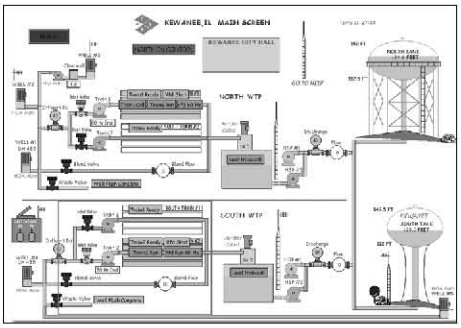
WaterWorld AUTOMATION TECHNOLOGY

New Control System Streamlines Plant Operation



Compliance with the Safe Drinking Water Act (SDWA) and improving its ability to maintain and upgrade its water treatment system led the City of Kewanee to install a state-of-the-art control system that would serve the needs of the city and surrounding community.

The system, installed with help from Engineered Fluid Inc. and Rockwell Automation, cut communication response times in half and greatly improved remote monitoring capabilities.

The Kewanee, located between Peoria and Moline, is a small city in west central Illinois. The water treatment facility houses three water pumping stations responsible for filtering and treating drinking water for more than 13,000 people.

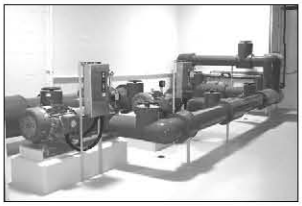
The city was concerned about the ability of its proprietary system to keep up with changing regulations. The existing water treatment system had become more difficult to modify and maintain.

"Replacement parts were becoming obsolete, and alternative technologies needed to increase the lifespan of existing equipment were becoming very hard to find," said Mike Johnson, project engineer at Engineered Fluid, manufacturers of water distribution equipment.

The City of Kewanee knew it needed an updated control system and identified three criteria for the purchase:

- Flexibility and scalability to stay ahead of tightening SDWA standards;
- Ease of use, troubleshooting and maintenance to reduce unscheduled downtime; and
- Remote monitoring and control of three pumping stations by the city's lean staff.

Engineered Fluid managed the upgrade project and selected Rockwell Automation to help design and install the new control system, which featured Allen-Bradley® programmable controllers (PLCs) and graphic terminals from Rockwell Automation.



This same technology is used by automated factories and industrial facilities worldwide. The control system works well with the city's current Reverse Osmosis (RO) filtration system.

To enable communication among the three pumping stations, Engineered Fluid installed an Allen-Bradley SLCTM 5/03 controller at the plant's central facility and MicroLogix™ 1200 controllers at each of the two remote stations. The controllers communicate via DF1 Radio Modem protocol, which can be used in either a traditional master/slave radio network or in a peer-to-peer, masterless network configuration. This technology has a higher degree of reliability than telephone carriers and allows city staff to take full control of the operation and maintenance of their supervisory control and data acquisition (SCADA) communication networks from any of the three sites.

Engineered Fluid also installed Rockwell Automation Software RSView®32™ human machine interface (HMI) software with Allen-Bradley PanelView™ 1000 operator terminals for monitoring and tracking the operation of the water purification system.

RSView32 software allows operators to monitor the entire treatment process including water levels, chemical application, flow raters and chlorine content.

Results

Working with Rockwell Automation, Engineered Fluid was able to reduce the communication response time for the City of Kewanee's RO system in half. Prior to implementing the DF1 Radio Modem protocol, it took approximately 60 seconds for an operator to receive an update. Now, an operator gets updates in 30 seconds.

"The engineers responsible for monitoring the water supply and making all the necessary changes to keep it clean and available for consumption have increased confidence in the system due to the rapid response rate of the network," said Johnson.

