



**RUKU**  
Sauna-Manufaktur

# Thermium

**THE UNIQUE INFRARED SAUNA WITH  
UP TO 6 DIFFERENT TYPES OF BATHING**

Quality made in Germany since 1852.

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Innovation from tradition. With great know-how and constant developments, RUKU has developed a reputation in the sauna world.

# RUKU – the right partner for your wellness oasis

Escape from stress and everyday life, gain new strength. Pamper yourself and recharge your batteries. Take time to create equilibrium in our ever-busier day-to-day life, protect your inner balance and remain fit and healthy. A good way of leaving everything behind you and gaining new energy is a RUKU wellness oasis.

Time to enjoy your wellness oasis and to relax is one thing we cannot give you. But when it comes to **professional planning and implementation**, you are in the best possible hands. The evidence for this is 150 years working with wood and more than 30 years building saunas. Time which we have used to link the name of RUKU closely with high-quality sauna cabins in exclusive designs and **innovative system solutions**.

The most significant RUKU innovations in recent years have been:

**RUKU Isoholz** – a multi-chamber insulation system with no mineral fibres, leading to an energy saving of approx. 10% and shorter heating-up times in comparison to traditionally insulated cabins.

**RUKU Meditherm** – a pressure-free steam generator for Isoholz sauna cabins with a capacity of up to 100% relative humidity and an active substance evaporator for pure herbs, and also the **RUKU Thermium**.

When we talk of innovations, this really means product solutions. **Processing quality and expert advice and service** are amongst the most important factors in our success and have been valued by our customers for decades. We know that, particularly in the multifaceted world of sauna production, a comprehensive advisory service is essential.

In this brochure you will find factual information about the various possibilities of the RUKU Thermium. This includes the basic physical principles of heat and the technology with which the effects are achieved. The **keywords printed in bold** and the clear illustrations are provided as **quick points of reference**.



## The dry bathing options

### Warm bath



Temperature: approx. 40°C

Rel. humidity: approx. 20%

Bathing time: as desired

Gentle infrared warmth for therapeutic applications; the rise in body temperature has a positive effect on blood vessels, organs, joints and muscles.

### Wellness bath



Temperature: approx. 60 °C

Rel. humidity: approx. 15 %

Bathing time: as desired

Enjoy relaxing warmth after a strenuous day, wind down completely and let your soul drift; sweating after approx. 30 minutes.

### Hot air bath



Temperature: approx. 80 °C

Rel. humidity: approx. 10 %

Bathing time: approx. 10–15 minutes

For intensive sweating; as in the classic sauna (cool down and rest after each bathing session); infusions with the RUKU Therme are possible.

## Bathing options with additional humidity

### Therapy bath



Temperature: approx. 40°C

Rel. humidity: approx. 35%

Bathing time: as desired

Increased humidity and lower temperature are gentle on the respiratory tract and mucous membranes; inhalations with our Therme for therapeutic purposes, e.g. colds, etc.

### Herbal/aroma bath



Temperature: approx. 50 °C

Rel. humidity: approx. 60 %

Bathing time: as desired

Take time out from your everyday cares and spoil yourself with our Meditherm and a gentle herbal, aroma or sea-air bath.

### Steam bath



Temperature: approx. 45 °C

Rel. humidity: approx. 100 %

Bathing time: approx. 15–20 minutes

Soft clouds of steam surround you from top to toe and cleanse your body; sweating clears and cleanses the pores, leaving your skin soft and silky.



# RUKU Thermium – the multipurpose tepidarium

In the ancient world, the tepidarium was the room in a bathhouse where you could relax and recuperate at moderately high temperatures. The especially pleasant feature of this room was that the warmth radiated uniformly from the walls and the floor, because they were heated from within. RUKU has rediscovered this well-tried principle and from it has developed the RUKU Thermium with a wall surface heating system. A multifunctional infrared heat cabin with a radiant heat field, corresponding to a genuine tepidarium. Whether young or old, everyone feels good in the Thermium. This is because the versatile infrared heat cabin has been designed to meet the most varied requirements. It can be used by the whole family, or by high-performance athletes. Warm bathing, steam bathing, hot air bathing; the uniform infrared heat makes everything possible in one cabin. On the opposite page there is an overview of the six possible bathing options.

Unlike in normal sauna cabins, in which the heat is produced by the stove in one place, in the RUKU Thermium the warmth radiates from a large surface area of the cabin walls. The wooden surface warms up quickly, but without becoming unpleasantly hot. As with a tiled stove the heat is radiated from the wood as long-wave, gentle infrared C heat – a thoroughly beneficial type of warmth which penetrates deep into the body.

## Thermium – the wellness cabin without a sauna stove

For the first time, RUKU has combined the whole spectrum of bathing culture in one single cabin. From the classic Finnish sauna, hot and extremely dry, through the Turkish steam bath, warm and with high humidity, to the particularly therapeutically valuable infrared radiation bath on the principle of the old Roman tepidarium – the RUKU Thermium is unbeatable in its versatility.



**More free space in Thermium. The internal space can be arranged freely and used to its optimum effect as no sauna stove is required.**







# Basics

## 1.1 Some terms, types of baths ancient and modern

Anyone interested in buying a sauna faces a multitude of terms quoted by the manufacturers and dealers. Some of these originate from historical development, but most of them are made up by the copywriters. We are therefore providing some definitions of terms:

**Finnish sauna:** classic historical log cabin, near a lake if possible; heating with hot stones which are also used to produce a blast of steam, the so-called infusion; mode of operation: dry hot air.

**Modern sauna:** electrically heated wood cabin installed in a residential building. Additional equipment includes: a warm/cold shower and, depending on comfort requirements, a plunge pool, a foot bath, a rest room, a solarium and a swimming pool.

About 20 years ago **the trend** of also using the private sauna cabin **for steam bathing** began. This meant that the types of steam bath which had become rare became quite popular again.

**We distinguish between the following two types of steam bath:**

- **Russian bath** (Banja), air temperature 45° C with a relative humidity of 100% with wafts of mist.
- **Irish bath**, air temperature 50-55° C, relative humidity about 90%, less mist.

In addition to these classic types of steam bath, which have been known for centuries, there are various types of **soft steam baths**, the water vapour concentration of which is limited to 60-70% relative humidity because of regulations.

Cabins which are also equipped with steam generators are given company-specific designations which, in various combinations of words, are based on Roman bathing bathing areas

Of particular interest to us is the tepidarium, since it provides the optimum results in terms of thermal comfort and the therapeutic applications of natural healing processes.

**The decisive characteristic of a (genuine) tepidarium is heating of the wall from the inside.**





## 1.2 Gentle warmth - important for relaxation and health

### Thermium – the modern tepidarium

The tepidarium has been handed down to us from Roman times – a room used for relaxation and bodily health. The Romans knew that a relaxed and warm, well-perfused muscle is more effective than a cold one. Even the Greeks had used warm rooms to prepare athletes for the Olympic Games.

In terms of its mode of operation the tepidarium can be seen as a forerunner of the RUKU Thermium. It is a room in which the walls and floor are heated by means of hot flue gases introduced into warm air shafts (hypocausts). The warmth radiates evenly from the walls and is transferred to any other bodies which come into this warmth radiation field. The same process also occurs in the RUKU Thermium.

So even the smallest blood vessels open and perfusion increases. Only a joint which, is well perfused can be rejuvenated. This radiated warmth also has a balancing effect on the autonomic nervous system. This is a starting point for the treatment of psychosomatic illnesses.

