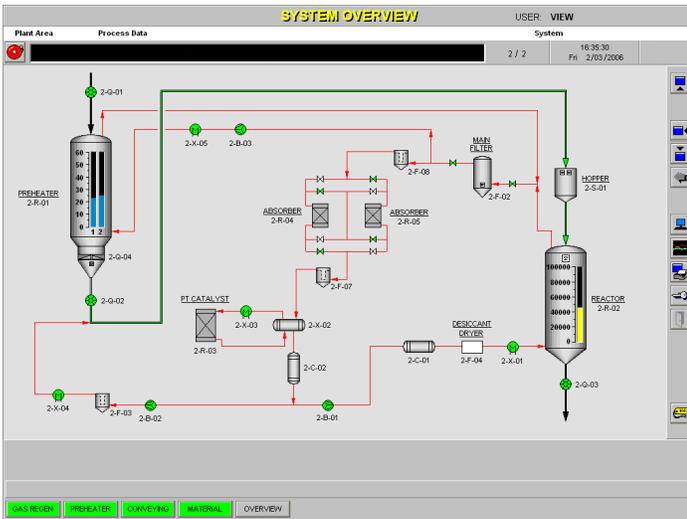


Control Masters Application Case Study

# HMI Upgrade and Data Acquisition



## Technologies

RSView32  
VBA and VBScript  
AB PLC-5/40E  
Ethernet/DF1 Communication

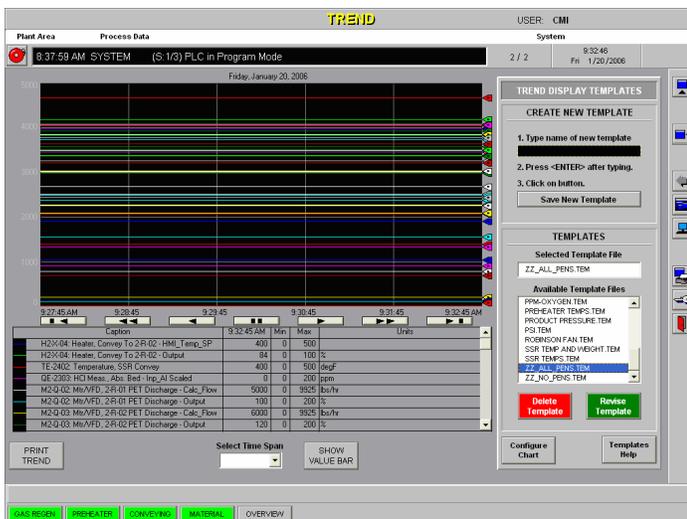
## Services

HMI Integration  
Data Logging, Trending, Archiving  
File Operations  
PLC Programming  
Data Acquisition from 3<sup>rd</sup> Party Device

## Project Description

Control Masters was contracted to provide a new Rockwell Automation RSView32 HMI application to replace their old FactoryLink application to operate a system that recycles shredded plastic into raw material for the firm's banding products. The old PC workstation was to be replaced as well. The new HMI was to be designed with the same look and feel and functionality as the old one. Another objective was also to implement data communication between the client's Allen-Bradley PLC-5/40E PLC and their Acrison MDII 2000 feeder controller for on-screen display of bulk density, flow rate and feeder status.

The new HMI application was created with seven full screens that represent the Main Filter, PT Catalyst, Polycondensation Unit (Reactor), Preheating, Conveying and Material Column sections, and a System Overview screen. When the user clicks on a particular object that represents a control device, one of 56 detail overlay panels appears that presents more information concerning the selected device. Other full screens include an alarm summary screen, a historical alarm log viewer screen, a system activity log viewer screen, and an event log viewer screen. Control functions and data entries are protected by three security levels requiring password entry.



A trend screen (shown left) uses Rockwell TrendX to display process data on a time scale. The user can select desired process data pens to include in a pen display group and save the group as a user template using custom controls built into the screen. The user can view the trend charts for any previously configured group of pens at a later time by clicking the saved template name in an ActiveX listbox object. Unwanted templates can be deleted by a supervisor using the same list box for selection. The user can also select one of 11 pre-configured time spans from another listbox.

Three data manager screens allow the system manager to copy daily activity/events log, alarm log and process data log files from the hard drive to a CD-R or CD-RW or restore them from the CD to the hard drive, or delete a selected file in either drive. File manipulation is implemented using VBScript routines. An automatic backup of all log files to a ready CD-R or CD-RW occurs at the beginning of each month. Prompting for blank CD insertion and status of the backup in progress are provided.

Control Masters configured a new Dell Optiplex workstation with Windows XP SP2, installed the software and completely tested the new HMI application prior to shipment. A second workstation was later set up as a backup unit. The Control Masters project engineer was present at the client's site for startup and training support.

At the site, the Control Masters project engineer added programming to the client's existing PLC-5 program and upgraded the PLC processor firmware to enable it to communicate with the Acrison feeder controller. An Allen-Bradley 1761-NET-ENI module is the intermediary between the Ethernet network and the DF1 protocol required by the feeder controller. Bulk density, flow rate and feeder status read from the feeder controller are displayed on the HMI screen.

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The new computer workstation and the RSView32 HMI application are providing the client with a reliable and user-friendly interface to the process. The familiar look and feel has resulted in the technicians' rapid acceptance and proficiency in the use of the new HMI. Process data now obtained automatically from the Acrison feeder and displayed on the new HMI eliminates the need for technicians to walk to the feeder control panel on the plant floor to monitor the feeder.