



Chilled Ceiling Panel INDUCOOL-Compact

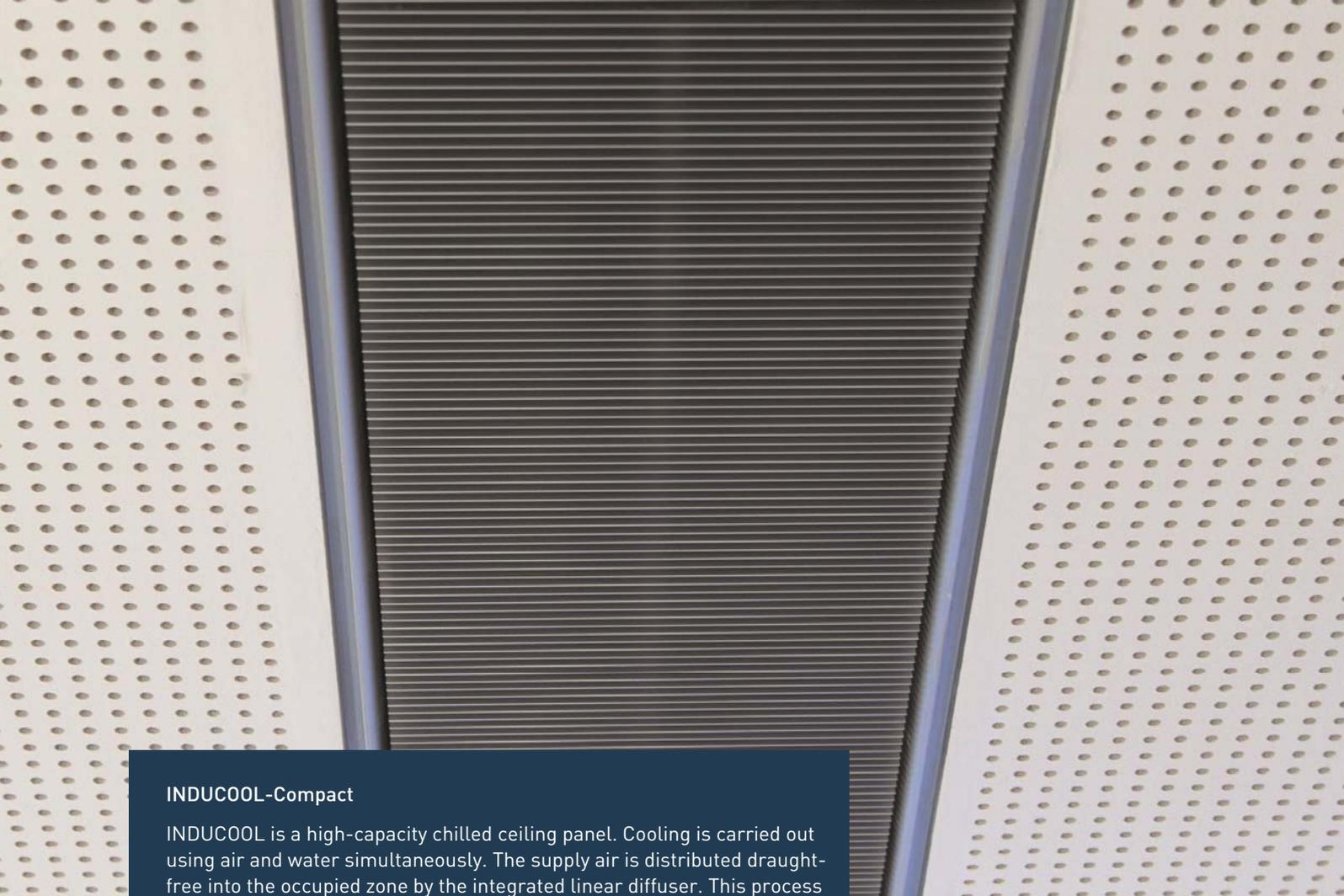


Seit 1877

Kiefer

Luft- und Klimatechnik

Neue Wege mit Luft



INDUCOOL-Compact

INDUCOOL is a high-capacity chilled ceiling panel. Cooling is carried out using air and water simultaneously. The supply air is distributed draught-free into the occupied zone by the integrated linear diffuser. This process considerably increases the heat transfer and cooling capacity.