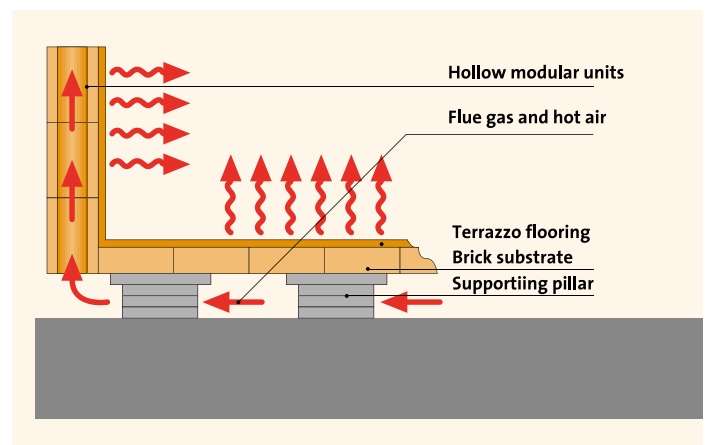


Figure 1.2/1  
Schematic diagram of a hypocaust heating system according to (1)  
\*Reference to source material

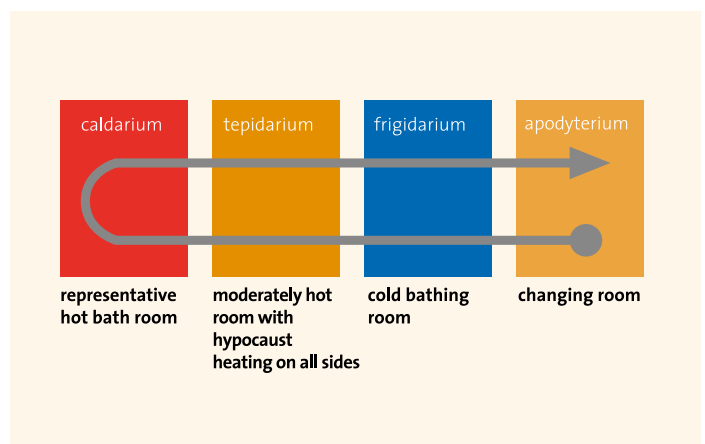


Figure 1.2/2  
Common arrangement of the rooms in  
an ancient bathhouse according to (1)

The warmth is produced over a large area in the cabin walls. They become warmer than the air temperature, which produces an optimum warm cosiness.

## 1.3 Effect

The Thermium offers you relaxation and regeneration after day-to-day activities and sport.

Experience pleasant warming all the year round. Users feel healthier, more dynamic and in a better mood.

**Ideal before and after sport:**

The warmth makes your muscles supple. Athletes use the Thermium to loosen and warm up their muscles before the active warm-up phase. The Thermium is also used after strenuous sporting activity in order to prevent hyperacidity of the muscles („aching muscles”).

**When you need new energy:**

If we do not have the necessary warmth, we cannot develop our strength. Our dynamism remains elusive and we feel run down and lacking in drive. The Thermium warms you up all over. The body's thermoregulation is mobilised and the blood circulation is stimulated. You top up with energy in the warmth radiation cabin.

## 1.4 Infrared heat radiation in the RUKU Thermium

**Relax in the Thermium climate:**

The air in the warmth radiation cabin remains relatively cool, which makes breathing significantly healthier and more pleasant (no excessive drying out of the mucous membranes). Even elderly people and those with a predisposition therefore feel good in the Thermium climate.

**Use the therapeutic effects:**

There has been evidence for a long time of the therapeutic effect of warmth radiation as a gentle and natural healing and regeneration application for various indications. Typical application areas are in the locomotor system and in cases of essential hypertension (high blood pressure), as well as for stabilisation and harmonisation of the circulation. The effect of encouraging perfusion and the protective regeneration effect are also beneficial in psychosomatic illnesses and in general exhaustion conditions.



## 1.5 Promotion of health with longwave infrared heat radiation

### **Warmth can heal**

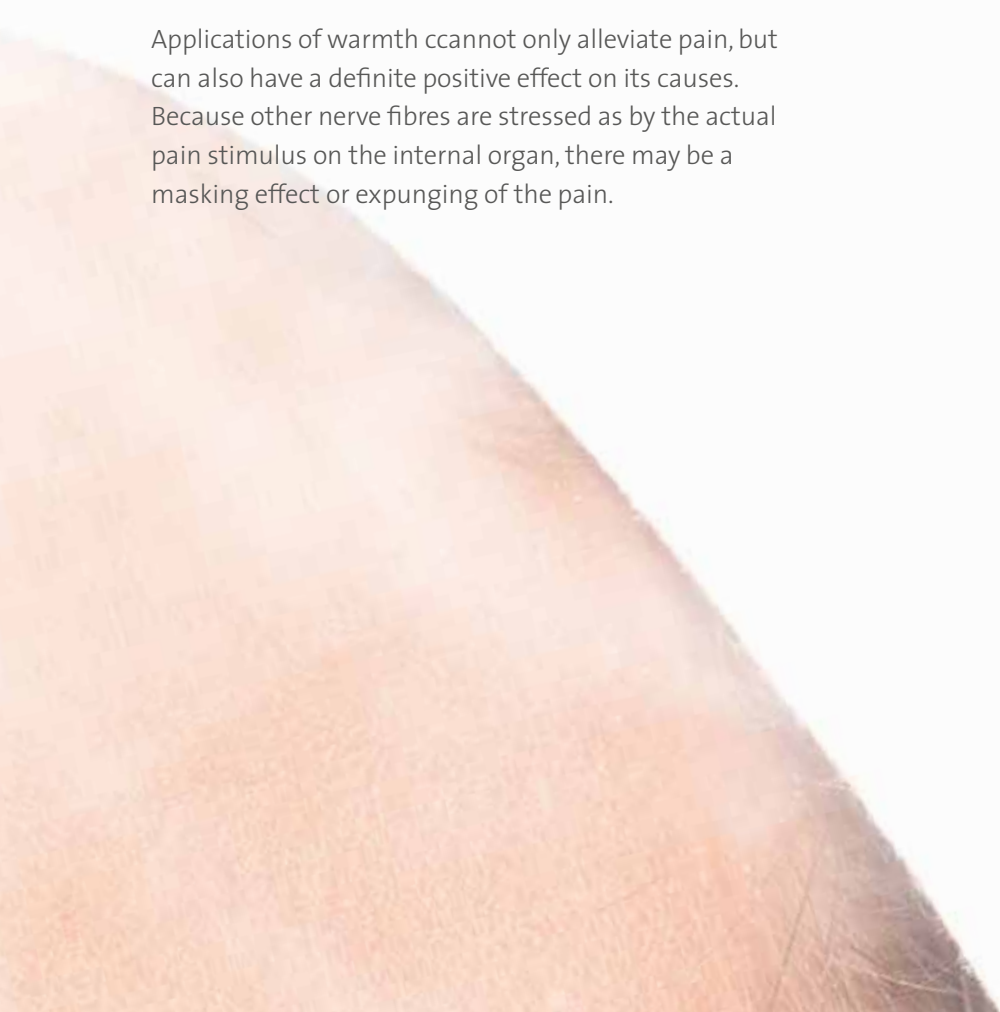
Warmth not only provides a feeling of comfort and well-being. Warmth can heal. The organism expands the blood vessels, thereby increasing the circulation. That alone can alleviate pain as pain mediators are removed more quickly from the damaged area.

Warmth also makes the muscles soft and relaxes them. Painful conditions in the locomotor system, such as muscle tension, can be resolved. Ligaments and joint capsules are generally made more malleable by warmth and can therefore be moved more easily – the reason for heat being used in degenerative joint conditions such as arthrosis. Care should be exercised in the case of acute inflammatory diseases and a doctor should be consulted in all cases of doubt. Warmth is a useful tool in the chronic stage, but it can also have a beneficial effect on internal organs in diseases of the locomotor system.

Applications of warmth cannot only alleviate pain, but can also have a definite positive effect on its causes. Because other nerve fibres are stressed as by the actual pain stimulus on the internal organ, there may be a masking effect or expunging of the pain.

### **Infrared heat radiation - proved and tested over decades**

Infrared has been known as a means of alleviating pain for a long time. Who does not know the red light, which is such a help for muscular and joint pain? This deep warmth has also been commonly used for a long time to keep premature babies warm in incubators.



