Heating and Cooling Ceiling Systems
Comfortable and energy efficient

zehnder

always
around you

Heating | Cooling | Fresh Air | Clean Air

Comfortable and energy saving. 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 one enjoy comfort whilst saving energy and costs? The answer is: with Zehnder systems for radiant heating and cooling.

A pleasant, draught-free indoor climate is achieved by the thermal radiation principle, with which 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.

Energy saving

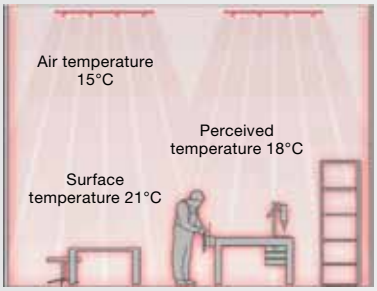
Energy efficiency is of prime importance when choosing a heating and cooling system. By comparison to other systems, Zehnder systems for radiant heating and cooling can achieve a more than 40 % saving of energy, whilst maintaining a pleasant indoor climate.

- Energy saving with the same temperature sensation
- Uniform temperature distribution over the height of the room
- Very high heating capacity according to EN 14037
- Brief heating up and cooling down time
- Free choice of the source of energy; also alternative energies, heatpump, condensing boiler technology or waste process heat
- No additional electricity costs for venitalors

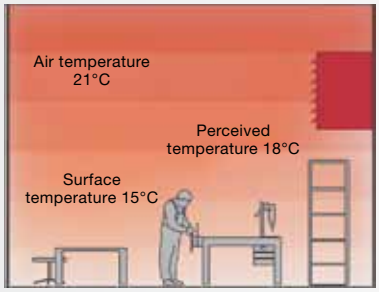
Firstly: When heating with radiant ceiling panels, the room air temperature is lower despite the same sense of heat.

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



With radiant ceiling panels



With air heating

Secondly: Whilst the heated air rises, e.g. with air heating, the heat is produced where the radiant heat meets (the floor) where radiant ceiling panels are concerned. 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).

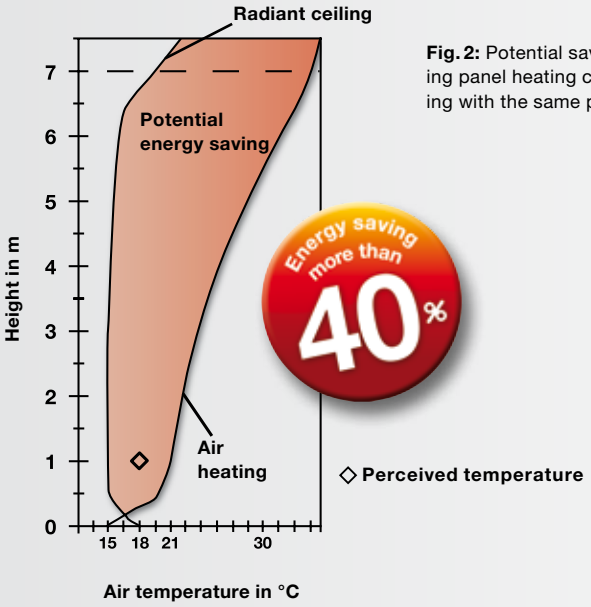


Fig. 2: Potential savings with radiant ceiling panel heating compared with air heating with the same perceived temperature.

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 solation 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 at a height eg. of 30 metres ensure pleasant and comfortable heat on the ground at highest energy efficiency.

Heating effect
The mode of operation of the heating is as simple as it is effective: The radiant panels are heated by hot 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 object 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.

