Heavy duty strand-based products could provide new uses for fibre

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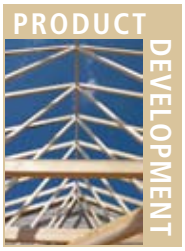
update MOUNTAIN PINE BEETLE

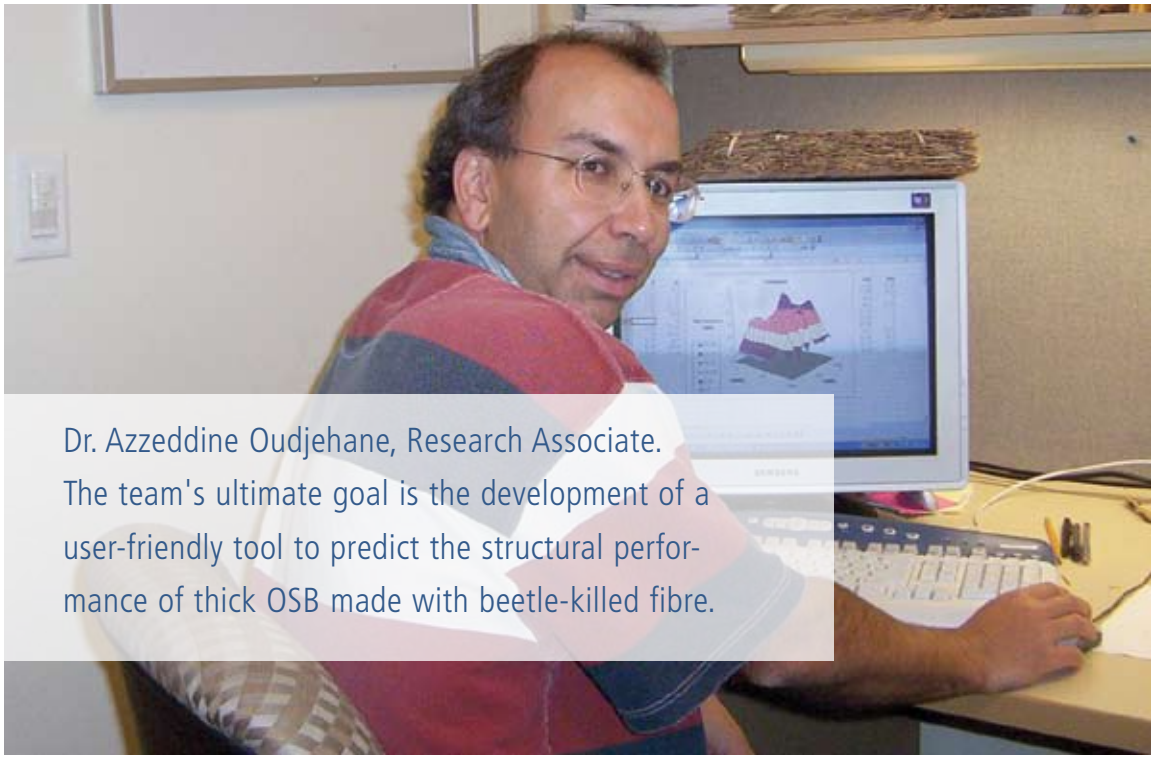
Researchers are developing some of the knowledge needed by manufacturers interested in making thick strand-based products out of beetle-killed wood.

Professor Frank Lam of the University of British Columbia is leading a team of researchers in a three-year study funded by Forestry Innovation Investment Ltd. Their ultimate goal is the development of a user-friendly tool to predict the structural performance of thick OSB made with beetle-killed fibre.

New thick strand-based structural products could help utilize a large volume of beetle-killed wood. The beetle-killed fibre has altered physical and chemical properties related to time-since-death. New thick strand-based products might be used as headers, beams and columns in low-rise commercial, multi-family residential and single family residential markets. With the uniform qualities and characteristics inherent in engineered wood products, they would be especially suitable for uses where load demands are higher, such as in the low-rise commercial and multi-family residential projects.

