COMPARATIVE STUDY OF GLULAM-MEMBERS AND STEEL-MEMBERS USED IN THE CONSTRUCTION FIELD

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DEFINITIONS

GLULAM
Glue laminated timber, or Glulam, is a type of engineered wood made of short pieces of sawn lumber which are laminated together using a high strength, water resistant adhesive. Glulam is most commonly used for long-span beams but is also used for trusses and columns (7).

STEEL
Steel is a ferrous metal. Its high strength in relation to its weight makes it the material of choice for skyscrapers, and long-span structures such as bridges. Its malleability and weldability allow it to be shaped, bent, and made into different types of components (7).

STRENGTH AND SUSTAINABILITY

STRENGTH
Glulam has 1.5 to 2 times the strength to weight ratio than that of steel (11).

RECYCLABILITY
Both steel and glulam are completely recyclable. However, at this juncture, steel is much more easily recyclable (5)(10).

ENVIRONMENTAL IMPACTS

Fire Rating
Glulam members have a much lower strength loss in comparison to steel members when exposed to fire, providing them with a greater fire rating (1).

Carbon Storage
A five-story residential building made of glulam could store up to 37 pounds of carbon per square foot (2).

Manufacturing
The manufacturing of steel beams results in energy consumption 2-3 times greater and fossil fuel use 6-12 times higher than during the manufacturing of glulam beams (9).
Mjøstårnet by Voll Arkitekter in Brumunddal, Norway. This is the world's tallest timber building. Made using CLT and Glulam in place of steel and concrete (6).

Works Cited


