MASTER
LIVING TECHNOLOGY

UNA
THERMAFLOOR

invisible wellness

enter to a world of energy

Master Divisione Elettrica presents a new kind of home heating systems for residential, industrial and commercial installations.

UNA ThermaFloor is the new electric radiant heating system, characterized by high energy efficiency and extremely easy installation.

Designed for different kinds of applications, UNA ThermaFloor is perfectly integrated with our **UNA** domologic system, providing a sole solution between the home automation, heating and electric system, with the aim to give wellness to who wants to live without worries.

Discover all the advantages of the system and try to imagine your new home with the invisible wellness of UNA ThermaFloor.

the good thing is that you don't see it

UNA ThermaFloor is a nano-polymer self-regulating low-voltage (24V) electric heating system.

It is composed by strips with only 1.2 mm polymer thickness and can be the adapted to multiple applications: underfloor,under plasterwall and ceiling, but even in outside areas to melt snow and ice from courtyards, ramps, stairs, sidewalks, parking lots and even rooftops.

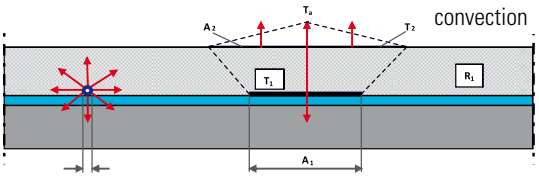
UNA ThermaFloor is easy to install both in new buildings on restructuring, but it is especially **easy to manage:** it requires no maintenance and has a total reliability in time and thanks to the self-regulating technology, it allows to reduce energy consumptions significantly.

efficiency example

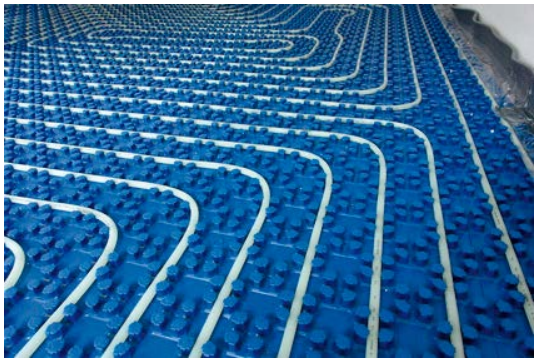
According to recent studies it has been demonstrated that UNA ThermaFloor is much more efficient than any other heating system.

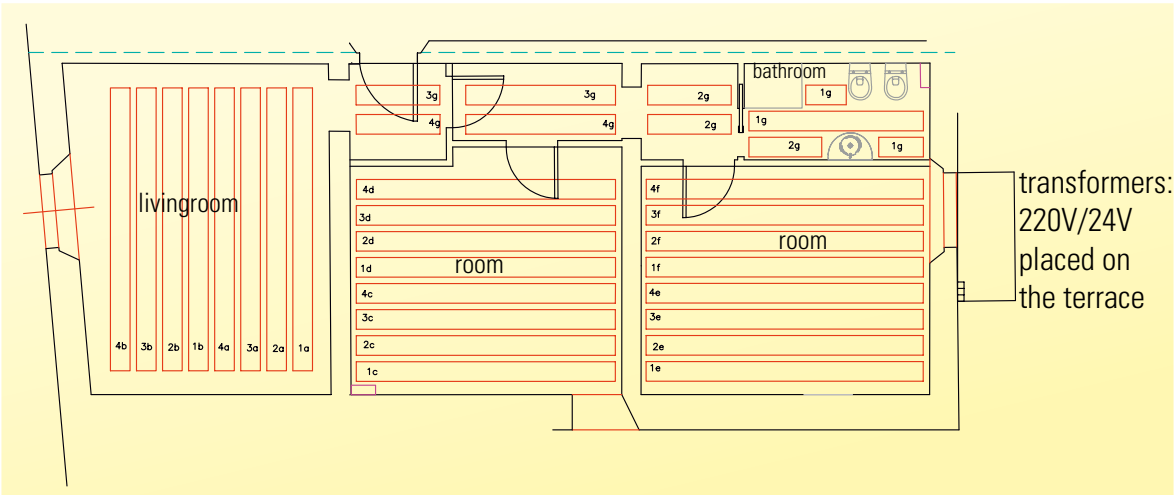
Prof. Francesco Schiavone (University of Florence and Senior Research Associate Royal Melbourne Institute of Technology in Australia) has compared the transmission heat of the ThermaFloor self-regulating heating element with the one of electrical cables heating systems and a hydronic heating system.

The footprint of the hydronic element and the heating cable is equal to 4% of the floor, while the footprint of UNA ThermaFloor is equal to 60% of the floor.



A typical heating system with **UNA ThermaFloor** Residential develops up to maximum **52 W/m²**. To get the same result in terms of heating output **heating cables system** requires **125 W/m²** (2.4 times more power) and an **hydronic system** requires **104 W/m²** (double power).