Maximum Comfort with lowest Energy Requirements

Air-conditioning systems often have to battle against the preconception that they cause draughts. If you consider the relevant standard DIN EN ISO 7730, this preconception is strengthened. Because even to achieve the best possible room class A, a 10 % dissatisfaction rate due to draughts is acceptable. But there is another way. For example, in the EURO PLAZA Office Park in Vienna a total of around 170,000 m² of office and floor space was created between 2001 and 2014 and equipped with more than 16,000m of INDUCOOL Chilled Ceiling Panels. Now every day more than 9,000 employees work here, with the result that the dissatisfaction rate lies under 1 %.

A further advantage is the low energy requirements. Owing to the use of free cooling, operating costs can be reduced to a minimum with INDUCOOL. INDUCOOL facilitates temperature differences of the supply air to the room of up to -14 K and therefore enables effective cooling through the supply air. From the transition periods and therefore 6,000...7,000 h/a the outside air offers enough cooling potential for free cooling. This leads to a considerable reduction in annual operating costs. In the EURO PLAZA, these costs in job terms amount to less than the equivalent of a single working hour per year. It is evident from this that the highest comfort doesn't have to be expensive.

And this is just one of many reference projects that are equipped with INDUCOOL.

Strengths



Energy

Low energy requirements owing to free cooling, hygienic minimum air flow rate and dissipation of residual heat using cold water.



Architecture

Premium aluminium profiles can be used as design elements, their low spatial density giving the architect free reign for ceiling design.



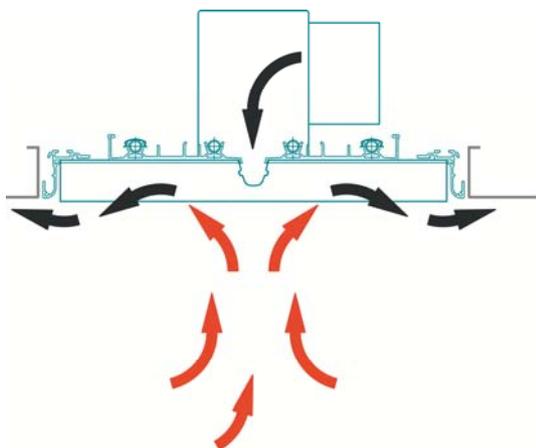
Technology

The integrated highly inductive linear diffuser itself meets the highest requirements in terms of ambient comfort.

Function

How do we explain the extremely high thermal comfort? The answer lies in the integrated discharge profile, which was essentially derived from our INDUL linear diffuser and developed exclusively for INDUCOOL. This integrated discharge profile uses its high induction effect to draw the warm ambient air over the water-cooled aluminium fin plates. Depending on the parameters, this achieves a cooling capacity of up to 500 W/m. The high induction on the underside of INDUCOOL panels – and therefore directly within the room – ensures a rapid reduction in the velocity of air leaving and temperature differences, so that the highest requirements in terms of ambient comfort are met in the occupied zone. Moreover, in the summer period the low supply air temperature leads to an increased dehumidification of the supply air in the central unit, resulting in a significantly more comfortable indoor climate.

Cooling capacity	Up to 500 W/m
Panel width	295 mm
Panel length	500 – 1750 mm
Installation height	145 mm
Surface covered	5 – 10 %



» INDUCOOL-PANELS ELEGANTLY INTEGRATED IN THE CEILING«

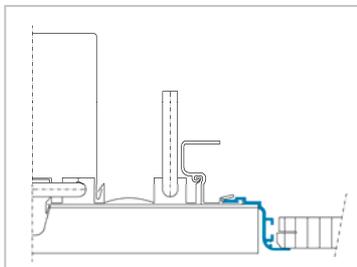
INDUCOOL can be installed just as easily in sophisticated ceiling designs as in standard designs. These chilled ceiling panels offer the architecture a great deal of freedom in ceiling design with the choice of continuous strips or single panels at selected locations.

