10 Days. Zero Margin for Error. Proven Results.

Control System Modernization at a 300 MMcfd Gas Treating Facility

Executive Summary | Texas Automation Systems (TAS)

The Situation

Midstream operators across the Oil & Gas sector face a common dilemma:
legacy control systems that are increasingly difficult to support, yet impossible to replace without risking downtime, safety, or production losses.

In 2025, **Texas Automation Systems (TAS)** was engaged by prominent **MidStream Gas Plant** to execute one of the most time-constrained control system modernizations imaginable, **a full replacement of an existing DCS at a 300 MMcfd gas treating facility with a hard, non-negotiable 10-day outage window**.

Failure to meet the schedule was not an option.

The Challenge

The project scope extended far beyond a typical controls upgrade:

- Complete migration from a **Siemens PCS 7 DCS** to a **Rockwell Automation ControlLogix-based architecture**
- Design and deployment of a **fully redundant control system**
- Replacement of all control, power, and network infrastructure
- Migration, loop checking, and validation of **1,850 total I/O points**
- Development of a new **plant-wide SCADA system** using Inductive Automation's Ignition Platform
- Safe plant restart **on Day 10**

This was a critical, high-visibility effort where **planning, execution discipline, and teamwork** would determine success.

The TAS Solution

TAS recommended and implemented a **modern, fault-tolerant PLC and SCADA architecture** engineered specifically for high-availability Oil & Gas operations.

Core Elements of the Solution

Modern Control Platform

- Rockwell Automation **ControlLogix** processors
- Redundant controllers operating in hot-standby configuration

True System Redundancy

- Fully redundant PLC processors
- Fully redundant SCADA Servers
- Fully redundant power supplies
- Fully redundant managed network switches
- Elimination of single points of failure

High-Availability Networking

- Robust **Parallel Redundancy Protocol (PRP)** network
- Dual independent network paths to all critical devices
- Zero-time recovery from network failures

Plant SCADA & Visualization

- Plant-wide SCADA system built on **Inductive Automation's Ignition Platform**
- Primary and redundant Ignition Gateways
- Clustered Server Environment
- High-Availability 3-node Historian
- Real-time monitoring, alarming, and trending
- Operator-friendly HMI design
- Scalable platform for future expansion

Six Months of Preparation for a 10-Day Execution

The key to success was **front-loaded engineering**.

Over a six-month period prior to cutover, TAS completed:

- PCS 7 system reverse engineering and documentation
- Full control logic development
- Detailed I/O mapping and validation
- SCADA screen and alarm configuration
- Redundancy and failure-mode testing
- Hour-by-hour cutover planning for 17-member commissioning team

By the time the plant went offline, **every major risk had already been engineered out of the execution phase**.

The 10-Day Cutover

Once the plant was shut down, execution followed a disciplined, pre-planned sequence:

1. **Removal of legacy DCS hardware**
2. **Installation of new redundant control, power, and networking infrastructure**
3. **Termination, loop-checking, and validation of all 1,850 I/O points**
4. **SCADA verification with operations personnel**
5. **Controlled startup and commissioning**

Throughout the process, TAS engineers worked **side-by-side with local plant personnel**, whose operational knowledge and responsiveness were critical to maintaining schedule and ensuring a smooth startup.

The Results

✓ **Plant returned to service on Day 10 on schedule**
✓ **Zero safety incidents**
✓ **Zero unplanned downtime beyond the outage window**

Operational Benefits

- Dramatically improved system resiliency
- Elimination of single points of failure
- Modern, maintainable control and SCADA platform

Business Benefits

- Reduced long-term lifecycle and obsolescence risk
- Scalable architecture for future plant expansions
- Increased confidence in uptime and operability

Why This Matters to Operators

This project demonstrates that:

- **Full control system replacements do not have to mean extended downtime**
- **Modern PLC-based architecture that can meet or exceed traditional DCS reliability**
- **Aggressive outage windows are achievable with the right preparation and partner**

