



A Rockwell Automation Company

TransGas Moosomin Gas Storage

The Client:

TransGas Ltd. is the gas transportation division of SaskEnergy, a Saskatchewan Crown Corporation. TransGas is involved in the transportation, storage and distribution of natural gas in the Province of Saskatchewan. The creation of

storage caverns in Moosomin Saskatchewan is part of an ongoing TransGas program to increase natural gas storage capacity in the province

The Requirement:

A common method for storing natural gas is to create a cavern in a salt formation below the earth's surface and then pump the gas into the cavern. To form the caverns, fresh water is pumped into the salt formation, washing out the salt and leaving a void. For the Moosomin site the fresh water was to be supplied from three wells several kilometers from the plant site. The water was to be pumped by two 450 US gpm pumps and stored on site in two 400 barrel tanks. The outlets from the two pumps would be piped together into a common pipe. The water flow would then split into a three direction header with hand operated valves to isolate each line. Modulating flow control valves would be used to maintain a desired flow to each cavern. The total flow and

pressure into the caverns would also need to be monitored. Small amounts of Diesel fuel can be added to the fresh water as it is injected into the developing cavern to assist in shaping the cavern. The total flow of diesel also needed to be recorded. The brine leaving the developing caverns is piped to two 400 barrel storage tanks. Because of the environmental concern over the possibility of a brine spill over, a third overflow safety tank is required to receive any possible overflow from either tank. The brine is pumped out of the two tanks by two 450 US gpm pumps. The brine is pumped underground to two disposal wells.

The Design Solution:

Allen Bradley hardware and software was used for the control system. The hardware was configured as a hot backup system using Allen Bradley PLC-5/25s. The Human Machine Interface (HMI) software was Allen Bradley's ControlView. This package runs on an IBM PS/2 computer with an Allen Bradley KT card for communication to the PLC. All PLC power requirements are supplied by a battery backed 24VDC supply. An Allen Bradley RediPanel is also installed which gives the same control as the ControlView, but lacks the detail and graphical representation. Manual controls are also available should the operator want to control a piece of equipment manually/locally.

There are two levels of automatic/manual mode control for the plant. These are the plant or system level, and the individual device level. When the system level mode is placed in manual, each individual device is controlled manually, regardless of the individual mode selection for that device. When the system level mode is placed in auto, each individual device is controlled according to its individual mode. When the operational mode of a device changes from auto to manual or manual to auto, it does so "bumplessly".

When the system is in auto mode, it may be started or stopped as a group.

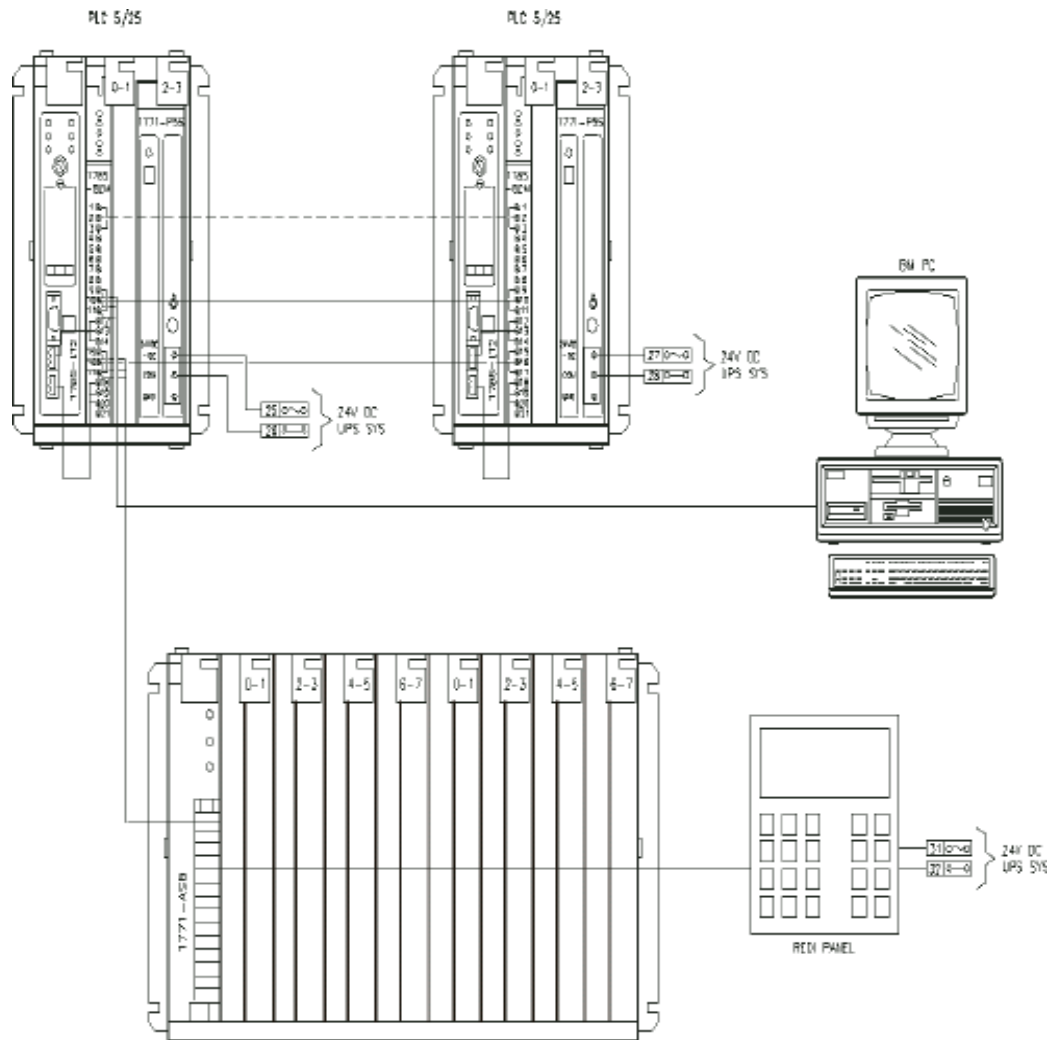
In addition to the equipment and signals associated directly with the wash system, there are several signals that are read by the PLC and used for interlock and indication on the HMI and RediPanel.

The ControlView HMI is used to display all status and alarm information to the operator in a graphical representation. The operator interacts with the ControlView through a custom keyboard. The operator can start and stop motors in individual or group modes. Alarms are displayed on a summary screen as well as printed on a printer. The ControlView is also used for extensive historical archiving and trending and reporting. All flows levels and pressures are constantly monitored and logged. The data are used to provide minute to minute trends of the process as well as for summarizing of totals on reports. Reports contain the totals since the last report, running totals, instantaneous values, high and low values of selected variables as well as run times and status of all discrete values.



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System Specifications:

- Hot Backup AB PLC 5/25s
- 36 Analog I/O, 70 discrete I/O
- 8 Control loops
- AB ControlView HMI
- 20 Graphics pages
- Remote RediPanel HMI

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

www.hinz.com