Technology Centre Engel, Schwertberg
Photo © ENGEL AUSTRIA GmbH

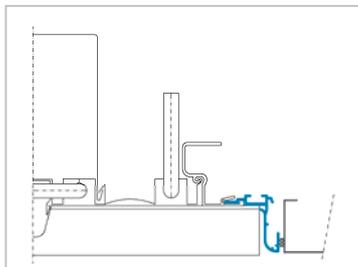
Installation Options

Due to the extremely high cooling capacity of INDUCOOL, only 5–10 % of the ceiling surface needs to be covered with INDUCOOL panels. The rest of the ceiling remains free for architectural designs of any kind. A wide range of ceiling attachment profiles ensure that the panels are perfectly integrated into any kind of ceiling structure. INDUCOOL panels can therefore be developed in both false and exposed ceiling systems, either as individual panels or in continuous lengths, enabling a full range of highly aesthetic solutions to be achieved.

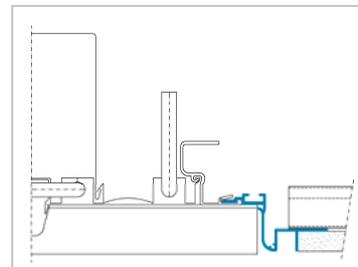
Installation in Mineral Fiber Ceiling with Air Guide Profile 1



Installation in Metal Ceiling with Air Guide Profile 3



Installation in Plasterboard Ceiling with Air Guide Profile 3-GK



Hygiene and Cleaning

INDUCOOL uses the fin plates on the underside of the chilled panel for heat exchange. Unlike traditional chilled beams, the induced secondary air does not flow through the plenum or a cooling coil where dust can be deposited. This means that the air remains uncontaminated. The low temperature of the supply air dehumidifies it, which reliably prevents the formation of condensation. This prevents any hygiene issues (germ formation) commonly related to condensation. For this reason, the INDUCOOL Chilled Ceiling Panel is even suitable for use in hospitals or other areas with stringent hygiene requirements, and has been used for this application a number of times.



Philips Austria GmbH, Vienna
Photo © Kiefer GmbH

Technical and economical System Advantages

Low Energy Consumption

INDUCOOL is the optimal solution for minimising energy costs, utilising a combination of air & water to satisfy the room cooling loads. For the majority of locations, there will be many hours in which the outdoor air required to “drive” the panel, will be below dew point, therefore providing maximum free cooling and negating the use of mechanical refrigeration. Similarly, the secondary water can be cooled effectively for many hours utilising evaporative cooling, again minimising the use of mechanical refrigeration. INDUCOOL is the first choice for low energy systems.

Increased Comfort

Occupant comfort is the key objective for any air conditioning system, and is delivered by the terminal device. INDUCOOL delivers the highest possible levels of comfort for a terminal device. Conditioned outdoor ventilation air is delivered through a series of high induction micro jets where it mixes fully with the room air ensuring maximum dispersion of the fresh air to the occupants. The mixed air is delivered to the occupied zone at very low velocities ensuring no occupant discomfort from draughts. The cooled surface of the panel will typically operate at 4–5 °C below room design temperature as with a chilled ceiling, providing added comfort through a radiant exchange to the occupants. Typically occupant satisfaction level of 95 % are achieved when measured against the comfort standard EN 7730. INDUCOOL provides maximum occupant comfort and hence productivity.

