



A Rockwell Automation Company

Lakeside Packers / IBP Inc. Refrigeration System

The Client:

Lakeside Packers is a meat processing plant located in Brooks, Alberta. They supply beef to large food chains and distributors in Western Canada and the United States. Lakeside Packers is a wholly owned subsidiary of I.B.P. of

Dakota City, Nebraska. IBP has several meat packing facilities throughout the United States.

The Requirement:

Lakeside was increasing their storage capacity as well as implementing additional processes to the existing plant located west of Brooks, Alberta. The expansion will increase the production from 2000 to 4000 head per day. The expansion involved many new processes such as a flotation system, rendering system, a refrigeration plant, a beef

processing area and walking beam/spray chill in the Hot Box room. This task involved Programmable Controller selection, requisition and programming, control panel design and requisition, electrical tender bid document preparation. The lighting design and 5kV power system were also included in our scope along with the MMI configuration.

The Design Solution:

With Allen-Bradley PLC 2s already existing in the facility it was decided to utilize PLC 5 processors, the PLC 5/40 was chosen in order to utilize common CPUs. The same logic was used in the selection of an Operator Interface with Wonderware on site. The plant operation was distributed into three PLCs, Plant Systems, including the Flotation System, Walking Beam, Spray Chill and Refrigeration. All three PLCs were connected via Data Highway Plus to a Dell Pentium Personal Computer running the 'NT' version of Wonderware. A Dell Pentium Personal Computer running ICOM programming software was used to program the PLC.

Refrigeration:

The plant expansion required refrigeration control for the following new process areas: Hot Box Room, Processing, Ground Beef, Combo Storage and Blast Freezer. The system utilizes ammonia as a refrigerant for the process. There are a total of (8) Mycom compressors, (6) 700 hp, 4160 volt & (2) 200 hp, 480 volt. Each compressor comes with its own control panel. The PLC can remotely start or stop each unit. Refrigeration is broken down into three chill zones: 15F, -35F and 25F. Hot Box Refrigeration utilizes separate controls for (14) Hot Box Zones. There are a total of 205 fans in the Hot Box room. The Engine Room contains 35 motors/pumps all controlled from the PLC. Numerous control panels are located throughout the facility to allow local control of motors.

Operations has full view and control of the process via the operator interface located in the control room.

Spray Chill:

After the beef is processed, it must hang in the Hot Box Room for a specific period of time. To reduce the amount of product shrinkage, water is sprayed from nozzles onto the beef. This is an automatic process controlled by the PLC.

Operator interface screens are used to provide all pertinent information and control (ie. setpoint entry, manual initiate, current spray status).

Walking Beam:

The movement of the beef in the Hot Box Room is controlled with the "Beef Tracking System". Bar code labels are applied to give each side of beef giving unique identification. The system utilizes chain drives to advance the beef throughout the room. Encoders and limit switches are used to automatically track each side of beef. When the tracking system detects the beef has reached the correct holding rail, the PLC will energize a gate solenoid to divert it off the main rail. Separate ram solenoids are used to advance the beef on the holding rails. A gravity gate is used to unload the product to the unload chain. Manual switches are provided to instruct the PLC to temporarily bypass a rail if desired. Additional status and control is provided from operator interface screens located in the control room.

