PPP model for new Regionshaus building in Hanover

EnBau

This building demonstrates two important aspects of innovative construction: firstly, the contractor's requirements with regard to energy efficiency and occupant comfort are set very high, and secondly a particular financing model is applied: the "public private partnership", or PPP for short. The contractor (the Region of Hanover), despite a tight public budget, is able to build a consistently energy-optimised building for 300 staff.

The new Regionshaus building in Hanover. Visualisation from the perspective of Hildesheimer Strasse.
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Building summary

Project status	
Location	30169 Hannover, Niedersachsen
Completion	31.03.2007
Inauguration	01.04.2007
Building owner	Region Hannover
Gross floor area	8.441 m^2
Heated net floor area	7.134 m^2
Gross volume	28.911 m^3
Work places	300
Usable floor area (according to EnEV)	5.399 m^2
main usable floor area	3.599 m^2
A/V ratio	0,30 m^2/m^3
Key aspects	Heat insulation, Glazing + windows, Optimised lighting, Ventilation + heat recovery, Regenerative + passive cooling, Thermo-active building element systems, Control technology, operational management, building automation, Financing models

Project description

The new Regionshaus building in Hanover (Germany) represents the first time that a building which complies with the standards of the support initiative "Energy-Optimised Construction" (EnOB) has been realised with the PPP financing model. The Region of Hanover is constructing the building in Hanover's city centre. The strict energy standard was contractually defined as an objective within the PPP project, and comprises planning, construction, and financing over 20 years. The accompanying scientific research is sponsored by the German Federal Ministry of Economics and Technology (BMWi) as an EnOB project, and received subsidies from proKlima ("the enercity fund").

Building concept

The PPP invitation to tender defined the essential objectives with regard to energy efficiency, but allowed the planners considerable freedom of design.

The design which is now in implementation provides a high-tech energy concept, which answers the region's call for a reliable low-maintenance building with low life cycle costs.

This building, in Hanover's inner city, adds to the Region of Hanover's large number of administration buildings. The 5-storey angular building structure provides the region with a new attractive location, with a spacious, glazed, multifunctional hall on the ground floor protruding towards the street.

The particular challenge of this model project is the accommodation of the EnOB standard's strict energy efficiency requirements in an open competition run by a public authority. The primary energy requirement for heating, ventilation, cooling and lighting must not exceed 100 kWh/m^2 per annum.

Energy concept

The energy concept encompasses the essential aspects of achieving high energy efficiency: a compact building structure (A/V = 0.3), good thermal insulation (walls with 160 mm of mineral fibre in thermal conductivity group 035), good windows (U = 1.2 W/(m²K)), and good air-tightness (n50 < 1.5).
The rooms are heated by means of static radiators, and can be cooled in summer with concrete core activation. Ventilation systems with highly efficient heat recovery and moisture recovery are provided for the multipurpose hall and the sanitary rooms. The building is supplied with remote heating. Cooling occurs via an array of 12 borehole heat exchangers, each 70 m in length. A chiller is provided only as a reserve. The heat exchangers are also used in winter to preheat the outdoor air in the hall's ventilation system. Thus, additional cooling of the heat exchangers takes place in winter, so in the following summer a greater cooling potential is available.
The building is equipped with building control technology, as well as a comprehensive measurement concept, and can be monitored online.

Performance

Information on this subject will become available as the project continues

Optimisation measures and possibilities

Information on this subject will become available as the project continues

Construction costs and profitability

The planning process is subject to the legal framework for assessing profitability: construction is only permitted if the construction costs in the PPP process do not exceed the cost estimates. Thus, the EnOB standard is achieved with a cost guarantee!

Key energy data

Energy indices according to German regulation EnEV (in kWh/m²a)	
Heating energy demand (calculated according to EnEV, based on net floor area)	34,80
Overall primary energy requirement (based on net floor area)	93,00
Measured energy consumption data (in kWh/m²a)	
Thermal heat consumption	34,60
Total source energy	79,80
Primary energy complete	123,60
Primary energy ventilation	11,10
Primary energy lighting	27,30
Primary energy auxiliary energy + others	6,90

Implementation costs

Costs of implementation in €/m²	
Construction (KG 300)	762
Technical system (KG 400)	282

These figures represent estimated costs

Net construction costs (according to German DIN 276) relating to gross floor area (BGF, according to German DIN 277)

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