



A Rockwell Automation Company

Terasen Pipelines Inc.

Platte Pipeline - Salisbury Station MOV Actuator Upgrade

The Client:

The Platte Pipe Line Company was assembled by Marathon Ashland Pipe Line LLC and other small investors and began operation in 1952. In 1996, Alberta Energy Company (AEC) purchased the Platte Pipe Line Company on the premise that Marathon Ashland would revitalize and operate the pipeline for AEC. In 2002, Alberta Energy Company and PanCanadian merged to form EnCana, creating one of North America's leading independent oil and gas companies with an enterprise value of approximately US \$35 billion. In January 2003,

Terasen Pipelines was formed as it took over operation of both the Platte Pipe Line system and Express Pipe Line system from EnCana.

Terasen Pipelines is the current operator of the Express and Platte Pipeline system. Covering a total length of 932 miles, the Platte Pipeline transports crude oil through 19 pump stations on it's 20" diameter line between Casper, WY, and Wood River, IL.

The Requirement:

For the transportation of crude oil, the Platte Pipe Line was originally designed and constructed with a rated capacity of approximately 150,000 US barrels per day. In the early 1980's when the slumping oil production in Wyoming and Montana hit the oil industry hard, the Platte Pipe Line Company was forced to reduce delivery through the pipeline to a fraction of the capacity.

As demand for crude oil increased again in 1996, Alberta Energy Company purchased the Platte Pipe Line Company

and began revitalizing the pipeline. Inoperative pumping stations were restored and existing operational stations were upgraded to achieve a projected throughput of approximately 180,000 US barrels per day.

Hinz was contracted to provide Electrical Engineering services and support for the revitalization effort, including new control system and electrical power system upgrades.

The Design Solution:

The pipeline upgrade work performed by Hinz at Salisbury Station located in Salisbury, Missouri, incorporated upgrades to the Motor Operated Valves (MOV) and associated 480VAC distribution systems at the plant. On the Tank Valve Manifold, the present condition of the "open-gear" MOV actuators was poor as they were failing and in need of replacement. Thus, the first part of the project was to replace all existing open-gear MOV actuators on the Tank Valve Manifold with new EIM Controls actuators. Newer EIM Controls actuators existed on the Unit Valve Manifold but they lacked integral starters. It was decided to retain these existing actuators but to fit them with new integral 480VAC starters.

Hinz developed a new design of the 480VAC distribution system to accommodate the new 480VAC actuator starters. New circuit breaker distribution panels named Rack A and Rack B were engineered to provide service to each MOV on the Unit Valve Manifold and Tank Valve Manifold respectively. Hinz used a similar panel design for both Racks A and B. Mounted inside the front section of the rack was the 480VAC bus and 480VAC circuit breakers dedicated to each MOV. The rear of each rack included 120VAC control power circuit breakers and terminal blocks for each MOV.

Previously, control cables connected from the control room to each of the valve operators. In the new design, the cables were

rerouted to connect directly from the control room to the rear of Racks A and B. New multi-conductor cables were then installed from Rack A or B to each MOV actuator. In the design, the existing 480VAC feeder cable supplying the combination starter control panels located in the plant yard was retained and extended to new Rack A. A new feeder was then installed to connect power from Rack A to new Rack B.

In the project, modifications were also made to the PLC control system wiring in the control room. PLC output cards were re-terminated to accommodate the MOV revisions, and new 32-point PLC input cards were added to the system to accommodate new status signals from each valve's Hand-Off-Auto switch.

Other modifications made to the plant during the project included the installation of new 30 HP tank mixers for Tanks 802 and 803. New MCC starters and cables were installed to supply the mixer motors from the MCC located in the switchgear building.

After the installation of new distribution Racks A and B, the existing 480VAC combination starter control panels located in the plant yard were removed.



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System Specifications:

Hinz Provided Design Engineering and Installation Support for the following:

- Electrical Design for Motor Operated Valve (MOV) Electrical Upgrades for 44 Valves.
- Electrical 480VAC Distribution System Design to Provide Power Service to all MOVs.
- Control System Schematic Design for all MOVs.
- 480VAC Electrical and Controls Additions for New 30HP Tank Mixers on Tanks 802 and 803.
- 480VAC Equipment Upgrades to Existing MCC Equipment.
- Design and Installation of New Control Wiring to Modicon Quantum PLC Modules.

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

www.hinz.com