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ENVIRONMENTAL PERFORMANCES OF LONG-SPAN BEAMS

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Abstract

In the last decades, the effects of the climate change phenomena and the consumption rates of raw materials have led to an increasing awareness regarding the need of implementing the sustainable development concept at the global scale. The activities we complete each day have a direct negative influence over the current situation of the natural ecosystems, and therefore it is highly important to understand and reduce at the same time our global environmental footprint. One of the most significant economic activities that has at the same time a major influence over human wellbeing and a tremendous impact over the environment is represented by the construction sector. Considering the level of pollutants emitted into the air, water and soil that are related to the built environment, it can be stated that this sector represents a critical factor in achieving global sustainability. Therefore, it is essential that civil engineering specialists clearly understand the negative ecological effect of the materials and structural elements that are currently being used, in order to promote solutions with a low level of environmental influence. Taking under account the above, the authors aim at comparing the influence over the natural environment of a long-span beam made from different structural materials, in order to clearly determine the solution that implies a low level of negative environmental impact. In order to achieve this objective, the Gabi software was used and the Life Cycle Assessment has been considered. The resulted values attained by taking under study the cradle-to-cradle approach justify considering the linear element made by using glued laminated timber as a solution that can be successfully used in achieving the sustainability goals in the built environment.

Keywords: built environment, cradle-to-cradle, Life Cycle Assessment, pollutants, sustainable development

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