



A Rockwell Automation Company

Sakhalin Energy Investment Company Inc. Plantscape Integration for Sakhalin II

The Client:

Sakhalin Energy Investment Company Inc. is the operating partner of a major offshore production facility located in the Sea of Okhotsk off the coast of Sakhalin Island in the Russian Far East. The facility produces up to 100,000 barrels

per day of crude oil. This is the first offshore production facility in this geographic area of the world

The Requirement:

Oil production at the facility has been declining steadily since it was brought into production. Continued drilling into new zones in the formation has not been sufficient to maintain production. Sakhalin Energy determined that they had a need for supplemental water injection facilities to maintain formation pressures. Re-injecting the produced water and gas was not sufficient.

The solution was to drill seawater supply wells into the ocean floor. Water would be pumped from these wells, through a de-aerator column, pressurized by gas turbine driven pumps, and sent into the formation through injection wells.

Hinz was contracted by Sakhalin Energy to be the systems integrator for this project. Vendors supplying complex devices (Turbines, HVAC systems, etc.) were responsible for supplying and programming PLC controllers for their devices. Hinz was responsible for making these complex

individual devices work as a system, programming the waterflood module PLC and integrating the MMI system.

Hinz requirements can be broken down into five major areas of responsibility:

- a. Design of the ControlLogix PLC control system.
- b. Configuration and programming of the control system.
- c. Configuration and programming of the Honeywell Plantscape MMI system.
- d. Factory acceptance testing.
- e. Site commissioning.

The Design Solution:

An Allen Bradley ControlLogix PLC system was designed and purchased. Specialized hardware and software needed to be utilized to communicate with Foundation FieldBus instruments.

Hinz programmed the PLC to control:

- a. the starting and stopping of the seawater supply wells.
- b. PID control of all flows to the de-aerator column.
- c. monitoring of all seawater flows.
- d. control of all chemical injection.
- e. run permissives, pressure control, and minimum flow control of the injection pumps and turbines.
- f. control of all ancillary equipment associated with the project.

- g. safety shutdowns of all equipment.
- h. alarming of all process signals.

Communication from the control system to various vendor PLC packages was accomplished through a number communication protocols (Allen Bradley DH+ and Modbus)

A Plantscape system consisting of a server and three client stations existed on the Platform. A complete overhaul of all system screens and database points was completed prior to work being done for the pressure maintenance project.

Work for the project consisted of 40 new screens and 400 database points. Two servers (main & redundant) were programmed & configured to replace the existing server and one client station. The replaced client station was moved to the new waterflood module as an operator workstation.



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System Specifications:

- Waterflood PLC - Allen Bradley ControlLogix 5550
- Waterflood Remote I/O Panel - Allen Bradley SLC I/O
- Vendor PLCs – Modbus link (2)
- Vendor PLCs - AB DH+ Link (5)
- Protocol Converters - Control Net to Foundation Fieldbus (10)
- Plantscape SCADA R.310:
 - Plantscape Server – Main
 - Plantscape Server – RedundantHoneywell
 - Plantscape clients (3)

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

www.hinz.com