

# Uses and Applications for Mass Timber

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## ABSTRACT

Mass Timber products are gaining market share as owners and architects seek to provide warm, inviting spaces, made from renewable materials. Wood's carbon profile is far superior to alternate heavier structural materials, and with modern adhesives and fasteners, timber can now compete with steel and concrete for mid-rise construction. While stick frame construction is common for buildings up to six stories in height, above that, the amount of wood required to support gravity loads becomes such that glue laminated column and beam systems with or without mass timber panels are more appropriate. CAD driven CNC robotic equipment can deliver high performance large building elements to the job site with tolerances of 1/16". These elements install rapidly with just in time delivery logistics. The capacities and performance of these Mass Timber elements are improved compared to historical Heavy Timber (type IV) construction, but there are considerations particular to today's Mass Timber elements that an engineer and architect should be familiar with prior to undertaking a design effort. This presentation will first provide a brief overview of the various families of Mass Timber products, the specific performance benefits, and how they relate to code requirements. It will give an introduction to the different ways of manufacturing and processing Mass Timber with the emphasis on the inherent opportunity for the use of BIM, CAD/CAM and automation. It will show examples of how these Mass Timber products are assembled and connected. The related cost implications in comparison to traditional construction materials and methods will subsequently be discussed. Finally a variety of hybrid solutions will be shown, including optimized structural systems and high performance building envelope design.

## BIOGRAPHY

After graduating in 1998 with an engineering degree in Wood Technology from the University of Applied Science in Rosenheim, Germany, Hans worked as a Research and Development consultant for several German prefabricated housing manufacturers prior to joining Bensonwood Homes in 2000. Hans was deeply involved with the Unity Homes product development line, including the Zero Energy Zum house, built inside the exhibition Hall at Greenbuild in Washington DC. The house was voted Best of Show. Most recently, Hans was involved with the UMASS Integrated Design Building, a CLT structure, coordinating the framing program for union carpenters. Hans is the Project Management team leader at Bensonwood and involved with development of new and improved systems and products for the construction industry.