The deep warmth in the Thermium has the effect of loosening muscles, thereby reducing the risk of injury, for example during sport.





## 2.1 The heating process in the traditional stove

A cabin equipped with a traditional stove is heated by means of air circulating inside the cabin (convection). In the stove, which is in a concentrated space, the air is heated to a high temperature on glowing heating tubes. This hot air rises from the stove to the ceiling and then falls, giving off heat to the walls. At floor level it is again sucked in by the stove and the circulation starts anew. The heat flow from the air to the wall presupposes that **the air is always warmer than the wall**. This process also requires time: there is a relatively long heating up time with high energy consumption.

The location of the stove determines the heat distribution. Around the stove it is hot, but in other places there are **areas of shade**.

**A cold concrete floor** has a particularly **unfavourable** effect. It hardly warms up at all as it immediately conducts the warmth which comes to it via the air to the subsurface. After a relatively short stay you get cold feet and, if you are susceptible to them, blisters or other symptoms. A heat radiation climate as in the tepidarium can therefore not be achieved.

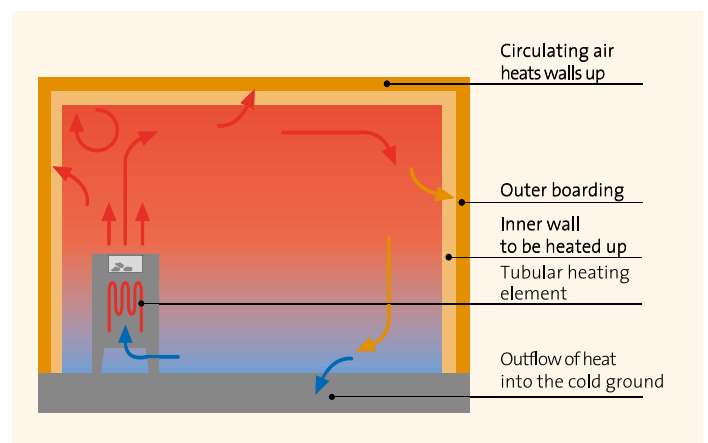


Figure 2.111  
Functional principle of traditional cabin  
heating while heating up

## 2.2 The heating process in the RUKU Thermium

In the Thermium **the warmth is produced over a large area around the cabin walls**. As in the ancient hypocaust heating system, the majority of the thermal energy flows through the inner wall. This warms up quickly and, depending on the bathing option, is adjustable up to about 30 to 80° C. With these moderate surface temperatures, the wood surface then gives off pleasant **long-wave warmth** in accordance **with the principle of the tiled stove**. A small proportion of the thermal energy heats the air, which is spatially distributed, **in all the heated wall sections for sauna bathing** (hot air bathing) and, after fresh air is added, flows all round the edge of the ceiling into the cabin.

The cold floor is screened off by **Isoholz warm flooring**. This includes air chambers with reflective foil, which largely prevent heat loss and **reflect the heat radiation**.

Thus a spatial **warmth radiation area** is created which by and large corresponds to a (genuine) tepidarium.

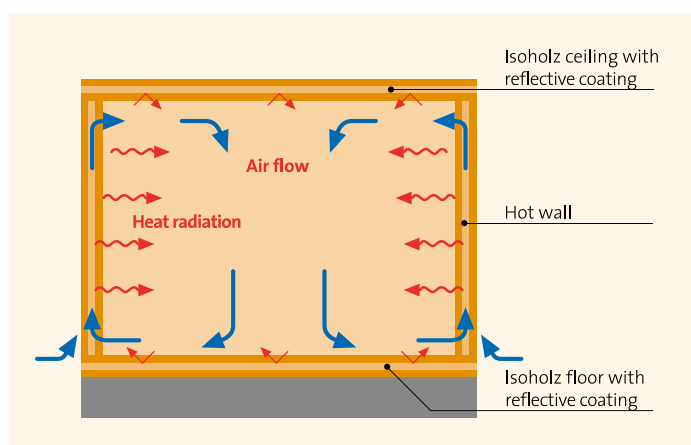


Figure 2.2/1  
Heating in the RUKU Thermium



The integrated wall heating ensures completely uniform distribution of warmth and cosiness throughout the whole room.



The health-promoting uses of long-wave infrared heat radiation are very varied. The pleasant warmth penetrates deep into the body.



## 2.3 What exactly is infrared?

In 1801, Friedrich Wilhelm Herschel discovered infrared radiation in the sun's spectrum. These parts of sunlight are effective in the development of heat. The sensory cells of human skin perceive them as heat radiation and react accordingly.

Infrared radiation is **not visible** and in the electronic spectrum of sunlight, it that proportion of rays which is attached to coloured light in the wave range and is therefore to be found below (infra) red light.

The warmth given off by the heating elements in the Thermium cabin has a similar wavelength to the infrared part of sunlight and the warmth produced in body tissue. Even the palms of our hands give off infrared.

The warmth in the Thermium is matched to the therapeutically most effective wavelength within the infrared range. This wave range is then subdivided into infrared A, B and C waves. Scientists and doctors have known for decades that infrared heat radiation with values from the long-wave (infrared C) range is the most significant medically. It warms the surface of the skin and flows through the blood and lymph stream to the core of the body – instead of leading to sweating and dehydration. In the core of the body the warmth activates a series health-promoting processes. The heat radiation produced in the RUKU Thermium is therefore only of the long-wave infrared C type.

Heat radiation is one of three means of heat transmission. When two bodies at different temperatures are positioned immediately next to one another, an adjustment occurs through heat conduction. When the energy is transferred by means of air, we speak of convection. And heat radiation means that the heat is transferred from a warm body to a cold one without using air as a medium for the heat transfer. The radiation energy is in fact transferred in the infrared wave range.

Using the sun as an example: the infrared radiation contained in sunlight causes solid objects on earth to react by stimulating the atoms of their molecules, they begin to oscillate in various ways, thereby discharging heat. The gases between the sun and the earth do not react to these infrared sun rays; it is therefore ice cold at a height of a few thousand metres.

### **And what does the infrared deep warmth do?**

The warmth stimulates circulation and regulates high blood pressure. Muscles are relaxed, organs and tissues are pleasantly stimulated and the metabolism is boosted. Substances which trigger pain and cause inflammation can be removed more quickly. More oxygen, nutrients and antibodies get to the site of the event. The immune system is stimulated.

Infrared deep warmth can therefore have a very positive effect on the body's power of resistance and self-healing.

### **Deep penetration of warmth – medically effective!**

In the Thermium the body can be thoroughly warmed. How health promoting this mild overheating of the whole body is shown by the positive experiences of patients with various health problems.

### **High blood pressure/poor circulation**

High blood pressure (hypertension) is known to be a risk factor for many illnesses. Even slightly raised blood pressure as a persistent condition can damage the heart and the arteries. Checking one's own blood pressure is therefore recommended as a precautionary measure. If hypertension is detected and treated medically, many associated diseases such as arterial sclerosis, arrhythmia, stroke and renal failure can be alleviated or even prevented. The beneficial effect of infrared warmth on patients with high blood pressure can be explained medically as follows: with warmth the vessels and arteries relax, so pressure is taken off the heart and the blood pressure reduces. At the same time circulation improves. The blood pressure regulating effect of the Thermium has been confirmed by many users in recent years.

### **Back problems**

Many people are limited in terms of fitness because they have back pain. This can occur in all adults and can lead to serious problems. Strengthening of the back muscles can reduce the pain. Many doctors prescribe heat treatments, massages and stretching exercises to alleviate the pain. Sedatives are also used to relax muscles. Users of the Thermium heat cabin have achieved **notable success and considerable alleviation of their pain**. The warmth stimulates blood circulation, thereby activating the healing process and alleviating the pain.



