

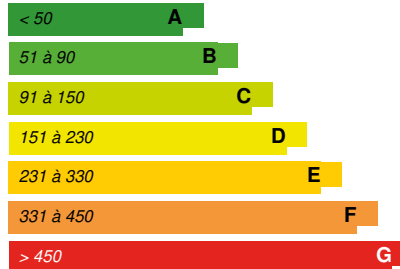
## IAK Administrative Building

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New Construction

2



**Building Type** : Office building < 28m  
**Construction Year** : 2012  
**Delivery year** : 2016  
**Address 1 - street** : 2719 LUXEMBOURG, Luxembourg  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 22 793 m<sup>2</sup>  
**Construction/refurbishment cost** : 71 100 000 €  
**Number of Work station** : 1 900 Work station  
**Cost/m2** : 3119.38 €/m<sup>2</sup>

### General information

The town planning party is based on the Kirchberg Fund's urban planning plan, whereby the street fronts are defined by the four-storey building. In the European quarter there are many buildings of very large size, not conducive to creating a pleasant atmosphere for pedestrians. This project has a great desire to be on a human scale. The four volumes have a strong presence on the street but constitute a small town block, with a pleasant green courtyard in the center, intended for the users of the building but open to the public. The arrangement of the volumes was organized in such a way as to have different zones inside the garden, thus creating an interesting path. The arrangement of the volumes also allows each person to have great escapes of view from his workstation to the inner garden, but also to the adjacent streets.

The façades are made up of solid and void, recalling a human dimension. Each window corresponds to a place of work, an office ... The rhythm of the openings varies according to the orientations. So there are more fills in the facade exposed to the sun than in the unexposed façade. The perforations thus pass from 29% in South-West facade up to 56% of opening on the North-East facade. Environmental quality and low energy requirements have always been at the basis of our architectural and technical choices (green roof, rainwater recovery, photovoltaic panels, etc.). The building is very well insulated, it benefits from its mass of inertia to regulate the interior temperatures. In order to minimize the heating system, there is a closed-loop aquifer system integrated into the concrete slab using heat / fresh soil for preheating (winter) and pre-cooling (in summer)

The building received BREEAM "excellent" certification, especially for the health and wellness sectors

### Data reliability

Self-declared

## Stakeholders

### Stakeholders

Function : Contractor  
Fonds de Compensation

Marc Fries

<http://www.fdc.lu>

Function : Designer  
ARLETTE SCHNEIDERS ARCHITECTES

Arlette Schneiders

<http://www.arlette-schneiders.lu>

Function : Other consultancy agency  
SiTLux ingénieurs en techniques spéciales

Carlo De Bastiani

<http://www.situlux.eu>

Function : Structures calculist  
lux-cec

Christophe Burgun

<http://www.luxcec.lu>

### Owner approach of sustainability

In 2008, the contractor organized an international competition between architectural offices. The requirements of the contracting authority in this competition were largely based on sound and sustainable construction, and were described in detail in the specifications. Thus the use of certain products that could be considered harmful in the future were proscribed already at the beginning of the design. The building owner wanted a building that was open to the neighborhood, a site that participates in the life of the neighborhood. The site had to be accessible to all people walking, and even a pedestrian way connecting the old district of Kirchberg and the new district. The building had to be on a human scale, pleasant to live. The requirement to receive BREEAM EXCELLENT certification was known at the start of the competition, as was the requirement to build a building that would not require major maintenance during the first 50 years of life. Economy and quality were equally important.

### Architectural description

The urban planning part is based on the general urban plan of the Kirchberg Fund, by which the fronts of the street are defined by the location of the four volumes of the building. In the European quarter there are many buildings of very large size, not conducive to creating a pleasant atmosphere for pedestrians. This project has a great desire to be on a human scale. The four volumes have a strong presence on the street but constitute a small town block, with a pleasant green courtyard in the center, intended for the users of the building but open to the public. The arrangement of the volumes was organized in such a way as to have different zones inside the garden, thus creating an interesting path. The arrangement of the volumes also allows each person to have great escapes of view from his workstation to the inner garden, but also to the adjacent streets. The façades are made up of solid and void, recalling a human dimension. Each window corresponds to a place of work, an office ... The rhythm of the openings varies according to the orientations. So there are more fills in the facade exposed to the sun than in the unexposed façade. The perforations thus pass from 29% in South-West facade up to 56% of opening on the North-East facade. Environmental quality and low energy requirements have always been at the basis of our architectural and technical choices (green roof, rainwater recovery, photovoltaic panels, etc.). The building is very well insulated, it benefits from its mass of inertia to regulate the interior temperatures. In order to minimize the heating system, there is a closed-loop aquifer system integrated into the concrete slab using its heat / coolness for pre-heating (in winter) and pre-cooling (in summer). BREEAM certification "excellent", especially for the "health" and "well-being" sectors

