

CLT News

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School of Forestry & Wildlife Sciences



Image Credit: FRAMEWORK, Thomas Robinson, LEVER Architecture



Image Credit: John W Oliver Design Building at UMASS Amherst 1-2 - Alexander Schreyer



The Auburn University School of Forestry and Wildlife Sciences, or SFWS, actively works to increase awareness of the many benefits of cross-laminated timber, known as CLT, and to promote its use for construction in the South. In addition, the school conducts research according to industry reports within the proceedings of the North American Mass Timber Research Needs Workshop. These initiatives are achieved in partnership with the Colleges of Engineering and Architecture, Design, and Construction, as well as the Office of Sustainability, in order to integrate and leverage resources.

RESEARCH

The Forest Products Development Center in the School of Forestry and Wildlife Sciences at Auburn University has a rich history of research, development, and intellectual property advancements in the areas of adhesives and lumber improvement for engineered wood products. Drs. Soledad Peresin, Brian Via, and Yucheng Peng have undertaken the following key areas for CLT research: adhesive performance; younger plantation wood quality issues; and nanotechnology for coatings and chemicals.

WHAT'S NEW?

Currently, Javier Hernandez, a Ph.D. student in the School of Forestry and Wildlife Sciences working under Dr. Soledad Peresin, is focusing his research on acetylated lignin nanoparticles as an UV photodegradation inhibitor and as moisture protection for CLT. An extensive review on lignin nanoparticles was just published which deals with the morphology of lignin nanoparticles and how controlling the process to get the nanoparticles plays a role in its final properties. Hernandez is testing several solvent shifting methods to determine the optimum ways to find nanoparticles while also considering cost-effectiveness.

Dr. Adam Maggard and Dr. Brian Via, faculty members in the School of Forestry and Wildlife Sciences, were asked to review the titled "A Specialized Data Crawler for Cross-Laminated Timber Information Resources" for the Forestry Products Society journal that identified the latest topics of key interest to the CLT industry in which years of research from across the web has been categorized. The following areas overlap ongoing research at Auburn: moisture control, fire retardancy, environmental performance, adhesives, and acoustics (a form of nondestructive testing).

OUTREACH & EXTENSION

Increasing awareness about the benefits of CLT is a top priority of the School of Forestry and Wildlife Sciences, as the interest in the use of mass timber for tall buildings has begun to increase in the southern United States in recent years.

WHAT'S NEW?

The School of Forestry and Wildlife Sciences is planning the first-ever International CLT Conference in the southern United States. Due to the COVID-19 pandemic, this inaugural event has been temporarily postponed, but Dr. Adam Maggard and the steering committee are working diligently behind the scenes to kick off this event in mid-2021 with multiple learning tracks and renowned speakers.

Dr. Adam Maggard continues to share his expertise virtually to multiple audiences, including a recent presentation on "Timber Markets and CLT" to the Alabama Forest Owners Association (AFOA), which will be posted on their webpage.

Brochures have been designed for the "Innovation Spotlight Series," which will highlight the advanced research being conducted with Dr. Soledad Peresin and Dr. Brian Via through the Forest Products Development Center.



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IN THE WORLD OF CLT

CLT was initially used in Germany and Austria in the early 1990s as an alternative to stone, masonry and concrete construction. The first national CLT guidelines were published in 2002, which spurred the acceptance of CLT as a building material for multistory buildings throughout Europe. Its use finally found its way to Canada and the Pacific Northwest in the United States about 10 years ago. The first CLT-constructed building to be completed in Alabama is the Candlewood Suites at Redstone Arsenal near Huntsville which opened in March 2016. It is also the first hotel in the United States to be completely constructed using cross laminated timber (CLT). Four years later, Alabama now has three buildings completed using CLT and ten more in the design phase (as of March 2020 according to WoodWorks). And this is only the beginning. There is a lot of momentum around building with CLT and other mass timber. In fact, according to WoodWorks, as of March 2020, 784 mass timber projects had been constructed or were in design in all 50 states, in the multi-family, commercial, or institutional categories. WoodWorks has created an [interactive map](#) to follow this ever-expanding market.

WHAT IS CLT?

Cross-Laminated Timber (also known as CLT or CrossLam) is a prefabricated wood panel that is made by crossing an odd number of layers of wood stacked crosswise (thus, the name) in alternating directions (perpendicular to each other) which is then glued and pressed into place. This formation gives exceptional strength while being very light compared to other construction materials. Dimensions of finished panels can vary, but are typically 2 to 10 feet wide, up to 20 inches thick and up to 60 feet in length. It is in a new class of timber products known as massive or “mass” timber, which is often used synonymously with the term CLT; however, the category of “mass” timber includes other engineered products, too, like GluLam (glue-laminated timber) and NailLam (nail-laminated timber).

WHY USE CLT?

Sustainability is one of the main reasons’ architects, engineers and construction professionals are seeking out CLT for their projects. Wood is a renewable source that sequesters carbon, thereby having a positive or neutral carbon footprint. Also, the cross-laminating process provides improved dimensional stability so that “massive” timber (long, wide floor and ceiling slabs and high, single-story wall panels) can safely be used. In addition, contrary to what one might believe about wood products, CLT has a very good fire rating due to the thickness and cross-section pattern. Furthermore, because it is designed and cut to specifications at the manufacturing facility before being delivered to the jobsite, the measurements tend to be more accurate and, consequently, CLT is easy to install, with little waste and faster construction times. Finally, CLT is cost competitive to other building materials due to savings in lower transportation costs, reduced installation times and earlier completion dates.



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