



A Rockwell Automation Company

El Paso Corporation - Colorado Interstate Gas Keyes Compressor Station

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:

CIG was adding new compressor CG-5 at the existing Keyes natural gas compression facility in western Oklahoma to increase the system capacity.

The new compression package consists of a 4,330hp Caterpillar G3616TALE engine driving an Ariel JGC4 compressor. The new unit will be installed in a new compressor building and will be separately connected to the mainline. In addition to the new compressor, the station electrical power will be converted from CIG operated

generators to local utility system power.

The control system addition at Keyes Compressor Station will consist of the addition of the new unit to the Station Intellution HMI SCADA node, new ControlLogix Unit PLC panel to control the new engine and compression package, and a new local unit HMI for local monitoring and control in the new compressor building. Also included is a Caterpillar Engine Supervisory System (ESS) in its proprietary control panel.

The Design Solution:

Hinz was contracted to design and implement the control system. Initially, Hinz prepared a Functional Requirements Document which finalized the control system design configuration.

El Paso's design standards for the new CG-5 installation included an Intellution Fix32 HMI node along with an Allen-Bradley ControlLogix PLC.

The reciprocating engine is manufactured by Caterpillar. Caterpillar will not allow any purchaser of their engines to control the parameters of a Caterpillar engine. Thus, all functions of the Caterpillar engine will be controlled by the Caterpillar Engine Supervisory System (ESS) through their proprietary control panel.

The Unit PLC was required to have local HMI control in addition to remote HMI control. Local control was accomplished by using Intellution IVisualize.

Emergency shutdown logic (ESD) for CG-5 was programmed in the CG-5 unit PLC for emergency situations like fire and hazardous gas level detection.

Hinz provided the following software automation services

for the Keyes CG-5 engine and compressor control system:

Consultation to finalize the control system configuration.

Software design and program modifications to the existing Station PLC and interfaces to the new CG-5 Unit PLC and Caterpillar ESS for speed control and the ESD system.

Software programming of the new ControlLogix Unit CG-5 PLC.

System design and configuration for the Station HMI modifications, Intellution FIX32 SCADA software.

System design and configuration for the new Unit Panel HMI software.

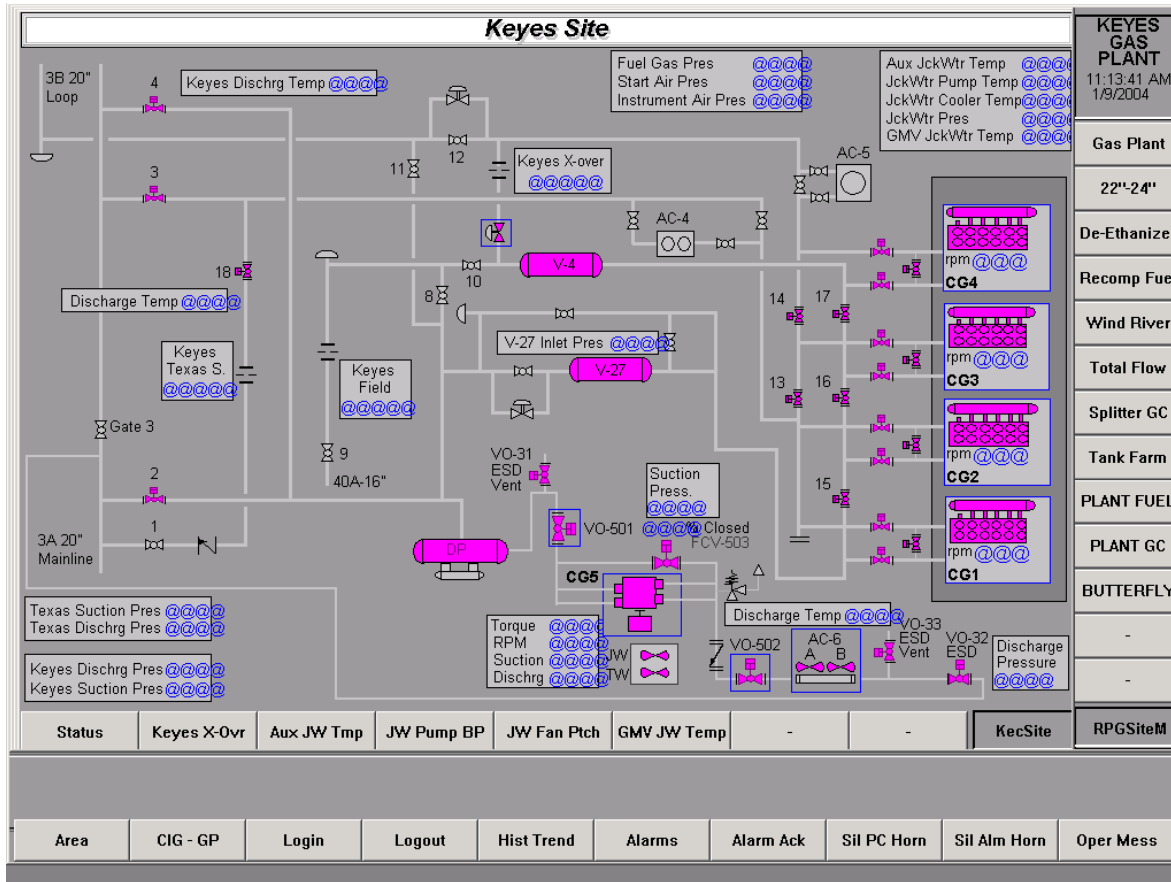
Assistance to CIG during the site commissioning at the facility.

Training to the CIG staff, along with budget and schedule reporting throughout the project.



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System Specifications:

- (1) Caterpillar G3616TALE engine driving an Ariel JGC4 compressor
- (1) ControlLogix 1756-L5550 PLC with I/O Chassis and power supply
- (1) ControlLogix 1756-ENET Ethernet Module
- (1) ControlLogix 1756-CNBR ControlNet Module
- (2) 1756-IF6I 6-channel Analog Input Modules
- (2) 1756-OF6I 6-channel Analog Output Module
- (2) 1756-IB16 16-pt Discrete Input Modules
- (4) 1756-OB16E 16-pt Discrete Output Modules
- (2) 1756-IR6I 6-channel RTD Input Modules
- (4) 1794-IB16 Flex I/O 16-pt Discrete Input Modules
- (3) 1794-OB1 Flex I/O 8-pt Discrete Output Modules
- (2) Square-D Variable Frequency Drives

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

www.hinz.com