De Wever - A Textile Community Lab

Material research and textile production laboratory with integrated residence

Graduation Presentation | Lea Scholze | 02.07.2019
What is the Intimate City?
Passage des Panoramas
Passage at Palais Royal

Passage des Panoramas

People waiting outside Gare de l’Est
Antwerp & Het Eilandje
View into Spanjaardsteeg
The Productive City
where producing industry and housing can coexist
"Today, textile is much more than just producing fabrics!"
Knitting Machine
Circular Knitting Machines
Where is the intimacy in a textile production space?
The Production & Textile Lab Space
Residence
View from Existing Area towards the new built
First Floor Corridor with Lignotrend ceiling
First Floor Corridor with Lignotrend ceiling
Accessible roof garden ZINCO 'Urban Farming'
- Specific soil for grass & planting
- Stabilodrain® SD 20
- Separation fleeces geotextile TGV21
- Thermal insulation XPS
- Root resistant sealing foil
- Pressure distribution board
- Cross laminated wood case element LIGNO Rippe Q3 BV
- With cavity for installation or weight fill
- Additional board for fire stability
- Integrated acoustic absorber
- Acoustic strip profile
- Concrete beam 20 cm
- Total ceiling thickness: 750 mm
- Total thickness: 1150 mm

Concrete Wall:
- Facade brick
- Lathing w = 50 mm
- Breather membrane SD = 0.1
- Rock wool facade insulation
- Concrete wall
- Total thickness: 480 mm
- U-Value: 0.215 W/m²K

Detail | Wall to Roof connection
Wood-Concrete Composite Floor uses benefits of timber and concrete in their span directions enabling larger spans as well as in terms of fire protection and excellent acoustic insulation.

Interior cross-laminated timber walls

Lignotrend Acoustic Ceiling System - horizontal load transfer

Concrete Beams - horizontal load transfer

Concrete Walls - horizontal load transfer

Concrete columns - vertical load transfer

Exterior Timber Frame Construction Walls

Concrete Walls - horizontal load transfer

Concrete columns - vertical load transfer

Concrete Beams - horizontal load transfer

Concrete walls - horizontal load transfer

Concrete columns - vertical load transfer

Concrete Beams - horizontal load transfer

Load Bearing Materials Diagram
Timber Wall:

- Facade brick: 50 mm
- Lathing w = 50 mm: 20 mm
- Timber construction lumber w = 60 mm: 150 mm
- OSB panel: 20 mm
- Lathing w = 60 mm: 45 mm
- Insulation between the construction: 45 mm
- Interior plaster board: 12 mm

Total thickness: 430 mm
Detail 1:10 | Metatherm vertical sliding window system in timber facade connecting to wood-concrete composite floor
Detail 1:10 | Solarlux Bi-Folding Glazed Window in Wood
Light green roof ZINCO Floraset® FS75 with Solar Panels

- specific soil for moss & small plants: >25 mm - 55 l/m²
- Floraset® FS 75: 210 mm
- separation + protection mat TSM32: 25 mm
- thermal insulation XPS: 55 mm
- root resistant sealing foil
- concrete bond C25/30: 146 mm
- cross laminated timber element: 140 mm
- Total thickness: 700 cm

Solar Panel attached to the Floraset® FS 75
Photovoltaik + Solar Thermal Panels

Sunlight is used for the generation of energy and warm water. Liquid is running through cavities in the Thermal panels and is heated by the sunlight.

The warmed up liquid is carried through the building to the basement where the heat can be stored and simultaneously the cold liquid is transported back up to the solar panels.

Sun Protection

The building is oriented east west, is however set between two existing buildings on the lower floors. Towards the east, the residential floors offer loggias which are set back by 1.90m due to privacy regulations. Simultaneously this also enable sun protection due to a backward inclined window position. Additionally moveale sunscreen panels are located in front of the loggia that can be placed according to demand.

Additionally all facades: east, west, north and south provide moveale horizontal timber panels which are located in front of the loggia that can be placed according to demand for sun and privacy protection.
Heating

The heat generated by the sunlight is stored in the basement. Additionally to Solarthermal Panels a Heat Pump supports the heating cycle of the building. Heating tubes within the screed of the floor enable comfortable and easily controllable room temperatures.

Industrial Waste Heat

The weaving machines located on the ground floor of the building generated a lot of energy due to their constant movement. If the cooling system of the machine is connected to the overall heating/cooling circulation the waste heat can be used in the overall heating system.
Ventilation

Throughout the residential floors (3-6) natural ventilation is offered as a primary fresh air source. All windows on these floors are operable to let fresh air in and let heat leave.

Within the window structure additional ventilation openings enable constant ventilation also while windows are closed.

On the textile lab levels (1-2) mechanical ventilation is located within the ceiling structure lignotrend. The cavities within the structure offer the possibility for ventilation tubes to be hidden.

Two ventilation shafts located next to the elevator enable air circulation. Furthermore fresh air is let in through a grid in the south facade hidden behind the perforated brick. The used air is again released in the north of the building through the a grid in the facade hidden behind the perforated facade.

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