



Low energy buildings - Case Study: Bayer Administrative Building, Diegem (Belgium)



Category / year

Destruction and new construction: low energy building or better - Office building (250-400 employees) / 2009



Address

J. E. Mommaertslaan, 14 - 1831 Diegem (Belgium)



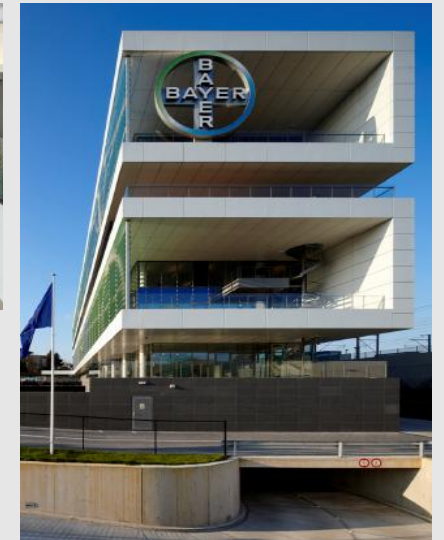
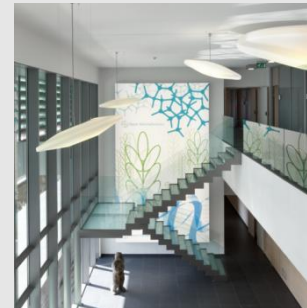
Contact details

Owner:
Bayer
Architect:
Schellen Architecten
Construction:
Van Roey

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Pictures





Description of the building

Detailed description:

The Bayer Diegem Administrative building combines the marketing & sales activities of Bayer HealthCare, Bayer CropScience and Bayer MaterialScience and the corporate services of Bayer in Belgium.

L / W / H = 94 / 13/ 26 m. Total surface 12 930 m² of which parking: 4 711 m², office: 7 697 m² and technical space: 522 m².

The total concept allows the reduction of the primary energy consumption for heating and cooling by 83 % which means 19 000 kg less of CO₂ emissions. The building that was on the site before was demolished and entirely recycled.

Building envelope:

- *Walls*: 10 cm polyurethane insulation ($U=0,26 \text{ W}/(\text{m}^2\cdot\text{K})$)
- Facade covered with lamellas for optimal light / heat management (20 % savings on cooling)
- High performance glazing
- Optimal acoustics

Energy efficient technologies:

- Heating with activated concrete floors
- HVAC including rotating wheel heat recovery system
- Presence detectors and adaptive LED lighting
- Building automation

Renewable energy sources:

- Geothermal field (60 boreholes of 100 m deep)
- 3 heat pumps (16 kW, COP of 4.3)
- Ground-air heat exchanger (18 underground ducts of 55 m)
- Use of rain-water and recycling of grey water for sanitary purposes (reduces flush up to 90 000 l per year)



Energy consumption

Energy values:

- *Energy consumption*: less than E65 (144 kWh/m²/year) VS Flemish E100 (222 kWh/m²/year) but in reality it should be E57 or lower since this official calculation method does not include the geothermal field and ground-air heat exchanger
- *Thermal heat loss coefficient*: $U = 0.58 \text{ W}/(\text{m}^2\cdot\text{K})$ (K30 VS Flemish required K45)

Energy demand:

Heating: 35 %	Excess: 1 %
Hot water: 15 %	Geothermic: 25 %
Lighting: 16 %	Heat exchange: 24 %
Ventilation: 16 %	Gas: 4 %
Kitchen: 11 %	Electricity: 47 %



Awards won

- Energy Award 2009
- Certificate of Partner in the GreenBuilding Programme for enhanced energy efficiency in buildings (EU Commission)
- Pilot project of the Flemish energy agency (VEA)
- Amongst the 5 finalists of the ORI 2020 Challenge 2009



Links

Websites illustrating the building:

- <http://www.archello.com/en/project/bayer-diegem>
- <http://www.energymag.be/nl/home/item/235-case-study-bayer-diegem>
- <http://www.climate.bayer.com/en/ecocommercial-building.aspx>

Promotional material online:

- Visits possible during BBL Open Door Days
- Detail of materials / technologies used available
- Movie of the construction