Development of a Tool for Integrated Life Cycle Assessment and Ecodesign of Electrical and Electronic Products

This paper describes the development of specifications for a tool that aims at ecodesigning electrical and electronic products. EIME is a Life Cycle Assessment and ecodesign software that was developed by an association of industrials in the nineties to support non-expert practitioners. The basic principle of this interface was to easily grasp the life cycle of Energy Using Products by using modeling codes that are familiar to the designer, such as tree views composed of containers (e.g. part, subassembly).

The emergence of new constraints, including European environmental regulations and the implementation of new requirements for environmental communication resulted in the appearance of new needs regarding the quantification of the environmental impact of electrical and electronic products.

To meet these new requirements and also the recommendations of the ILCD platform, the establishment of a new EIME interface was essential. In these perspectives, five development axes have identified and integrated in the EIME development technical specifications.

The first one is to improve the software user friendly aspect: by clearly defining the life cycle phase to take into account, by assigning an equivalent position for each life cycle phases in the model, by allowing the development of a suitable interface for specific types of products or services and finally, by providing templates for modeling life cycle aspects which were identified as being critical (e.g. the end of life phase). The objective of the software is to make accessible to non-expert LCA practitioners the Life Cycle Assessment concepts.

The second axis is to propose a database that is adapted to Electrical and Electronic product issues, in term of content but also in term of organization. As a consequence, the implementation of appropriate classification and nomenclature systems are some required steps to simplify the interface use.

Thirdly, powerful and easy-to-use analysis tools have been developed or improved in order to make the Life Cycle Assessment (LCA) results as easy to use and concrete as possible. To identify the different subassemblies, tracking functionalities are integrated. To compare design solutions, comparison graphs are integrated.

Considering the fact that in practice, different actors from different areas of a firm (e.g. design, manufacturing, sales and marketing) are involved at each step of the product life cycle, the fourth aspect of the development consists in providing a highly accessible tool where the concept of collaborative work is at the centre. As a consequence, EIME is nowadays built as an IaaS (Interface as a Service).
The last development axis is to streamline the process of data collection on product in order to integrate the approach into the depths of the company's practices. Indeed, to be sustainable and effective, the different steps of the Ecodesign process have to be as integrated as possible. As a consequence, solutions allowing to couple Life Cycle Assessment (LCA) – Ecodesign tool and Product Life Management (PLM) tools outputs are studied.

Based on this successful example of the development leaded in the Electrical and Electronic area, other easy-to-use Life Cycle Assessment and Ecodesign specific interface are available or under development: for the marine field and for hardline and softline products.

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