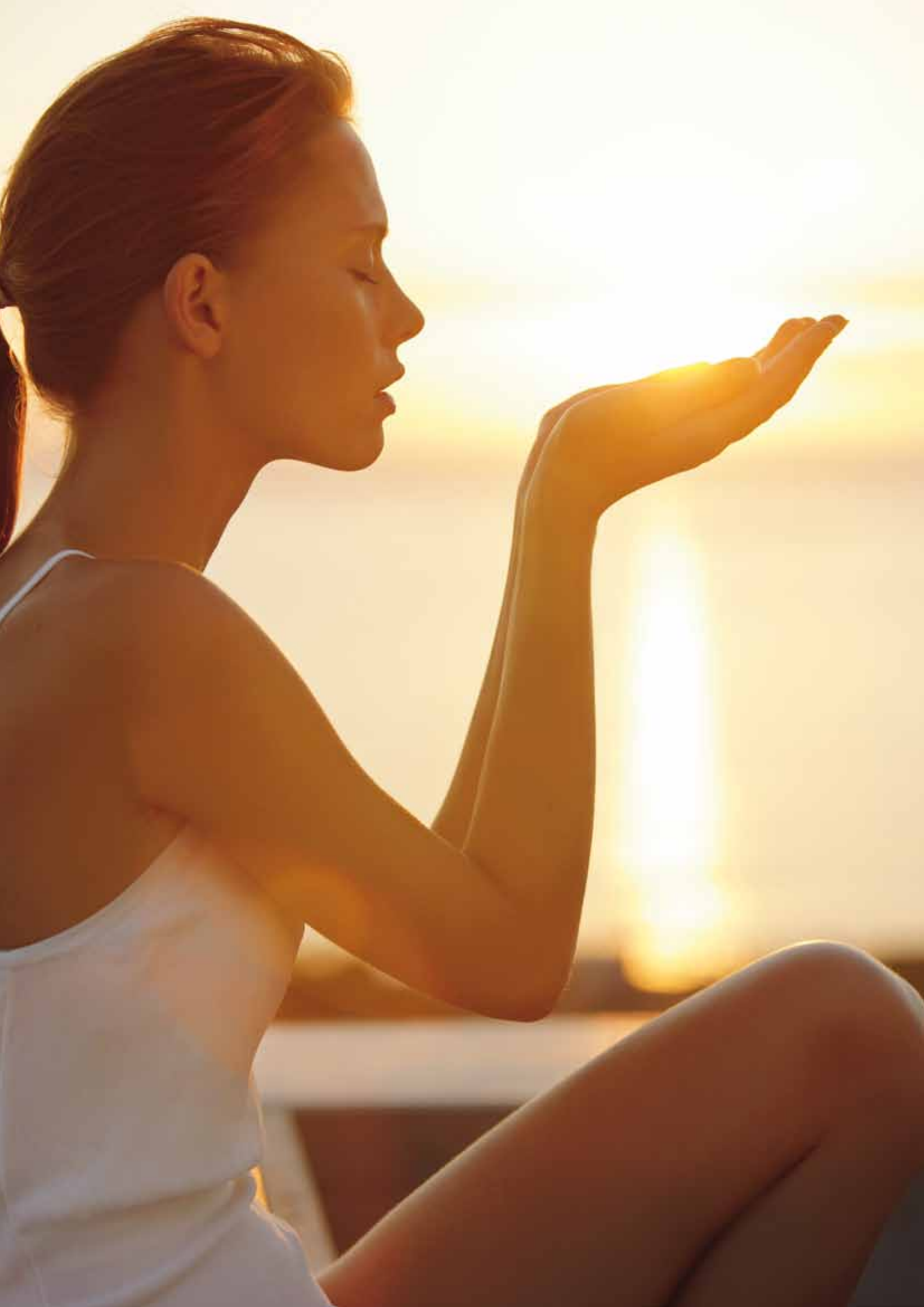


**Zehnder systems for
Radiant Heating and Cooling**

zehnder





Comfortable, energy efficient, versatile: Zehnder Ceiling Heating and Cooling Systems.

Compromises are often needed when a building needs to be heated or air-conditioned. Rising energy costs are faced with increasing demands for an optimum indoor climate. How can we create a comfortable environment whilst saving energy and costs? The answer is Zehnder systems for radiant heating and cooling.

A pleasant, draught-free indoor climate is achieved by utilising the thermal radiation principle, whereby the perceived temperature is higher than the air temperature. When compared with other systems, over 40% of the energy can be saved through this effect.

