Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Concrete Core Cooling with Air - CONCRETCOOL

Sebastian-Lotzer-Middle School, Memmingen

Photo © Klaus Mauz

Front view of the Sebastian-Lotzer-Middle School in Memmingen. The CONCRETCOOL Concrete Core Cooling Ventilation System from Kiefer combines component tempering and ventilation.

The planning concept for the ventilation and air conditioning equipment was developed by the planning office Güttinger Kempten. The CONCRETCOOL ventilation system from Kiefer, which combines the positive factors of a component temperature control and a ventilation system, played a central part for the implementation of the energy concept.

Innovative Ventilation Concept

The CONCRETCOOL ventilation system provides fresh air and cooling to all 16 classrooms, three multipurpose rooms, the Chemistry, Biology, Physics and IT labs and the Craft, Textiles and Art studios, as well as the staff rooms, Board of Governors room and secretarial office.

The CONCRETCOOL concrete core cooling ventilation system is particularly suitable for schools and educational facilities where plenty of fresh air is needed for a lot of people in a relatively small space. Continuous replacement of the ambient air prevents the CO_2 level in the room from rising. This is essential for concentration and therefore successful learning outcomes. A comfortable ambient temperature is also ensured through the combination of supply air and an activated ceiling for cooling. The CONCRETCOOL system maintains a high level of efficiency, whilst satisfying all of the main requirements for creating an atmosphere that is conducive to learning.

Visually, this project called for a smooth concrete ceiling throughout. This meant replacing the discharge elements. The outlet boxes were cast into the ceiling, leaving a gap to the lower edge, whilst the discharge elements were recessed, above the lower edge of the ceiling, and covered with a perforated metal plate mounted flush with the ceiling.

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Concrete Core Cooling with Air - CONCRETCOOL

Sebastian-Lotzer-Middle School, Memmingen

Installation of Concrete Core Cooling CONCRETCOOL.

Photo © Klaus Mauz

Classroom with discharge elements.

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

- Optimal thermal comfort
- Additional ceiling cooling with water is not required
- Free cooling provides energy saving of up to 50 %
- Full flexibility due to modular positioning of cooling tubes
- Cooling with outdoor air without use of recirculation air
- Reduction in building costs through low floor height

Technical data

Building:	Sebastian-Lotzer-Middle School, Memmingen
Proprietor:	City of Memmingen
Architects:	Consortium/MPRDO Mauz Pektor Architekten, Munich Herle + Herrle Architekten, Neuburg/Donau
Planning office:	Güttinger Ingenieure, Kempten
Completion:	2016
Product:	Concrete Core Cooling CONCRETCOOL
Energy efficiency:	KfW 55 to EnEV
Total floor area:	7.717 m²
Construction volume:	28.793 m³

E3013-26_04/17

Maschinenfabrik Gg. Kiefer GmbH Heilbronner Straße 380-396 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 Fax: +49 (0) 711 8109-205 E-Mail: info@kieferklima.de www.kieferklima.de

Concrete core cooling with air – CONCRETCOOL

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Claas Harsewinkel – New Building Atrium

Maximum energy efficiency and resource conversation

People make CLAAS: With its new administration building at the company headquarters in Harsewinkel, the global manufacturer of energy-efficient farming machinery and developer of agricultural technology is certainly living up to this motto. The high-efficiency building provides a modern, comfortable working environment which encourages communication between employees.
The four-storey building comprises an elegant entrance area opposite the Technoparc, conference and meeting rooms from the ground floor to the top floor, plus a new computer centre and the historical archive in the basement.
A covered atrium provides space for events, exhibitions and presentations. As the office areas have flexible divisions, they can be arranged as individual offices or open-plan spaces. The building features daylight-dependent lighting which is controlled via movement sensors for optimum results. The thermal load generated by people, computers, lighting, etc. in the offices during working hours is used to heat the atrium. Both measures contribute towards minimising energy and heat loss.

Photo © Andrea Felske

The new Atrium building with comfortable, energy-efficient office and meeting rooms featuring flexible divisions, an atrium for events and an elegant entrance area. Maximum energy efficiency and careful use of resources are an absolute must.