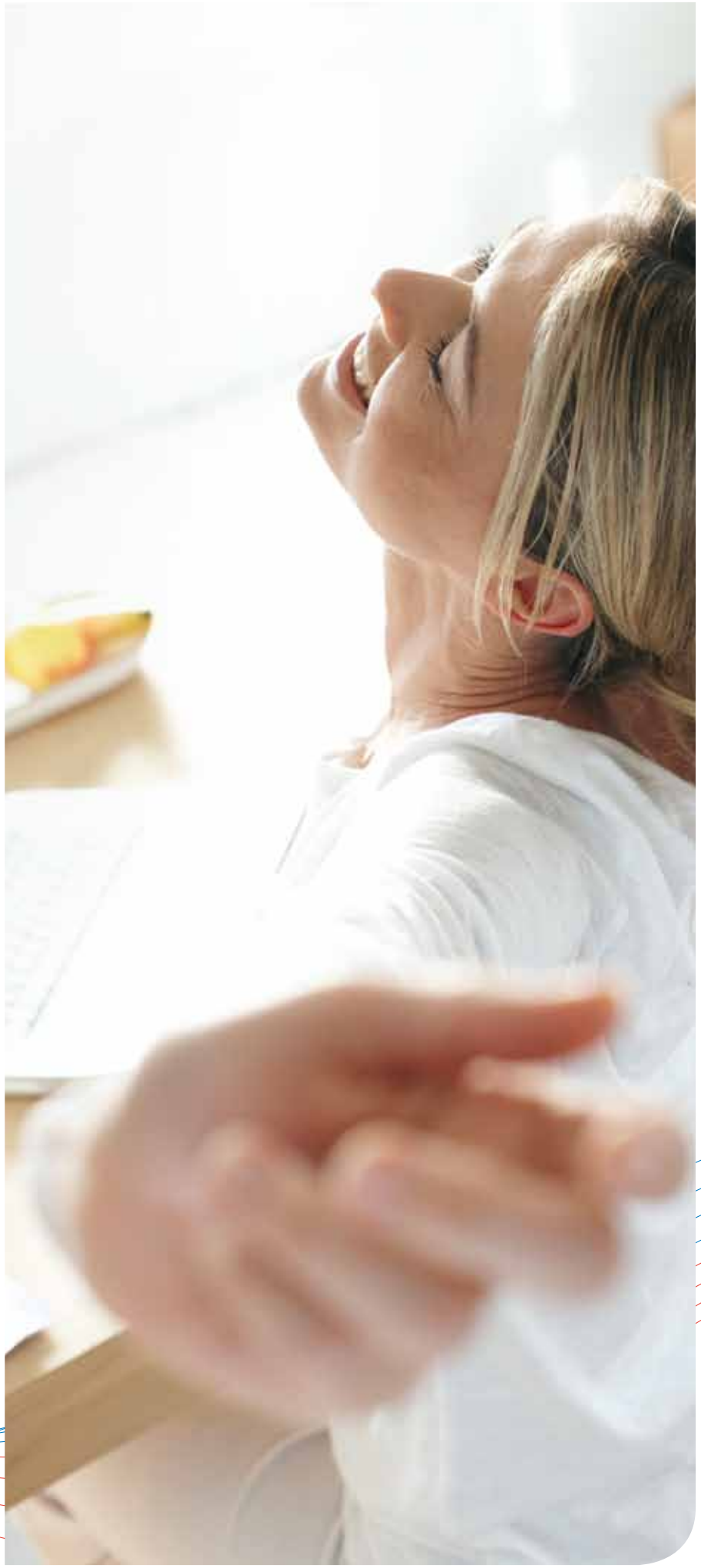
Comfort

We spend virtually 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



Tailored service

For Zehnder, service means looking after you properly. From the idea to the finished installation, our expert sales team looks after you on site. We support you in many areas of your planning process, from initial design with cost estimate, to the illustration of reference projects, to the finished system.

What we offer you:

- On-site contact person
- Advice on the choice of system
- Illustration of reference projects
- Provision of technical information
- Layout of cooling and heating ceilings and radiant ceiling panels
- Development of an project-specific offer
- Production of project-specific tenders
- Technical expert seminars

	Offer phase	Order phase
Customer	■ Heating and cooling load ■ Temperatures ■ Drawings	■ Order
zehnder	■ Project-specific planning and layout	■ Detail coordination
zehnder	■ Project-specific offer	■ Delivery

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 employed 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 multifarious, special shapes and colours, combined with tailor-made production of radiant ceiling panels simplifies use and does not involve costly, special solutions.

Schools and Hospitals

Enhancing performance and hygienic: The improved indoor climate increases the capability of students and their ability to concentrate. The radiant ceiling panel system is an especially hygienic alternative in the hospital and nursing home sector.

Products

The products from Zehnder are as multifarious as your requirements for perfect heating or cooling. Irrespective of the specific preconditions that must be overcome so as to achieve the right climate. Zehnder has the solution. And the experience gained from 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, fulfilment of the latest standards and a tailor-made match for your project – guaranteed!

Heating | Cooling

zehnder *zbn*

- 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 cut-outs, ball deflector grids, super imposed headers for improved appearance
- Fitment costs reduced by up to 20 % through longer individual elements (up to 7.5 m)

Heating | Cooling

zehnder *zip*

- Especially easy to install as low weight, optimally suitable for refurbishments
- Simple fitment – modules are connected by means of press/ screw fittings
- Short delivery times through standardized elements
- Corrosion inhibition: Special designs for wet rooms
- Special solutions: ball deflector grids for sports centres

Heating | Cooling

zehnder *carboline*

- Extremly quick reaction time to temperature changes in the room
- High energy savings, thanks to the rapid response of the system
- Comfortable indoor climate thanks to high radiant rate component
- Even heat distribution
- Very high heating and cooling output thus lower investment and operating costs
- Perforated design for acoustic absorption

Heating | Cooling

zehnder *como*

- Available in over 700 colours
- 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

For further information please go to www.zehnder-systems.com

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