

Heating Mesh Test



Heating Mesh for indoors, modular or customized



Heating Mesh - PVRI



The Carbon Fiber electric floor heating is a patented system, only 4 mm thickness, which can be produced in standard sizes or customized both for power and for geometric shape, maximum area for a single piece is 25m².

Radiation heating

Thermal radiation is a heat exchange mechanism that uses infrared waves as heat transmitters. In fact, two bodies or objects with different temperatures naturally exchange radiations, and the heat flow tends to go from the warmer to the colder body. The radiation emitted in a room by a floor heating system turns into heat when it comes into contact with an object, a wall or a person. Infrared waves are not absorbed by air but rather by solids, which turn them into heat. Heat is then transmitted into the room and occupants enjoy optimal heat and comfort.

Healthy heating solution

Floor heating is healthy, in fact does not create air movements, with consequent movement of dust and eliminates the temperature differences between the various zones of the environment. Floor heating guarantees the best comfort and compliance with regulations in force that allow a maximum floor surface temperature of 28°C. Thermal Technology floor heating systems, as confirmed by tests and related report issued by the IUAV University of Venice is advantageous because: *"An average radiation temperature of 21°C allows air temperature to be maintained below 20°C, i.e. lower than the temperature reached by traditional heating systems. This fact proves that this heating system limits the indoor-outdoor temperature differences so prevents unnecessary heat loss. The studied system also guarantees a temperature difference between floor and ceiling of about 1.5°C. Temperature at the level of the head and legs is roughly the same"*.

Examples for heating mesh installation



APPLICATIONS

The system is ideal for all building types, for example: family houses, blocks of flats, schools, hospitals, shops and stores, both for new buildings and for renovations. GENIUS CARBON system can be easily adapted for all uses.

Heating panels are incorporated in the floor, so the walls are freed of cumbersome radiators and more room space can be used for furniture placement.

Comfortable

Heat is uniformly spread from the floor to ceiling and a homogeneous, steady temperature is guaranteed throughout. The temperature is easily adjustable for each separate room.

Silent working

Due to the fact that this heating system is connected to electric grid, there is no need for a boiler or other mechanical appliances which could disturb the silence.

Modular Mesh	Size	m ²	Power
PVMR.060100	60X100	0,6	60 W
PVMR.060150	60X150	0,9	90 W
PVMR.060250	60X250	1,5	150 W
PVMR.060350	60X350	2,1	210 W
PVMR.090150	90X150	1,35	135 W
PVMR.090250	90X250	2,25	225 W
PVMR.090350	90X350	3,15	315 W
PVMR.090450	90X450	4,05	405 W
PVMR.150150	150X150	2,25	225 W
PVMR.150250	150X250	3,75	375 W
PVMR.150350	150X350	5,25	525 W
PVMR.150450	150X450	6,75	675 W

Code	Modular mat accessories Description
PVMM.40075.NR	Compensatory (non-heated) modules. 400X75
PVMM.00PL80	Module-to-module extension 80 cm
PVMM.0PL200	Module-to-module extension 200 cm
PVMM.0PL400	Power-to-module extension 400 cm



Flexible

Each room can be easily equipped with an independent thermostat (there is no need for pipes, pumps or valves) in order to adjust the temperature in accordance with the time actually spent there.

Healthy

Thanks to the heat irradiation principle, the air in the room is not being moved. Solid bodies are the one to be heated directly from the floor, avoiding thus dust and mite circulation. The floor-radiating system guarantees a floor vs. ceiling air temperature difference of about 1.5°C, important value for optimal comfort.

Safe

As it is an in-built system, there is no risk for a person to come in direct contact with high-voltage components. Heating elements are made of fireproof materials. Also, Carbon Fiber produces a minimal electromagnetic emission, which is 47 times lower than the limits set by directives on force.

Economic

Genius Carbon heating system ensures an optimal distribution of heat in the room, and allows the reduction of the temperature with 1 - 2 °C in comparison to all other heating systems. It should be mentioned that 1°C less leads to a 7% lower energy costs.

No maintenance required

The system does not require maintenance. No spare parts needed.

