



### RURAL WATER DISTRIBUTION CUSTOMER KIOSKS

**BACKGROUND:** We were approached by a company that ran a rural water distribution system. In this town there were many households without running water and the cost of installing a well was too expensive or not practical. Their business provided customers without city provided running water a place to pay cash and fill bulk water containers. The customer wanted to provide a system for his customers that would give them the ability to add cash to their account and then use that credit to buy water as needed. The caveat was they had an Allen-Bradley based PLC system which monitored the cash installed and dispensed the water based on the credit.

**SOLUTION:** Overlay a Linux based server that would keep record of customer accounts and credit through a MySQL database. The customer would interface with the server through an HID key fob for security and a keypad to enter the number of gallons to dispense. The server would direct the PLC to how many gallons to dispense and then debit the account and record the transaction. The customer could also add cash directly at the Kiosk to be added to their account. A webpage was created for operators and accounting to access customer accounts to add credit as well as monitor customer accounts.

**SYSTEM:** Used the Linux operating system as the server, MySQL database, PHP and HTML for user access and RaspberryPI as a serial port gateway in the TCP/IP communications.

**RESULT:** The cashless system is being used by over 50% of their customers which has saved the owner a lot of manpower spent counting coins and bills. They can simply run a report now which accounts for the money spent and gallons of water dispensed each day. An unexpected benefit is

they can now see which stations are being utilized the most and can perform preventative maintenance rather than waiting for failures.

Over 100k+ transactions later both the customer and their customer's are extremely happy with the solution.