MASS ENERGY

TFD

BUILDING

DYNAMIC FREQUENCY TECHNOLOGY

INFRARED RADIANT HEATING SYSTEM

INTELLIGENT USE OF **ENERGY**

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DYNAMIC FREQUENCY TECHNOLOGY

INFRARED RADIANT HEATING SYSTEM

EMBRACED BY THE HEAT

TFD Building favours the development of constant and controlled heat, drastically reduces dispersion and guarantees well-being, low consumption and reduced environmental impact.

Man and nature can help each other.

TFD Building is a non-invasive radiating system placed under the floor that, besides being very thin, is invisible in the room in which it is installed.
The only sign of its presence is the constant perception of well-being and comfort.

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REMOTE CONTROL

Thanks to an APP that can be downloaded on computers, smartphones or tablets, the system can be easily controlled from anywhere there is an Internet connection.

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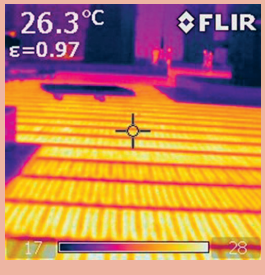
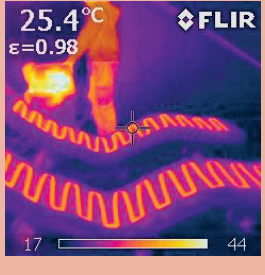
INFRARED HEATING

TFD Building is designed to radiate rooms through a heat exchange system that uses infrared waves to transfer heat as every warm mass emits infrared heat waves.

Different temperature bodies or objects naturally irradiate towards each other and the heat flowing goes from the hottest one to the coldest one. The radiation coming from the underfloor heating in the room turns into heat upon contact with an object, a wall or a person.





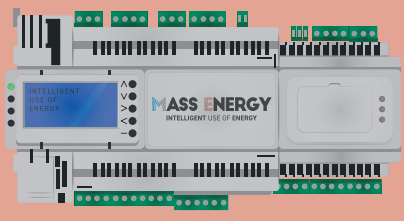
This way, the infrared waves aren't absorbed by the air but by the solid masses that transform them into thermal energy.
This energy is transferred into the room, thus creating optimal conditions of comfort for those living it.

APPLICATIONS

TFD Building is ideal for any type of building: houses, apartment buildings, schools, hospitals, commercial and industrial premises (new constructions or renovations).

The low temperature solutions of TFD Building can satisfy almost any kind of need.

The electric radiating system can be installed in floor screeds, walls or ceilings, therefore freeing rooms from bulky radiators and leaving ample space for the furniture.



SYSTEM FEATURES

TFD Building is a technology that manages the supply of energy flows and significantly reduces the consumption of the capacitive resistance sensors.

TFD Building cmanages the energy used to power these systems, preventing energy from being "wasted" in physical phenomena that isn't aimed at its best thermal return.

TFD Building can identify the type of resistance with which it communicates, through a case history stored inside the intelligent unit, to follow an ideal thermal curve of the resistance used, regulating itself and reproducing the best performance possible.

All the above allows the system to recognize, in just a few cycles, any type of resistance and its composition, regulating itself with its specific thermal curve.

Energy supply varies according to the type of material used for the resistance and consequently its optimal return.

Through the various dynamic readings (about 2,000 simultaneous data), it independently decides the time and supply (and non-supply) of energy.

Thanks to these cycles, **TFD Building** sets the ratio between maximum efficiency of energy consumption/maximum energy efficiency converted into heat.

The system is a set of know-how which, compared to traditional on-off or PID systems commonly used for years, stands out for its different specific functions:

- Internal electrical load control system to prevent disconnection of the metre and thus favouring domestic electrical loads.
- System consumption database, including operating temperatures of each thermal zone. Open window function that blocks the supply of energy to the relevant thermal zone.