Building:	**Claas Harsewinkel – New building Atrium Harsewinkel near Gütersloh**
Proprietor:	**CLAAS KGaA mbH**
Architects:	**Heitmann Architekten, Gütersloh**
Lighting planning:	**Scharkon Lichtkonzepte GmbH, Aalen**
Scope:	**9,000 m² total floor area 12,500 m² conditioned area**
System:	**Concrete core cooling with air CONCRETCOOL**

Concrete core cooling with air – CONCRETCOOL

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Claas Harsewinkel – New Building Atrium

Special climate control features

The new Atrium building features one CONCRETCOOL pipe module per 1500 mm construction grid. Each pipe module has a nominal width of 80 mm, approximately 5.5 running metres of active ribbed pipe and an air-side load of 50 – 75 m³/h. The specified quantity of fresh air (7.8 m³/h m²) which is pumped into the offices by the CONCRETCOOL system enters the pipes at an intake temperature of 12°C and is heated nearly to ambient temperature by the energy stored in the ceilings. When the ventilation technology system is operated for 12 hours, the CONCRETCOOL system can recool a stationary cooling load of 35 W/m² in the offices; with 20 hours of operation, it can even achieve 60 W/m². The operational ambient temperature does not exceed 24.5°C in normal operation. The extract air is extracted centrally in the corridors via the INDUSILENT cross-flow elements which are integrated in the corridor walls and feature sound absorbers.

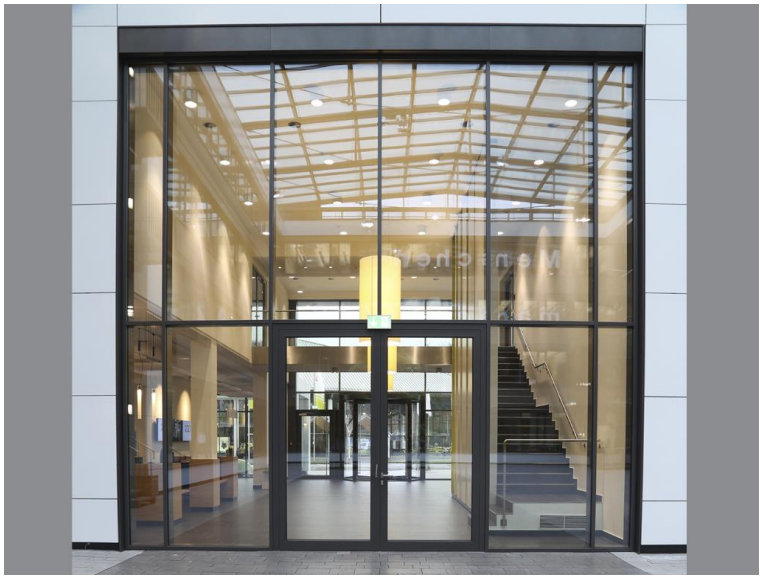


Photo © Andrea Felske

The elegant entrance area opposite the Technoparc

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.

Photo © Andrea Felske

In the meeting rooms, the air from the CONCRETCOOL system is conveyed into additional quick-reacting, high-performance INDUCOOL Compact cooling panels with a water-side capacity of 300 W per running metre for additional air conditioning.

System advantages:
- Optimal thermal comfort
- Additional ceiling cooling with water is not required
- Free cooling provides energy saving of up to 50 %
- Full flexibility due to modular positioning of cooling tubes

E3013_64 011/15

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Concrete core cooling with air

New cafeteria and library at the Grimmelshausen Gymnasium in Gelnhausen

Photos © hkr.architekten

For a total of 7 million Euros, the Main-Kinzig district as the school authority built a multifunction building with a size of more than 2,000 square meters of surface area on the former Hempel property.

The cafeteria is located in the basement of the building, with 430 m² of useful area for 180 visitors, as well as kitchen space and corresponding equipment rooms. By moving the school library to the new building, space was created in the main building for expansion of administrative spaces. The school library maintained on the first floor with an area of 420 square meters and with a lecture hall is an invitation for learning and reading, with internet-linked work spaces.

The new building was designed in close collaboration with the German Council for the Handicapped and is completely barrier free. The project was planned by the architects Hänsel and Rollmann, Gelnhausen.

