HINZ

A Rockwell Automation Company

Johns Manville International Inc.
Edge Trim Refeed System Automation

The Client:

Johns Manville (NYSE:JM) is a leading manufacturer and marketer of premium quality insulation and building products. The 142 year old Denver-based company had sales of $2.2 billion in 1999. Johns Manville produces and markets insulation products for buildings and equipment; commercial/industrial roofing systems; and engineered products including high-efficiency filtration media, fibers, fabric, and non-woven mats used as reinforcements in building and industrial applications. Johns Manville employs approximately 9,700 people and operates 55 manufacturing facilities in North America, Europe and China.

The Requirement:

Johns Manville's Insulation Group based in Littleton, Colorado, contacted Hinz requesting assistance with the design and implementation of an Edge Trim Refeed System for the McPherson, Kansas, fiberglass plant. The Edge Trim Refeed (ETR) System would be constructed alongside the existing fiberglass production Line #123. Following fiberglass production, the fiberglass insulation "mat" is cut into sizes suitable for packaging. This cutting process includes trimming the mat's uneven edges. The leftover pieces from the trimmed edge are normally sent to a shredder and ground up to become the "blown" insulation product. This blown insulation product is commonly used in the construction of new houses and is blown into the attic. Conversely, the Edge Trim Refeed System to be constructed would reuse the trimmed edge pieces in a different way. The edge trim pieces would be shredded and fed back into the fiberglass production ovens to again become fiberglass mat.

The P&ID drawings and mechanical design of the system would be provided by JM and would be similar to ETR systems at other JM fiberglass manufacturing plants. Hinz would provide the electrical and control systems drawings, cable schedule, power system calculations, and specifications. In addition to the electrical design of the system, Hinz would provide the design for the control panels and motor control center, including bidding documents and specifications, factory check-out, and on-site system commissioning. Hinz would be required to provide the PLC logic and HMI software configurations, set up the PLC and HMI computers, and commission them. Variable frequency motor drives would be included in the system.

The Design Solution:

Hinz assumed that the McPherson ETR System would be similar in design philosophy and construction to existing systems in plants at Willows, CA, and Penbryn, NJ. The project included the automation and control of fans, valves, and machinery used for fiberglass in-plant transport, conditioning, and dust collection. As with any design project, a number of changes were made to the original P&ID drawings to upgrade the ETR system to the latest process technology. This included upgrading several motors to include Variable Frequency Drives (VFD) and the addition of several valves. Eaton Cutler-Hammer PanelMate Power Series 1700 and 5000 color touch screen display computers were chosen for the HMI. The McPherson plant PLC standard of using Allen-Bradley PLC 5 components and RSLogix software was enforced. Allen-Bradley remote Block I/O components were also used extensively to minimize conduit and wiring to panels and equipment at remote plant locations. Non-smart control panels with panel indicator lights and pushbuttons were used to indicate system status at remote operator stations.

Control panels designed by Hinz included a main Refeed Control Panel, the Dust Collector Control Panel, the MCC Control Panel, two VFD motor control panels, and four smaller panels for mounting at remote operator stations. The I/O connections to the primary Line #123 controls were hard-wired through relays and dry contacts to plant Indexing and Alarms Panels. Allen-Bradley 1336S Adjustable Frequency AC Drives were chosen for their ability to communicate remotely with the system on the data highway.

The Hinz design for the McPherson ETR project also included the design of a separate Larostat de-dusting oil tank system. Controls for this system were mounted within a panel separate from the ETR controls and located at the Larostat tank location. The system design included I/O for pumps, valves, and mixing motors for the two tanks, and was controlled separately from the ETR system by an Allen-Bradley SLC500 processor and rack system. The panel included a PanelMate 1700 touchscreen operator interface. Remote plant signals were connected to the processor via the use of an Allen-Bradley Block I/O module, which was mounted in a second smaller control panel.

Starting from the P&ID drawings, Hinz laid out the electrical and controls drawings for the system. Hinz produced the One-Line and MCC Layout drawings, MCC specification, and power system calculations for all motors in the system ranging from 2 to 40 HP. Once the control panel drawings were finalized, Hinz organized and provided bid specifications for the panels and equipment. Hinz configured the PLC logic and PanelMate software, and loaded the configurations into the hardware devices. After panel fabrication, Hinz tested the PLC and PanelMate configurations at the panel fabrication shop. The panels were then shipped to the plant site for installation along with the Construction Specification and Cable Schedule.