Example for a **70.00 m² apartment**, Class B, located in Florence: Project temperature: 0°C, climate zone D, DD 1821. Installed power: **3.3 kW**.

Expected consumption for uninterrupted use **throughout the winter season** (setback of 1-2°C during the night) **kW/h approx 2,100. (€ 420.00** approx. Considering the price of the kW/h equal to € 0.20).

Energy consumption was calculated by considering the system continuously on without any interruption for **150 days**, on a average time of 8 hours a day.

When we consider yhe installation to be on, that means the installation is controlled by room thermostat set to 18°C. We consider 18°C because the radiation is known to earn at least 3°C than convection heating.

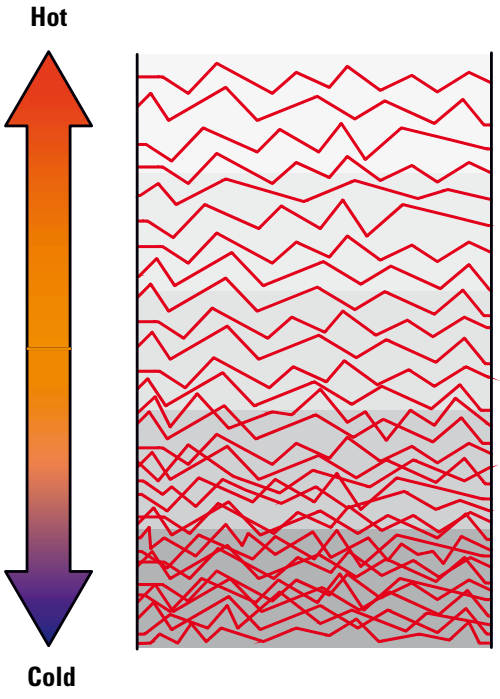
self-regulating technology

The polymer which constitutes the heating element contains nanoparticles distributed in a homogeneous way which, allow the passage of electrical current by virtue the nature of semiconductors when in contact with each other.

When the room temperature increases, the structural morphology of the changes and polymer nanoparticles move apart, reducing the contact points.

In this way the electrical resistance is increasing then reducing, it reduces the current flow and consequently producing less heat.
In a low temperature space, the nanoparticles are close and allow the passage of greater electric current and then the emission of higher heat.

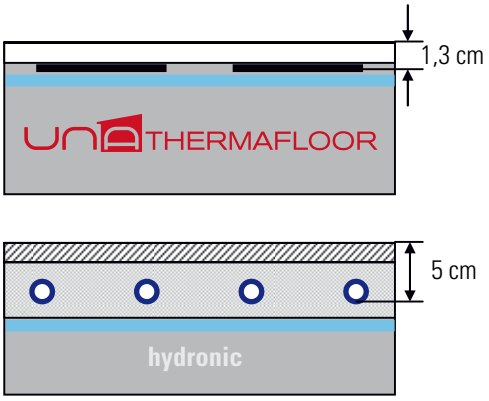
So, the more the material is heated, the less electric power passes and therefore less heat is developed. It's like having a sensor as large as the entire floor!



comparison

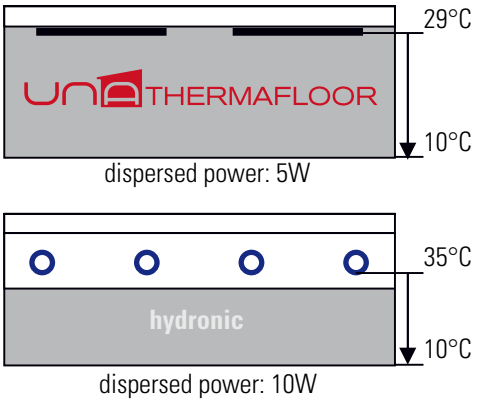
Reaction to temperature: overall saving 15%

UNA ThermaFloor can be installed immediately under the floor, in this case it reacts rapidly because it is very near to the floor finishing.
The hydronic heating system, thermal mass, and then has must heat a significant response times longer.



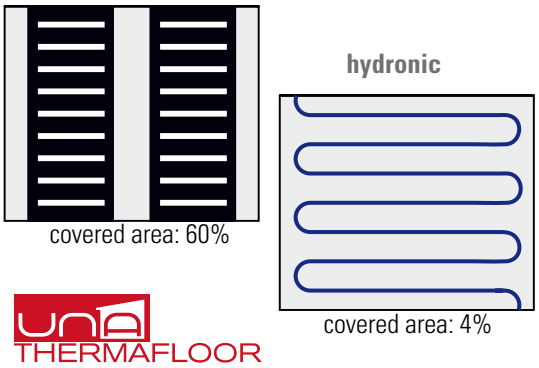
Heat dissipation: 7% overall savings

The temperature difference between UNA ThermaFloor and the bottom is minimal, that means low heat dissipation.
The temperature difference between the hot water tubes and the bottom is high, this causes a considerable thermal dissipation.