### **Sleeplessness**

Sleep is one of the most important things in life. During sleep the nervous system switches off to give the muscles the necessary relaxation. Only in deep sleep phases are we rejuvenated; the brain switches to, half power“- and the regenerating hormone STH is generated. For people with sleep disturbances including sleeplessness the Thermium has proved to be one of the most recommendable methods of re-establishing a healthy sleep pattern. The uniform cosy warmth penetrates the muscles and gently relaxes them. Tension disappears. The heat cabin thus provides the conditions for subsequent restorative deep sleep.

### **Skin problems/cellulite**

Unhealthy nutrition and lifestyle (lack of exercise) leads to problems with the connective tissue, the external indication of which is unsightly orange skin or cellulite. Infrared deep warmth increases perfusion and brings the skin“s own nutrients to the surface. **The elasticity of the skin** and the complexion are improved.

The pleasant air temperature in the Thermium produces a high oxygen content in the cabin. This protects the mucous membranes and respiratory tract.

## 2.4 The person in the heat radiation field

The human being, and with him all warm-blooded life forms, is constantly in a heat exchange with his surroundings. Since bodily functions are only certain within tight temperature limits, in addition to the body's own regulators, technical measures (clothing, heating, cooling) must be used to ensure adaptation to the ambient atmosphere.

The unclothed **skin surface exchanges warmth by convection** with the air and by radiation with the walls. This process is constant giving and taking.

**Radiation is balanced** when the radiation of warmth given and received is equal.

The favourable effect of balanced radiation refers here to the conditions in a bathing cabin. The therapeutic effects of an uneven heat exchange (e.g. an ice pack on the head) within a limited area are not questioned.

Since unfounded ideas about the nature of heat radiation are occasionally spread, these are the most important points:

Heat radiation is a subdomain of electromagnetic oscillations, defined by:

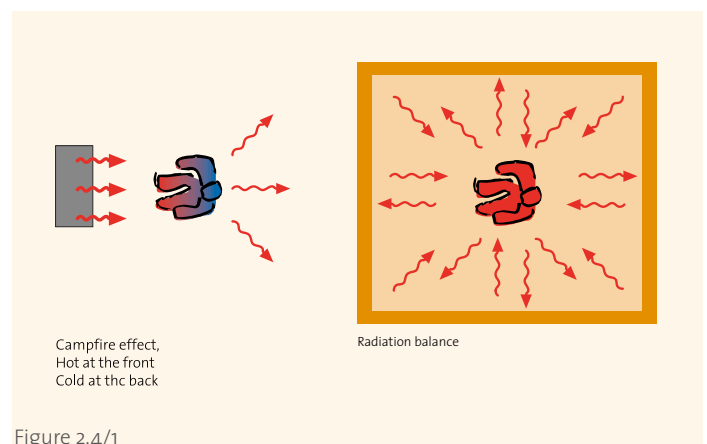


Figure 2.4/1

Radiation balance

$$\begin{array}{rclcl} \text{Frequency} \times \text{wavelength} & = & \text{speed of light} \\ f & \times & \lambda & = & c (= 3 \cdot 10^{10} \text{ cm/s}) \end{array}$$





### Gentle sweating with deep heat

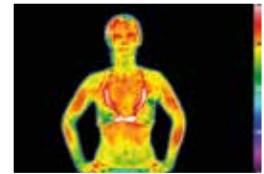
Even at low temperatures, infrared heat makes the body sweat, and it's suitable for all age groups. The mild warmth puts less strain on the circulation than strong heat and is also more gentle on the respiratory system. Another advantage: the oxygen content in the cabin is higher at these low temperatures.

Using thermographic imaging, the difference with a traditional sauna becomes particularly clear: When bathing in the Thermium, infrared heat penetrates deep into the body and warms it more intensively and evenly. The body cools less quickly after the bath, which means that the heat remains in the tissue for longer.

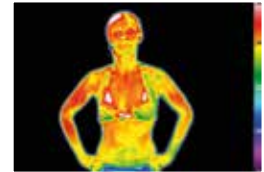
### In the sauna



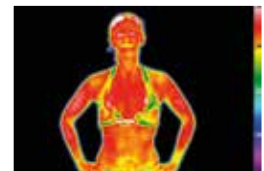
after 5 minutes



after 10 minutes



after 15 minutes



### After the sauna



after 10 minutes



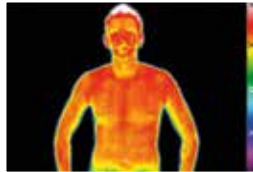
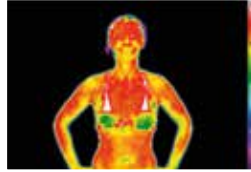
after 20 minutes



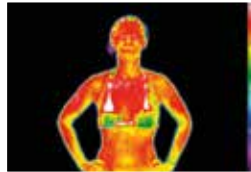
## In the Thermium



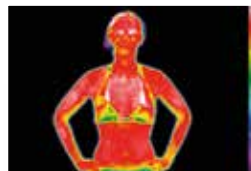
after 5 minutes



after 10 minutes



after 15 minutes



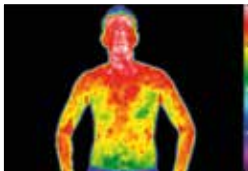
### Advantages for your health

- supports blood flow
- reduces high blood pressure
- eases muscle/joint pain
- stabilises circulation
- detoxifies and purifies
- strengthens the body's defences
- deeply cleans the skin

## After the Thermium



after 10 minutes



after 20 minutes





f in Hz	$\lambda$ in $\mu\text{m}$	
> 0,80		Infrared or ultra-red radiation (invisible heat radiation)*
$3,75 \cdot 10^{14}$	0,80	red light
	$\approx 0,57$	yellow
	$\approx 0,52$	green
	$\approx 0,45$	blue
$7,50 \cdot 10^{14}$	0,40	violet
< 0,40		ultraviolet

The wavelength of invisible heat or infrared radiation borders on the visible red light.

The radiation behaviour of various surface is denoted by the unit conductance (2).

The unit conductance "C" of wood surfaces is about 5.2 to 5.4 W/m<sup>2</sup>K<sup>4</sup>, roughly equivalent to that of a marble wall or the ceramics of a tiled stove. Wood is therefore very well suited as a heat radiator.

**Human skin** (C = 4.7) is also very similar. The wood cabin is therefore very well suited to therapeutic applications using radiation.

**\* Important note:** Only long-wave, diffuse infrared radiation, which is radiated by surfaces at moderate temperatures (up to max. 90° C) over as large an area as possible is experienced as pleasant. Heat sources with glowing heat radiators (600 to 1,000° C) radiate on a shortwave basis and selectively and therefore do not reach a radiation quality comparable with the RUKU Thermium.



## 2.5 The air in the RUKU Thermium

Apart from the radiation of warmth from the walls, the climate in the cabin is determined by the quality of the air. This is influenced by the following factors:

- the **air temperature** and its stratification, depending on the operating mode selected
- the **air humidity** (water g/m<sup>3</sup> or relative humidity in%)
- the **air renewal** (number of times the cabin air is replaced per hour)
- the **air flow** (mixing, air speed/draughts)
- the **oxygen content**
- the **air aroma** and the aerosol content (solid or fluid suspended matter distributed extremely finely)

### 2.5.1 The air temperature

Since hot air rises, the air temperature drops from the top to the bottom of each heated cabin.

**Important: the temperature experienced is not the air temperature, but the mean value of the air and wall radiation temperature.**

### 2.5.2 Air renewals/routing/control of air flow

The "used" air must be continuously replaced by "pure" fresh air. This air replacement ( $\lambda$ ) is measured either in terms of the air renewal rate (m<sup>3</sup> per hour and person) or the number of air renewals (x times the cabin volume)



The air in the Thermium heats up quickly but without becoming unpleasantly hot. People find this particularly pleasant.

