



Low energy buildings - Case Study: Daycare Center "Die Sprösslinge", Monheim (Germany)



Category / year

New construction: zero energy building or better - School building (60 children + staff) / 2009



Address

Alfred-Nobel-Str. 60, 40789 Monheim (Germany)



Contact details

Owner:

Bayer Real Estate

Architect:

tr. Architekten

Structural:

Ingenieurbüro für Baustatik Dipl.-Ing. Abed Isa

Energy concept:

IPJ Ingenieurbüro P. Jung GmbH

HVAC:

E + W Ingenieurgesellschaft mbH

For further questions:

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Pictures





Description of the building

Detailed description:

The daycare center "Die Sprösslinge" in Monheim serves as an accommodation for children of Bayer employees. It contains offices, classrooms, and recreation areas and accommodates approx. 60 children + staff.

Enclosed space: 3 556 m³ / floor space: 1 064 m².

The building was designed as a zero energy building on the basis of a wooden frame construction. Thanks to the use of innovative technologies, the minimum energy savings vs. local standards are detected to be 91 %.

Building envelope:

- Optimized building envelope and cubature
- Polyurethane insulation boards ($\lambda = 0.028 \text{ W}/(\text{m}\cdot\text{K})$), approx. 200 mm
- (Passivhaus) triple-glazed windows (approx. $U = 0.70$ to $0.90 \text{ W}/(\text{m}^2\cdot\text{K})$)
- Building envelope (mean value): $U = 0.147 \text{ W}/(\text{m}^2\cdot\text{K})$

Energy efficient technologies:

- Optimal, highly efficient HVAC technology
- Utilization of daylight & efficient lighting systems
- Highly efficient electrical equipment

Renewable energy sources:

- Geothermic energy (4 geothermal probes, approx. 100 m depth)
- Solar thermal energy (approx. 50 m²)
- Photovoltaic (approx. 412 m²)



Energy consumption

Energy values:

- *Primary energy demand:* 12 kWh/(m²·a) (the required max. value for this building type is according to German standards 134 kWh/(m²·a))

Energy demand:

Heating + HW: 51 %
 Vent. + light: 15 %
 AC: 34 %
 Total = 60 MWh

Geothermic energy: 41 %
 Solar energy: 10 %
 Photovoltaic: 49 %
 Total = 60 MWh



Awards won

- "Energy-Optimized Building" Award from the German Federal Ministry of Economics, 2009
- "Green Building Certification" of the European Union (application pending)



Links

Websites illustrating the building:

- http://www.energieportal24.de/pn_156785.htm
- <http://www.ecocommercialbuilding.bayermaterialscience.com/>
- internet/global_portal.cms.nsf/id/EN_Deutschland

Promotional material online:

- <http://www.ecocommercialbuilding.com>