



Success Story

For more info contact: ICONICS · 100 Foxborough Blvd. · Foxborough, MA 02035 · 508.543.8600 · info@iconics.com

Industry: Water & Wastewater

**Customer: Keokuk Municipal Water Works
Keokuk, Iowa**

Serving over 4800 customers, Keokuk Municipal Water Works is responsible for providing its residential, commercial and industrial customers with high quality and reliable water supply. The Water Works service area, 105 miles of pipe within a 20 sq. mile area, includes the entire incorporated area of the city of Keokuk, Iowa. Additionally the water system serves two small private water systems outside the Keokuk corporate limits.

ICONICS Software Deployed:

Keokuk Water has installed ICONICS GENESIS32™ after evaluating ICONICS, Wonderware and Intellution HMI software products. The GENESIS32 modules used are TrendWorX32™ and AlarmWorX32™. These ICONICS products were selected because of their cost effectiveness, ActiveX based technologies, ability to log data to Microsoft® SQL Server and the local support. GENESIS32 replaces a stand alone, proprietary system.

Project Summary:

The Genesis32 system monitors all functions of the plant: from analytical equipment to Rotork Valve: Control, Monitor, Alarm, Trend etc. The Genesis32 system connects to an Allen-Bradley Series 5 and Micrologix PLC's, Prolinx Hart Multiplexer, Rotork Valve System, Hach Analytical Equipment, Toshiba Drive Systems, and Rosemount Field Devices. The system has one Allen Bradley OPC Server, One Alarm and Trend server and 5 Browser nodes. The system has 1500 digital and 225 analog tags.

The ICONICS GENESIS32 system connects via Modbus to the Rotork Valve Package. The system provides better methods of data monitoring and alarm logging. It also provides much better visual representation of the water treatment process with the browser nodes located strategically throughout the facility. The ICONICS 16-bit to 32-bit graphics translator made for a fast and easy upgrade from GENESIS for Windows version 3.5x to GENESIS32 v6.x.



Keokuk Municipal Water Works



Keokuk Water Pumps



Keokuk Water Clarifiers



Keokuk Water Settling Tanks



Control System Engineers:

Ted Adams, Adams Consulting
217-228-1834 / 217-242-1480
Jeff Upper, Klingner & Associates, P.C.
217-223-3670

End-user quote:

"The system has been in for 5 years, and it has been very reliable. The migration from the older version Graphworx to the new has been a success. All aspects of the change over from interfacing and gathering data from the Rotork Valve package (Modbus) to the new OPC interface from ICONICS for the Allen Bradley PLC5 were completed in a timely manor with no down time." **Bill Cole, General Manager Keokuk Municipal Water Works.**

Project Overview:

Several large centrifugal pumps move Mississippi river water (raw water) to the plant and into the head tank from the river. Prior to the head tank several chemicals including oxidizes soluble manganese, a liquid alum, a coagulate aid, cationic polymer, and Carbon are fed directly into the raw water.

After the raw water is mixed with the chemicals, it goes to four claricone Clarifier units where an anionic polymer can be fed directly into the top sludge blanket in the Clarifiers. Lime is also introduced at the bottom in a slurry form to remove the minerals that cause calcium hardness. The entrance velocity of the raw water promotes mixing within the vessel's lower cylinder. The slower rotation in the middle section provides good particle contact and flocculation. There is little turbulence in the top section of the claricone, which makes for good settling of the particles and produces clarified water. The water passes upward through the sludge blanket of which entraps slowly settling particles that would otherwise pass through into the filters. The clarified water off the top of the claricones goes to the re-carbonation tank and has a high pH and concentration of calcium carbonate. Carbon dioxide gas is added to the tank to form soluble calcium bicarbonate and to reduce the pH to a level at which the water is stabilized to prevent scale formation or corrosion of water pipes.

The water is then gravity fed into the filters. There are four sand filters used to remove what little particulate was not removed in the claricones. Chlorine is then added. After the water goes through the filters it enters the storage well. Here liquid ammonia is added to combine with the free available chlorine to forming a weaker form of disinfectant. The treated water is then pumped into the distribution system and to two elevated storage towers through one of four high service pumps. All the plant control is achieved through the use of ICONICS GENESIS32 software.

Conclusion:

ICONICS has worked closely with Keokuk Water to make this project a success. Keokuk Water participates in the ICONICS SupportWorX for upgrades and access to technical support.