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Life Cycle Assessment as a Decision Making for Window Performance Comparison in Green Building Design

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Abstract : Life cycle assessment is a technique to assess the environmental aspects and potential impacts associated with a product, process, or service, by compiling an inventory of relevant energy and material inputs and environmental releases; evaluating the potential environmental impacts associated with identified inputs and releases; and interpreting the results to help you make a more informed decision. In this paper, the life cycle assessment of aluminum and beech wood as two commonly used materials in Egypt for window frames are heading, highlighting their benefits and weaknesses. Window frames of the two materials have been assessed on the basis of their production, energy consumption and environmental impacts. It has been found that the climate change of the windows made of aluminum and beech wood window, for a reference window (1.2m × 1.2m), are 81.7 mPt and - 52.5 mPt impacts respectively. Among the most important results are: fossil fuel consumption, potential contributions to the green building effect and quantities of solid waste tend to be minor for wood products compared to aluminum products; incineration of wood products can cause higher impacts of acidification and eutrophication than aluminum, whereas thermal energy can be recovered.

Keywords : aluminum window, beech wood window, green building, life cycle assessment, life cycle analysis, SimaPro software, window frame
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