Object:	**Grimmelshausen Gymnasium, Gelnhausen**
Architect:	**hkr.architekten, Gelnhausen**
Proprietor:	**Main-Kinzig district school**
Consultant:	**Ingenieurbüro TGE, Gelnhausen**
Scope:	**Planning of the heating, ventilation and sanitary facilities:** **Air flow rate for Concretcool only** **Cafeteria in the basement: 3,000 m³/h** **Library and foyer on the main floor: 3,200 m³/h** **Multifunction rooms on the main floor: 1,250 m³/h**

Technical data:
Pellet heating system, 150 kW for floor heating, radiators and the building ventilation system
Total air flow 18,400 m³/h in 5 air conditioning sections with heat recovery (cross-flow heat exchange)
48 kW chiller, air-cooled
Measurement and control system by Sauter
Heating, ventilation and sanitation system costs: 650,000 Euro

Maschinenfabrik Gg. Kiefer GmbH Heilbronner Straße 380-396 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 Fax: +49 (0) 711 8109-205 E-Mail: info@kieferklima.de www.kieferklima.de

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Concrete core cooling with air

New cafeteria and library at the Grimmelshausen Gymnasium in Gelnhausen

The building was designed as a low-energy building according to the guidelines of the Energy Efficiency Ordinance. To do so, the engineering firm of TGE, Gelnhausen, a firm known for its energy-optimising building plans and for its open innovative technologies, utilised a pellet heating system and a central fresh air feed system with specially-designed heat-recovery ventilation equipment for each of the various areas being used. The fresh air, with specified air exchange rates of between 7.2 and 9 m³/h m², is not fed directly to the rooms, but first flows through cooling tubes inside the concrete ceiling. While it flows through, the cold feed air heats up to approximately ceiling temperature. This achieves an outlet temperature of about 21°C entirely without a re-heater, resulting in an overall heat recovery of more than 95 %. Through appropriate climatic specifications, and with the potential of free cooling, favourable operating costs and energy savings are achieved which would otherwise not be possible. By reclaiming energy from the concrete ceiling, an optimum thermal comfort is achieved for the building.

Photos © hkr.architekten

Function CONCRETECOOL

In contrast to conventional systems, the feed air is not fed directly to the room, but first flows through aluminium cooling tubes embedded in the ceiling. The feed air cools the ceiling in the process. At the same time, the heat recovered is used to heat the feed air.

System advantage

- 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

E3013-47_10/13

Maschinenfabrik Gg. Kiefer GmbH Heilbronner Straße 380-396 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 Fax: +49 (0) 711 8109-205 E-Mail: info@kieferklima.de www.kieferklima.de

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Concrete core cooling with air CONCRETCOOL

Jacob-and-Wilhelm-Grimm-Zentrum, Humboldt University, Berlin

To celebrate the two hundredth anniversary of the oldest university in Berlin, the Jacob-and-Wilhelm-Grimm-Zentrum, the new central library of the Humboldt University, was opened on 12th. October 2009; its name honours the great efforts of the Grimm Brothers as academics and librarians.

Here under the guiding hand of architect Max Dudler, a luxurious temple of books has been created incorporating a high, a cathedral-like reading room and displaying the architect's characteristic austere sense of form; it not only combines unique aesthetics with a high degree of comfort and the most modern technology, it is also the largest open access library in Germany and allows direct access to books on every floor.

Besides the University Library, twelve more branch and subject libraries for the humanities, cultural studies, social sciences and economics are accommodated there. And of course there are also multi-media workplaces, a video-conference room, the library's own research room, numerous group and individual workplaces, and separate parent-child rooms.

