

Ixelles Employment

Construction of a **Passive** building for
the Employment Agency
30 Rue du Collège, in 1050 Ixelles





Ixelles Employment a flagship project



The Ixelles Employment Agency's new offices, located on rue du Collège, needed to be a real living space, open and pleasant both for people who work there and its users. This resolve guides the architectural approach at all levels of the project.

In fact, creating a living space, means thinking of and using the entire environment. From designing a building that complies with the most demanding energy standards to the urban integration of a dense program, it is the concern of abundant natural light which has guided the whole project. In other words, this space is the result of an approach that always considers the economic, human and social dimensions together.

Nowadays, this challenge of environmentally friendly architecture cannot merely be energy-saving. Energy efficiency is a necessity, but we have gone beyond that, so as to be more in line with the world in which we live and which we are building. Also, in a certain way this project aims to regenerate the social, economic and ecological environment.

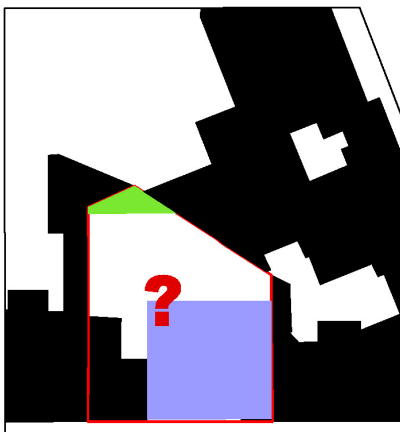
We invite you to browse though the urban, social and ecological aspects which are implemented here.



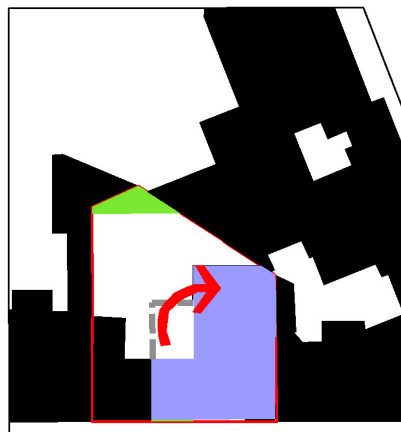
Urban area: a place in the city

Located on the corner of place Fernand Coque and rue du collège, the site is surrounded by a densely built-up environment. In addition, the project accommodates the commune of Ixelles' office for developing employment: Actiris, Form@XL, Local Agency for Employment, Local Office for Employment, SCE Municipal Authority for Employment. In order to seamlessly integrate this impressive program, we played on volumes and openings to create dynamic groups of space and reduce congestion of the urban situation.

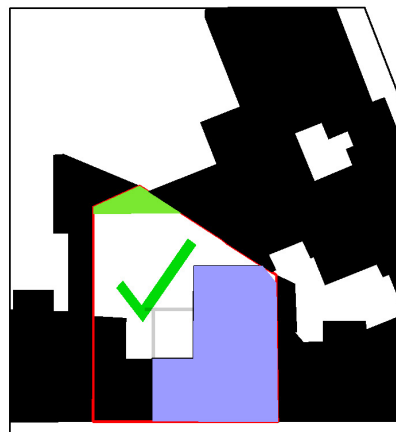
To make this building a welcoming, hospitable place, we wanted the main entrance to be clearly identifiable through the opening created. The passageway closed by a gate in the evening in order to avoid any vandalism problems, but during the day we wanted this space to already be a meeting and discussion place.



The program essentially consists of filling the empty site. However this construction poses a question with regards to the relationship with the existing building at no. 28.



In order to guarantee natural lighting conditions, better views and outlooks, a larger opening is provided. This play on volume favours diagonal openings which visually open up the space.



As the urban fabric is already very dense and the attached buildings surrounding the site are fairly high, this central shaft of light creates an opening up essential to the quality of the spaces. The project is built all around this inner patio, light source, visual openings and social links.



In addition, the site on which we were building was both closed in by attached buildings which had a significant difference in height. We decided to consider the construction and relationship with the urban fabric to assume both the status of these public facilities and offer the best possible sunlight conditions. So, we are proposing a "green" opening in the urban fabric. Being the only occurrence on this side of the block it clearly denotes the location of a building for public use.