Heat diffusion: overall saving 15%

UNA ThermaFloor Residential permits to cover a larger area (60% of the floor), heat the floor uniformly, and requires a lower temperature.
The thin heating pipes require more energy to heat the floor because they cover small areas (4%).



UNA ThermaFloor can be placed closer to the surface of the floor than any other heating system. Due to the lower mass to be heated, the system **reacts quicker** to any variations in temperature.

The uniform distribution of heat eliminates drafts and ensures a pleasant **comfort** at a lower temperature.

The maintenance of a continuous **uniform temperature** provides more efficiency than a system with cycles of on-off switching.

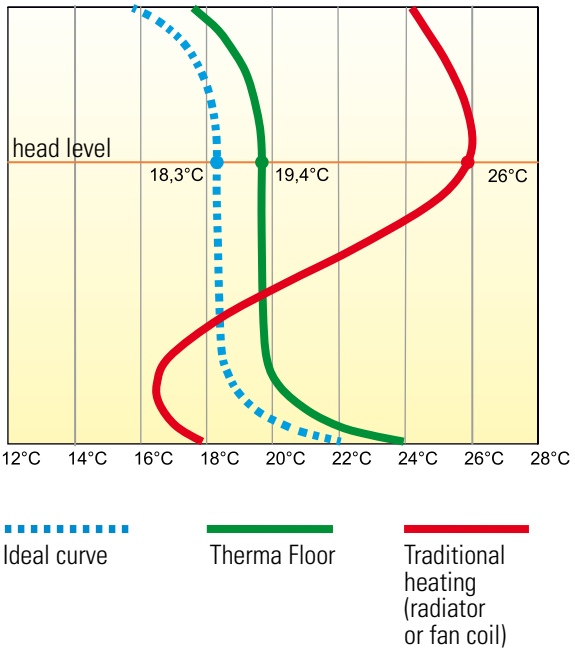
The self-regulating elements consume only necessary energy to maintain the temperature to an ideal level. The **size** according to the heating needs of individual rooms not only increases comfort, but it is also very convenient in terms of price.

safe and healthy

The heat generated by ThermaFloor ensures a **comfortable warmth** over the whole floor. The diffusion of heat within the environment is optimal when it is higher at the level of the feet and least at the level of the head.

Unlike the air systems, ThermaFloor is not putting into circulation dust particles, and thus it is ideal for persons suffering from allergies or illnessessuch as asthma.

A properly heated environment promotes **concentration and wellness**. Studies carried out in schools demonstrate that a decrease of 4°C increases in a classroom 10% the learning ability.
Health ministries of several countries have calculated that in the presence of children floor temperature should be between 19°C and 26°C and not exceed or 29°C. ThermaFloor maintains a average temperature of 24°C with a voltage of 24 V.



no danger

Electromagnetic field

ThermaFloor generates a minimum electromagnetic field, below the European standards.

If you've never worried for your refrigerator or washing machine, who produce more emissions than ThermaFloor, then you can enjoy the wellness of electric heating with serenity for you and your family.

Maximum security

If properly installed, UNA ThermaFloor system is absolutely safe, because the self-regulating nature of the semiconductor material prevents overheatings.

ThermaFloor operates with maximum voltage up to 30 volts alternating current, acquired and modulated by the normal power supply. Power suppliers are dedicated type, completely silent and characterized by low temperature.

Moreover, the system, at low voltage, is equipped with secondary circuit breakers and overcurrent protection for each element.

Accidents and disasters

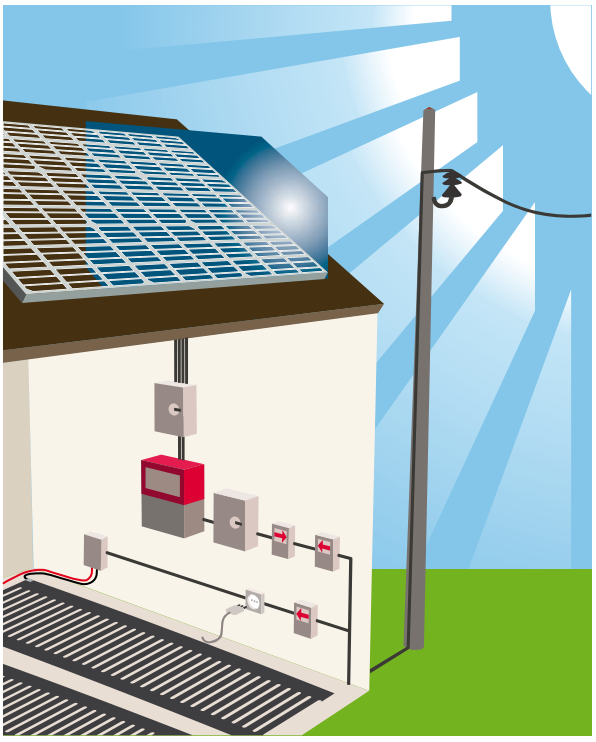
Unlike the systems with the boiler or furnace, there is **no danger** for accidental damage, because there aren't tanks or piping containing hazardous substances as a gas or fuel.
Even in case of earthquake or building structural damage, ThermaFloor will not burn and will not produce any sparks.

eco-compatible

ThermaFloor heating system can be easily supplied by renewable energy sources.

