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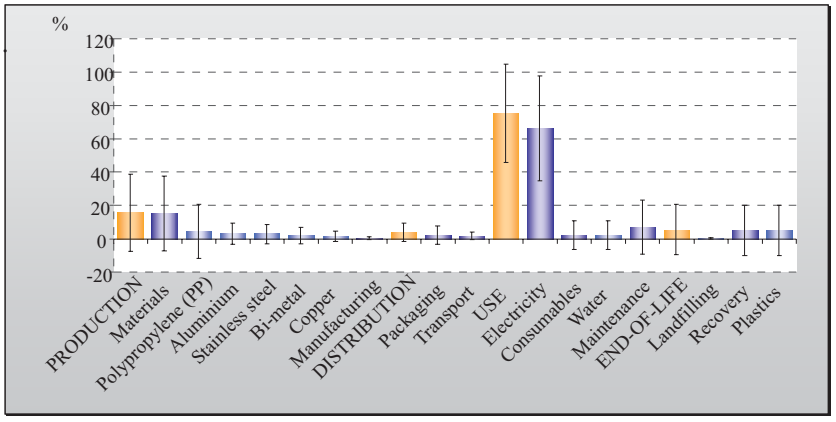
GOBIERNO DE ESPAÑA
MINISTERIO DE MEDIO AMBIENTE Y MEDIO RURAL Y MARINO

Generalitat de Catalunya
Government of Catalonia
Department of the Environment and Housing

No. 114 Technological & environmental improvement of products

Eco-design of the domestic steam iron TDA 4610

Company	BSH Electrodomésticos España, S.A., Vitoria Factory (Spain)
Industrial sector	Manufacture of domestic appliances ISIC Rev 4 nº 2750 (*International Standard Industrial Classification of all Economic Activities)*
Environmental considerations	Increasing public awareness about environmental matters, particularly energy saving & efficiency and climate change, the need to remain competitive in a global market and the appearance of the of the ErP (Energy-related Products) Eco-Design Directive 2009/125 EC (former EuP - Energy-using Products Directive (2005/32/EC), led the company BSH to become involved in this eco-design project.
Company background	BSH decided to take part through this case study in an eco-design pilot project addressed to the electrical and electronic sector, which was supported by Ihobe. This project was carried out between May and September 2008 and it concluded with the publication of an Electrical and Electronic Eco-design Guide by Ihobe in April 2010. The product assessed and eco-designed was the steam iron TDA 4610. It is a domestic model, with vertical steam flow, a total weight of 1,127 kg, 2,200 W maximum, constant steam flow of 30 g/min, supersteam function with 90 g/min, container capacity of 300 ml and with autocleaning and Calc'n'Clean functions.
Summary of actions	To identify the main environmental aspects of the product, an environmental assessment - streamlined LCA - was carried out considering the whole product lifecycle (manufacturing, distribution, use and end-of-life) using the software tool EuPmanager®, nowadays updated to a free cost version named EuPeco-profiler® under the LiMaS project (www.limas-eup.eu). This software tool uses the MEEuP methodology developed by VHK for the European Commission for assessing Energy-using Products. The graph below shows the environmental profile of the complete life cycle of the steam iron TDA 4610 assuming an estimated real usage of 1,000 hours. As can be observed, 16% of its overall environmental impact corresponds to the manufacturing stage, 4% to distribution, 75% to actual use and 5% to the end-of-life stage. A more detailed analysis reveals the most significant aspects and thus the priority processes and materials for improvement efforts.



Domestic steam iron TDA 4610

Summary of actions (cont.)

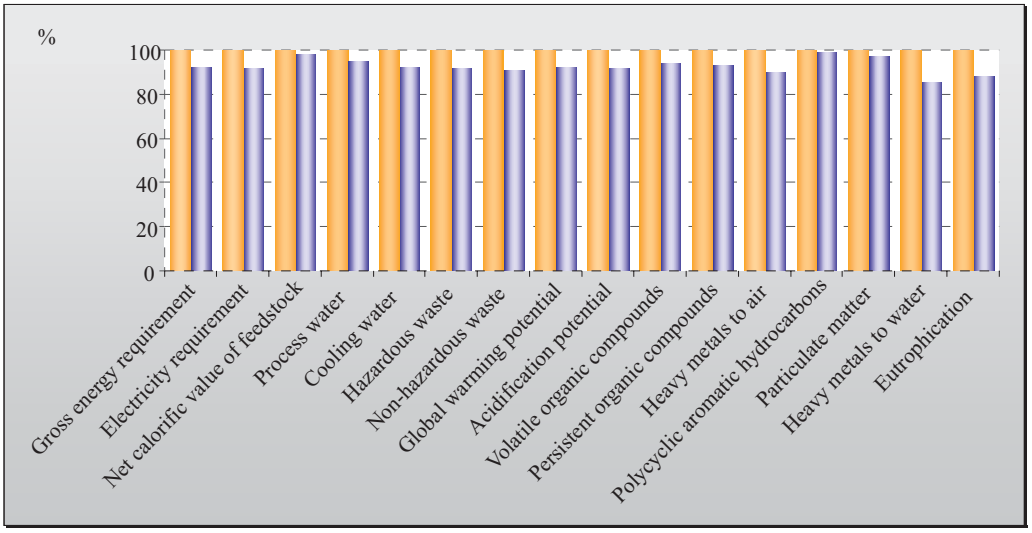
After identifying the most significant aspects of the product and considering the main company's motivations, there were identified and evaluated potential eco-design strategies for improving the product. Not all the strategies initially drawn up were implemented in the final improved design, as some proved unviable due to technical and/or economical reasons.

The eco-design measures finally applied are summarised below:

Use of cleaner materials
Replacement of some PVC parts: internal connection wires were replaced by rigid steel sheets, being the new assembly process fully automatic. PVC coating of the connexion cable was also replaced by EPR. This new connection design allows the elimination of the rear plastic part of the iron and some additional internal parts (e.g. internal PA 6,6 connectors).
Use of recycled materials
Use of recycled PP (primary scrap) in the loading container of the iron.
Lower energy consumption
Inclusion of a detailed user manual and clear user recommendations for an efficient use of the iron, considering type of fabric, steam flow needed, etc. Internal market studies estimates energy savings of 8%.
Functional optimisation
Replacement of the steel sole plate coating (88 g) by a new one made of aluminium with a ceramic cover (28 g). This resulted in a better sliding of the iron.

Balances

The graph below shows the improvements in percentage terms achieved in each of the 16 environmental impact indicators considered, after the implementation of the eco-design measures described above. The average environmental improvement achieved in the new steam iron model is 7.5%. An 8.1% reduction in energy consumption during the useful lifetime was achieved. The new design implies a total energy savings of 81 kWh (approx. 11.3 €) compared with the previous model.



Conclusions

The main benefits achieved in this eco-design project were the following:

Improvements in the product:
- 7.5% reduction in overall environmental impact
- 8.1% reduction in energy consumption during the useful lifetime
- 10.5% reduction in the total weight of the product
- Use of cleaner materials in the product
- Higher amount of recycled materials in the product
- Functional optimisation of the product

Improvements in the company:
- Implementation of a practical tool for environmental assessment
- Alignment with the future requirements of the ErP Directive (2009/125/EC)
- A greater capability for innovation through eco-design
- Market position improvement

NOTE: This case study seeks only to illustrate a pollution prevention example and should not be taken as a general recommendation.

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