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03 RADIANT SYSTEMS FOR INDUSTRIAL USE

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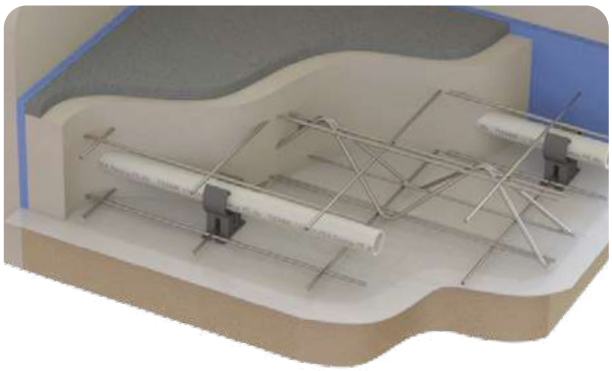
Radiant floor heating is now the best way to heat warehouses, sheds, industrial spaces characterized by large sizes and considerable heights.
It is an efficient system both in terms of energy and in terms of resistance to stresses from high loads. Tiemme is a leader in the design and production of radiant systems for industrial use.

TIEMME'S SOLUTIONS

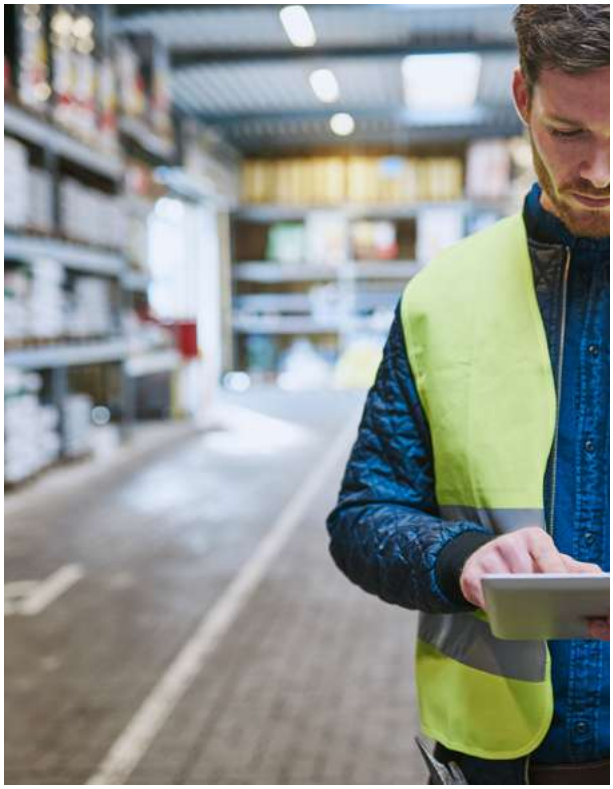
STRONG RAIL

STRONG NET



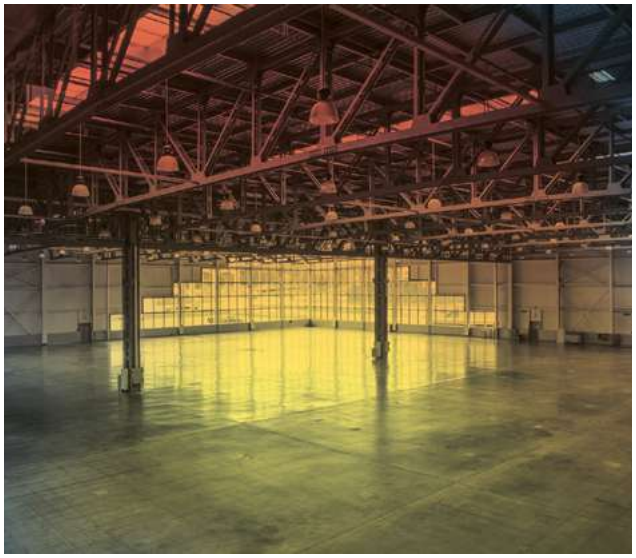
ENERGY SAVING

Choosing to heat a very large room with a floor radiant panel system means significantly reducing operating costs. Compared to an air system, fuel savings of up to 50% are achieved. Exploiting as a radiator the entire floor area, the industrial system allows to operate at very low temperatures and therefore to make the most of low temperature and condensation heat generators.
In addition, the heat transmitted by radiation from the pavement is concentrated in the user's parking areas and not near the roof where it would have no use. In fact, compared to an air system that creates stratification phenomena, a floor heating radiant system generates an almost linear thermal gradient to the point that in the highest part of the structure the air temperature tends to decrease.
These characteristics make it possible to significantly reduce heat losses by transmission, as the temperature difference between the internal and external environment near the dispersing structures and the covers is significantly lower. The significant reduction of thermal dispersion allows to install a heat generator with a much lower power compared to other types of systems, obtaining better levels of comfort. The use of lower thermal powers is equivalent to the reduction of the flow rates to be supplied to the plant and therefore of the diameter of the pipes to be fed to the collectors and of the characteristics of the circulating pumps. Another important factor for energy saving is the fact that the radiant system, operating at low temperatures, allows to exploit the heat coming from alternative energies resulting in a further reduction of heating costs and allowing to amortize in a short time initial costs of construction slightly higher than other types of plant.



