BC Coastal Hem-Fir Initiative – 2012/13

Project Title	Planning and Decision-making Tools for Solid Wood Products Manufacturing
Project Number	H.16
Project Leader	Brian Jung
Project Team	Alex Precosky, Bruce Lehmann, Andy Godden
Total Budget	$105,000

Need(s)

Currently, there is a great deal of uncertainty when mills wish to introduce a new product or log type. Due to the variability of log properties and the complexity of mill flow, it is difficult to predict how the log breakdown pattern will affect grade out-turns and mill productivity. While many mills possess scanning and optimization equipment which can be used to predict product outturns, they can't predict the impact on production rates and are therefore unable to determine whether it will make money. Mills typically conduct trials in order to see how production is affected, which are both costly and time consuming.

When introducing a new product or log type, there is often a steep learning curve for both sawmill managers and machine operators. As new products become regular orders, the key issue is efficiency. This is achieved by fine-tuning the system: removing bottlenecks, improving volume recovery, extracting the value when it is available, and generally eliminating waste in all its forms. On a broader scope, these issues may be better addressed by modifying the mill configuration or adding technology. This period between the introduction of a new product and its efficient production is very costly. If sawmill managers could predict how production would be affected, then they could plan for how to set up the mill to operate more efficiently before the change was implemented.

Objectives & Approach

For the past decade, FPInnovations has been helping mills to improve their productivity by developing simulation models using both Optitek and SIMUL8. However, used in isolation, these tools are unable to give a complete picture of whether a change in production will be profitable. While the SIMUL8 models can accurately measure material flow, they are unable to determine the optimal breakdown of logs and have therefore not been used to predict the impact of new log types, products or breakdown patterns. Optitek is able to find the highest value products that can potentially be made from logs, however it is unable to determine how those products will impact mill productivity. If the products take longer to produce, the increased operating costs may negate the gains made from the higher priced products. An opportunity exists to increase the utility of these tools by integrating their functionality.

The link between Optitek and Simul8 has been created and successfully tested within the lab environment. The results from the lab tests have been positive. The next step in the development of the system is to conduct a mill trial to evaluate the performance of the system in a mill environment. The development of the proof-of-concept was developed based on a coastal sawmill and the first mill trial will be conducted at this site. The second mill trial will be conducted at a new mill site which assists to evaluate the robustness and adaptability of the system to another mill site.

When applying this model to sawmill, the first step will involve benchmarking it against an existing cutting program with known impacts on flow. The actual log breakdown solutions will be saved from the sawmill breakdown optimizer and imported into the model. It will be run and the resulting mill production will be compared against actual results. This process will be used to refine the model until the predicted production time is within +/- 2% of the actual results.

Once this benchmarking is complete, the model will be used to predict the impact of a new cutting program on production times and margin. The actual program will be defined after close consultation with the sawmill manager. Optimal breakdown solutions for a series of logs will be generated and the resulting impact on mill flow assessed. The breakdown optimization and mill flow parameters will then be modified and the outputs will compared with the original result. This process will be continued until the best result in terms of both production time and product value is found

Benefits

Being able to predict the impact of changes ahead of time will reduce the number of trials that mills need to conduct, which is expected to save $500,000 per sawmill per year. Reducing the learning curve and allowing mills to reach efficient production more quickly is expected to save $1M per sawmill per year. Knowing whether a new products or log type is likely to be profitable ahead of time will enable sawmills to target the areas of greatest opportunity, which is expected to increase revenue by $500,000 per sawmill per year.

Project Tasks and Outputs – Current fiscal year

Tasks / Outputs	Expected Delivery Date
Pick industry collaborator/mill trial site	May 2012
Complete development of Optitek mill model	August 2012
Complete development of Simul8 mill model	August 2012
Conduct mill trials	November 2012
Report finds from mill trial	March 2013

Status and Major Accomplishments – Previous year

- Developed Optitek log breakdown flow simulation of Western Forest Products, Saltair Sawmill Division.
- Linked Optitek log breakdown simulation with Simul8 mill flow simulation of Western Forest Products, Saltair Sawmill Division

Performance Measures

Key Success Factor	Key Performance Indicator	Target	How the outcome of the Project supports the Program objectives
Benchmark existing cutting program.	Match the measured operating time of the sawmill.	Actual operating time +/- 2%	Ensures the accuracy of the tool against measured results.

Key Success Factor	Key Performance Indicator	Target	How the outcome of the Project supports the Program objectives
Predict the mill productivity for a new cutting program.	If the program is implemented, match the predicted operating time of the sawmill.	Actual operating time +/- 2%	Demonstrates the use of the simulation tool for planning new cutting programs.

Communication Strategy for Information Dissemination

Work with cooperating company to develop and test methods and software. Software will be made available to the cooperating companies.

Collaboration – Research Partners

- Western Forest Products - Saltair Sawmill Division
- ForwardSIM