Developing thick strand-based products with beetle-killed wood requires a good understanding of their structural response under long-term loading – or the probability of deformation, creep and collapse. This behavior can be influenced by fibre, adhesive and pressing method, and its management is critical to the development of new engineered wood products.



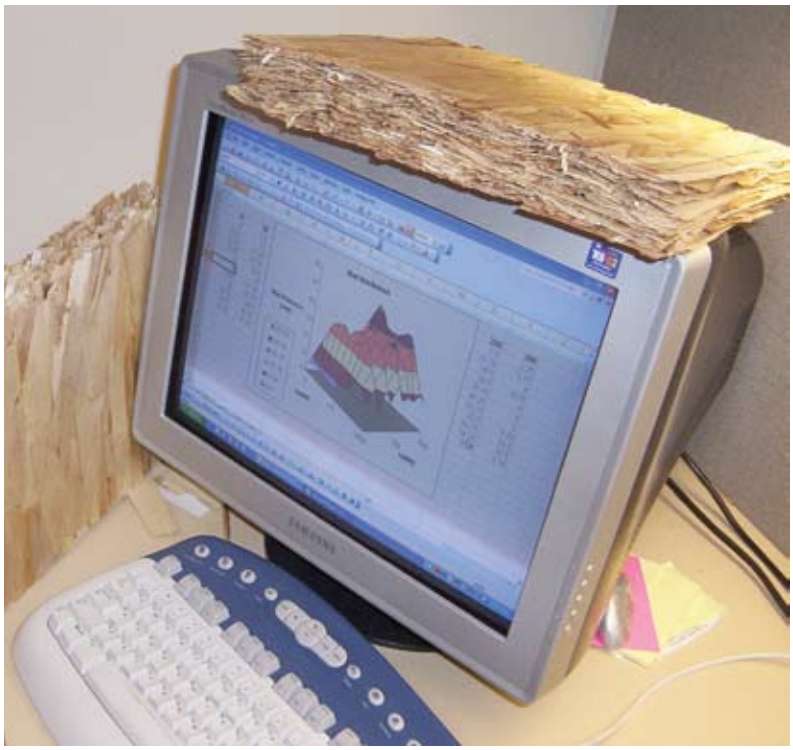


Dr. Azzeddine Oudjehane, Research Associate. The team's ultimate goal is the development of a user-friendly tool to predict the structural performance of thick OSB made with beetle-killed fibre.

The UBC project builds on earlier studies by Dr. Lam focusing on oriented strandboard (OSB) made with aspen, and will look at the modeling of thick product pressing, alternative resins, and the structural performance of beetle-killed strand-based products.

In year one of the project, researchers conducted a literature review on various aspects of making thick strand-based products, built some small lab-scale test equipment and modified existing computer models that could help with the project.

The first report includes an extensive survey of literature on the properties and behaviors of numerous natural and synthetic adhesives. No recommendation has been made yet as to which of the dozen or so types of adhesives would be best for new thick strand-based products.



The researchers went on to explore approaches to the mathematical modeling of product behavior under load. Past practice has been to model the two factors of deformation and time-to-rupture in an uncoupled fashion, but the UBC team's plan is to find ways to develop a unified approach to modeling and predicting both phenomena.

Year-one work also saw the design of a permeability test jig to improve the accuracy of strand permeability tests using UBC's lab-scale humidity chamber.

The next phase of the three-year study will look at fibre-adhesive interactions, and a pressing model for thick strand-based composites.

FOR THE FULL REPORT, GO TO **WWW.BCFII.CA/MPB/** AND DOWNLOAD THE REPORT "MPB 2006-05: DEVELOPMENT OF THICK MPB STRAND BASED WOOD COMPOSITES".

Forestry Innovation Investment Ltd. is a British Columbia government corporation investing in initiatives to help market BC forest products, and promote our sustainable forest practices to the world. FII's Mountain Pine Beetle Program supports government's Mountain Pine Beetle Action Plan and its objective to maximize the economic value of mountain pine beetle wood. FII does this through marketing activities and research into new products and manufacturing processes for mountain pine beetle wood.

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