



A Rockwell Automation Company

Kinder Morgan Inc. Station 105 (Glasco, KS) Compressor Station Automation

The Client:

Kinder Morgan Inc. is one of the largest midstream energy companies in America, operating more than 30,000 miles of natural gas and product pipelines.

Natural Gas Pipeline Company of America (NGPL) is a subsidiary of Kinder Morgan Inc. and the largest transporter of natural gas into the Chicago market.

The NGPL system has more than 10,000 miles of pipeline,

210 BCF of storage, and peak day deliverability of 5.7 BCF per day. NGPL has developed a unique and extensive infrastructure, including premier storage facilities, that enables it to provide safe, reliable, and efficient natural gas service to its many customers.

Station 105 (NGPL system) is located in Glasco, KS.

The Requirement:

Kinder Morgan Inc. awarded the Station 105 Compressor Automation project to Hinz. The project was comprised of two identical compressor units (Clark TCV-12) to be upgraded from pneumatics to electronic control utilizing the Allen-Bradley ControlLogix PLC platform. The project was awarded as a turn-key construction contract to Hinz.

Hinz was responsible for all construction management. Construction specifications were developed and electrical construction contractor bids were solicited. Power Controls Integration Inc. (PCI) was awarded the electrical construction subcontract, and the control panels were procured through Utility Control & Equipment Corporation (UCEC).

The engineering services required included PLC unit panel design and fabrication, software development (both units and station), removal of existing Robershaw pneumatic panels, installation and calibration of all instruments, electrical construction and installation of wiring and controls, and commissioning.

Additionally, one new Allen-Bradley ControlLogix Station PLC was required to accommodate station I/O as well as control the station. The Station PLC interfaces to an I/O panel utilizing Allen-Bradley Flex I/O located in the auxiliary building.

Communications between the Station PLC, the Station Supervisory Computer, and the new Unit control panels were via a fiber optic Ethernet communication link. Communications between the Station PLC and the Station Aux Remote I/O panels were via ControlNet.

Hinz would be required to configure the station and unit PLCs with all required Kinder-Morgan functionality and SCADA host computer interfaces.

The project was fast-tracked as the Units were required to be on-line in three (3) months.

The Design Solution:

Upon award, an on-site kick-off meeting allowed Hinz, PCI, and KMI to finalize project details, locate instruments, and gather field data.

Hinz then prepared a Functional Requirements Document (FRD) which finalized the control system configuration and integration of the units into the station control. Hinz worked closely with KMI personnel to define the control strategies, control system architectures, and required project standards.

The station and unit control panels were engineered and procured according to KMI standards. A complete electrical design package was provided including all installation details and as-builds. Hinz provided complete construction management for installation.

Since NGPL was utilizing Siemens as its corporate standard, logic for the new Allen-Bradley ControlLogix PLCs had to be completely developed. Functionality for the units included all required sequencing, high level calculations for predictive load

stepping, and alarming. The programs were fully structured and utilized modular software formats. The Operator Interface Terminals (OIT) consisted of Wonderware InTouch loaded in Xycom panels, respective for each unit. The programming was structured so that the unit OIT screens could easily be integrated into the station HMI. The communications were designed utilizing a combination of Ethernet over fiber-optic cable and ControlNet.

The system was factory tested and simulated at the Hinz Denver facilities prior to installation.