Large Performance Range

INDUCOOL Chilled Ceiling Panels provide measurable advantages due to their large performance ranges for cooling load and specific air flow rate. Depending on the density of the setup and the performance level, a cooling load in excess of 100 W/m² and a specific air flow rate of 5...40 m³/hm² can be achieved. The system can therefore be customised to meet any requirements. When the setup is used for a different purpose, simple adjustments can lead to higher cooling loads and air flow rates than originally planned. INDUCOOL Chilled Ceiling Panels from Kiefer are therefore more flexible than traditional systems and can be used for a variety of applications.

Reference Projects

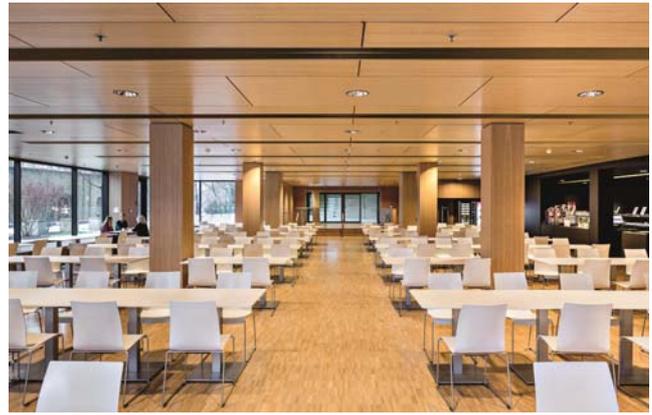
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TECHNOLOGY CENTRE ENGEL, SCHWERTBERG

Proprietor ENGEL AUSTRIA GmbH
 Architects Architekturbüro Kada, Graz, Austria
 Planner BHM Ingenieure, Linz, Austria

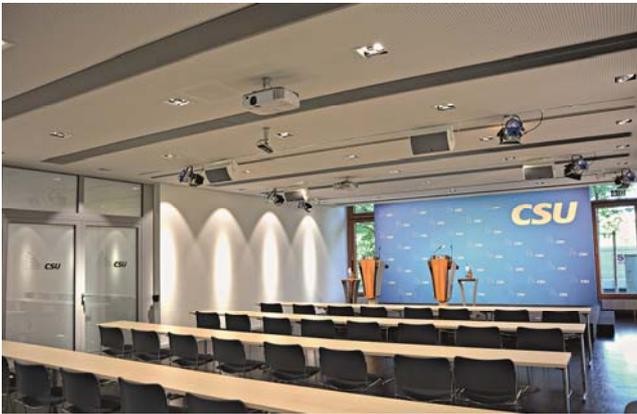
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MINISTRY, STUTTART

Proprietor Vermögen und Bau B.-Württemberg
 Architects Staab Architekten, Berlin
 Planner Duschl Ingenieure Project GmbH & Co. KG, Rosenheim

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LANDESZENTRALE DER CSU, MUNICH

Architects Weickenmeier, Kunz + Partner
 Architekten Ingenieurs GmbH,
 Munich
 Planner ITG GmbH Landshut, Eching

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KRONES AG, NEUTRAUBLING

Architects Architekturbüro Manfred Winkler,
 Wörth
 Planner Ingenieurbüro Scholz, Passau

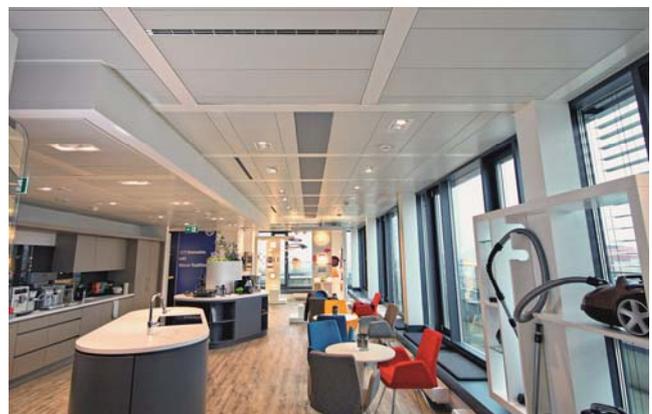
Photo © Kiefer GmbH



PRESS CENTRE AIRPORT, MUNICH

Architects Koch + Partner, Munich
 Planner Prof. K. Müller + Partner Consulting
 GmbH, Rosenheim

