

BC Coastal Hem-Fir Initiative – 2012/13

Project Title	Resource Conversion Tools
Project Number	H.04
Project Leader	Laszlo Orbay
Project Team	Bruce Lehmann, Peter Kort, Karm Gill, Forward Sim
Total Budget	\$90,000

Need(s)

There is no consensus among sawmillers regarding the impact of sawing decisions at the headrig like the angular orientation of the log at which the sawyer opens up the log; the side processing sequence; the extent of slabbing. Actual mill tests are labour intensive and expensive, slow down production. The impact of variable log supply on lumber recovery cannot be eliminated. Sawmill simulation can be a useful tool to address sawing strategies related issues. Optitek the sawmill simulation software of FPInnovations was enhanced to analyze the operation of sawmills on the BC coast. Now it can model log quality by taking internal defect characteristics into account and simulate log quality dependent sawing decisions at the headrig and downstream machinery. As the first application of the improved version of Optitek, a model of a coastal sawmill was set up to investigate how sawing decisions at the headrig affect product grade outturns. A methodology for evaluating headrig sawing decisions using the Optitek Headrig simulation tool was developed. To test this tool, an Optitek model of an existing coastal sawmill will be built and used to demonstrate how alternative sawing decisions at the headrig can be analyzed and assessed by mill management. Mill specific log supply, product mix and machinery specifications will be used in building the simulation model. Simulation run results will be presented to mill management on how they can form instructions assisting headrig sawyers in their sawing decisions.

Sawmillers agree that sawing decisions at the front end of sawmills are important. Both experienced and novice sawyers work in the cut-off saw (bucking) and headrig operator booths. In an average sawmill a significant proportion, 6 - 7% of productive time, involves a less experienced sawyer at the headrig. The learning curve of a novice sawyer is long and the sawing decisions of less experienced sawyers can result product value recovery loss. Training the operators in a real sawmill environment can lessen the loss. Estimating the value recovery losses due to bad sawing decisions at the front end of sawmills can show the importance of minimizing the learning curve. The Headrig tool of Optitek in interactive mode can be used to train sawyers and to show the impact of their sawing decisions on value recovery in a simulated environment.

Objectives & Approach

- To set up an Optitek simulation model for a specific sawmill of coastal B.C.
- To test the applicability of the new Headrig Tool in assisting management in their sawing strategic related decisions. More specifically, the impact of decisions like the angular orientation of the log at which the sawyer opens up the log; the log side processing sequence, the extent of slabbing on product value recovery will be estimated by simulation.
- To validate simulation results by conducting actual mill test(s) in cooperating sawmill.
- Cooperating sawmill will be selected. Sawmill specific issues will be discussed with mill personnel, data characterizing specific log supply, product mix and machine specifications will be

collected, Optitek input files will be built accordingly. Sawmill simulation runs will be designed to analyze the impact of sawing decisions at the headrig on product recovery. The effect of angular orientation of opening face, log side processing sequence, the extent of slabbing, the benefit of having internal defect information about the log will be estimated. Actual mill test will be set up to validate simulation results.

- To test the applicability of the Headrig Tool in training headrig sawyers.
- To estimate the impact of good and bad sawing decisions made at the bucking station and at the headrig operator booth.

Benefits

Since there is no consensus among sawmillers on the impact of sawing decisions at the headrig, the results of this study will help management to provide headrig sawyers with more unflinching sawing instructions. A preliminary simulation study showed that the difference between values of products recoverable from a log with opening the log at the best opening face and opening the log at 90° away from the best opening face can be 10%. Opening the log at the right angular orientation can result a gain of \$15 - 20 per log m³.

Training the operators before their employment in real life sawmill environment can lessen the loss. Executing good and bad sawing decisions with the “Manual Headrig Interactive Tool” showed a difference of \$140/m³. Assuming a production of 700 m³/shift and a novice sawyer 7% of productive time on average at the headrig, the loss can be up to \$6860 per shift.

Simulation results will shed light on the importance of correct decision making at the front end of sawmills.

Simulation results will be circulated among managers of sawmills in coastal B.C

Project Tasks and Outputs – Current fiscal year

Tasks / Outputs	Expected Delivery Date
Find co-operating sawmill	May 2012
Acquire data characterizing log supply, product mix, and machine specifications of the selected sawmill	October 2012
Create Optitek input files in harmony with the operation of the selected sawmill. <ul style="list-style-type: none"> • Log data input file describing external shape and internal log quality • Machinery specification input file • Product input file. 	November 2012
Do simulation runs, analyse results.	December 2012
Validate simulation results	January 2013
Report results to mill management.	February 2013

Status and Major Accomplishments – Previous year

Optitek model of a hypothetical coastal sawmill was set up to test newly developed Optitek features and methods of model building

Performance Measures

Key Success Factor	Key Performance Indicator	Target	How the outcome of the Project supports the Program objectives
Participation of headrig operators.	Improved performance of headrig operators.	\$250,000/yr/mill	Simulation results will show the value of opening up the log at the headrig right at the best face or 90 dgr away from the best face. Also side processing sequences will be compared and the best will be recommended for management. Sawmill management could use simulation results to instruct headrig operators. Simulation results will show the importance of cut-off saw and headrig operator training.

Communication Strategy for Information Dissemination

- Report will be written and handed over to mill management.
- Simulation results will be circulated among managers of other sawmills in coastal B.C. through the BC Coastal Newsletter.

Collaboration – Research Partners

- Western Forest Products