The new ETR System allows John's Manville to increase the production output of the McPherson fiberglass plant, while providing plant operators with the required control, data acquisition, and alarming features.

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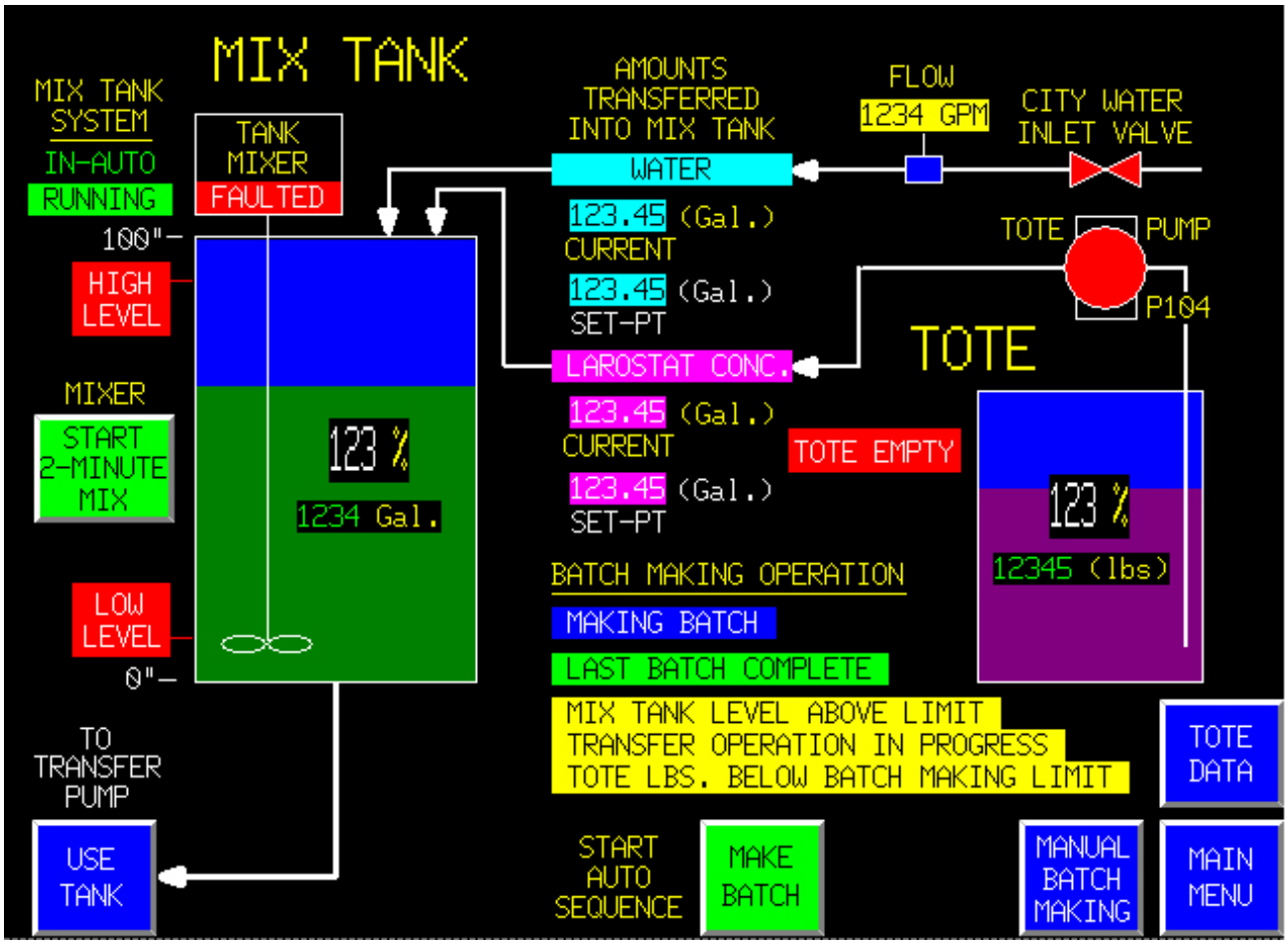

System Specifications:

- Allen-Bradley PLC-5/30 Processor with RSLogix 5 Development Software
- Allen-Bradley SLC-5/04 Processor with RSLogix 500 Development Software
- Allen-Bradley 1791 Block I/O Modules
- Allen-Bradley 1336S Adjustable Frequency AC Drives
- Eaton Cutler-Hammer PanelMate Power Series 1700 and 5000 Color Touch-Screen Display Computers

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

www.hinz.com