



Development of an open-source cooling and heating load estimator for early building planning

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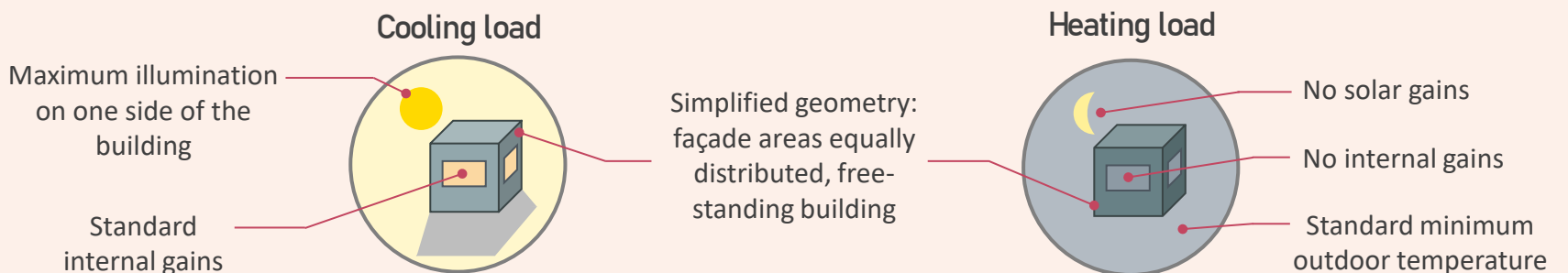
Introduction

- Most existing approaches for heating/cooling load calculations require either many inputs or are based on untransparent rules-of-thumb.
- There is a lack of **simple tools** to estimate loads with reasonable accuracy when very few information is available.
- Development of the open-source Python module **CHLOE (Cooling and Heating Load Open-source Estimator)** to address this issue.
- Applications** include:
 - ✓ Basic heating/cooling system sizing in the **earliest building planning stages** (LOD 0 to LOD 2)
 - ✓ Load estimations for building archetypes and samples used in **building stock modelling**, where e.g. not even the orientation is known

Materials and methods

Twofold simplification approach of the heating/cooling load calculation process:

- Use of typical input values from standards and empirical studies (German context), single-zone model
- Simplification of physical processes:



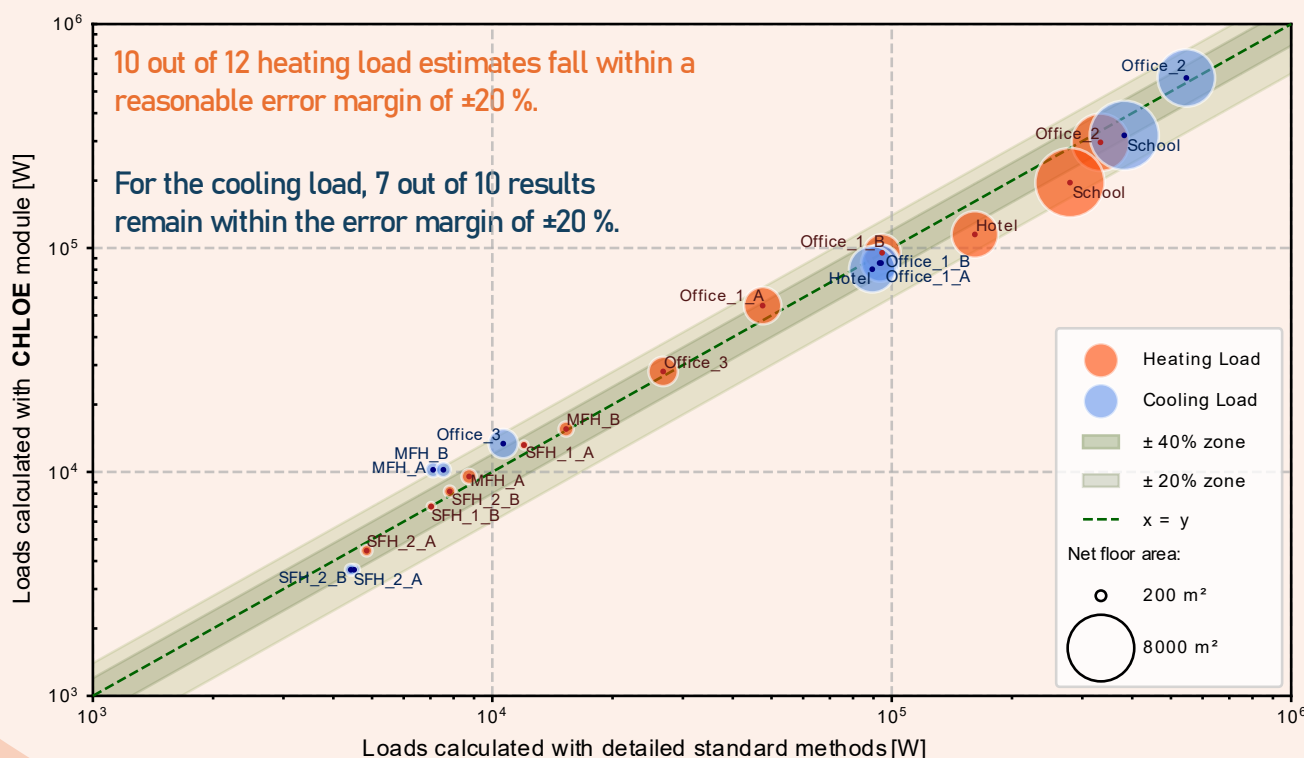
Case study application and results

- Verification: comparison of CHLOE's results to standard-conform load calculations from detailed methods
- 6 residential and 6 non-residential building variants were considered as case studies

Case study buildings



How good are CHLOE's load estimates compared to detailed standard methods?



GitHub link
<https://github.com/IWUGERMANY/CHLOE---Cooling-and-Heating-Load-Open-source-Estimator>



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