

## Enough LIGHT?

Summary of a potential study on behalf of  
**Vienna Housing Research**



### Motivation

External corridors have a long history in the Viennese housing tradition. Originally such elements could be found as an open access balcony, the so called "Pawlatschen". A passageway along an external wall, but fully integrated into the building shape was typical of the Wilhelminian style. Improved quality and availability of material made a full glazing of such access balconies possible. These new type of access balconies are visually a discrete building volume in front of the flats.

Building owners expect that these highly transparent but closed-in access balconies improve the thermal, visual and acoustic comfort of the sheltered apartments. Additionally they provide an attractive common space.

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## **Demand**

How such fully glazed access balconies in the local urban landscape of Vienna actually improve or reduce comfort is the central question of this potential study.

## **Methodology**

We defined a simplified model of an apartment which we then varied and calculated the effect of the variations on thermal and visual performance. As basis a loggia was geometrically defined within the limitations set by the building code of Vienna and ÖNORM B 8110-1.

A first question was if the geometric model in accordance to the requirements of the building code of Vienna meets the minimum daylight factor required by DIN 5034-4. The answer turned out to be no. We then made the apartment less deep, such that the minimal daylight illumination was fulfilled.

Next, the thermal und optical affects of the loggia on the apartment under different compass orientations were studied, considering the:

- Summer cooling load (kWh/m<sup>2</sup>a)
- Winter heating load (kWh/m<sup>2</sup>a)
- Daylight penetration (To quantify the sunlight availability in the apartment a new factor, developed by the authors was applied.)

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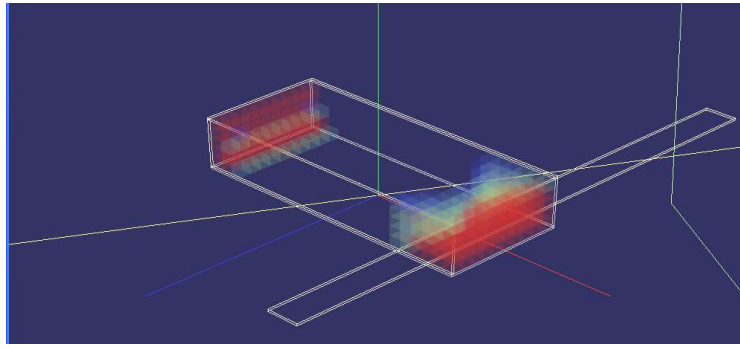


Figure: Perspective View of an exemplary Sunlight Penetration

Finally, the potential benefits of varying the geometry from the base, like changing the room depth or changing the window dimensions were studied.

## Results

The results have been presented for each compass orientation of the loggia. It is thereby possible to see the affect of a fully glazed loggia on thermal comfort and sunlight availability in Vienna. These results can be an aid to planners and building owners, considering the glazing of loggia in existing buildings, or the construction and orientation of buildings by new constructions.

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