

The power of innovation

Overview of SIRCONTEC's floor structures

Trencin, April 2012

... comprehensive technical solution

Obsah

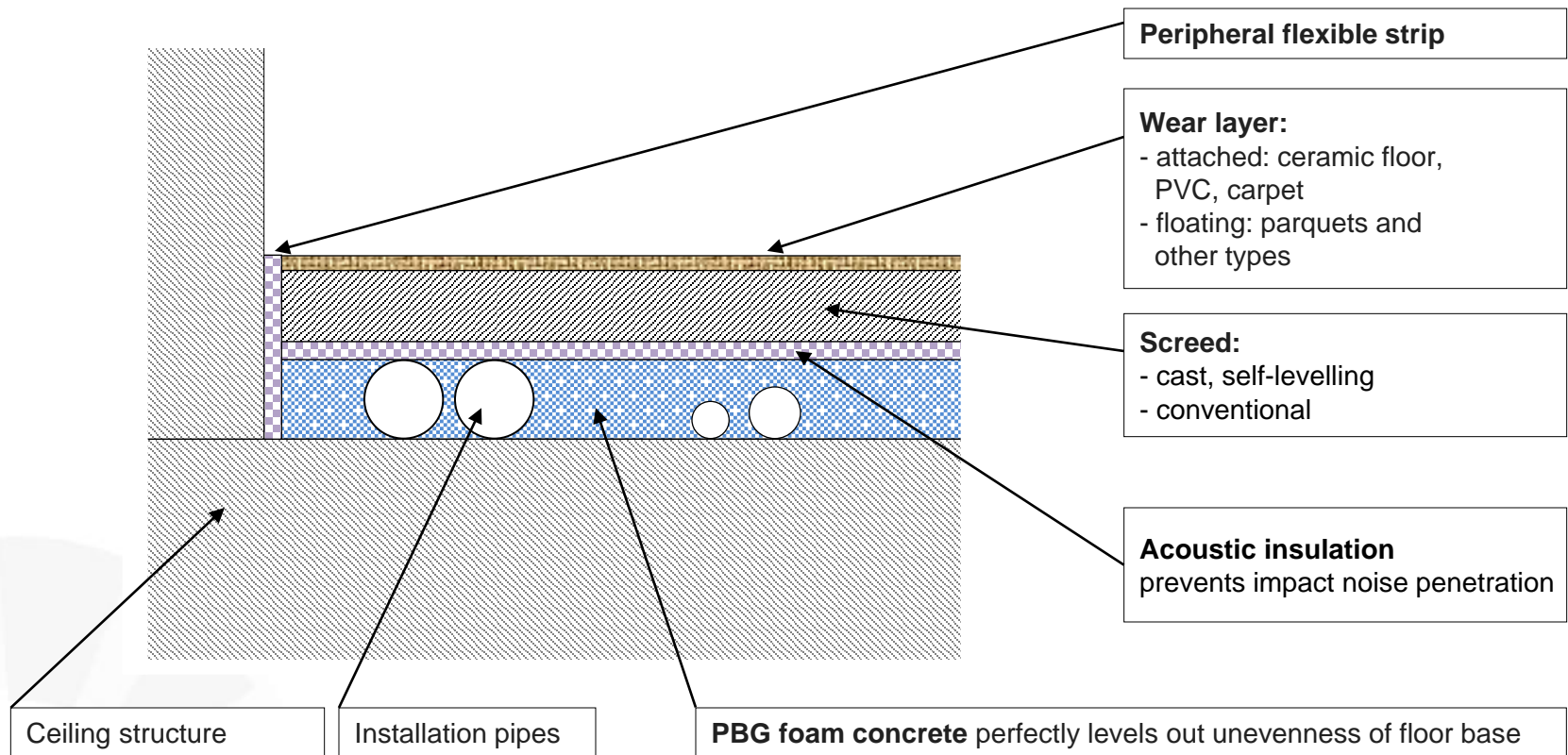
- Acoustic floors
- Floors without acoustic insulation
- Floor above unheated area or ground
- Main benefits of PBG levelling layer
- Contact information

Why is the SIRCONTEC acoustic floor necessary?

