



The impact of ventilation systems on indoor air quality and the interaction of the occupants with these systems: A study conducted on Belgian residential buildings

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Research illustrates that people spend an average of 87% of their time enclosed in buildings and more precisely 69% of their time at home. With the current direction of the construction sector buildings are becoming more and more restricted in energy consumption, resulting in highly air-tight constructions.

These factors increased the concerns of the scientific community over its effects on IAQ.

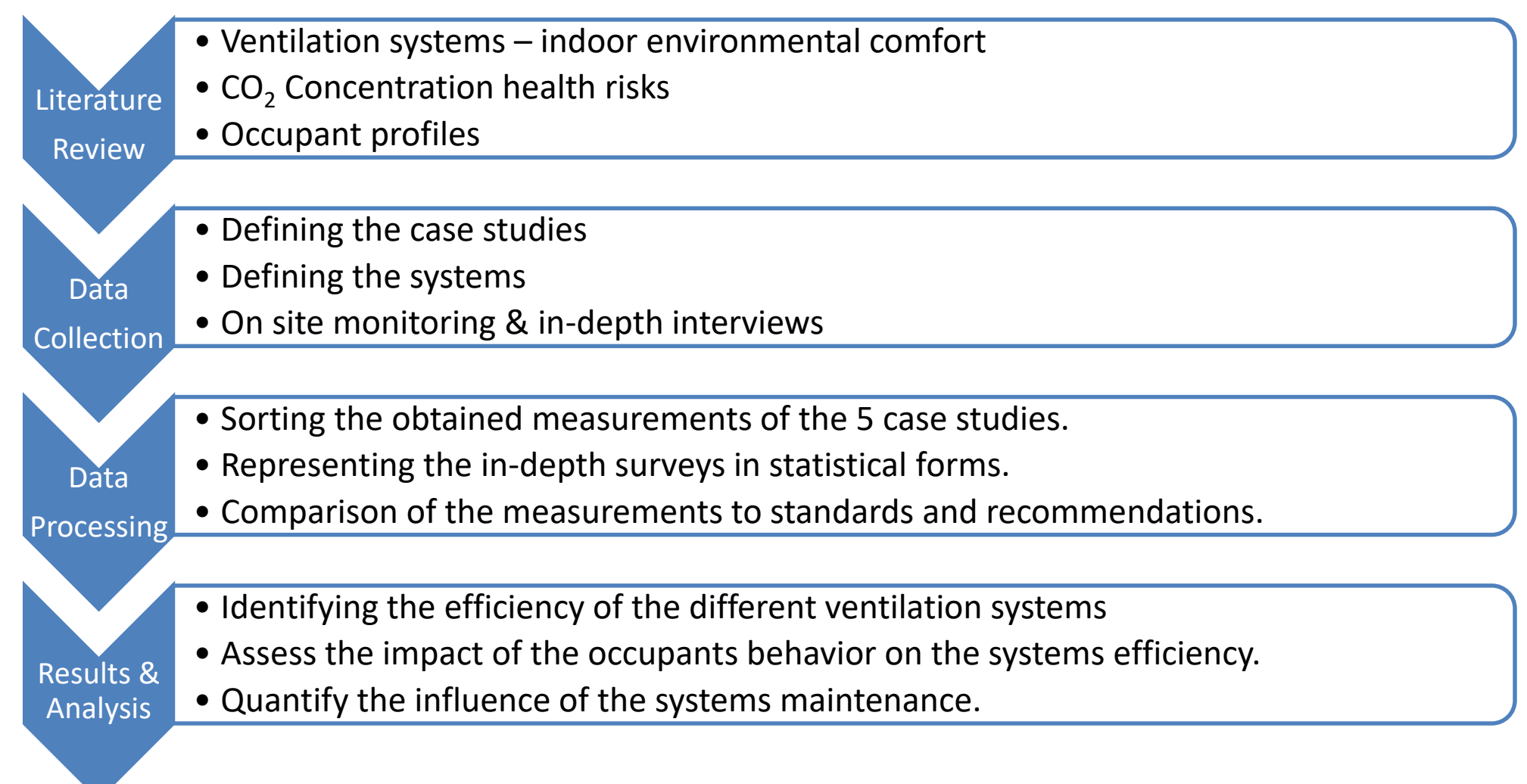
Ethnography-Occupant behavior-Residential Buildings Monitoring-Post-Occupancy Evaluation-User Satisfaction

- Numerous POE studies highlight the fact that high-performance buildings have an effect on users' indoor environmental comfort.
- The satisfactory rate doesn't exceed 50% when it comes to IAQ.
- One of the main factors contributing to air quality is the ventilation system.

OBJECTIVE

- Assess the efficiency of different ventilation systems on IAQ using quantitative and qualitative data extracted from 5 case studies in Belgium.
- Study the interaction of the occupants with these systems in regard to the operation mode, maintenance frequency and personal sensation.

- The administrations within the construction sectors.
- The decision makers in the design process.
- What is the efficiency of the different ventilation systems on air quality and energy consumption?
- How does the occupant interact with the ventilation systems,
- What is the impact of the occupants on the systems' efficiencies?
- First of its kind within the Belgian context that studies the impact of occupants' behavior on the IAQ by creating a link between the occupants' profile, behavior pattern and ventilation system.
- Analysis based on 5 real-life cases using a combination of qualitative and quantitative data.



- The results confirm that occupants' behavioral pattern has more impact on the ventilation systems than the maintenance factor.
- The impact of the occupants is proportional with the degree of the performance of the system.
- Mechanical ventilation systems prove to be most efficient ventilation systems when it comes to IAQ distribution and satisfaction rate.
- Personal control on the ventilation systems has a major contribution on the occupants' satisfaction rate.

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