Strategic Research Project

UserTEC

User Practices, Technologies and Residential Energy Consumption

Newsletter no. 8 – March 2018

Finalising UserTEC

In November 2017 we had our final partner meeting. We presented some of the main results from the many different project that have been part of UserTEC. Our Danish partners and the advisory board took active part in discussing the results and relating our research to the technical, economic and political world outside of academia. Although the project has been extended to June 2018, this is our last newsletter, and we thank our readers for following our project. All publications will, however, continue to be listed at our website.

International publications

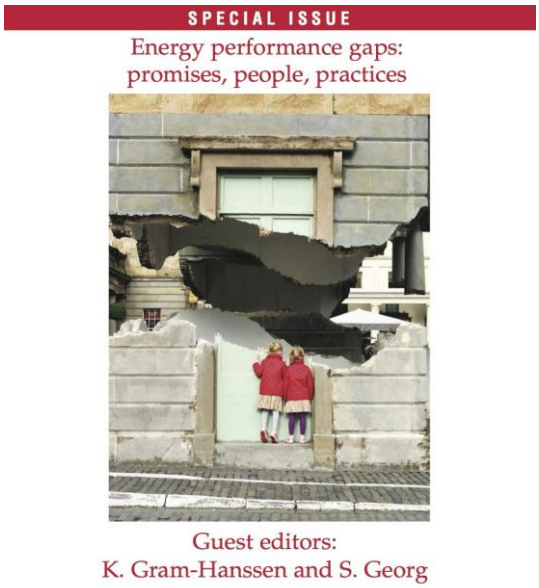
As a follow up on the international UserTEC conference in 2016, the recognised international journal *Building, Research and Information* has published a special issue on energy performance gap, which includes results from UserTEC. The special Issue was edited by K. Gram-Hanssen and S. Georg.

The editorial notes that the building sector has been identified as the sector with the largest potential for energy savings. Yet, despite great technical progress, a large part of the savings have yet to be realized. If the energy performance gaps are to be minimized, then the potential for energy savings from the residents and building users and their practices must be considered. For example, building occupants develop higher expectations of comfort and they often lack an understanding of the control of building technologies. But it is also true that many technologies are not adapted to user needs: they lack user friendliness and can lead to unnecessary and unwanted consumption.

The project is supported by:

Innovation Fund Denmark
RESEARCH, TECHNOLOGY & GROWTH

To achieve energy savings, future energy efficient technologies have to meet users' needs to a greater extent and support their practices in a sustainable direction. This goes for residents as well as for building professionals and their practices. Pursuing this requires deeper understanding of differentiated user practices and their relations to energy consumption.



Cover of the special Issue of Building Research and Information

Policy has, hitherto, been effective in promoting the development of more energy efficient buildings. But policy has not addressed the continuously growing energy consumption. Technological efficiency on its own is unlikely to provide the dramatic and rapid reductions needed.

The conclusions from the special issue include at least three points of relevance for public policy:

- First, policy must move beyond just focusing on efficiency of buildings and theoretical

energy reductions. Policy needs to be more firmly based on understandings of how new technologies also introduce new practices and new norms of what home, comfort and a good everyday life is.

- Second, it is necessary to consider how to develop new (smart) technologies which people can understand, domesticate and use, while at the same time consideration must be given to whether these new technologies induce more consumption rather than help consumers to save energy.
- Third, if policy is to deliver the needed radical CO_2 and energy reductions in buildings, then a shift of focus is needed away from regulation as a one-time gateway which only assesses the design and material aspects of a building. Instead, policies and regulations should consider alternatives which include an ongoing assessment of both the material and social aspects of building operation, along with guidance and support to building professionals and occupants.

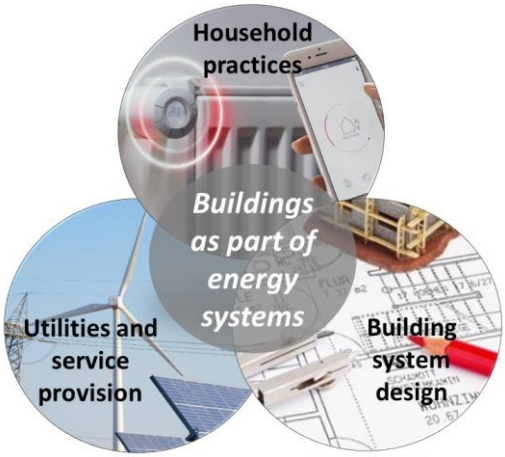
International exchange

An important part of the international cooperation in UserTEC have been the exchange of researchers between Aalborg University and our international collaborative partner universities. In January 2017 Kirsten Gram-Hanssen was visiting professor at Oxford University. Later AAU had visits from PhD student Rihab Kalid and Paula van den Brom, from respectively Cambridge and Delft University.

Rihab Kalid from Cambridge visiting SBi.

A new research project

Thanks to strategic research funding from AAU, the UserTEC team will build on the results from UserTEC in a new project: "Intermittent energy - Integrating Households, Utilities and Buildings" (InterHUB). Transition to a low-carbon future entails an increased use of intermittent energy sources such as wind and solar power, and calls for new ways of balancing energy supply and demand.



InterHUB sees buildings as part of the energy system.

Buildings have a prominent role in this, because buildings, as an active and integrated part of the energy system, can deliver the needed flexibility services by enabling energy storage and by serving as distributed system generators. Smart technologies are also part of the infrastructure needed to realize these potentials. Although there is a growing body of technical research on these topics, this research tends, however, to overlook the changing roles that these developments imply for the building industry, utilities and households. This is critical, as these three sets of actors play a key role in demand response and ensuring the projected energy savings. In the interHUB project social scientists and researchers from the humanities will work together with engineers to deliver critical analyzes of how intermittent energy solutions including residential building system designs can be effectively implemented.

Follow InterHUB project on http://www.strategi.aau.dk/Forskning/Tv%C3%A6rvidenskabelige+forskningsprojekter/interHUB/

UserTEC is a strategic research project lead by Kirsten Gram-Hanssen, SBi, Aalborg University. It is conducted in cooperation with University of Cambridge, University of Oxford, Linköping University, Delft University of Technology and Technical University of Denmark, as well as in cooperation with major Danish and international companies within the building and energy sector. More info at: http://sbi.dk/usertec