- ❑ Because requirements for acoustic properties of flats and buildings are increasing and, subsequently, standards are becoming stricter. For example in Czech Republic, in the spring of 2011, according to the revised standard CSN 73 0532, the maximum normalized impact noise level between two flats was limited from the previous value of 58 to **55** dB. In Germany, for example, they are even stricter - 53 dB, and the country where they have the greatest liking for silence is Austria – 48 dB.
- ❑ Because underestimation of noise reduction requirements, or application of inconvenient materials in designing floor structures of buildings, usually results in permanently impaired quality of the construction and, especially, of the living.
- ❑ Because SIRCONTEC acoustic floor is the most efficient technological solution for floors in the market.

SIRCONTEC Acoustic Floor

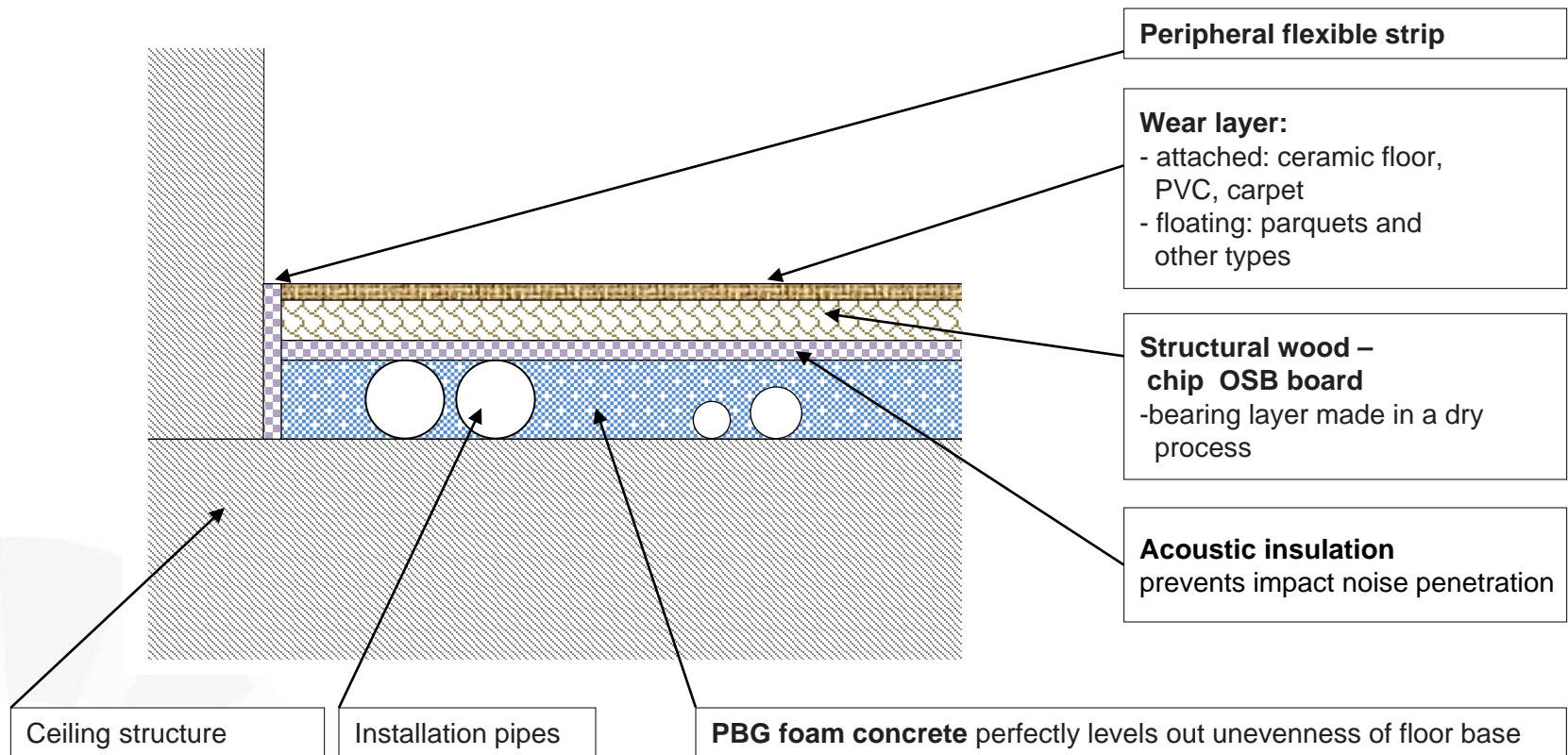
for apartments and civic buildings generally



