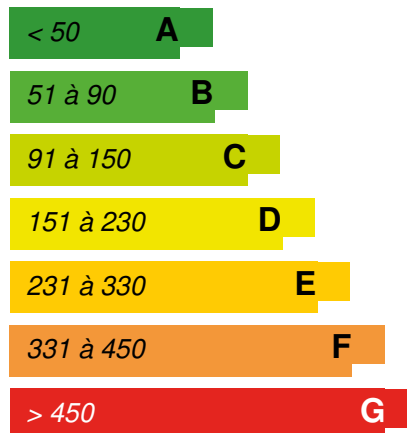


Office Building of Hebei building science and technology research and Development Center

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Building Type : Office building < 28m

Construction Year : 2012

Delivery year : 2015

Address 1 - street : 050000 SHI JIAZHUANG, China

Climate zone : [Dwa] Humid Continental Hot Summer, severe, dry winter

Net Floor Area : 10 508 m² Useful area (es)
Construction/refurbishment cost : 5 452 000 €
Number of Work station : 6 Work station
Cost/m2 : 518.84 €/m²

General information

The total construction area is 14527.17m², underground area is 2164.87m², 6 floors area is 12362.3m², the height of building is 23.55m, concrete frame structure, designed seismic intensity is 6 degrees;
Use features: the building is mainly used for new energy-saving technology demonstration, energy technology research and development, testing, office and meeting rooms;
Construction standards: according to the German passive low-energy buildings standards and China three-star green building standards.

Stakeholders

Stakeholders

Function : Developer

Hebei Academy of Building Research

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<http://www.hebabr.com/>
building field

Function : Company

Hebei Academy of Building Research

Liu Shaoliang E-mail: lvsejianzhu001@126.com; address: NO 395, Huaian Xi Road, Shijiazhuang, HeiBei province

<http://www.hebabr.com/>

Contracting method

General Contractor

Type of market

Realization

Building users opinion

perfect contentment

Energy

Energy consumption

Primary energy need : 113,20 kWhpe/m².year

Primary energy need for standard building : 120,00 kWhpe/m².year

Calculation method : Primary energy needs

Breakdown for energy consumption : heating, cooling, lighting, ventilation, hot water, equipment 0.135

Envelope performance

Envelope U-Value : 0,14 W.m⁻².K⁻¹

More information :

wall, 200mm aerated concrete block + 220mm Graphite polystyrene board , reinforced concrete + 220mm Graphite polystyrene board

Window: Integral window heat transfer coefficient $U \leq 1.0$

Door: Integral window heat transfer coefficient $U \leq 1.0$

roof 100mm reinforced concrete + 230mm XPS, $K=0.14$

floor 100mm reinforced concrete + 230mm XPS, $K=0.14$

Building Compactness Coefficient : 0,16

Indicator : EN 13829 - n50 » (en 1/h-1)

Air Tightness Value : 0,20

Users' control system opinion : The fresh air system is automatically operated according to the concentration of carbon dioxide in the room

Air conditioning system frequency conversion operation, indoor part according to the indoor temperature automatic operation

Public lighting by sound and light control

More information

All of the above energy demand data are Used Germany PHPP calculation

Real final energy consumption

Final Energy : 37,70 kWhfe/m².year

Real final energy consumption/m² : 107,85 kWhfe/m².year

Real final energy consumption/functional unit : 35,95 kWhfe/m².year

Year of the real energy consumption : 2 015

Renewables & systems

Systems

Heating system :

- Heat pump
- Radiant ceiling
- Fan coil

Hot water system :

- Solar Thermal

Cooling system :

- Fan coil
- Radiant ceiling

Ventilation system :

- Double flow heat exchanger

Renewable systems :

- Heat pump (geothermal)

Renewable energy production : 15,00 %

Other information on HVAC :

Soil source heat pump and air to air conditioning system Ground source side cold (hot) water cold (hot) direct supply fresh air units.

The atrium two natural light well to strengthen the natural lighting and natural ventilation Solar photovoltaic system, solar hot water system

Solutions enhancing nature free gains :

Set ventilation roof, lighting roof, increase indoor lighting, strengthen natural ventilation

Smart Building

BMS :

Energy consumption of air conditioning fresh air system according to the feedback at the end of the automatic adjustment, itemized monitoring platform

[↗ Automatic adjustable external shading](#)

Users' opinion on the Smart Building functions : Easy to use

Environment

Urban environment

Volume rate of 1.3, the total construction density of 26.4%, green rate of 29.56%

Land plot area : 792 818,00 m²

Built-up area : 12,50 %

Green space : 234 357,00

Products

Product

passive house York dena

Hebei Academy of Building Research

Email: lvsejianzhu001@126.com

<http://www.hebabr.com/>

Product category : Structural work / Passive system

Being the very first passive-house office building in China, this project will play a huge role to promote the development of passive-house in Hebei and whole China, and which will improve the ecological environment and make the contribution to building a beautiful China in the future.

This project has been recognized by the user, Dena and the community



Costs

Health and comfort

Water management

Consumption from water network :37 841,38 m³

Consumption of grey water :11 708,42 m³

Consumption of harvested rainwater :5 292,41 m³

Water Self Sufficiency Index : 0.31

Water Consumption/m² : 3.6

Water Consumption/Work station : 6306.9

Indoor Air quality

Indoor temperature: summer 26°C winter20°C Carbon dioxide concentration
≤1000PPm

Comfort

Calculated indoor CO₂ concentration :
≤1000PPm

Measured indoor CO₂ concentration :
800~950

Carbon

GHG emissions

GHG in use :33,20 KgCO₂/m²/year

Building lifetime : 50,00 year(s)

Contest