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RENVELOPE

A SHOWCASE OF SERIAL RENOVATION WITH INTEGRATED TECHNOLOGIES

A Demonstrator in the Heart of Vienna

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SOZIALBAU AG

NUSSMÜLLER.ARCHITEKTEN



RENOWATE

IBW

evon



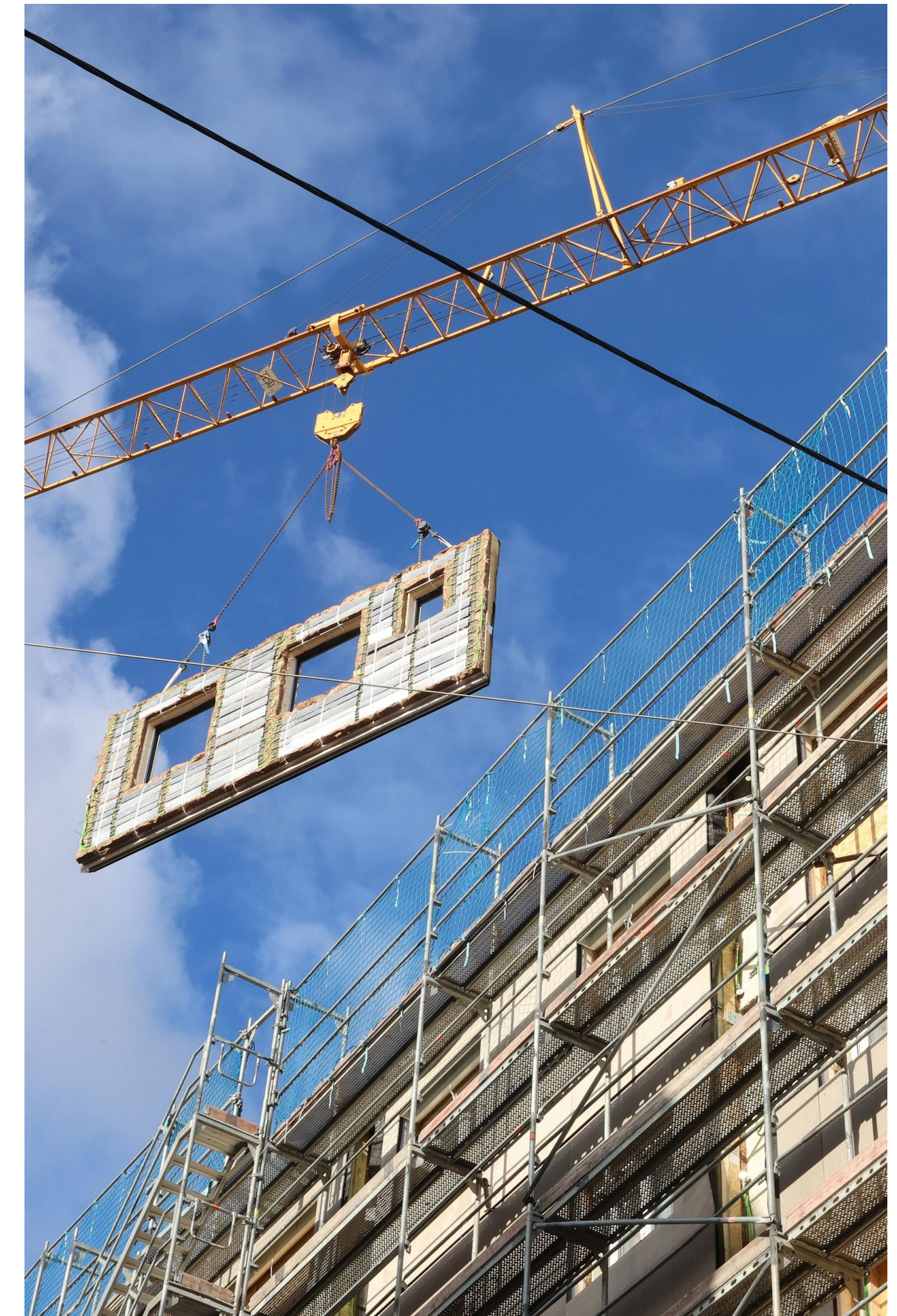
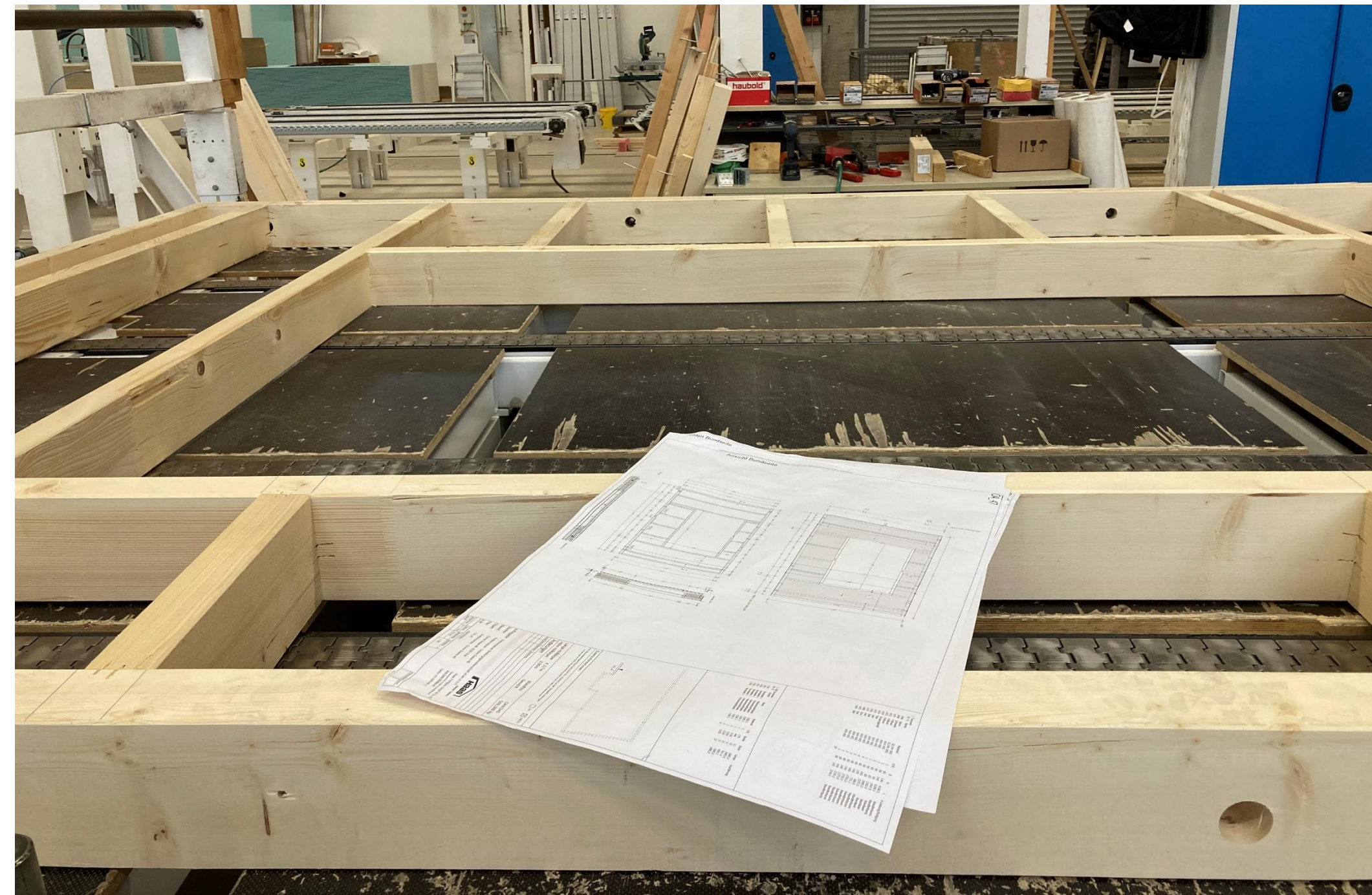