...designed for impact noise reduction - without acoustic bridges

SIRCONTEC Acoustic Floor with OSB board

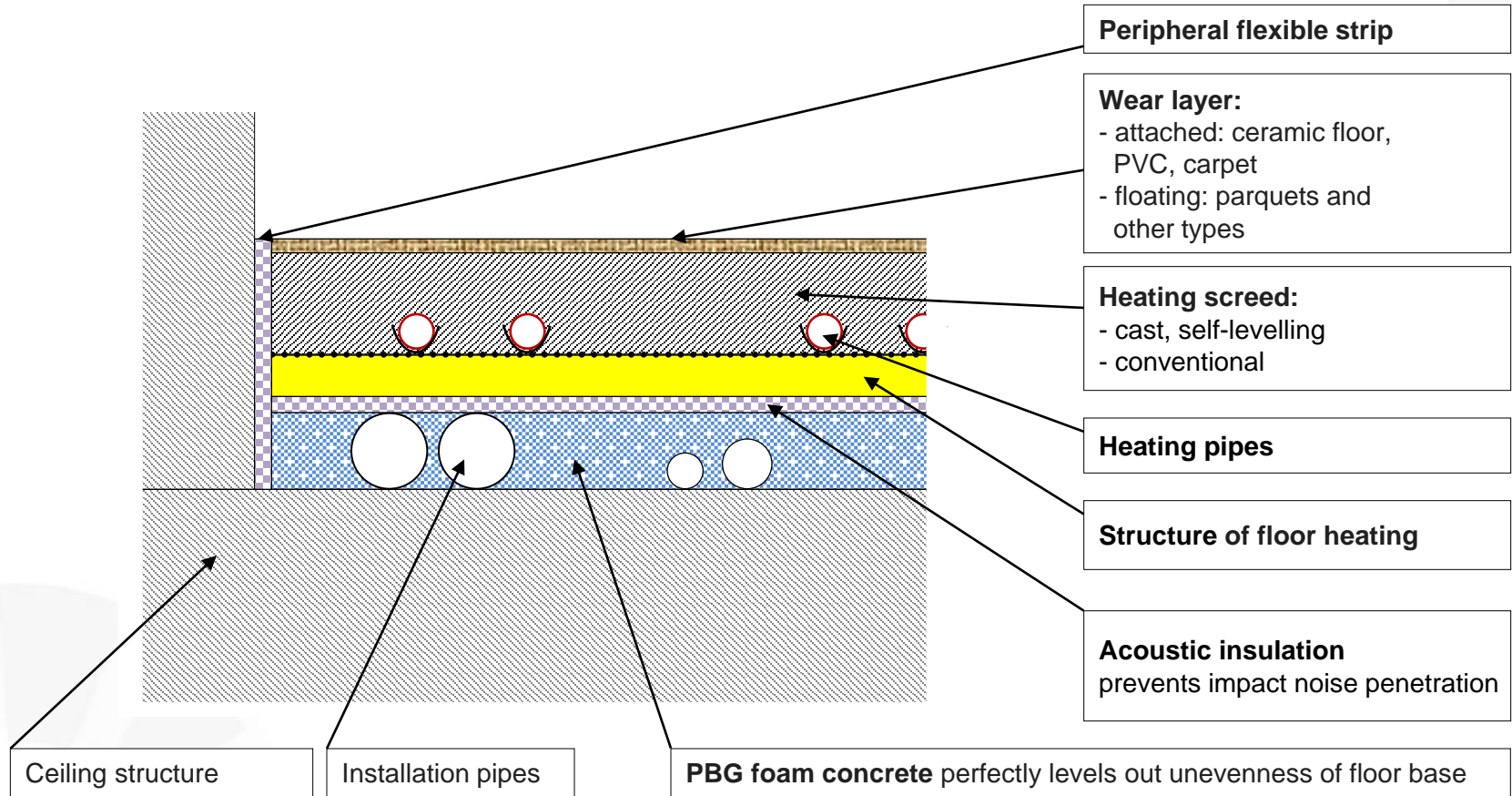
for apartments and civic buildings generally



