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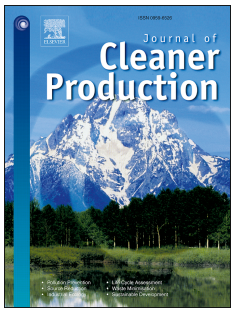

Environmental Impact Reduction Using Exergy-Based Methods

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Environmental Impact Reduction Using Exergy-Based Methods

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Highlights

• The implementation of the environmental issue to the exergy-based methods is discussed

• Exergoenvironmental analysis for the compression refrigeration machines is applied

• The effect of the selected eco-indicators to the results is evaluated

• The component-related environmental impact is negligible compared with the environmental impact of fuel

Abstract

An exergoenvironmental analysis is conducted at the component level of a system and identifies (a) the relative contribution of each component to the environmental impact associated with the entire system, and (b) options for reducing the environmental impact associated with the overall system. In an exergoenvironmental analysis a one-dimensional characterization indicator is obtained using a Life Cycle Assessment (LCA). An index (a single number) describes the overall environmental impact associated with system components and exergy carriers. It should be mentioned that the evaluation of environmental impacts would always be subjective to some degree. The paper discusses the effect of the indicator used in an exergoenvironmental analysis on the conclusions obtained from the analysis using a compression refrigeration machine as an example. The results demonstrate that the contribution of the component-related environmental impact can be neglected in the

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