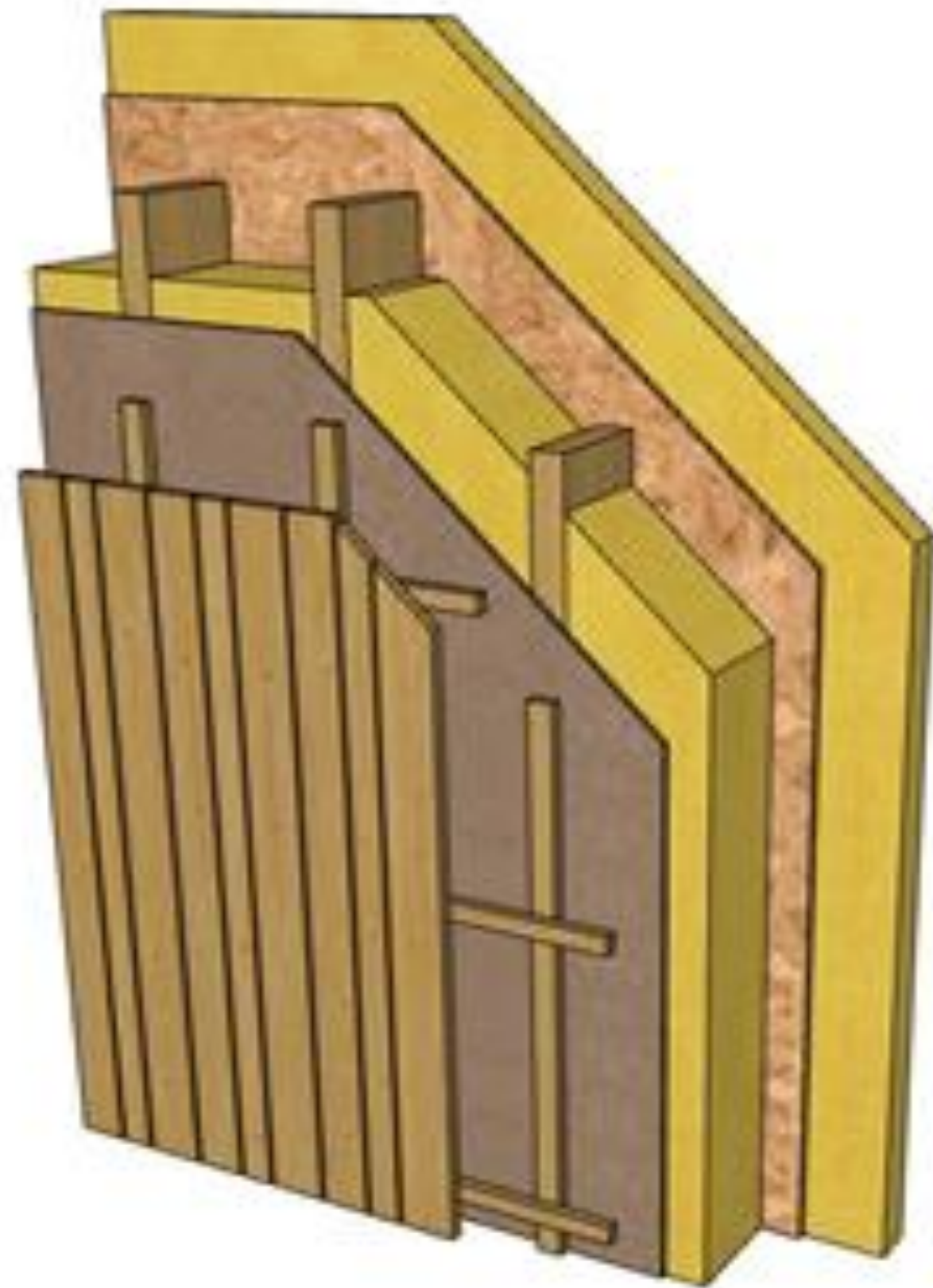
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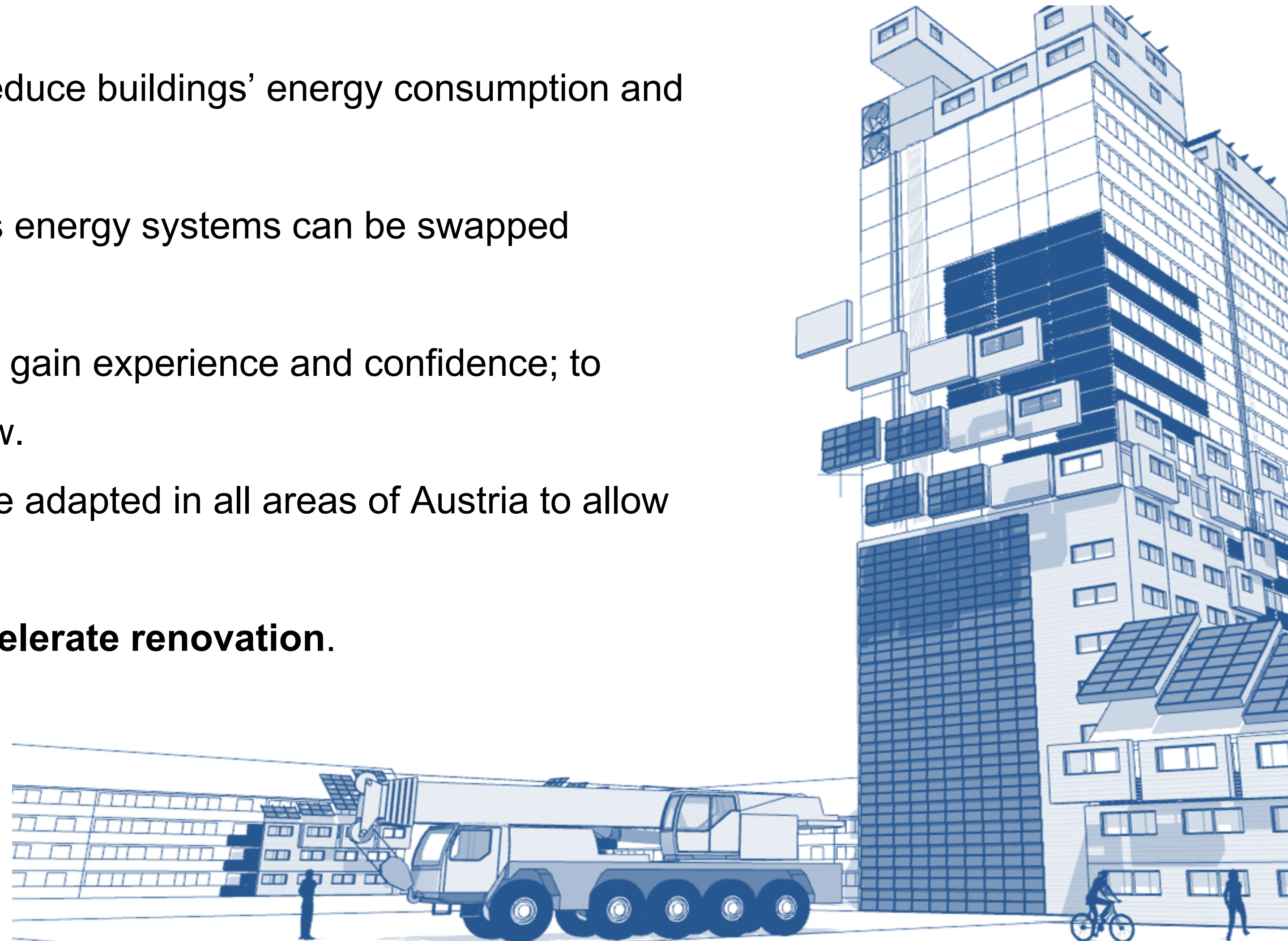
The basics: serial renovation in a nutshell

