



A Rockwell Automation Company

Robin Hood Multifoods Inc. Bakery Mix Automation

The Client:

Robin Hood Multifoods Inc. is a Canadian subsidiary of International Multifoods Inc. of Minneapolis, MN. The mill in Saskatoon produces a full line of standard milled grain products including wheat flour and rolled oats, as well as

many value added products such as bakery mixes for bakeries, restaurants and institutions. Robin Hood has recently embarked on an automation program to prepare the mill for the future.

The Requirement:

Robin Hood had a profitable market in the value added bakery mix industry, supplying pre-mixed recipes to many clients. They had found, however, that it required a great deal of time and effort to avoid inconsistencies in the ingredient proportions due to awkward control of the existing mixer system. They were also unhappy with the degree of product tracking that was available with the existing system.

The answer was to automate the two bakery mix lines (referred to as Mixer Line 1 and Mixer Line 2). The automation would tie all the scales, mixer controls and ingredient additions into a central PLC based control system. This system was to provide a means of managing and

editing the different recipes and scheduling the daily batches. The system would also have a computerized inventory system for the bakery mix area. With this inventory system the operators would know exactly what weights of ingredients went into each mix, where they came from in inventory and when it was time to reorder.

The system was to provide a batch report which allowed for exact time, date and batch number tracking for each mix. The batch report, which could also be supplied to the customer, would include a list of the dry, small, micro and wet ingredients, their target weights, and actual weights.

The Design Solution:

The Bakery Mix control system is made up of three subsystems. A number of personal computers (PC) connected to a file server on an Ethernet LAN are used for inventory control, recipe management and recipe scheduling. Two Programmable logic controllers (PLC) monitor and control the field equipment. Four personal computers provide color graphics operator interface at the control room and on the plant floor.

The inventory system is made up of a file server which is shared by other systems plus four computers for the bakery mix. The file server is an IBM PS/2 computer with two 320 megabyte hard drives. For the bakery mix, it is used to store the database software, the inventory, the recipes, and the batch schedules. The Inventory/Recipe Terminal is located in the lab. It is used to add or subtract to the inventory database to match up with actual inventory levels, enter new or modify existing recipes, and define ingredients. The Scheduling Terminal is located in the Run Office. It is used to enter the batch schedule. The plant floor terminals are located next to the small ingredient scales. They are used to display system operating messages to the operator, acknowledge system ingredients being weighed, and read the small ingredient scales.

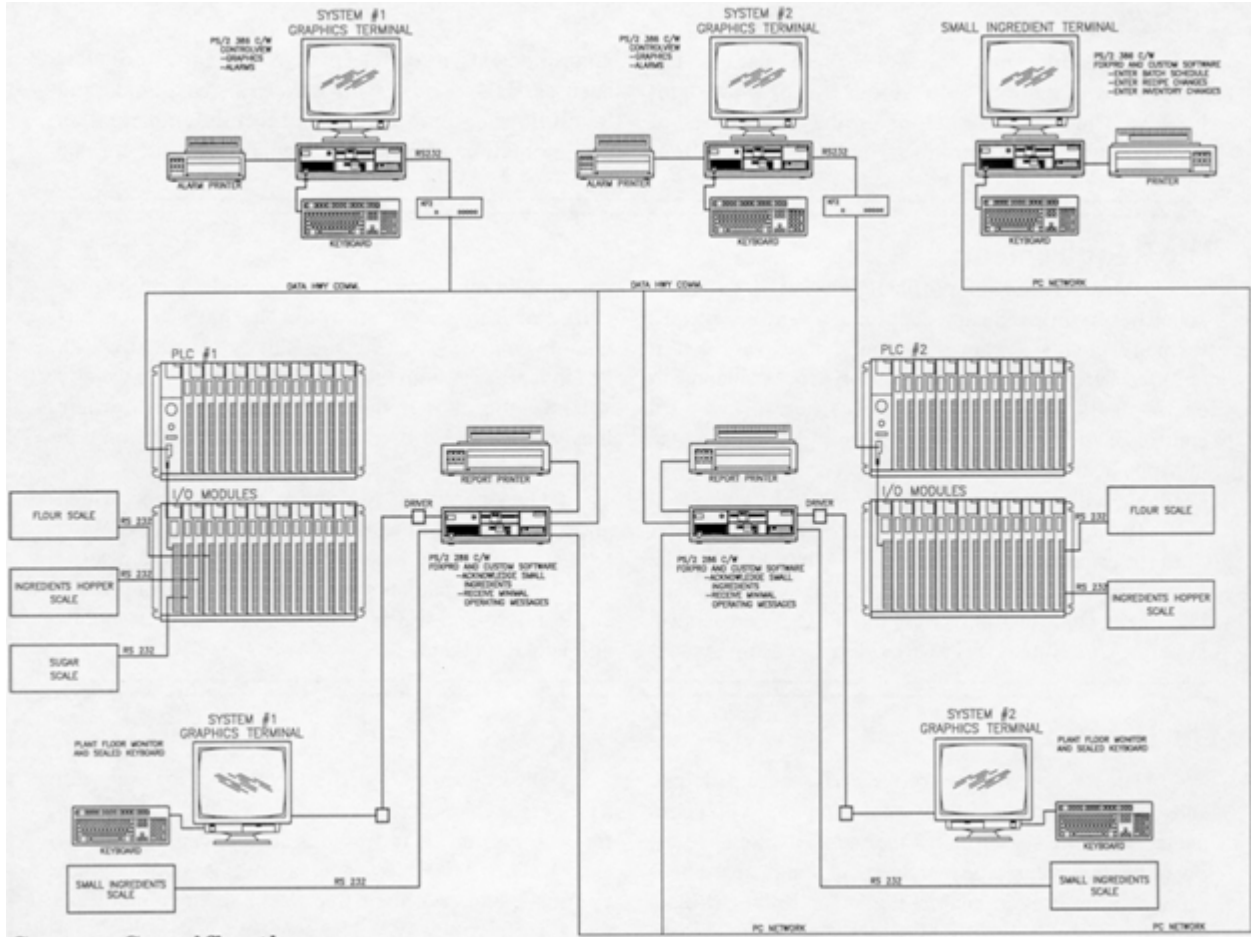
The PLCs are Allen-Bradley PLC 5/25s each with a processor chassis and a remote rack. One PLC is used for each system. This provides independent control for each bakery mix line. The two PLCs, two graphics terminals, and two plant floor terminals communicate via a Data Highway. The two PLCs use the Data Highway to share information common to both systems, to communicate to the two graphics terminals and to communicate to their respective plant floor terminals. The graphics terminals and plant floor terminals do not communicate to each other. Batch schedule information, used by the plant floor terminals, and inventory information is stored in the file server. Two office terminals, also on the PC network, are used to enter the schedule, recipe, and inventory information.

The graphics terminals are IBM PS/2 computers running Allen-Bradley's ControlView. Two graphics terminals are used to provide independent control for each bakery mix line. However, either terminal is capable of providing operator interface to either or both bakery mix lines. The graphics terminals are used to, provide equipment status to the operator, provide manual override control, display and print alarms.



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System Specifications:

- 2 Allen-Bradley PLC 5/25s
- 2 ControlView Operator Interface terminals in Main control room.
- 5 ControlView Graphics Pages
- 2 Plant floor Interface terminals running Custom FoxPro Code. .
- 1 small ingredient computer running Custom FoxPro Code.
- Ethernet LAN
- RS - 232 Interfaces to 7 Ingredient scales.
- 600 PLC I/O
- 15,000 lines of FoxPro and C code.

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

www.hinz.com