The electronics consists of a standard PLC in which our advanced computing unit is configured. It uses multiple analogue and digital variants (advanced PID; advanced on-off; integrated automation of physical-dynamic and electro-instrumental concepts) to regulate the supply of energy and obtain the best thermal quality in real time. This, with minimum energy consumption expenditure to reach,

in a very short time, the set-point parameter of the desired temperature and, by taking advantage of the thermal inertia of the screed and the casing in which it operates, to reach the real efficiency advantage.

This means we've been able to use energy intelligently.

Maximum comfort: heat propagates evenly from the floor to the ceiling maintaining a constant and homogeneous temperature of every surface inside the premises; the temperature is easily regulated in every room. The difference in temperature between floor and ceiling, of about 1°C, guarantees an unparalleled comfort for the occupants of the heated rooms. The infrared rays emitted by TDF Building are the most natural radiation in the world as they are the same emitted by the sun and by any warm mass that surrounds us.

Silent: **TFD Building** is managed by an advanced control unit, which is placed inside a dedicated electrical control panel. There are no mechanical elements that could disturb the environment and generate failures. All the equipment is static.

Flexible: Each thermal zone is autonomous and can be independently regulated by entering relevant temperature set-points.

Healthy: TFD Building is healthy, as it doesn't create air movement with the consequent displacement of dust and mites. It also eliminates temperature differences in the various rooms.
This heating system guarantees maximum comfort and respects the rule that limits floors' maximum surface temperature to 29°C. TFD Building also guarantees a temperature difference of the air between the floor and the ceiling of approximately 1°C, an extremely low value that ensures the occupants of the heated rooms unparalleled comfort.
The heat is noticeably more pleasant as the infrared rays heat up the masses, leaving the air fresher for breathing.

Safe: as TFD Building is an integrated system, there is no possibility of contact with the electrical elements.
These radiant electrical elements are made with fireproof materials, resist humidity thanks to an IP67 degree of protection and don't emit electromagnetic fields.

Economical: TFD Building, thanks to the excellent heat distribution and the emissions of infrared waves, increases the perception of room temperature by 1-2°C compared to other heating systems.

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Quick: TFD Building can reach the desired level of comfort more quickly than other heating systems, even from a cold temperature. It can adapt very quickly to thermal changes, from the external environment, by anticipating or delaying its switching on or off. Through a counter, it manages the electrical loads and avoids the intervention of the metres.

Respects the environment: TFD Building doesn't release emissions into the atmosphere (combustion gases, NOx, CO 2 , PM 10 and PM 2.5 particulate matter) when installed.

Reliable: as the components have no mechanical parts, the system has no loss of performance and remains unaltered over time.

Quick to install: during the design stage, the space and surface of the rooms to be heated are thoroughly analysed. The easy-to-install radiant components are designed taking into consideration every aspect that can speed up the laying on site. It doesn't require a boiler room or a technical compartment, as the built-in control panel becomes a feature.

Maximum power of the metre to install: TFD Building, to operate correctly, requires a counter power of 40% compared to the thermal one required by the project. Once the set-point temperatures of the individual zones have reached the maintenance stage, the system maintains the temperature by regulating the installed thermal power to 20%.

No maintenance: the system requires no maintenance and has no loss of lifetime performance.

Remote control: thanks to an APP that can be downloaded on computers, smartphones or tablets, the system can be easily controlled from anywhere there is an Internet connection.

Remote assistance by Mass Energy: possibility of assistance and maintenance, by specialized Mass Energy Srl personnel, of all types of systems, especially the larger ones, upon request with an annual fee.

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DESIGN

REALIZATION

SUPPLY

INSTALLATION

TESTING

AFTER SALES SERVICE

TFD SYSTEM

TFD BUILDING

TFD CLIMA

TFD MOLECOLAR

TFD ENERGY

TURNKEY SUPPLY
FOR TAILOR-MADE SOLUTIONS

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