1. Façade-panels with insulation
2. Prefabrication in controlled environments
3. Time-saving façade installation on-site
4. Non-invasive renovation method



RENVELOPE – What are our aims for serial renovation?

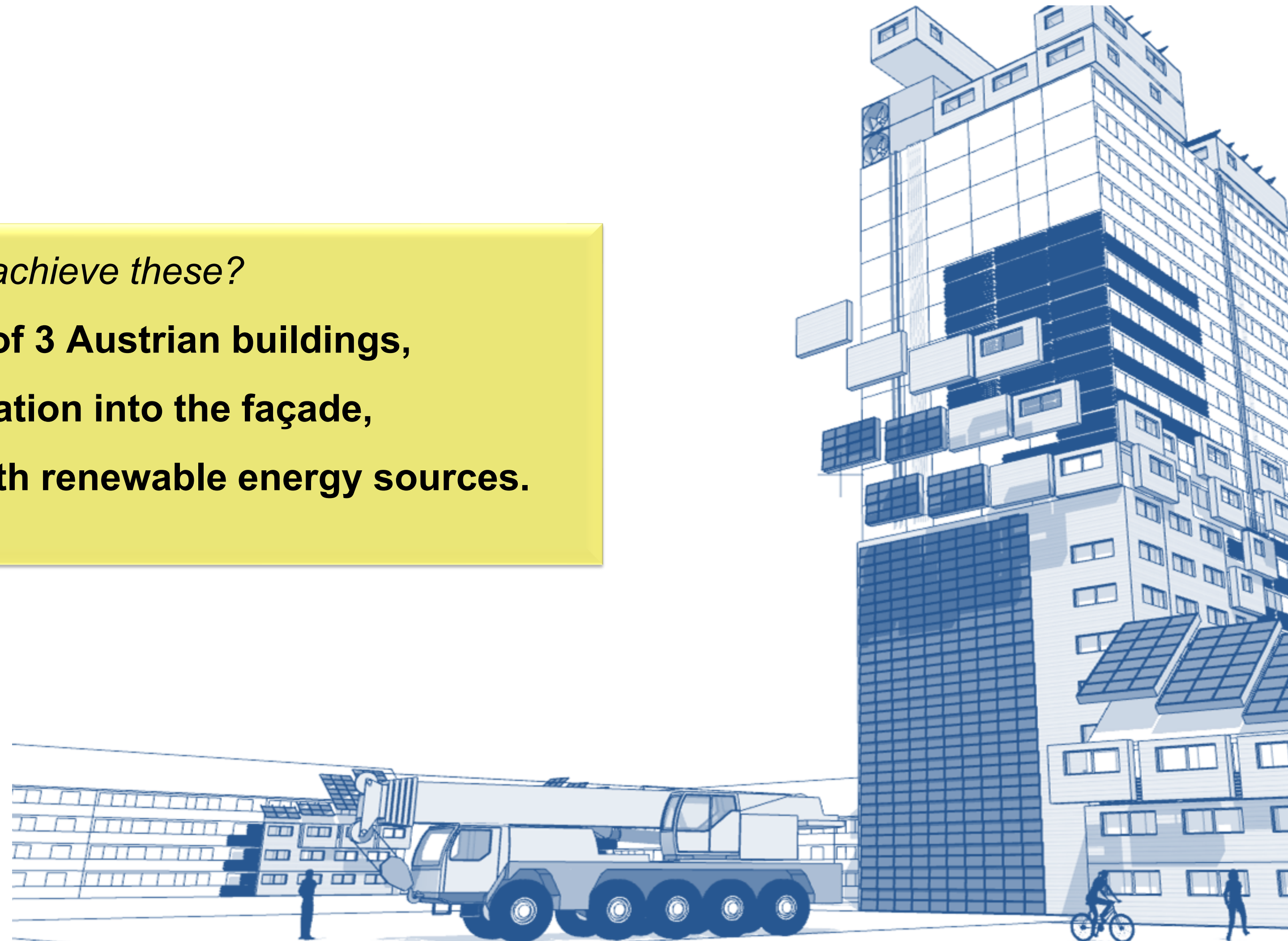
1. We want to show that we can reduce buildings' energy consumption and CO2 emissions by 80%.
2. We want to show how building's energy systems can be swapped without the extra pain.
3. We want Austrian companies to gain experience and confidence; to reduce prices through know-how.
4. We want the building code to be adapted in all areas of Austria to allow for serial renovation.
5. **We want to pave a way to accelerate renovation.**



RENVELOPE – the path to success...

How are we going to achieve these?

- **serial renovation of 3 Austrian buildings,**
- **technology integration into the façade,**
- **In combination with renewable energy sources.**



The three demonstrators* of RENVELOPE

(*before renovation)

Arenberggasse 4 Vienna



Reference: Nussmüller.Architekten

Grüne Gasse 48 Graz



Reference: Rottenmanner

Landesberufsschule Knittelfeld



Reference: LIG/ILS

Three demonstrators of RENVELOPE

(*after renovation)

**Arenberggasse 4
Vienna**

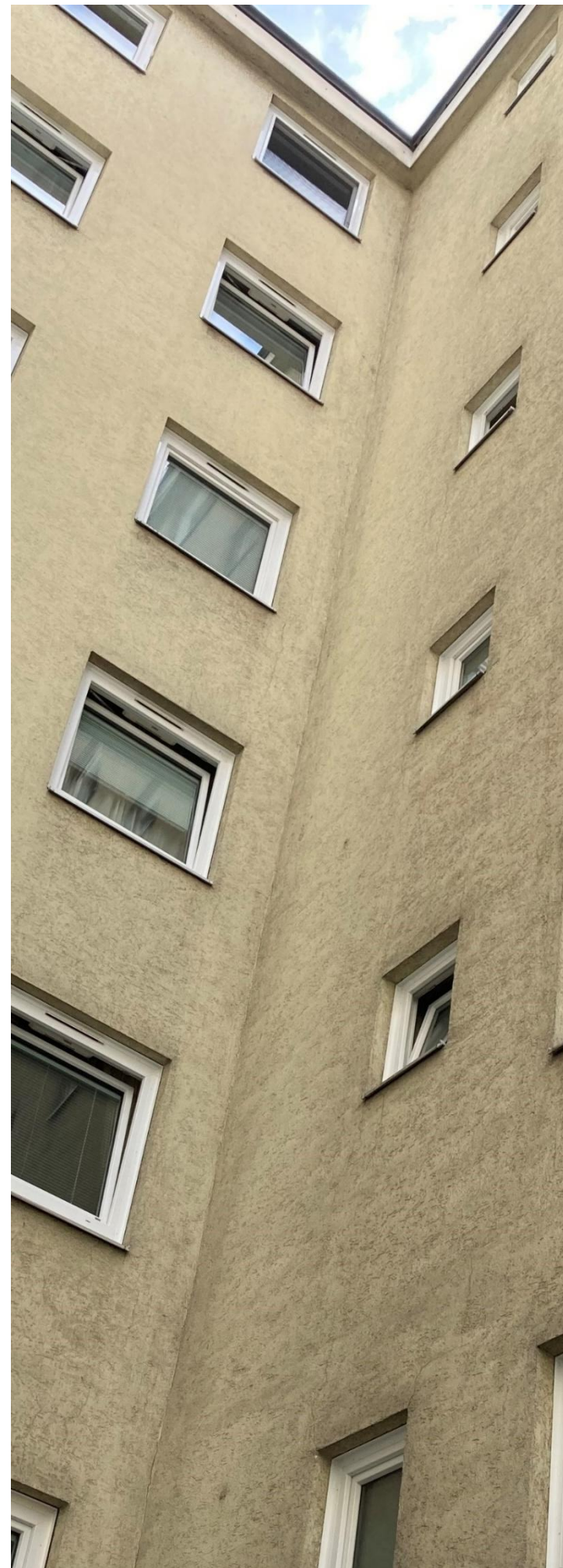


Reference: AEE INTEC



Reference: LIG/ILS

Demonstrator: Arenberggasse 4, Vienna



Reference: AEE INTEC



Reference: Nussmüller.Architekten



Reference: googlemaps

Demonstrator: Building Facts before renovation

Sozialbau AG

1977

Reinforced-
concrete walls

7 storeys above-
ground,
1 storeys
underground

Building class 5

accessible court-
yard

triple-glazed PVC
windows

Gas for DHW and
heating

Total residential
floor area
1,628.30 m²



24 Apartments
social housing!

Renovation aims

Façade

- Insulation with prefabricated modules
- Building component activation
- Solar shading