With over 50 years of experience, Zehnder is currently the largest manufacturer of radiant ceiling panels in Europe. Tens of thousands of satisfied customers in Europe, Asia and the USA validate the quality of the systems built by Zehnder.

If you are planning a project we would welcome the opportunity to assist you.

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Energy saving

Energy efficiency is of prime importance when choosing a heating and cooling system.

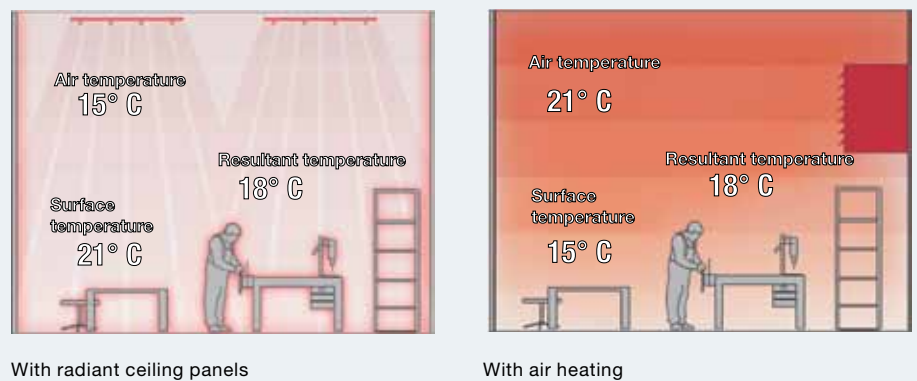
By comparison to other systems, Zehnder systems for radiant heating and cooling can achieve more than 40% energy saving, whilst maintaining a pleasant indoor climate.

- Energy saving with the same perceived temperature
- Uniform temperature distribution over the height of the room (Fig. 2)
- Very high heating capacity according to EN 14037
- Quick heating up and cooling down time
- Free choice of the source of energy; also alternative energies, heat pumps, calorific value technology or waste process heat
- No additional electricity costs for driving circulation fans

Firstly: When heating with radiant ceiling panels, the room air temperature is lower despite the same resultant temperature.

The consequence: Heat loss is reduced due to the lower difference between the room air and the outside air temperature (Fig. 1).

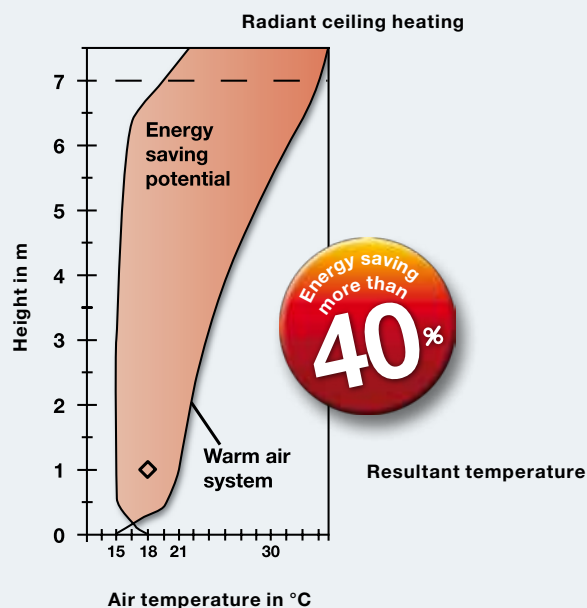
Fig. 1: Air temperature and perceived temperature



Secondly: With air heating the heated air rises into the unoccupied space, whilst the radiant panels are effective everywhere on the ground all the time. A more even distribution

of heat is produced over the total height of the room and thus a noticeable reduction in energy consumption (Fig. 2).

Fig. 2: Potential savings with radiant ceiling panel heating compared with air heating with the same perceived temperature.



Comfort

We spend three quarters of our lives in buildings:

