Energy Supply& Demand in Residential Buildings

Main Results and Impact

4TU. Energy Transition in Buildings Hackathon & Workshop (3–4 September 2025)

The 4TU. Energy Transition in Buildings event was a two-day hackathon and workshop organized under the Building energy Responsive Integration of supply and Demand engaGEment (BRIDGE) initiative, hosted at the University of Twente. The event aimed to bring together researchers, students, industry experts, and stakeholders to explore innovative solutions for improving the energy efficiency and integration of building energy systems as part of the broader energy transition.

Objectives

•Promote collaborative problem solving on real-world energy challenges in buildings.

•Facilitate cross-disciplinary engagement between academia, industry, and government.

•Inspire future research directions, partnerships, and funding opportunities.

•Support young researchers with networking, mentorship, and practical experience.

Event Structure

Day 1 — Hackathon: Participants, primarily PhD students, MSc students, and postdocs, worked in teams on real challenges related to building energy systems. Topics included advanced advanced heating and cooling, Thermal storage and energy system integration, Built environment energy system, Smart grids and AI-driven energy systems. Participants engaged with experts from academia and industry for interactive feedback, mentorship, and idea development. In day 2, after invited experts' evaluation, Certificates were awarded to all participants, and prizes were given to the top three teams.

Day 2 — Workshop: Open to a broader researcher audience, the workshop offered keynote presentations and panel discussions from leading experts. The aim was to foster knowledge exchange across research, practice, and policy domains, and to support collaboration for future proposals and research initiatives.

Key Contributions & Outcomes

•Strong engagement from young researchers working on energy transition challenges.

•Encouraged interdisciplinary discussions on supply–demand integration, smart controls, AI and system innovation.

•Provided a platform for forming research teams and identifying potential funding pathways.

•Enhanced connections among universities and industry partners, laying the groundwork for future collaborations.

Impact

The event successfully created an interactive environment for tackling urgent energy transition challenges within the built environment, supported knowledge exchange, and promoted future joint actions in research and funding applications. Participants left with new insights, stronger networks, and clear directions for continued work in energy system integration and innovation.

Plan for follow-ups

To ensure concrete outcomes following the event, the following follow-up actions and funding-oriented collaborations have been defined:

1) Resilient urban energy system and control (Initiative)

A consortium has been formed consisting of UT (Dr.Tingting Zhu, Fengxian Liu, Dr. João Miguel Oliveira dos Santos), TU/e (Dr. Dujuan Yang, Dr. Guang Hu) , Dr. Aleksandra Lekic (TU Delft) and Ennatuurlijk (Mr David M. Berghuis, Steven Maclean). This group will focus on preparing an application targeting some suitable national funding, building on the technical discussions and collaboration opportunities identified during the event.

2) Funding Application - (TKI PPS Project, 2026 Jan.) In addition, a TKI Energy PPS project application (Zeotropic mixture heat pump systems in industry application) is being prepared, led by Hogeschool Rotterdam (Dr. Brendon de Raad) and UT (Dr. Tingting Zhu) in collaboration with Ciclos and Dutek. This application aims to translate the event outcomes into a structured public–private research project.

3) Funding Application –EU CET Partnership Funding (2026-2027 round) Another collaboration group has been established including UT (Dr. Tingting Zhu, Dr. Fengxian Liu), BDR Therma (Mark van der Wiel) , and partners from Denmark (Technical University of Denmark) and Germany (RWTH Aachen University).The objective of this group is to prepare a proposal targeting EU CET Partnership funding, with an emphasis on international collaboration and industry involvement.

4) 4TU.Energy Supply& Demand in Residential Buildings-webinar (online meet-up) is in planning.

News link: https://www.4tu.nl/energy/news/energy-transition-in-buildings-hackathon-workshop/

Applicants:
Dr. Tingting Zhu (UTwente), Dr. Dujuan Yang (TU/e), Dr. Aleksandra Lekic (TU Delft)