...designed for impact noise reduction

SIRCONTEC Acoustic Floor with floor heating – conventional structure

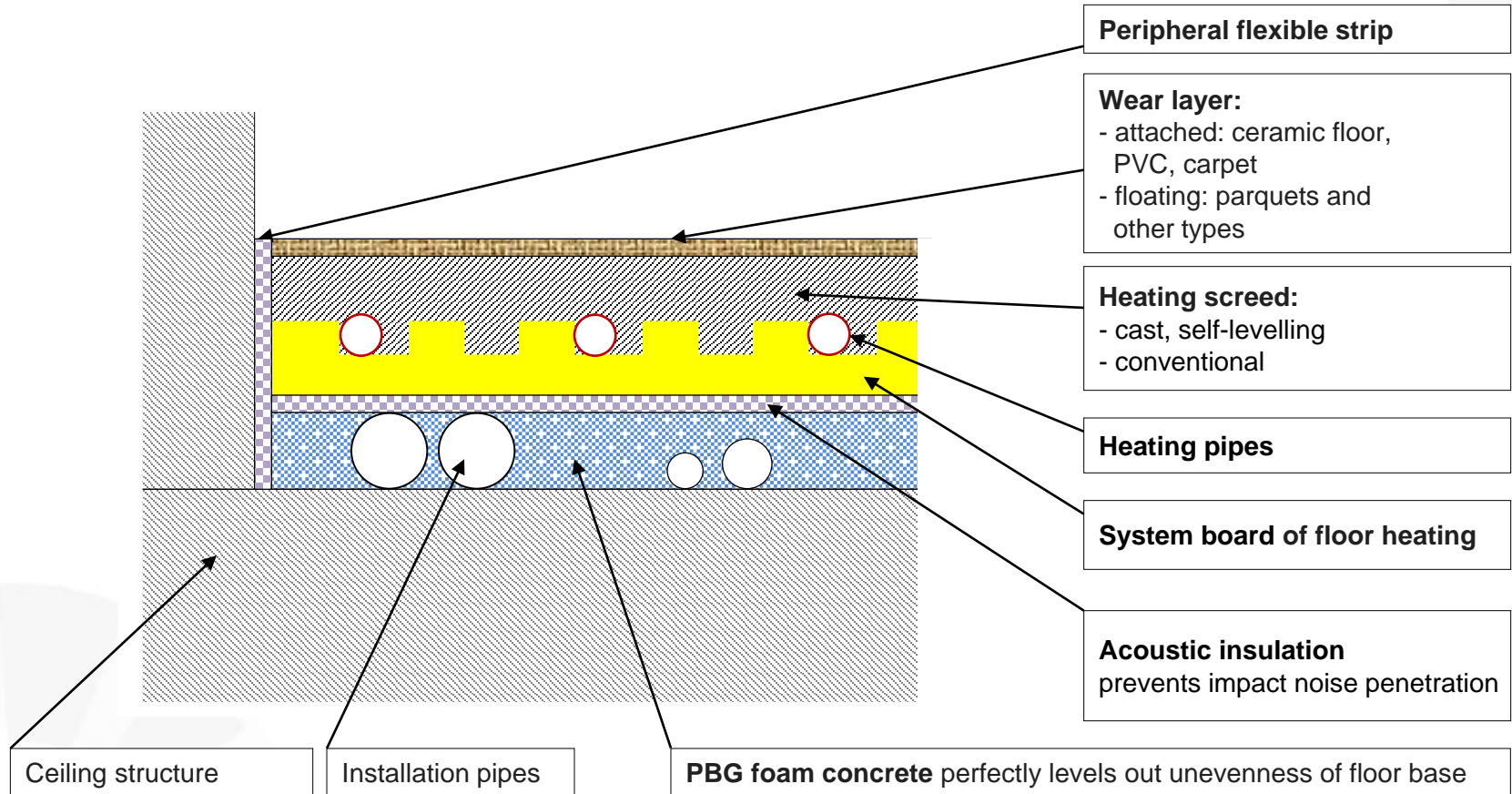
for apartments and civic buildings generally



