HINZ
A Rockwell Automation Company

# Alcan Smelters & Chemicals
## Alcan Aluminum - Coke Calciner

## The Client:

Alcan Aluminum Limited is recognized as one of the world's largest producers of aluminum. Integrated through all stages of the aluminum industry. Alcan's interests include bauxite mining, alumina refining, aluminum smelting and recycling, fabrication and sales. While remaining a Canadian company with headquarters in Montreal, Alcan has been quick to earn international respect for the quality of its products from their many installations around the world. Alcan Smelters and Chemicals Ltd. is a subsidiary of Alcan Aluminum Ltd. One of the smelters it operates is located in Kitimat, B.C.

## The Requirement:

Coke calcination is a process that removes all moisture and burns out all volatiles from green coke. The calcined coke is then used for making anodes used in pot rooms where aluminum is produced.

The coke calciner area's electrical and control system is made up of a wide range of equipment which has been installed over approximately 15 years. This includes several stand alone loop controllers, push buttons, LED displays, pen recorders, counters, Foxboro SPEC200, Modicon 984 PLC, Yokogawa dual loop controllers and Intellution FIX32 HMI for WinNT.

A study was conducted by Hinz to identify the existing control in the Coke Calciner area and to provide Alcan with a strategy for consolidating all control functions within one system. This involved replacing the existing mimic panel with a modern graphical operator interface.

## The Design Solution:

Thirty-six analog loops were identified, and required interface to operations through the HMI system. Five of these where PID loops executed in the PLC. Four where part of the Pyroscrubber burner control and were identified as critical requiring special attention. These loops remained as stand-alone (existing Yokogawa) controllers. A communication module was added to provide direct communication with the HMI system.

The analog I/O on the mimic panel and Spec200 system was eliminated by wiring directly to the Modicon 984 PLC and HMI system. In order to conform to a standard 4-20mA signal, some loops required upgrading. This upgrade included the installation of new transmitters, transducers, a tachometer for the kiln and PLC Logic Function Blocks. A new Vortex flow meter run was required to replace the existing turbine meter.

Forty-three drives were identified in the system, most of which were push button controlled with LED indications for status. All discrete inputs and outputs were removed from the mimic panel and rewired to the PLC for HMI display and control.

The HMI system consists of four IBM Compatible personal computer stations running Fix32 in a WinNT environment. These are configured as two redundant SCADA nodes and two VIEW nodes. These SCADA nodes have access to PLC information view Modbus Plus and the VIEW nodes communicate over the plant LAN.

To test the system before shutdown, a simulation of the process was performed using S-S Technologies PICS Simulation Software. All of the HMI, PLC and simulation programming required for this upgrade was accomplished by Hinz. Other responsibilities included the electrical/control engineering, commissioning and start-up of the project. A local Kitimat firm was responsible for the construction supervision. All installation and wiring was done internally by Alcan maintenance personnel.

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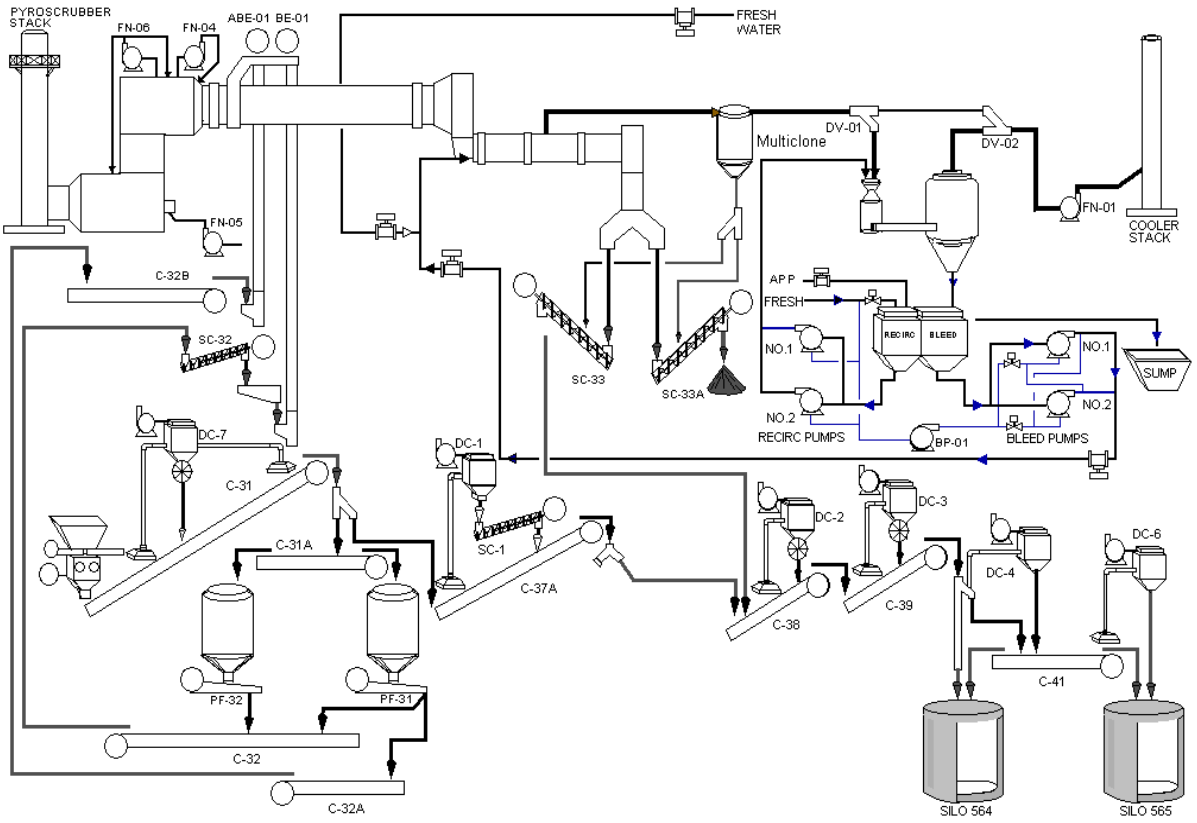


## System Specifications:

- Modicon 984-685E
- 4 Intellution Fix32 Stations
- 450 I/O
- 27 Analog Inputs
- 5 PLC Loops
- 4 Stand Alone Loops
- 43 motors

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

**www.hinz.com**