

SCADA for Water Systems in 2022 and beyond

A look at the past and future of SCADA for water system automation

Before modern Programmable Logic Controllers (PLC's) came along, pumps and valves that required automation were controlled by what was called "Relay Control"

One of the main problems with this design was that there were many complex, hardwired circuits. One relay in a chain would fail, sometimes intermittently, and a fault would occur, but it would be difficult to find the cause of the fault. It was a frustrating control system to support, with the intermittent faults the worst of many problems.

When PLC's came along it represented a huge breakthrough for the automation world, now instead of entire panels filled with relays, everything could instead be configured with software.

At the time when this breakthrough came along all of the current engineers were familiar with the process of wiring relays, delay blocks and other modules together on physical panels so the designers of these new PLC's made them work the same way except in software, instead of routing a real wire between two relays you could draw a line between two virtual ones on the computer. This new way of panel wiring was called "Ladder Logic".

While "Ladder Logic" is still in use today and represents the majority of systems in operation today, unfortunately it brings with it many of the same legacy issues that plagued "Relay Control" systems.

When "Ladder Logic" first replaced the legacy "Relay Control" systems it worked great, due to the limitations in reliability and physical constraints of hardwired "Relay Control" systems these old panels were never very complex and were often modularized with each system consisting of several different independent systems. As time went on though engineers began creating more and more complicated automation schemes which brought back the same issues of complexity that plagued the original "Relay Control" systems. Additionally each hardware manufacturer began locking its customers into its own specific software which often cost thousands of dollars and required regular upgrades. All of this was passed onto the end user and quickly the savings that PLC's gave end users melted away into an industry of mystique that more often than not left users feeling frustrated and dissatisfied.

Alternatives have existed to "Ladder Logic" for some time in the form of various textual programming languages but these have been slow to move into widespread adoption because of the complicated development environment required which traditionally involved moving code between multiple pieces of complicated proprietary software before finally being uploaded to the PLC.

After 15+ years working in the industry FlexSCADA set about to create a solution to this problem and created a PLC from scratch that can be programmed in an industry standard scripting language right from your web browser without the need for any complicated software or development environments.



Typical "Relay Control" automation panel