

CHALMERS

DESIGN BEYOND INTERVENTIONS

Supporting Less Energy-reliant Activities in the Everyday

ANNELI SELVEFORS

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The opponent is Associate Professor Conny Bakker, Faculty of
Industrial Design Engineering at Delft University of Technology



Department of Industrial and Materials Science
Division Design & Human Factors
CHALMERS UNIVERSITY OF TECHNOLOGY
SE - 412 96, Gothenburg, Sweden
Telephone +46 (0)31-772 1000

ABSTRACT

This thesis addresses challenges and opportunities for product design to contribute to domestic energy conservation. The overall aim of the thesis is that of increasing the understanding of people's energy use and their use of energy-reliant artefacts in the everyday in order to propose ways of supporting energy conservation through design. Two main themes are explored within its scope: how people's doings in everyday life influence energy use and how energy-reliant artefacts designed to support energy conservation influence energy use.

Material from four empirical studies has been used to address the themes and discuss implications for design practice. Study A investigated how people's possession and use of appliances influenced energy use and Study B explored people's energy use and approach to energy conservation from the perspective of everyday activities. Studies C and D investigated how artefacts designed to support energy conservation may influence energy use through evaluations of an energy feedback system and kitchen appliances designed to mediate less energy-intensive use, respectively.

A cross-study analysis shows that people's energy use is embedded in the web of activities that make up everyday life and suggests that the design of energy-reliant artefacts mediates the actions and outcomes of those activities. Depending on their overall design, design characteristics, and their fit with the activity that is enabled, energy-reliant artefacts may either facilitate energy conservation or make less energy-intensive use challenging or undesirable. For instance, if artefacts are not easily understandable and easy to use, and if they do not provide suitable functions that enable people to use them effectively for a particular purpose, they risk being rejected or used in an energy-intensive way. The findings thus suggest that artefacts designed with one or more functions aimed to motivate or encourage people to reduce their energy use, commonly referred to as design interventions in literature, risk impeding energy conservation if they do not support energy conservation as a whole. To increase the potential for artefacts to support energy conservation, it is crucial to design suitable and relevant artefacts that provide for less energy-reliant everyday activities and that make it possible and desirable for people to meet their needs and attain their goals in less energy-intensive ways. If less energy-intensive use is only encouraged, but is not enabled and mediated, it will be difficult for people that do not have the preconditions to use less energy to actually reduce their energy use.

This thesis therefore argues for moving beyond design interventions and instead designing for less energy-reliant activities by holistically considering the preconditions and design characteristics that functions on all layers of design may give rise to. Such an approach has the potential to reduce mismatches between the design of an artefact and the activity enabled, which in turn may increase the potential for artefacts to be used in less-energy-intensive ways and be adopted long term. In conclusion, the thesis provides new insights into the way in which people's activities and use of artefacts influence energy use and highlights opportunities for design practitioners to create preconditions for less energy-reliant activities in the everyday.