This opening follows the natural curve of the land due to a "green" ramp connecting the street level and the internal courtyard. At the rear of the site, a shaft of light provides another opening for this dense area. As the urban fabric is already very dense and the attached buildings surrounding the site are fairly high, this central shaft of light creates an opening up essential to the quality of the spaces. The project is built all around this large patio.



synergy of departments

A large reception hall welcomes and directs to the different departments. Two lifts ensure limited waiting time. All the departments are accessible to people with reduced mobility.

The second lift is for staff use only. The bike area is strategically placed beside the reception hall and the main lift to be able to easily access the different floors.

Referral to the different departments is very easy given the organisation by floors, all serviced by the main lift. A reception/referral area in each department enables the user to know where he is and where he wants to go at all times. Lastly, the areas accessible to the public are always located as close as possible to the reception while the offices not used by the public are further away.

The layout of the different accesses and departments is then considered so as to be the most appropriate and convenient for users. From the covered bike parking at the entrance to the changing rooms in the basement, close to the main lift, gentle forms of transport are encouraged for staff wanting to come by bike.

Assembled around the heart of the building, the departments create a pleasant synergy with the place.



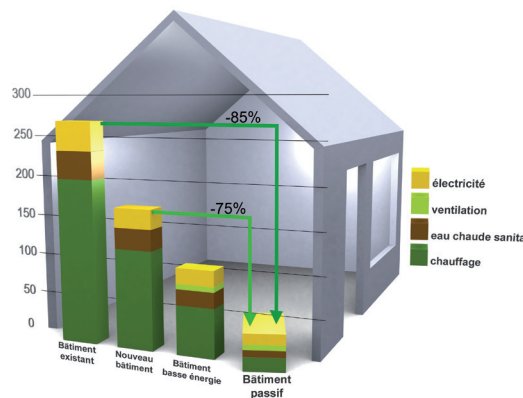
more light!



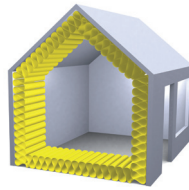
Within the building itself, apart from thermal comfort and air quality, the inside environment depends on the quality of light. This is why light is at the heart of our design process. We carry out precise simulation studies to anticipate as accurately as possible the quantity and quality of natural and artificial light from which the building will benefit.

With the same concern for resilience, large windows enable the space to benefit as much as possible from natural lighting in order to reduce energy consumption. The play of levels, façade materials and volumes create wide openings for light.

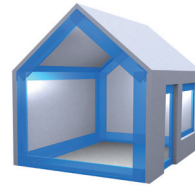
With regards to artificial light, this is managed by absence sensors in order to automatically reduce unnecessary energy consumption.



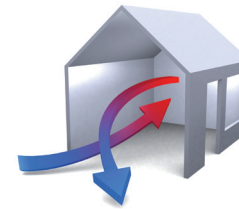
reduction of requirements: the passive standard



