



A Rockwell Automation Company

Alberta Department of Energy Oil Sands And Research Division Surface Expansion Project

The Client:

The Alberta Department of Energy Oil Sands and Research Division (AOSTRA) located near Fort McMurray, Alberta, operates an underground test facility which is used to field test underground mining access and horizontal well on-site recovery of bitumen from the Athabasca Oil Sands.

Originally, the facility was built to determine the feasibility of the SAGD (Steam Assist Gravity Drainage) technology, the current production of the facility is now approximately 2200 bbl/d.

The Requirement:

The underground test facility has been in operation since 1989 and it has undergone a number of expansions to the various parts of the facility. The Phase B expansion included three additional underground horizontal well pairs. The surface facilities were upgraded to include raw water treating, filtering and softening, steam generation, production treatment, produced water treatment and water disposal. The latest phase added (2) horizontal well

pairs drilled from the surface to increase the production of the facility.

Future expansion plans include new water recycling facilities, additional water treatment equipment and production wells.

The Design Solution:

The Phase B expansion added two 486-33MHZ personal computers utilizing Realflex software as the SCADA system. It operates with the dual redundant Hot Standby/Automatic Failover Module. A Datek (8) line failover switch all peripheral devices in the event of a hardware failure. GE Fanuc 90-70 PLCs were selected to perform the process control because of the diagnostic capabilities along with the high speed communications bus. The MMI database contains approximately 8000 points. There are currently 126 PID control loops operating the facility. The geological formation surrounding the underground horizontal well pairs is monitored by 620 temperature probes located at regular depths in each of 31 observation wells. Each observation well contains a Campbell scientific CR-10 remote terminal unit that communicates back to the central PC host.

The latest surface expansion and additional I/O

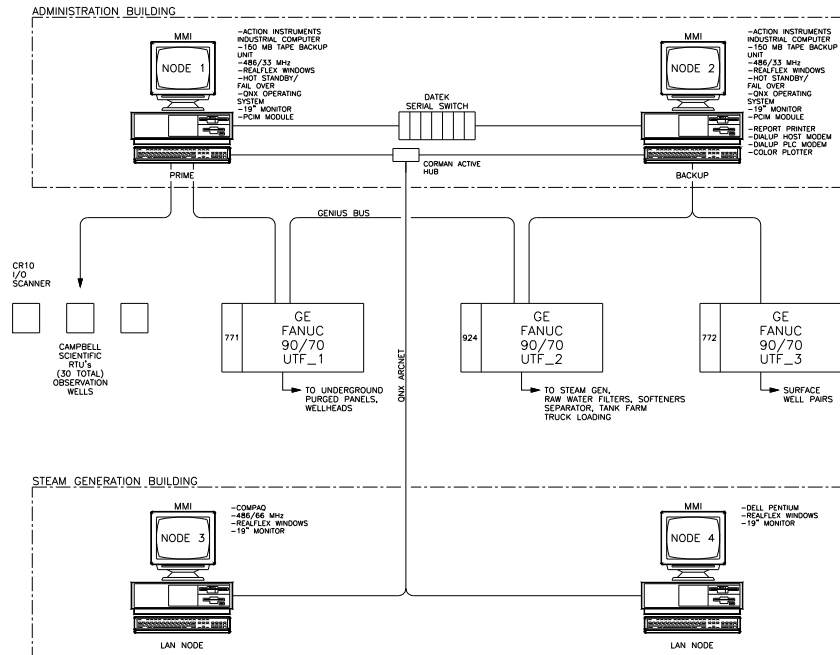
required that a third GE Fanuc series 90/70 PLC system be installed in the control room. Along with the new well pairs and associated production facilities, an additional Steam Generator, raw water filter and boiler feed pumps and disposal wells were added to the existing PLC system. This extra I/O and program logic meant that the UTF_2 PLC processor be upgraded to a 486/66MHz model. An additional 37 displays were added to the Realflex SCADA system. To help manage the numbers of displays available to operations, an additional Lanflex Node was added to the operators control centre in the Steam Generation building. The additional SCADA poll time was minimized due partly to the faster PLC processor and to modular design of Realflex's LanNodes to the architecture.



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System Specifications:

- 5 Well pairs (3 Underground & 2 Surface)
- 3 Raw Water Pumps
- 6 Raw Water Filters
- 1 Raw Water Softener
- 4 Steam Generators
- 4 Feedwater Charge Pumps
- 8 Disposal Water Wells
- 1 Induced Gas Floatation Unit
- 1 GE Fanuc 772 Programmable Controller
- 1 GE Fanuc 924 Programmable Controller
- 6 Remote I/O Racks
- 44 Digital Input/Output Blocks
- 28 RTD Blocks
- 70 Analog Input/Analog Output Blocks
- 17 High Speed Counter Blocks
- 12 Thermocouple Blocks
- 13 Genius Bus Controllers
- 3 Current Output Blocks
- 400 Graphic Pages
- 4 MMI Realflex Window Nodes
- 1 Exide UPS for MMI/PLC
- 30 Campbell Scientific RTUs

Production Treatment Facilities

- 1 Hydromatation Filter
- 2 High Temperature Separators
- 6 Tank Farm Tanks
- 1 Truck Loading
- 1 GE Fanuc 771 Programmable Controller

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

www.hinz.com