## Energy

### Energy consumption

Primary energy need : 124,10 kWh/m<sup>2</sup>.an

Primary energy need for standard building : 219,00 kWh/m<sup>2</sup>.an

Calculation method : RGD du 31 août 2010 - bâtiment fonctionnel

Final Energy : 83,58 kWh/m<sup>2</sup>.an

Breakdown for energy consumption :

Heating = 25.3 kWh / m<sup>2</sup>.an Lighting = 33.0 kWh / m<sup>2</sup>.an Ventilation = 26.2 kWh / m<sup>2</sup>.an Cold = 17.8 kWh / m<sup>2</sup>.year Healthy central heating = 4.5 kWh / m<sup>2</sup>.year Auxiliary energy = 17.3 kWh / m<sup>2</sup>. year

### Envelope performance

Envelope U-Value : 0,37 W.m<sup>-2</sup>.K<sup>-1</sup>  
Building Compactness Coefficient : 0,29  
Indicator : EN 13829 - n50 » (en 1/h-1)  
Air Tightness Value : 1,60

## Renewables & systems

### Systems

Heating system :

- Urban network

Hot water system :

- Individual electric boiler

Cooling system :

- Water chiller

Ventilation system :

- Free-cooling
- Double flow heat exchanger

Renewable systems :

- Solar photovoltaic

Number of panels installed = 202 Peak power = 50.50 kWp Number of inverters = 3

## Environment

### GHG emissions

GHG in use : 24,90 KgCO<sub>2</sub>/m<sup>2</sup>/an

Methodology used :

CPE Functional Buildings

Building lifetime : 50,00 an(s)

GHG Cradle to Grave : 1 245,00 KgCO<sub>2</sub> /m<sup>2</sup>

### Water management

The site is equipped with a rainwater installation intended for the supply of toilets and urinals. The rest of the equipment is connected to city water.

### Comfort

Measured thermal comfort : ETE = moyenne 24°C HIVER = moyenne 21.5°C

Acoustic comfort : The following levels relate to HVAC system noise limits as well as ambient noise from the outside. -≤40dB LAeq,T in offices occupied by a single person -40-50dB LAeq,T in offices occupied by several people -≤40 dB LAeq,T public spaces (staff room, toilets) -≤ 35 dB LAeq. T in conference / meeting rooms -e. ≤ 50 dB LAeq,T in coffee / canteen corners

## Products

### Product

Architectural Concrete

BETON FEIDT S.A.

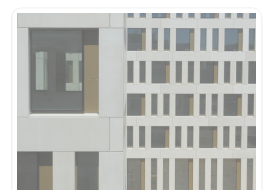
Ferd FEIDT

<http://www.betons-feidt.lu>

Product category : Table 'c21\_italy.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '6'

The facade cladding consists of prefabricated panels of architectonic concrete of large format and light beige

The product is extremely well accepted by users and people passing on the street, as it creates a warm ambience.



## Costs

### Urban environment

The building site is located in the Kirchberg district of Luxembourg. This district is marked by great achievements for the needs of the European Community. It is well connected to the other districts by public transport. The installation of the tram is in progress and will further increase the smooth mobility in the neighborhood.

### Land plot area

Land plot area : 8 936,00 m<sup>2</sup>

### Built-up area

Built-up area : 37,00 %

### Green space

Green space : 5 621,00

### Parking spaces

There is no outside parking.

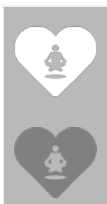
## Building Environnemental Quality

### Building Environmental Quality

- Building flexibility
- indoor air quality and health
- water management
- energy efficiency
- renewable energies
- integration in the land
- mobility
- products and materials

## Contest

### Building candidate in the category



Santé & Confort



Coup de Cœur des Internautes



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