



A Rockwell Automation Company

Norbord - Tupelo Oriented Strand Board Plant

The Client:

Norbord Industries Inc. is a wholly owned subsidiary of Nexfor Inc., headquartered in Toronto, Ontario. Norbord is a leading international manufacturer, marketer and distributor of wood and wood composite panel products. They employ 1,300 people worldwide and operate OSB, MDF and

plywood mills in Canada, United States, Scotland and other parts of Europe. Tupelo is Norbord's fifth OSB plant with operations currently in production at Bemidji, Minnesota; Vald'or, Quebec; La Sarre, Quebec and Inverness, Scotland.

The Requirement:

The Tupelo plant has a design capacity of 456 million square feet (3/8 inch basis) annually. It employs a 9 x 24 foot press line and is the first OSB mill in the world to implement conveyor drying technology. Norbord commissioned a design team with extensive experience in the Oriented Strand Board industry. PS&E Projects Ltd. was selected as the process/mechanical consultant and Hinz was selected as the electrical/controls consultant based upon our single discipline specialty nature coupled with our specific OSB industry experience.

Hinz' responsibilities included the design of the electrical and control system configuration. This design had to be flexible enough to accommodate multiple vendors, but also needed to keep the number of vendors (and therefore spare parts inventory) to a minimum. Communication was extremely important to the project's success since several of the large process equipment vendors were from Germany.

The Design Solution:

Hinz provided complete electrical engineering and project management services including selection of major electrical and controls hardware, electrical design, instrumentation design, specification and supervision of control systems provided by others, HMI configuration, programming of a number of the PLC systems, documentation, on-site commissioning and installation supervision.

The Tupelo plant has over 700 motors with a connected horsepower of 22,000. The main plant distribution is 3kV. The 13 kV main switchgear feeds a 5 MVA, 13kV - 4.16kV transformer for the 4.16 portal crane and motors larger than 200 HP. It also feeds 5 - 2500kVA, 13kV - 480V unit substations. The 2500kVA unit substations distribute the power to the 480V MCCs. The 480V MCCs distribute the power to the 480V motors and other loads. MCC layouts and motor I/O's are structured according to process areas allowing for fast start-up and check-out of all components as each process area was completed. This approach provided increased flexibility and minimal impact on construction occurring in other areas. All motor control I/O were installed and pre-wired within the MCCs by the MCC manufacturer to minimize errors and expedite the installation and commissioning process. Field I/O's were enclosed in remote I/O cabinets and distributed throughout the plant as needed. The plant also has a 500KW, 480V emergency generator that feeds an emergency MCC through a transfer switch. This generator is for providing power to critical equipment in case of a utility power failure. It feeds such

