



A Rockwell Automation Company

## Trans Canada Pipelines Ltd. Station Ethernet Implementation

### The Client:

TransCanada Pipeline Ltd. (TCPL) owns and operates a natural gas pipeline which spans from Saskatchewan to Quebec. There are approximately fifty compressor

stations with a total of 214 Compressors generating 2057 MW of power.

### The Requirement:

The existing station SCADA Ethernet equipment at the stations was becoming dated and did not allow for expandability or redundancy. The current method of accessing the station and unit PLCs was through a direct serial or parallel connection. This method of PLC program access made it difficult for the engineering group in Calgary to support and maintain the system.

Hinz was contracted by TCPL to upgrade the existing SCADA Ethernet equipment and to install Ethernet cards into the PLC racks at 27 compressor stations located across Canada.

### The Design Solution:

Prior to performing this work, audits of the existing drawings were done to ensure they were up to current standards. A coordination effort was required to ensure the on-site work did not interfere with other on-going projects. This project required interaction with regional planners, station controls group, SCADA group, information systems, CAD, gas control and operations.

The SCADA work on-site required that the existing hub be replaced with two 24-port hubs. This provided hub redundancy and allowed for more comprehensive remote troubleshooting capabilities. Dual communication links were run to the SCADA/MMI nodes, station and unit PLCs and the engineering workstation. Dual port transceivers were added to fully utilize the redundant network. In some cases, modifications were made to the Ethernet backbone to accommodate additional devices on the network.

The serial PLC programming connection was replaced with a rack mounted PLC Ethernet communication card. This provides a common communication medium for all equipment. A new engineering workstation computer was installed to allow the station technicians and the engineering group access to all station and unit PLCs from one location. The engineering workstation computer can also be accessed remotely through the

wide area network. Modifications to the PLC programs were required to allow access to the Ethernet link. The site laptop computer was upgraded to Windows 95. In addition, Ethernet and SCSI PCMCIA cards were installed.

An audit of the PLC hardware was performed and various cards were upgraded during the Ethernet installation. Modifications were made to optimize the operation of the failover system. The Logicmaster PLC folders were modified to follow the new naming convention.

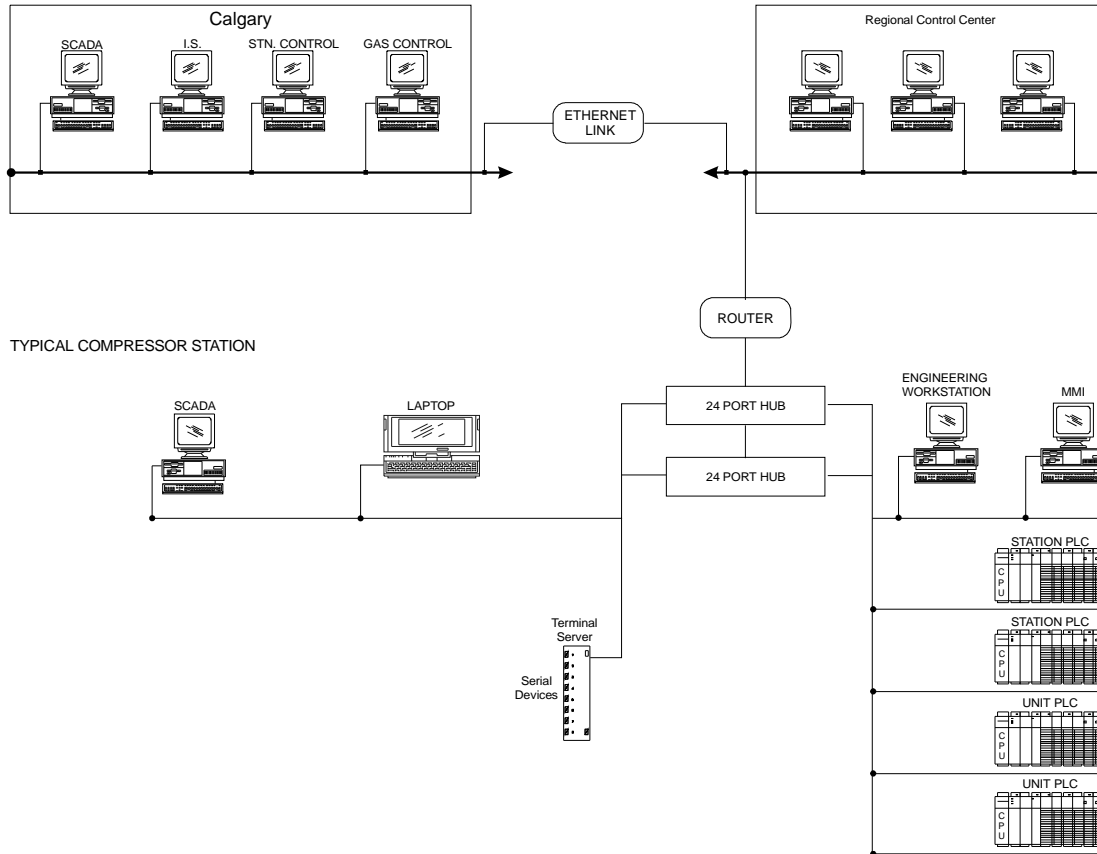
The station FactoryLink application continues to communicate with the PLCs via a serial connection. Phase II of this project will install Ethernet cards in the SCADA/HMI nodes to allow FactoryLink to poll the PLCs over the network.

A detailed project execution plan was developed to ensure the onsite work was kept consistent among the various commissioning teams. All work performed onsite was done with no scheduled downtime. This was accomplished with the hot standby CPU redundancy feature of the GE Fanuc PLC system.



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## System Specifications:

- Factory Link VMS SCADA Node
- Factory Link OS2 Local HMI
- GE Fanuc IC697CMM741 and IC693CMM321 Ethernet cards
- 2 Sehi 24 Port Ethernet Hubs
- Engineering Workstation - HP Vectra
- TPT-D4 Transceivers
- Logic Master Software

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

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