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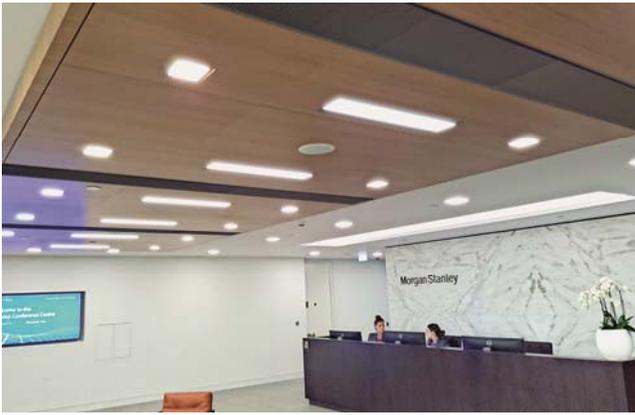


PHILIPS AUSTRIA GMBH, VIENNA

Architects Neumann + Partner, Vienna, Austria
 Planner Scholze Ingenieurgesellschaft,
 Dresden

Reference Projects

Photo © Kiefer GmbH



MORGAN STANLEY, LONDON

Proprietor Morgan Stanley & Co. International PLC
 Planner Meit Associates, London, UK

Photo © Anna Blau



EURO PLAZA, VIENNA

Proprietor Kapsch Immobilien GmbH
 Project developer Strauss + Partner, Wien, Austria
 Architects Neumann + Partner, Wien, Austria
 Planner Scholze Ingenieures., Dresden

Photo © Kiefer GmbH



STEWARD BUILDING, LONDON

Proprietor Henderson Global Investors, London, UK
 Architects Allford Hall Monaghan Morris (AHMM), London, UK
 Planner Long & Partners, London, UK

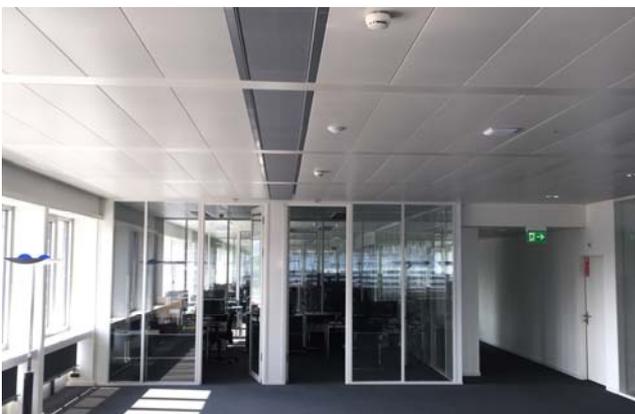
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JULIUS BLUM GMBH, HÖCHST

Architects Arno Bereiter Architekturwerkstatt, Lustenau, Austria
 Planner Klimaplan, Hohenems, Austria

