

Variotherm radiant heating systems - overview

Radiant wall and floor heating

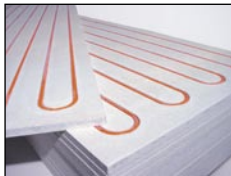
INTRODUCTION

A decision about a heating system is a decision for many years, sometimes for a lifetime. Consequently the technical functions and safety aspects of a heating system are important criteria when it comes to making the right choice. Variotherm has been manufacturing and distributing ecological heating systems for over 20 years now - systems which impress with their advanced technology and functionality.

ADVANTAGES

- Systems are designed as surface heatings and low temperature systems and are therefore ecologically and economically very efficient and practical
- Systems are variable and can be fitted individually to any building situation
- Systems provide large area radiant heat and comfortable warmth in heated rooms
- Can be combined with other systems - eg those which are operated by calorific value, condensing boilers, heat pumps and solar heating
- Proven quality in thousands of homes, buildings and production sites
- 10-years warranty with warranty certificate

SYSTEMS



Variotherm Modular Wall Heating for dry wall construction

The ideal solution for wood frame constructions, prefabricated homes and attic expansions. Rapidly installed it can be used flexibly and initial and heating costs will not burden your wallet. Variotherm

Modular Wall Heating is an absolute flexible system. Only four Modular Panels fulfil almost any building needs. Assembly is quick and easy leaving no big mess. Variotherm Modular Wall Heating combines heating and wall in one and offers ready-to-use panels.



Variotherm EasyFlex Wall Heating for plastered construction work

EasyFlex is a high performance wall heating solution for flat or curved surface mounting and close pipe spacing (only 77 mm). This means every wall is heated very fast and efficiently. EasyFlex is also extremely

thin, with a structural height of only 17mm. It is an extremely flexible system which offers creative design freedom.



GENERAL

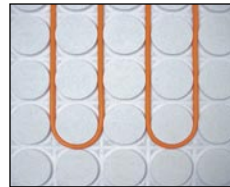
More and more architects and property owners are no longer satisfied with any old solution for new housing and industrial construction projects. What they are looking for is individuality, originality, functionality, economy and ecology.

With Variotherm heating systems you can create economical, ecological and healthy heating for your living environment.

As Variotherm heating systems are highly adaptable and suitable for individual applications, they meet all the requirements of modern architectural planning.

Designer warmth in the form of heated walls, focussed warmth in your favourite corner and tiled stoves are real attractions in every flat. Our wall heating, baseboard heating and ducted floor heating are equally pretty: pretty inconspicuous. Because in contrast to conventional radiators you hardly notice these heating systems in your living space.

Variotherm heating systems do not raise dust like conventional radiators, but generate biologically healthy, horizontally radiated warmth. This warmth is perceived by the body just as pleasantly as the warmth of the sun.



Variotherm Floor Heating

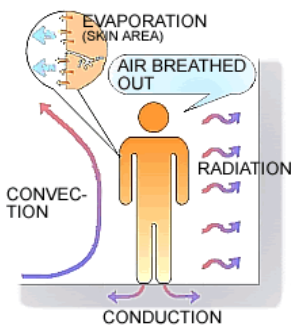
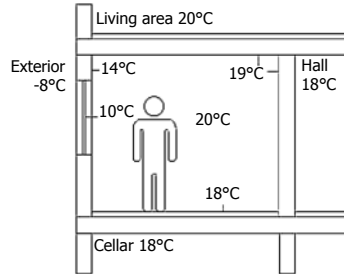
Newly constructed or older buildings – it doesn't matter. Variotherm Floor Heating systems can be used anywhere, are installed rapidly and provide superior comfort in living rooms, sanitary and bath rooms, hallways and reception areas. There are three complete systems to suit your specific needs: VarioFix and

VarioNop for cast plaster floors and VarioComp for dry floor construction and renovation.

COMFORT

Comfort is not just derived from having the right kind of **air temperature** in a room. The temperature of all the surfaces which encompass the room is just as important. The physiologically perceived temperature approximately corresponds to the arithmetical mean of the two.

$$\text{perceived temperature} = \frac{\text{air temperature} + \text{mean surface temperature}}{2}$$



People feel comfortable when the **basic equation of "thermal comfort"** is met:

heat generation = heat emission

The important factor is that the heat which is emitted by the human body can **radiate as uniformly as possible in all directions**. If too much heat is withdrawn on one side (cold spots), we perceive this as unpleasant.

Diagram 1

The lower the **air temperature** in the room (vertical values) is, the warmer the **encompassing surfaces** (walls, floor, ceiling, together with window and door surfaces) have to be in order to create a cosy atmosphere.

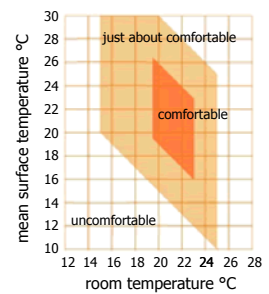


Diagram 1

The unfavourable influence of the cold exterior walls and windows (temperature exchange with the body) is for the most part neutralised by locating panel heating in outward facing walls, in particular under windows.

The room temperature can be set lower than is the case with convection heating, because the **radiated warmth raises the temperature perceived by the occupant of the room**, which means that the feeling of comfort is not affected.

Diagram 2

Where there are drafts, both heating costs and discomfort increase. The vertical axis shows the **air speed** (m/s), while the horizontal axis indicates the room air temperature (°C).

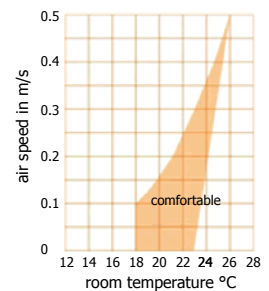


Diagram 2

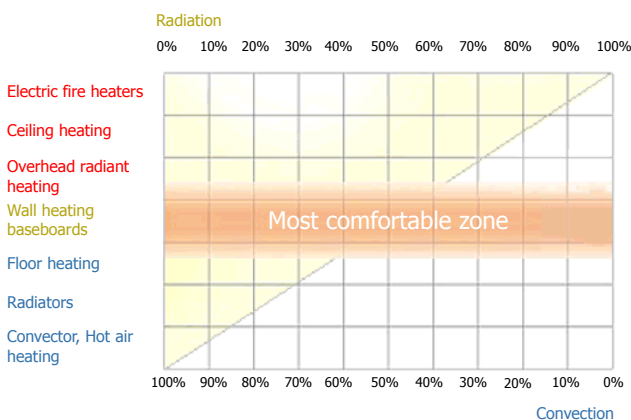


Diagram 3

For a pleasant ambient climate the **humidity** (vertical axis, indicated in %) must be in the median area. The air temperature also influences our perception of moisture.

Room heating systems provide warmth in two basic ways:

By convection and by radiation.

The way in which the warmth is transmitted **depends very much on the room heating system.**

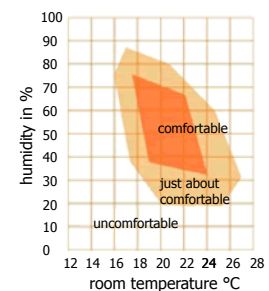


Diagram 3