The installation of a photovoltaic system in the same building, compatibly with national and local laws, may contribute to or provide in full energy self-sufficient buildings.

The energy produced by photovoltaic systems can be sufficient to supply ThermaFloor during the day with net metering, also in low exposed areas, the energy produced in the warmest and sunniest months can compensate the cost of electrical energy to supply ThermaFloor in winter months.



advantageous

Respect of the environment

UNA ThermaFloor is a innovating and non-polluting heating system.

Since is not provided with a boiler, the ThermaFloor system does not produce any type of CO^2 emission on the spot.

Furthermore, if you choose renewable and non-polluting energy, you can get to have an environmentally friendly heating system.

No maintenance needed

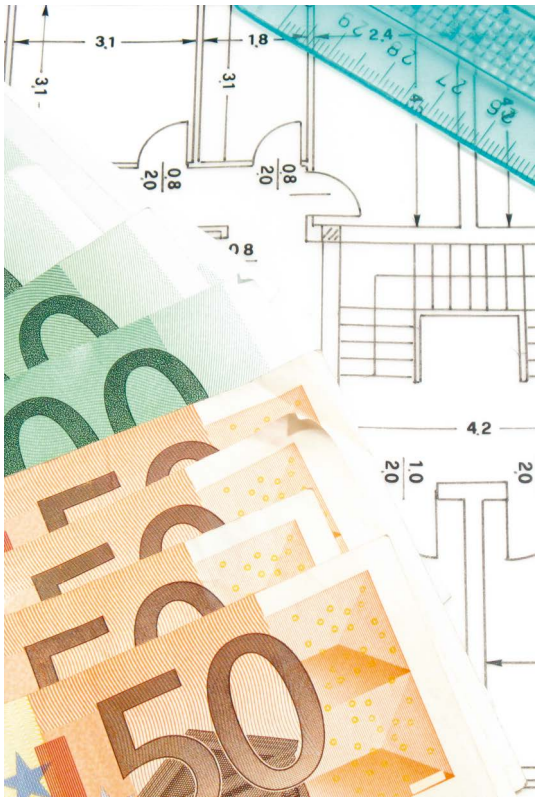
UNA ThermaFloor does not require any maintenance, it will not be damaged by punctures, and it is guaranteed for twenty years.

Carefree

UNA ThermaFloor does not require any document or legal obligation to install it, nor any obligation with the Fire Dept.

Tax benefits

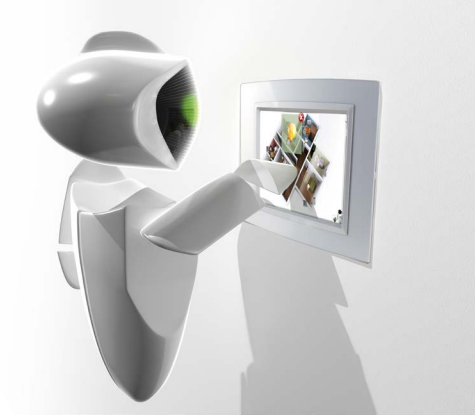
In some countries, if you will include UNA ThermaFloor in the construction or renovation of a building, you can take tax advantages (depending on local laws).



integrated with UNA

UNA ThermaFloor is perfectly integrated with UNA home automation system by Master.

Using **Therma** board, you can manage independently each zone of your home, by setting the right climate with the hourly and weekly programs, and edit it or disable it only with a button.