Warranty

As evidence of the high technical and mechanical properties of Carbon Fiber the manufacturer offers a warranty of 10 years from the date of purchase.

Thermal Technology® heating system is also:

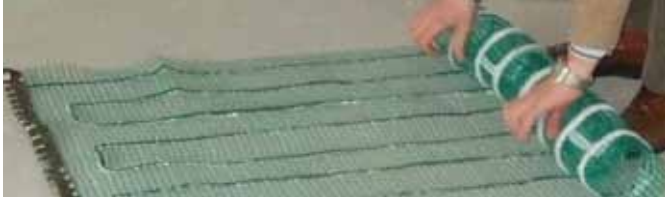
- reliable over time;
- quick and easy to install;
- reusable (if installed under floating floor);
- self-extinguishing and resistant to moisture, the electrical connections are certified IP67.

TEMPERATURE CONTROL

Thermal Technology® heating system does not require double temperature control (floor sensor and room thermostat). Temperature control is managed by a simple room thermostat or programmable thermostats. For a better control of the heating system, we recommend the installation of an electronic control unit, which enables you:

- To modulate the system's operation based on outdoor temperature;
- control and manage the maximal absorption peak;
- set ranges of attenuation.

Application modular mesh



MODULAR SYSTEM FEATURES

Technical data of the modular mesh

Modular heating mesh is composed in 12 standard-size (see chart) modules that are linked together by means of a patented connector, with a high protection degree IP67, and 4 mm thick.

The modules are composed of an alkali-resistant fiberglass mesh being a support for carbon fiber thermal conductors, protected by an insulating band to reduce heat loss downwards.

Power Supply 230V.

Inside both of the elements, mat and mesh, Carbon Fiber cables are linked in parallel to a single feeder. If one of the elements is accidentally pierced and carbon cable is damaged, just a limited surface of 1 square meter will cease to work.

MODULAR SYSTEM INSTALLED POWER

The modules are designed to ensure 100 Watts/sqm in order to withstand the most severe conditions.

MODULAR SYSTEM COMPOSITION

GENIUS CARBON® modular heating system is composed in:

- 12 heating elements, different sizes (see chart);
- 2 extensions, different length, for modules interconnection;
- 1 extension for connection to the electrical system.



Extension - PVMM.0PL200

Customized Mesh	Size	m ²	Power (W)
PVRI.000000	Customized	/	Customized

Applicazione materassino a progetto

Customized Mesh application



CUSTOMIZED SYSTEM FEATURES

Customized heating mesh technical data

Inside both of the elements panel and mesh, carbon cables are connected in parallel to a single feeder. If one of the elements were accidentally pierced and carbon cable was damaged, just a limited surface of 1 square meter.

These qualities enables user to operate the elements for renovations, rehabilitation, conversion of the attics in a living area, etc.

INSTALLED POWER FOR CUSTOMIZED SYSTEM

The power necessary for proper use of the system depends on dispersion percentage of the building (building energy class A, B or C). It also depends of the climate zone and thermal insulation. The heating elements are projected after all these parameters are measured, and their power can be different, from **25 to 100 Watts per square meter.**

General Rules

- Make sure that the products used for the floor covering are compatible with the this type of heating.
- Install wood or laminate floor according to manufacturer's instructions.
- Use elastic bonds.
- Allow screeds and bonds to dry according to manufacturer's instructions.
- Entrust the work on the electrical connections only to qualified personnel.

Conformity

These products are compliant with electrical safety standards, established by the LVD (Low Voltage Directive) 2006/95/EC and with electromagnetic compatibility as stated in the EMC (Electromagnetic Compatibility) Directive 2004/108/EC.

The products also comply with the CEI EN 50366:2004 standards on electromagnetic emissions.

UNI EN:13501-1: 200 class B fire resistance certificate

These products have passed CE - TÜV - CB tests.