THE COMFORTT

The radiant system, thanks to a homogeneous heat distribution, creates an extremely comfortable environment. The heat is generated in a mild and uniform way and is perceived by the human body in an extremely natural way: the exchange between the source and the environment occurs by radiation and the perception of heat is similar to that of the sun.
The heat radiated from the floor concentrates where it really is needed and creates a physiologically optimal climate for the human body thereby improving working conditions at the level of thermal comfort. For this reason, radiant technology is increasingly widespread in the industrial field.



Traditional heating thermography

Thermography floor heating

FIRE AND SAFETY

In many cases the industrial halls are the place of production processes involving highly flammable materials. Again a floor heating system brings undeniable advantages: The absence of high temperature heating components is a positive factor in the safety level of the working environment.

MAINTENANCE

The low temperature thermal energy carrier fluid allows less stress on the different components of the industrial heating system (heat generators, pipes, fittings, seals) and being an integrated system in the floor we will have a further reduction in maintenance costs.

ABSENCE OF CONVECTIVE AIR MOVEMENTS

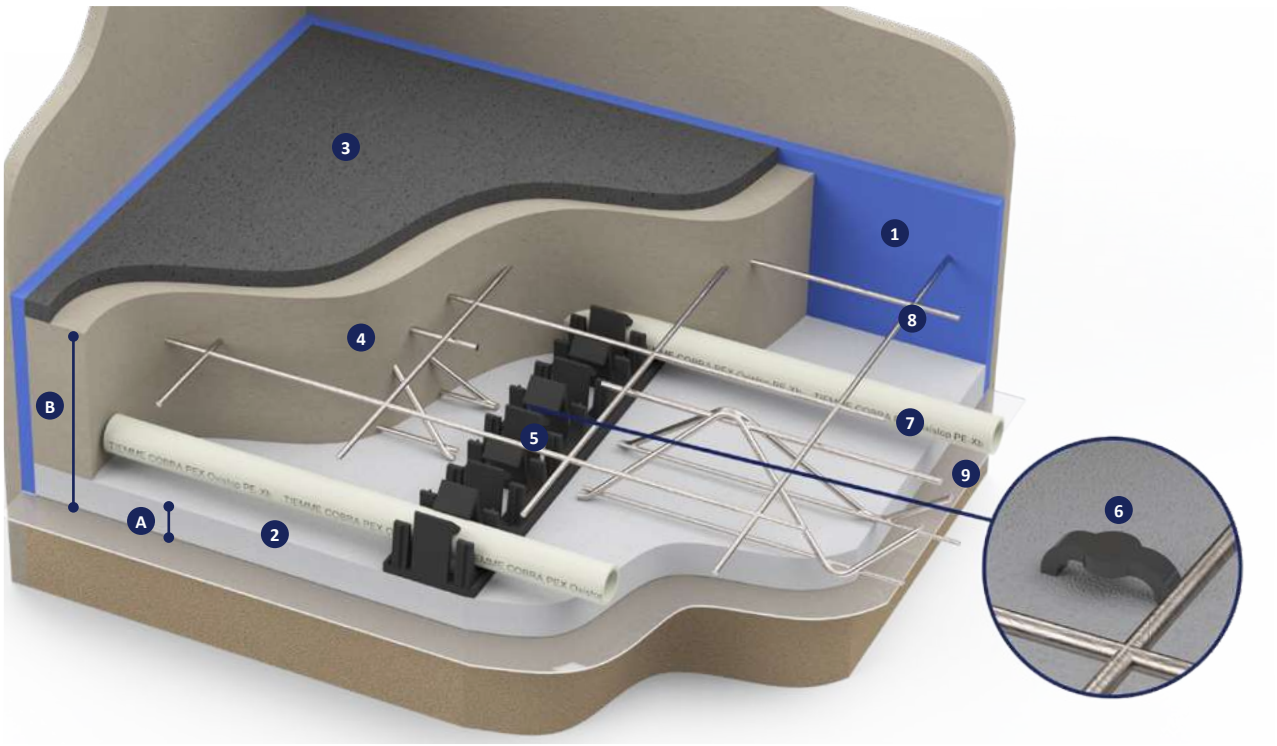
A traditional air heating system generates significant temperature differences between the heating bodies and the air itself, producing annoying convective motions. Conversely, in a radiant panel heating system the temperature difference between the floor and the adjacent air is about 5 ºC, which is not sufficient to determine convective motions and thus displacement of dust. In addition, the elimination of heating bodies at high temperatures offers the advantage of avoiding the combustion of atmospheric dust by reducing the risk of allergies and ensuring healthy environments and optimal hygienic conditions.