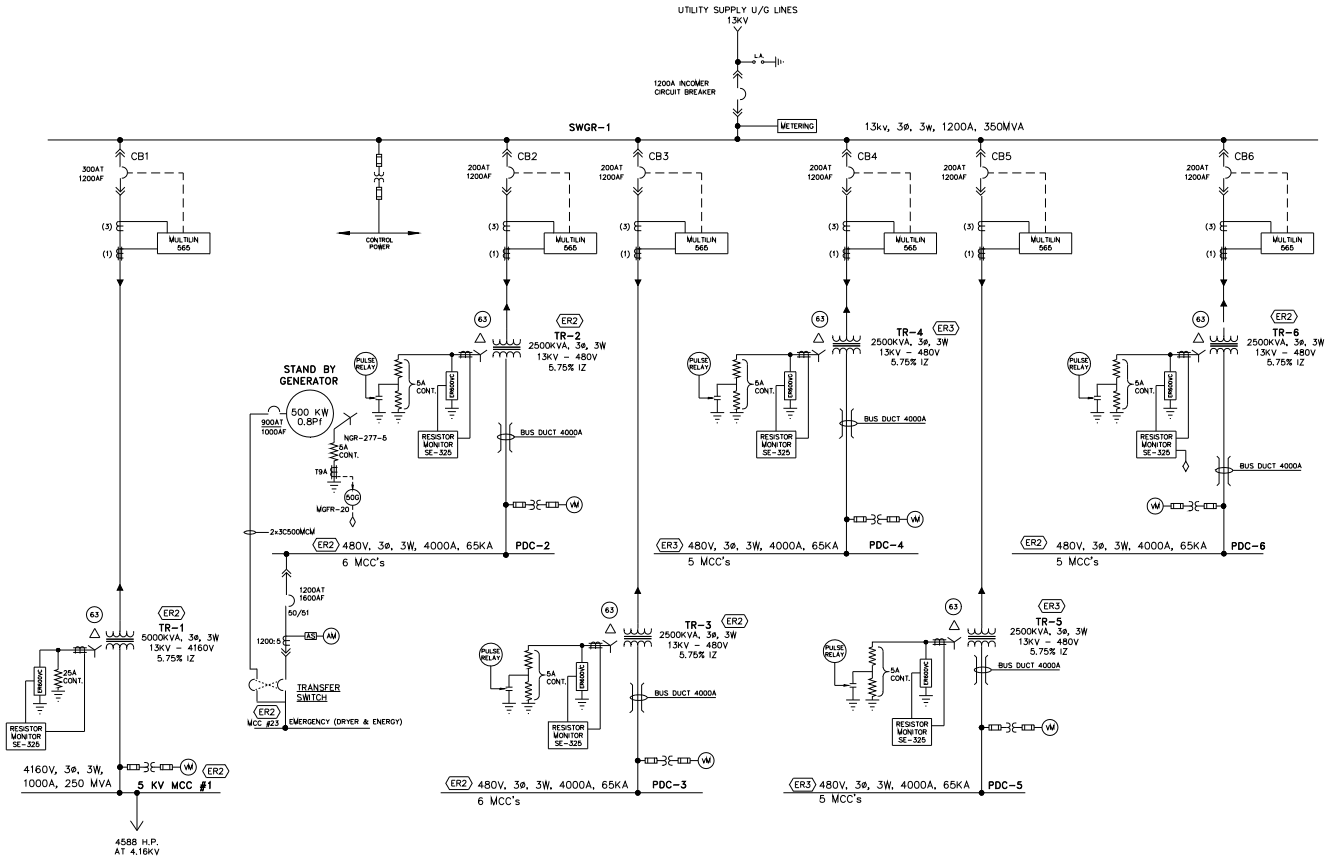
equipment as emergency lighting, UPS, dryer conveyor drives, outfeed conveyors and fire dump conveyors, primary loop oil circulation pump, refractory cooling fans, grate water pumps, scale house, pump house, sanitary sewer pumps, fuel storage pumps, etc.

The control system configuration created a need for individual PLCs in stand alone process areas based on process independence and vendor supply. Plant control was distributed between seven process areas with each area having a PLC 5/40 or 5/60 to implement the control requirements. Some of the PLCs were supplied by the process vendors because of the concern over performance guarantees. Communication between the PLCs and the HMIs was achieved with four separate data highways. Two highways are dedicated to HMI/PLC communications and two highways are used for PLC intercommunications. The Human Machine Interface (HMI) is based on Allen-Bradley's ControlView software package operating on PC based computers. A total of five stations are provided in the control room with the following distribution: two stations provide redundant control for the Blending, Forming and Pressing systems provided by Siempelkamp; one stand alone station provides loop control of the press (by Siempelkamp) and two stations provide redundant control of all other process areas. Each HMI station uses Touch Screens technology to access graphic screens, acknowledge alarms and perform control functions with a minimal number of steps.



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System Specifications:

- 22,000 HP connected
- Over 700 motors
- 13kV underground feed from the utility substation
- 13kV, 1200A main switchgear c/w 7 - 1200A air circuit breakers and Multilin feeder mgmt relays
- 5MVA, 13 - 4.16kV transformer
- 4.16kV, 1000A MCC line-up c/w 7 FVNR Vacuum Starters
- 5 - 2500kVA, 4160 - 277/480V Transformers
- 5 - 5A, 277V high resistance grounding schemes c/w Startco SE-325 Relays
- 5 - 4000A, 42kA, 480V PDCs
- 27 - 480V MCCs, 1200A Bus, 65kA Bracing
- 500kW Emergency Generator

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

www.hinz.com