...warm floor with acoustic insulation

SIRCONTEC Acoustic Floor with floor heating

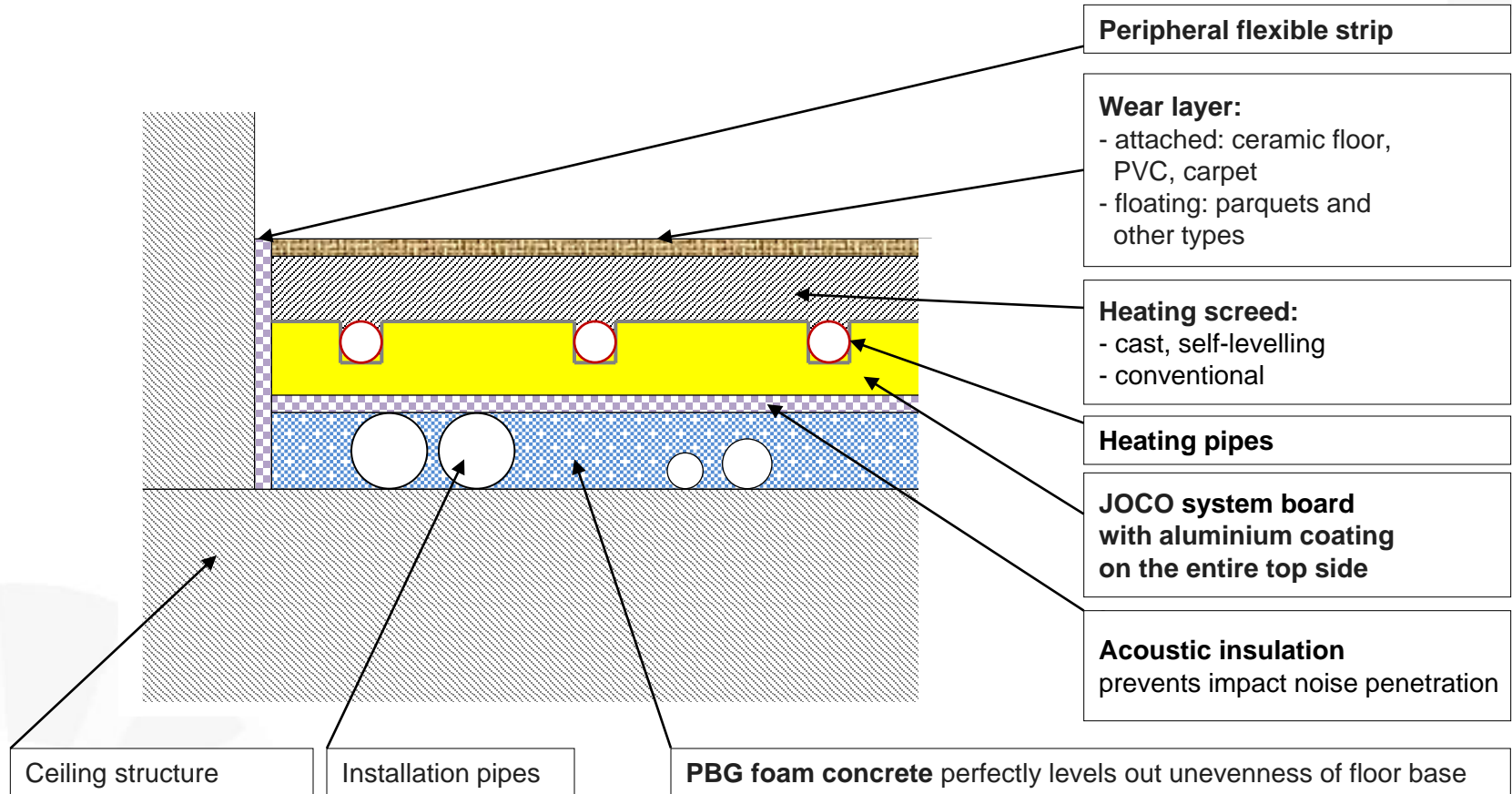
for apartments and civic buildings generally