EXPLOITATION OF ALTERNATIVE ENERGY

The high exchange surface of the floor heating allows to operate with a very low temperature thermal energy carrier fluid. The system can then recover and make best use of the heat from processing processes, heat pumps, solar energy, source water, etc. with an additional reduction in heating costs; costs which, at best, can even be reduced to zero.

INTRODUCTION

Ideal solution for industrial heating and cooling systems. The smooth panel in extruded polystyrene is particularly suitable for systems subjected to high loads.



1.	Perimeter strip	**art. 4507**
2.	Insulating panel	**art. 450XPS**
3.	Industrial floor	-
4.	Screed	-
5.	Rail	**art. 4516**
6.	Rail fixing clip	**art. 4521**
7.	Pipe	**art. 0200B**
8.	Electro-welded mesh	-
9.	PE sheet	**art. 4503**

Code	Dimensions (mm)	
	A	B
450 0151	30	180 ÷ 230
450 0163	40	190 ÷ 240
450 0164	50	200 ÷ 250

450XPS

XPS extruded polystyrene thermal insulation panel with high compression resistance

Code	Thickness (mm)	Price €/m²	Packaging (m²)	Packaging (no. panels)
450 0151	30		9/126	12
450 0163	40		6,75/94,5	9
450 0164	50		6/72	8