Energy system

- Combination of deep boreholes with a heat pump and air-source heat pumps

Building management system

- model predictive control for energy optimisation

Roof refurbishment

- Reinforcement of the roof structure
- New roofing material: Prefalz
- Installation of photovoltaic systems (south-facing roof) with a total capacity of approx. 10.6 kWp

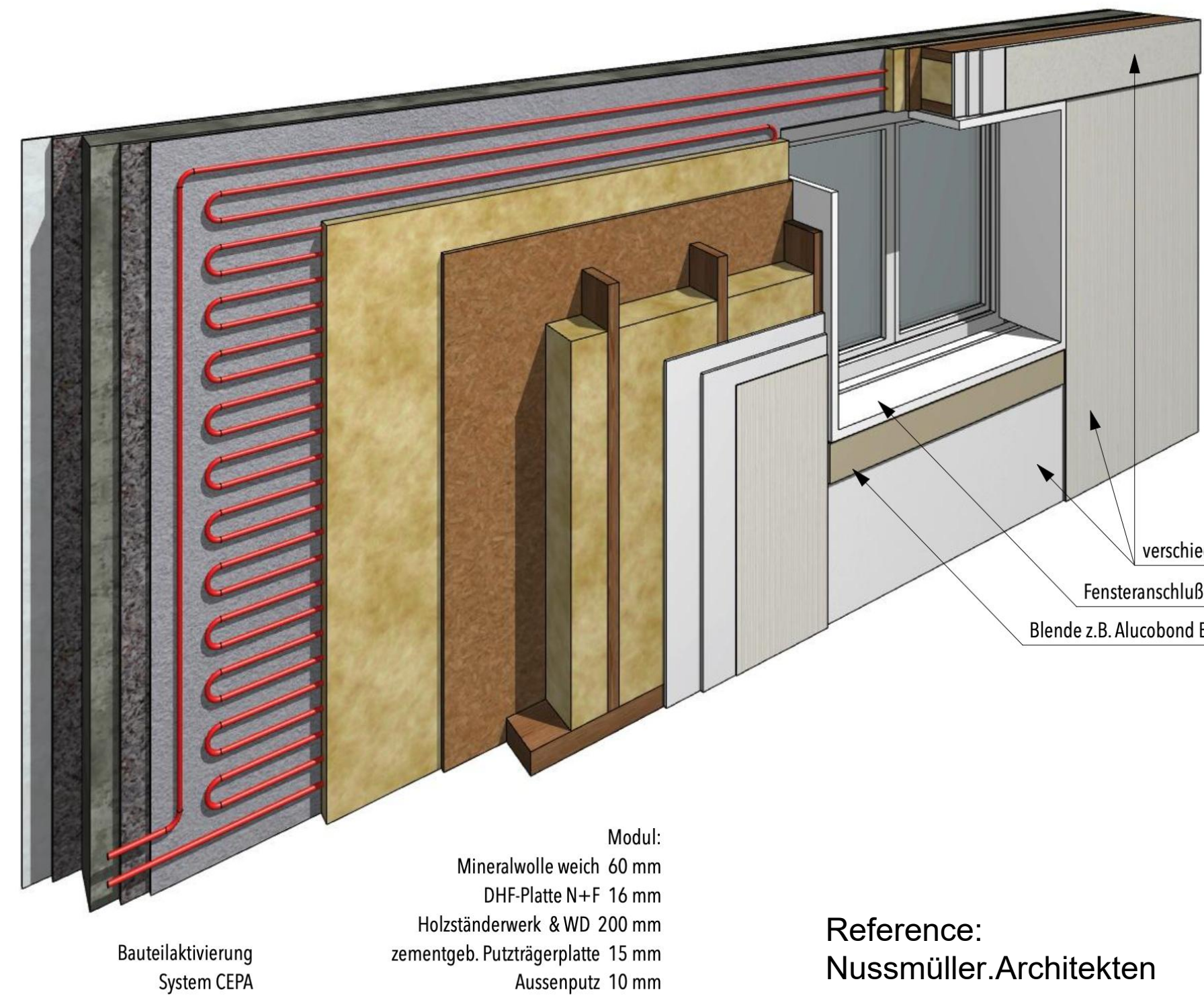
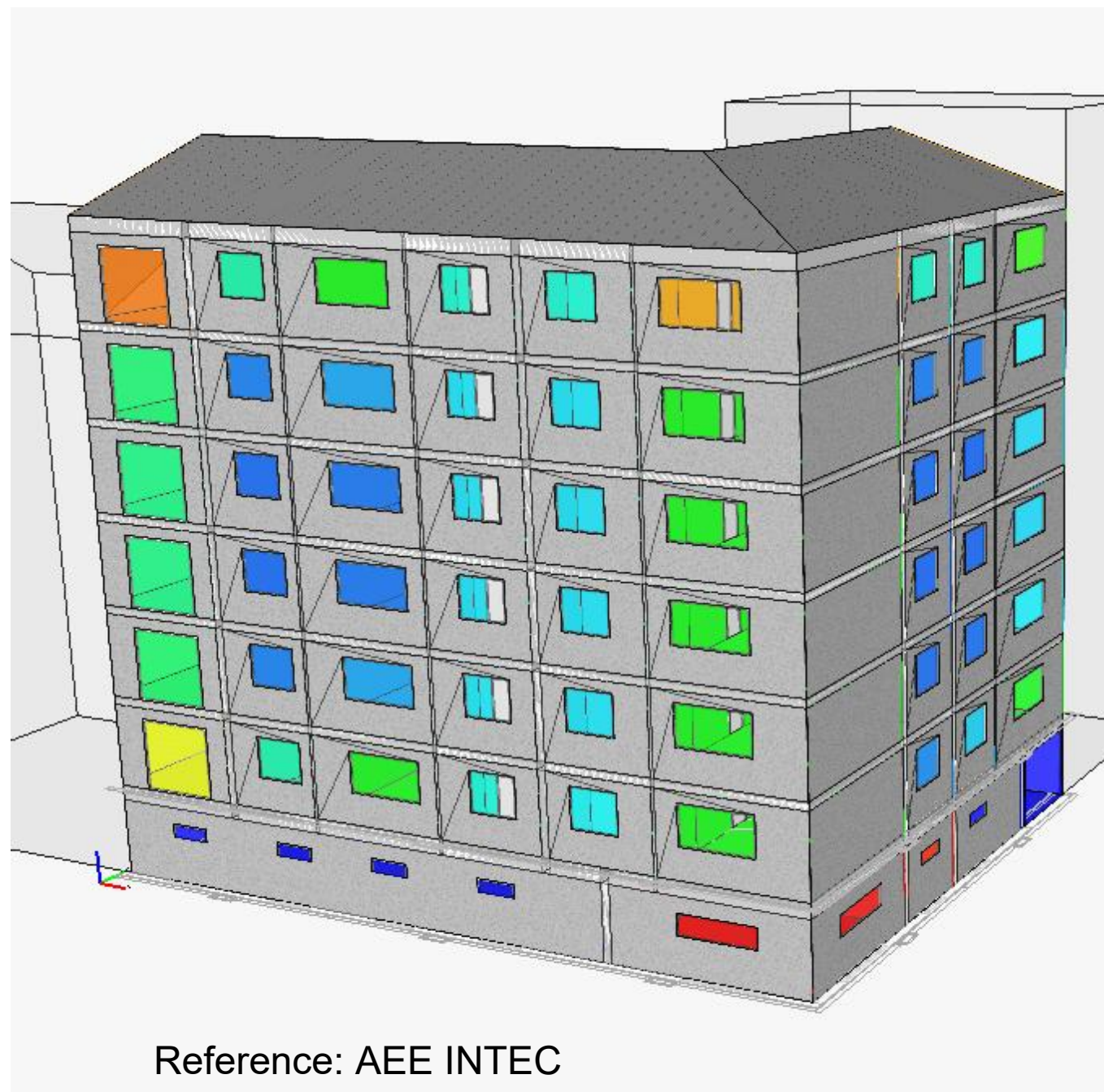
Living comfort

