



A Rockwell Automation Company

ADM Agri-Industries Co Gen Project

The Client:

ADM Agri-Industries Ltd., located in Lloydminster, Alberta, produces refined Canola oil. Canola seed is

delivered to the plant where it is cleaned, the oil extracted and refined.

The Requirement:

The oil seed market is an international one with considerable competition. As a result, pricing is competitive and profits marginal. Processing of Canola seed into refined oil requires considerable amounts of both thermal and electrical energy, and the economic viability of the process can be threatened with rising costs of natural gas and electrical power.

A surplus Cogeneration unit was available at the ADM Soybean processing plant in Helena, Arkansas. This unit could provide up to eighty five percent of the power requirements of the Lloydminster Canola process and included a turbine generator, heat recovery boiler and electrical switchgear. The project involved dismantling of the equipment and shipping it to the plant in Lloydminster, installing the equipment in a new building and connecting it to the electrical system.

The plant is normally supplied from the ATCO Electric Hill Substation by an overhead 25kV distribution system. An alternate source for the plant is from the Lloydminster Substation. The service is

primary metered and the plant connected to the overhead distribution system by one 4160V and three 600V three phase feeders. The new Cogeneration unit was to be installed and connected to operate in parallel with the ATCO Electric system. The common point of the electrical systems for the plant was the 25Kv overhead line on the plant side of the revenue metering equipment. The output of the generator is 13.8kV and a step up transformer was installed to connect to 25kV system.

The project was lead by ADM and the work of dismantling and shipping of the equipment, as well as the supervision of Contractors installing the equipment at the plant was by ADM forces.

Hinz provided electrical engineering support to review the electrical drawings in compliance with the Canadian Electrical Code, provided drawings and specifications for installation of the new step up transformer, implement transformer protection relaying and interface with ATCO Electric Ltd.

The Design Solution:

A 6mVA transformer was installed and connected to the ATCO 25kV overhead line through an electrically operated 630A Recloser and to the Main Breaker in the 13.8kV switchgear. The Recloser was configured for single operation and provided overcurrent protection for the 25kV connection to the transformer.

A new stand-alone electrical building houses the 13.8kV switchgear and 480Volt Motor Control Center supplying the generator auxiliaries.

Transformer protection was provided by a Multilin SR745 to protect the transformer against internal faults

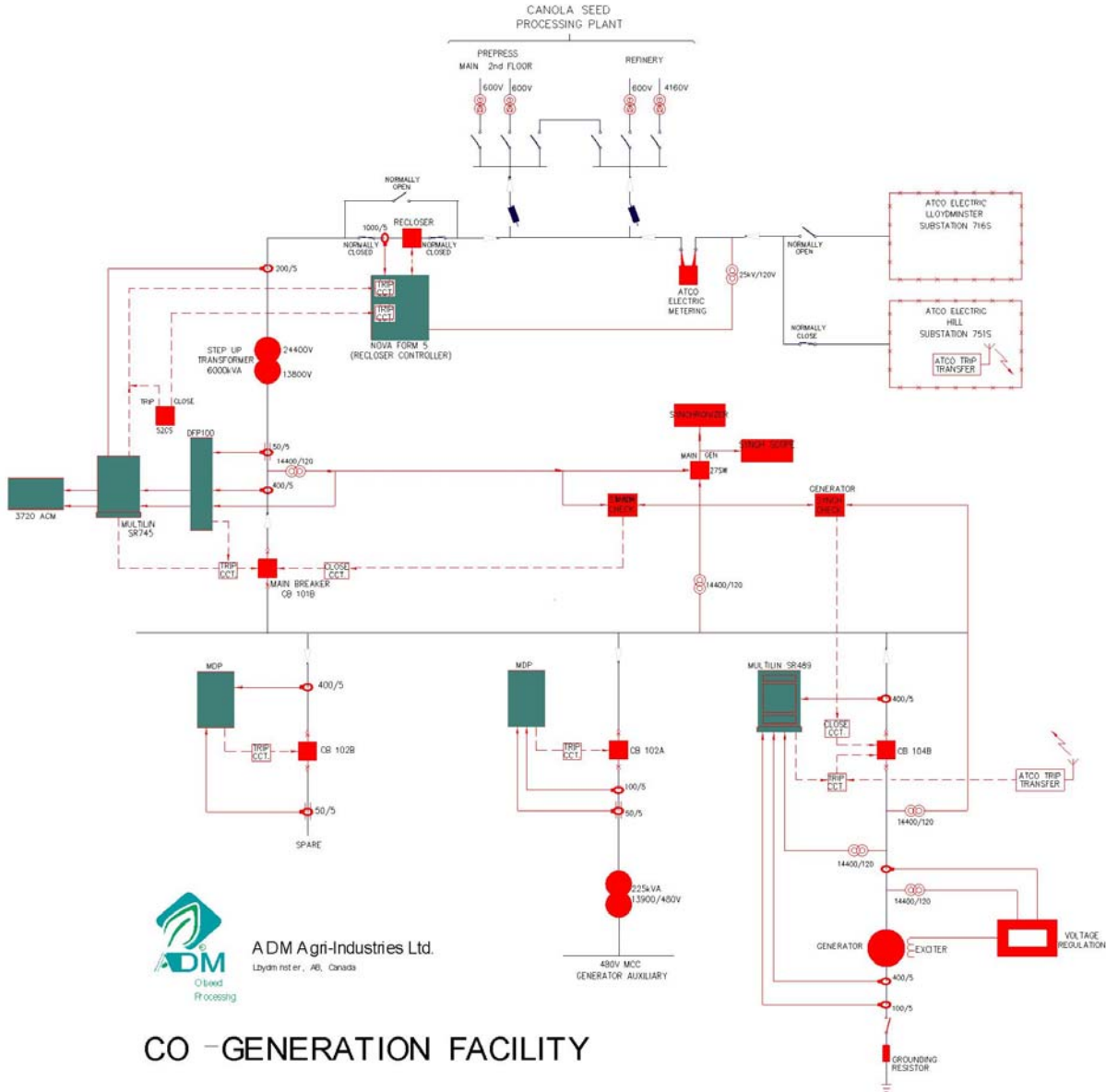
and overload conditions. The relay trips the Recloser and 13.8kV Main Breaker when the setpoint of programmed parameters are exceeding. ATCO Electric also installed a Trip Transfer scheme to trip the Generator Breaker when the circuit breaker at the substation feeding the overhead distribution was open. This ensured that the substation breaker could not be reclosed on a live line.

All existing generator and feeder protection and control circuits were reconnected and put into service



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ADM Agri-Industries Ltd.
Lloydminster, AB, Canada

CO - GENERATION FACILITY

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

www.hinz.com