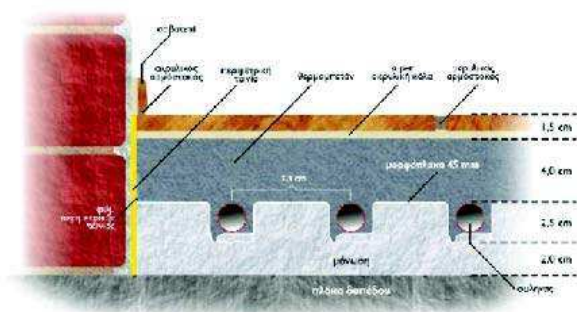




Interplast Underfloor heating system

Underfloor heating operates **with water at a low temperature, between 35°C - 45°C**, that circulates in pipes embedded in the floor. The heat is then evenly distributed over the area by radiation, warming it up. Most of the advantages of Underfloor heating derive from using the entire floor as a radiator.

Advantages



A warm and comfortable healthy environment

Uniform temperature throughout the space, heating upwards from the feet to the head, at a lower temperature, **which does not dry the air**.

Great energy-savings

Lower operating temperatures, reduction in heat losses towards the ceiling, free from draughts.

Complete freedom of arrangement of spaces

There are no limitations whatsoever to space.

Clean spaces

Thanks to the low temperatures and lack of draughts there is no blackening of walls.

Energy savings

Due to the low operating temperature, and the uniform distribution of the heating, **we achieve 30-40% reduction in fuel consumption**, therefore we save money.

Underfloor heating materials

Como-floor pipe



Raised temperature PE 17x2.0 pipe with oxygen barrier, suitable for Underfloor Heating applications. The pipe is characterised by its exceptional flexibility and mainly by the fact that it covers and exceeds the temperature requirements of the specific installation. The barrier protects and extends the lifespan of the metal components of the installation (e.g. boiler). **Interplast's Como-Floor pipe is manufactured in compliance with all the European specifications and is certified by the largest European and American institutes.**

Manifold



The manifold is the "heart" of the installation. Interplast, through its subsidiary ELVIOM, with more than 50 years experience in the manufacture of brass fittings, produces **a manifold for underfloor heating, which guarantees the required flows for the circuits and the system's perfect balance.**

The bar type manifold of nickel-plated brass, **without junctions** and with nominal diameter 1" or 1 1/4", 3/4" threading (Eurocone). The supply manifold bears hexagon socket valve or flow meters for regulation of circuit flow, while the return manifold includes actuator valves enabling the fitting of actuators which are activated from the thermostats of each space, enabling independent operation of the respective circuits of each space.

In order to achieve optimum balance of the heating system, we propose special supply and return couplings with attached thermometers.

Distribution panel



Metal panel, suitable for enwalling, constructed from galvanized steel, 1mm thickness, painted with electrostatic paint. **It is adjusted to a height** of up to 815 mm. Bears an **adjustable removable frame** for protection from the plaster, which sets the panel depth from **115 to 165 mm.**

Panel



Panel made of expanded polystyrene with vapour barrier (PE film) and 30 kg/m³ heat insulation density, dimensions 135x75x4.5 cm. It allows keeping the pipe spacing stable with pace of 75, 150 or 225 mm. **The panel has interlocking edges that allow the perfect fit of the pipes. Due to its geometry, it allows the pipe to be fully covered by the thermal concrete and the absorption of the entire thermal load which the pipe conveys.**

Perimetric insulation tape



This is made of polyethylene foam **with film** (placed on top of the panels for proofing against concrete) and **an adhesive strip for fixing.**

Expansion joint



This is placed at predetermined points, selected during our study, and on the lower cases of the building's internal doors so that they can **absorb the thermal concrete's contractions and expansions.**

Clip



These are used for fixing the pipe to the panel, when required.

Pipe reel



To accommodate the installer, Interplast provides a special pipe reel for carrying long pipe lengths (600m). The pipe reel is lightweight for easy transport in indoor areas and is painted with electrostatic paint.

Plasticizer



Improves the thermal concrete, increasing strength, watertightness and plasticity.

This results in easier pumping and pouring.

Polypropylene fibres



changes.

These reinforce the concrete and protect against cracking while increasing tensile and compressive strength, resulting in improved strength of the thermal concrete and prevent problems related to temperature

Aqua plus pipe with aluminium



with aluminium.

The Aqua-plus pipe with aluminium is used for piping from the boiler to the manifold. **We thus guarantee the safety of the installation and the aesthetic result, due to the low linear expansions of Aqua plus**

Three and four-way mixing valve



The use of a **four-way mixing valve** allows an initial **adjustment of the hot water temperature** supplied by the boiler (approximately 50°C).

