



A Rockwell Automation Company

El Paso Corporation - Colorado Interstate Gas Rawlins Propane Project

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:

Hinz was asked to provide modifications to the Fix32 HMI and ControlLogix PLC control systems installed at El Paso Corporation's Rawlins Propane Plant located in Wyoming. Modifications were made to the Propane Plant Station PLC and to each of the four compressor PLC control systems. Modifications included the automation of a new butterfly control valve and pressure transmitter,

automation of new pocket un-loaders on 4 Gas Plant Compressors, the addition of automatic torque and load functionality, modifications to the compressor shutdown circuits, modifications to the compressor turbo speed magnetic circuits, and modifications to the compressor exhaust oxygen transmitter alarm circuits and air-fuel ratio control.

The Design Solution:

Hinz was asked to provide upgrades at the Rawlins Propane Plant to the Allen-Bradley ControlLogix PLC program and upgrade the Intellution Fix32 HMI computer SCADA node.

Part I of the project involved the installation and automation of new butterfly control valve and pressure transmitter. The valve was connected to the ControlLogix Station PLC at an existing PLC Flex I/O Panel where a new PLC analog output module was installed. The new pressure transmitter was installed to provide the process variable signal input for the new control valve. The transmitter was also connected at a PLC Flex I/O Panel through a new PLC analog input module. Hinz provided a new PID control loop within the PLC logic, new PLC and HMI database tags, and a PID faceplate screen for the valve.

Part II of the project involved the installation and automation of new pocket un-loaders on four Gas Plant Compressors, for automatic Torque and Load capability. Each compressor was retrofitted with four pocket un-loaders and respective control solenoid valves. The solenoid valves were pneumatically connected to the pocket un-loaders. Open and close signals to the solenoid

valves were sent from each Unit ControlLogix PLC. ControlLogix PLC Flex I/O relay output modules were used for the connection hardware.

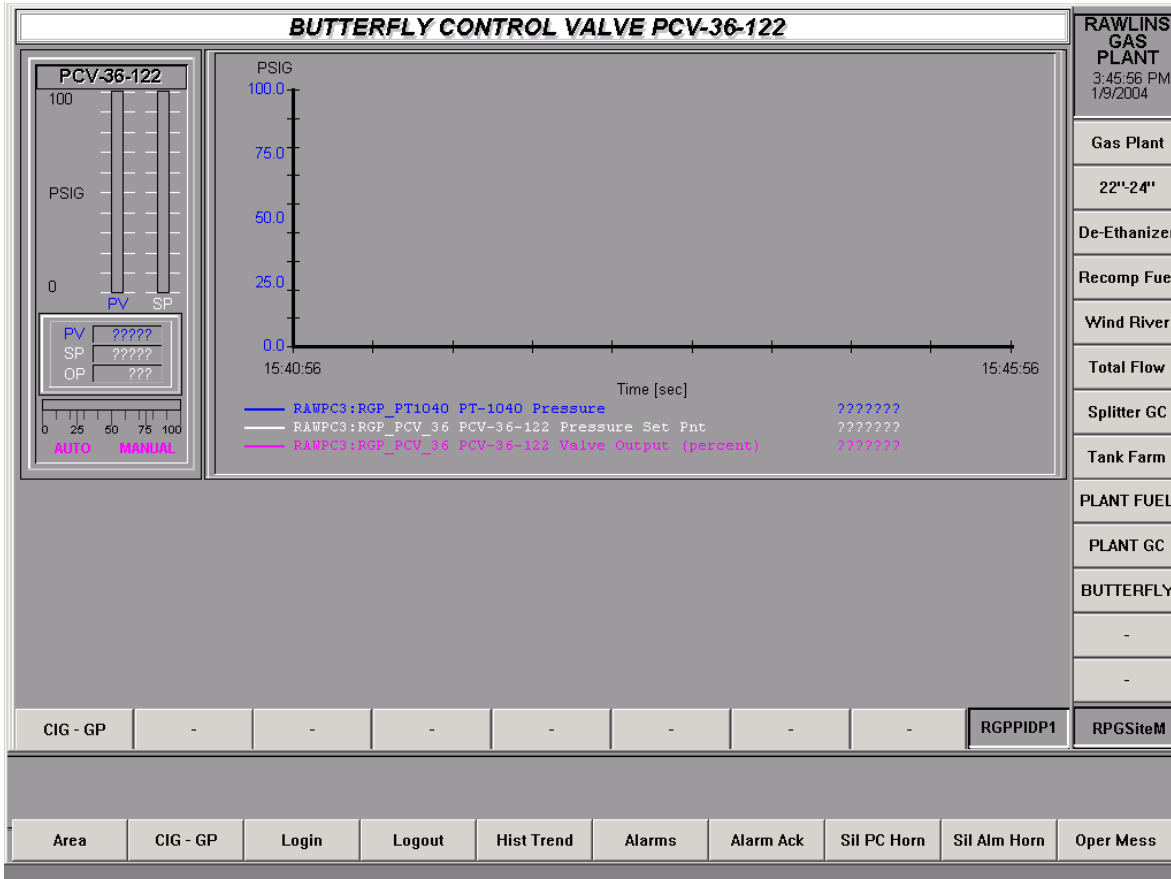
Hinz provided torque and load programming and functionality within the existing Unit ControlLogix PLCs and HMI control system. This included the addition of a new torque and load control program in the PLC logic to operate the solenoids and un-loaders, new PLC and HMI database tags and tag-groups, and HMI screen modifications. The torque and load buttons and indicators were added to each unit HMI screen. The current load step in use was shown on the HMI screen, and the pocket un-loader screen display objects were programmed to change to green color when energized by the PLC. PLC and HMI programming of the torque and load system included an over-torque alarm and high-high torque shutdown logic. For each compressor, the torque and load control system was designed to operate both manually or automatically as selected from the HMI screen.

Parts III and IV of the project involved modifications to the existing turbo speed magnetic circuit and the unit shutdown circuit. These were modified to connect as inputs into the PLC.



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System Specifications:

- (1) Station SCADA Node, Intellution Fix32 HMI
- (4) ControlLogix 1756-L55 PLC with Chassis
- (1) ControlLogix 1756-L50 PLC with Chassis
- (4) ControlLogix 1756-ENB Ethernet Module
- (4) ControlLogix 1756-CNBR ControlNet Module
- (6) 1794-IE8 Flex I/O 8-ch Analog Input Modules
- (5) 1794-IF6I Flex I/O 6-ch Analog Input Modules
- (6) 1794-ACNR Flex I/O Communication Modules
- (9) 1794-IB16 Flex I/O 16-pt Discrete Input Modules
- (3) 1794-OB16 Flex I/O 16-pt Discrete Output Modules
- (4) 1794-OW8 Flex I/O 8-pt Relay Output Modules

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

www.hinz.com