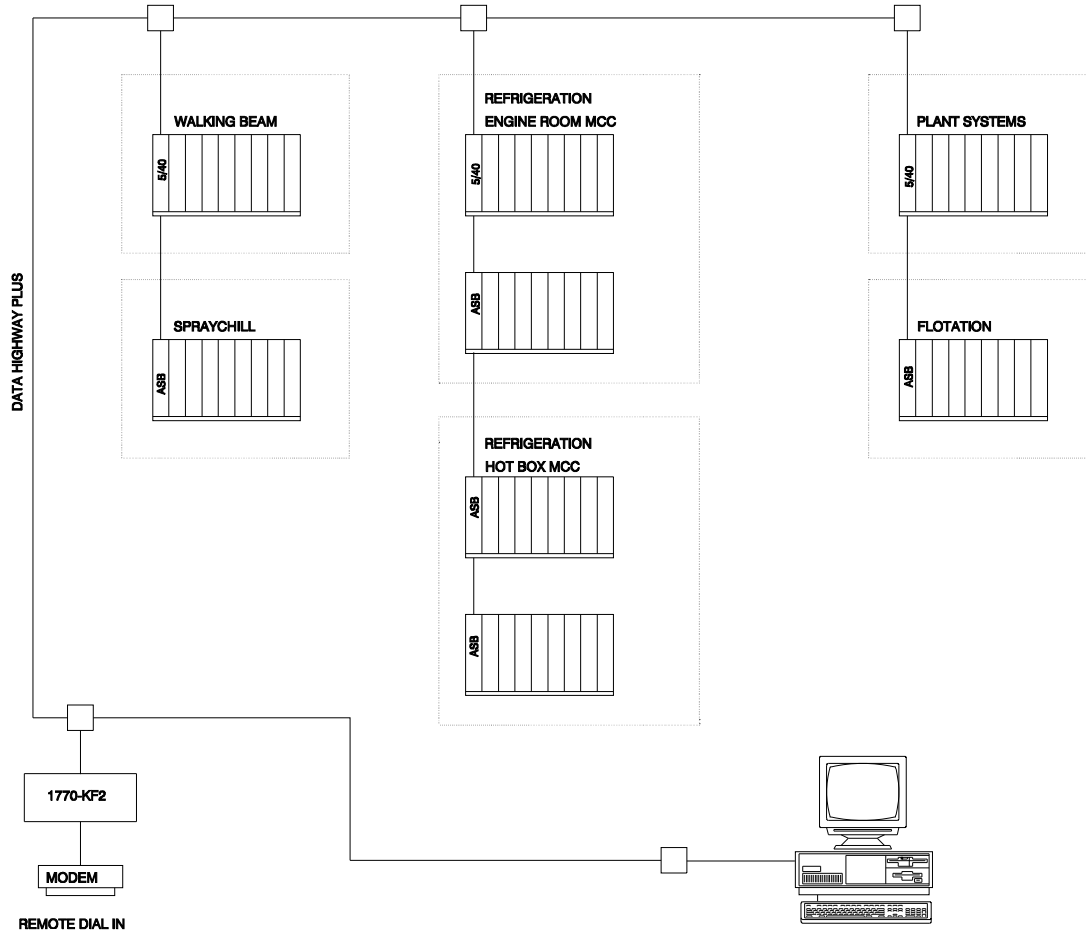
Flotation:

The Flotation System is designed and implemented to recover the oil in the processing water before it is pumped to waste treatment. The finished oil then can be sold as an ingredient in the manufacturing of feed stocks. The equipment includes an auger system, 6 large sump pumps, 2 flotation cells, a skimmer-system, 2 centrifuges which require Y - D starting, a Sharples decanter, and associated tanks and pumps. A Toshiba VFD is also required to control the rate of skimmings transferring. Tank heating uses steam controlled by PID loops. A total of 8 high pressure pumps capable of supplying a flow of 2000 GPM of hot water to the processing floor is also included in the system. Pumps performing the same task are programmed to rotate once a week to ensure even wear.



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System Specifications:

- (3) Allen-Bradley PLC 5/40 Processors
 - (8) Allen-Bradley PLC Panels
 - Dell Pentium Computer Running Wonderware in Microsoft NT
 - Dell Pentium Computer Running ICOM PLC programming software
 - 1000 Digital, Analog and RTU I/O points
- 8 Mycom ammonia compressors
- 205 Fans in Hot Box Room
- 35 pumps & motors in Engine Room
- 41 motors in Flotation process
- Data Highway Plus
- Remote Dial In via 1770-KF2

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

www.hinz.com