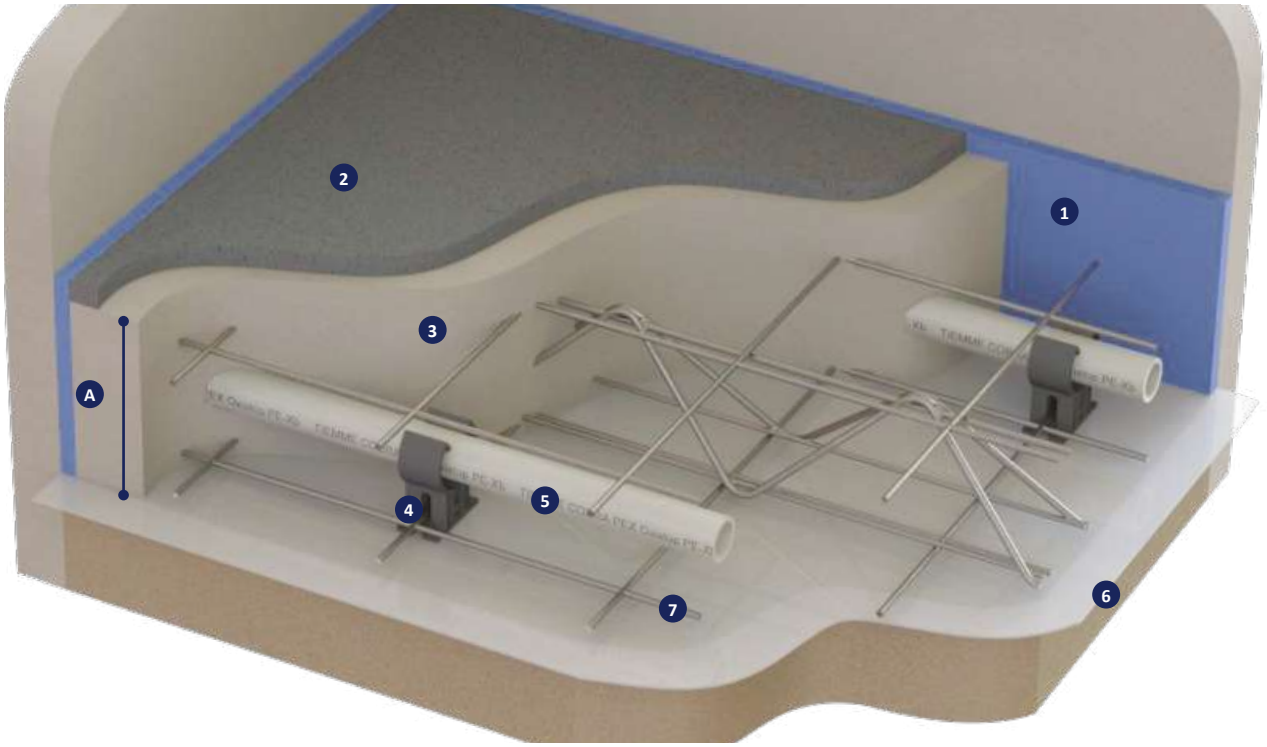
TECHNICAL CHARACTERISTICS

	Codes		
	450 0151	**450 0163**	**450 0164**
Thermal resistance EN 13164 (m²K/W)	**0,90**	**1,20**	**1,40**
Compression resistance to 10% UNI EN 826 (kPa)	300		
Insulation thickness (mm)	30	40	50
Total thickness (mm)	30	40	50
Minimum laying pipe distance (mm)	50		
Thermal conductivity UNI EN 12667 (W/mk)	0,033	0,033	0,035
Density (kg/m³)	35		
Water absorption UNI EN 12087 (%)	0,7		
Reaction to fire EN 13501-1 (Euroclass)	E		
Water vapour diffusion resistance factor (μ)	150		
Total panel size (mm)	1270 x 620		
Useful panel size (mm)	1250 x 600		
Useful panel area (m²)	0,75		
Panels per package (n)	12	9	8
Panel area per package (m²)	9	6,75	6

03 A STRONG NET

INTRODUCTION

Ideal solution for industrial heating and cooling systems. Without an insulating panel, the pipe is fixed with clips placed on a support metal mesh.



1. Perimeter strip **art. 4507**
2. Industrial floor -
3. Screed -
4. Pipe fixing clip **art. 4525**
5. Pipe **art. 0200B**
6. PE sheet **art. 4503**
7. Electro-welded mesh **art. 4533**

Code	Dimensions (mm)
	A
-	150 ÷ 200

0200B

High density COBRAPEX cross-linked polyethylene pipe with EVOH oxygen barrier.

TECHNICAL CHARACTERISTICS

- Maximum operating temperature: 95 °C
- Thermal conductivity: 0,38 W/mk
- Complies with EN ISO 15875-2
- Anti-oxygen barrier in EVOH compliant with DIN 4726
- Composition: PE-Xb

Code	Type	Price €/m	Unit/Box (m)
020 0011	20 x 2,0		120/2160
020 0012	20 x 2,0		300/2400
020 0004	20 x 2,0		500/2500
020 0009	25 x 2,3		300/1500
020 0097	25 x 2,3		360/1800
020 0108	25 x 2,3		500/1500

New code

4507

Perimeter strip in expanded PE with adhesive back and PE sheet to contain mortar.

Code	Type	Price €/m	Unit/Box (m)
450 0030	H 250 x 8 mm		50/150

1480P

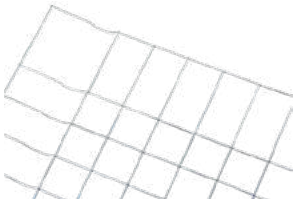
Plastic 90-fold elbow for the protection and support of the COBRAPEX pipe near the connection to the distribution manifold.

Code	Type	Price €	Unit/Box
034 0078	Pipe Ø20		25/300
034 0079	Pipe Ø25		25/150

4525

Plastic clip, for manual insertion, for fixing the pipe on the electro-welded mesh with Ø 6 mm wire.