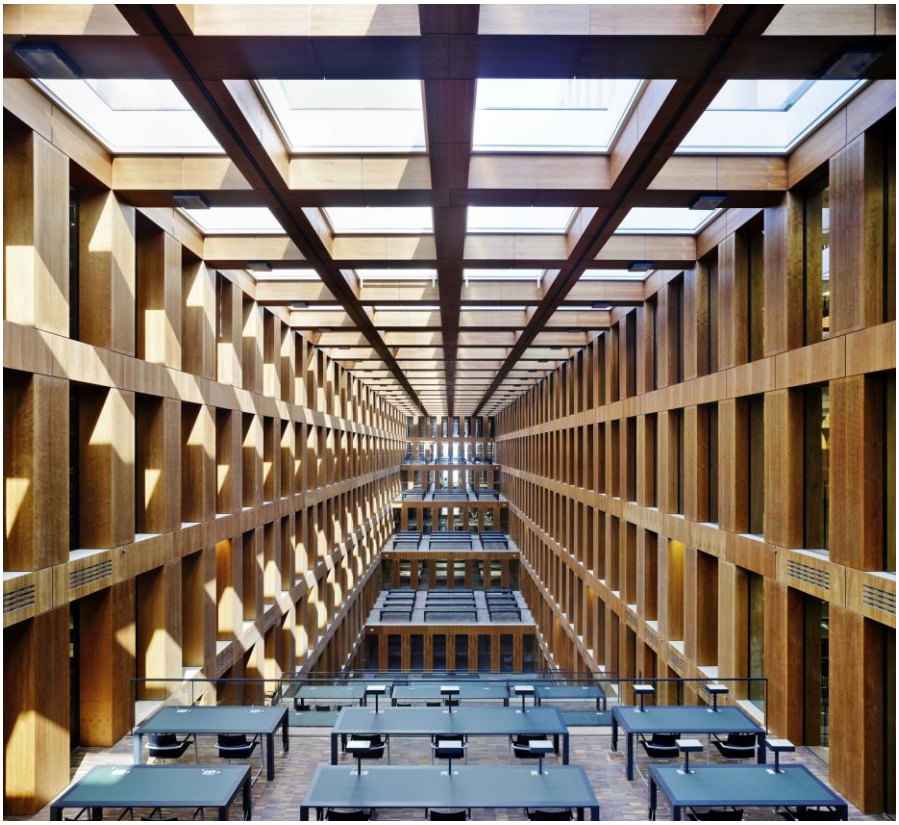


Photo © Stefan Müller

Elegant reading terraces on five levels in the Jacob-und-Wilhelm-Grimm-Zentrum, the new library of the Humboldt University in Berlin

Building:	**Jacob-und-Wilhelm-Grimm-Zentrum, Central Library, Humboldt University, Berlin**
Proprietor:	**Humboldt-Universität, Berlin**
Architects:	**Max Dudler, Berlin, Zurich, Frankfurt**
Consultant:	**Zibell, Willner + Partner, Berlin**
Media inventory:	**2.5 million**
Building volume:	**144,000 m³**
Volume of concrete:	**23,350 m³**
	10,400 m² air-conditioned surface
Cooling system:	**Concrete core cooling with air CONCRETCOOL**
Inauguration:	**12th. October 2009**

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Kiefer
Seit 1877 | Luft- und Klimatechnik
Neue Wege mit Luft

Concrete core cooling with air CONCRETCOOL

Jacob-und-Wilhelm-Grimm-Zentrum, Humboldt University, Berlin

Unity of design

The new building, whose facades feature a travertine-like natural stone, has a formal austerity with a classical modern basis; its dynamism is underlined by the numerous rectangular windows in three different formats. The large storerooms are protected from daylight behind narrow slits, whereas the reading areas are illuminated through wider windows. The interior fittings are strictly oriented on the geometry of the facades. Walls, shelves and study tables are aligned with the building's grid pattern. The tables are exactly the width of the spaces between the windows, and the sitting areas are precisely the width of the windows with clear vistas from all workplaces. In this way the interior fittings and the architecture of the building form a harmonious unit with full consciousness of its significance as a design element in the urban setting.

Photo © Stefan Müller

Exterior view of the Jacob-und-Wilhelm-Grimm-Zentrum – Max Dudler's buildings employ a specific architectural language whose art is expressed in simplification.

Source: grimm-zentrum.hu-berlin.de/download

Installing reinforcement

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

E3013_38 02/10

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Concrete Core Cooling with supply air

Seit 1877 | Kiefer Luft- und Klimatechnik

Neue Wege mit Luft

m.pire tower, Munich

Photo © Bernhard J. Lattner

The Skyline Tower in Munich impresses with its delicate glass and steel structure, which is also a feature of other buildings of Helmut Jahn in Germany, such as the Sony Center in Berlin and the Munich Airport Center. While the tower radiates lightness from on high, the long, extended campus building endows the ensemble with a spatial depth. A roofed atrium connects the campus with the tower. The total gross floor area of 44.000 m² provides space for flexible partitioning and use of individual, open plan or combination offices depending on function and specific requirements.

Building:	**m.pire tower, Munich**
Architects:	**Helmut Jahn, Chicago**
Porpietor:	**Bayrische Bau- und Immobilien Gruppe, Munich**
Consultant:	**Ingenieurbüro für Energie- und Haustechnik, Sarnen/Switzerland Dipl.-Ing. Peter Berchtold**
Scope:	**26.000m² conditoned area**
System:	**Concrete core cooling with supply air CONCRETCOOL** **Per fitout module (B=1350 mm) one linear diffuser. Air guide vanes are invisibly integrated into ceilings.**
Air flow rate:	**4.5 m³/hm² (exch. rate = 1,5 x/h)**
Completion:	**2010**

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Betonkerntemperierung mit Luft

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

m.pire tower, München

Awarded German Seal of Approval in Gold for Sustainable Building.