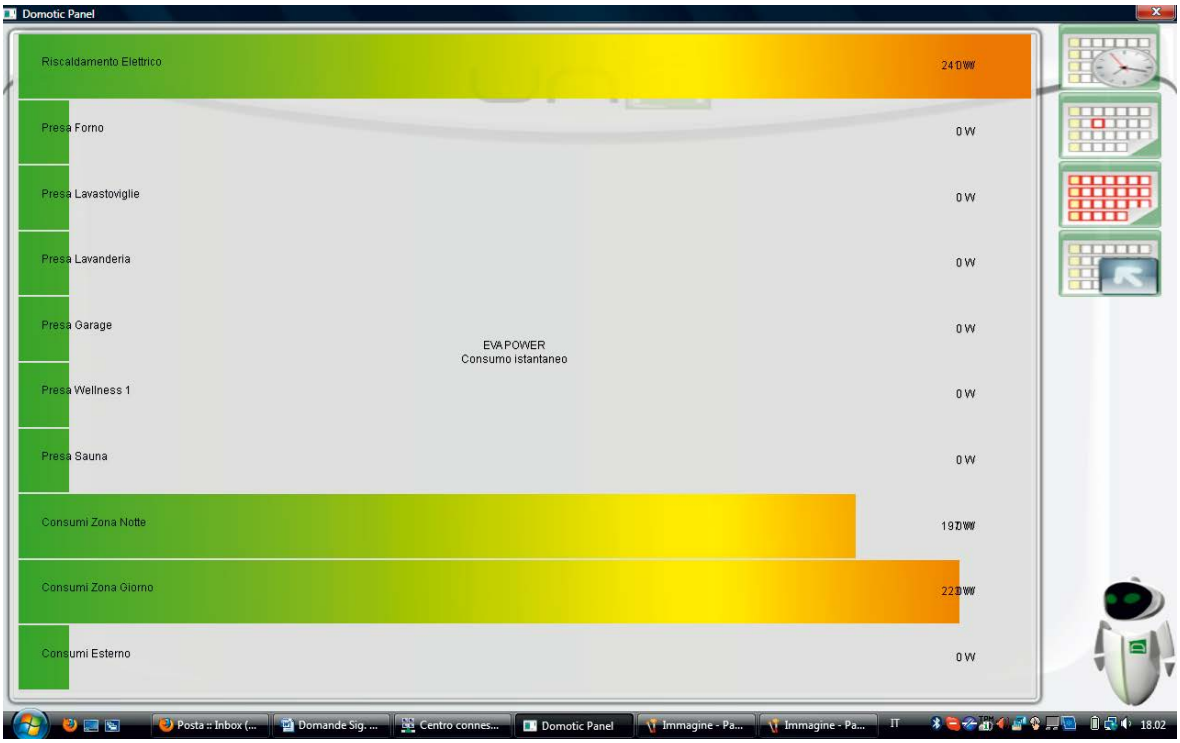
With **Tosca** touch screen it is possible to havealways under control the temperature in every corner of your house, and program ideal climates thanks to the Visus interactive interface.

Vesta allows the other boards to activate and manage the temperature directly from your office, from your smartphone or any access to the Internet.

Finally, with **EvaPower** board you store information about the energy consumptions of your installation in real time, and to avoid separations of power at times when the home appliances consume more.

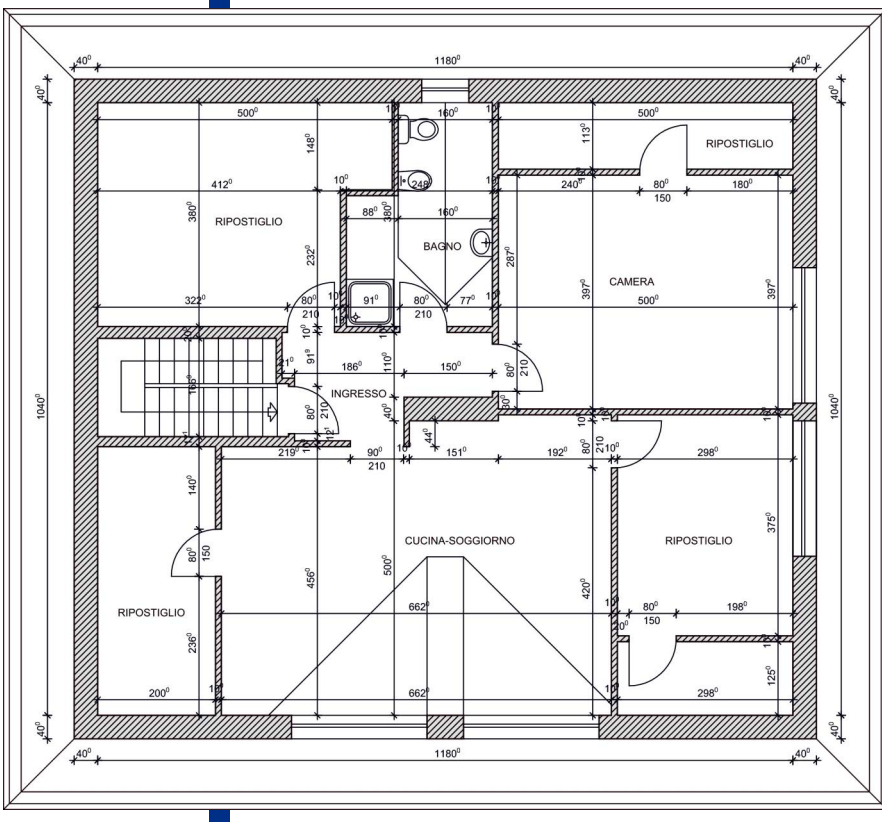
simplicity

The software **Visus** installed on Tosca touch screen or on a standard personal computer (WinVisus version), allows you to monitor the temperature of each area of your house and regulate directly from a single control point.



