



A Rockwell Automation Company

## Gulf Canada Ltd. Homeglen Rimbey Controls Remediation

### The Client:

The Gulf Homeglen Rimbey 3-32 facility is located in Central Alberta, with a capacity of 10 MMSCFD gas and 600 m<sup>3</sup>/d of oil, including inlet separation, flare system, compression, oil treating, vapor recovery unit and tank farm.

The Gulf Canada Resources Limited Homeglen Rimbey 3-32 Oil Battery shutdown controls are centered around two Toshiba PLC Racks mounted in a control panel located in the MCC building.

### The Requirement:

The PLC racks are connected to discrete input devices, primarily field-mounted, and direct discrete output signals to the Lampbox, relay coils and field-mounted solenoid valves as dictated by the logic programmed in the PLC CPU.

There were no spare input or output channels available in the PLC Racks. It had become a common practice at this facility to double-up on output devices such that two solenoid valves are activated by a single output channel. This obviously unsafe practice also has the effect of severely limiting programming flexibility since no matter what you want individual outputs to do in response to a unique shutdown event, you cannot execute unique output commands because the field devices are wired to a common output channel.

This situation continued to the Lampbox, which is the operator's primary eye on this plant. Here, you get the double problem of no spare PLC output channels coupled with no spare Lampbox windows. The result is the totally unsafe situation of the lampbox window warning the operator of the possibility of one of two events which may have occurred in the same building or an event which may have occurred in one of two areas.

An example is one Lampbox window warning of the possibility of 10 ppm H<sub>2</sub>S or 20% L.E.L. in the same building. The Operator did not know what his problem was. Compounding this is the fact that 25 ppm H<sub>2</sub>S or 40% L.E.L. is not annunciated, even though reaching 25 ppm H<sub>2</sub>S or 40% L.E.L. will cause the Battery to Block and Bleed. The Operator has an inexpensive

Panel Meter for H<sub>2</sub>S readout so theoretically he can establish the H<sub>2</sub>S level in the building but still would have no idea if he has an L.E.L. problem or how severe the L.E.L. problem might be. Also, the H<sub>2</sub>S Panel Meter is connected to the H<sub>2</sub>S Detector signal loop in such a way that failure of the meter could cause the loss of the H<sub>2</sub>S input to the PLC; this is unacceptable.

These problems could not be resolved using the existing PLC hardware. The Toshiba PLC equipment, while not obsolete, is antiquated. Vendor technical support is essentially non-existent; recent attempts to enlist this support have resulted in the person being unable to help after two days of chasing him down.

There was no room in the Control Panel to expand the existing PLC Input/Output hardware due to its low density design. Programming the Toshiba PLC was cumbersome at best and is a complete oddity to the Gulf Instrumentation/Electrical Maintenance personnel in the area.

As for the Lampbox, there was no room to expand it such that it could even begin to adequately display the present alarms and shutdowns required by the Operator.

This situation had come to exist over time with the modification of processing equipment to address production, environmental and safety concerns. Unfortunately, the PLC Shutdown System's capacity to capture the required changes associated with these modifications was limited and the system became overloaded.

### The Design Solution:

The proposed replacement for the existing equipment would be a Hybrid Control system, specifically a Honeywell Plantscape Process control system. This particular system utilizes small footprint physical hardware and HMI (Human Machine Interface) software for alarm and information displays to the Operator.

With this solution, Operations would be provided with a fully integrated system for the facility. The Operator Interface Unit would allow the Operator to view all alarms, safety and process information as well as execute all functions previously associated with the Control Panel mounted switches.

Safety is the primary concern and the new system would be installed to execute shutdown, alarm and start-up permissive

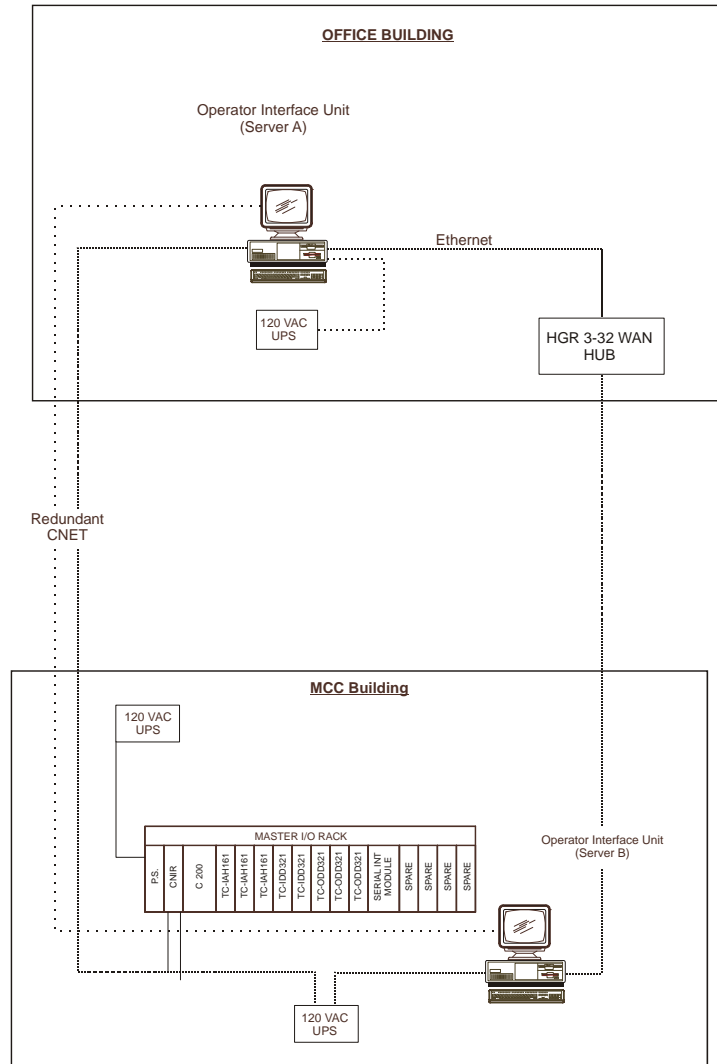
logic functions. Because of the design of the Honeywell Plantscape product, the proposed system could easily be expanded to execute future regulatory control, gas measurement to AGA Standards, full SCADA host operations and interface to Pump-off Controllers. The existing Barnett Telephone Callout Unit would be retained and connected to the new system.

The small physical size of the Plantscape hardware would allow one of the existing Control Panels to be re-used. Existing Shutdown System components would be removed and the backpan modified to accept the new equipment. In addition to cost savings associated with not having to a new Control Panels, this approach provided significant savings in Electrical field construction costs.



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### System Specifications:

- Redundant PlantScope Services
- C200 Process Controller
- 48 4-20mA I/P
- 64 24V Discrete I/P
- 96 24V Discrete O/P

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

[www.hinz.com](http://www.hinz.com)