

BIM to BEM: Building Energy Analysis based on Building Information Modeling



TECHNISCHE
UNIVERSITÄT
DARMSTADT

BIM zu BEM: Gebäudeenergieanalyse basierend auf Gebäudedatenmodellierung

ISM+D

Institute of Structural Mechanics and Design
Institut für Statik und Konstruktion



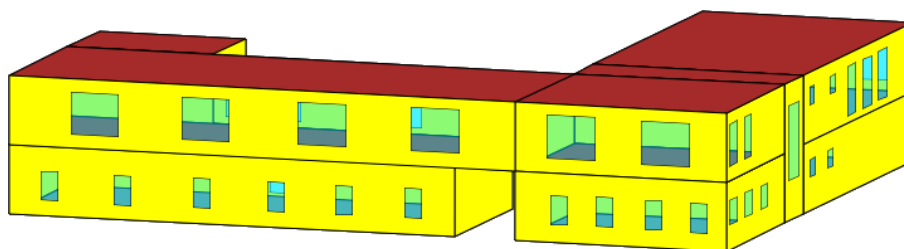
Energy
Efficient
Construction

Bachelor/Master Thesis

Topic: building information modeling, building energy simulation, Energy Plus

In recent years, building information modeling (BIM) is widely applied in the construction industry due to its ability to assist managing complicated projects, control construction costs, and enhance the detailed realization of architects' designs. For general building energy modeling (BEM), it involves creating a simulation model that mainly includes building geometry, materials, HVAC, lighting systems, and occupancy, all of which are also detailed described in a BIM model. However, as a multifunctional tool, BIM is still very limited for conducting building energy design in depth. Meanwhile the building energy performance becomes increasingly important for modern building design. Therefore, it is essential to develop, test, and optimize BIM models for building energy simulation.

In this context, the aim of the IREP project is to use BIM technology for application to building energy efficient design. In this work, a BIM model of an office building is to be developed and applied to energy simulation. Moreover, a detailed investigation of different tools for BIM to BEM is to be conducted in this work. The results will help to optimise and accelerate the decision-making process for various energy-related construction and refurbishment measures using BIM and BEM.



Mögliche Arbeiten:

- Development of digital building model
- Optimizing and modifying the building models for energy performance analysis
- Conducting building energy simulations

Das solltest du mitbringen:

- Experience with BIM (e.g. Autodesk Revit)
- Knowledge of general building energy systems
- Knowledge of key building physics parameters and design principles in the construction
- In-depth knowledge of energy efficiency measures in buildings
- Knowledge of Energy Plus is desirable

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