The Skyline Tower meets the criteria of the European “Green Building” Certificate for buildings with a low primary energy requirement, and has been awarded in Gold for sustainable Building.

This is based not just on energy efficiency, but also on the sustainability of the building with respect to the environmentally-friendly supply of energy, along with socio-cultural aspects such as comfort in the rooms, architecture and location. The Skyline Tower employs a combination of concrete core cooling with air, and axially arranged fan coils which individually regulate the base-load cooling.

In this way the energy requirement of the Skyline Tower is reduced substaintially in comparison with a conventional building.

Photo © BBIG

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

E3013_37 04/13

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Betonkerntemperierung mit Luft

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Holzhafen West, Hafencity Hamburg

Urban future

As a twin building to the award-winning “Holzhafen Ost” and in direct neighbourhood to the spectacular “Kristall” residential building – two interconnected glass towers with a view of the river Elbe, the “Holzhafen West” completes the ensemble at Hamburg's oldest dock. The three building wings modelled on Hanseatic warehouses are grouped around extensive patio courtyards providing maximum view of the river Elbe. Tall windows and full-surface glazing create rooms flooded with light. Thermal construction part activation with best possible ventilation function, sun shading glazing and lamella glare protection provide a comfortable ambient climate even in summer.

Photo © B+L Gruppe

The sophisticated new buildings at Holzhafen turned a deserted industrial area into urban waterfront architecture, combining classic Hanseatic counting house tradition with modern office architecture.

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

Building:	**Holzhafen West, Hamburg Hafencity**
Proprietor:	**B + L Gruppe, Hamburg**
Architect:	**Astoc Architects & Planners, Köln**
General Contractor:	**Alpine Bau Deutschland AG, Hamburg ARGE Holzhafen, Hamburg**
Consultant:	**Ingenieurbüro Fl. B., Berlin Ingenieurbüro Scheer, Berlin**
Aerea:	**10.700 m² konditionierte Fläche**
System:	**Betonkerntemperierung mit Luft CONCRETCOOL**
Flexible area: concept	**for large and small room solutions**
Completion:	**Spring 2011**

E3013_42 07/10

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Concrete Core Cooling with supply air

Kiefer
Seit 1877
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:	**Peter Zeiler + Partner, Frechen**
Tenant:	**Firmensitz Deutschland des Enconcern, Niederlande**
Bruttogrundfläche:	**4.880 m²**
Cooling system:	**Concrete Core cooling with air**
Primärenergie-verbrauch 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**
DNGB Gold:	**Awarded with the first gold quality seal for sustainable building by the DGNB**

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Concrete Core Cooling with supply air

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Etrium company headquarters with passive house standard, Cologne

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.

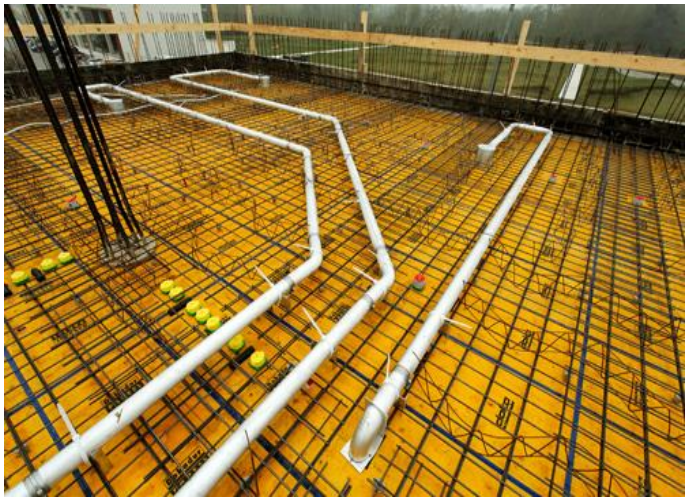


Photo: Ecofys Germany

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

E3013_41 07/10

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Concrete core cooling with air CONCRETCOOL

New Office and Administration Building for Basler Versicherungen

On a site in Bad Homburg, Basler Versicherungen inaugurated its new office and administration building in September 2007. In an area of more than 15,500 m², there is space here for over 500 employees. The architects, Bieling of Kassel, have designed a building notable both for its linear architecture and its modern equipment. The five-storey building, composed of two U-shaped structures, contains 2,000 tons of steel and 13,000 cubic metres of concrete. The use of concrete core cooling permits energy-saving climate control yet still ensures comfortable room temperatures.

