

Tailored family adaptation

A study of crises in zero-energy house



Background

This project belongs to the IEBB project, which advocates for the renovation of 'zero energy houses' (ZEH) that synergize insulation and heat pump systems for energy conservation. The ZEH's energy-saving efficiency depends on user behaviour. From a systems perspective, improper human interactions hinder energy saving, while occupants may find system responses that conflict with their preferences. This study delves into these conflicts and crises, highlighting the variance in post-occupancy adaptation influenced by individual perceptions and familial interplay. The project's zenith aim is to tailor adaptation, ensuring co-performance between the heat pump system and households.

Key Insight

In researching residents' responses to the 'routine crisis' introduced by a new system, I discovered that these 'crises' could be productive, stimulating household engagement and fostering harmonious interactions with ZEH systems. This insight gave rise to the concept of the 'enacted interface' - a distinctive bridge between residents and their

automated homes that supports the adaptation process. Through analysis, I identified elements that amplify residents' engagement with 'crises' and observed the influence of family diversity on individual perceptions and responses to them. The results are manifested in two interrelated frameworks: one describing the ubiquity of 'crises' and another characterising the classification and impact of different elements.

Design

This design aims to make households curious about 'crises' and guide them toward tailored adaptations to new tech. The 'Clock' thermostat provides a consistent interface for temperature adjustments, while the 'Feeling Message Board' suggests lifestyle tips based on the user's emotional input and changing scenarios. Both reinforce the system's ability to communicate contextual and real-time status, motivating users to actively engage with its functions. Additionally, the design stimulates family discussions about the indoor environment and promotes collaborative responses to 'crises'. Through co-performance of the system's dynamic feedback and the household's proactive exploration, the aim is to facilitate tailored adaptation.