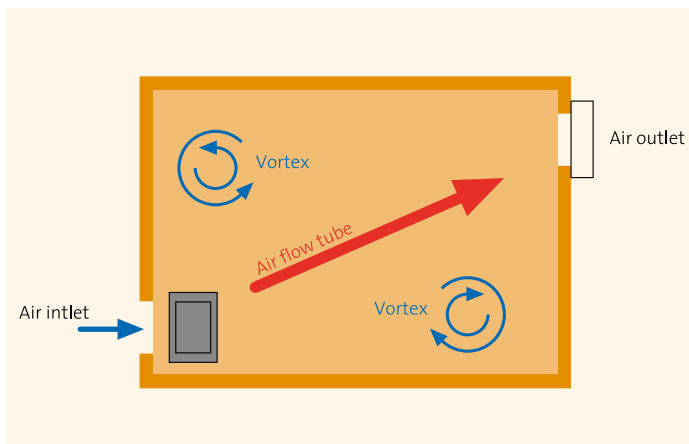


Figure 2.5.2/1  
Traditional routing of the air flow in plan view

According to the new guidelines (3), **in commercial installations** it is recommended that there should be at least 12 air renewals per hour and 20 air renewals per hour where there is a high occupancy rate or numerous infusions. In commercial installations, depending on the cabin size, these values are generally only attainable with forced ventilation by connecting to the ventilation system or with a ventilator.

**Traditional routing** has the fresh air inlet low down, near the stove, with the outlet also low down (often) on the opposite wall. Uniform air renewal for the whole room is thus not guaranteed; a narrow air flow tube is formed with vortices on either side of it. **With only one inlet and one outlet, acceptable routing** of the air flow cannot be achieved. There will always be poorly aerated corners.

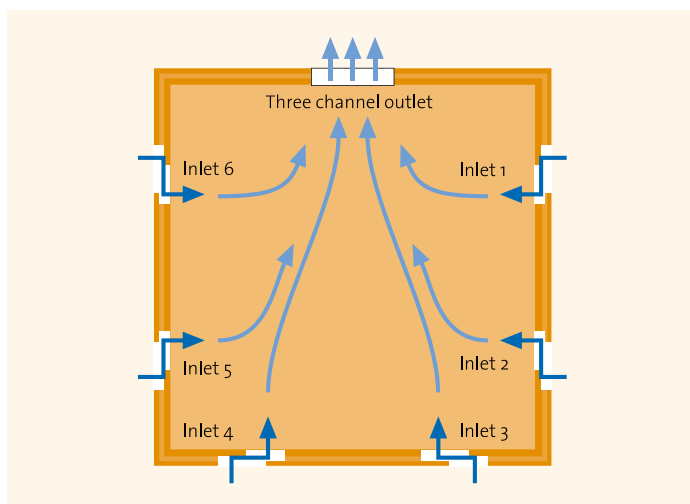


Figure 2.5.2/2 Routing of the air flow in the RUKU Thermium  
The example illustrated shows a cabin for private use (approx. 10 m) with six fresh air inlets and a three channel outlet.

The **RUKU Thermium** was therefore fitted with inlets on **several sides**. Preheated fresh air is fed in from various sides under the ceiling. It forms a flow field for air outlet which covers the whole room.

Below the three channel air outlet we have placed **a two-way controllable air outlet with three channels**.

A cabin built to today's technical Standards must be equipped with air (quantity) control which is capable of at least the following:

- low **air flow** rate when heating up
- operational ventilation dependent on the occupancy
- fast dehumidification after steam baths

### 2.5.3 Air aroma and aerosols

The air should be fragrant with aromas or be able to convey therapeutic/cosmetic substances. An aroma dish is therefore provided and herbal steams produced with hot water extractions rising from this. Essential oils can also be added.





**RUKU**  
Sauna-Manufaktur

Technology

3.1 Assembly/overview

The following plan view shows the basic assembly of a completely equipped cabin for saunas, steam baths and spas.

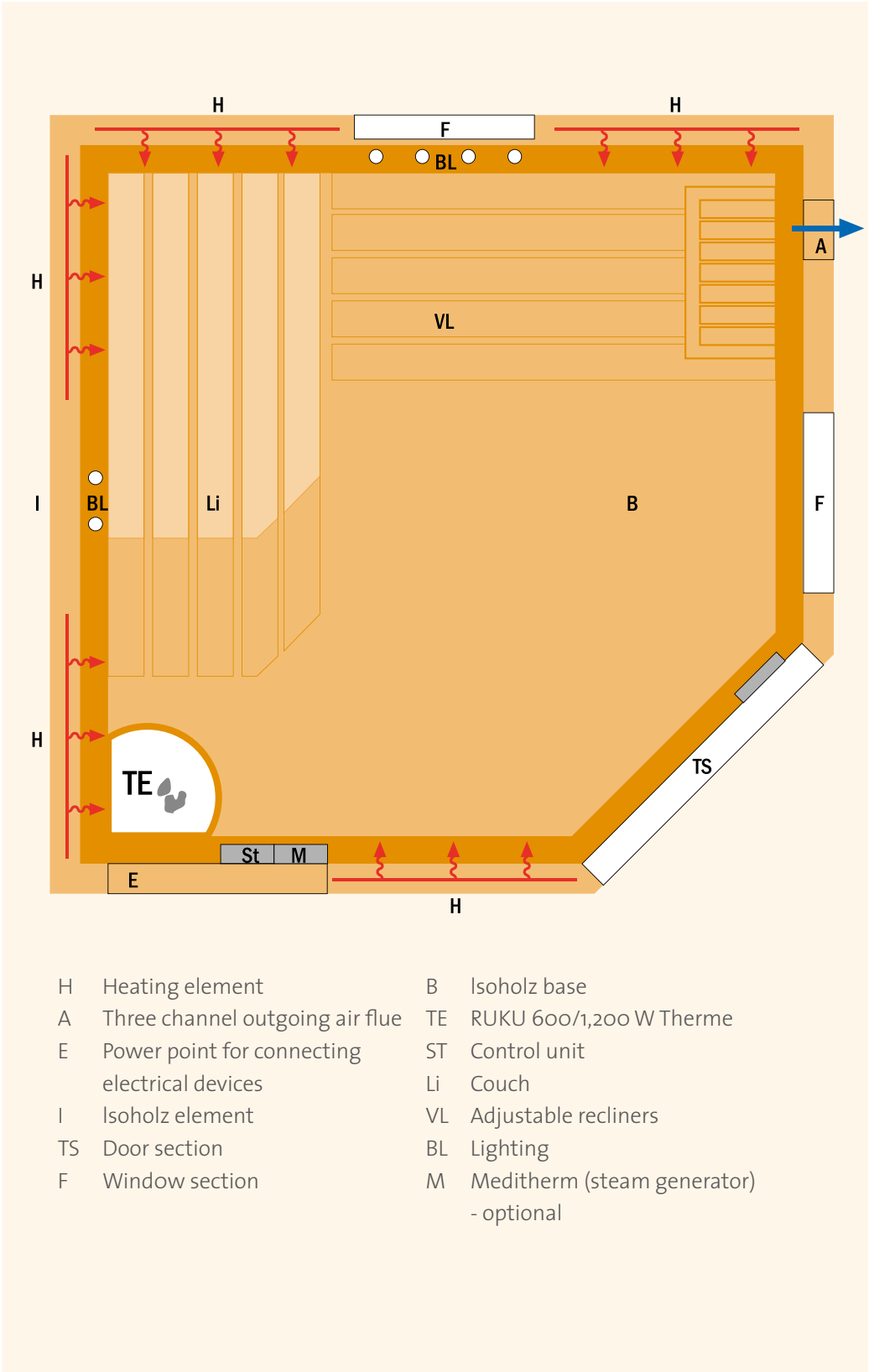


Figure 3.1/1  
Example of layout: Complete cabin 1R 6.6 kW



### 3.2 The heating section

The walls of the RUKU Thermium are made up of various sections, depending on the size and shape of the plan view, in accordance with the individual customer's wishes. The most important section design is the infrared radiating heating section.

