

Reviewer

Dimitrios Lergios, Project Manager - LCA Specialist, Audit and Verification, FORCE Technology.

Reviewed study

The review is performed of the following LCA report, where focus is on greenhouse gas emissions (global warming potential environmental impact categories): "Life cycle assessment of Contour Design – Balance Keyboard" by Contour Design A/S sustainability team, dated 15/03/24 (version 4). The study was commissioned by Contour Design A/S. The object of assessment is the product Contour Design Balance Keyboard (CD BK). The following review statement refers to the above-mentioned study and cannot be used for any other study.

Review procedure

The purpose of the review was to provide an independent 3rd party assurance that the study follows the procedural and methodological requirements in ISO 14040, 14044, 14067 and good LCA practice. The review is of the type "Critical review by internal or external experts", as described in ISO 14044, Section 6.2., and was performed in the period from 19/02/24 to 15/03/24 by a single reviewer. The reviewing process took place after the report was finalised. The report was delivered to the reviewer who in turn initiated a dialogue with the study's practitioner and provided comments over the study's content. Afterwards the report was amended two more times, based on further comments and dialogue.

Review statement

The LCA report, which focuses only on the total global warming potential impact categories (GWP total, GWP fossil, GWP bio, GWP luluc), has been reviewed with respect to compliance with ISO 14040, 14044 and 14067. The methods applied in the attributional LCA report are consistent with the ISO standards, and the applied methods in the LCA report are in general scientifically and technically valid. Further, the used data in this context is in general appropriate and reasonable according to the goal and scope of the LCA. The review was performed by only one reviewer, which complies with the review requirements of ISO 14040, 14044 and 14067, since the study is not a comparative assertion. Interpretations presented in the report reflect the goal of the study and the identified limitations. In general, the report is sufficiently transparent and consistent, but could have been clearer and more concise in its presentation.

Further, and specifically on the phases in the report:

The **goal and scope** of study is well described and states that the focus of the study is to quantify the carbon footprint of CD BK and identify impact hotspots in the life cycle of the CD BK. The study does not include a comparative assertion neither has a comparative nature, as it considers only one object of assessment (CD BK). However, the results of the study will be disclosed to the public (e.g., marketing claims) and be used in a calculator tool (available to the public), which can lead to comparisons. In that content, the reviewer would like to highlight that the study contains some major assumptions and methodological choices. The primary data used for waste management rates represent the separate collected electronic waste (in Denmark) and include a very high recycling rate. This assumption may not be representative of reality since users may dispose the products in other waste streams with different treatment rates. This has not been well described in the study neither a sensitivity analysis was performed to assess the sensitivity of the results to this assumption. However, Contour Design A/S states that most of their products are distributed through IT resellers to companies, which means that the product will most likely be disposed to the electronic waste collection system. The warranty period (2 years) was chosen as the product's lifetime in the functional unit. This may not be representative of reality since users may use the product for a longer time. However, Contour Design A/S included this uncertainty in the sensitivity analysis which showed that the results are not sensitive to the chosen lifetime since the impact from use stage is very small and insignificant compared to the other life cycle stages. The cut-off approach was chosen as the allocation method for modelling the recycled content and recycling of materials. This means that the recycled content of incoming materials is burden-free (only the impacts from the recycling process are considered) while the impacts from recycling of waste are not allocated to the system under study. The methodology choice may lead to unfair comparisons if the results of this study are compared with other studies that follow a different methodology. Finally, any communication of the results (e.g., marketing claims, calculation tools etc.) is not covered by this review, since it cannot be reviewed according to the requirements in ISO 14040/14044/14067.

Primary data used in the study is collected from Contour Design A/S production site and suppliers. **Secondary data** were retrieved from statistics (Denmark Statistics) and the Ecoinvent professional LCA software database (v. 3.9.1). The chosen LCA modelling tool was SimaPro. The general geographical, temporal, and technological representativeness of the data was described in the study, while a quality assessment of secondary data was performed. Although, more focus could have been placed on towards the applied secondary data. The technological representativeness of some secondary data seems to be slightly over-estimated; however, this does not affect the overall quality of the applied data which is considered appropriate.

The **Life Cycle Impact Assessment (LCIA)** is presented in a simplified and adequate way, where calculations are performed for the whole life cycle and individual life cycle stages. The results focus solely on the global

warming environmental impact categories and any global warming potential due to fossil, biogenic and land use/land use change GHG emissions and removals is reported separately. A contribution analysis of global warming impact from each life cycle stage, as well as individual activities/materials, to the total results, can also be seen.

In that context, the *interpretation* describes sufficiently the results in terms of the LCA modelling processes used. A proper *uncertainty analysis* is missing in the report (according to the ISO standards) however, a *sensitivity analysis* was performed for several parameters and choices. Overall, the approach is in general considered reasonable, even though there could have been more focus on the uncertainty of the study (e.g. choice of secondary data for the PCBA inventory and how this affects the results, choice of proxies to describe processes/activities for which no relevant secondary data were available).

The *conclusions* in the LCA study relate well to the main aim of the study and mention some major limitations, even though they could have been more thorough in terms of assumptions, uncertainty, and overall data quality.

The study is not intended for comparative assertion, and this is not considered in the review process. If significant changes take place on supplier, product, process, or market level, then the LCA study needs to be revised to evaluate whether those changes significantly affect the results.



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15/03/24
Date