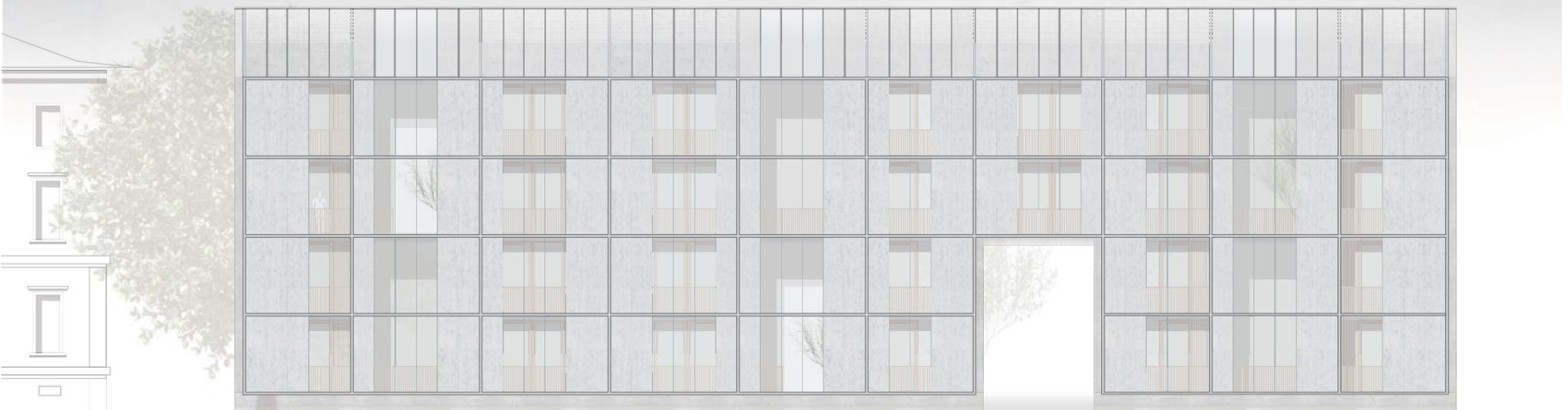
