



Concrete Core Cooling with supply air



Seit 1877

Kiefer

Luft- und Klimatechnik

Neue Wege mit Luft

Etrium company headquarters with passive house standard, Cologne



Photo © Gerhard Hoffmann

The Enconcern company headquarters in Germany, the Etrium, is the first large passive house building in Northrhine-Westphalia. With the Etrium, the Dutch market leader for sustainable energies has provided an architectural vision for a world supplied exclusively by sustainable energy. The term “passive” means a comfortable climate with extremely low energy consumption where the heat is primarily drawn from existing sources such as solar radiation and heat loss from people and technical devices. Solar panels and wind turbines on the roof support heat input from natural resources. Tempering the concrete core with incoming air ensures optimum air distribution on the floors while efficiently using heat recovery. The primary energy consumption of the building is only 116 kWh/m². This means the Etrium requires around 70% less primary energy than a conventional office building of this size. The energy required for heating is only 10 kWh/m², about a fifth of the demand of a conventional office building.

For this energy efficient office complex, the Etrium has been awarded the first gold quality seal for sustainable building by the DGNB.

Building:	Firmenzentrale Etrium, Köln
Proprietor:	Friedrich Wassermann GmbH, Köln
Architects:	Benthem Crouwel Amsterdam/Aachen
Energy simulation:	Ifes GmbH, Frechen
Consultant:	PB Bauer, Köln
Tenant:	Firmensitz Deutschland des Enconcern, Niederlande
Bruttogrundfläche:	4.880 m²
Cooling system:	Concrete Core cooling with air
Primärenergieverbrauch m²/a:	116 kWh (70 % weniger als in konventionellen Bürogebäuden gleicher Größenordnung)
Year of:	2008 – as the first large passive house office building in Northrhine-Westphalia

DGNB Gold:



Awarded with the first gold quality seal for sustainable building by the DGNB





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The design

The building has three floors and is based on a square footprint with around 38 m side length and an atrium with a glass roof. Two opposite angles, rotated by 90° towards each other, create the special interior space with characteristic patios which are facing on each floor. Acoustically effective wooden panelling on ceiling and walls as well as the industrial parquet floor lend a homely flair to the Etrium.

In contrast to the understated interior design, the external facade of the Etrium is fully designed with red glass chips, crushed recycled glass. This reflects the sunlight in an unusual way, harmonising perfectly with the commercial area. A high-quality building shell with thermal insulation and triple glazed windows is part of the energy-efficient comfort. The interior primarily consists of glass so that the rooms are flooded in light and only use artificial lighting when required.



Photo © Gerhard Hoffmann

The glazed courtyard, the atrium, creates space and daylight while also fulfilling an important function as a used air zone between the offices and the heat exchanger. This atrium design, coupled with the high level of energy efficiency, is where the Etrium got its name.

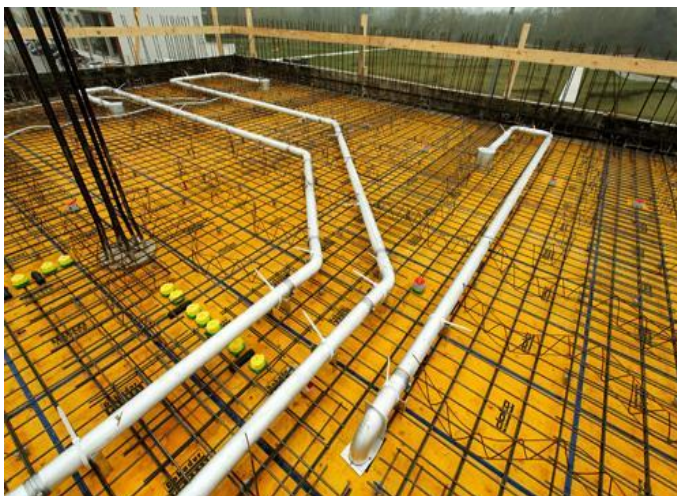


Photo: Ecofys Germany

Reinforcement work, pipe coil installation

Function CONCRETCOOL:

In contrast to conventional systems, in which supply air is fed directly into the working areas, the air first flows through aluminium cooling tubes cast into the ceilings. Thereby the supply air cools the ceiling. At the same time the gain of heat is used to warm up the supply air.

System advantages

- Optimum thermal comfort
- Additional ceiling cooling with water is not required
- Free cooling provides energy savings of up to 50%
- Full flexibility due to modular positioning of cooling tubes
- Cooling with outdoor air – no air circulation required
- Construction costs reduced due to low floor height

