

Project Statement

BC Coastal Forest Sector Development Initiative

Program	Harvesting and Conversion Program – Solid Wood and Residual Products
Project Title	Resource Conversion Valuation Tools
Project Number	H.04
Project Leader	Laszlo Orbay
Project Team	FPInnovations: Z. Pirouz, P. Bedard; ForwardSim: D. Verrett
Start Date	October 1, 2007
Completion Date	March 2010

Rationale:

The identification of potential products and markets for the coastal industry and the matching of this with the available resource is just the first step in the business decision to determine what products to manufacture. A critical part of the decision is to select the product combinations and fibre resource that are profitable and then which have the highest margin. This project focuses on advancing a proven valuation software tool, Optitek, so that it can be applied to quantify log-to-product conversion efficiency of coastal wood product manufacturing, sawmill technologies and fibre resource as required by projects H.02 and H.03 of the BC coastal forest sector development program.

Key Objectives:

Advance the development of Optitek for application to the BC coastal industry:

1. Incorporate internal log and wood defects that are unique and important to the BC coastal industry
2. Incorporate the ability to simulate visual grading and sorting through the sawmill process
3. Advance Optitek algorithms and its graphical user interface to enhance its usability for the coastal industry focusing on its specialized machines and processes
4. Test and verify software changes and enhancements.

Project Methodology:

OPTITEK is FPInnovations' proven sawmill product conversion simulation tool. It was originally developed primarily for SPF mills producing light structural framing products. As a result, it currently has the capability to simulate the equipment typical of interior sawmills, but has a limited ability to simulate coastal operations where internal log characteristic and features have a large affect on grade outturns of high-margin appearance-grade products. In the last two years, Optitek has been enhanced with internal defect processing capability. Currently, Optitek can take into account limited internal defects important to the BC interior such as knots, checks and stain. It does not yet have the capability to

incorporate more extensive resource characteristics important to the BC coast. It also does not yet have the capability to simulate the equipment and processes typical of BC coastal sawmills.

This project will further enhance Optitek so that it can be applied to the BC coastal industry and its unique resource, sawmills and products. This is a key requirement of other projects in the BC Coastal initiative including P.03, H.02, H.03 and H.08. This will be conducted in 3 phases.

Phase one will involve developing a specification document detailing changes required to the existing Optitek software to enable use for modelling coastal operations. Internal log feature capabilities will need to be expanded to include characteristics affecting lumber grade outturns for high-value appearance-grade products. Specifications for software modules describing coastal plant equipment (E.g. carriage head rigs) will also be developed. Another important feature requiring development is a graphical user interface that displays defects on any sawn surface (opening face of the log, sawn surface of cants, flitches and boards) and a sorting decision module to simulate human grading and sorting decisions in the sawmill breakdown process. Changes required to enhance capabilities of the software and a detailed work plan will be developed by the programming contractor, ForwardSim.

Phase two will be done primarily by the software programming contractor and will involve implementing the changes and enhancements in Optitek required for modeling logs unique and important to the BC coast. Internal defects to be included will be identified in Phase 1. Information from the “Resource Characterization” project will be used to build detailed log models.

Phase three will involve the enhancement of Optitek to enable the simulation of products, equipment and plant processes unique to coastal sawmilling. Testing, debugging and verification of the new software will also be done in phase three. Information from the “Identification of Key Barriers and Opportunities” project (H.02) will be used to build a model of a coastal manufacturing plant. The simulation model will be used to identify best practices and technologies that could be adapted for solid wood products manufacturing of the coastal industry – Phase 1, project H.03. Simulation trials will be conducted and compared to actual mill outturns to verify software performance.

Finally, a decision to the use of Optitek to simulate and evaluate new sawmill technologies identified in the “Best Practices” and “Advanced Scanning Systems” projects will be made in consultation with the steering committee.

Project Milestones:

Activities	Planned Completion Date
Phase 1 - Identify resource characteristics, plant equipment, and manufacturing processes that are unique to the coastal industry and develop a specification document outlining the changes required to adapt the Optitek model for Coastal operations.	June 2008
Phase 2 – Modify Optitek software architecture and add features required for internal defect modeling of coastal logs.	January 2009
Phase 3 – Add products, equipment and plant process related features to Optitek to enable the simulation of coastal sawmilling. Test, debug and verify software.	March 2009
Go / no go decision in consultation with steering committee to proceed to application of Optitek	March 2010

Key Deliverables:

Enhanced Optitek conversion valuation system for the BC coastal producers that is able to incorporate unique coastal resource and product characteristics and accurately simulate coastal sawmill equipment and product conversion processes.

Expected Long-term Outcomes:

1. Ability to simulate product conversion through sawmills with ability to accurately represent the resource and manufacturing facilities
2. Improve business decision making using simulated data before industrial trials
3. Ability to value product options and compare these to the baseline

Potential Impact:

One of the barriers to the success of the BC coastal industry is uncertainty. Typically, the only method available to evaluate resource characteristics and product potential is to conduct mill trials, which are very expensive, disruptive to production and difficult to evaluate. As a result, only a few ever make it to this stage of consideration. An Optitek system enhanced for the coastal industry will provide a valuable simulation tool that will allow resource and product options to be evaluated without the need for mill trials. As a result, opportunities can be ranked and a degree of certainty achieved about their potential for success.

Collaboration:

This project will require extensive collaboration with Forintek's programming contractor, ForwardSim. It also has strong linkages to other BC Coastal Initiative projects including:

- P.03 – Gap Analysis, Market Studies and Demonstration Projects of the BC Coastal Products
- H.02 – Identify Key Barriers and Opportunities in Solid Wood Products Mfg
- H.03 – Identify Best Practices Manufacturing Technologies in Solid Wood Products Manufacturing
- H.08 – Decision Support Tools for Industry Competitiveness