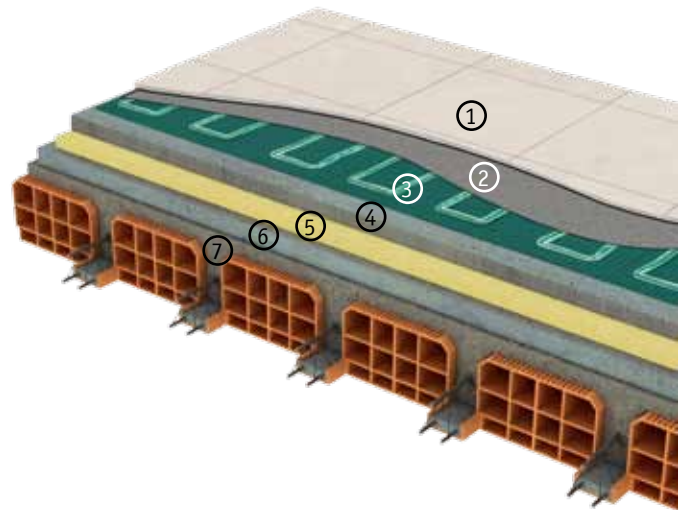
HEATING MESH BETWEEN CEMENT SCREED AND CERAMIC-SANDSTONE-MARBLE FLOOR

Installation between screed and floor allows fast heating of the room and rapid achievement of thermal inertia due to the small thick of the system.

The system is recommended for places with occasional use, for example: holiday homes, offices, shops, meeting rooms, restaurants, hotel rooms, etc...

Layers:

1. Ceramic-marble floor.
2. Elastic bond.
3. Heating Mesh.
4. Cement screed.
5. Insulating panel.
6. Filling sub-base.
7. Floor slab.

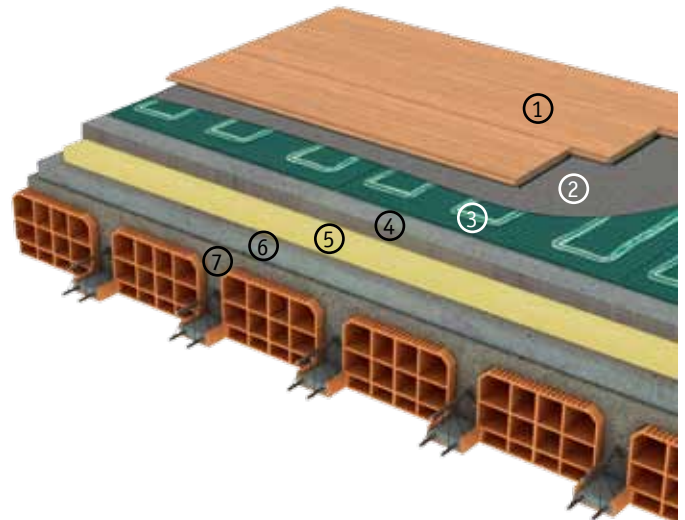


HEATING MESH BETWEEN CEMENT SCREED AND WOOD/LAMINATE FLOOR

Installation between screed and floor allows fast heating of the room and rapid achievement of thermal inertia due to the small thick of the system. The system is recommended for places with occasional use, for example: holiday homes, offices, shops, meeting rooms, restaurants, hotel rooms, etc...

Layers:

1. Wooden/laminate floor, glued or floating.
2. Elastic bond.
3. Heating Mesh.
4. Cement screed.
5. Insulating panel.
6. Filling sub-base.
7. Floor slab.



How to lay a heating mesh

- Unroll the mesh with the side labeled "HEATING SURFACE" up.
- Smooth the mesh with elastic glue using putty knives or toothless plastic tools. Allow the bond to dry following the manufacturers' instructions.
- Lay the new floor using the same type of glue and tools.



