



A Rockwell Automation Company

Alberta Energy Company / EnCana / Terasen Platte Pipeline Moorefield Station Power 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 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 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:

Hinz began the Moorefield Station project work by designing, specifying, and procuring the equipment for the main incoming electrical substation. A decision was made to build a new 69kV/4160V electrical substation on the north side of the existing substation area so that the units could be cut over from the existing to the new electrical system without hampering routine station operations. The new 7.5MVA, 69kV transformer was specified by Hinz along with the S&C Electric Series 2000 Circuit Switcher. The Circuit Switcher included hermetically sealed, no-maintenance, single-gap puffer-type SF6 gas-filled interrupters with 25-kA ratings.

Foundations for the main substation, the main switchgear building, and the substation transformer were installed per location detail drawings provided by Hinz. A substation grounding grid was designed by Hinz to achieve the touch and step potential requirements proposed for safe operation by IEEE. A dedicated Uninterruptible Power Supply (UPS) was designed to service the Circuit Switcher. To improve the station power factor a Tuned Filter Capacitor Bank was designed by Hinz.

Hinz was also responsible for the design of the low voltage distribution system at Moorefield Station. A new, oil-filled, pad-mounted transformer was utilized to transform the voltage from 4160 volts to 480 volts for station utility and UPS system

loads. The 480 volt MCC serviced the building's HVAC units and service transformer, which stepped the voltage down from 480 to 120 volts. Additionally, the 480 volt MCC supplied power to the storage shed and Station Control Building. A separate 480/120VAC transformer was installed at the Station Control Building to provide power for lighting and heating requirements there.

Hinz was responsible for the design of the electrical building. The building's floor system design ensured minimum interference between bottom entry cable feeders into the high and low voltage starters, while ensuring ease of installation of the field cables.

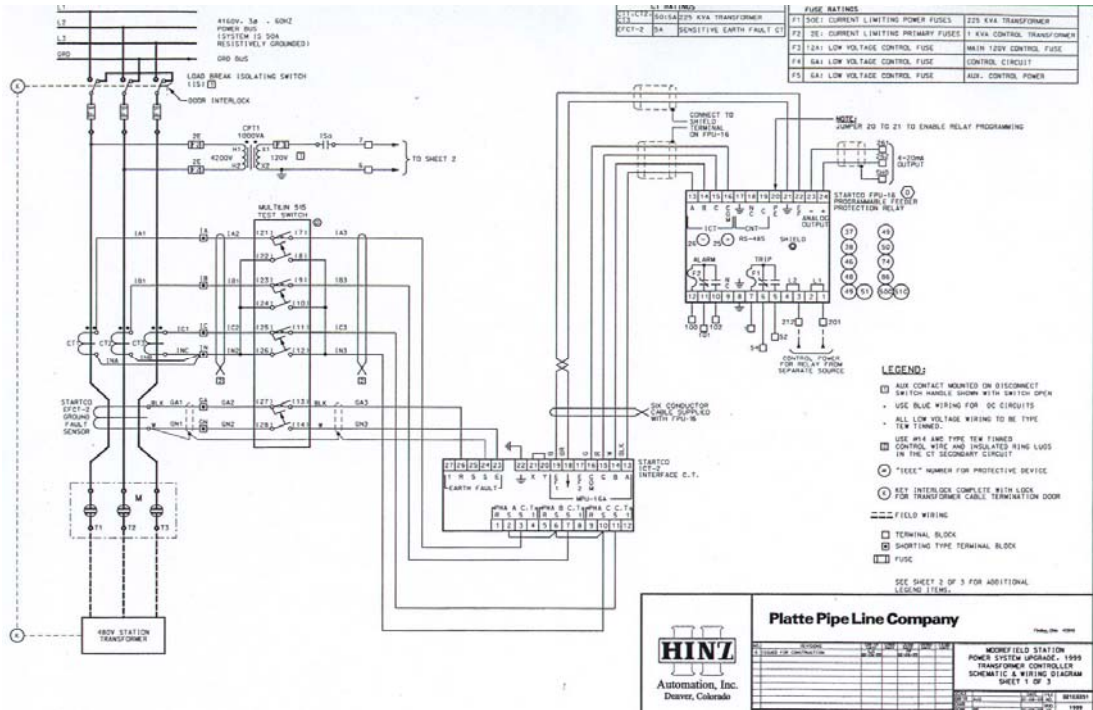
Hinz provided control system design, control panel layout design, Programmable Logic Controller (PLC) logic, and Human Machine Interface (HMI) programming for the Moorefield Station. Hinz recommended the installation of a UPS system to protect the control system. With the UPS installed, the off-site control center would have access to all station status information in the event of a power outage.

Hinz provided all required documentation to define and outline the design changes to both the electrical and the control system project installation work.



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Moorefield Station / Transformer & Controller Electrical Schematic Wiring Diagram

System Specifications:

- New 69KV/4160V Electrical Substation, with 7.5MVA, 69KV/4160V Transformer.
- New S&C Electric Series 2000 Circuit Switcher, including Single-Gap SF6 Gas-Filled Interrupters.
- Tuned Filter Capacitor Bank.
- Grounding Grid System.
- Oil-Filled, Pad-Mounted 4160/480V Transformer for Low Voltage and Station Utility System Loads.
- Miscellaneous 480/120VAC Auxiliary Transformers.
- 480V Motor Control Center.
- Uninterruptible Power Supply (UPS).
- Power System Design, Electrical Building Design, Control Panel and Control System Design.
- Programmable Logic Controller (PLC) Logic, and Human Machine Interface (HMI) Programming.

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

www.hinz.com