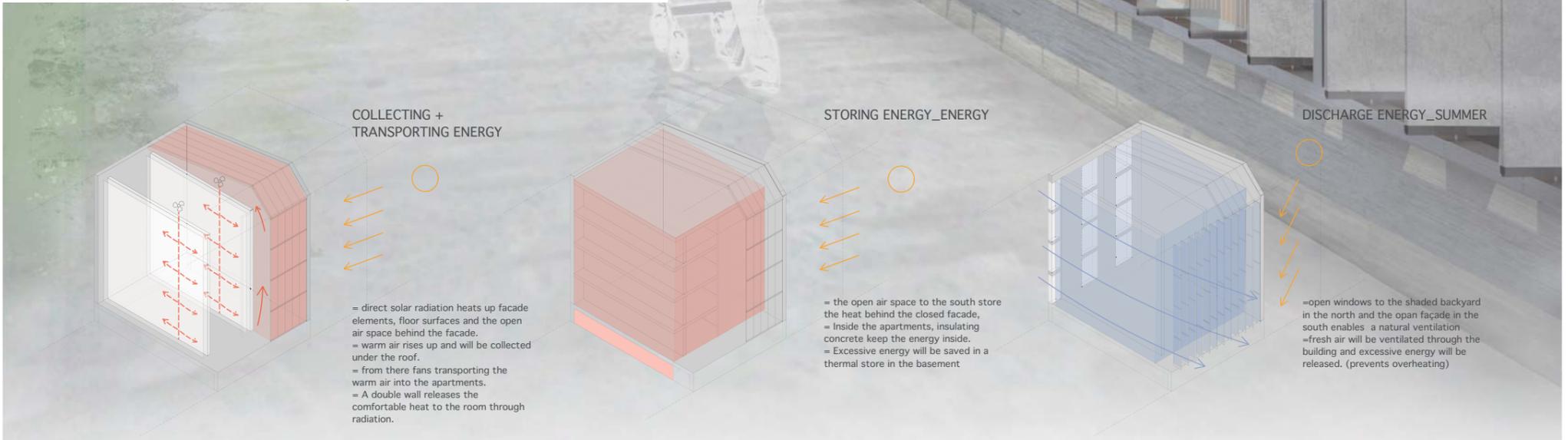
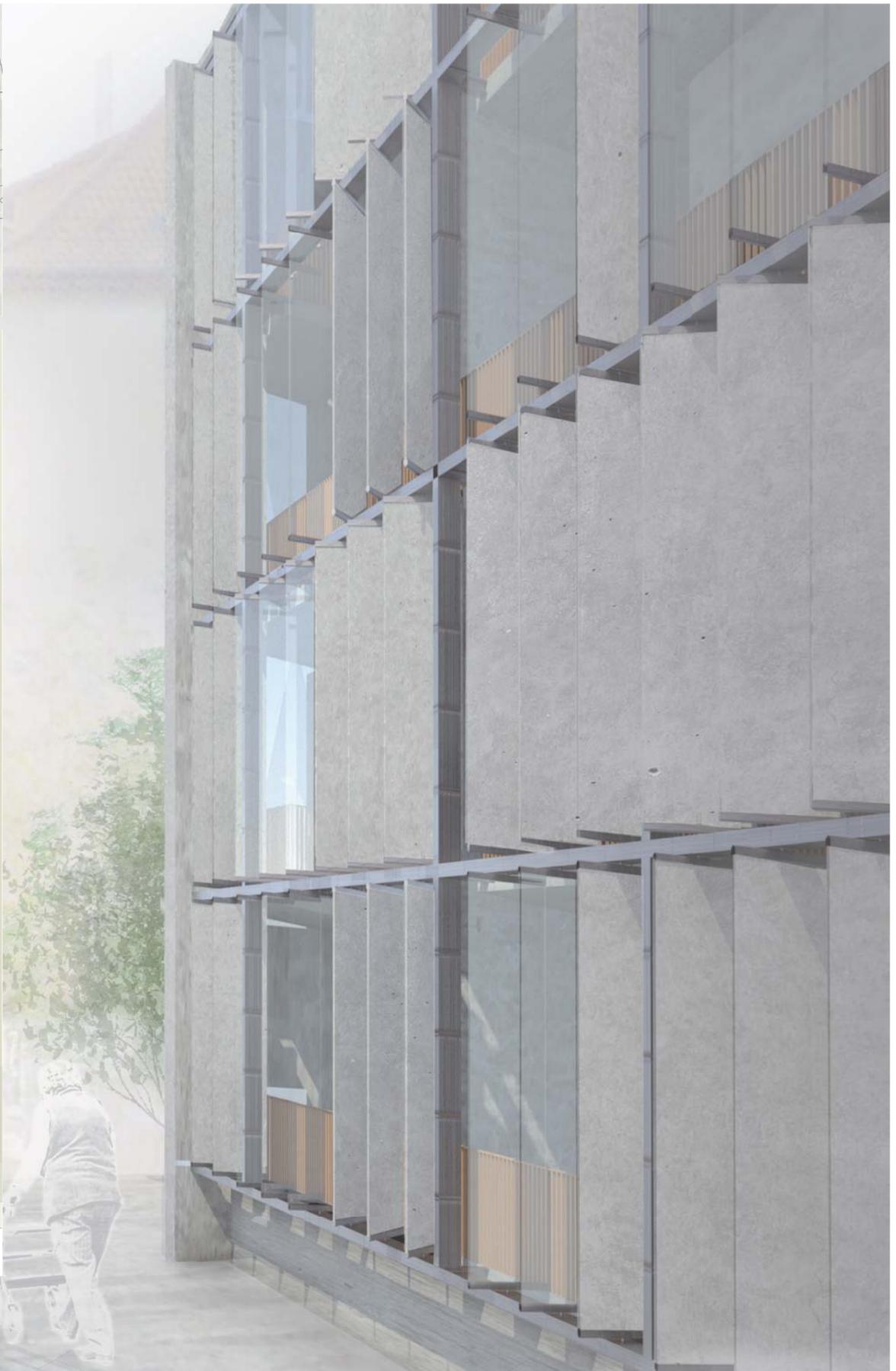
