



A Rockwell Automation Company

El Paso Corporation - Colorado Interstate Gas Rawlins 150kW Standby Generator Set

The Client:

El Paso's interstate transmission system spans the nation, border to border and coast to coast. The nationwide pipeline system is consolidated into three regional operations.

The Western Pipeline group consists of El Paso Natural Gas Company and Colorado Interstate Gas Company and is headquartered in Colorado Springs, Colorado.

Colorado Interstate Gas (CIG) is a major transporter of natural gas in the Rocky Mountain region. The Colorado Interstate Gas system is connected to nearly every major supply basin in the Rocky Mountains as well as production areas in the Texas Panhandle, western Oklahoma, western Kansas, and Wyoming.

The Requirement:

El Paso needed to upgrade the Standby Generator located at their Rawlins Gas Plant. The facility was equipped with a continuous-rated 75kW generator which operated upon the loss of the normal "utility" power. An automatic transfer switch starts the generator and then transfers power from the normal utility source to the backup generator power source.

The load being connected to the generator had increased past the point of maximum continuous-rated generator capacity. In some recorded cases, the generator had operated at above its continuous-rated capacity, which had also placed current on the cabling from the generator to the automatic transfer switch and then onto MCC "B" at levels higher than the rated ampacity of the installed cables.

The current condition of both the generator and cabling was leading to poor energy performance, life, and safety of the generator and cabling.

It was beyond the scope of this project to replace the utility power feed. The utility power source from Electrical Switch House #2 to the Automatic Transfer Switch is supplied by a 125A breaker and is connected by a single conductor per phase #2AWG, type RHW, 75C, located in a 1 1/4" conduit, which after the upgrade, will become the limiting factors in regard to the amount of power available to MCC "B" during normal operating conditions.

The Design Solution:

Hinz was contracted to prepare a detailed budgetary estimate for the control system upgrade of the existing generator. Working with El Paso personnel, a detailed estimate was prepared to define the project scope, budget, and implementation plan. The scope of work included:

- Sizing the new generator which was sized at 125kW prime power with 150kW standby power at 60Hz. This translated into 188A (continuous) and 225A (standby) at a 0.8 power factor. Since the generator must have its output de-rated by 2% for every 1000 feet above 3000 feet in elevation and the generator was installed at 7000 feet, the de-rated output of the generator translates into 173A (continuous) and 207A (standby) at a 0.8 power factor.
- Replacing the existing #2AWG power wiring with 4/0 size wire, which increased the ampacity to 230A.
- Extending the fuel supply line. The current carrying

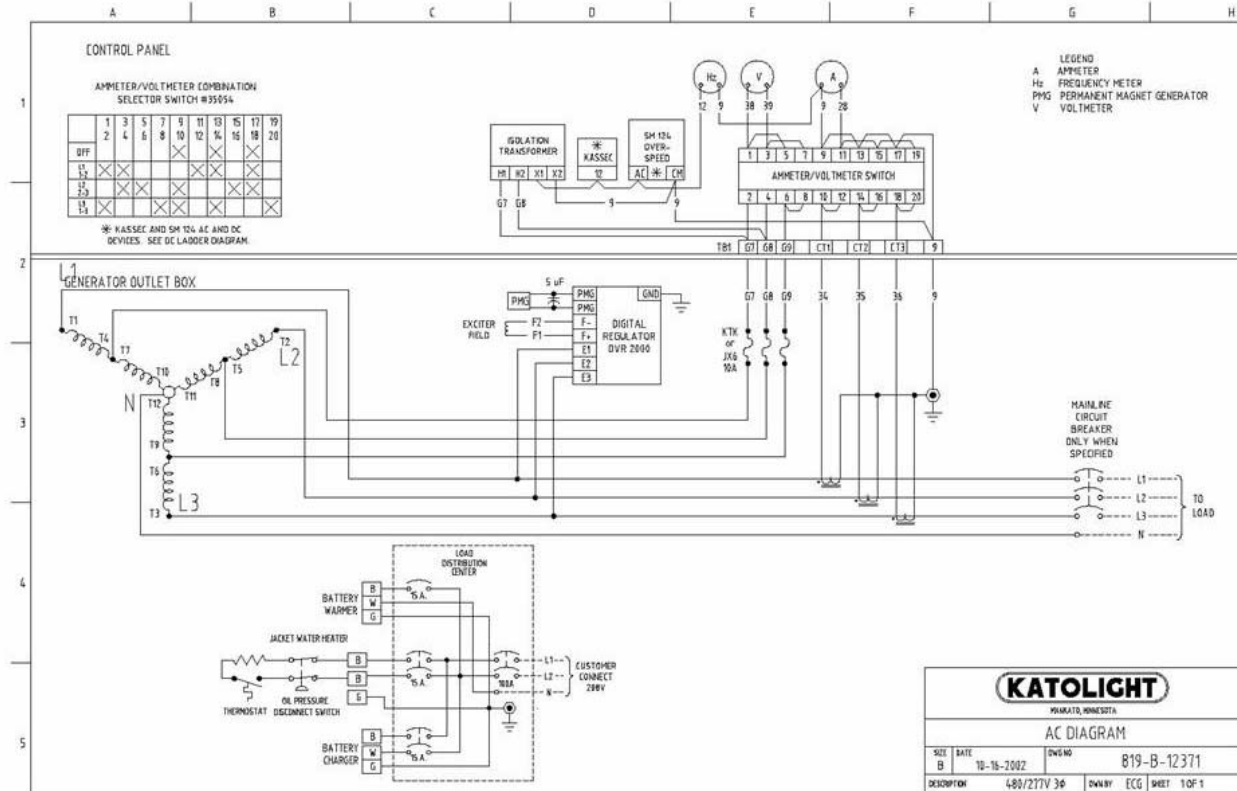
capacity of the Automatic Transfer Switch was rated at 260A, which was large enough.

- Reconnecting "remote start" generator control wiring from the Automatic Transfer Switch to the new generator.
- Retrofitting an existing panelboard to derive the control power for the new generator set. New breakers, wiring, and conduits were sized and installed.
- Preparation a detailed Functional Requirements Document (FRD).
- Providing specification sheets for equipment to be purchased by El Paso for all new equipment required for this project.
- Providing complete engineering, commissioning and training for the new equipment.



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System Specifications:

One Katolight Generator Set, Model No. NL150FRZ4, complete with

- Weatherproof Enclosure
- 150kW Generator
- Cummins 8.3L Engine, Control Panel
- Governor
- Heavy-duty Air Cleaner
- Unit-mounted Radiator
- 225A Main Circuit Breaker
- Battery
- Battery Charger
- Heater
- Vibration Isolation Pads
- Residential Muffler
- Air/Fuel and Catalyst Emission Control
- Internal Distribution Load Center.

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

www.hinz.com