CLIMATIC CHAMBERS DATAS:

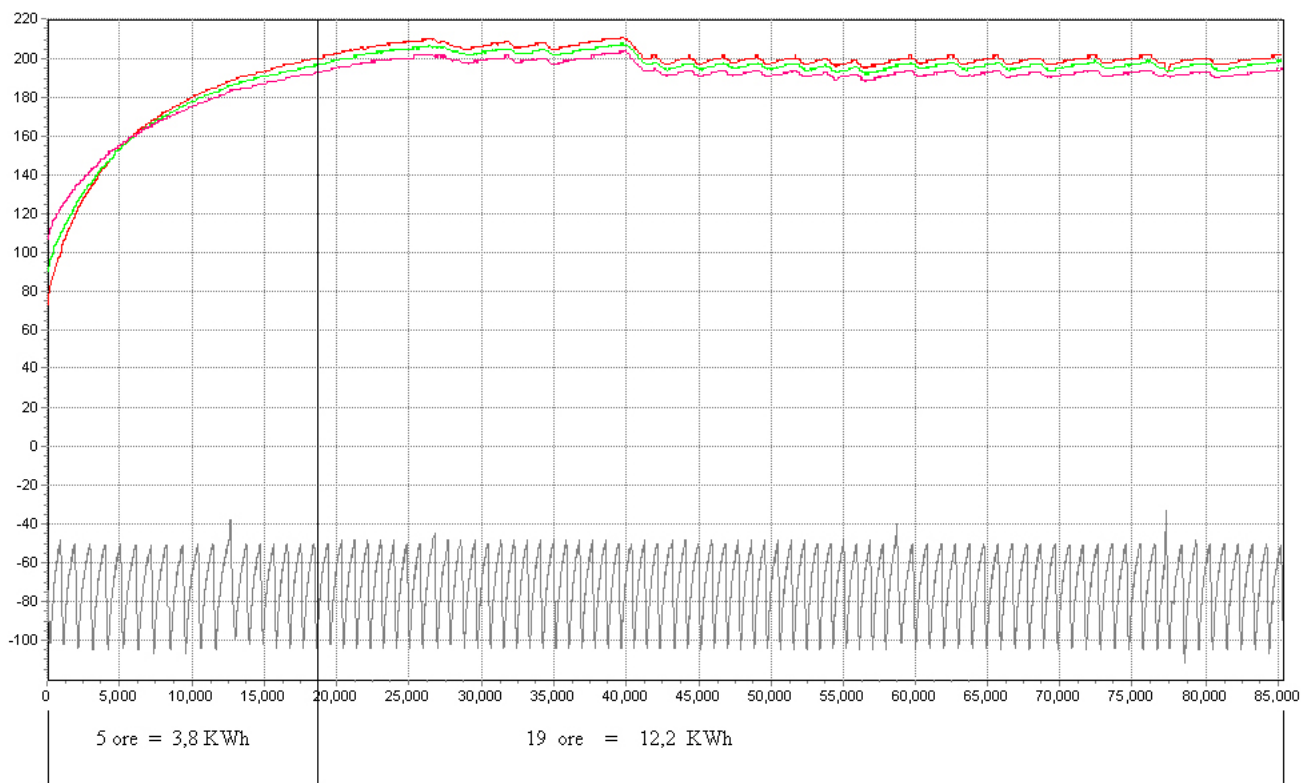
- Surface 13m². Volume 43m³.
- **Total heat loss 850W**
- External wall 22m².

TEST DATAS:

- 24h duration.
- **External temperature -5°C/-10°C, average -8°C.**
- Ambient temperature setting 20°C.
- Start test temperature 10°C.

PROBE POSITIONING:

- Red : on wall - 50cm above the floor.
- Green: on wall - 100cm above the floor.
- Purple: on wall - 150cm above the floor.
- Grey: external temperature survey.



Consumption:

- from 10°C to 20°C
- maintaining power

TOTAL

3,8 KWh
12,2 KWh
 16 KWh

Duration:

- 5 hours
- 19 hours ⁽¹⁾

24 hours

(1) Effective hourly consumption kWh 0,642 (-25% respect the requirement)



CLIMATIC CHAMBERS DATAS:

