IEA HPT Annex 60:

Retrofitting Heat Pump Systems in Large Non-domestic Buildings

Heat Pump Research Seminar

8th Nov 2022

The HPT TCP is part of a network of autonomous collaborative partnerships focused on a wide range of energy technologies known as Technology Collaboration Programmes or TCPs. The TCPs are organised under the auspices of the International Energy Agency (IEA), but the TCPs are functionally and legally autonomous. Views, findings and publications of the HPT TCP do not necessarily represent the views or policies of the IEA Secretariat or its individual member countries.

Project Background

Why do we need this Project?

- The UK will need to decarbonise energy used in all buildings to achieve our net-zero climate goals.
- Large non-domestic buildings are included in this and represent a relatively large portion of emissions from buildings.
- There will be increased push from government for these buildings to take actions over the next decade.

What is the problem?

- Non-domestic buildings are complex and varied in form, size and function.
- There are a wide variety of system options when considering a move to retrofitting a heat pump system in an existing building.
- There is a lack of simple, high level advice for decision makers who know they need to take action but don't know how.

What do we need?

- Better evidence of real project examples that we can point to.
- Experience from other countries where heat pumps are a common solution.
- Simple to use, accessible advice on potential options signposting to evidence and detailed guidance.

Annex 60 – Retrofitting heat pumps in large non-domestic buildings

- **Multi-year project starting Sept 2022 – Dec 2024**
- **International Collaboration**
- **Supported by BEIS but participants bring their own resources**
- **Project Contacts:**
  - **roger.hitchin@hotmail.com (alternate delegate)**
  - **oliver.sutton@beis.gov.uk (delegate)**
  - **Andre.neto-bradley@beis.gov.uk**

Proposed structure of project

- Task 1 – Literature review of existing guidance and knowledge
- Task 2 – Case Studies of existing projects
- Task 3 – Options Support Tool development
- Task 4 – Reporting and dissemination

Task	Q3 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	Q3 2024	Q4 2024
Task 1 - Literature review of existing knowledge									
Task 2 – Case Studies of existing projects									
Task 3 – Options Support Tool development									
Task 4 – Reporting and dissemination									

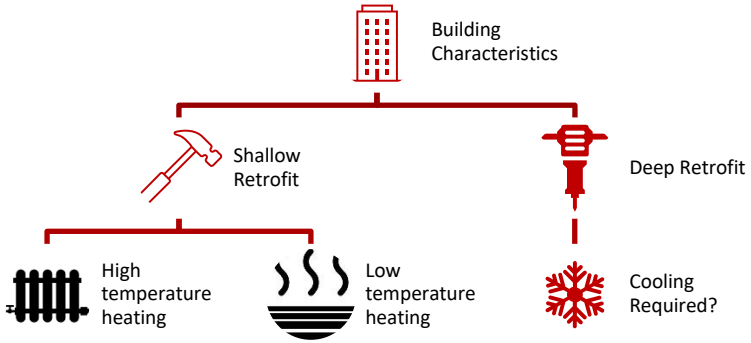
Demonstration and Monitoring

Case studies will be gathered from participants and from industry groups who have an interest in the research and its outputs. These should include cases that have been successful as well as those where problems arose with lessons learnt provided. The task will need to:

- Agree criteria for performance and evaluation metrics, acceptable levels and scope of qualitative and quantitative reporting and monitoring.
- Develop reporting templates and processes.
- Collate and review case study timings, building types and system types covered.
- Develop a user friendly communication tool to present the case studies e.g. web based and publish this online.
- Gather data and evidence from monitored retrofit projects by participants during the project.
- Where relevant, utlise the findings from the case studies to inform the Options Support Tool development.

Options Support Tool

- Aim to develop a user-friendly, accessible tool to aid decision makers when considering their options to retrofit a heat pump system.
- It will need to incorporate information about:
  - The building, it's construction, fabric, use etc
  - The existing HVAC system under consideration,
  - The suite of heat pumps system options available
  - Point to more detailed guidance and standards as well as the evidence collated and developed through this project.
- Could be a web-based interactive tool



Target audiences

- Three principal target audiences, who will need results presented in different ways
  - Building owners and managers, who will need a general understanding of the options available to them
  - HVAC system designers, who will need more detailed information on system choice and design
  - Policy makers and their technical advisors, who will need sufficient information to assess the potential applicability, costs and likely outcomes of possible policy instruments

Planned outputs

- Options Support Tool – Format TBD, dependent on user testing and development
- Case Study Catalogue – with different presentation methods e.g. web based, documents, mapped.
- Technical Report – with findings from the literature review and a compendium of resources and references. Key findings from development of Options Tool and Case Studies.
- Possible tailored guidance/advice/briefing for building owners, HVAC engineers and policy makers.
- Webinars to disseminate findings

Collaborations

Confirmed Participants

- UK – BEIS (informal participation from NHS Estates, GSHPA, CIBSE, MCS, Mitie)
- Italy – Politecnico of Torino (prof. Masoero) + TEON, Enerbrain (Italian Companies)
- Canada – Natural Resources Canada
- Austria – Austria Institute of Technology (AIT)

Tbc Participants

- USA – EPRI
- Ireland – University of Galway
- The Netherlands
- Sweden – RI:SE

Other Collaborations

It is proposed to collaborate with other IEA activities where this appears valuable:

- This will be relatively informal through, for example, shared workshops or special presentations
- It has been agreed to collaborate with the EBC TCP in order to have access to their building refurbishment knowledge
- It is planned to collaborate with HTP TCP annexes that have included non-domestic retrofit case studies

Please get involved

- Spread the word!
- Become a formal participant – full engagement, ~3 person months over the project
- Become an informal participant – provide case studies, feedback on outputs such as Options Support Tool.
- Become an observer – get project updates and receive outputs.
- Help disseminate the outputs

For more information

- Please contact

  roger.hitchin@hotmail.com (alternate delegate)

  oliver.sutton@beis.gov.uk (delegate)

  Andre.neto-bradley@beis.gov.uk

- Or check the project website

https://heatpumpingtechnologies.org/annex60/

Thank you, any questions?