



A Rockwell Automation Company

Voyageur Panel Plant Wide Simulation

The Client:

Voyageur Panel is a new company started by several investment parties of which the major contributor is the Boise Cascade company from Boise, Idaho. Boise Cascade is already well known worldwide in the pulp

and paper industry, and is now branching into the OSB panel business. Their first OSB plant is located near Barwick, Ontario, Southeast of the Lake of the Woods.

The Requirement:

A new plant was constructed at the Barwick site to manufacture OSB panels. Voyageur Panel implemented an extensive employee screening program to ensure that the employees were the best available. The operators that were hired however, had no previous experience in the plant process or operation. Therefore, a simulation of the plant was required to provide comprehensive operator training for normal operation and upset conditions.

Voyageur panel specified that the simulator be a PC solution only. No PLCs were to be used for simulation. Voyageur panel also wanted the existing Wonderware graphics from their various vendors to be used in the simulator, so that the operators training

would see 'the Plant' as if they were controlling the actual process.

Multiple operator stations running the Wonderware applications from the various vendors were to be connected to the simulation PC which would control the upset conditions for training purposes.

The simulator would have to react like the real process, based upon operator input and training scenarios. The process characteristics would be supplied by all the equipment and control system vendors. From this projected operation, the completed simulator was required months in advance to match the plant that was under construction.

The Design Solution:

The solution is implemented on a Windows NT simulator PC. Wonderware NT runs on the Simulator PC and supplies tag information over the 10baseT network to the six operator stations. InTouch's IDEA tool-kit library of functions is used to pass data back and forth between Wonderware's real time database and the Visual C++ program that simulates the real plant. Both Wonderware and the C++ program run on the Windows NT simulator PC. The IDEA toolkit allowed the programmers fast access to the operator interface database, and running Wonderware on the simulator PC provided seamless data availability on the operator stations via NetDDE. The changes to the supplied Wonderware applications on the operator stations were minimal. Running Wonderware on the simulator PC allows the trainer to see all of the process details that each operator has access to, and provides a reference for the trainer pop-up screens that Hinz developed to allow the trainer to introduce upset conditions to the system.

Using Visual C++ allows for redesign and improvements to continue well into the timeline of the project.

An object based solution allows this flexibility. The core of the code was developed based on strict rules and formats to ensure the same look and feel of code when all the sections were brought together. With the same look and feel to the code, any section can be worked on without a learning curve to familiarize the user with the codes function and structure. The structure also allows for the reuse of the core code on future simulators for both OSB plants as well as other industrial applications with a similar PLC and HMI configuration.

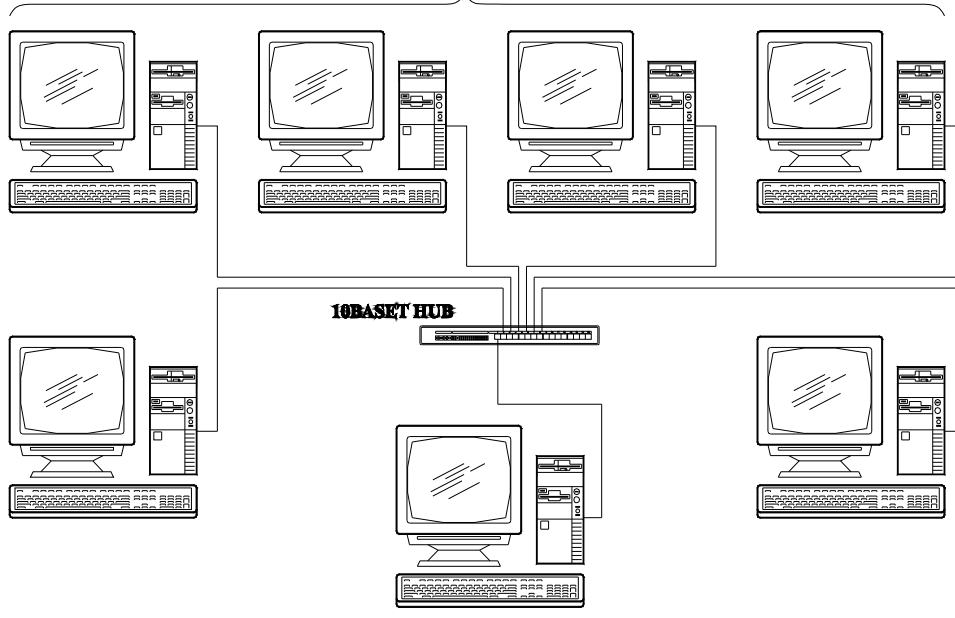
The simulator can be described in three sections. The first section involves the simulation of the real plant process flow including equipment reaction characteristics that interact between each other. The second section duplicates the PLC control of the entire process. This involved the programs from six PLCs. The last section involves keeping the Wonderware graphics up to date with the changing data from the simulator which result from process operation or upset conditions initiated for training.



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Windows95 Wonderware 5.6 OPERATOR TERMINALS



TRAINER TERMINAL WindowsNT 4.0 Wonderware 6.0

System Specifications:

- Three Vendor-supplied Wonderware applications. 3,000, 1,000, and 500 tags, respectively.
- Total application contains all 3 Vendor applications plus training tags and totals 10,500 tags.
- 200 MHz HP Vectra Pentium Pro with 128 Mb of RAM, a 17 inch color monitor at 1024 x 768 resolution and 16-bit color, a 4 Gb hard disk and CD-ROM.

The Simulator PC:

- Windows NT 4.0 and Wonderware for NT 6.0.
- Written in Microsoft Visual C++ 4.1, uses the Wonderware IDEA toolkit.

Six operator PCs:

- Windows 95 and Wonderware for Windows 5.6.
- Pentium 133 MHz with 32 Mb of RAM, 17 inch monitors at 1024 x 768 resolution and 16 bit color, 2 Gb hard disk and CD-ROM.

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

www.hinz.com