1 excellent insulation
BE < 15kWh/m²year



2 air tightness
 $n_{50} < 0.6 \text{ vol/h}$



3 ventilation with heat
recovery

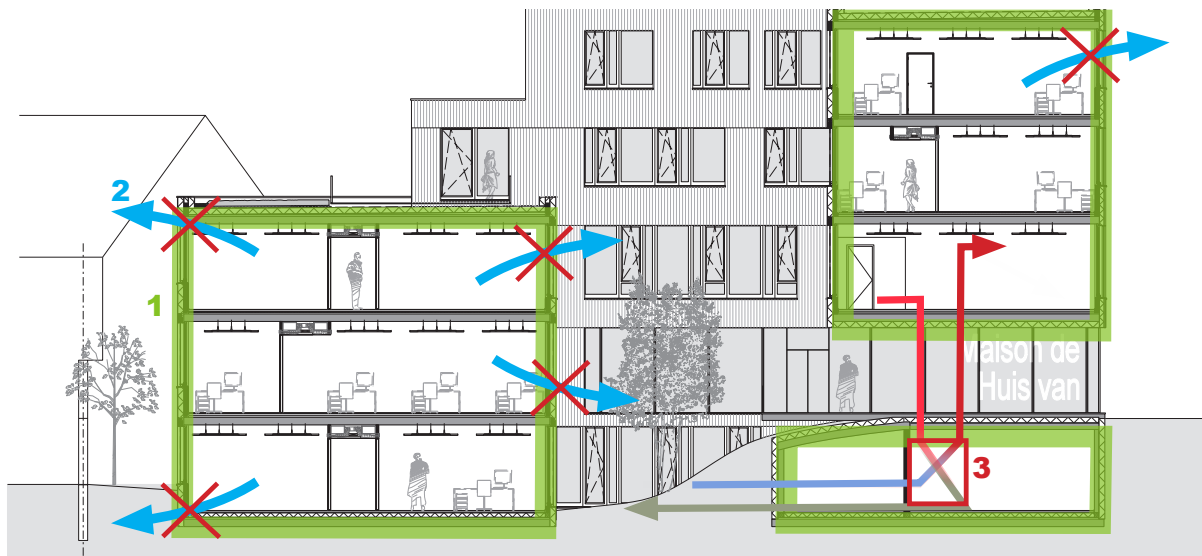
less energy consumption! ///

Our current aim is to carry out projects that renew the social, economic and also ecological environment.

In this respect energy saving is vital. Backed by previous experience, a pioneer and well-known in the field, our office offers a building with the **passive standard** (15kWh/m²year).

Due to a very high degree of insulation and particular attention to air tightness, **energy consumption is reduced by approximately 90%**, dispensing the project of a conventional heating or air conditioning system, while guaranteeing a same level of comfort.

This control fills a triple purpose: it decreases consumption of energy resources, it enables savings to be made and, because it produces a more resilient building, less energy use, therefore less pollution, finally it contributes to creating a healthier environment and thus living and meeting spaces of the same quality.



winter **comfort**

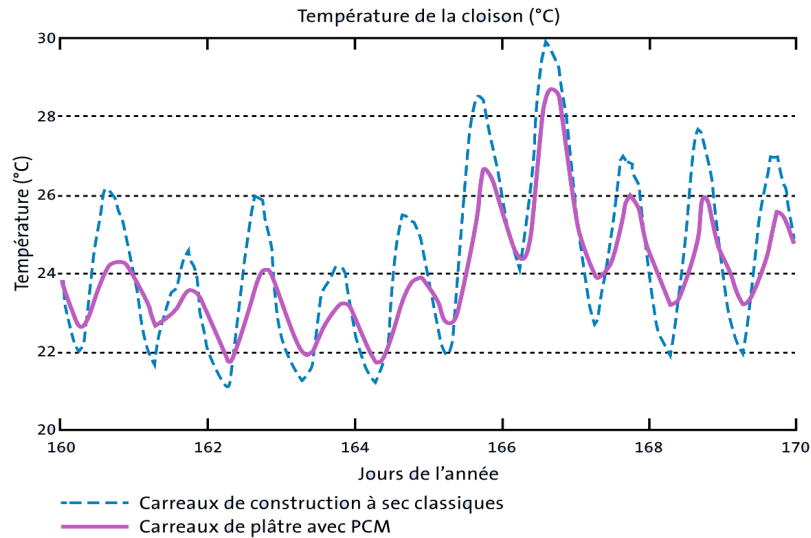
- 1 insulation: building envelope treatment
- 2 air tightness limiting air leakage
- 3 ventilation CMV with double flow heat exchanger



summer **comfort**

- 1 external solar protection
- 2 PCM phase change materials
- 3 inertia accessibility of the floor mass
- 4 night cooling
- 5 photovoltaic panels

Example of the impact of PCMs:



a first in Belgium



Lastly, the building's quality is linked to the quality of the materials used. This is why we choose them based on studies calculating the impact of grey energy used to produce and transport them and a study on their impact on health. Furthermore we use innovative materials.

In this project, innovation involves using phase change materials (PCM – Phase Change Material). These are capable of storing large quantities of thermal energy and keeping it for a long time with very little loss. It is the changes between solid and liquid state of a high quality paraffin that makes this possible: by melting, after having reached a certain temperature, the paraffin stores the thermal energy which is released (fusion heat) thus avoiding a heat build-up during the day. At night, this heat is evacuated by the material which solidifies again.

