



A Rockwell Automation Company

## Alberta Energy Company / EnCana / Terasen Platte Pipeline Yoder Power System 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 \$35 billion US. 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 its 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 its 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:

For the Platte Pipeline Yoder Station located in Yoder, Wyoming, Hinz provided electrical and control systems design for an all new electrical installation. Essentially, the Yoder Station was completely rebuilt. First, Hinz provided engineering design documents and coordinated the contractor work for the addition of a new 34.5kV substation. The new design would convert the station and machinery from 2400 Volts to 4160 Volts, consistent with upgrades on other Platte Pipeline stations. The new main substation transformer was rated at 34.5kV-4160Y/2400 Volts, 5000KVA with neutral grounding resistor, and the dead-end structure. The new dead-end structure included lightning rods, 36kV station class lightning arrestors, suspension insulator assemblies, 34.5kV power fuses and fuse-holders, and disconnect switches.

Next, a new 14 ft by 50 ft heavy wall station switchgear building was designed and installed. Along with heating, lighting, grounding, and a full-length electrical cable tray, the building housed the 1200A, 4160V medium voltage main breaker and Allen-Bradley Soft-Starters for each of the two 1500 HP pumping units. The building also housed the 4160 Volt, 600KVAR Power Factor Correction Capacitor Bank (PFCC) used to maintain system voltage and enhance power quality. New panels were provided in the building for utility metering components, the Modicon Quantum PLC system,

and the UPS system.

During the installation and upgrades, the existing 1500 HP unit motors were rewound to enable them to be reconnected to the new 4160 Volt distribution system. The existing control system wiring was completely replaced and reconnected. Hinz recommended the installation of a UPS system to protect the control system and provide the off-site control center with access to all station status information in the event of a power outage.

Hinz also designed and managed the installation of a new station-wide grounding system to eliminate spurious instrument related problems. Other upgrades at Yoder Station included the main station yard transformer, which was upgraded to a 300 KVA, 4160-480Y/277 Volt oil-filled type. A new Modicon Quantum PLC was installed for station control and for capacitor bank control. Programming of the PLC was performed by Hinz.

Hinz directed and coordinated the electrical contractor's work and provided all required documentation to define and outline the design and installation of both the electrical and control system project work.



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### System Specifications:

Hinz Provided Design and Installation Support for the following:

- New 34.5KV Station Substation, with 5000KVA, 34.5KV-4160Y/2400 Volt Transformer, station class lightning arrestors, and Neutral Grounding Resistor.
- New Substation Dead-End Structure included lightning rods, suspension insulator assemblies, 34.5KV power fuses and fuse-holders, 34.5KV Disconnect switches.
- Two 1500HP, 4160V, 1800RPM Unit Pump Motors.
- New Station Yard Transformer, 300KVA 4160-480Y/277 Volt.
- New 4160 Volt 600KVAR Power Factor Correction Capacitor Bank.
- New Station-Wide Grounding System, to eliminate spurious instrument related problems.
- Design and Installation Support of New Electrical Switchgear Buildings.
- Installation of New Modicon Quantum PLC, including Logic Programming.

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

[www.hinz.com](http://www.hinz.com)