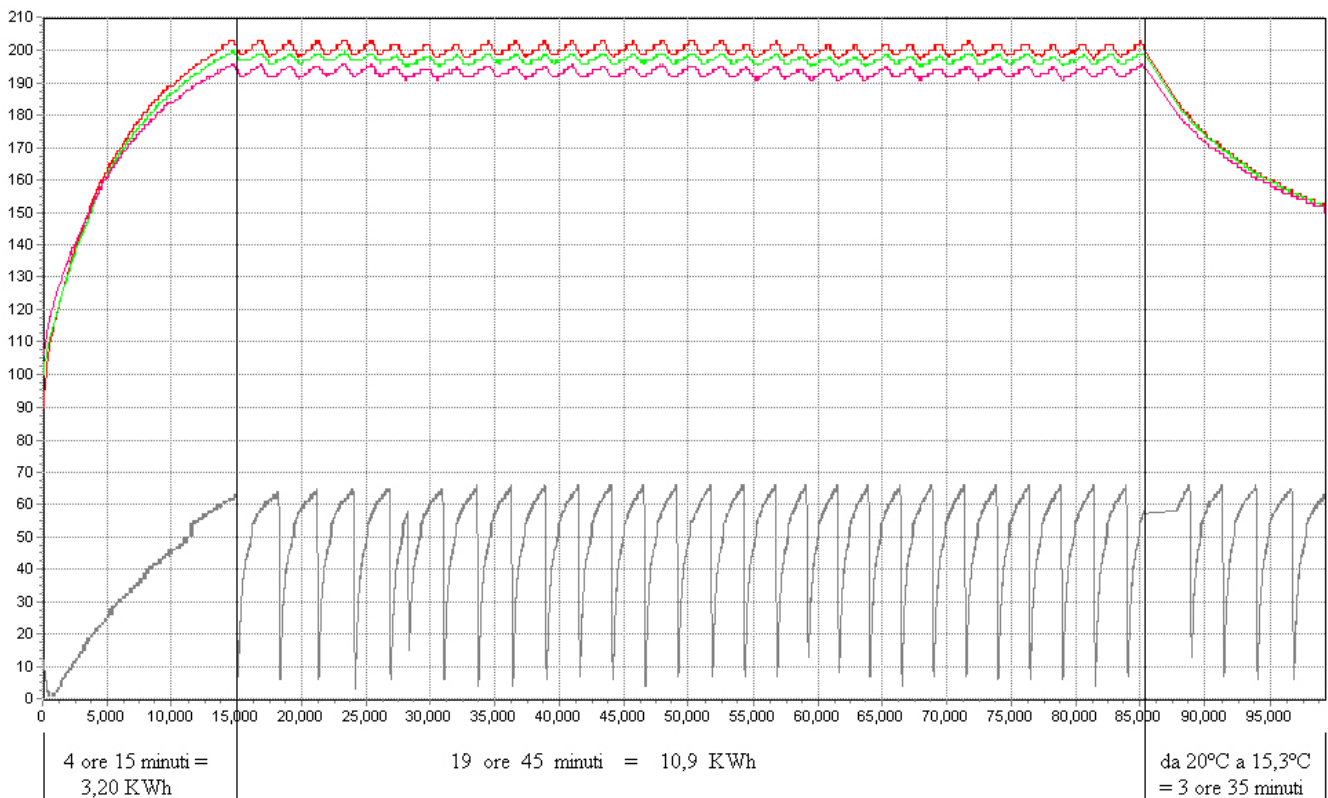
- Surface 13m². Volume 43m³.
- **Total heat loss 755W**
- External wall 22m²

TEST DATAS:

- 24h duration.
- **External temperature 0,5°C/6,5°C, average 3,5°C.**
- Ambient temperature setting 20°C.
- Start test temperature 10°C.

PROBE POSITIONING:

- Red: on wall - 50cm above the floor
- Green: on wall - 100cm above the floor.
- Purple: on wall - 150cm above the floor.
- Grey: external temperature survey.



Consumption:

- from 10°C to 20°C
- maintaining power
- TOTAL

3,2 Kwh
10,9 Kwh
14,1 KWh

Duration:

4 hours and 15 minutes
19 hours and 45 minutes⁽¹⁾
24 hours

(1) Effective hourly consumption kWh 0,552 (-27% respect the requirement)

Thermal Technology powered by:

Carbon Fiber Heating srl
Str. Calea Borsului 53 / B
410605 Oradea (BH) ROMANIA
Tel.: +39 0423 858589

www.thermaltt.com - info@thermaltt.com