Sustainable Innovation 2015
20th International Conference
'State of the Art' Sustainable Innovation & Design
9th – 10th November 2015
University for the Creative Arts
Epsom, Surrey, UK
www.cfsd.org.uk

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Towards Sustainable Use and Post-Use: Design Considerations for Small Household Appliances

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The product category of small household appliances is expanding with increasing numbers of product types. Through making minor incremental changes on technical and aesthetic features, new products are developed and introduced, which do not mainly allow product repair and upgrading as the result of permanently attached product parts for optimizing the manufacturing and assembly processes. These products are mainly outsourced and low-priced, therefore users tend to replace the broken ones with the newer versions (Cooper, 2004), which also leads to an ever-increasing electronic waste. Some of these products are used frequently in home environments such as kettles and contact grills, however the use and the source of energy remain invisible since the resource consumption does not communicate clearly and effectively with the user (Energy Saving Trust, 2012). Due to the misperception of product performance, the household appliances such as vacuum cleaners and blenders/choppers are often used in high power settings unnecessarily causing excessive use of electricity. Furthermore, product maintenance may have implications for both product repair and resource consumption. For instance, if the heating plates of contact grill are not cleaned properly and regularly, this may lead to excessive water use, and even the replacement of these plates.

As outlined above, most of the impacts related to effective use of resources, and product maintenance and repair are highly related to people's use and post-use behaviours. To gain users' insights into that area, participatory and generative research methods, namely Generative Focus Group (GFG) and Experience Reflection Modelling (ERM) were integrated into a long-term design research project. These methods have helped the authors gain a thorough understanding of the people's needs, preferences and experiences regarding a selection of household appliances to develop sustainable design considerations accordingly. The GFG sessions were focused on five product categories (i.e. electric tea maker, coffee maker, contact grill, vacuum cleaner and blender/chopper). Based on this initial research phase, emerging design considerations for sustainability were identified and revised. Following that, to have a more in-depth exploration of the individual use experiences, the ERM sessions were facilitated including interview schedules, 2D/3D modelling toolkits and video analysis to reveal tacit knowledge of users on the main research topics. Particularly, the process of 3D modelling enabled the users to reflect on their experiences, needs and preferences. The main purpose of incorporating this method was to understand people's use and post-use behaviours, as well as the reasons behind them.

The core aim of this paper is to present the outcomes and findings from the ERM sessions, and particularly to give a comprehensive list of the design considerations along with their descriptions. These will be discussed through a visual representation of these considerations in line with the selected products. The implications of these considerations will be discussed further for developing design directions to be incorporated into the idea generation phase of design process.