A comparative study on life cycle assessment of micro and macro components

Micro manufacturing is an extremely demanding technological field where very special materials are used, extreme production condition like clean room, super high temperature, toxic chemicals, etc. are employed. Due to these facts, micro products can be environmentally damaging even after their smaller dimensional scale. So performing of LCA for micro products is equally important as it is for macro products. Keeping this motivation in mind, current paper systematically performs the LCA of a micro Socket used in hearing aids. The analysis makes a guide line about how to use the conventional knowledge about LCA and tools for the efficient LCA analysis of the micro parts. A comparative study is made in the paper by comparing two different sockets of hearing aid and it shows well how to make a comparative study for LCA when the manufacturer makes a new product to replace an old one. Another comparative study is made in the paper for micro and macro which shows that scaled up effect of the micro product compared to macro counterpart. The critical finding of this comparative study shows that the relative environmental damage done by micro product is higher than the macro product and that is confirmed by the net impact analysis. Finally, the LCA procedure presented in the paper, and the knowledge documented can be a valuable source of information for the researchers and scientists who work with the LCA of micro and macro products.

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