An installation consists of several heating elements with heat outputs of approx.  $1 \text{ kW/m}^2$ . A significant proportion of the thermal energy is transferred from the tubular heating elements to the back of the inner boarding, it then flows from there through the wood to the surface and is gently radiated from here (tiled stove effect). Depending on the bathing option selected, the **wall temperatures** of the heating sections are set from  $30$  to  $80^\circ \text{C}$ . In addition, warmth is brought into the cabin by air flows, going from the bottom to the top of the heating sections. Thus the cabin air is continuously warmed and the heat loss is balanced. In the external shaft fresh air flows upwards and is preheated by the warmth pressing outwards. This thermal energy thus returns to the cabin. The two air flows mix high up and, behind a ceiling screen covering a large area, emerge directly into the hot air cushion below the ceiling.

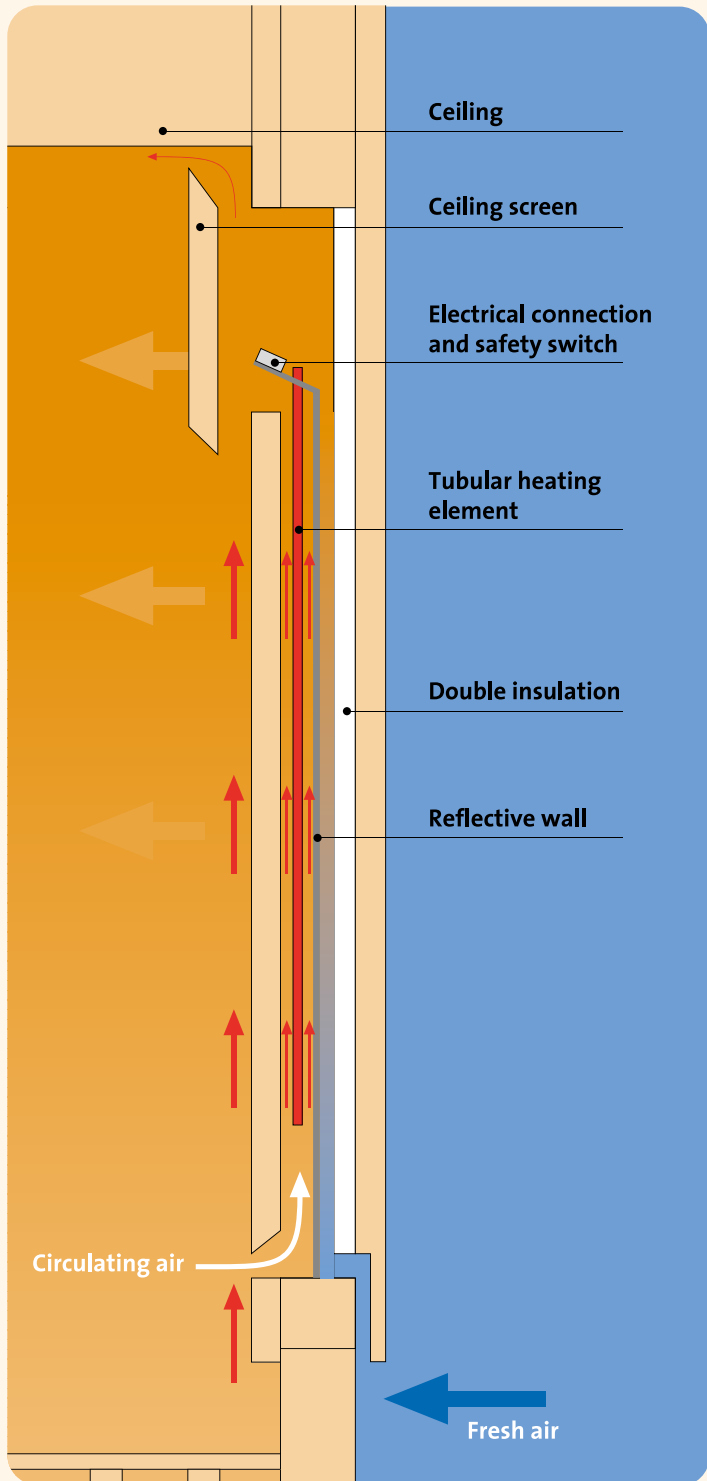


Figure 3.2/1  
Sectional view of a heating section

The wall surface heating system gives off long-wave infrared heat uniformly and can deliver high temperatures to the walls without any risk of burning.

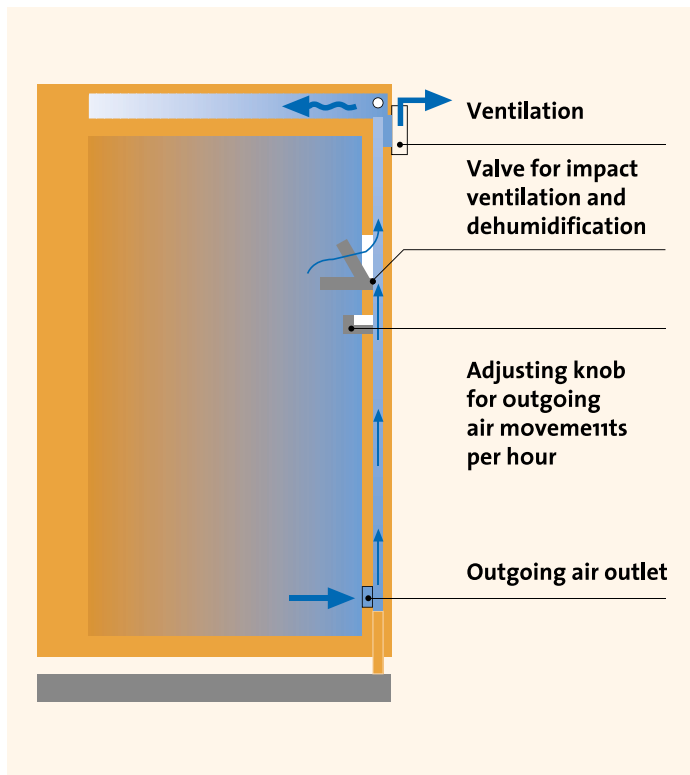


Figure 3.3/1  
Three-channel outgoing air section, sectional view  
through the main channel (the third channel for per-  
manent outgoing air is not shown in the illustration)

### 3.3 Three-channel outgoing air section

The three-channel outgoing air section developed by RUKU in 1995 differs from a traditional outgoing air shaft in the following details:

The outgoing air is regulated and can escape at the bottom or the top, at the same time or separately, as required. Since the outgoing air section is adapted to the layout of the cabin, it can be placed in the most favourable position in terms of flow; several three-channel sections can be fitted if necessary. The outer and inner boarding of the outgoing air sections is flush with the wall and therefore does not affect furnishing or the external design.

### 3.4 Types of construction/options

The RUKU Thermium was designed consistently as a construction kit with many possibilities. Standard measurements therefore do not have a place here.

**Every Thermium cabin is manufactured in accordance with the customer's wishes and the installation site.**

**A brief look at the construction kits for wall sections shows the multiplicity of designs:**

- standard heating sections for vertical, straight walls, 1,200 W or 600 W
- special heating sections for fittings under windows and on jamb walls
- Isoholz flooring
- Isoholz elements
- three-channel outgoing air element
- electrical elements

The following options can also be combined:

- RUKU Meditherm steam generators
- variable recliners
- light islands with coloured lighting
- insulated glass windows
- insulated or all-glass doors
- variants on the design in terms of shape and colour

**Illustrations of the models and options can be seen in the relevant brochures.**

### 3.4.1 RUKU Thermes

The RUKU Thermium was designed consistently as a construction kit with many possibilities. Standard measurements therefore do not have a place here.

