Forest Products Industry

Edger Setworks

Application Note

Edgers are used in the secondary breakdown step of cutting logs into boards. The cant (log after first cuts are made, giving it its first flat surfaces) is fed to the Edger to be cut into boards. The chippers, lasers, pickers, positioning pins and saws are moved to positions called sets, thus the term setworks.

Manual Edgers have pre-positioning tables to orient the boards before the in-feed position pins. The operator skews the board to the best position with the pre-positioning pins, using a fixed laser line as a reference. The operator then positions the movable lasers across the board to achieve the best cut pattern.

The sets the operator chooses go into a queue awaiting transfer to the positioning pins and saws. When the board is moved to the Edger on the feed chain it contacts the positioning pins. The saws are set from the queue data, then the press rolls lower and feeds the board through the Edger. As soon as the board passes out of the Edger the queue sends new sets to the saws. On the discharge end of the Edger there are movable chippers or movable pickers to remove wane (scrap). All sets are done by Delta motion control module(s).

Optimizing Edgers do not have pre-positioning tables. A scanner feeds cant dimensions to an optimizing computer, which calculates the sets and sends them directly to the PLC. Sequencing of the cants and saws is done by the PLC. The PLC issues commands to the Delta motion control modules to set the positioning pins, set the saws, and the chippers or pickers.

High-speed throughput is the normal requirement for an Edger application. The feed chain on the pre-positioning table usually runs approximately 10 to 15 inches per second or eight boards per minute.

Overhead fetch pins can be used to move boards faster into the Edger in-feed. The fetch pins move approximately 45 to 50 inches per second, or 15 boards per minute to move the board into flexible pneumatic bumpers. Fetch pin positioning is controlled by the Delta motion control module(s). The cant is then fed into the Edger.

A well planned PLC program can control queuing, saw and fetch pin positioning. Result: Higher throughput.

Important considerations:

Hydraulic: Sufficient hydraulic oil, adequate accumulator pressure, proper valving and accumulator location, plus fast linear response valves with zero overlap, will ensure better control of machinery.

Controller: Fast PLC scan times and I/O update times of 40ms scans or less reduces time spent waiting for set states. Result: Increased throughput.

Since most moves are short, minimum settling times on the motion control tuning are more important than high travel speeds.

Benefits using Delta's motion control modules include:

- High density modules: an edger can use 12 to 14 axes of control
- Fast 1 or 2ms loop time: quicker sets for higher throughput
- Error handling capabilities: the modules react to errors and report to the PLC quickly via bus communications
- Fully tested: Third Party Vendor module

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