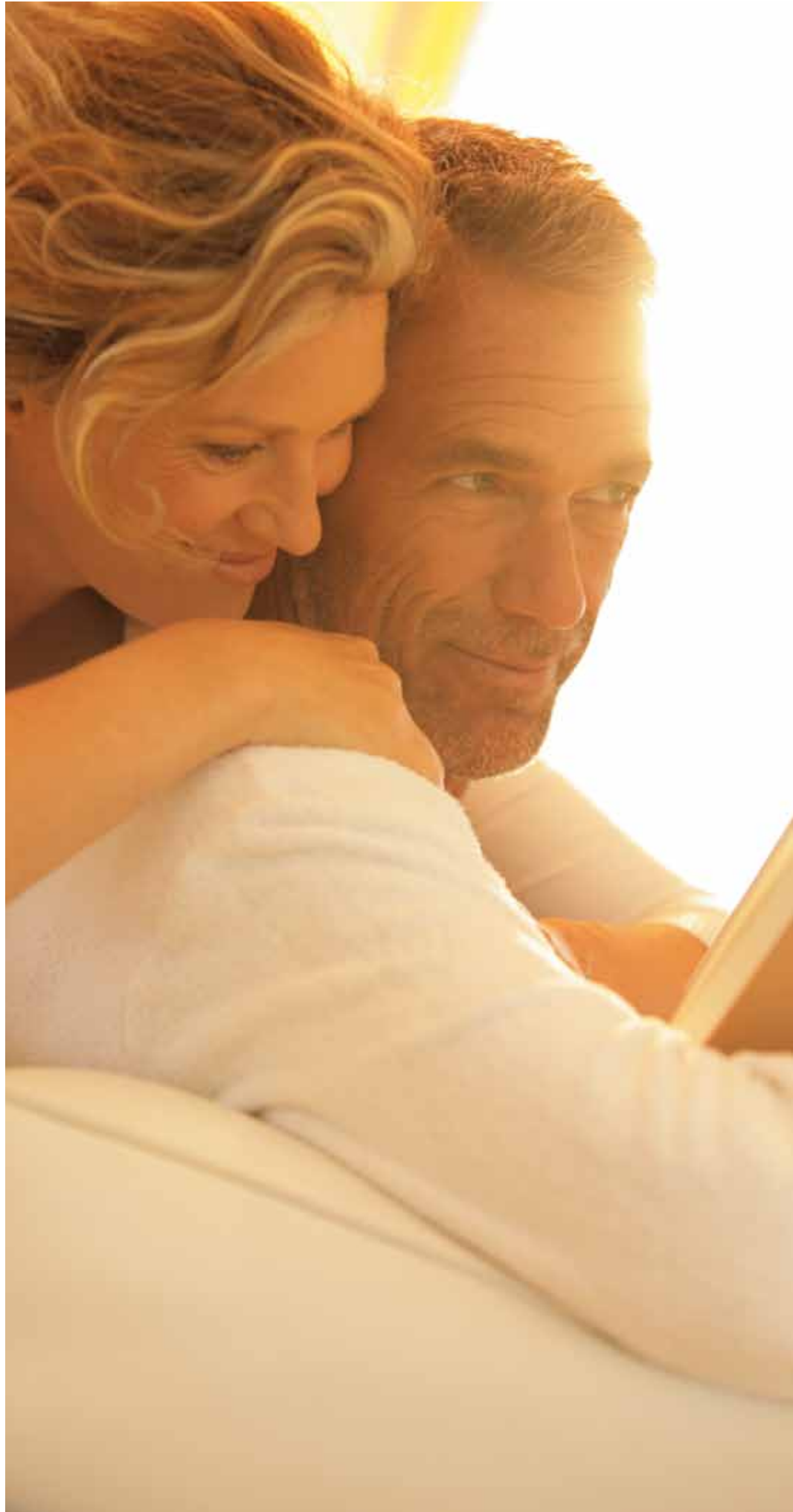
At home, at work, at leisure.

The indoor climate (temperature and air quality) as such is of considerable influence on our general well-being. Comfort is achieved primarily by the type of heat transfer. For example, the radiant heat of a tiled stove is considered to be pleasant and natural, since it directly heats the body. This principle of heat transfer is utilized by the systems for radiant heating and cooling.

Radiant panels uniformly placed on the ceiling create a perfect, naturally comfortable climate; the heat is distributed in a balanced manner over the complete area.

By comparison to conventional air heaters, radiant panels are also a totally clean entity, since the heat that they produce is draught-free and does not disperse any dust. This is a considerable advantage not only for those suffering from allergies, but also for people who need to be in dust-laden rooms. An advantage that is also evident in a considerable reduction in the cost of cleaning.

- Natural principle of radiant heat
- Uniform heat distribution throughout the room
- Heating and cooling effect immediately perceivable
- Silent operation
- No dust dispersal – advantage for people suffering from allergies
- Reduced cleaning costs for your building



Functional principle

Radiant ceiling panels from Zehnder operate according to a basic, natural principle, which is identical with the thermal effect of the sun: Direct sunlight on a cold winter's day allows us to develop a warm feeling which is considered to be comfortable despite the cold ambient air. The heating effect of the sun is produced by electromagnetic waves that penetrate the air without a loss of energy. Only upon contact with the human body is this energy converted into heat.