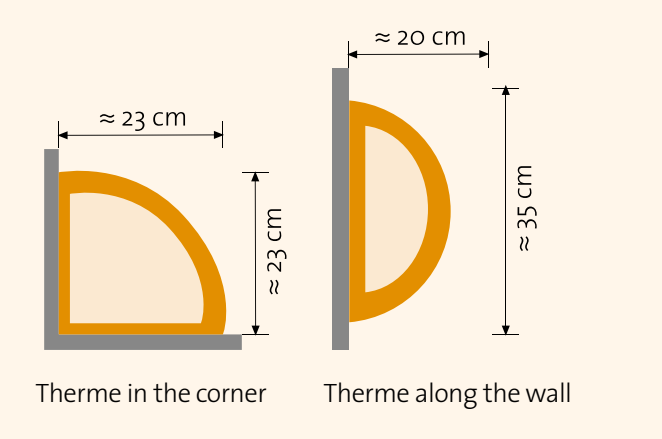


Figure 3.4.1/1  
Plan view shapes and dimensions  
(in cm) of the RUKU Thermes

Type/capacity (in W)	Installation	Function
Therme 600 or 1200	Wall or corner placement	<ul style="list-style-type: none"><li>■ Blast of stream</li><li>■ Aroma</li><li>■ Inhalation</li><li>■ Light steam bath</li></ul>

#### Optimum performance

Depending on the cabin size, connection possibilities and desired type of bathing, Thermes with capacities between 600 and 1,200 W are available. The following table introduces the RUKU Therme family:

All types work fully automatically. They always run on standby without any energy loss and provide steam when water is added. In large cabins, because of the better steam distribution, it is a good idea to have several Thermes.

Figure 3.4.1/2 Example of the  
design of a RUKU Therme  
600 or 1,200 W



As with all RUKU cabins, a Thermium can be made completely individual. There are almost no boundaries in terms of shape, size, design and configuration.

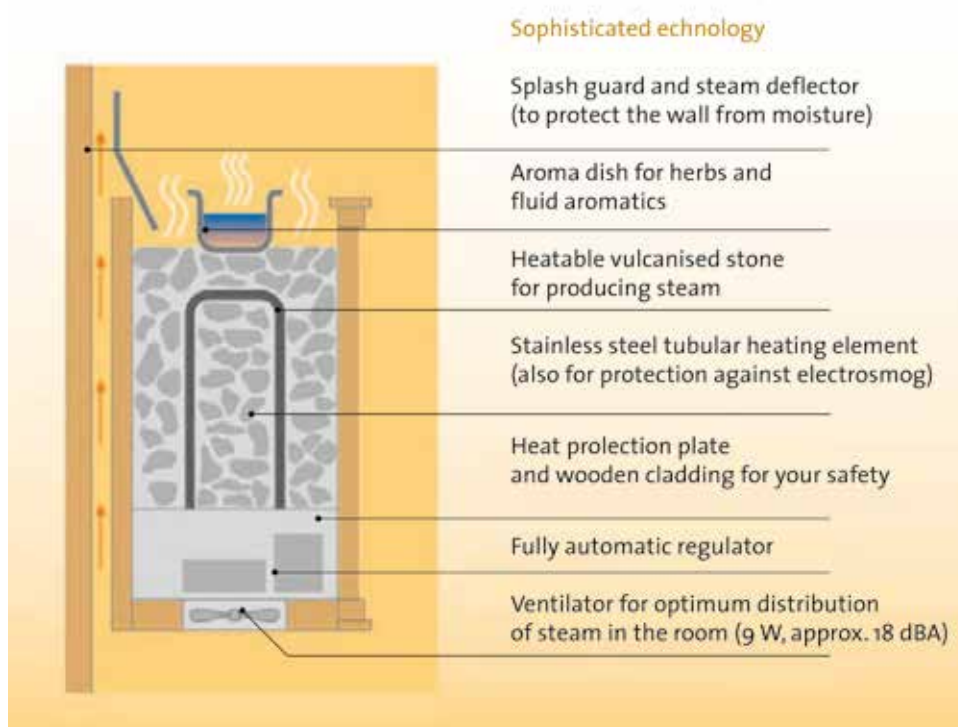
### 3.4.2 Steam baths, aroma baths and air humidification

#### Perfect function

The Therme is ideal for blasts of steam or relaxing aroma and steam baths. But it can also be used for inhaling essential oils using a tried and tested method.

- Easy to operate: simply add water and steam immediately forms.
- Very low power consumption: switches to stand-by automatically after 15 minutes. (the heat lost is used for heating the cabin).
- Almost maintenance-free: lime is applied to the stone filling and is harmless.
- No bacteria formation is possible (if used as instructed): the Thermes are automatically disinfected by the heat.
- No water residues (if used as instructed): the residual water always evaporates completely.
- Enjoy a healthy indoor climate: hot water extraction of herbs in the aroma dish, gentle contact with essential oils (evaporation occurs at approx. 80°C, that is before the boiling point of water).

Figure 3.4.2/1  
 Sectional view of the Therme structure



- Aromatherapy  
(giving aroma to the cabin)
- Infusion  
(e.g. for a hot air bath)
- Gentle steam bath  
(e.g. for therapy bath)



### 3.4.3 RUKU Meditherm – steam aesthetics in perfect form

Sauna and steam bath in one cabin, and that without any negative effect on its durability? The patented solution is called RUKU Meditherm. This TÜV-quality-tested and GS approved steam generator transforms your Thermium cabin into a versatile health spa. After your bath, the cabin is completely demineralised and dried. RUKU Meditherm is an all-rounder for all kinds of steam from gentle to intense:

- curative therapy/inhalation bath
- mild herbal/aroma bath
- Russian steam bath with up to 100% relative humidity

The compact steam generator, mounted on the inside wall of the cabin, is easy to use and, above all, easy to clean. The active substance evaporator ensures the effective release of aromas and other active substances, whether they are from fresh or dried herbs, flower petals or essential oils.

Figure 3.4.3/1  
The Meditherm casing, made of wood:  
white porcelain top with black grip ring



Thanks to built-in Therme, sauna infusions and light steam baths or aroma baths are standard in the RUKU Thermium.



## Enjoy the benefits of infrared heat

### Patented RUKU wall surface heating system

The walls of a Thermium cabin are composed of a variety of sections: heating element sections, a ventilation and electronic device section, and the RUKU Isoholz sections – all of the sections are manufactured in-house. The arrangement of these maintenance-free sections depends on the shape and size of the cabin. Our patented heating element sections utilise earthed tubular heaters, a reflecting wall and two types of insulation to radiate long-wave infrared C heat over a large area.

The result: comfortable warmth that is spread evenly through the space without any risk of burns, and with no electrosmog. Two safety fuses on each heating section protect against over-heating, providing an absolutely reliable method of preventing any fire hazards. Tested by the TÜV and provided with the GS safety-check seal, the RUKU Thermium provides the highest level of safety.







### 3.5 Electrosmog?

Electrosmog refers to electrical or electromagnetic fields which are dispersed into the surrounding area by energised or live conductors.

The dispersal is prevented by shielding the conductors. In all RUKU heating sections the filaments are embedded in stainless steel earthed ducts. So **no electrosmog is produced by the heat conductors in the RUKU Thermium.**

### 3.6 Burn injuries?

There is no hot stove in the cabin to burn yourself on. In extreme cases, as in a traditional sauna cabin, the wooden inside wall surfaces reach surface temperatures of up to 100° C. Touching the wooden surfaces is then unpleasantly hot, but does not lead to any burn injury.

Even the steam generator can be touched on the side without any danger. **But never approach the generator from the top or reach into the rising steam!**

**The aroma dish also gets hot**, as does the water evaporating in it.

### 3.7 Safety measures

The RUKU Thermium is well protected against overtemperatures. The control unit receives a control signal from the air temperature sensor fitted in the cabin, which is safeguarded against breaks in the line and overtemperature. Each heating section is also fitted with reversible and non-reversible overtemperature protections. The reversible ones switch off temporarily at a locally set heat-limiting value, then switch on again. The non-reversible safety fuses monitor the limiting value switches. If one of these fails, they cut the power to the appropriate tubular heating element.



