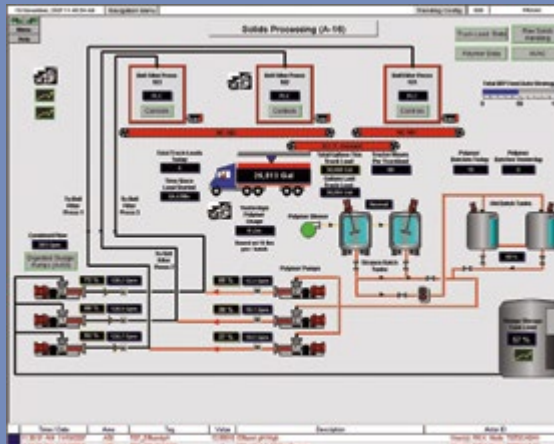Lincoln Wastewater System's
Northeast Treatment Plant

Lincoln Wastewater System
Lincoln, Nebraska

Solids Processing Screen

"ICONICS GENESIS32 is a very powerful and easily configurable control platform. I have no problems with any of the suite components. The integration of scripting and expression editing provides much more power than I am used to."

Frank Newell
Control Systems Support Specialist
Lincoln Wastewater Services

About Lincoln Wastewater System

The Lincoln Wastewater System (LWWS), owned and operated by the City of Lincoln, Nebraska, provides a continuing and comprehensive effort to assure the proper collection and treatment of current and future wastewater flows and loads in an environmentally sound and cost effective manner that protects human health and the environment.

Underneath and throughout Lincoln are 970 miles of sanitary sewer lines and 14 pumping stations that keep the wastewater flowing to two municipal treatment plants. The Theresa Street Plant is located in the north central section of the City and Northeast Wastewater Treatment Plant is just south of Interstate 80 and east of Highway 77. The Theresa Street facility has a maximum capacity of 27 million gallons per day and on an average day presently treats about 18 million gallons of wastewater. The Northeast facility presently treats about 5.5 million gallons per day. That adds up to 23.5 million gallons of water per day running through the two treatment plants.

ICONICS Software Deployed

Lincoln Wastewater System installed ICONICS GENESIS32™ OPC Web-enabled HMI/SCADA suite and its WebHMI™ Web-based real-time automation component, as well as the BridgeWorX™ (real-time data bridging), ReportWorX™ (enterprise reporting/charting/analysis) and PortalWorX™ (real-time collaboration and visualization dashboards) components of ICONICS' BizViz™ manufacturing intelligence/business visualization suite.
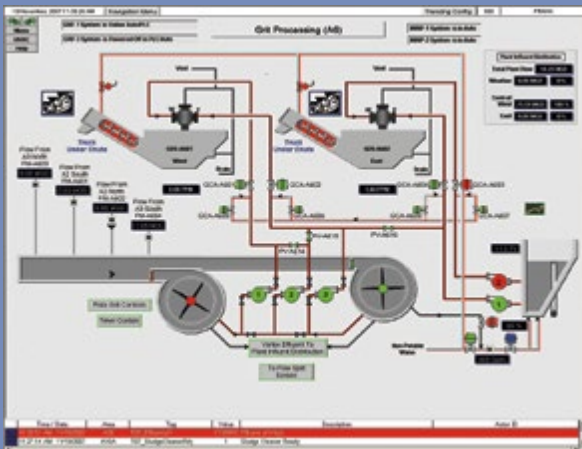
Project Summary

ICONICS solutions were recommended through LWWS' system integrator, Olsson Associates (who have offices

in Lincoln). Lincoln Wastewater System has installed GENESIS32 server and multiple browser stations at each plant, joined together on the City's fiber optic network. Each plant is an activated sludge wastewater facility. The LWWS SCADA system controls all manual and automatic aspects of each process including raw water pumping, flow dispersal through different treatment trains, flow control to aeration basins and plant overflow bypass.

The system also controls aeration basin dissolved oxygen monitoring, mixed liquor suspended solids monitoring, return activated sludge flow set points/rates and effluent flow disinfection/totalization. The system also controls solid waste removal from the treatment facility.

Data communications is handled through wired Ethernet within buildings and multimode fiber optics between buildings at each site, as well as radio communications to remote lift-stations and dedicated telephone lines to some remote lift-stations. ICONICS software interfaces with Allen-Bradley (SLC 5/05, MicroLogiX 1000 and 1100) and Wago (Modbus I/O) hardware and KEPware OPC Servers. Process accumulators, totalizers, averages and more are logged to SQL Server, while other data is shared with Microsoft Access and Oracle databases.

Grit Processing Screen

Anaerobic Digesters

Although browsers access the local server, the LWWS application was configured so that in the event of one server failure, the other plant could provide basic graphics, alarming and trending for the other facility. WebHMI allows LWWS administrative staff to access graphics, alarming and trending from desktops on the City network. Trending via WebHMI has been especially useful to operations and maintenance managers. ICONICS BridgeWorX is used to log process information to a SQL Server database on a separate server for reporting. ReportWorX is used to create, print and e-mail daily process and equipment runtime reports to key personnel.

Conclusion

Lincoln Wastewater Service's new system provides monitoring and control of numerous pumps, valves, gates, wetwell levels and solid waste removal in a secure manner. The system also allows managers to monitor any functions that the operators monitor. LWWS was impressed by the ease and flexibility of ICONICS software's configuration, as well as with the open connectivity and open standards concepts of OPC technology.

Future projects involving ICONICS include integration of surveillance cameras, maintenance data and electronic lockout of equipment.