



A Rockwell Automation Company

Fording Coal Ltd. Series One to Series 90-30 PLC Conversion

The Client:

The Genesee Mine was developed as a joint venture between Fording Coal Ltd. and the City of Edmonton in 1980. The mine is located approximately 70 kilometers southwest of Edmonton. The Genesee operations involves mining of valuable sub-bituminous thermal coal to use as fuel in the Genesee Generating Station owned and operated by Edmonton Power.

Fording began operating the Genesee surface strip mine in 1988, and now produces in excess of 3.5

million metric tons of coal annually. This economically valuable source of energy is responsible for generating 92 percent of Alberta's electricity. Abundance of coal (reserves will last for at least 375 years based on the current 22 million metric tons mined annually), proximity of coal deposits to the mine's surface and low sulfur contents (1/12 of the amount of sulfur in natural gas) make coal the best source for generation of electricity.

The Requirement:

Original GE Fanuc Series One PLCs were in need of update. Fording Coal Genesee decided to upgrade existing Series One GE PLCs which were installed inside their Marion 8200 dragline and Dresser 191-

mMshovels. Obsolescence and shortage of spare parts were the main reasons for the upgrade. Quick turnaround of unit upgrade and minimal costs were key factors.

The Design Solution:

Hinz provided an engineering estimate, wiring diagrams, conversion of all three programs and total commissioning of the system within the allocated time and budget. The Series One PLCs were upgraded to GE 90-30 Series. The program conversion was done manually from a hard copy of the existing Ladder logic. This was compared to the results from an automatic conversion utility. The manual conversion was completed within two days of the automatic one and yielded superior performance. The commissioning was a success; the equipment was ready for full operation after one day of commissioning. The following PLCs were upgraded from GE Series One PLCs to GE 90-30 Series:

Dresser 191-M control and annunciator PLC, inside the shovel: this PLC receives operator inputs such as shovel orientation and mode of operation as well as other field inputs, executes the logic and controls all of the annunciators located inside the operator's cabin as

well as those on the PLC cabinet. This PLC was converted to a GE FANUC 90-30 with a 331 CPU in a 5-slot main rack connected to an expansion rack.

Lube PLC, also inside the shovel: This PLC provides control and fault indication for the automatic lubrication system in the shovel. The operator can select the lubrication time (duration) of different hydraulic systems in the shovel as well as the fault time interval. This PLC was converted to a GE FANUC 90-30 with a 311 CPU in a 5 slot single rack
8200 dragline automatic lubrication PLC: like the lube PLC, this system controls the lubrication time and fault time interval duration for the 8200 dragline. This PLC was converted to a GE FANUC 90-30 with a 323 CPU in a 10-slot rack.



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System Specifications:

- Three stand alone GE 90-30 PLCs
- 26 DI, 10 DO (2nd PLC)
- 37 DI, 32 DO (1st PLC)
- 35 DI, 18 DO (3rd PLC)

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

www.hinz.com