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## DEALING WITH LCA MODELING FOR THE END OF LIFE OF MECHATRONIC PRODUCTS

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### Abstract

This paper discusses end-of-life (EoL) modeling issues in Life Cycle Assessment (LCA), through the application to a domestic cooker hood. Two EoL approaches are applied and discussed, namely the avoided burden and the one recommended by the Product Environmental Footprint (PEF) Guide, presently under testing. While no case studies on PEF application have been published yet, to the best of our knowledge, the scientific community is questioning the robustness and relevance of some methodological aspects, especially the EoL formula.

The objective of the work is to provide a case study for supporting the scientific discussion on EoL modeling by: applying the avoided burden approach to the cooker hood EoL; testing the PEF EoL approach on a cooker hood component, the aluminum filter, and compare the results with those obtained from the avoided burden approach; evaluating how both the approaches affect the allocation of burdens/credits associated to recycling. The Global Warming Potential (GWP) and the Abiotic Depletion Potential (ADP) impact categories are investigated.

The study points out that the PEF EoL approach delivers higher environmental impacts than the avoided burden one, due to a reduced contribution from the avoided impacts.

Overall, the application of the PEF EoL approach is more complex, due to the additional and often not available information needed, such as the recycled content of the materials and the disposal treatments that are avoided when recycled materials are used in the product. Also the structure of the LCA datasets may limit the application of the PEF EoL.

*Key words:* avoided burden, EoL recycling, Life Cycle Assessment, Product Environmental Footprint, recyclability rate

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