


# coolregion

## WP 3 - D19 (Gertec, Germany) - Best practice example No. 1

### General data

Name of the building	Energion
Building type	Office building
Country	Germany
Address	Lise Meitner Str. 14, 89081 Ulm
Google Earth coordinates	48°25 North, 9°46 East
Building owner/user	Software AG - Stiftung

### Building information

Picture of the building	
Highlights	<ul style="list-style-type: none"> <li>- Passive house with 420 workplaces; (A/V: 0,22 m<sup>1</sup>)</li> <li>- Basic shape of the building: three equal, curved facades</li> <li>- Reinforced concrete frame construction; thermal insulation up to 50 cm in the roof</li> <li>- Triple glazed windows</li> <li>- Glass roofed atrium of approx. 430 m<sup>2</sup></li> <li>- Concrete core activation with 40 geothermal probes each 100 m deep</li> <li>- Mechanical ventilation with heat recovery: The supply air flows through a subsurface concrete pipe, 28 m long and 1,8 m bore</li> <li>- 15 kWp PV + 135 kWp PV on the garage close-by</li> </ul>
Year of construction	2002
Total net area (m <sup>2</sup> )	6.911 (main useable surface: 5.412 m <sup>2</sup> )
Volume (m <sup>3</sup> )	32.223
No. of floors	5
Glazed surface level	43 %

**Cooling concept**

Cooled area (m <sup>2</sup> )	6.911 m <sup>2</sup>
Cooling approach	<ul style="list-style-type: none"> <li>- The concrete core activation (CCA) and the 40 geothermal probes with each 100 m deep achieve a cooling load up to 120 kW without an additional cooling machine.</li> <li>- Water flows directly from the CCA (350 plastic tube registers on 5.000 m<sup>2</sup> ceiling area) through the geothermal probes. The registers are at distance of 10 cm from the rear side of the ceilings, which are 28 cm thick.</li> <li>- In case of cooling the design temperature lies at 18°C at a temperature spread of 1,2 K.</li> <li>- By an additional heat exchanger with antifreeze safety the water circulation in the geothermal probes is also used to cool the supply air.</li> <li>- Minimum air moisture of 30 % is assured by central air moistening (spray nozzles) and plants in the atrium and in the offices.</li> <li>- Most of the cooled supply air flows into the atrium and then into the offices.</li> <li>- A free cross or shaft ventilation as well as a mechanical ventilation with surplus supply air could be operated alternatively in the atrium.</li> <li>- Free ventilation at night by supply and exhaust air in the atrium, open windows in the offices and storing construction materials ensure night cooling.</li> <li>- In the garden floor 830 m<sup>2</sup> floor cooling have been realized to cover high cooling loads in case of special use.</li> <li>- Seminar rooms are additionally equipped with cooling canvas.</li> <li>- The waste heat from the cooling units in the central computing rooms (compression) and from the kitchen is emitted into the CCA and into coolers, if there is no demand.</li> </ul>
Annual electricity consumption (kWh <sub>el</sub> /m <sup>2</sup> )	n.s.
Installed capacity (kW)	108 (all geothermal probes), decentralised cooling: 34 kW (15 kW <sub>el</sub> )

## Building concept

Comfort	Excellent; ratio of overheating 0%, room temperatures to 100 % between 20 und 27°C
Solar protection	<ul style="list-style-type: none"> <li>- Transparent blinds with spectral selective foils in the pane interspace are installed in the glass roof to further provide daylight.</li> <li>- The foil-blinds reduce the degree of light transmission of the glass roof from 71 % to about 13 %, the degree of light transmission is reduced from 50 to 17 %.</li> <li>- Offices at atrium side: Benefit of the transparent blinds. A glare protection is installed on demand.</li> <li>- Offices at the facades: External sunscreen with a two-tier option (activated as glare protection the supply of daylight is still given).</li> </ul>
Lighting performance	<ul style="list-style-type: none"> <li>- Most lights are equipped with fluorescent lamps and electronic ballasts.</li> <li>- Offices at the facades: Lights with daylight dependent regulation and motion detectors.</li> <li>- The energy saving potential is to low to install motion detectors and special regulation in the offices at the atrium side.</li> <li>- The internal corridors are supplied with daylight by glass elements next to the office doors.</li> </ul>
Office equipment	- Energy efficient office equipment, selective choice of electricity saving kitchen technology
Regulation	n.s.