More safety, as the heating system is inside the cabin wall, so there can be no direct contact with the heat source.

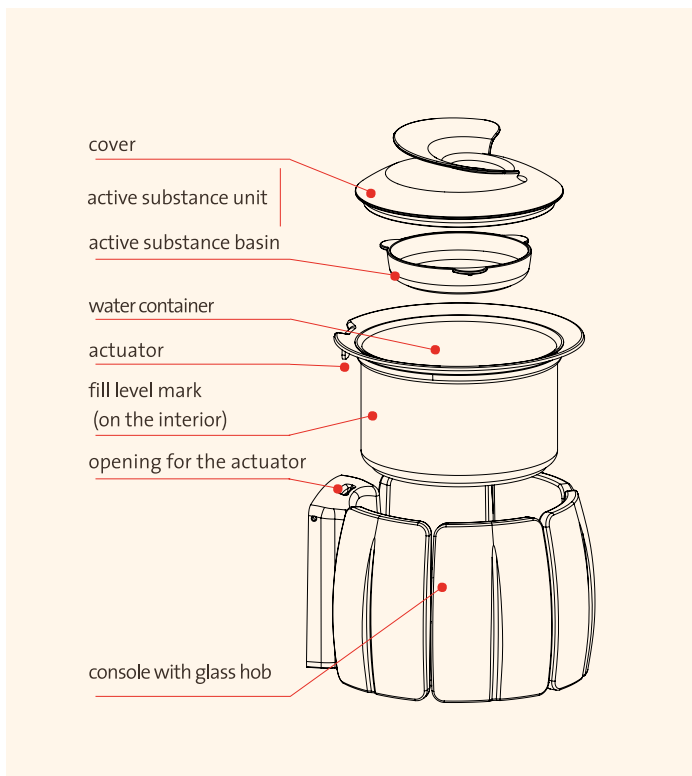


Figure 3.8/1  
 cross-section of the therme

### 3.8 RUKU Meditherm advantages

- Steam generator RUKU Meditherm with an active substance evaporator as an accessory for dry sauna and Thermium.
- For all types of steam bath, from mild hot air bath to steam bath with up to 100% relative humidity.
- Perfectly designed evaporator mounted on the wall inside the cabin. Ceran® glass panel heating plate with 2 kW heating output – 230 V. Stainless steel water container that holds up to 4 litres. Steam emitter in fine ceramic, manufactured in Selb, the city of porcelain. The integrated active substance container is suitable for evaporating both real herbs and essential oils.
- Easy cleaning of all removable parts – dishwasher-safe.
- To protect against accidental contact, the evaporator is encased in a flower-shaped obeche wood housing.
- The device features an automatic safety switch-off function, which is activated when the water supply is exhausted.
- In-house manufacture – safety-tested by TÜV Bavaria and provided with a GS seal.
- Easy installation makes the Meditherm a perfect retrofitting element.

#### The device is operated via a temperature comfort controller:

- state-of-the-art micro-controller technology
- exact temperature regulation with a dual-sensor system
- 4-digit, 7-segment LED display
- 24-hour time presetting
- automatic drying programme







# Application

## 4.1 Reactions of the body in the cabin climate

The human body is only viable within tight temperature limits. The internal temperature (core body temperature) is about 37° C, the skin surface temperature on the brow at room temperature about 32° C.

At higher or lower ambient temperatures the human heat regulation tries by various means to maintain the desired temperatures. For example, the body reacts to too high ambient temperatures by sweating. The sweat evaporating on the body surface acts as evaporative cooling.

This and other thermally produced effects form the basis of a range of healing methods which are differentiated in terms of the medium used (water, air), the duration of the effect, the sequence of hot and cold, moist and dry, movement, rest, aroma and light.

Other installations are therefore required, apart from a sweat cabin. At least a shower with warm/cold water and a foot bath should be provided.

The Thermium can also be combined with a solarium, swimming pool or fitness room.

## 4.2 Sauna/hot air bathing

The climate in the Thermium is set to warm, dry hot air at about 80 °C .

For hot air bathing we offer the air temperature guide lines as applicable to saunas, but we prefer lower air temperatures which we make up for with higher wall temperatures (intensive radiation of warmth). However, if the customer wishes to have higher air temperatures, we call this „Sauna extreme; then a Finnish sauna with a traditional stove would be recommended.

**Reason:** The mucous membranes of the respiratory tract dry out at air temperatures over 80°C (burning feeling) and resistance to infection is reduced. Hot air is thinner. Each breath taken provides less oxygen, much like being 2,500 m up a mountain.

Indulge your body and soul with the necessary recuperation while forgetting everything around you – with a bath in the RUKU Thermium.







## 4.3 The air aroma while bathing

Modern aromatherapy (13, 14) is enjoying increasing popularity. We shall see its special effect in combination with the other bathing options.

Before that, however, two remarks:

**The human sense of smell gets used to an aroma in a few minutes.** In spite of the intensity objectively remaining constant, the fragrance is experienced as lessening. If you leave the cabin for a few minutes, you notice when you return that the fragrance is still there. There is therefore little point in giving high doses; a discreet fragrance is just as stimulating.

Many aromatics (particularly chemical products) are aggressive, incompatible with skin and harmful to eyes.

The RUKU range of fragrances contains only completely natural essential oils.

Our standard range includes:

**Eucalyptus** for respiratory tract infections. The active substances inhibit the formation of mucus and have an antiseptic and expectorant effect (coughing up is made easier).

**Mountain pine** opens up the respiratory tract, has an antiseptic effect, brings relief for bronchitis and colds.

**Lavender** especially suited to care for the whole body, versatile essential oil, facial steam baths (a few drops in hot water) for skin care; also has a calming effect on the nervous system for anxiety, nervous exhaustion and sleep disturbances.

**Orange** refreshing, anticonvulsive and skin-protective effect.

## 4.4 Inhaling with the RUKU Therme or the Meditherm

The aroma dish is intended for inhaling essential oils using a tried and tested method.

Fill the aroma dish/active substance container about two thirds full of water, then add a few drops of essential oil or herbs. The essences contained in the medicinal herbs evaporate in this hot water extraction or are taken up by the rising steam. To ensure that the concentration is maintained, we recommend sitting right by the steam outlet. If necessary putting a handkerchief over your head, and inhaling the rising vapours directly.

If extracting from tea bags, the tea blends from the pharmacist which contain more active substance should be used.

Fluid concentrates are generally so intense that you can dispense with the handkerchief.

Simply switch off and indulge yourself with very special downtime, with fragrances, light and music.

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## 6. Notes

Some of the illustrations show special designs and additional equipment which are available at extra cost. We are not able and are not allowed to give you any therapeutic advice; that is reserved for doctors. We therefore ask you to regard this text as introductory information.

## 7. Enclosures

Wiring diagrams are supplied in loose leaf form with all RUKU Thermiums. Further publications on particular subjects (installation questions, ventilation problems, etc.) are available at the advisory discussion with the RUKU agents.



Customised solutions – no problem for RUKU. We build to order, so we are able to take space considerations into account in our planning.









### **RUKU Sauna-Manufaktur GmbH & Co. KG**

Dietenheimer Straße 43a  
89257 Illertissen  
Germany

Tel. +49 7303 9051-0  
Fax +49 7303 9051-131

You can find more information about RUKU Sauna-Manufaktur on our website and locate a RUKU showroom in your area. Pay us a visit to experience our products for yourself. Or give us a call. We'd be happy to advise you and connect you with a sauna consultant in your area.

[info@ruku-manufaktur.de](mailto:info@ruku-manufaktur.de) | [www.ruku-sauna.de](http://www.ruku-sauna.de)

