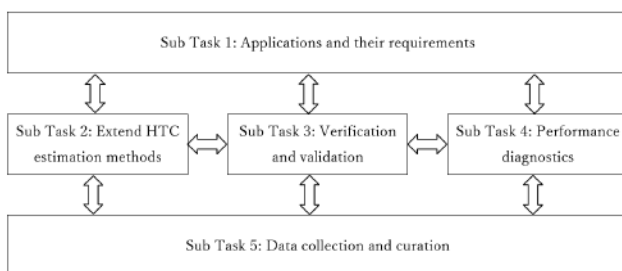


# Validation and Verification of In-situ Building Energy Performance Measurement Techniques

## EBC ANNEX 94

This work is building upon the work delivered by the completed EBC projects 'Annex 58: Reliable Building Energy Performance Characterisation Based on Full Scale Dynamic Measurements' and 'Annex 71: Building Energy Performance Assessment Based on In-situ Measurements' to provide datasets and findings to accelerate the development of measurement methods, a methodology by which they are deemed to be valid and consensus on the approaches for calculating uncertainty. It is generating a database of real measured buildings and calibrated energy models, and where new and improved methods of heat transfer coefficient measurement can be developed virtually.

The most challenging and valuable part of the proposed project is the collection of a large dataset across the globe of typical dwellings, under differing climates. This will enable the development of measurement techniques for cooling dominated climates; currently, the research is concentrated primarily on heating dominated climates.



The project structure.

Source: EBC Annex 94

### PROJECT OBJECTIVES

- 1 developing new knowledge and understanding of the breadth of real-world applications for in-situ building energy performance measurement techniques and the technical requirements of those applications across different sectors
- 2 extending the current heat transfer coefficient estimation methods to new building typologies and climates while improving their accuracy, repeatability, and robustness
- 3 co-creating a new framework for the verification and validation of in-situ building energy performance measurement techniques
- 4 developing new research areas on building performance diagnostics that identify the reason for the HTC performance gap
- 5 collecting and curating data sets to support the work of this project and to create a legacy resource that is free to access and accelerating innovation and adoption of in-situ building energy performance measurement techniques

## INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA) was established as an autonomous body within the Organisation for Economic Co-operation and Development (OECD) in 1974, with the purpose of strengthening co-operation in the vital area of energy policy. As one element of this programme, member countries take part in various energy research, development and demonstration activities. The Energy in Buildings and Communities Programme has co-ordinated various research projects associated with energy prediction, monitoring and energy efficiency measures in both new and existing buildings. The results have provided much valuable information about the state of the art of building analysis and have led to further IEA co-ordinated research.

## EBC VISION

By 2030, near-zero primary energy use and carbon dioxide emissions solutions have been adopted in new buildings and communities, and a wide range of reliable technical solutions have been made available for the existing building stock.

## EBC MISSION

To accelerate the transformation of the built environment towards more energy efficient and sustainable buildings and communities, by the development and dissemination of knowledge and technologies through international collaborative research and innovation.

The following project deliverables are planned:

- Stakeholder surveys and workshops
- Literature reviews
- Data collection, curation, and analysis
- Methodical development and comparative evaluation
- Dissemination

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### Project duration

Ongoing (2024 - 2028)

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### Operating Agent

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### Participating countries (provisional)

Austria, Belgium, Denmark, France, Germany, Spain,  
the Netherlands, United Kingdom

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### Further information

[www.iea-ebc.org](http://www.iea-ebc.org)

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