

Proof of concept using FLEX GLT

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Block glued glulam beams create an economical disadvantage. The core idea of this thesis is to apply a new product under development by Stora Enso to standardised school projects based on the UK Department for Education's design framework.

Initial Data

Architectural demands on aesthetics and limited space due to mechanical and electrical service pipes lead to a limitation in depth for glulam beams. Engineers then dimension the beams that they are oversized in width and they have to be block glued. The process of block gluing is cost-intensive and discourages the use of wood as a material and therefore often results in the use of steel instead. To circumvent this Stora Enso, among others, are developing a product called „Flex GLT“. This type of beam can be produced up to a certain over width without having to resort to block gluing. The major difference to conventional glulam, is that the lamellas are staggered vertically.

Aim

The aim of this thesis is to show that „Flex GLT“ has similar, if not identical material properties to glulam and can be introduced in school buildings of the DfE (Department for Education). The second objective is to develop standard solutions for beams in classrooms of basic teaching which are based on the DfE's guidelines.

Methodes

The focus was initially placed on analysing the beam properties in the „RFEM“ structural analysis program. The results obtained were supplemented with an expert assessment from Graz university of technology on behalf of Stora Enso. In a second step, the

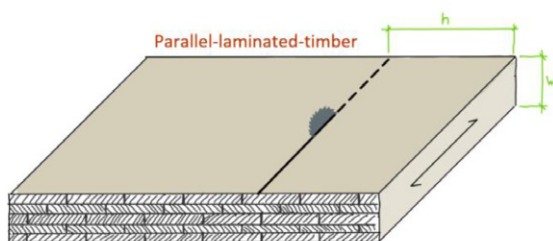
findings were used to complete a preliminary design and develop system solutions. These are based on the defined framework conditions of school projects of the British Department for Education as well as internal projects of Eurban limited.

Results

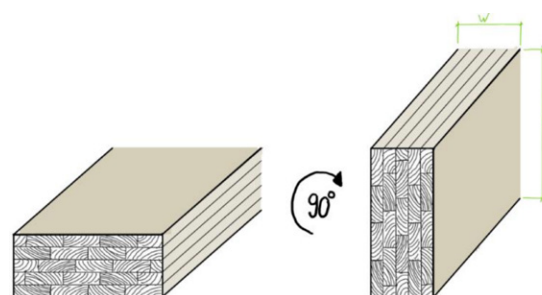
The data from the expert opinion support the results obtained from the analysis in RFEM. In some aspects, they are even greater than the expected results according to EN 14080 for the strength class of GL26h. In conclusion it can be said that the „Flex GLT“ beam type has the potential to replace or supplement at least some of the glued laminated timber beams.



Leon Geertsens
Timber Structures and Technology



Symbolic Production of FLEX GLT



Symbolic structure of FLEX GLT