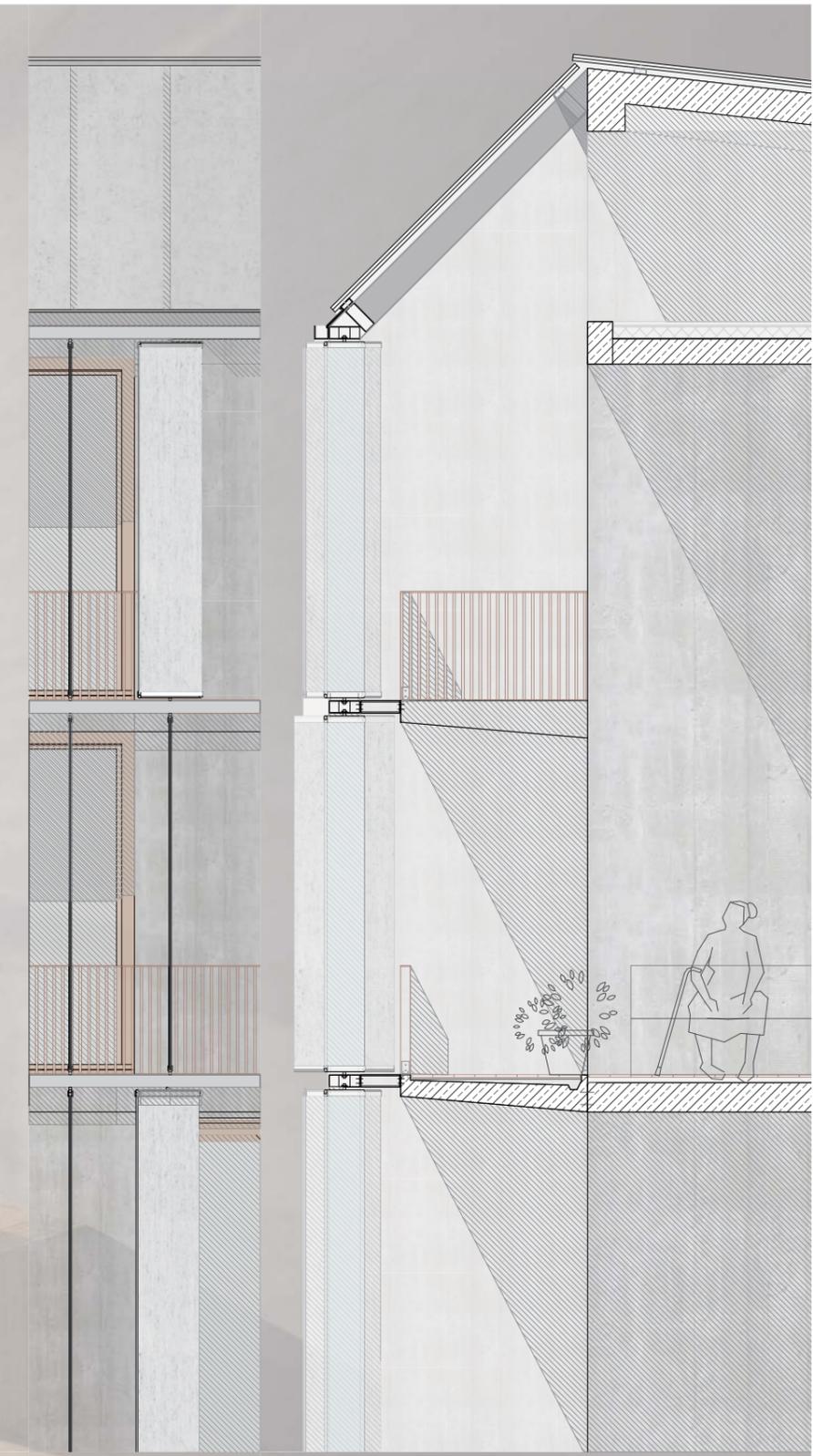