Zehnder radiant ceiling panels copy this natural principle. Radiant panels fitted even at a height of 30 metres can still ensure pleasant and comfortable heat on the ground. And they do so with unique efficiency, since the heat effect does away with the need to first heat up the air and thus also incorporates a considerable savings potential.

Heating effect

The mode of operation of the heating is as simple as it is effective: The radiant panels are heated by warm water and give off energy into the room. This energy is only converted into a heating effect when it meets the human body or an object.



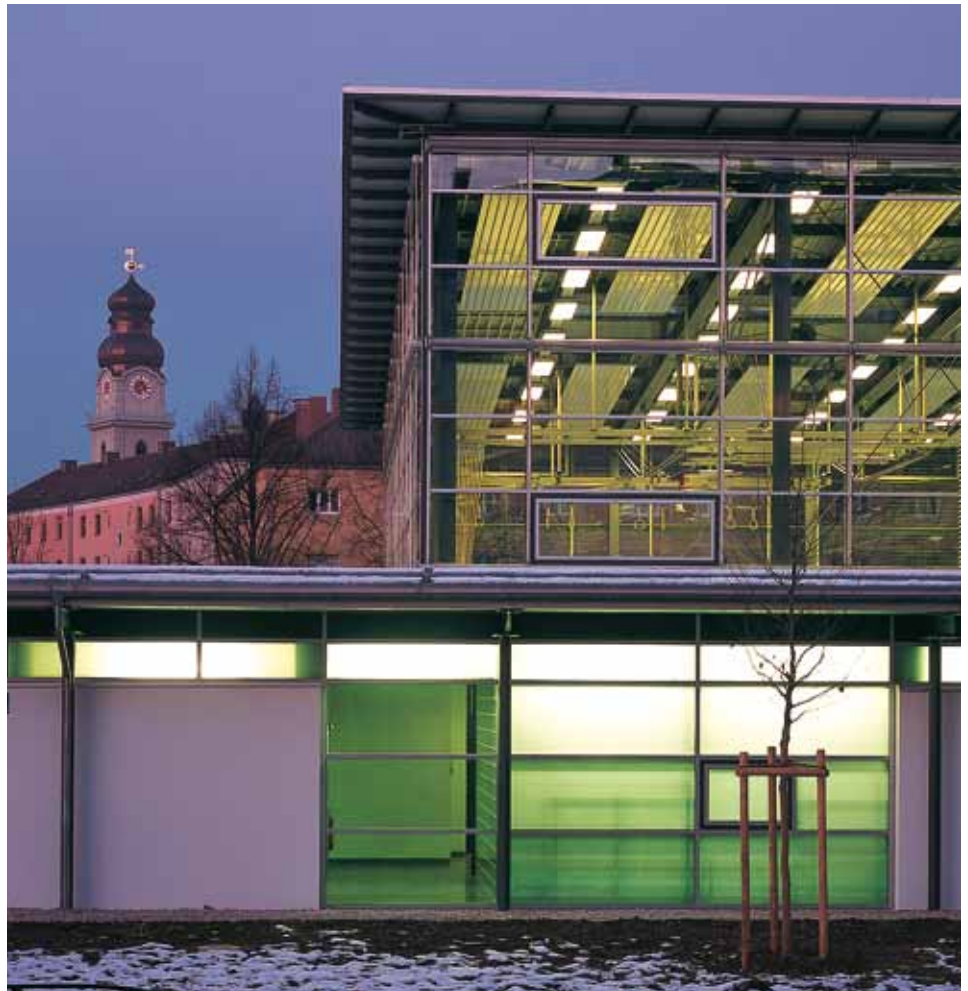
Cooling effect

A system that is used for heating buildings in a cost-saving and efficient manner, can also be used for cooling. Cold water flows through the cooling ceiling. Due to their higher temperature, the people and objects in the room give off the heat by radiation to the ceiling. The warm air of the room simultaneously rises up to and along the ceiling where it gives off its heat to the cooling ceiling. The cooled air flows back into the room.



Applications

The radiant heating and cooling principle can be used for many different rooms and buildings. Systems with Zehnder radiant ceiling panels have been in use for decades for heating rooms even at a height of 30 m. They can be installed in all usable areas. Radiant ceiling panels from Zehnder have been usefully employed especially for the heating and cooling of factories and sports centres, retail outlets, offices and public buildings such as schools and hospitals. For some considerable time they have been an essential component of innovative construction projects.



Factories and warehouses

Energy efficient: By using radiant ceiling panels, large and high hangars can be heated in an energy saving manner.



Sports centres

Possibly record breaking: Through the uniform temperature distribution, optimum comfort is achieved through the radiant ceiling panel system.