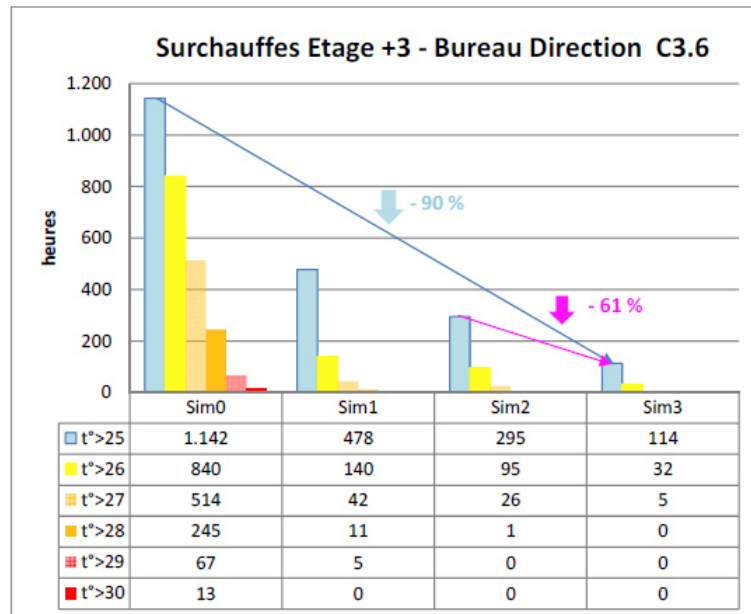
This phase transition can be repeated as often as necessary. During warm periods, an efficient night cooling is put in place by means of mechanised opening of certain windows so that the temperature decreases sufficiently and the PCM goes back into a solid phase. The PCMs combined with natural night time ventilation enable the hours of over heating to be greatly reduced and improve the thermal comfort of all the spaces (areas with different internal loads and occupations: individual offices, open plan offices, training rooms,...) while reducing cooling costs.

Stated more simply this could be compared to the phenomenon of an ice cube in a drink. Of course, there is no risk of the product leaking out as the capsules are inserted in a gel held between aluminium foil.

Used in false ceilings



Comfort and over heating study in rooms facing South West.



Above are the comfort studies which we have done. This table shows the number of hours per year during which the temperature of the room exceeds 25, 26, .. 28°C.

The Sim0 case shows the initial situation: more than 1,000 hr per year above 25°. The following two show the situation with a forced (mechanical) or natural night time ventilation.

The last case (Sim3) shows that with natural night time ventilation and phase change materials, the over heating time is divided by 10 for this room, dropping to almost 100 hrs only above 25° and none above 28°!

Compared to natural ventilation only (Sim2), the addition of PCM reduces the hours of over heating in the room by a further 60%

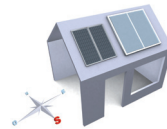




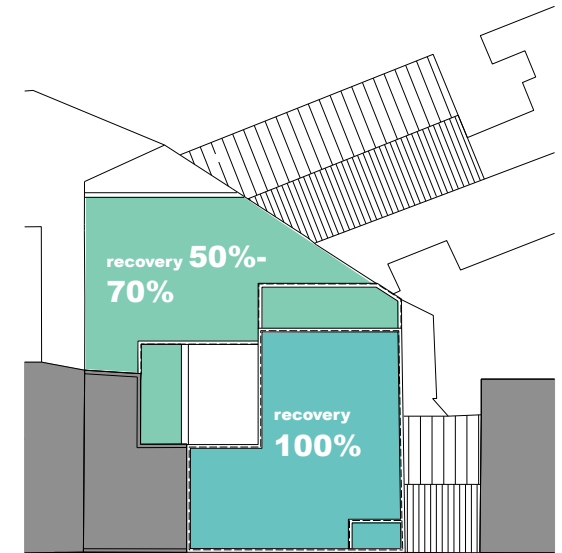
the cherry on the cake //

In addition, in order to reduce energy consumption for lighting, large windows allow a space to benefit from maximum natural lighting. With regards to artificial light, this is managed by absence sensors in order to automatically reduce unnecessary energy consumption. Lastly, 62 m² of photovoltaic solar panels complete the whole infrastructure and decrease the energetic and economic impact of use.

We strive to ensure that water entering the site is returned to the ground. Rain water is recovered on the building's rooftops. Green roofs enable 50 to 70% of the water to be recovered, while 100% of the water is recovered from the highest roof. In this regard, considering the construction from the point of view of its overall impact on the environment, we favour more abundant nature in our projects to develop biodiversity.



renewable energy



water recovery



mison de
s van

de l'Emploi
van Tewerkstelling











Maison de
Huis van

Emploi
Te verkelsteling