



MOEEBIUS

MODELLING OPTIMIZATION OF ENERGY EFFICIENCY IN BUILDINGS FOR URBAN SUSTAINABILITY

LAUFZEIT: 42 MONATE

 TECHNISCHE HOCHSCHULE NÜRNBERG
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With the increasing demand for more energy efficient buildings, the construction and energy service industries are faced with new challenges. Buildings are often not able to uphold the energy performance and savings predicted by the selected and applied energy efficiency measures. This so-called “performance gap” is attributed to a variety of factors. For one, the predictions tend to be unrealistically low whilst actual energy performance is usually unexpectedly high. Current modelling techniques are unable to represent realistic use and operation of buildings. Even the most detailed modelling and simulation programs still contain many simplifying assumptions, which lead to gaps between predicted and real consumption. The current simulation tools do not accurately incorporate the impact of occupant behaviour on the energy performance of buildings.

Therefore, MOEEBIUS introduces a holistic energy performance optimization framework that enhances current modelling approaches for passive and active building elements and delivers innovative simulation tools.

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FUNDACION TECNALIA
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The MOEEBIUS Solution

The MOEEBIUS framework determines and describes real-life building operation complexities in accurate simulation predictions that will significantly reduce the “performance gap”. It will also enhance multi-fold, continuous optimization of building energy performance to further mitigate and reduce the “performance gap” in real-time or through retrofitting. Through the configuration and integration of an innovative suite of end-user tools and applications the framework will enable:

- Improved building energy performance assessment
- Precise allocation of detailed performance contributions of critical building components
- Real-time building performance optimization (during the operation and maintenance phase)

including advanced simulation-based (human-centric) control and real-time self-diagnosis features

- Optimized retrofitting decision making on the basis of improved and accurate Life-Cycle Assessment and Life-Cycle Cost performance predictions
- Real-time peak load management optimization at the district level

The open and scalable architecture of the Framework will allow its seamless integration with other building and district energy management systems.

Role of the THN

THN is involved in the development of the overall architecture and development of the decision support system for fault detection. Together with the partners the THN will develop the system integration towards delivery of the support system.

The partners are:

- TecNALIA (Coordinator; ES)
- HONEYWELL (CZ)
- HYPERTECH (EL)
- CIT (IE)
- Solintel (ES)
- UCC-Tyndal (IE)
- Almende (NL)
- Fraunhofer IBP (DE)
- BELIT (SR)
- Kiwi Power (UK)
- ISQ (PT)
- Grindrop (UK)
- BEOELEK (SR)
- MAFRA (PT)
- ASM (PL)