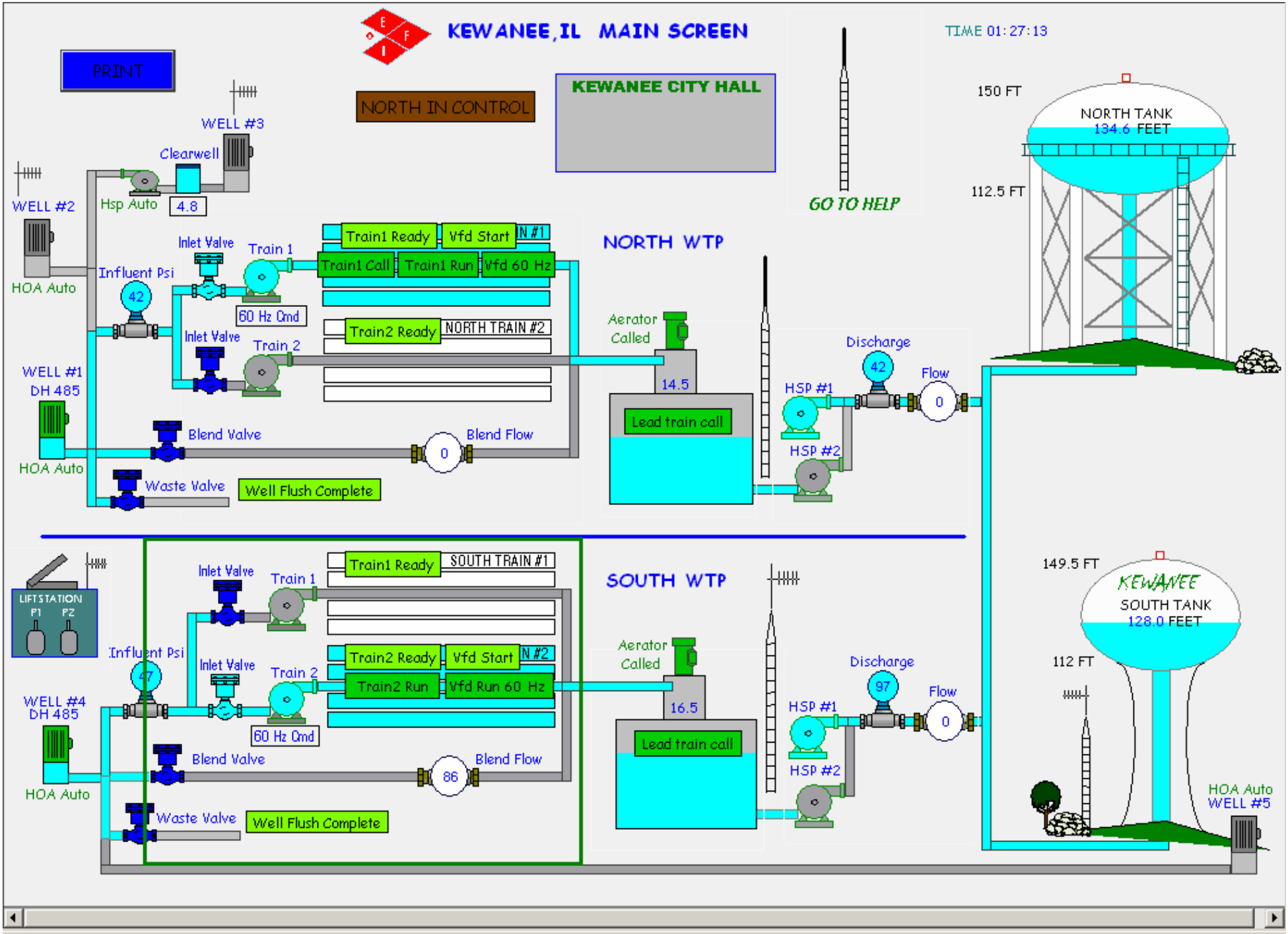

EFI Project Engineer Mike Johnson


EFI Project Engineer Tim Dejournett

The SLC 500 and MicroLogix controllers also help keep the water clean by managing how much water is pumped out of the clear wells and keeping the RO systems balanced. WW

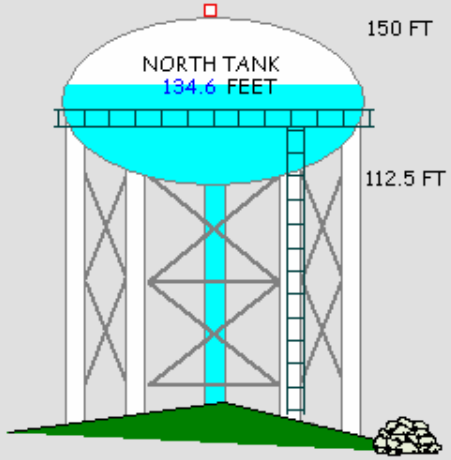
Engineered Fluid, Inc.
P.O. Box 723
Centralia, IL 62801
Phone 618-533-1351
Fax 618-533-1459
Email *info@engineeredfluid.com*
Website *www.engineeredfluid.com*

