Initial experimental investigations on natural fibre reinforced honeycomb core panels

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Abstract

The main attention of the present work is on eco-friendly honeycomb cores for sandwich panels. They are manufactured by combining flax fibres with polyethylene matrix; the analyses involve both reinforced and un-reinforced cores. Some experimental tests have been planned and carried out in order to qualify the modal characteristics of this important class of panels.

Tests results, herein discussed, report a great improvement of reinforced cores (continuous-unidirectional and short-random) compared to un-reinforced ones in mechanical properties. An improvement in damping value is achieved by filling the core with wool fibres resulting in minimal weight increase.

A summary of the impact and acoustic tests results of preview tests are also reported in order to have a global view of the behaviour of these sandwich panels. The effects of reinforcement material type, core thickness and presence of face sheets on energy of structural dissipation and sound absorption capabilities have been investigated.

Keywords: **honeycomb**, **recycling**, **vibration**

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