Invitation for Competition Submissions 2009

ISOVER
Multi-Comfort House - Office Building

Office building Saint-Gobain Isover
International, two-stage, open competition

Participants: Students
Organizer: Saint-Gobain Insulation with the participation of national Saint-Gobain Isover organizations
1. Details of the task

By unrestricted choice of location and property an office building with the building physics performances of passive houses - ISOVER Multi-Comfort-House has to be designed.

The planned office building shall be the new headquarter for Saint-Gobain Isover.

1.1. Property

The property can be freely chosen and must be represented on a plan of the site. For the purpose of better illustration, the property or the surrounding natural and cultural environment should be photographed (the site for construction need not be real in the legal sense).

1.2. Space allocation

At the notional location 60 permanently used office working places with the computer and internet access are needed. In addition, a meeting room for 50 people and two smaller meeting rooms for 25 persons each, should be available.

The office building shall include the common spaces and the infrastructure facilities as toilets, kitchen(s), storages for brochures and office supplies, archives, etc.

The fictitious organization has following functional entities: sales, customer services, marketing, product development, purchasing, IT and bookkeeping, general management and registry.

A space for the permanent exhibition of isolation systems and solutions and for the training of customers shall exist on the ground floor or elsewhere but easily accessible.

The parking places for cars, bicycles and motorcycles, as well as external plant shall be roughly designed.

1.3. Type of construction, technical parameters

The high-performance thermal, acoustic and fire protection requirements have to be considered in order to achieve the Multi-Comfort-House criteria. Basic features that distinguish passive – MultiComfor house construction can be found on www.iepd.sk or www.passivehouse.com/English/PassiveH.htm.
1.3.1. Construction

Basically, the construction method (static system, wood, masonry or steel construction) can be chosen freely, whereby Isover products should be employed in the process. All needed information or technical details can be found on www.isover.sk, www.isover.cz, www.isover.com, www.basf.de or www.owa.de.

Designed building must meet main criterias for passive houses, set by Passive House institute in Darmstadt. Annual heating requirement for passive house is less than 15 kWh/(m²a), this has to be proved by simple calculation in PHVP software, freely available on webpage of Passive House institute in Darmstadt – www.passiv.de or Slovak Institute for Passive Houses – www.iepd.sk. This calculation must be part of documentation.

Additionally, the following Isover contact persons are available to answer any questions:

Prof. Doc. Ing. Jozef Štefko, PhD – Technical University of Zvolen  
Email: stefko@vsl.dzvolen.sk

Ing. Arch. Henrich Pifko, PhD. – Faculty of Architecture, Slovak Technical University  
Email: Henrich.Pifko@stuba.sk

Ing. Vladimír Balent – Isover, Project manager  
Email: Vladimir.Balent@saint-gobain.com

1.3.2. Technical parameters for thermal insulation

The exterior structural components should have the following U-values:

- All opaque external structural components $U \leq 0.15$ W/m²K
- Windows and doors $U_{\text{Wtotal}} \leq 0.8$ W/m²K

In the case of very small volumes or a poor surface-to-volume ratio, the opaque structural components should have a U-value of up to 0.1 W/m²K.

1.3.3. Protection against overheating in summer

Sufficient outside sun protection for the eastern, southern and westward windows shall be planned. In the project the ratio of transparent to opaque components has to be taken in account. For the large glass faces the summer performance has to be calculated and fulfilled in accordance with national requirements.

1.3.4. Technical parameters for fire protection

In the floor plan design and space organization it has to be paid attention on the construction of fire sections. In addition the emergency exit ways have to be considered.

The fire protection should achieve the national requirements. If national requirements are not defined, all bearing internal and external walls have to achieve at least REI 60 according to ISO standards.
1.3.5. Technical parameters for sound insulation

Depending on the location of the property the increased sound protection against outside immissions has to be included. The airborne sound insulation and acoustic in office building has to be special planned, because these parameters are influencing the quality of working place and comfort.

The following values have to be kept:

- Airborne sound insulation for exterior walls \( R_w \geq 55 \text{ dB} \)
- Airborne sound insulation for roof \( R_w \geq 50 \text{ dB} \)
- Airborne sound insulation between special protected areas (meeting rooms, training spaces) \( R_w \geq 55 \text{ dB} \)
- Airborne sound insulation for internal walls between regular offices \( R_w \geq 45 \text{ dB} \)
- Airborne sound insulation for all ceilings \( R_w \geq 55 \text{ dB} \)
- Impact sound insulation for all floors: \( L_{nt,w} \leq 45 \text{ dB} \)

All ceilings should be designed to comply with Sound Absorption Class A to EN ISO 11654.

In practice, sufficient sound insulation for windows and doors, as well as for sanitary installation and ventilation systems should be consider.

1.4. Competition requirements

1.4.1. The following minimum requirements should be observed

Plans
- Plan of site 1:500
- Floor plan and cross-section 1:100
- Horizontal façade cross-section 1:50
- Vertical façade cross-section 1:50
- Strip view of south façade 1:50
- Construction details 1:10
- Construction details of areas where thermal bridges can occure 1:10
  (Joint of external wall and fundaments, joint of roof and external wall, bottom of terrace/balcony door)
- Renderings and /or photos of the modell

Descriptions
- Energy supply and ecological concept (optionally with the graphic illustration)
- Simple scheme of ventilation system with heat recovery as a part of building cross section
- Design report – description of the design concept
- Description of construction
- List of constructions with U-values
- Simple calculation in PHVP software as a proof of meeting passive house standard, results of simulations and calculations
- Recapitulation of all thermal and acoustic properties in the table
1.4.2. In addition, the following may also be submitted

- Expandability and flexibility of the structural grid
- Ergonomical quality of the working places
- Energy and ecology estimation (energy-pass, eco-pass)
- Usage of alternative energy systems (photo voltaic modules, sun collectors, wind)
- Representation of the possibilities for coupling or terracing of the detached house – formation of a compact development structure
- Use of rainwater for watering gardens – rainwater harvesting
- Accessibility

1.5. Formalities for submission

Projects should be submitted in poster format measuring 60x80cm, 100x100cm or 70x100cm, and additionally in digital form on the CD. Design report and fragment of the PHVP “verification” sheet with the calculation results has to be on the poster too, complete PHVP calculations (as Excell worksheet) has to be included on the CD.

Furthermore, the personal information sheet with following information: year of birth, city and country of birth, school information and attached “passport” photo should also be handed in, also added on the CD.

2.6. General assessment criteria

Design:

Involvement in environment and landscape, structure of the building, the building concept of property, functionality and quality of floor plans, formal design of the building, spatial quality of the interior

ISOVER Multi-Comfort-House:

Total energy concept (passive house technology), thermal quality of the building envelope, summer performance, passive and active solar gains, acoustic comfort, renewable energy sources

Ecology:

Exposure and lighting concept, materials choice, green space design, accessibility