Photo © Basler Versicherungen

Basler Versicherungen's new office and administration building, Bad Homburg

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

Building:	**New building for Basler Versicherungen, Bad Homburg**
Architects:	**Bieling Architekten, Kassel**
Proprietor:	**Basler Lebens-Versicherungs-Gesellschaft , Bad Homburg**
Consultant, building services:	**Protec Planungsgesellschaft, Braunschweig**
General contractor:	**Strabag AG, Braunschweig**
Scope:	**15,500 m² conditioned area**
CoolingSystem:	**Concrete core cooling with air CONCRETCOOL** **Per fitout module, one linear diffuser Air flow path invisibly integrated into the ceilings.**
Air flow rate:	**6 m³/hm²**

E3013_15 12/08

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Concrete core cooling with air CONCRETCOOL

ARCUS Sportklinik, Pforzheim

The architecture of the ARCUS Sportklinik creates an environment in which efficiency and individual needs are in harmony

The ARCUS Sportklinik is a specialist clinic for orthopaedics, accident surgery, sports medicine and cardiology, which unites ultra-modern technology and strict demands for optimum quality in the care of patients. The new building with a total area of 12,000 m² is defined by a conservative rendered facade with a composite thermal insulation system with, in some areas, a glazed-panel curtain-wall in front of it. The building is composed of two independent blocks with a glazed entrance hall between them arranged so that the entrance is oriented towards the direction of arrival. The feel-good idea is emphasised by individual lighting and the use of natural materials in warm colour tones in the practices and patients rooms.

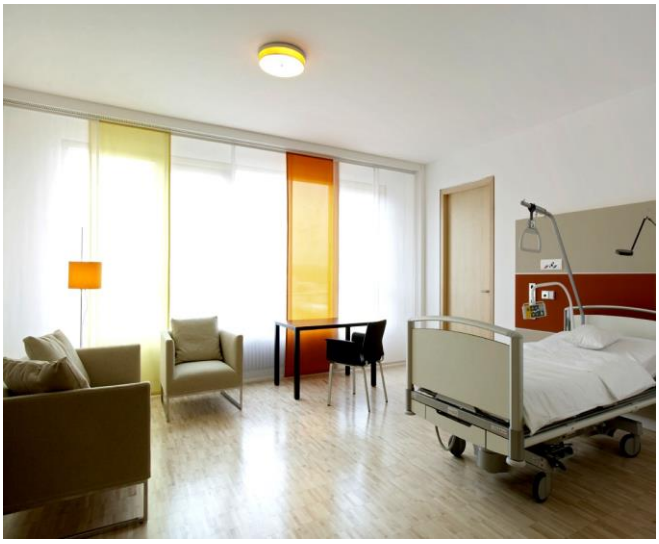
Building:	**ARCUS Sportklinik, Pforzheim**
Architects:	**Architektengruppe Eggert + Partner Stuttgart**
Proprietor:	**R u. B Klinik Betriebs GmbH Pforzheim**
Consultant, building services:	**IGP, Pforzheim**
General contractor:	**Consortium: Wolff & Müller, Karlsruhe Züblin AG, Karlsruhe**
Scope:	**1,500 m² conditioned area**
Cooling system:	**Concrete core cooling with supply air CONCRETCOOL** **Per fitout module, one linear diffuser Air flow path invisibly integrated into the ceilings.**
Air flow rate:	**6 m³/hm²**

