



Project Outcomes Report

Project Outcomes Report Help

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Award Title: PFI-BIC: Thermal Modification Research for Engineered Wood Materials

Federal Award ID: 1237798

Report Submission Period: 09/01/2015 to 06/30/2016

This project has potential to enhance the competitiveness of the nation's forest products industry because it advanced wood thermal-modification technology toward the development of high-performance and sustainable engineered wood products (EWPs) with improved dimensional stability, resistance to biodeterioration, extended service-life, and reduced environmental impacts.

Specifically, mechanical, physical, and biological durability performance testing has verified that the thermally-modified EWPs, when processed using the correct protocols, can better resist attack by common white rot and brown rot decay fungi and resist expansion and shrinkage due to changes in moisture content, while maintaining some key mechanical properties, such as modulus of elasticity (stiffness).

The Intellectual Merits of this project are:

- Validation of research that expanded the bounds of wood thermal-modification technology from solid wood to EWPs.
- Demonstration of the process technologies, and mechanical, physical, and biological durability performance of new thermally-modified EWPs.
- Creation of a team and facilitation of interactions and information exchange between forest products industry stakeholders, both public and private, to advance wood thermal-modification technology.
- Expanding the research by collaborating with Lakehead University (Thunder Bay, Ontario, Canada) and the U.S. Department of Agriculture Forest Service, Forest Products Laboratory.

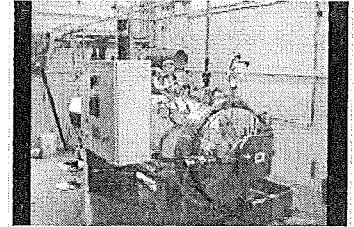
The Broader Impacts of this project are:

- Advancement of discovery and understanding while promoting training and mentoring of four undergraduate and three graduate research assistants in research techniques, data analysis, and reporting.
- Broadening of research participation by partnering with two graduate students from underrepresented groups.
- Enhancement of unique pilot-scale wood thermal-modification technology to enable better process control and monitoring of real-time energy-use data, while making the technology available to researchers and practitioners from academia and industry, across the Nation and world.
- Broadening of research dissemination to enhance understanding by a range of stakeholders by publishing/sharing project results in diverse media sources, including: (a) two peer-reviewed journal papers, (b) three domestic conference presentations/papers, (c) two international conference presentations/papers, (d) three seminars to undergraduate engineering students, (e) one article in a forest products industry trade journal, and (f) four seminars/webinars presented to both public and private forest products industry stakeholders.

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Images (1 of 4)



Close Preview