

Sustainable Optimization of an Assembled Product using LCA

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ABSTRACT

Currently, industries come up with Assembled Product Optimization which is totally or partially relying on economic and social aspects rather than environmental aspects. It tends to avoid identifying hidden and massive impacts to the environment by manufacturing products. The total composition of three pillars; economic, social and environmental can affect achieving sustainable product optimization [1]. The importance of pillars of sustainability will be demonstrated through the Life Cycle Assessment (LCA) technique to produce a sustainable product such as a wardrobe of a modern residential apartment is optimized [2]. Enhancing its product development factors will be affected towards the optimization while exposing the hidden environmental impacts [3]. By redesigning the associated wardrobe through changes of specifications, raw material and dimensions, best-optimized designs will be selected in which best-optimized cases of enhanced product qualities than the reference wardrobe design. Furthermore, to guide real furniture manufacturers for this optimization approach, a manufacturer guideline will be prepared as the ultimate deliverable or the output of this study which can be recognized as a strategic product optimization plan which will act as a milestone in sustainable product optimization strategy.

Keywords: *Assembled product, Life Cycle Assessment, Sustainable product optimization, product development*

REFERENCE

- [1] A. Sadollah, N. Mohammed and Z. W. Geem, "Sustainability and Optimization: From Conceptual Fundamentals to Applications," no. 06.03.2020, p. 34, 2020.
- [2] Pauli Miettinen and Raimo P. Hamalainen, "How to benefit from decision analysis in environmental life cycle," *European Journal of Operational Research* 102 (1997) 279-294, vol. 102, no. 2, pp. 279-294, 16.10.1997.
- [3] Qingsong Wang, Wei Liu, Xueliang Yuan, Hongrui Tang, Yuzhou Tang, Mansen Wangc, Jian Zuo, Zhanlong Song and Jing Suna, "Environmental Impact Analysis and Process Optimization of Batteries Based on," *Journal of Cleaner Production*, vol. 1, no. 2017, p. 37, 2017.