

Sim[PLY]: Sustainable and Eco-friendly Construction Framing (2015-053)

Green Construction Framing Procedure that Produces Durable Buildings without the use of Heavy Machinery.

Market Overview

Sim[PLY] is a sustainable construction framing system that utilizes pre-manufactured, CNC-cut plywood components and specialized connection details to enable fast, easy, and safe on-site building construction. The market for green, sustainable building materials and construction is trending and on the rise: the global market is projected to reach \$529 billion by 2020. Increased awareness about the benefits of green technologies and stricter government regulations are factors that have contributed to the growing market. However, green building practices are still expensive when compared to traditional construction, which is often a deterrent for builders. Clemson University researchers have developed an innovative structural system that allows individuals to construct a house using only hand powered tools. The Sim[PLY] framing system consists of pre-cut and individually numbered components, designed to be flat-packed and shipped directly to a building site. At the building site, the components can be easily and rapidly assembled using tab-and-slot connections secured by steel zip ties. Assembly is safe and quiet and requires no power equipment. The result is a durable, eco-friendly building with a strong and resilient structure, capable of high insulating values.

Technical Summary

Sim[PLY] represents the future of sustainable light-frame construction. It is a kit-of-parts that consists of CNC-cut plywood components, which are premeasured and individually numbered. These components are designed to be flat-packed and delivered to any construction site for assembly. At the construction site, the components are easily assembled into a 3D structure using a tab-and-slot connection and steel zip ties. This innovative framing method has proven to be faster, safer, quieter, and more eco-friendly than traditional construction procedures.

Application

General Construction; Green building materials

Development Stage

Production prototype

Advantages

- Building components are pre-numbered and lock together using a simple tab-and-slot connection, eliminating the need for on-site measuring and cutting as well as heavy machinery
- Zip-tie joining method is simple and safe, making the construction process easier for non-skilled workers
- Utilizes pre-manufactured, CNC plywood components instead of traditional lumber, eliminating on-site waste and creating an eco-friendly architecture

App Type	Country	Serial No.	Patent No.	CURF Ref. No.	Inventors
Issued US Patent	United States	62/573,953	10,156,067	2015-053	Dustin Albright, Ulrike Heine, Ufuk Ersoy, Vincent Blounin, Daniel Harding, David Pastre

Department Bio

The Clemson School of Architecture is dedicated to educating future architects, generating knowledge to address challenges, and advocating for the improvement of built, natural and social environments. The graduate architecture program at Clemson has been ranked seventh among public universities for three consecutive years. The department routinely participates in the DOE Solar Decathlon, which is where the technology stems from. In the 2015 competition, they placed 6th overall, 2nd in Architecture, 2nd in Communications and 3rd in Market Appeal..

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