**CONCRETE FLEXIBLE**

Concrete is a versatile and flexible material. Depending on the concrete admixture, the energy properties can change for different applications. In this project the advantages of different types of concrete are used for different functional and spatial requirements. The residential building is not planned on the green land but rather in an urban space. There is a public side to the street in the south, and a more private space to the north. Just the south side allows to absorb a lot of the solar energy, but it can also come easily to an overheating. Therefore the topic "flexible concrete" is taken up again by the design of the facade elements consisting of Ultra High Performance Concrete. It is easy to change its position for more or less input of solar energy. The material is very weather-resistant, very lightweight and protects the apartments like a second skin. This facade construction will reach a U-value of 0,42 W/m<sup>2</sup>K. With outside temperatures of -10 degrees in winter a steady inside-temperature of 18 degrees can be achieved.

The apartments are planned for the particular needs of old and disabled people. In the different levels private apartments alternate with public common rooms. In order to create a zone for social relationships all functions are connect by terraces and balconies. This project shows how a sound life in concrete can be achieved. It also displays how energy-efficient concrete can be used and how flexible the material can be adopted to react to different climate changes.

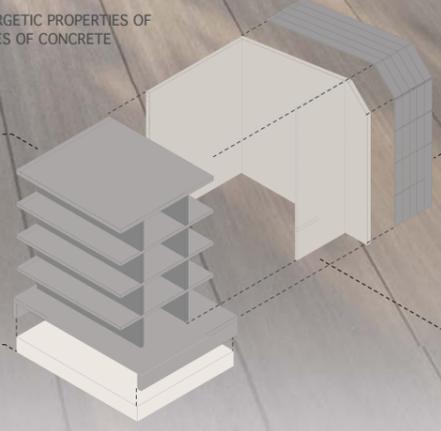




**EXPOSED CONCRETE (ABSORBS ENERGY)**  
 - Constructive element  
 + gives pleasant cooling to the common rooms  
 + the mass moderates indoor temperature fluctuations  
 + reduces spikes in temperature

**ENERGETIC PROPERTIES OF TYPES OF CONCRETE**

**RECYCLED CONCRETE (STORES ENERGY)**  
 - Thermal storage in the basement  
 + re-use of concrete materials  
 + air in the intermediary spaces absorbs the excess of energy generated by the optimized facade



**ULTRA HIGH PERFORMANCE CONCRETE (COLLECTS ENERGY)**

= UHPC facade elements in the south  
 + silicadust, quartzflour and sand reduce the pore volume to 1,5-1,8 % vol.  
 + water-repellent through no microcracks and a low porosity  
 + 30 - 50% lowered self-weight  
 + lighter constructions  
 + high strength and load capacity  
 + cobased permanent  
**INSULATING CONCRETE (ISOLATES ENERGY)**  
 = casing the inner rooms to the west, east and to the shade's backyard in the north  
 + light-obscures like expanded clay, increase the void air content of the insulating concrete to 880 bis 960 kg/m<sup>3</sup>  
 + homogeneous  
 + no further insulation material necessary  
 + no heat-bridges



**Dachaufbau\_Kaltdach**

Ultrahochfesterbeton/Glas	25-50mm
Unterkonstruktion, Betonfertigteile	40mm
Dachraum Kalt, entlüftet	250mm

**Wohnraum:**

Bitumbahn 2-lagig	3mm
Wärmedämmung	100mm
Dampfsperre	200mm
Betondecke	200mm

**Gemeinschaftsraum:**

Betondecke	200mm
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**Wandaufbau:**

Plattenabdeckung: Ultrahochfester Beton/Glas	25mm
Stahlrahmenkonstruktion + Drehelement VARIOMATIC elektrisch steuerbar.	200mm
Luftpufferraum Balkonfertigteile Isokorb	1,5m
Holzelement+Öffnungen/ Dämmbeton	200mm

**Bodenaufbau:**

Sanitär_Küchenbereich:	
Zementestrichboden	15mm
Unterlagsboden	45mm
Trennlage	20mm
Trittschall	200mm
Bodenplatte	200mm
Wohnbereich:	
Holzdielen	20mm
Unterlagsboden	40mm
Betonplatte	200mm