- Addition of French doors with Juliet balconies.
- Minimal-invasive renovation process

Background research for this demonstrator, just to name a few...

Testing of the CEPA-System (building component activation)

IDA ICE Simulations



Architectural integration



Demonstrator renovation process

- The planning was completed by architects: **Nussmüller.Architekten.**
- The renovation contract was given to **RENOWATE.**
- The façade modules were built by **Weissenseer.**
- The building heating system was planned and led by **TBH.**
- The building energy management system was executed by **evon.**

- **Schedule:**
 - Construction start: autumn 2025;
 - The installation phase of the panels was **approx. 3 weeks.**
 - Planned completion: end of 2025 – Actual Completion: two months later.

- **Status:** finalization and commissioning of all systems.



Renovated demonstrator



Renovated demonstrator



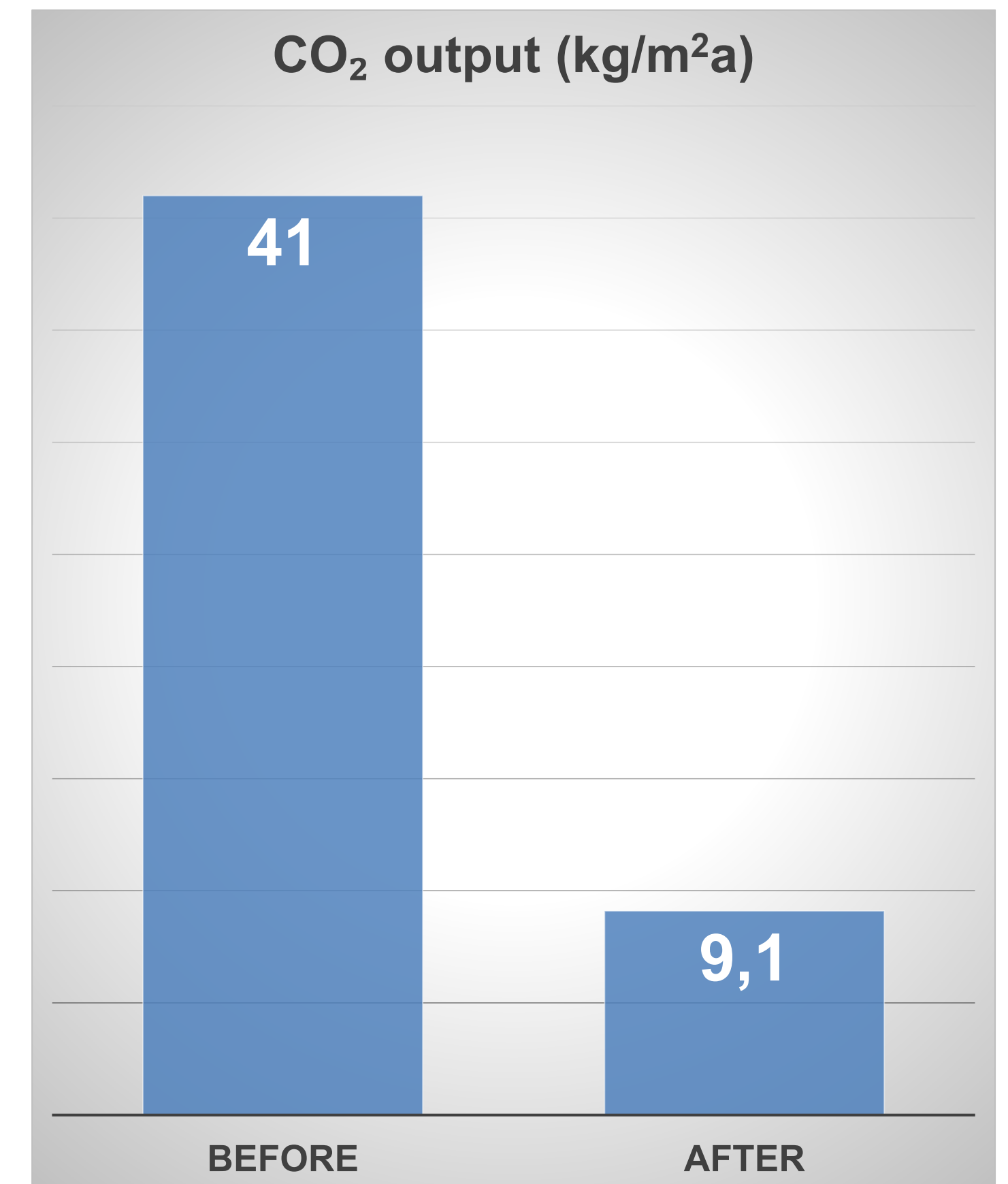
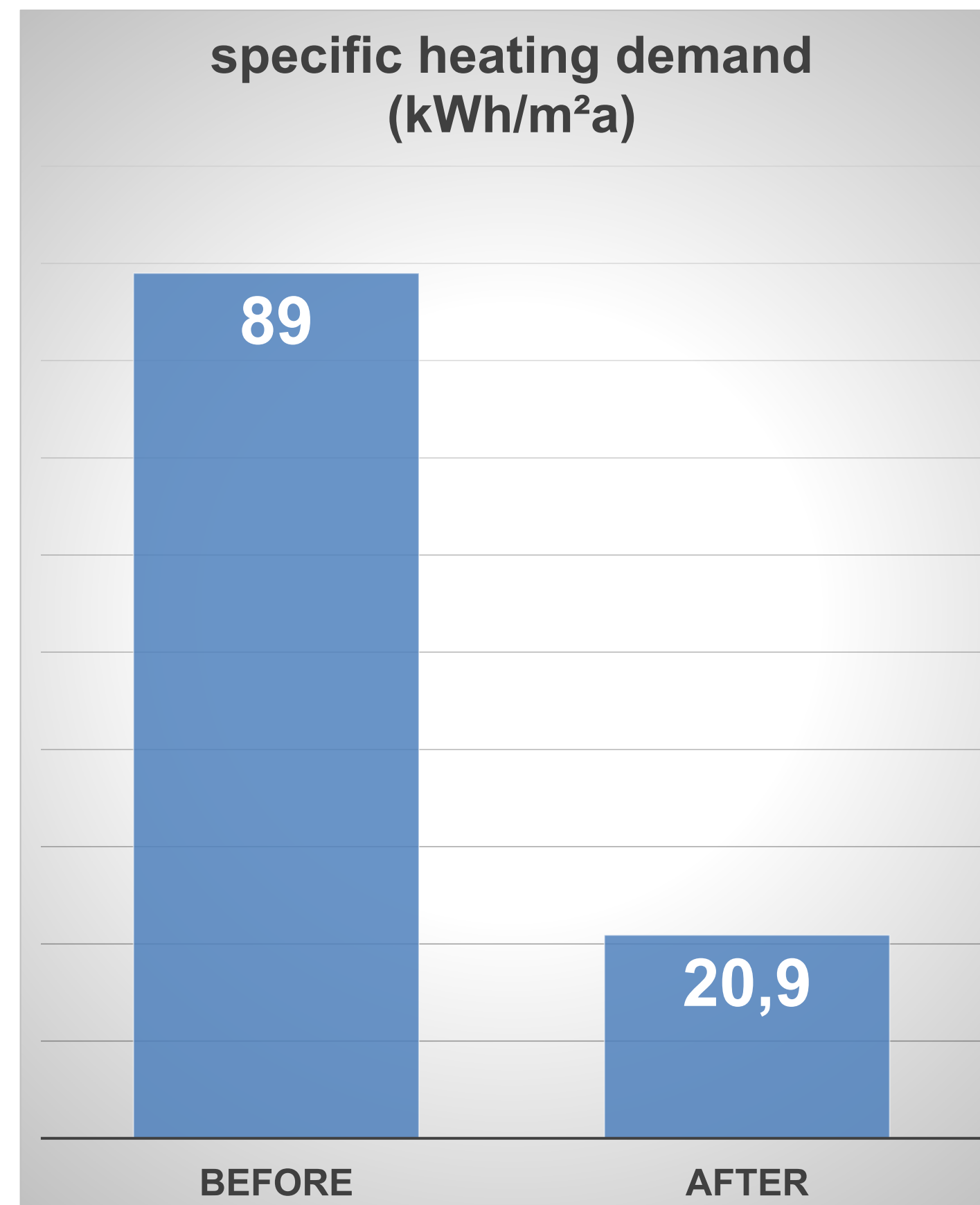
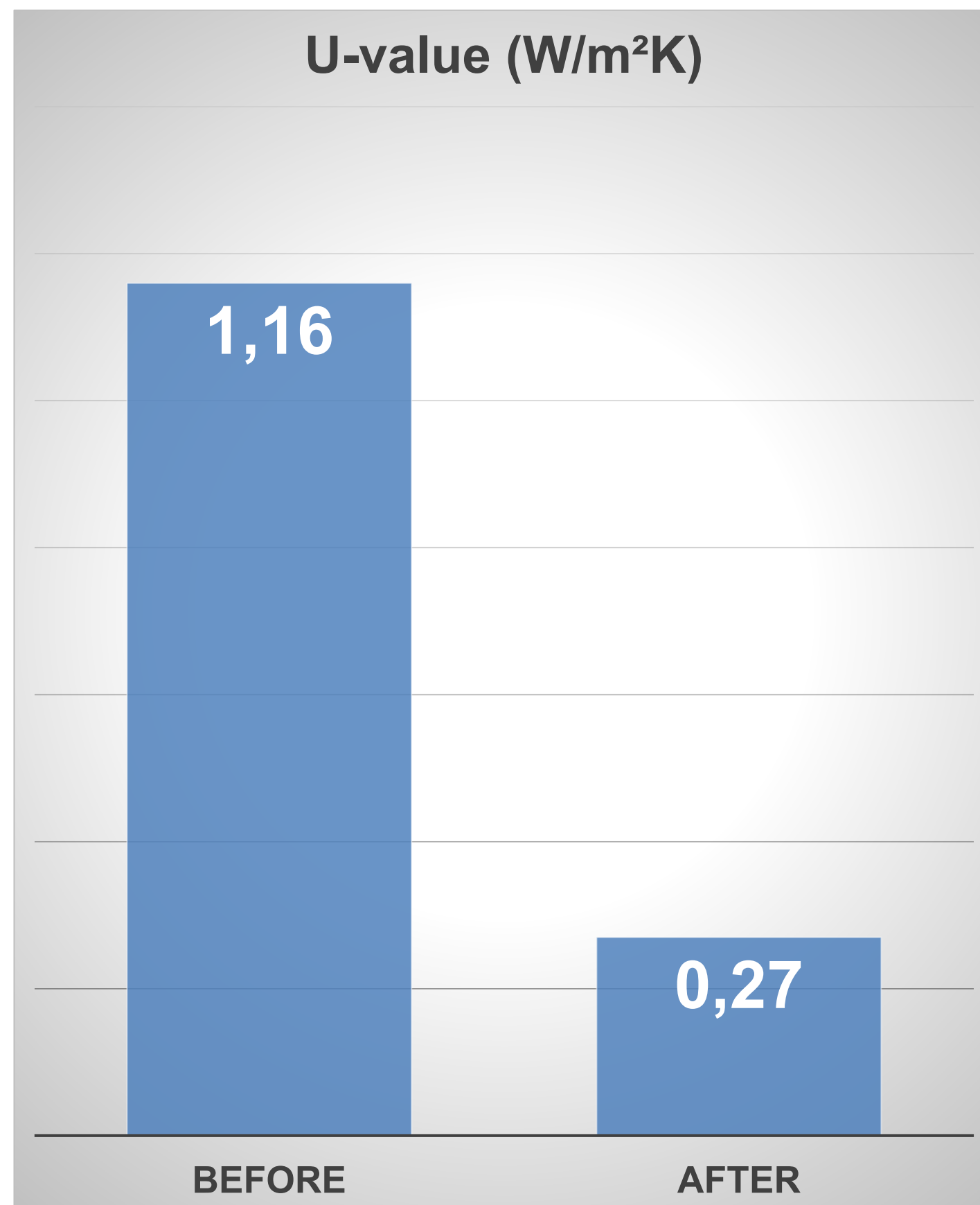
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RENVELOPE - Demonstrator Arenberggasse 4, Vienna