Display areas and retail outlets

Space-saving: Because it is installed on the ceiling, the radiant ceiling panels system does not occupy valuable floor space.



Offices

Optimally matched for buildings and people:

The diversity of special shapes and colours, combined with tailor-made production of radiant ceiling panels simplifies use and does not involve expensive, special solutions.



Schools

Top marks: The improved indoor climate increases the capability of students and their ability to concentrate. Through installation to the ceiling, the radiant ceiling panels permit increased use of the floor and walls. Repairs to radiators are less frequent, and additional safeguards to prevent injuries or burns are not required.



Hospitals

Well cared for: The radiant ceiling panel system is an especially hygienic alternative in the hospital and nursing home sector.



Products

The products from Zehnder are as diverse as your requirements for perfect heating or cooling. Irrespective of the constraints that must be overcome so as to achieve the right climate. Zehnder has the solutions gained from the experience of decades of developing heating and cooling technology. With Zehnder, you can choose from a wide range of high-grade, maintenance-free products with a long service life. At the same time you are choosing proven, reliable quality, conformance to the latest standards and a tailor-made match for your project – guaranteed!



zehnder *zbn*

The classic for an optimum indoor climate

- Matching with individual architecture – available in over 700 colours
- Optimum heat distribution to match the room geometry – in 7 design widths and special widths
- Large number of special solutions: Angled, perforated for sound absorption, lamp cutouts, ball deflecting guards, superimposed end covers for improved appearance
- Installation costs reduced by up to 20% through longer individual elements (up to 7.5 m)



zehnder *zip*

Flexible through modular design

- Special solutions: Ball deflecting guards for sports centres
- Especially easy to install through low weight, consequently optimally suitable for refurbishments
- Simple installation – modules are connected by means of press/screw fittings
- Easy to store and short delivery times through standardized elements
- Corrosion inhibition: Special designs for wet rooms



zehnder *como*

The individualist for all ceilings

- Available in over 700 colours
- Model multiplicity: Strips, sails, enclosed ceiling, invisible under plasterboard – matching the architecture
- Wide range of special designs, individually cut to size
- Special solutions such as cutouts for lighting or projectors
- Sound absorption through perforated design
- High service life through corrosion-free materials



zehnder *flatline*

The specialist for lowered ceilings

- Smooth appearance – aesthetic integration in the architecture
- Simple installation in existing ceilings and new lowered grid ceilings
- Silencing through perforated design
- High service life through corrosion-free materials
- Perfect hygiene



zehnder *carboline*

The specialist for grid ceilings

- Extremely fast response to temperature changes within the room
- Saves energy through fast response time of system
- Comfortable room temperature
- Very high heating and cooling performance, therefore, lower maintenance and operating costs
- Sound absorption through perforated design



zehnder *zrp*

A fundamental and versatile product

- 2 mm high grade aluminium alloy for extra robust construction
- Linear front-faced for enhanced aesthetics
- Models are available for: integrated T-bar applications, open void and closed finished ceilings, wall mounted solutions
- Anti-bacterial finish for increased hygiene
- 0-rated phenolic foam insulation for added fire protection



Heating – Cooling – Fresh and Clean Air

At Zehnder, you will also find the best air-conditioning technology for your construction project: Radiators from Zehnder are effective, economical and visually attractive for any project.

Natural radiation is the basis of the systems for radiant heating and cooling, which must ensure comfortable heat or pleasant cooling especially in office buildings as well as in sports and events arenas and factories. All of this with maximum economy and without maintenance costs.

Proper and healthy heating and cooling go hand in hand with clean and fresh air. Comfosystems from Zehnder ensure that heat is not achieved at the expense of the air we breathe. Fresh air is provided, the used air together with the odours and moisture is removed while the energy is recovered.

The Zehnder Clean Air Solutions air filtration units are used in buildings with a particular dust problem, such as factories. Using the electrostatic principle, specially patented filters collect the finest particles and thus protect the staff and materials.

Whether it be heating, cooling, or clean and healthy air: Systems from Zehnder create a perfect indoor climate.

For further information please go to www.zehnder.co.uk

Radiators



Systems for radiant heating and cooling



Comfosystems for fresh room air



Clean Air Solutions for clean air





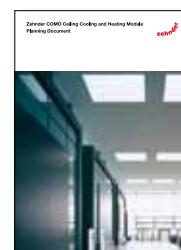
Systems for Radiant Heating and Cooling



Zehnder ZBN



Zehnder ZIP



Zehnder COMO



Zehnder FLATLINE



Zehnder CARBOLINE



Zehnder ZRP

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www.zehnder.eu

