



Hinz Automation Inc.

Luscar Ltd.

The Client:

Luscar Ltd. is a diversified coal company with over 85 years of Mining experience in Western Canada. Luscar Ltd. Line Creek Mine is an open pit coal mine and processing plant, located in

Sparwood, British Columbia. The Line Creek Mine was acquired by Luscar Ltd. through the take over of Manalta Coal in 1998.

The Requirement:

Luscar Ltd. Line Creek Mine stores the coal it produces in two different states (Raw and Clean Coal) in silos before and after its production. In order to be in compliance with the BC Mines Act the client required methane detection installed in all of its eight coal storage silos. Methane gas, commonly found in coal streams, presents a potential hazard to the people working within enclosed areas as well as the machinery if it were to ignite. The methane detection to be installed in the

storage areas is to continually monitor the area for methane. When methane levels reach a hazardous level operators will be notified via an alarm on the local operator interface and the appropriate machinery will be shut down and will be disabled from restarting until the methane levels have returned to acceptable levels. The methane detection transmitters are to utilize the existing PLC control system to provide alarming and shutdown functionality.

The Design Solution:

Hinz Automation Inc. was given the task of providing Luscar Ltd. Line Creek Mine with a complete solution for the implementation of methane detection. The scope of work for the project included project management, electrical design and installation, PLC programming, commissioning, and documentation. An electrical contractor was hired directly by Hinz for the construction portion.

Due to very tight production schedules all work had to be completed during the current maintenance scheduled downtime. This required careful planning and scheduling for both the work to be completed by the electrical contractor as well as the testing and commissioning to ensure maximum uptime and production. This was achieved as well as when work had to be scheduled in an operating environment it was done so in a safe and efficient manner. There were no lost time incidents during the project.

To effectively monitor each silo for Methane two transmitters were required; one located at the top of the silo and one at the bottom. The scope of design required the new methane transmitters to integrate with the existing PLC control system. The existing system consisted of an expansive network of Modicon PLCs, remote I/O racks and Panelmate operator interfaces. The optimum solution required the addition of two new Remote PLC I/O racks and the utilization of two existing Modicon 200 series I/O racks. To make use of the latest in PLC technology some of the existing PLC equipment required upgrading in order to be compatible with the new hardware. These upgrades included upgrading the current 785E Modicon processors as well as the remote I/O racks. This upgrade enabled the processors to be able to communicate to the new Quantum remote I/O drops. In some locations the existing PLC remote I/O network was already near its maximum dB loss capacity so very close attention needed to be paid to cabling routes and installation. A Schneider/Modicon technical spe-

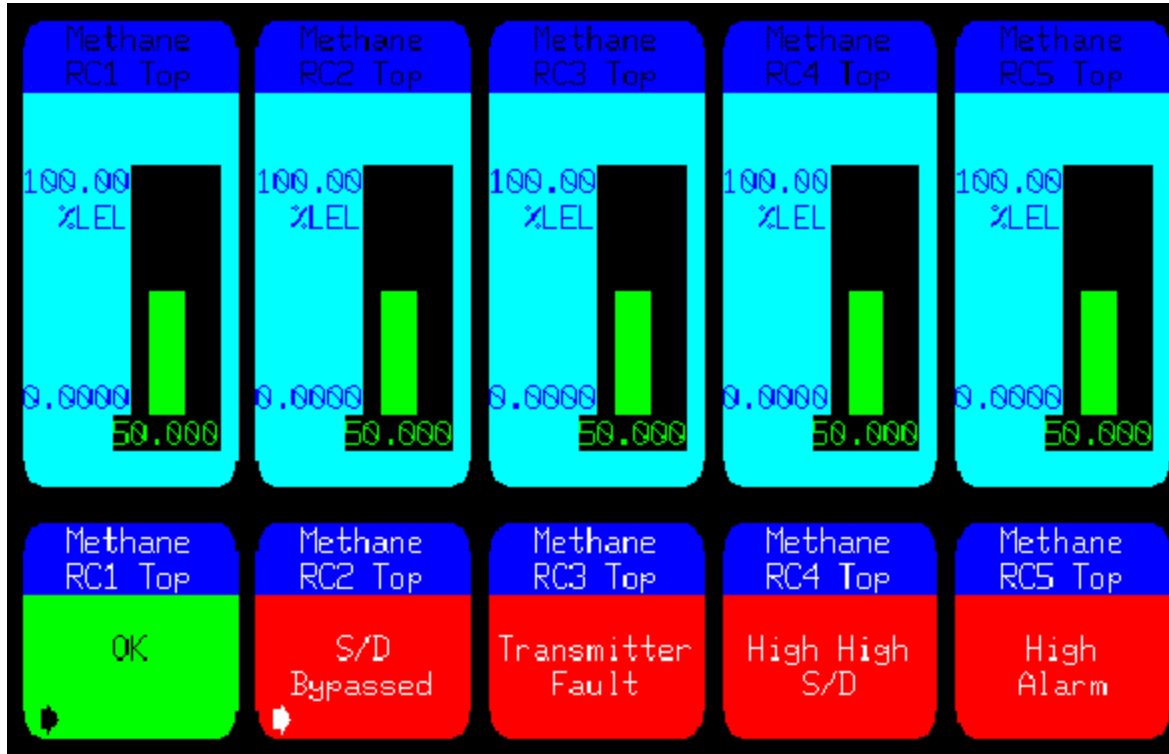
cialist was brought onto site to complete delicate networking tasks, inspect all work relating to the RIO network and test all RIO networks for dB loss and network integrity.

The PLC work for the project involved the programming of appropriate methane alarms, shutdowns and the addition of Methane Alarm screens to the local operator interfaces. All of the new PLC code required for the system had to be integrated within the existing programs that controlled the plant. To ensure maximum up time all programming was done on-line in order to avoid process shutdowns. New graphical screens were added to the existing Panelmate operator interfaces. These screens indicate the level of methane detected by each transmitter as well as the alarm state (alarm, shutdown, transmitter fault, bypass or OK).

Upon completion of the installation of the methane detection the client received operator training and complete project documentation. Documentation included: as built electrical drawings and shutdown key, user manuals, and complete printouts of the new PLC logic.



Methane Detector/PanelmateGraphics System Additions



System Specifications:

- Complete Turnkey Solution (Engineering design, purchase, installation)
- 16 Armstrong ACM combustible Gas Sensor/ Transmitter
- Modicon 78SE CPU Quantum upgrade install
- 2 Modicon 10 slot Quantum Backplant c/w Quantum 8 channel Analog I/P Module
- Electrical construction co-ordination of contractor (Bighorn Electric)
- Panelmate Graphics System Modifications
- Modicon PLC Modifications (1-78SE, 2-984 c/w Redundant Processor)
- As Built Drawing package of New Remote I/O Drops (2)
- As Built Shutdown Keys.

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