Building Physics in comparison: Before and After

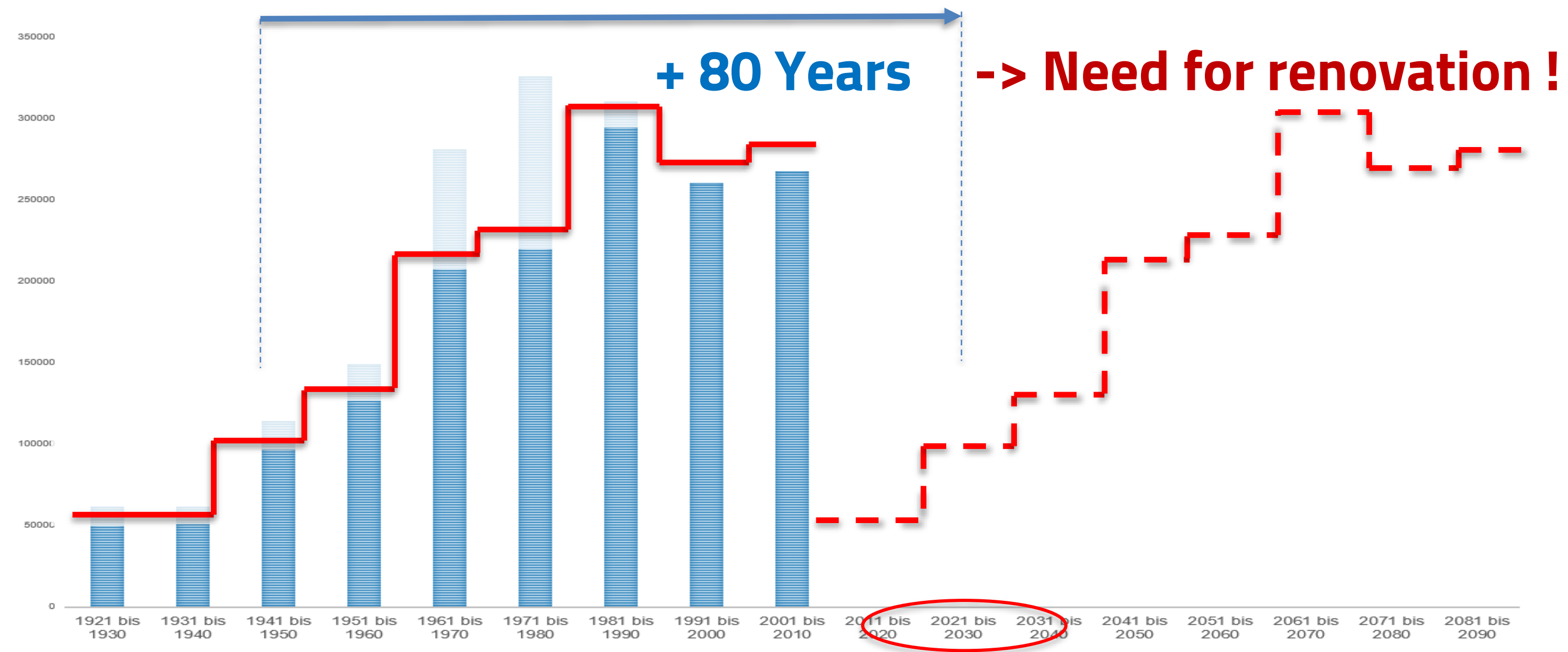


Serial Renovation Potential in Austria

How many buildings in Austria are suitable for serial renovation?

-> The answer will be presented in the next presentation by Alexis Mundt.

Study by IIBW





AEE INTEC

IDEA TO ACTION

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