## Figures

Figures from [http://www.solarbau.de/monitor/doku/index\\_0.htm](http://www.solarbau.de/monitor/doku/index_0.htm) Portrait No. 17

Bauwerkskosten Brutto, Stand Kostenberechnung

Bezug	Baukonstruktion DIN 276: KG 300	Technische Anlagen DIN 276: KG 400	Bauwerkskosten KG 300+KG 400
 BruttoRauminhalt DIN 277	226 €/m <sup>3</sup>	74 €/m <sup>3</sup>	300 €/m <sup>3</sup>
 NettoGrundfläche DIN 277	1.054 €/m <sup>2</sup>	345 €/m <sup>2</sup>	1.399 €/m <sup>2</sup>

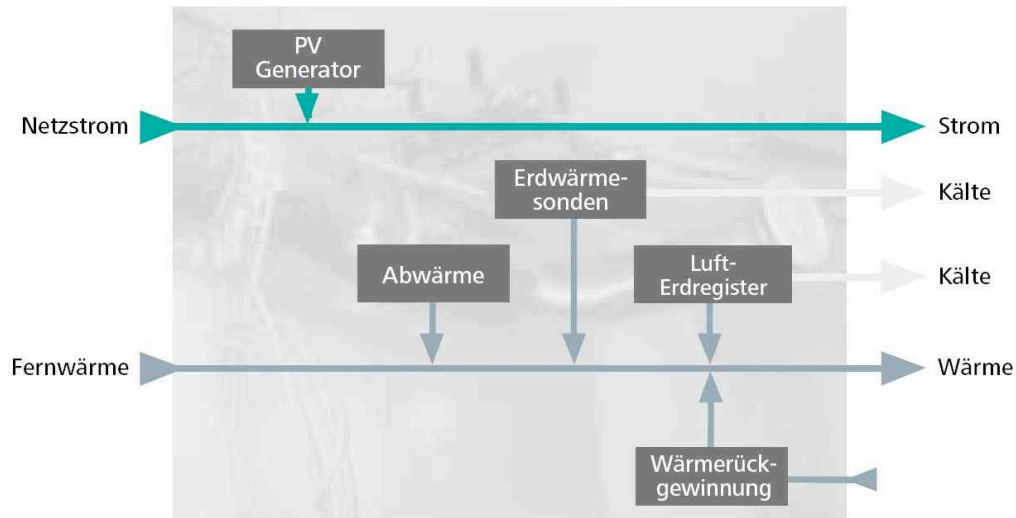


Figure 1: Energy supply

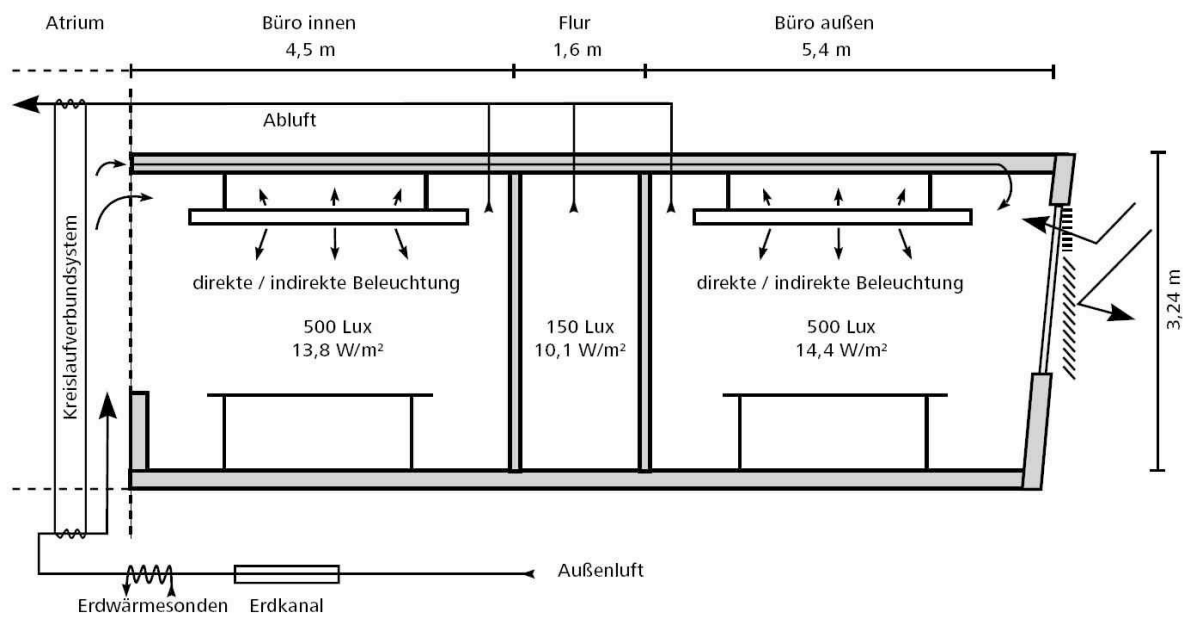


Figure 2: Air-conditioning and lighting concept

## Contact & Links

[www.energon-ulm.de](http://www.energon-ulm.de)

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