If you connect UNA ThermaFloor to EvaPower board, you can display consumptions of the entire system or each heated area. Also, if you have limited power, EvaPower is able to anticipate and avoid overruns and energy detachments by your suppier, so you can decide each time your priorities between the several devices and appliances in your home.

easy to think



The simplicity of UNA ThermaFloor begins from the moment of planning. Quantity and arrangement of ThermaFloor stripes determine the total heating capacity of the system.

It is necessary the design to be undertaken by a **specialized designer**, in order to avoid the risk of downsizing or oversizing the heating system.

Master offers its customers the design and dimensioning service of the ThermaFloor system. In order to get the quantity and the detailed recommendations for installation is to send a request to the Master technical assistance including:

- Technical report of the building
- Geographic location of the building
- A DWG or DXF map of the building.

example

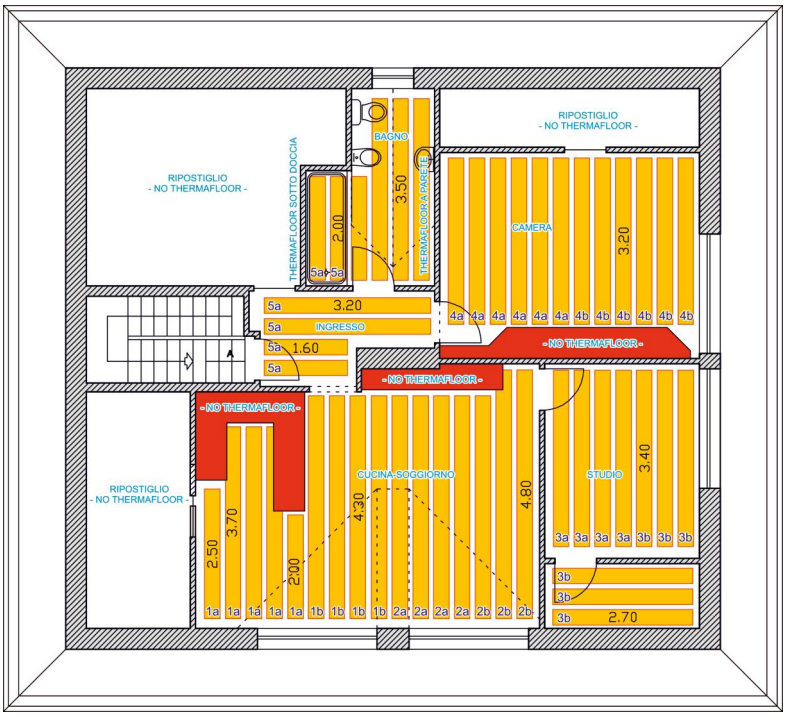
This example shows the application of UNA ThermaFloor in a **80 m²**, floor located in **northern Italy** (Design temperature: -5°C; climatic zone E; DD 2404) with **Class B** building.

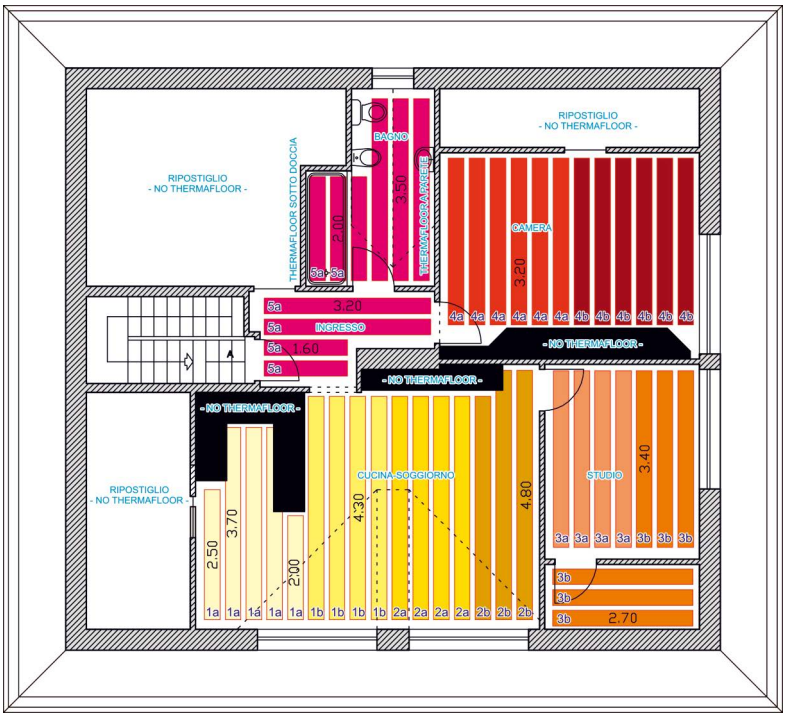
In the design phase, areas that do not require UNA ThermaFloor (closets, furniture kitchen cabinets) must be taken consideration and estimated installation of **160 m linear** ThermaFloor (30.5 cm rolls width) for a total maximum power of **4.00 KW**.

