Sanitary block of the Itterbeek Chiro

In 2018 Rotor was contacted by the municipality of Dilbeek to intervene in the festival “De Blik van Breugel” celebrating the 450th anniversary of the death of the famous painter Pierre Breugel, in Itterbeek, on the outskirts of Brussels. This festival took place from the beginning of April to the end of October 2019.

Rotor was contacted to design the pavilion for the festival (more information about the pavilion). This project was the perfect opportunity for the commune to highlight the use of reused materials.

It turned out that the municipality of Dilbeek was planning to build, at the same time, a new sanitary block for the members of the Chiro d’Itterbeek (youth organization), their premises being located in an old L-shaped farmhouse in the center of Itterbeek, right in front of the small church of Sint-Anna-Pede. This project could be perfectly combined with the need to provide sanitary facilities for the visitors of the festival ‘De Blik van Breugel’. So a second assignment - the construction of a sanitary block next to the old farmhouse - came to Rotor. During the design phase, we proposed to the municipality of Dilbeek that we develop an exemplary project in which we would use a maximum of reusable building materials. In terms of tendering, this resulted in a design and construction contract for Rotor as designer-contractor, in association with the company CC Autrement. Little is known about the history of the farm where the toilet block was built. The building itself is the property of the Itterbeek church administration, which makes it available to the Chiro of Itterbeek. The sanitary block is the property of the municipality of Dilbeek.

This small building project is therefore an extension of the existing farmhouse, which, although completely new, consists of less than a third of new materials (in % mass). The majority of the materials are, on the one hand, materials recovered from various Belgian operators and, on the other hand, surplus from construction sites.

The facade, for example, is entirely made of bricks and joinery of reuse. The interior of the sanitary block is mainly made of reused materials sold by RotorDC. For
example, the floor covering is made of ceramic tiles from a former Everheide elementary school (Brussels region) dating from the 1930s. The sanitary appliances (urinals, toilets and suspended washbasins), the lighting and the mirrors were also recovered, before finding their new destination in this project. The load-bearing structure, both the concrete blocks and the framework and associated thermal insulation, came from site surplus or surplus production. The tiles are surplus from the renovation of a villa in Brussels.

The scale of this project is modest but all the phases of a classic new construction project were carried out (foundations, sewers, shell, plumbing, electricity and interior design). The ambition to work as much as possible with reused materials was therefore explored at all levels. The objective of this small project was to show what is possible to implement and, at the same time, to identify the main logistical and organizational obstacles that can hinder material reuse projects. In this sense, the project was also an important learning experience for all involved.

If you had to do it again?

The construction site went well because the communication between the participants was fluid and easy. The question of materials was carefully thought out beforehand in order to try to use as many reused materials as possible while avoiding the need for the construction company to go and find materials in many different places. A few very specific dealers were therefore chosen. It is important to keep this point in mind for actors who also want to use a lot of reused materials. Site logistics is an important point of attention when working with reused elements. A few points for improvement in the future: Pay more attention to the finishing of the pipes that are to remain visible. Concerning the implementation of the bricks we will try in the future to use a mortar bastard rather than a cement-based mortar. The same applies to the installation of tiles.

See more details about this project

https://www.randkrant.be/artikel/bouwwerk-circulair
https://opalis.eu/fr/projets/toilettes-pour-le-chiro-dlitterbeek

Photo credit

Rotor asbl-vzw

Stakeholders

Contractor

Name : Commune de Dilbeek
[https://www.dilbeek.be/]

Construction Manager

Name : Rotor asbl-vzw
[http://rotordb.org/en]

Stakeholders

Function : Construction company
CC Autrement
[https://ccautrement.be/]

Function : Manufacturer
RotorDC
[https://rotordc.com/]

Function : Manufacturer
Franck
[https://www.franck.be/]

Function : Manufacturer
Gebruiktebouwmaterialen
[https://gebruiktebouwmaterialen.com/]

Energy
Energy consumption

Calculation method: Other

Breakdown for energy consumption: We do not have precise information on the current consumption of the building. The building is mainly used on weekends. The consumption is limited to: - sporadic lighting of the 5 lights; - turning on the ventilation & pump for rainwater; - use of rainwater for the 4 toilets & 2 urinals; - use of city water for the 3 sinks.

Renewables & systems

Systems

Heating system:
- No heating system

Hot water system:
- No domestic hot water system

Cooling system:
- No cooling system

Ventilation system:
- Single flow

Renewable systems:
- No renewable energy systems

Environment

Urban environment

The project addresses the need for new sanitary facilities for the Chiro, which occupies the existing building. The building was designed in brick to best fit into the existing building environment, which is also constructed of brick. As mentioned earlier, two types of reused bricks were used: a yellow industrial brick and a rougher country kiln brick, including a classic version and a finer version. These bricks were laid in successive layers that repeat. The old red brick ensures the integration of the new building on the existing gable of the old farmhouse, while retaining its individuality through an atypical masonry pattern. The layered construction is an allusion to the masonry (sand-lime stone and brick in successive layers) of the Sint-Anna-Pede Chapel on the neighboring site.

Products

Product

Franck

https://www.franck.be/

Product category: Gros œuvre / Structure, maçonnerie, façade

Opalis

https://opalis.eu/en

Product category: Autres / Autres

Directory of retailers of reused materials in Belgium, France and the Netherlands.

