



A Rockwell Automation Company

El Paso Corporation - Colorado Interstate Gas Rawlins Bi-Directional Control Valves

The Client:

El Paso's interstate transmission system spans the nation, border to border and coast to coast. The nationwide pipeline system is consolidated into three regional operations.

The Western Pipeline group consists of El Paso Natural Gas Company and Colorado Interstate Gas Company and is headquartered in Colorado Springs, Colorado.

Colorado Interstate Gas (CIG) is a major transporter of

natural gas in the Rocky Mountain region. The Colorado Interstate Gas system is connected to nearly every major supply basin in the Rocky Mountains as well as production areas in the Texas Panhandle, western Oklahoma, western Kansas, and Wyoming.

The Requirement:

The primary project objective was to upgrade the Rawlins Plant line and yard valves to facilitate transportation of natural gas in multiple directions throughout the pipeline system.

As part of the project, seventeen valves would require PLC and HMI programming for standard valve control and alarming functionality. However, not all of the valves were to be retrofitted with limit switches and actuators right away. The valves would be operated from the existing Station Intellution Fix32 HMI computer.

Additionally, new pressure control valve PCV-105 needed to be installed in the crossover piping around the 5A bypass valve, X-15. The pressure control valve would

maintain pressure on the 5A line to the west of the station. Four pressure transmitters also needed to be installed to monitor the upstream (west) and downstream (east) pressures of the 5A and 5B bypass valves, X-15 and VO-34 respectfully.

The equipment listed above would be controlled by a new Station ControlLogix PLC. The PLC would interface to the Station HMI via the existing Ethernet network. Remote Flex I/O would be used for wiring the instruments to the PLC.

The Design Solution:

Hinz was contracted to program a new Allen-Bradley ControlLogix PLC and existing Station Fix32 HMI node for the bi-directional facilities. The scope of work included:

- Installation of AB Flex I/O panels, to be mounted as close as practical to the end devices. The Flex I/O was connected to the ControlLogix PLC via a redundant ControlNet network using RG-6 coax cable.
- Development of the PLC program logic for controlling the 17 control valves.
- Revision of the existing Fix32 HMI screens to allow for manual control of the bi-directional facilities.
- Addition of upstream and downstream pressure transmitters to the main site HMI screen.

- Creation of a new PID control screen for the pressure control valve, PCV-105, to maintain pressure on the on the 5A line to the west of the station. Functionality includes auto/manual control, set point entry, PID tuning, and trending.

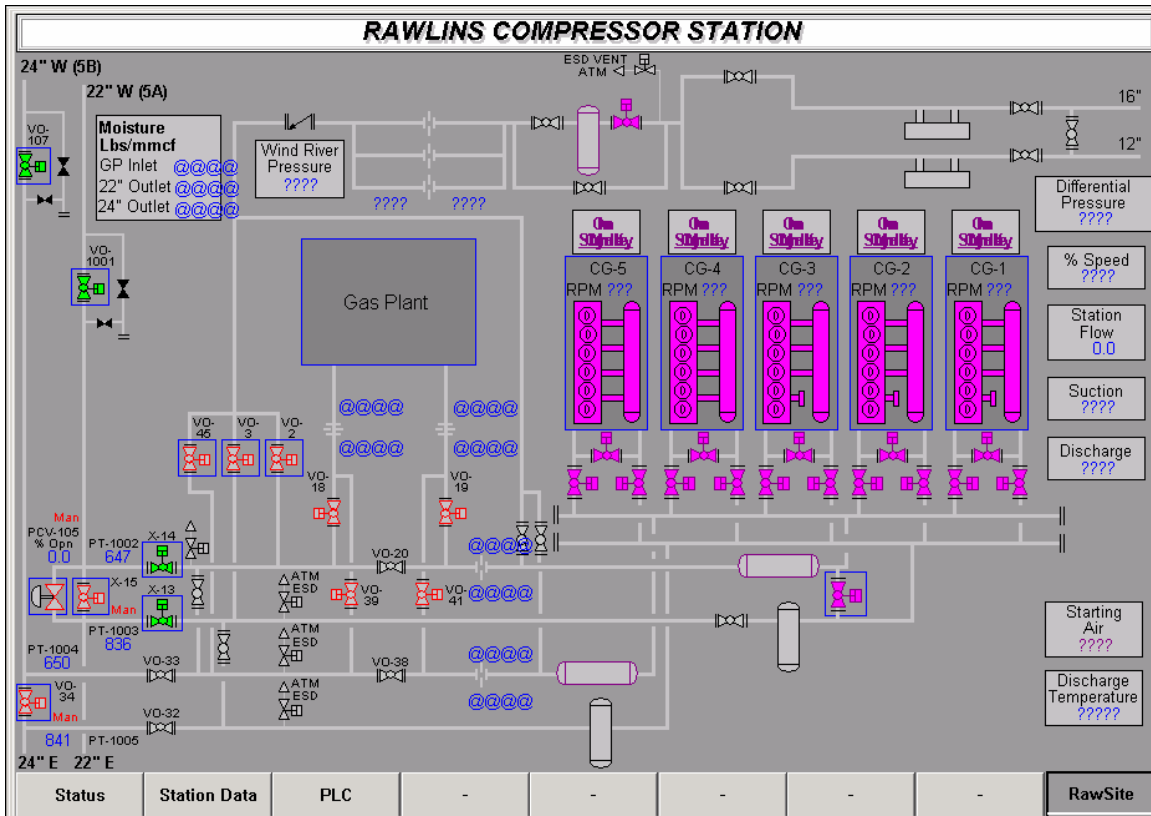
The detailed project scope included:

- Preparation of a detailed Functional Requirements Document (FRD).
- Submission of project tracking documents to include progress reports and budget cost analysis.
- Developing PLC simulation code for software testing and provide for a witnessed software acceptance test.
- Commissioning and training of the new control hardware.
- Submission of final as-built FRD documentation.



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System Specifications:

- (1) ControlLogix 5555 PLC
- (3) NEMA 4, Hinged Door, 48" x 36" x 12" control panels
- (3) Flex I/O ControlNet Adapters
- (13) Flex I/O Module Bases
- (1) Flex I/O 8-pt Analog Input Module
- (1) Flex I/O 4-pt Analog Output Module
- (4) Flex I/O 16-pt Discrete Input Modules
- (4) Flex I/O 16-pt Discrete Output Modules

For further information or to contact a Hinz office near you, please check our website at:

www.hinz.com