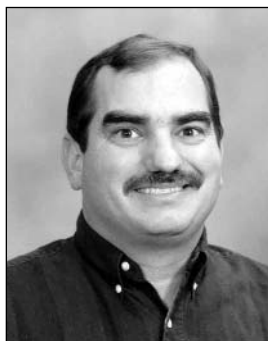


Programmable Logic Controller use simplifies system control

Water and wastewater systems in Kansas continue to expand their use of programmable logic controllers (PLC) as a method to control processes. The “PLC” is actually a small computer used for automation control of machinery such as pumps and motors used for water and wastewater processing. The PLC is also unique in that unlike general-purpose computers, the PLC is packaged and designed for extended temperature ranges. And it can function in dirty or dusty environments. PLCs are also immune to electrical noises. A PLC is mechanically more rugged and resistant to vibrations and impact than a general-purpose computer. The PLC replaces the many timers, relays and other devices used to control start/stop, the run times and the level controls as just a few examples of their adaptation to municipal uses.



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PLCs provide increased reliability as once the information has been written it can then be easily downloaded to a new PLC. The PLC has more flexibility can be updated by programs from the original equipment manufacturer. Security can be provided through passwords and key locks. PLCs provide a lower cost if an application has more than a half-dozen control relays and timers.

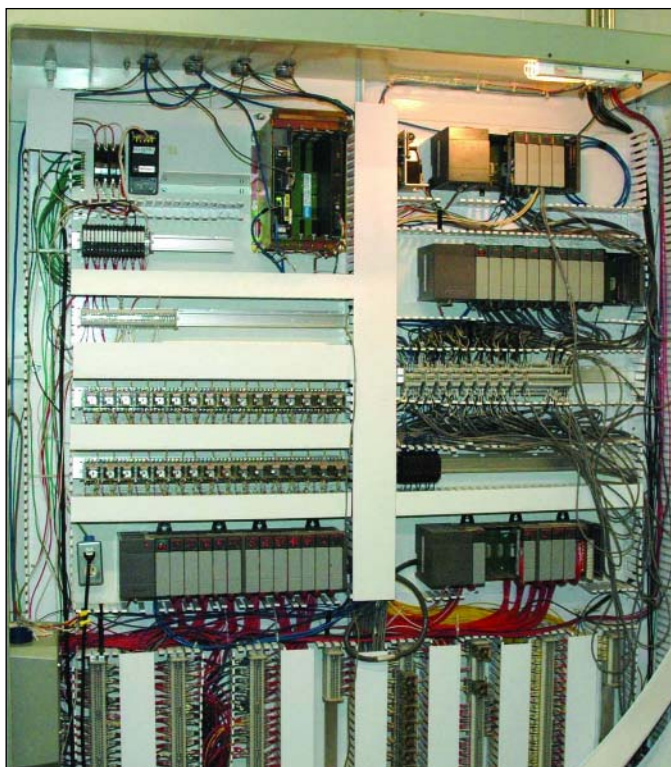
Communications capability is greatly increased with a PLC as it has the capability to communicate with other controllers and computer equipment for better

I attended the training session sponsored by KRWA entitled “Programmable Logic Controllers: Application, Function and Benefits” held in Manhattan this

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supervisory control and data gathering. They provide faster response times and real time applications than the older type relays and timers such as turning on and off fill valves for components such as chemicals and water storage.

past July 26 and 27. Several systems sent operators to the training. They were Abilene, Humboldt, Iola, Manhattan, Seneca, St. Marys, Morris RWD 1, Nemaha RWD 3, Veolia Water (Junction City), and Wabaunsee RWD 2. Presenter Bob Blume did an excellent job in training this



The PLC cabinet at the Abilene Reverse Osmosis water treatment plant houses numerous PLCs that are used for nearly every aspect of plant control. PLCs even remotely control the many wells and delivery pumps bringing water into the plant for treatment. Abilene operators attended the training hoping to receive training that would eventually let in-house personnel program PLCs for new uses in the plant.

session. The interest and need is obvious as the class filled to the maximum allowed size of 20 registrants in a short time. The attendees actually used a PLC training program to operate several different pieces of equipment. The basic knowledge of ladder logic is necessary to understand PLCs. I recommend those those who are not familiar with ladder logic to attend a future session that KRWA will be sponsoring.

Systems that are considering improvements or new facilities such as water or wastewater treatment ought to suggest that their designer include PLCs in the design and also, make sure that the program is provided to the water or wastewater utility. This information should belong to the system as proprietary information.

PLCs were invented as a less expensive replacement for older automated systems using hundreds of relays and timers. Often a single PLC can replace thousands

of relays. A PLC is not a large piece of electrical device, depending on the amount of controls they are replacing, but in most cases is no larger than a bread toaster.

This allows the spare to be programmed for the place it is needed in a matter of seconds.

The PLC has been around since the late 1960's. They were started by the automotive industry

One of the many beauties of a PLC is that once it is programmed you can save the information on a computer and a disc. Then if the PLC needs to be replaced or updated, the utility can reinstall the program.

One of the many beauties of a PLC is that once it is programmed you can save the information on a computer and a disc. Then if the PLC needs to be replaced or updated, the utility can reinstall the program. Another is that you can keep a spare on hand to load the saved information for a wastewater treatment facility or water plant using the same device.

for a replacement of the hard-wired relay systems. The need arose from the changing model years when it would take days to rewire the relays instead of the few hours it now takes to reprogram the PLC.

I am no expert on PLCs, but they are a very useful piece of equipment to upgrade equipment for better control and data gathering. Most of this information was taken from a handout in the session I attended and supporting information was also obtained from Wikipedia, the free encyclopedia on the Internet. To gain information and training first-hand, I recommend you attend one of KRWA's sessions on PLCs. Watch the KRWA Web site at www.krwa.net and then check "training calendar."

I also encourage water and wastewater utility staff and governing bodies to attend the 2007 KRWA annual conference & exhibition, March 27 – 29, in Wichita. The KRWA conference is a top-notch event, filled with relevant training sessions, 275 exhibits, outstanding speakers and great hospitality. It's second to none. I hope you attend to learn, share and compare products and services available to you.



Bob Blume teaches basic PLC programming to students by using an instruction program that simulates programming PLCs for real world problems. It is also a bunch of fun. This KRWA PLC training class was held this past July at the Manhattan Wastewater Plant.