

RTU vs. PLC

What is the difference? DO I CARE?

Definitions:

- PLC-programmable logic controller
- RTU- Remote telemetry unit
- CPU-Computer Processing Unit
- I/O- Types of Inputs and Outputs such as Digital Inputs & Outputs, Analog Inputs & Outputs
- Polling- master unit “asks” for data from PLC
- Report by exception- RTU can initiate data transfer on change of state or alarm situation
- Store-and-forward- Ability of an RTU/radio to pass information from one site to the next to extend radio communication range.

Many districts are employing automation to help better manage their system and to help stretch scarce manpower resources. Automation typically starts with either a Remote Telemetry Unit (RTU) or a Programmable Logic Controller (PLC). Both of these technologies utilize a small computerized “brain” (CPU) to process inputs and outputs from primary sensing devices and pumping equipment. These devices might be level and flow transmitters, intrusion alarms, or motor starters.

Figure 1 Ace 3600 Series RTU

For Districts that are considering automation, the choice of equipment is really a choice of design priority. This can be clarified by the use of a simple, but telling Colorado analogy:

A true RTU utilizing radio such as a Motorola ACE 3600 RTU is equivalent to a rugged 4 x 4 truck that comes with severe weather survival equipment, studded snow tires and the ability to get through the high country. The features of a rugged RTU often include: Multiple types of communication ports to “talk” to a variety of field equipment, licensed UHF or VHF radio, verification of data transfer, Store-and-Forward capabilities, report-by-exception capabilities, and on-board back up battery.



A PLC such as an Allen Bradley is more equivalent to a Ferrari sports car being raced at Bandimere speedway. It is a great solution for very high speed communications in a

Figure 2 AB MicroLogix 1400 PLC



controlled, short distance, environment. Typical features of a PLC often include: High processing speeds, Large I/O capacities, and a polling structure for retrieval of data.

Many districts utilize both RTUs and PLCs! The RTUs deployed for remote communications operate over licensed UHF radios and employ channel-monitoring and report-by-exception capabilities to control the radio communication and reduce the possibility for data collisions. The

treatment plants employ high-speed PLCs for in-plant local control of filter treatment, backwash process and chemical feed rates.

These types of districts employ ONE type of computerized control software to view and control the data from the remote sites and the in-plant PLCs. Most control software, like GE's iFIX, has a variety of protocol drivers to communicate with different sources of data. This creates seamless consolidation of data from raw water, in-plant treatment, and potable distribution! One customer said, "Since we are a relatively small facility compared to Denver and the big boys, we only have one operator at the facility about 2/3rds of the time. We rely heavily on our instrumentation to give us accurate and concise information about our plant operation and the status of our outside facilities".

Why should you care? Well, it is just like your Daddy used to say, "Use the right tool for the job!" In the case of data collection and control automation, choosing the right communication equipment can make your system run smoothly. To finish off the analogy, does your district need a truck or a sports car? Maybe both?