

Highline Water Project

Flowing Forward - Improving Monitoring Capabilities

Case Study



Summary

The Highline Water Project modernizes the century-old Rocky Ford Highline Canal in southeastern Colorado by integrating advanced water management technology. Local farmers partnered with Nomad Water to replace outdated equipment with a system that uses radar-based sensors, edge computing with the JENE controller, and the 9210 Datalogger for real-time monitoring and automated irrigation gate control. This solar-powered setup enhances operational efficiency, improves water flow precision, and ensures compliance with regulatory standards, empowering farmers with remote access and reliable data for smarter water use.

Challenge

The Rocky Ford Highline Canal, built in the early 1900s, has been a lifeline for farmers in southeastern Colorado for over a century. Spanning more than 100 miles and originally dug by horse-drawn equipment, the canal has undergone numerous technological advancements to support local agriculture. As water management demands evolve, an upgraded system became necessary to maintain accuracy, efficiency, and compliance with regulation. To address these challenges, a local association of farmers partnered with Nomad Water to modernize the canal's irrigation system. By integrating radar-based sensing, automation, and remote access technology, the project is transforming irrigation management along the High Line Canal.

Objectives

The High Line Water Project enhances irrigation management with real-time monitoring, automation, and remote access. By modernizing infrastructure and integrating advanced technology, it ensures efficient water distribution, regulatory compliance, and sustainable use while reducing manual workload.

Solution

Improving Flow Control

To replace outdated equipment, a radar-based water level sensor has been installed further downstream, providing precise, real-time measurements of water levels. This data is integrated into an advanced control and automation system, allowing for dynamic, real-time adjustments to water flow based on actual conditions.

At the center of this upgrade is the JENE-EG534-300-N4, a powerful edge processing and control device that streamlines system automation. Edge processing refers to performing data processing and analysis closer to the data source rather than sending it to a centralized cloud or data center. This approach reduces latency, bandwidth usage, and response time, making it ideal for real-time applications. The JENE enhances data collection, processing, and remote access, enabling operators to make informed decisions with accurate, up-to-date flow information. By combining edge computing with real time data transmission, the system can quickly analyze sensor data and trigger necessary adjustments without requiring constant manual intervention.

Key Features



The 9210 Datalogger & Controller integrates data from the radar sensor, logs critical water usage metrics, and automates irrigation gate operations.



Real-time remote monitoring of water levels and flow rates, eliminating the need for frequent on-site checks.



Automated adjustments to irrigation gates based on water conditions, optimizing efficiency and preventing excess flow.



Instant alerts for abnormal conditions, including low/high flow rates and equipment malfunctions.



Regulatory compliance through accurate logging and historical data tracking.

With the JENE handling processing and control and the 9210 Data Logger managing real-time data logging, the system achieves a new level of precision and automation. A solar-powered energy system ensures continuous operation without reliance on external power, making it both sustainable and reliable.

Installation and Configuration

The implementation of both new hardware and software:

- Installing and mounting the radar sensor, control system, and solar power unit at the designated location.
- Setting up the system to ensure the radar connects smoothly with the JENE controller and 9210 Datalogger.
- Integrating remote monitoring and control capabilities, enabling farmers and operators to access and adjust the system from anywhere.
- Setting up automated flow calculations, linking water depth measurements to precise flow rate adjustments.

By leveraging edge computing, automation, and real-time data transmission, the system reduces manual workload while increasing accuracy and efficiency.

Modernizing Water Management

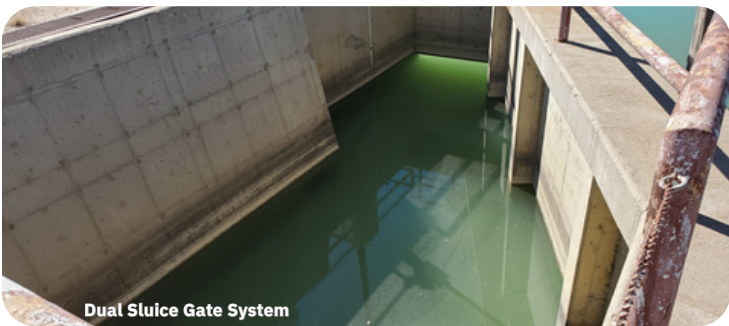
The High Line Canal’s modernized irrigation system now delivers:

- Improved monitoring accuracy, ensuring precise water level tracking.
- Automated control of irrigation gates, optimizing water use and preventing waste.
- Remote access and alerts, providing operators with real-time oversight.
- A sustainable, solar-powered infrastructure, reducing operational costs and energy reliance.
- Reliable compliance with water regulations, backed by detailed logging and historical data.

By integrating Nomad’s cutting-edge automation, the High Line Canal has taken a significant step toward smarter, more efficient water management. The combination of JENE processing, advanced radar sensors, and the 9210 Datalogger ensures a resilient, future-ready system that empowers farmers to make informed decisions, optimize irrigation, and protect this vital resource for future generations.

Conclusion

This project improves water management through automation and real-time data, optimizing efficiency and sustainability. With cutting-edge technology, the High Line Canal now supports smarter irrigation, conserving resources and securing long-term agricultural productivity.



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