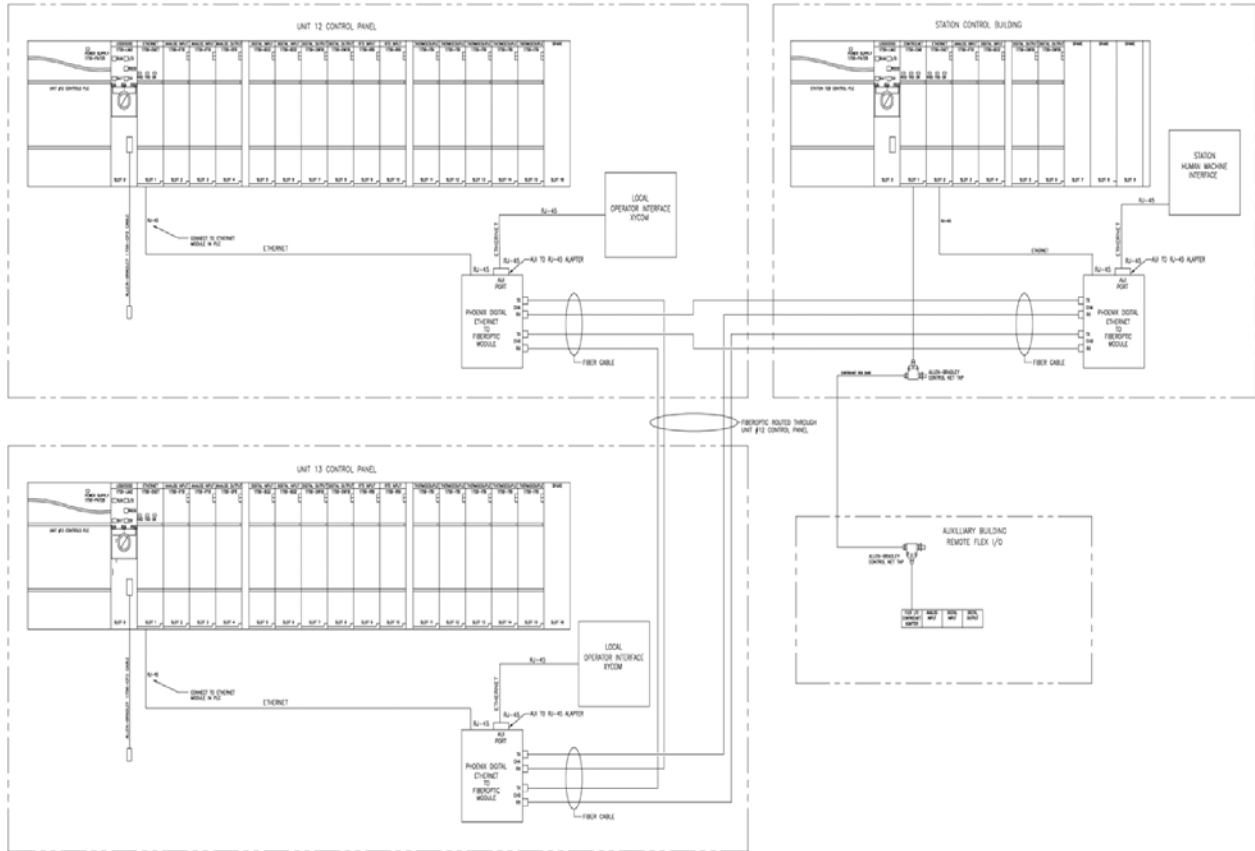
The new control system was commissioned on time and on budget, allowing Kinder Morgan to meet its strict in-service deadlines.

Throughout the project, Hinz maintained full control over the engineering, QA, construction, budgeting, and schedule.



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System Specifications:

- (1) Station Allen-Bradley ControlLogix PLC with Remote Flex I/O.
- (2) Unit Allen-Bradley ControlLogix PLC.
- (2) Xycom Local Control Operator Interface Terminals (OIT) running Wonderware InTouch HMI.
- TCP/IP Ethernet Fiber Optic Redundant Communications between Units and Station.
- Allen Bradley ControlNet Communications between Station PLC and Station Remote I/O Panels.
- Wonderware InTouch HMI Programming Software.
- EPC (Turn-key) Contract, responsible for all engineering, procurement, construction, installation, commissioning, and management.
- (2) Unit Clark TCV-12 Reciprocating Compressors.

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

www.hinz.com