HINZ
A Rockwell Automation Company

Finlay Forest Products
CLT Conveyor Speed Control

The Client:

Finlay Forest Products of Mackenzie British Columbia is a large scale integrated wood products manufacturer. Finlay Forest produces dimensional lumber and pulp and paper on the same site. Their site contains two sawmills, two planer mills and one pulp and paper mill.

The Requirement:

The planer mill at Site #2 is a modern planer mill with multiple Allen-Bradley PLCs controlling the equipment. The exit of the main planer mill contains several staging conveyors in a circular arrangement, leading to a CLT (Continuous Lumber Tester) and a Sorter. The CLT is a device for determining the tensile strength of the lumber for trusses, etc. Electronics attached to the CLT determines the MSR (Mechanical Stress Rating) and sprays the end of the lumber blue, black, or with nothing depending on readings. The lumber is then passed by the manual graders and into the sorter. Each conveyor in the system prior to and after the CLT is controlled with VFDs. The nine Mitsubishi model A VFDs each provide six possible speeds controlled by 3 contacts on the drive.

The speed of each conveyor was controlled manually with a selector switch that allowed the operator to select any of the six fixed speed profiles for the entire system. These fixed speeds would be manually adjusted on the drive. No speed synchronization or feedback existed between the nine drives and the mechanical differences between often resulted in one or more of the drives losing its synchronization with the other drives in the system This resulted in jam-ups and the whole system would have to be shut down while the problem was fixed.

The Design Solution:

Hinz provided Finlay Forest with conveyor speed synchronization control integrated into the existing Allen-Bradley PLC 5/20. The new system provides speed measurement, tuning capability and HMIs for the operator interface.

Each conveyor is outfitted with a rotary encoder that provides an accurate speed reference in feet per minute to a high speed counter in the PLC. A PID within the PLC uses the speed reference to accurately control the speed of each drive. The PID controls the speed of each conveyor by driving an analog output tied directly to the VFD input speed. When a new speed is requested by the operator, the PID ensures that the conveyor quickly reaches and maintains the new speed.

Two Allen-Bradley PanelView 550's where added to provide the operator greater flexibility to control the drives in the CLT system. The speed of each conveyor is displayed on the PanelView so that the operator knows exactly how each conveyor is performing. This also provides the operator with a visual reference to modify the current speeds. Each drive may be controlled from a global set point (single speed selection for the group) or a local set point (individual speed tuning of each conveyor). This allows the operator to finely tune the system and thereby maintain a consistent flow of product through the system without blockages and jams resulting in minimized downtime.

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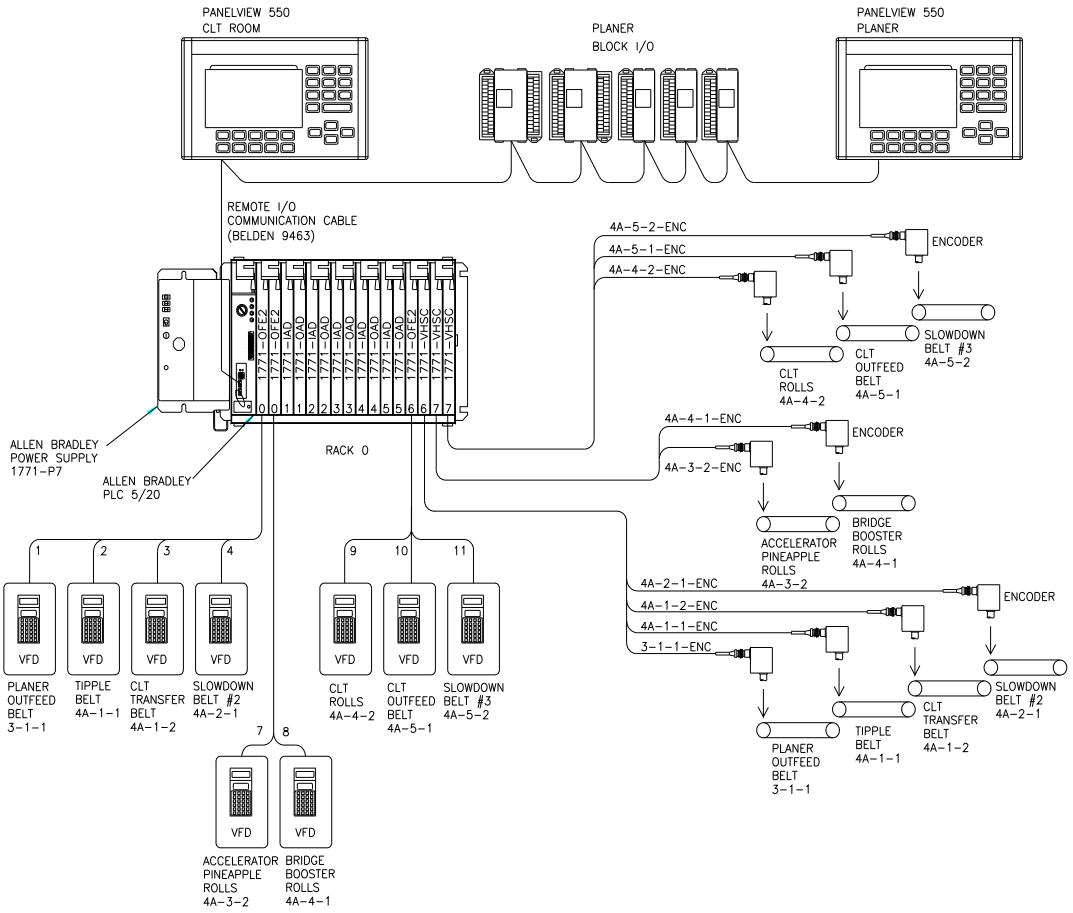

System Specifications:

- 1 Allen-Bradley PLC 5/20 processor
- 3 Allen-Bradley High Speed Counters
- 3 Allen-Bradley Analog Output Modules
- Two Allen-Bradley PanelView 550 HMIs
- 9 Quadrature Encoders
- 256 I/O

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

www.hinz.com

"Automation and Power Specialists"

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