LEGIAPARK – buildings dedicated to biotechnologies

Boulevard Patience et Beaujonc, Liège (BE)

Complete stability, building engineering services, EPB-responsible, energy design, BREEAM certification and health and safety coordination mission

Onwer
LEGIAPARK s.a.

Architect
Valentiny Architectes

Cost of the works
€ 86,7 M excl. vat of which
€ 18,6 M for the structure and
€ 16,5 M for the techniques

Studies
2019 - 2020

Execution
2020 - ...

ST | TS | EN | CS | BIM

LEGIAPARK is a complex of two buildings constructed on the former Patience and Beaujonc coalmine, opposite the Mont-Légia clinic, the CHC's new hospital. It is intended to accommodate companies active in the biotechnology and life sciences sector. It is being built in bouwteam on behalf of LegiaPark sa, a company created by Noshaq and the CHC.

The complex offers 30,000 m² of buildings and 15,000 m² of underground parking. It consists mainly of BL2 laboratories, clean rooms, offices, co-working spaces and a training and conference centre.

The soil tests show a complex structure with a low bearing capacity. The presence of the remains of the old coal mine adds an additional element of complexity. To meet these constraints, the building is founded on piles.

The structure is mainly made of reinforced and pre-stressed concrete, both for the vertical and horizontal structures. This durable material greatly reduces the maintenance of the structural elements while guaranteeing excellent robustness as well as excellent performance in terms of acoustics and resistance/reaction to fire.

The chosen design approach aims to provide a simple and modular reinforced and prestressed concrete structure. This approach, which leads to a regular geometry, results in prefabricated structural elements for the columns, beams and floors in prestressed hourdis. This systematisation allows the design of simple and repetitive constructional nodes and allows cost control.

The regular vertical load-bearing structure is located on the facade and within the spaces to provide a high degree of building flexibility. The 8.0 m quasi-square grid allows the support of reasonably thick floors and the use of single direction beam rows.

A footbridge links the two buildings. It is made of a mixed steel and concrete structure that is entirely visible.

The buildings, which are two or three storeys high, are built around external patios that are partially covered by photovoltaic canopies. These are made of steel and are composed of 18-metre high «trees» and a metal mesh to support the photovoltaic panels.

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The buildings, which are two or three storeys high, are built around external patios that are partially covered by **photovoltaic canopies** to limit solar radiation in the buildings and to produce electricity locally. The installation is completed by **photovoltaic panels** placed on the flat roofs of the buildings, with a **total capacity of 333 kWp**. Motorised **solar blinds** are placed on the external façades to avoid glare and overheating.

The **heat production** for each building is provided by two gas condensing boilers with a unitary capacity of 450 kW. This is supplemented by a 4-pipe heat pump with a capacity of 150 kWth. **Cooling** is provided by two water-cooled condensing chillers, each with a capacity of 680 kW, fed by two cooling towers. The 4-pipe heat pump with a cooling capacity of 120 kWth completes the installation.

The heating and cooling **terminal units** are adapted to the purpose of the premises and the type of finishing. For example, reversible ceilings with heating and cooling functions are used in offices, co-working areas and meeting rooms. Where loads are higher, in the foyer, cafeteria and training area, chilled radiant ceilings are combined with floor convectors. The data room is air-conditioned by two direct expansion systems with variable flow (redundancy). The premises that do not require cooling are heated by static heaters.

Ventilation and air treatment are provided by double-flow units with wheel energy recovery operating in 100% fresh air. For the BL2 areas, only the preparation of fresh air is planned at this stage. The cleanroom installations will be specific to each tenant. The units are equipped with frequency inverters to adapt the flow rates to the actual needs. The units are equipped with a humidifier to maintain the relative humidity between 40 and 60% R.H.

The underground car park, designed in sub-compartments of less than 5,000 m², is protected by a sprinkler system, and equipped with a **CO** ventilation system. The **CO2 and O2** storage facilities are located in the car park.

All of the above installations are managed and controlled by a Centralized Technical Management (CTM).

The complex is supplied with **medium voltage** for a total power of 4,000 kVA, with each building having a cabin of 2 x 1,000 kVA for the so-called «normal» power. The so-called «backed-up» power is produced in each of the buildings by an 800 kVA **generator set**.

The functional, decorative and security **lighting** is equipped with **LED** lamps. The lighting is managed by a KNX installation. A dimming system with a photocell using a **daylight sensor** to adjust the level of illumination is provided in the workspaces.

The structured cabling is type 6A S/FTP. The electrical installations are completed by the general fire detection, access control, intrusion detection, video surveillance and video telephony installations.

Charging stations are provided for electric bikes and vehicles.