Photo © Imperial54.ch / IGIMO AG



IMPERIAL 54, ZURICH

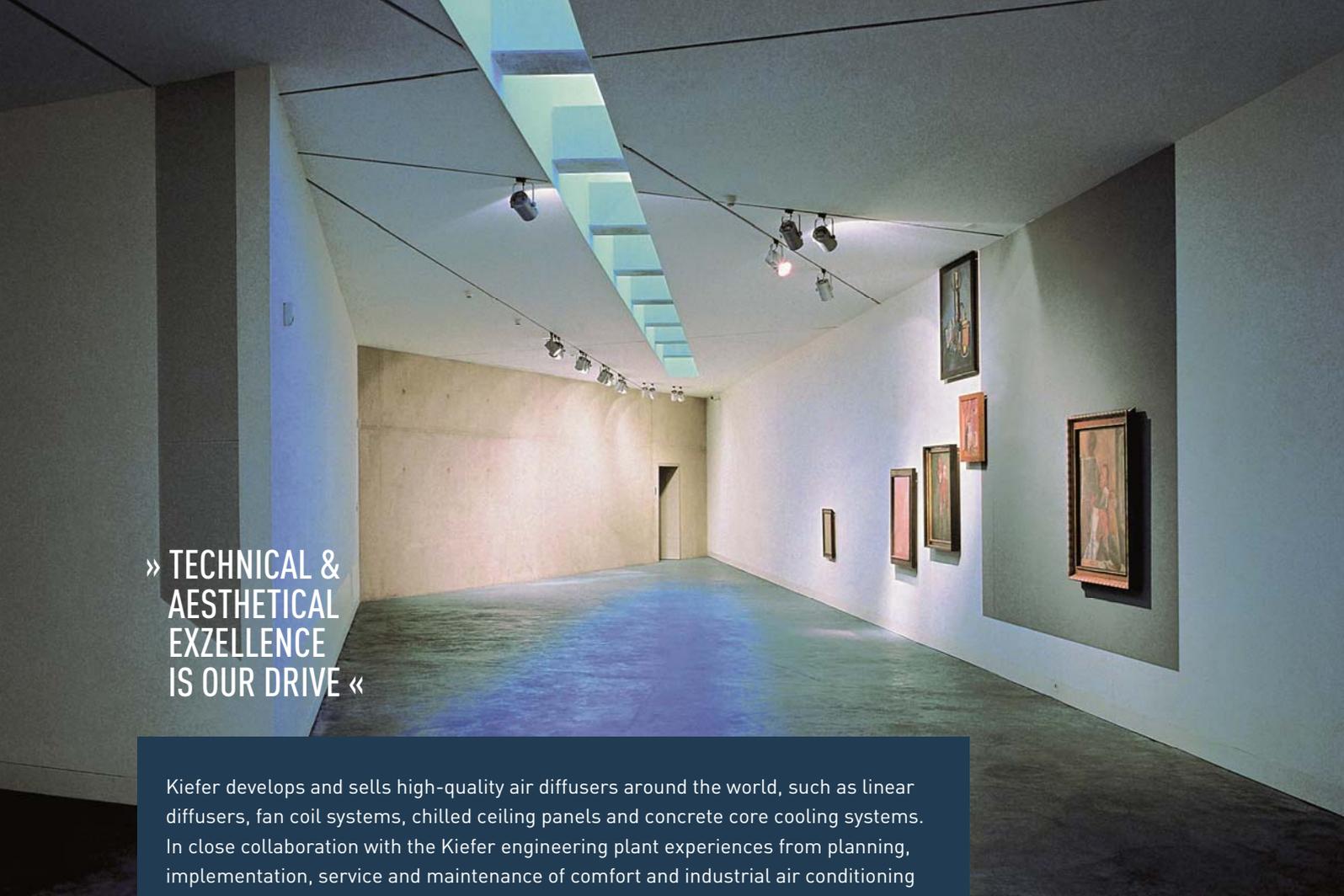
Proprietor Immobilienfonds IGIMO AG
 Architects Renespa AG, Weinfelden, Switzerland
 Planner Fredy Häfliger AG, Vitznau, Switzerland

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RAIFFEISENBANK, HEIDE

Proprietor Raiffeisenbank eG Heide
 Architects DL Architekten + Partner, Bredsted
 Planner Ingenieurbüro Pahl und Jacobsen, Heide



» TECHNICAL &
AESTHETICAL
EXZELLENC
IS OUR DRIVE «

Kiefer develops and sells high-quality air diffusers around the world, such as linear diffusers, fan coil systems, chilled ceiling panels and concrete core cooling systems. In close collaboration with the Kiefer engineering plant experiences from planning, implementation, service and maintenance of comfort and industrial air conditioning slips in the development of the components and systems.



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Kiefer

Luft- und Klimatechnik

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