After the four-way, a **three-way mixing valve** is installed on the flow line of each group of manifolds, **reducing again**, and differently for each manifold, the **temperature of the water we supply into the floor.**

Pre-adjustable electric valve motor



This is installed on the three-way mixing valve where, with the aid of a sensor, **the desired supply water temperature is fixed (15-70°C)**. We are also able to adjust the time intervals (recommended time: 30 sec) at which the sensor commands the electric valve motor to balance the supply water temperature.

Cut-off thermostat



This interrupts the circulator's operation when the water temperature **exceeds the maximum desired setting.**

Actuators



Actuators are connected through a communication base with the corresponding thermostat and open or close the underfloor heating circuits. **In this way we can achieve independency in every room of a house and as a result more economical operation and selection of different temperatures in each heated space.**

Receiver



The thermostats are connected to the receiver and through it they activate the actuators to open and close the circuits depending on the desired temperature in each space.

Pump module



This starts or stops the circulation pump with the required time delay when the thermostats give the commands to the actuators.

Wireless thermostat communication system

Thermostats operate as transmitters and the base as receiver, giving commands to the actuators on the manifold to open and close the circuits without the use of wires. **This is an intelligent and**

flexible solution for cases where we wish to install at a later date separate thermostats to control the desired temperature in each space without the need to install communication cables.



Compensator



Recognizes ambient temperature with a sensor and interacts with the three-way mixing valve and the heating circulator. **In this way we prevent the system's inertia according to the environment's temperature**

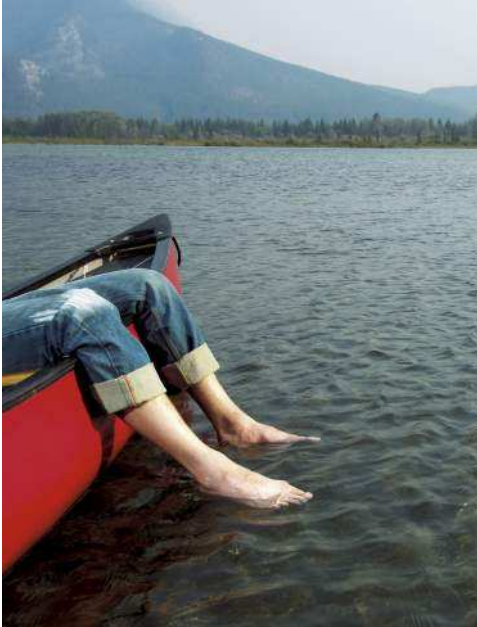
changes, achieving more economic operation of the heating.

Thermostat



With the thermostat, which reacts to temperature changes with up to **0.1°C accuracy**, we achieve the desired room temperature. **This way we achieve a tenfold increase of temperature accuracy compared to common thermostats.**

Underfloor cooling system



By cooling we mean transformation of the floor of each space into an immense cool surface. This is achieved by distributing cold water through underfloor heating pipes. The Underfloor cooling system maximizes comfort levels by uniformly absorbing heat from all directions.

Advantages

A comfortable, healthy environment.

Uniform room temperature, sense of pleasant coolness.

Great energy-savings

Higher operating temperatures, reduced losses, freedom from draughts.

Lower initial domain cost.

By using the existing pipes and subdimensioning the cooling machine (chiller) we exploit the great inertia and heat capacity of the system.

Complete freedom of arrangement of spaces

There are no limitations whatsoever to space.

Clean spaces

Thanks to the low temperatures and lack of draughts there is no blackening of walls as is the case with air conditioning units.

Economy

The use of the heat pump instead of the common **boiler achieves 50% more economic operation and the system's depreciation is achieved in less than two years.**

Basic characteristics of underfloor cooling



Flow water temperature from 14 – 18°C.

Floor temperature 20°C.

Reduction of temperature of the space by 5-7°C

Average capacity per sq. metre 35-50 Watts.

Air-to-water heat pumps



These are advanced devices that use the energy offered by the environment and use it for the heating and cooling of any house. Air-to-water heat pumps obtain the energy from the ambient air and **heat the water that flows through the circuits of the Underfloor heating.** Respectively, in the **summer they produce cold water, which we use to cool the house.**

They are specially designed for use in underfloor heating and cooling systems guaranteeing maximum performance (COP up to 4.1) with the lowest power consumption.

They are available in a broad range of capacities from 5 to 40 kW, covering every installation.

Fan-coil Units

These units **enforce the Underfloor cooling system and absorb the relative humidity of the space.** They combine elegant design, high performance (from 1.5 Kw-9 kW) and noise-free operation. Available in a wide range (floor, wall, ceiling,) they cover all applications and installation requirements for office buildings and domestic use.

