



Experimental and Numerical Analyses of New Massive Wooden Shear-Wall Systems

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Material: CLT (Cross-Laminated Timber)

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Summary:

Three innovative massive wooden shear-wall systems (Cross-Laminated-Glued Wall, Cross-Laminated-Stapled Wall, Layered Wall with dovetail inserts) were tested and their structural behaviour under seismic action was assessed with numerical simulations. The wall specimens differ mainly in the method used to assemble the layers of timber boards composing them. Quasi-static cyclic loading tests were carried out and then reproduced with a non-linear numerical model calibrated on the test results to estimate the most appropriate behaviour factor for each system. Non-linear dynamic simulations of 15 artificially generated seismic shocks showed that these systems have good dissipative capacity when correctly designed and that they can be assigned to the medium ductility class of Eurocode 8. This work also shows the influence of deformations in wooden panels and base connectors on the behaviour factor and dissipative capacity of the system.

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