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Mechanical Behaviour of Strip-Planked Wood for Boatbuilding

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The strip-planking technique, which is based on the use of glued-laminated wood, is characterized by many interesting features for wood boatbuilding. The main advantages offered are an easier construction process along with a better exploitation of the mechanical properties of the materials. In order to investigate the response of a particular glued-laminated wooden panel (made by Douglas fir longitudinal strip planks combined with thinner Mahogany veneers at $\pm 45^\circ$), which is quite common for boat construction, a series of experimental tests has been carried out. In the analyzed laminated structure, the Douglas fir strips are the inner layer and give the shape of the hull, whereas the outer Mahogany veneers, in addition to contributing to the overall strength of the structure, give water-tightness to the hull. The results of the tests performed on different specimens are presented in the paper. Specifically, in accordance with the guidelines of the UNI EN standards, bending tests on glued-laminated wooden panels have been carried out. Moreover, tensile and compression tests on specimens made only by Douglas fir strips at 0° or by Mahogany veneers at $\pm 45^\circ$ have also been performed. The aim of this study is to find a reliable approach for the structural boat design, using laminated-wood panels with different layers, and strip-planking technique.

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