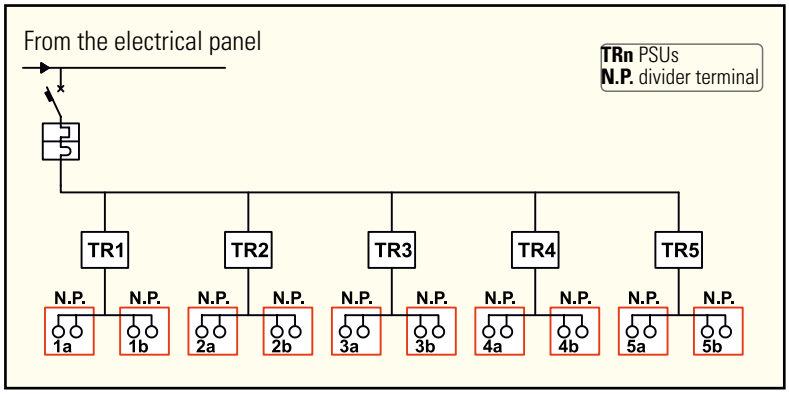
The above picture shows the simplicity of the design and commissioning in place, which consists in parallel arrangement of ThermaFloor strips.

The picture on the right is highlightening the separation of different areas in the apartment.

In order to obtain a greater comfort during both the installation and the subsequent management of the heating system by the user, the designer has chosen to install **5 power supply units each one with power up to 1000W**.







The arrangement of the strips and the next link to the processor based on the criteria of local subdivision (left diagram), allow the user to choose the ideal temperature for each area in the house, diversifying also switching on and off.

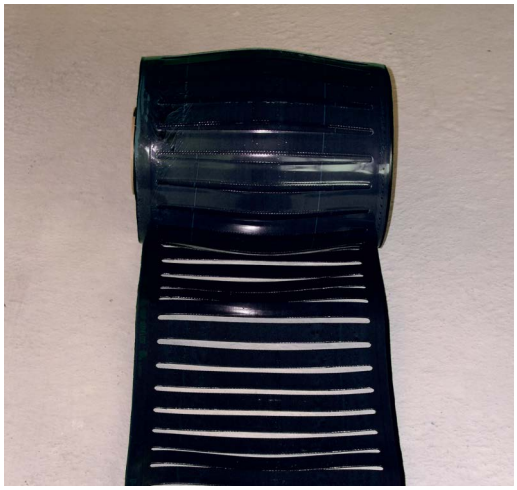
easy to install

UNA ThermaFloor is 30.5 cm wide, with thickness of 1.2 mm, available in **rolls**, by cutting into sections according to the project needs. It is embedding in the fixing materials (glue, mortar or concrete) and requires the interposition of a screed, but only of the underlying sheets of heat-insulating material, to avoid the dispersion of heat.

The UNA ThermaFloor strips are positioned next to each other and fixed the underlying insulating tape.

UNA ThermaFloor is **particularly suitable** for wet rooms and spaces with water dispersion problem, such as bathrooms, gyms and dressing-rooms.

Furthermore, it permist to save the space of typical hydronic systems, the pipes and pumps to boiler rooms, requiring only normal ducts for electric cables without particular protections.



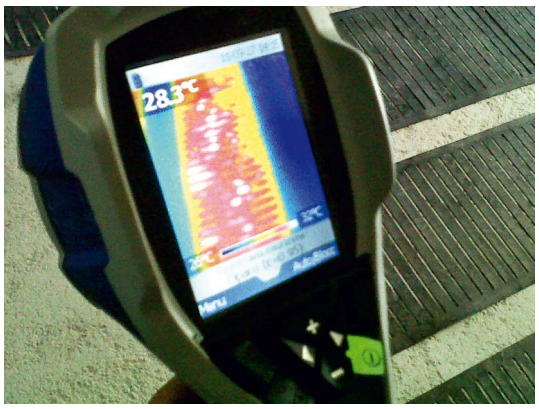
installation

Isolation

The insulating tape must be inserted below ThermaFloor obviously depends on the type background, the floor chosen factor (K) and available height.
The guidelines for all radiant heating systems require R values four times higher beneath the thermo-radiating elements with respect to the above.
Furthermore some materials for floors require insulation with resistance to higher compression, such as ceramic tiles or marble.

Easy to fix

ThermaFloor can be used under all types of floors: carpet, vinyl, laminate, marble, tile, brick and parquet. If you can access the interspace below, ThermaFloor can even be installed under existing floors, without affecting the aesthetic outcome.
You can also install ThermaFloor on the walls, covering it with plaster or with the tiles in the case of bathrooms or changing rooms.

