



A Rockwell Automation Company

McCain Foods Ltd. Control System for Calgary Juice Plant

The Client:

McCain Foods Ltd. Calgary is part of the McCain Foods Group of Companies in Canada. Head office is located in Florenceville, N.B. The Calgary Juice Plant produces fruit juice from concentrate in

125 ml, 250 ml and 1 liter sizes which are McCain brands and private label. The 125 ml packs are McCain brands only.

The Requirement:

The Calgary Juice Plant mixes a variety of ingredients to produce various flavors of both juices and drinks in 1 liter, 250 ml, and 125 ml packages. Standard ingredients including water and liquid sugar are automatically controlled on a batch basis. The aseptic process is air pressurized to prevent the ingress of bacteria into the product. This requires strict sequence control of valve operations to prevent individual product intermixing and loss of product sterility. Individual batches of flavors are operator selected and initiated and are individually

processed through heating and cooling exchangers en route to the product fillers. Clean In Place (CIP) facilities require the control of numerous cleanse and rinse cycles for all tankage, valving, and piping to ensure sterile environments for production. The plant integrates control of the process with control of the plant refrigeration and general building space heating and cooling. Control is located in one central control room where the operator can control the entire facility.

The Design Solution:

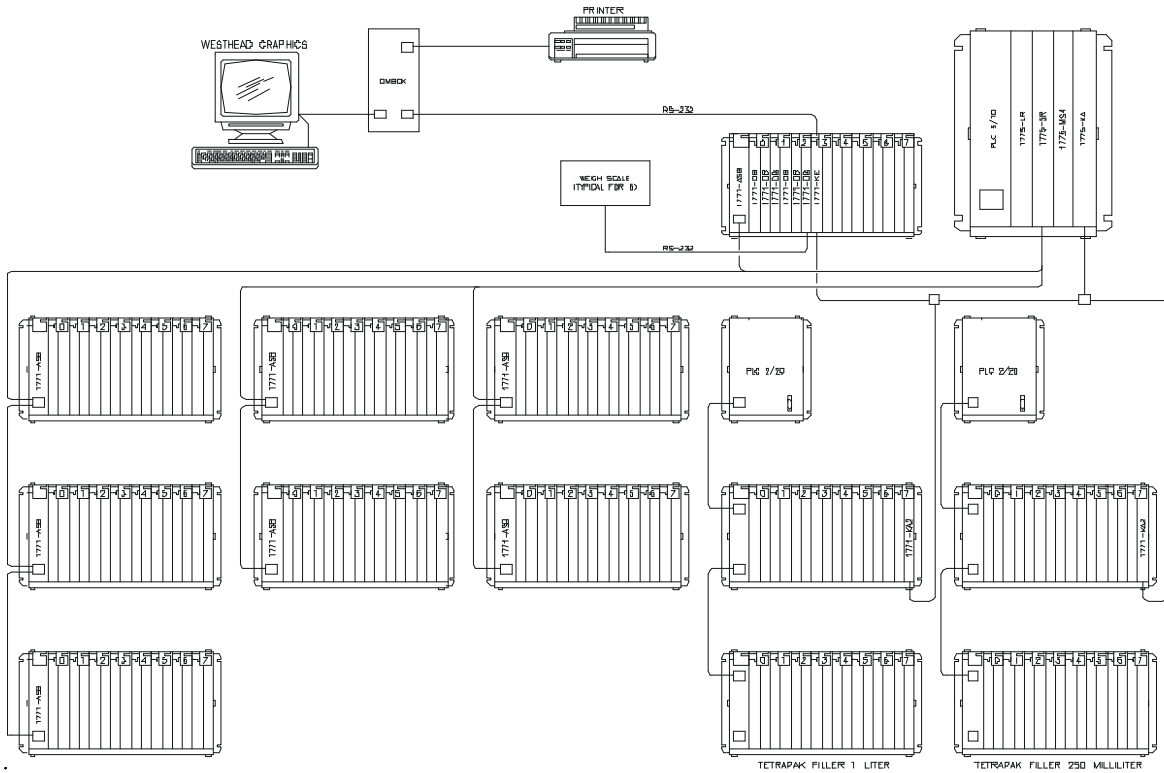
McCain Foods Ltd. is a strong supporter of Allen-Bradley motor control products, variable speed drives and PLCs. As well, their North American facilities have utilized Westhead Graphics as their operator interface. The Calgary Plant control system consists of an Allen-Bradley PLC 3/10 Data Highway connected to two PLC 2/20's which are located onboard the filling machines performing local machine control while providing major interlock and status information to the PLC 3/10. The PLC 3/10 has 7 remote racks distributed throughout the plant. One of the remote racks utilizes a PLC 5/15 configured in rack adapter mode. This PLC executes all PID closed loop controls for the process totalling 10 PID loops. Two I/O racks are located in the electrical room and are

directly interfaced to control the 70 plant motors. Four additional racks are located in process areas interfacing directly to process end devices and some 130 valves. Weigh scale interfaces via ASCII basic modules are provided to 6 Toledo scales weighing mix and aseptic surge tanks for control of product transfer and batch mixing. The Westhead Graphics unit provides the operators with over 20 pages of process graphics depicting all process elements and parameters. All alarming and operator actions are logged to facilitate tracking of batch sequences and alarms.



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System Specifications:

- 1 Allen-Bradley PLC 3/10
- 2 Allen-Bradley PLC 2/20's
- 1 Allen-Bradley PLC 5/15 Rack Adapter Mode
- Westhead Graphics Operator Interface
- 130 Valves
- 70 Motors
- 800 Digital I/O
- 65 Analog I/O
- 10 PID Loops
- 6 RS-232 Weigh Scale Interfaces
- 25 Graphics pages
- 3 Allen-Bradley Variable Frequency Drives
- Allen-Bradley MCC
- Parts Inventory Computer Database
- Production Inventory Computer Database

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

www.hinz.com