Kiefer
Seit 1877 | Luft- und Klimatechnik
Neue Wege mit Luft

Concrete core cooling with air CONCRETCOOL

ARCUS Sportklinik, Pforzheim

Photo © Ines Blersch



Patient's room with 4-star standard

Function CONCRETCOOL

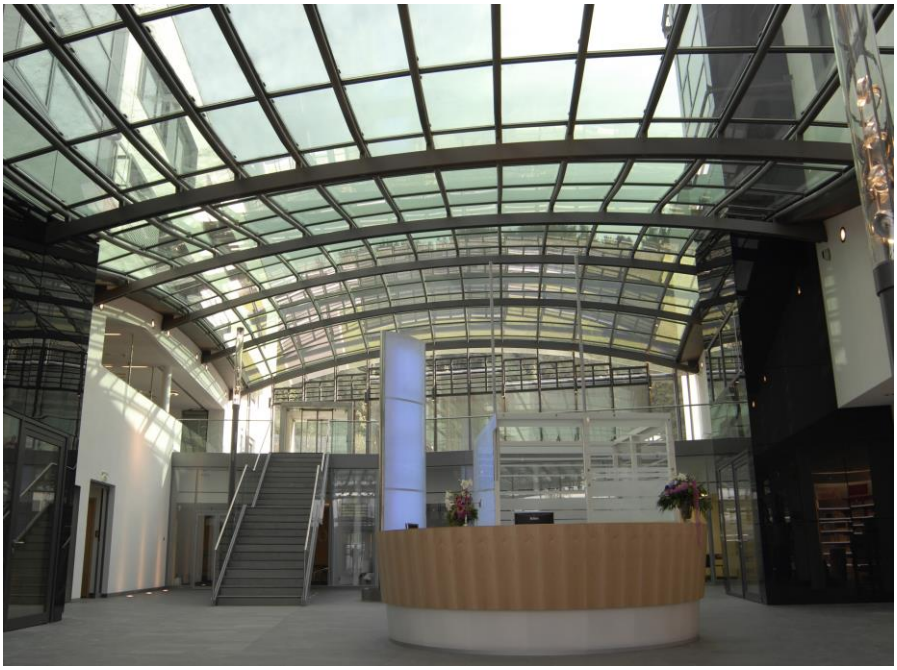
In contrast to conventional systems, in which supply air is fed directly into the working areas, the air first flows through aluminium cooling tubes cast into the ceilings. Thereby the supply air cools the ceiling. At the same time the gain of heat is used to warm up the supply air.

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

Air-conditioning equipment

The ventilation system comprises 20 local air-conditioning or ventilation installations with outdoor air and exhaust air, 6 operating theatres with laminar-flow filter ceilings, 42 residential patients' rooms with concrete core cooling by means of cast-in supply air tubes, 2 screw-type water chillers with a total capacity of 950 kW, and four 1200 kW recooling plants.



Entrance hall of the ARCUS Sportklinik

Photo © Ines Blersch

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Concrete core cooling with air CONCRETCOOL

AXA Konzern AG, Cologne

Photo © AXA Konzern AG

This extension to the German headquarters building of the international insurance group AXA in Cologne-Holweide comprises five new administration buildings and a new media and congress centre. The architects, BM + P Beucker Maschlanka and Partner, Düsseldorf, have achieved an elegant combination of brick facades and external glazed stairways, with a floor plan that follows a large-area concept. The generous window fronts provide clear views of a tranquil lake and gardens while brightening the rooms with daylight. In the building complex, about 4,500 employees serve the insurance enterprise.

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

Building:	**AXA Konzern AG, Cologne-Holweide**
Architects:	**BM + P Beucker Maschlanka and Partner GbR, Düsseldorf**
Proprietor:	**AXA Konzern AG, Cologne**
Project management:	**Assmann Beraten + Planen GmbH, Dortmund**
New building:	**Five office buildings, media and congress centre, multi-storey car park**
Scope:	**28,000 m² conditioned area**
Cooling System:	**Concrete core cooling with air CONCRETCOOL**
	Per fitout module, one linear diffuser. Air flow path invisibly integrated into the ceilings.
Air flow rate:	**3 m³/hm²**

E3013_25 12/08

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Concrete core cooling with air CONCRETCOOL

Central Library, Ulm

Gottfried Böhm created quite a stir with his design for a new central library in the historic centre of Ulm. It was opened in Spring 2004.

A glass pyramid with a height of more than 35 metres, the building radiates its objectives both to the outside and within: openness and accessibility.

The few walls are centred around an artistically designed spiral staircase, which winds up all five storeys to end in the crowning glory, a readers' cafe with a panoramic view of the citv.

Photo © Martin Duckek

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

Building:	**Central Library, Ulm**
Architects:	**Gottfried Böhm Cologne**
Proprietor:	**City of Ulm**
Consultant, building services:	**S.H. Keppler, Ulm**
Scope:	**2,000 m² conditioned area**
System:	**Concrete core cooling with air CONCRETCOOL** **Per fitout module, one linear diffuser Air flow path invisibly integrated into the ceilings.**
Air flow rate:	**7.5 m³/hm²**

E3013_14 12/08

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Kiefer
Seit 1877
Luft- und Klimatechnik
Neue Wege mit Luft