For operators facing aging DCS platforms, shrinking outage windows, or increasing reliability demands, this case study provides a proven roadmap for modernization without compromise.
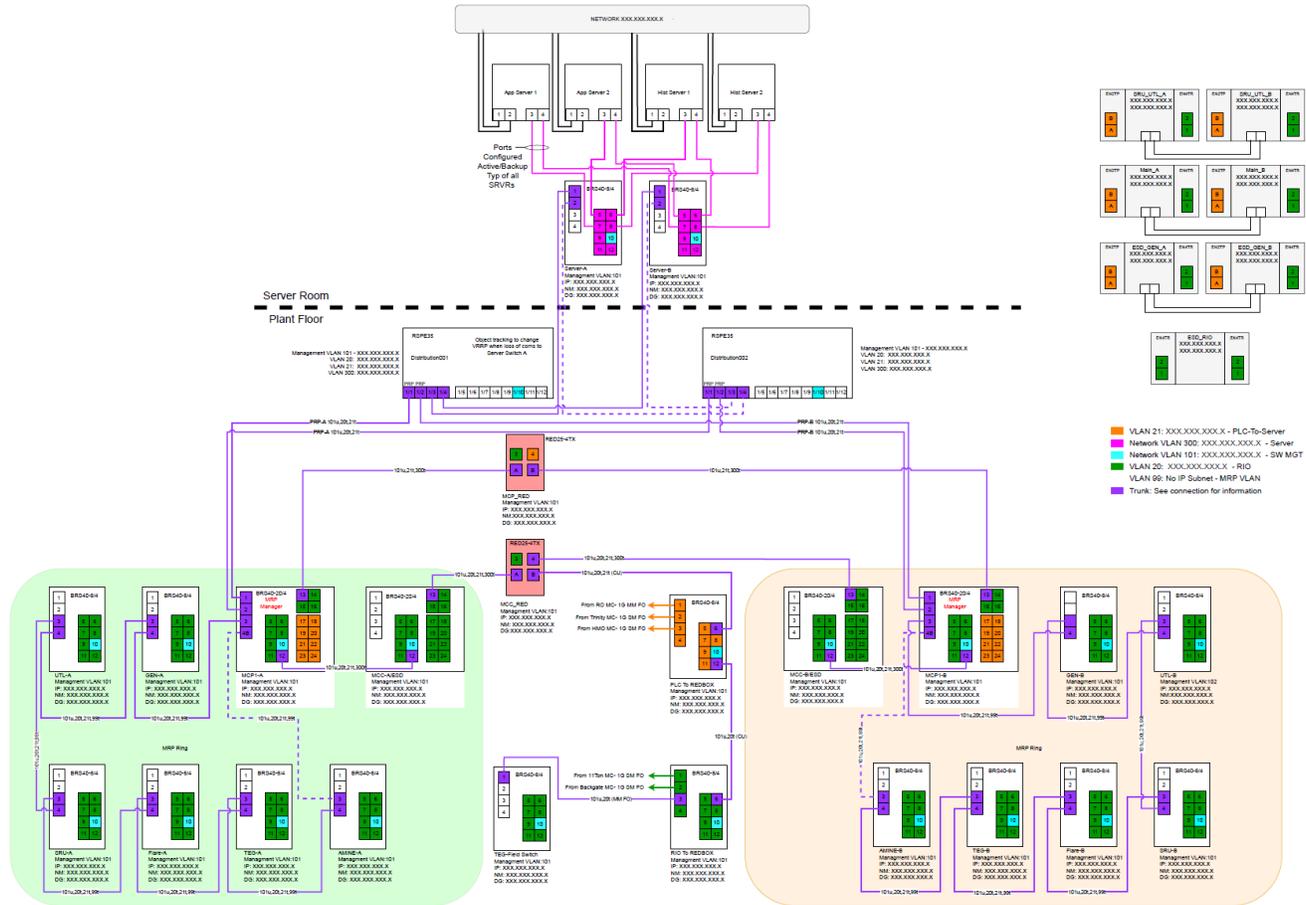
Why Texas Automation Systems

TAS specializes in **high-risk, mission-critical automation projects** where failure is not an option. Our approach combines:

- Deep Oil & Gas domain expertise
- Rigorous upfront engineering
- Proven redundancy and networking architecture
- Collaborative execution with plant operations teams

The result is control systems that are **reliable, scalable, and built for the realities of modern industrial operations**.

Network Architecture

Let's Talk

If your facility is facing:

- An aging DCS or PLC platform
- A constrained outage window
- The need for higher availability and future flexibility

Texas Automation Systems is ready to help.