Franck

Reusable bricks
Costs

Construction and exploitation costs

Total cost of the building : 55 000 €

Circular Economy

Reuse : same function or different function

Batches concerned by reuse :
- Structural works
- Structural framework
- Roofing
- Facades
- Outdoor joineries
- Floorings
- Insulation
- Electricity
- Plumbing

For each batch : Reused Materials / Products / Equipments :

Facing bricks - 30m².

Three types of bricks were used: a yellow industrial brick and a rougher country oven brick, including a classic version and a finer version. These bricks were laid in successive layers that are repeated. The old red brick ensures the integration of the new building on the existing gable of the old farmhouse while retaining its individuality through an atypical masonry pattern. The layered construction is an allusion to the masonry (sand-lime stone and brick in successive layers) of the Sint-Anna-Pede chapel on the neighboring site.

Exterior facade lintels - 5ml: 2 reused steel U-profiles joined together to form a lintel.

Roof tiles - 20m²

Exterior woodwork - 2 doors and 2 windows in wood.

Floor tiles - 14m². These tiles come from a former Everheide elementary school dating from the 30s and located in the Brussels region (Evere).

Wall tiles - 11m².

Sanitary facilities: 4 toilet bowls, 2 Duravit urinals, 3 art deco sinks and a urinal divider.

Furniture: 2 bars for PMR and a changing table.

Lighting: 5 light fixtures

Floor & wall insulation: 43,3 m²

Ceiling insulation: 18m²

Concrete blocks: 48m²

Wooden frame: 49,2 ml

Field of use and material origin :

Facing bricks - reuse - purchased via opalis dealer Franck

Exterior facade lintels - reuse - purchased via reseller opalis Gebruiktebouwmaterialen. Reused steel profiles to be assembled into lintels.

Roof tiles - reuse - leftovers from a Brussels building site (donation)

Exterior joinery - reuse - bought via reseller opalis Namur Croisade poverty and Gebruiktebouwmaterialen

Floor tiles - reuse - bought via opalis dealer RotorDC

Wall tiles - reuse - bought via reseller opalis RotorDC

Sanitaryware - reuse - purchased through opalis dealer RotorDC

Furniture - reuse - purchased via classified ads (marketplace)

Lighting - reuse - purchased via opalis reseller RotorDC

Floor insulation - construction surplus - bought via reseller opalis Gebruiktebouwmaterialen
Wall insulation - construction surplus/end of stock/quality B materials - purchased via opalis Bouwstocks dealer

Ceiling insulation - surplus/end of stock/quality B materials - purchased via opalis Bouwstocks dealer

Concrete blocks - construction surplus/end of stock/quality B materials - bought via opalis Bouwstocks dealer

Wooden frame - construction surplus/end of stock/quality B materials - bought via opalis Bouwstocks dealer

Environmental assessment

Impacts avoided: water, waste, CO2:

Materials: thanks to the use of many reused elements and elements coming from surplus of building site or end of stock, the building site made it possible to avoid the production of new material and the impacts which are related to it. The use of end-of-stock materials and decommissioned materials avoided the dumping of this material.

In terms of limiting transport, most of the materials come from the Brussels region.

Water: a rainwater tank has been installed to supply the toilets and urinals.

The following impact calculation does not include the PMR bars and the changing table.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Avoided CO2 (kg)</th>
<th>Avoided water consumption (m³)</th>
<th>Avoided waste (kg)</th>
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<tr>
<td>Outdoor facilities</td>
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<td>0</td>
</tr>
<tr>
<td>Exterior fittings / Locksmithing - Metalwork</td>
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<tr>
<td>Coverage</td>
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<td>Climatic engineering equipment</td>
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<td>Electrical equipment</td>
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<td>Plumbing</td>
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<td>Floor and wall coverings</td>
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<table>
<thead>
<tr>
<th>Avoided CO2 (kg)</th>
<th>Avoided water consumption (m³)</th>
<th>Avoided waste (kg)</th>
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<tbody>
<tr>
<td>TOTAL</td>
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Equivalent

<table>
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<tr>
<th>Km in a small car</th>
<th>Nb of rectangular bathtubs</th>
<th>Nb of years of household waste of a French person</th>
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<tbody>
<tr>
<td>36582</td>
<td>819</td>
<td>11</td>
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</table>

Equivalent trip from Paris to Nice

42.0

Sentence to copy below

The reuse operation saved the equivalent of 36582 kilometers travelled by a small car, or 42 Paris-Nice trips, 819 rectangular bathtubs filled with water and 11 years of household waste of a French person.

Health and comfort
Water management

Installation of a rainwater tank to supply the sanitary facilities (WC and urinals).

Contest

Reasons for participating in the competition(s)

This project, through its humble program, is intended to be exemplary in terms of its materiality and the lessons it has generated. It was a question of testing through this project the implementation of a maximum of materials of reuse while keeping reasonable the budgetary and logistic considerations.

The construction was thus carried out with materials coming from 3 different channels:

- the reuse sector;
- surplus from construction sites;
- new construction.

Less than a third of the materials are new (in % kg).

In today's construction industry, reused materials and construction surplus are still very rarely used for new constructions and transformations; the materials are usually reduced to aggregates with little value. This modest construction project wants to show that things can be done differently and that the process to do so is not complicated.