Concrete core cooling with air CONCRETCOOL

Berufskolleg, Kreis Recklinghausen

Photo: © Hans Jürgen Landes Fotografie

The Herwig Blankertz and Max Born Vocational Training College in Recklinghausen now has new premises in converted colliery buildings. Two compact, generously glazed buildings, with an effective area of 17,600 m², form together with a five-court sports building a central public space, the Campus Vest. For comfortable conditions in the rooms, which permit concentration while working at any season of the year and any time of day, an integral energy and building concept was developed in which the CONCRETCOOL ventilation system has a central role along with the dual-shell building envelope and a replacement-air system. By exploiting the internal loads, the thermal storage capacity of the structure, and the weather-dependent sun-blinds, the energy needs for ventilation and heating have been minimised in comparison with conventional building management systems.

Function of 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

Building:	**Herwig-Blankertz- und Max-Born-Berufskolleg, Recklinghausen**
Architects:	**scholl architekten partnerschaft scholl.balbach.walker, Stuttgart**
Proprietor:	**Kreis Recklinghausen - Der Landrat**
Planner: Stuttgart	**Pfeil & Koch Ingenieurgesellschaft,**
Scope:	**17,600 m² conditioned area**
System:	**Concrete core cooling with air CONCRETCOOL** **The ventilation system is integrated into the ceilings so that it is invisible.**
Air flow rate:	**9 m³/hm² (exch. rate = 2.7 x /h)**
Features:	■ **High interior loads (users, equipment)** ■ **Replacement-air system for reliable ventilation and high air quality** ■ **Sealed building envelope to minimise effects of external noise**

E3013_30 02/10

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Concrete core cooling with air CONCRETCOOL

Sparkasse Ulm

Destroyed in the Second World War, the Neue Strasse in Ulm forms a break in the architecture of the old city. On one side is Ulm Cathedral and the Stadthaus by Richard Meier, and on the other Rathaus dating from the middle ages and the new glass Central Library by Gottfried Böhm.

The new building for the Sparkasse Ulm formulates new urban space in this central location and closes a gap in the old city. The building is formed in two blocks which penetrate each other at an acute angle, leaving an opening on the Rathausplatz side, a glazed seam. The light seam takes up the enclosure of the public areas and offices, and so creates an exciting relationship between the building interior and the external surroundings.

Photo © Zooey Braun

New building for the Sparkasse Ulm. Clear forms create a new urban space between Ulm Cathedral and the historic Rathaus.

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

Building:	**Sparkasse Ulm**
Architects:	**Stephan Braunfels, Berlin / Munich**
Proprietor:	**Sparkasse Ulm**
General contractor:	**Matthäus Schmid - Bauunternehmen GmbH & Co. KG, Baltringen**
Consultant, building: services	**Conplaning GmbH Ingenieurbüro für Gebäudetechnik, Ulm**
Project management:	**Johannes Hanf, Braunfels, Architects**
Gross floor area:	**4000 m²**
System:	**Concrete core cooling with supply air CONCRETCOOL Per fitout module, one linear diffuser. Air flow path invisibly integrated into the ceilings.**
Air flow rate:	**8 m³/hm²**
Inauguration:	**18th October 2006**

E3013_16 12/08

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de

Concrete core cooling with air CONCRETCOOL

Puma AG, Oensingen

The new headquarters building for Puma Schweiz AG in Oensingen is a classical reinforced concrete frame structure. The basement is a massive reinforced concrete construction. The floors above it are rest on pre-cast spun concrete supports. The façade of the open frame structure is clad with a glass curtain wall. The floors above the second floor are used as offices. The ground floor comprises a factory outlet and a bistro restaurant, while the first floor is occupied by a showroom for trade customers.

Function of 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

Building:	**Puma AG, Oensingen**
Architects:	**Mühlemann + Partner Architekten und Planer GmbH Grenchen**
Proprietor:	**Puma Schweiz AG**
Scope:	**3.000 m² conditioned area**
System:	**Concrete core cooling with air CONCRETCOOL** **Per fitout module, one linear diffuser** **Air flow guide vanes are invisibly integrated into the ceilings.**
Air flow rate:	**8.3 m³/hm²** **(exch. rate = 2.7 x / h)**

E3013_26 02/10

Maschinenfabrik Gg. Kiefer GmbH ● Heilbronner Straße 380-396 ● 70469 Stuttgart, Germany
Tel.: +49 (0)711 8109-0 ● Fax: +49 (0) 711 8109-205 ● E-Mail: info@kieferklima.de ● www.kieferklima.de