

The Engineer's Role in Optimization



Presentation Description

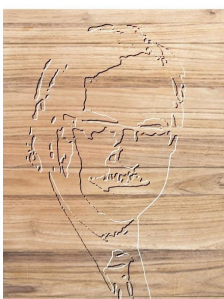
Achieving cost efficiency with mass timber requires an understanding of both material properties and manufacturer capabilities, and thus a close collaboration between designers and builders.

At the earliest stages of design, when structural grids are being laid out, and different materials are under consideration and early cost comparisons are made, it is important to recognize that the most efficient concept for mass timber may not be the same as that for steel or concrete. Each material has its strengths and weaknesses. Trying to force a grid from one material onto another may feel like hammering a round timber peg into a square steel hole. But optimization requires more than a column layout; the best structures take advantage of unique qualities and benefits of different fabricators and erectors.

This presentation will examine the structural engineer's role in optimizing a mass timber structural layout by taking a system vs. product approach. Topics will include known parameters for mass timber design, design challenges, connections, grid spacings, and lessons learned from the structural design of several mass timber projects in the Rocky Mountain region.

Learning Objectives

1. Discuss how a systems-based approach to mass timber structural layout can result in cost efficiencies
2. Understand some of the factors that affect mass timber member cost, including unit costs, optimum spacing, erection speed, and constructability
3. Recognize some differences between cost effective mass timber and steel structures
4. Describe the role that the structural engineer plays in achieving mass timber structures that are optimized for manufacturer capabilities, code compliance, integration of mechanical systems, and architectural program.



Bio

Gregory R. Kingsley, PhD, PE, is the president and CEO of KL&A Inc., Engineers and Builders in Golden, Colorado, a firm of over 90 that includes structural engineers, civil engineers, land surveyors, steel detailers, and construction managers. He enjoys working with design architects on innovative structures, especially in wood.

AIA Provider Number: E249

Credit Designation: LU|HSW