, the town operates both water and wastewater treatment facilities as well as 13 remote pumping stations automated with Schneider Electric Modicon PLCs and industrial control links devices connected to approximately 4,000 I/O points in total.

The challenge for the Town of Tonawanda, NY was operating their facilities and pumping stations with a legacy HMI/SCADA application and other third-party applications such as reporting solutions whose price for support was becoming too high. They also needed to view information from their facilities and pumping stations via the Internet using Microsoft Explorer web browsers. The town mandated that the return on investment for switching to another HMI/SCADA application must occur within the first year.

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Solution Deployed

The Town of Tonawanda, NY replaced their outdated HMI/SCADA software with ICONICS' GENESIS32 Enterprise Edition and WebHMI Thin Client at both the Water and the Wastewater Treatment Facilities. The system was installed by town employees, with sales and technical support from BCS in Buffalo, NY. Between both locations, five GENESIS32 servers, five WebHMI servers, and numerous dedicated and browser-based clients were installed. Both locations deployed ICONICS' GraphWorX32 for the operator screens, TrendWorX32 for real-time trending, and AlarmWorX32 Multimedia for distributing alarms and events to the appropriate people. ICONICS software was also deployed at the 13 remote pumping stations connected over leased lines back to the control room.

Redundancy was performed at three levels. There were redundant Enterprise servers in each location, and each location served as a backup for the other. There was wireless Ethernet between the locations running over a Cisco backbone. ICONICS' DataWorX32 was added to the application so both the Water Treatment Facility's servers and the Wastewater Treatment Facility's servers could act as each others backups. DataWorX32 Redundancy was also used to keep the plants in sync. OPC technology and redundancy also played a significant role in the application. There were redundant OPC drivers in use as well as redundant Ethernet with a recovery time of less than 300 milliseconds. Kepware OPC drivers were used to connect GENESIS32 to Schneider Electric Modicon PLCs and industrial control links devices.

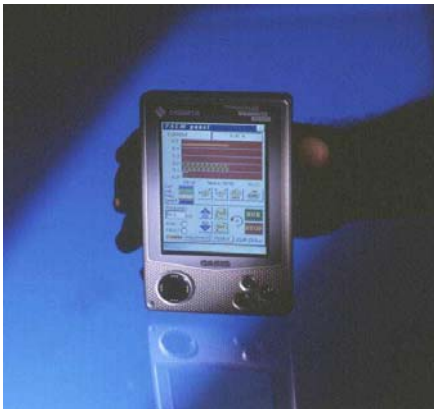


Metrics and Results

For the price of one year of support, GENESIS32 and WEBHMI were installed on a 32-bit platform, providing additional capabilities such as true thin-client viewing via Internet Explorer Web browsers. The upgrade provided the Town of Tonawanda, NY with a system that is scalable along with an architecture that supports additional functionality, such as wireless operator stations and the ability to stay connected via mobile phones. They were also able to lower the costs of their maintenance contracts and reduced their internal system support costs. The savings were enough to avoid the capital expense of replacing their legacy HMI and Plant TV systems. Since WebHMI is a thin-client solution, all system administration and licensing is now done at a single location on the server. With client-side licensing, staying connected to the plant can be done from any location at any time with a sanctioned user name and password. The Town of Tonawanda, NY met its goal of deploying a solution that paid for itself within the first year. Going forward, the Town of Tonawanda, NY will continue to retrofit software solutions and soon will deploy ICONICS ReportWorX as their reporting standard.

ARC Perspective

The Town of Tonawanda, NY is now able to embrace thin-client HMI/SCADA software as well as functionality such as wireless operator stations and mobile phone connectivity. ARC's market research shows a number of factors driving the market growth of thin-client technologies. Many HMI/SCADA users suffer from a lack of, or an over-extension of IT resources. Thin-client technology requires less IT resources for support since the software resides in a central location rather than distributed to individual users located throughout the plant. This also substantially lowers overall support costs and reduces the up-front costs of deployment. It also gives the manufacturer the opportunity to outsource the implementation and maintenance of the web server, since all the support can be handled at a single location. Thin client technology makes for easy access by users anytime and anywhere, a major factor in a world that requires increased collaboration by a global workforce as manufacturers face increase pressure to introduce new products at a much faster rate and time to market.



PDAs Used For Wireless HMI

ARC's research has found that wireless web products are typically a bundled hardware and software solution consisting of a handheld device with preloaded HMI/SCADA client software. HMI/SCADA screens can be transmitted to the handheld device, typically via wireless Ethernet transmissions. This provides mobile users with instant access to important HMI/SCADA information. Process and production status as well as alarm information can be viewed in the HMI/SCADA screens. Typical users benefiting from wireless web access include maintenance, delivery, quality, and data entry. The benefits for these users include mobility, quick access to critical information, easy connection, lower administration costs, and widespread use of existing HMI/SCADA screens, limiting the need for new screen creations.



Written by ARC Advisory Group, Thought Leaders for Manufacturing & Supply Chain