Energirenovering av småhus med Al-stöd

Enabling stakeholder engagement in energy retrofitting: an openaccess platform for detached-houses in the north of Sweden

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1. INTRODUCTION

2. PROJECT PLAN AND DELIVERIES

3. SUMMARY OF OUTCOME



MEMBERS

UMEÅ UNIVERSITY



- Thomas Olofsson, PI
 Expert of indoor built
 - Expert of indoor built environment, HAVC system and energy efficiency



- Weizhuo Lu
- Expert of building energy renovation and ICT technologies



- Kailun Feng
- Expert of building energy renovation and big data technologies

FORMAS: INTRODUCTION

Enabling stakeholder engagement in energy retrofitting: an openaccess platform for detached-houses in the north of Sweden





https://energieffektivasmahus.se/

INTRODUCTION

Project plan:

- Stage 1: Data preparation;
- Stage 2: Big-data modelling;
- Stage 3: Open-access platform.

Deliveries:

- I: Renovation performance prediction (machine learning model)
- II: Open-access renovation platform



PRESENT STAGE

Stage 1: Data preparation





Stage 1: Data preparation



Heat map of buildings U-value distribution in Umeå building stock.



Improved energy retrofit decision making through enhanced bottom-up building stock modelling, *Energy and Buildings*, Volume 318, 2024, 114492 7

2025-06-03



Stage 2: Big data modeling

Real buildings (big data)



Data augmented archetype



Building Big Database

Test renovation

Virtual buildings

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Stage 2: Big data modeling





Stage 3: Open-access renovation platform





Stage 3: Open-access renovation platform



Building and Environmen

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Stage 3: Open-access renovation platform











Stage 3: Open-access renovation platform



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Stage 3: Open-access renovation platform





Ventilation System Update and Window Improvement: the occupants use less personal heaters. This behavior contributes to greater energy savings than from technology alone.



FUTURE ARRANGEMENT



Test renovation



• Thermal environment 2025-06-03



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IVA's 100 List: current research with potential to create value

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Intelligent Human-Buildings Interaction Lab

RESEARCH GROUP Intelligent Human-Buildings Interactions lab (IHBI) at Department of Applied Physics and Electronics, Umeå University, aims to explore the interaction among energy, energy-efficient measures and occupant behaviour using lab experiment. As a new research domain, IHBI conducts cutting-edge research on immersive built environment, data-driven modelling and machine learning, intelligent indoor environment for evidence-informed decision-making.

https://www.umu.se/en/research/groups/intelligent-human-buildings-interaction-lab/



Thank you !

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