Code	Type	Price €	Unit/Box
450 0038	Pipe Ø 20		200/200
450 0066	Pipe Ø 25		200/2000



4533

Hot-dip galvanized electro-welded mesh with Ø 6 mm wire and 100x100 mm grid.

Code	Type	Price €/m²	Unit/Box (m²)
450 0043	2000 x 2000 mm		40/200

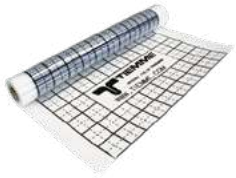
4540

Screed additive in aqueous solution composed of acrylic polymers; reduces hygroscopic withdrawals by increasing the thermal resistance and improving thermal conductivity.

TECHNICAL CHARACTERISTICS

- Dosage: 1 kg of additive x 100 Kg of cement

Code	Type	Price €/kg	Unit/Box (kg)
450 0019	10 Kg ≈ 9,6 l		10/10
450 0017	25 Kg ≈ 24 l		25/25



4503

PE sheet with insulation function and moisture barrier.

TECHNICAL CHARACTERISTICS

- Width: 1,2 m
- Length: 100 m
- Thickness: 0,15 mm

Code	Type	Price €/m²	Unit/Box (m²)
450 0025	-		120/120

4539

Corrosion protection of metal parts with universal fungal bactericide for heating and cooling systems.

TECHNICAL CHARACTERISTICS

- Dosage: 1 l of additive x 100 l of circulating water

Code	Type	Price €	Unit/Box
450 0486	1 l		1/12

4520F
Clip fixing tool.

Code	Type	Price €	Unit/Box
450 0034	-		1/1

4535
System test pump with 1/2" connection

Tank capacity 8 l

Code	Type	Price €	Unit/Box
450 0049	50 bar		1/1

4530
Pipe unwind (up to Ø 20)

Code	Type	Price €	Unit/Box
450 0028	-		1/1

1495
Snips for pipe cutting

Code	Type	Price €	Unit/Box
034 0015	0 - 35		1/5

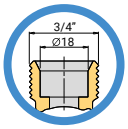
4522
Screed dryer

Code	Type	Price €	Unit/Box
450 0020	230 Vac 2,5 KW		1/1

4522A
Adapter plugs 230-380 Vac for 4522

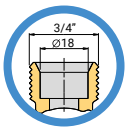
Code	Type	Price €	Unit/Box
450 0381	230 - 380 Vac		1/5

1436N
Adapter for bodies with 3/4"x18 union (EUROCONO) for PEX pipe



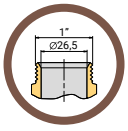
Code	Type	Price €	Unit/Box
144 0011	16 x 2,0 - 3/4"(ø18)		10/250
144 0012	17 x 2,0 - 3/4"(ø18)		10/200
144 0019	20 x 2,0 - 3/4"(ø18)		10/200

1636N
Adapter for bodies with 3/4"x18 union (EUROCONO) for multilayer pipe



Code	Type	Price €	Unit/Box
144 0002	16 x 2,0 - 3/4"(ø18)		10/250
144 0003	20 x 2,0 - 3/4"(ø18)		10/200

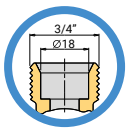
1436N06
1"G adapter for PE-X pipe



Code	Type	Price €	Unit/Box
144 0232	20 x 2,0 - 1" G		10/200
144 0075	25 x 2,3 - 1" G		10/200

1879

End cap



Code	Type	Price €	Unit/Box
144 0071	3/4"(ø18)		10/250

0660S

Cross-linked polyethylene pipe with aluminium core, without box - White

Code	Type	Alum.	Price €/m	Unit/Box (m)
060 0015	16 x 2,0	0,20		500/6000

0660

Cross-linked polyethylene pipe with aluminium core – White. In rolls

Code	Type	Alum.	Price €/m	Unit/Box (m)
060 0001	16 x 2,0	0,20		100/3200
060 0010	16 x 2,0	0,20		200/3000

0635

Multilayer pipe 0660 green coated for cooling

Code	Type	Alum.	Thk.	Price €/m	Unit/Box (m)
062 0019	16 x 2,0	0,20	10 mm		50/500
062 0008	20 x 2,0	0,25	10 mm		50/450

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