Reprinted with revisions to format, from the September 2006 edition of **WATERWORLD**


KEWANEE,IL MAIN SCREEN
TIME 01:27:13
PRINT
NORTH IN CONTROL
KEWANEE CITY HALL
GO TO HELP
WELL #3
Clearwell
WELL #2
Hsp Auto
4.8
150 FT
NORTH TANK
134.6 FEET
112.5 FT
NORTH WTP
Train1 Ready
Vfd Start
N #1
Train1 Call
Train1 Run
Vfd 60 Hz
Inlet Valve
Train 1
Influent Psi
HOA Auto
42
60 Hz Cmd
Train2 Ready
NORTH TRAIN #2
Inlet Valve
Train 2
WELL #1
DH 485
Aerator
Called
14.5
Lead train call
Discharge
42
Flow
0
HSP #1
HSP #2
Blend Valve
Blend Flow
0
HOA Auto
Waste Valve
Well Flush Complete
LIFT STATION
P1
P2
SOUTH WTP
Train1 Ready
SOUTH TRAIN #1
Inlet Valve
Train 1
Influent Psi
47
Train2 Ready
Vfd Start
N #2
Train2 Run
Vfd Run 60 Hz
Inlet Valve
Train 2
WELL #4
DH 485
60 Hz Cmd
Aerator
Called
16.5
Lead train call
Discharge
97
Flow
0
HSP #1
HSP #2
Blend Valve
Blend Flow
86
HOA Auto
Waste Valve
Well Flush Complete
149.5 FT
KEWANEE
SOUTH TANK
128.0 FEET
112 FT
HOA Auto
WELL #5

KEWANEE,IL TANK SCREEN

NORTH HIGH LEVEL ALARM ON FT:	149.0
NORTH HIGH LEVEL ALARM RESET FT:	148.0
NORTH LEAD HSP CALL OFF FT:	146.0
NORTH LEAD HSP CALL ON FT:	140.0
NORTH LAG HSP CALL OFF FT:	140.0
NORTH LAG HSP CALL ON FT:	120.0
SOUTH LEAD HSP CALL OFF FT:	147.0
SOUTH LEAD HSP CALL ON FT:	143.0
SOUTH LAG HSP CALL OFF FT:	140.0
SOUTH LAG HSP CALL ON FT:	130.0
NORTH LOW LEVEL ALARM RESET FT:	125.0
NORTH LOW LEVEL ALARM ON FT:	120.0



SETPOINT CHANGE OK

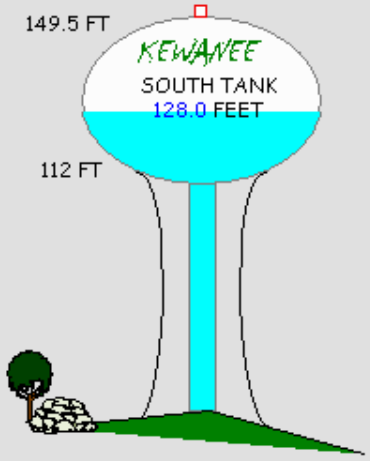
TANK SELECTED FOR CONTROL

Select Mode

NORTH | SOUTH

Current Mode: NORTH

SOUTH HIGH LEVEL ALARM ON FT:	149.0
SOUTH HIGH LEVEL ALARM RESET FT:	147.0
SOUTH LEAD HSP CALL OFF FT:	146.5
SOUTH LEAD HSP CALL ON FT:	140.0
SOUTH LAG HSP CALL OFF FT:	142.0
SOUTH LAG HSP CALL ON FT:	132.0
NORTH LEAD HSP CALL OFF FT:	142.0
NORTH LEAD HSP CALL ON FT:	136.0
NORTH LAG HSP CALL OFF FT:	142.0
NORTH LAG HSP CALL ON FT:	130.0
SOUTH LOW LEVEL ALARM RESET FT:	127.0
SOUTH LOW LEVEL ALARM ON FT:	125.0



GO TO MAIN SCREEN

GO TO TANK TREND CHART

PRINT