CASE STUDY

How a Small Texas Oil & Gas Producer Achieves Instant ROI with Solar-Powered Leak Detection and RIOT SCADA Integration

PREPARED BY RIOT INDUSTRIAL

2025

OVERVIEW

RIOT Industrial is a leading Texas based automation company. Specializing in PLC Systems, SCADA, and AI based data analysis solutions, we cater to producers in Texas and Eastern New Mexico.

BACKGROUND

A small, independent oil and gas operator producing fewer than 5,000 barrels of oil per day faced persistent and costly challenges managing an off-grid location with five pipelines collecting into a primary header.

Spills and leaks at this location had become a critical issue, leading to fines and damages ranging from $25,000 to $40,000 per incident. Beyond the financial burden, the company risked damaging landowner relationships and attracting increased regulatory scrutiny.

Traditional monitoring methods were reactive and delayed, depending on scheduled site visits or unreliable autodialer callouts — often too late to prevent major losses.

OUR INNOVATION

RIOT Industrial met with the independent producer to fully understand the desired outcomes. It became clear that an automated leak detection system, instantaneous valve control, and reliable remote monitoring would be needed to meet the producer's needs of:

- Fast-response solution capable of instantly detecting and isolating leaks
- Cost-effective solar system suitable for remote, off-grid operation
- Reliable communications to ensure alarm callouts were never missed

TECHNICAL IMPLEMENTATION

RIOT INDUSTRIAL'S TECHNICAL TEAM DEPLOYED A CUTTING EDGE SOLUTION THAT DELIVERED BETTER THAN EXPECTED RESULTS ON DAY 1

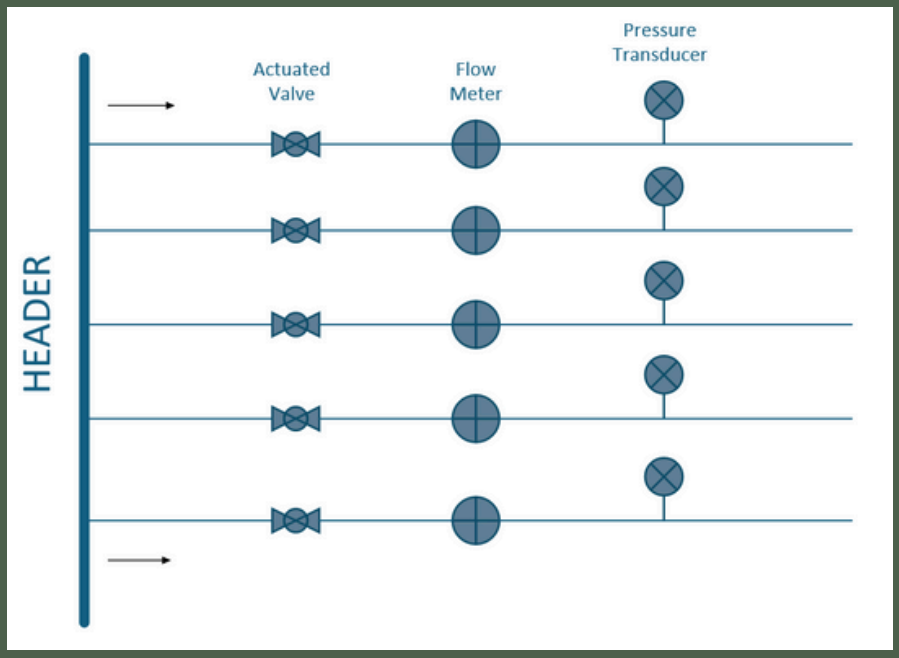
- Solar-Powered Remote Automation
  - Operated independently with no need for utility power
- Automated Valve Control
  - Immediate valve closure triggered by leak detection
- RIOT SCADA Integration
  - Real-time data visibility
  - Guaranteed alarm callout and notification delivery
  - Secure historical data logging for compliance

SOLUTIONS

In addition to the solar powered PLC skid, RIOT Industrial implemented an instrumentation scheme on each pipeline to instantly detect and act upon a leak or spill event.

PIPELINE INSTRUMENTATION

- Actuated control valve with fail-closed safety mechanism
  - Controlled via 4-20mA signal from PLC
- Sensia MC Synergy (MC-IIII) Flow Totalizer
  - Flow Rate, Daily Flow Total, and Total Flow data being pulled into PLC via Modbus RS-485
- Pressure Transducer measuring pipeline pressure
  - Calibrated and read by PLC via 4-20mA signal



OUTCOME

Our innovative approach paid off instantly. Just **one day** after installation, the system detected a pressure drop coupled with a flow rate spike, signaling a leak.

WHAT HAPPENED

- The automated control system instantly shut-in the line
- An alarm was immediately dispatched through RIOT SCADA, notifying the Operator
- No environmental spill occurred
- No fines or landowner damages were incurred

METRIC	BEFORE	AFTER
Leak Response Time	24 Hours (site visit dependant)	**Immediate** **(< 1 Minute)**
Spill Damage Costs	$25k - $40k (per incident)	**$0** **(first detected event)**
Regulatory Risk	High	**Minimal**
ROI Timeline	12 - 18 months (estimated)	**1 Day** **(actual)**

RESULTS

For small independent producers, remote site spills can have outsized impacts on profitability and reputation. Localized Automation and SCADA systems solve this problem.

TAKE AWAY

By implementing a solar-powered leak detection and automation system integrated with RIOT SCADA, this producer:

- Achieved immediate return on investment
- Eliminated a major source of operational risk
- Strengthened landowner relationships
- Met environmental compliance standards

This case study highlights the potential for off-grid solutions to overcome entrenched operational inefficiencies and drive measurable improvements in remote production environments.

RIOT Industrial: Smart solutions for smart producers.

CONTACT US TODAY

Inspired by this success story?

Schedule a call today.

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RIOT INDUSTRIAL

888-755-7573
LETSTALK@RIOTINDUSTRIAL.COM