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A New Approach of Study Towards Environmental Impact Assessment for Sustainable Product Design

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Abstract

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Abstract

Environmental impact assessment is essential to meet the objectives of sustainable product design. The environmental impact should be measured at the initial stages of product design to minimize the impact. In this paper, we demonstrate the application of a computer-aided design (CAD) tool to measure the environmental impact during the design stage. SolidWorks software uses the Life Cycle Assessment (LCA) model to measure the environmental impact such as energy consumption, carbon footprint, and air-water pollution. The spur gear model is used to demonstrate the process of assessing environmental impact using the CAD tool. The input parameters such as material, manufacturing process, region, transportation method, and product usage play an essential role in the environmental impact. The results indicate that the environmental impact can be reduced by optimizing the parameters by selecting alternatives using the CAD tool at the initial design stage. © 2023 American Institute of Physics Inc.. All rights reserved.

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


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