



A Rockwell Automation Company

Kinder Morgan Inc. - Natural Gas Pipeline Company Station 304 (Marshall, TX) 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 is 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.

The Requirement:

Station 304, located in Marshall, TX, had two compressor units (Worthington ML-14, Cooper 16/W330) which needed to be upgraded utilizing the Siemens 545 PLC platform from pneumatics to electronic control. The station control also needed to be upgraded to the Siemens 545 platform. The project was to be awarded as a design build contract.

Construction specifications were developed by Hinz during the bidding process so that an electrical construction contractor could be selected. The services required included unit and station PLC panel design and fabrication, software development (both units and station), removal of existing Robershaw pneumatic panels, installation/calibration of all instruments,

termination, all wiring, electrical construction and commissioning.

A Siemens based 545 Station PLC was also to be added and would interface to the units.

Communications between the Station PLC, the Station Supervisory Computer, and the new unit control panels were via a fiber optic Ethernet communication link. The client required that the units and station PLCs be configured to have all required Kinder-Morgan functionality and SCADA Host interface.

It needed to be completed on a fast-track schedule with the units on-line within four (4) months of award.

The Design Solution:

Hinz prepared a Functional Requirements Document (FRD) finalizing 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 the standards put forth. A complete electrical design package was provided including all installation detail and as-builts. Hinz provided complete construction management for installation.

Existing pneumatic panels were replaced with Siemens 545 PLC equipment. Unit control algorithms were evaluated and converted from C code into the PLC. These algorithms included unit efficiency, unit fuel and curve torque, unit loading controls and

calculations, and unit speed control.

Station PLC functionality includes alarm monitoring, station pressure set-point control, overpressure and over temperature override control, line break monitoring and override control, station valve control and monitoring, station start and stop, unit abnormal shutdown monitoring, system communications monitoring emergency callout and gas control interface

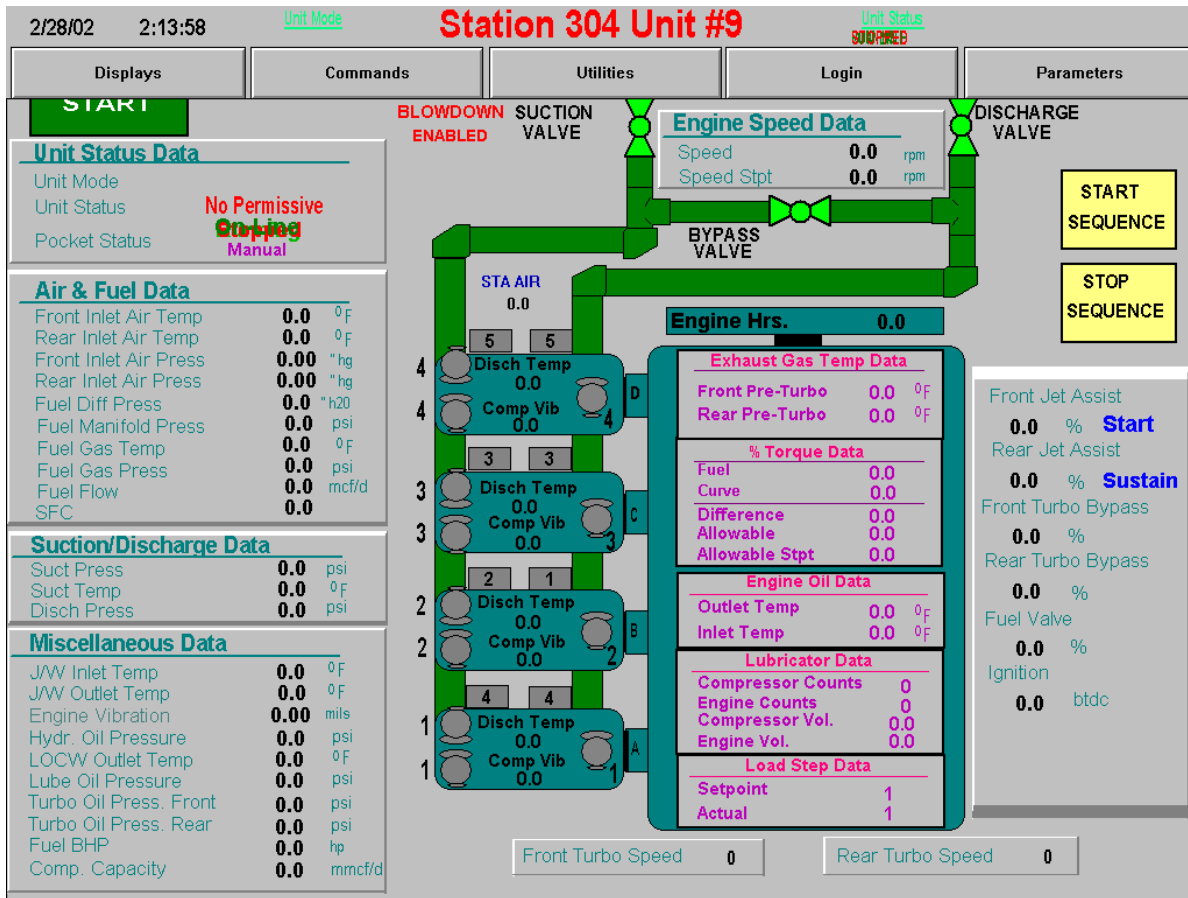
The programs were fully structured and modularized. The Station HMI and OIT interfaces consisted of Wonderware InTouch and Xycom panels respectively. The system was FAT tested and simulated at the Hinz Denver facilities, prior to commissioning.

Hinz maintained full control over the engineering, QA, construction, budgeting and schedule, allowing for a very clean and successful installation.



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System Specifications:

- (1) Station Siemens 545 PLC with Ethernet Interface.
- (2) Unit Siemens 545 PLC with Ethernet Interface.
- Siemens SoftShop RLL Programming Software.
- (2) Xycom OIT Local Control Operator Interface Terminals (OIT) running Wonderware In-Touch.
- TCP/IP Ethernet Fiber Optic Redundant Communications between Units and Station.
- (3) Siemens OLM Fiber interface modules.
- (1) Wonderware In-Touch Station HMI PC.
- EPC (Turn-key) Contract, responsible for all engineering, procurement, construction, installation, commission, and management.
- (1) Unit Worthington ML-14 Reciprocating Compressor.
- (1) Unit Cooper 16/W330 Reciprocating Compressor.

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

www.hinz.com