Produced Water Pipeline and Equipment Management System

The Produced Water Pipeline and Equipment Management Solution automates monitoring and controlling water transfer pumps at produced water tanks on each well site.

The Prolora™ Automation Unit (PAU) maintains water levels between configured amounts and can apply hysteresis to predict volumes and run times.

Automation at Tank Batteries:

- ✓ PAU monitors and automates the valves at each of the pipeline connections so that they can be remotely opened and closed as needed.
- ✓ Locally operating automation monitors and collects pressures, flow rates, total volumes, and valve status which is displayed on web pages or an App accessed locally via WiFi and relayed to the central server.

Automation at the termini including SWD facilities and produced water storage tanks:

- ✓ The PAU monitors and collects pressures, flow rates, and total volumes, as well as valve status, displays on an HMI accessed locally via WiFi, and relays data to the central server.

Alerts:

- ✓ Real time personalized alerts by email, text and/or online.

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The Prolora™ 3 Part System

Automation at the local Points of Presence (POPs):

Prolora Automation Units (PAU) monitors and, if desired, controls operational activities at each field location or vehicle. The locally operating automation collects data, relays local and remote commands with the Internet, manages local equipment, supports service calls, and initiates alarms and alerts.

"Dashboard" to monitor and control the system:

When on location, the Dashboard shows all the local operating information. When connected to the Internet, users can see the operational data for any unit in the system. This feature allows staff to monitor and control the system locally or remotely, see real-time status information, view service histories, and monitor active and historic alerts and alarms.

Data management system:

This "in the cloud" server-based database system collects and stores all data. Regular (1-15 minute) "heartbeats" of all operational data from each PAU is automatically stored. All data is secure, auto-archived daily, and accessible from anywhere via the internet. Concurrently, if desired data can also be sent to your own data center. Personalized reports provide summaries, billing reconciliation, location specifics, analytics, morning reports, or any type of information generated based on the stored data.

The Prolora Difference

Prolora's automation uses state-of-the-art next-generation SCADA "Internet of Things (IoT)" methodologies to deliver reliable, highly stable, fault-tolerant field operations without the limitations of conventional third and fourth generation SCADA-based automation implementations, including:

Local Processing. Unlike typical field automation, Prolora equipment implements robust local event handling and routine operations management.

Decentralized Data Management. Prolora uses a better approach to data management than traditional fourth generation SCADA-based programs. With mission-critical data coming from a mix of sensors, controllers, and local data structures (some of which may be at nearby locations), Prolora avoids the typical 1:1 data mapping using comprehensive data modeling and object-oriented programming techniques.

Peer-to-Peer. Typical field automation operates in a single-tasking, Master-Slave mode with the field units responding to remote commands using little local logic. Prolora's peer-to-peer approach is more stable and resilient to failure as each Prolora field unit operates independently and follows locally assigned rules and logic. The Automation units can, for example, decide to open and close valves and turn pumps on and off as needed without being remotely directed. Remote command and control can also change instructions or directly adjust settings and manage valves and pumps.

Inherently Multi-Pathed. Prolora's field units maintain dual-carrier connections to instantly and automatically re-route data communications to users and remote servers if a particular Carrier's network fails. Failover operates entirely transparent for field automation, cloud-based dashboards, and system users. Carrier management is included in monthly charges, so separate carrier accounts are not needed.

Independent, Battery-Operated Design. Typical automation often fails unexpectedly. Prolora's mission-critical parts operate on a steady, internal DC power source that does not fluctuate as nearby AC powered devices turn on and off. This innovative design utilizes the local AC or DC power source to maintain local batteries while the batteries, in turn, operate the electronics.

Security. Prolora's control programs cannot be directly accessed, either locally or from the Internet.

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