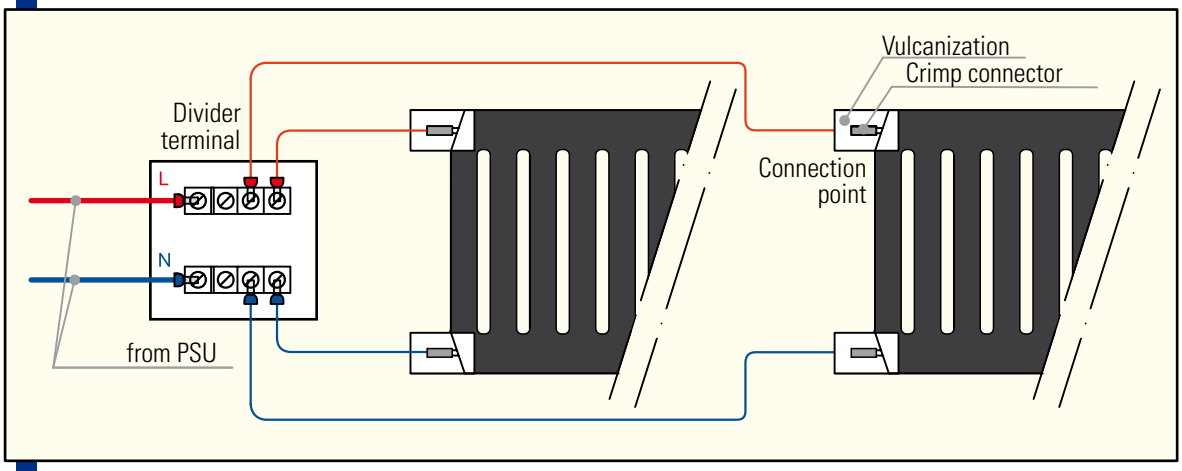


Electrical wiring

For the installer the operations the wiring is extremely simple and takes the form with a series of parallel connections which branch from the terminal block.
UNA ThermaFloor strip, once cut to size, is connected at the points cutting with a crimp connector and subsequent vulcanization.

Power supply

The power supplier can be easily positioned on the wall in a dedicated room, so as to be protected and safe in normal operation but also easily accessible for the installer.



ThermaFloor

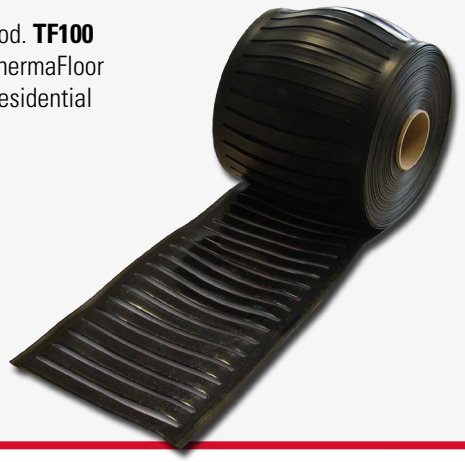
The ThermaFloor strips are available in two different versions, in order to match with the different types of installation and the different climate and environmental conditions.

ThermaFloor residential (**TF100**) is the standard version for domestic, industrial and commercial installations.
All examples and features previously shown refer to this type of product.

For outdoor areas, such as sidewalks, slides, ramps, or parking lots, and for other special needs, as assessed during the design stage, ThermaFloor High Efficiency (**TF200**) is avaiable.

Both types are provided in 53 meters rolls.

Cod. **TF100**
ThermaFloor
Residential



Cod. **TF200**
ThermaFloor
High Efficiency

Power supply units

UNA ThermaFloor requires the use of the appropriate power supplier 230-24V~ available in 500W, 1000W and 1500W versions.

The dimensions of the PSU are:
TF605 (500W): 365x175x89 mm (7.7 kg)
TF610 (1000W): 568x175x89 mm (12.7 kg)
TF615 (1500W): 721x175x89 mm (18.6 kg)

The PSUs are designed to be installed on switchboards or ventilated rooms in order to avoid overheatings in particular climatic conditions.

Cod. **TF605** PSU 230V-24V~ 500W
Cod. **TF610** PSU 230V-24V~ 1000W
Cod. **TF615** PSU 230V-24V~ 1500W

Accessories

TF900 Connectors
TF910 Insulating tape 63 mm x 3 m
TF950 Crimp tool
MBD125111 125A Terminal block
MBD160111 160A Terminal block

Accessories

For more information about UNA ThermaFloor system, please contact the Master technical dept.

MASTER
LIVING TECHNOLOGY

THERMAFLOOR

Master Srl Divisione Elettrica
Via Mario Tognato, 16
35042 Este - PADOVA (ITALY)
Tel. +39 0429 602777 - Fax +39 0429 601247
www.master.it
www.domologica.com

Art. **DEPLIANT38-ENG** - Agg. 12-09-2014 -