...warm floor with impact noise reduction

SIRCONTEC Acoustic Floor with JOCO floor heating

for apartments and civic buildings generally



...warm floor with impact noise reduction

EPS (Polystyren) and SIRCONTEC PBG (Foam Concrete) in floors - comparison



- ❑ EPS – low labour productivity with extensive waste; high risk of creating acoustic and thermal bridges
- ❑ Does not allow placement of uniform screed thickness
- ❑ Releases combustion gases – class E



- ❑ PBG – output of more than 600 m² per shift
- ❑ Uniform screed thickness all over the surface => minimized cost and screed quality complaints
- ❑ Non-flammable – class A1

Liquid PBG fills up space and perfectly evens the base

Comparison of influence of PBG foam concrete and EPS floor material on the floor's impact noise insulation

Impact noise insulations	EKM (PUR)	PE (polyethylene foam)	Acoustic EPS
Thickness [mm]	6	5	15

1. After installation

Levelling layer	Damping in dB (ΔL_w)			
	SIRCONTEC PBG 40	26,2	24,2	27,5
	Floor EPS (Polystyren)	25,0	22,2	24,2
	Comparison of damping in %			
	SIRCONTEC PBG 40	100%	92%	105%
	Floor EPS (Polystyren)	95%	85%	92%

Floors with the levelling layer made of EPS have lower insulation capability than floors with PBG foam concrete

2. After 7 days

Levelling layer	Damping in dB (ΔL_w)			
	SIRCONTEC PBG 40	25,1	18,6	
	Comparison of damping in %			
	SIRCONTEC PBG 40	96%	71%	

Measured on the floor fragment:

35 mm anhydrite screed
 0.1 mm separating PE-foil
 x mm acoustic insulation
 50 mm levelling layer
 150 mm monolithic ceiling

... floors with foam concrete increase impact noise reduction

Influence of the levelling layer on impact noise insulation of low frequencies (100-315Hz)

Impact noise insulations	EKM (PUR)	PE (polyethylene foam)	Acoustic EPS
Thickness [mm]	6	5	15

1. After installation

Levelling layer	Damping in dB (ΔL_w for 100-315Hz)			
	SIRCONTEC PBG 40	9,5	8,4	10,9
	Floor EPS (Polystyren)	8,8	5,2	7,2
	Comparison of damping in %			
	SIRCONTEC PBG 40	100%	88%	115%
	Floor EPS (Polystyren)	93%	55%	76%

Floors with the levelling layer made of EPS have significantly lower capability to insulate low frequencies in comparison with floors with PBG foam concrete

2. After 7 days

Levelling layer	Damping in dB (ΔL_w for 100-315Hz)			
	SIRCONTEC PBG 40	8,6	1,6	
	Comparison of damping in %			
	SIRCONTEC PBG 40	91%	17%	

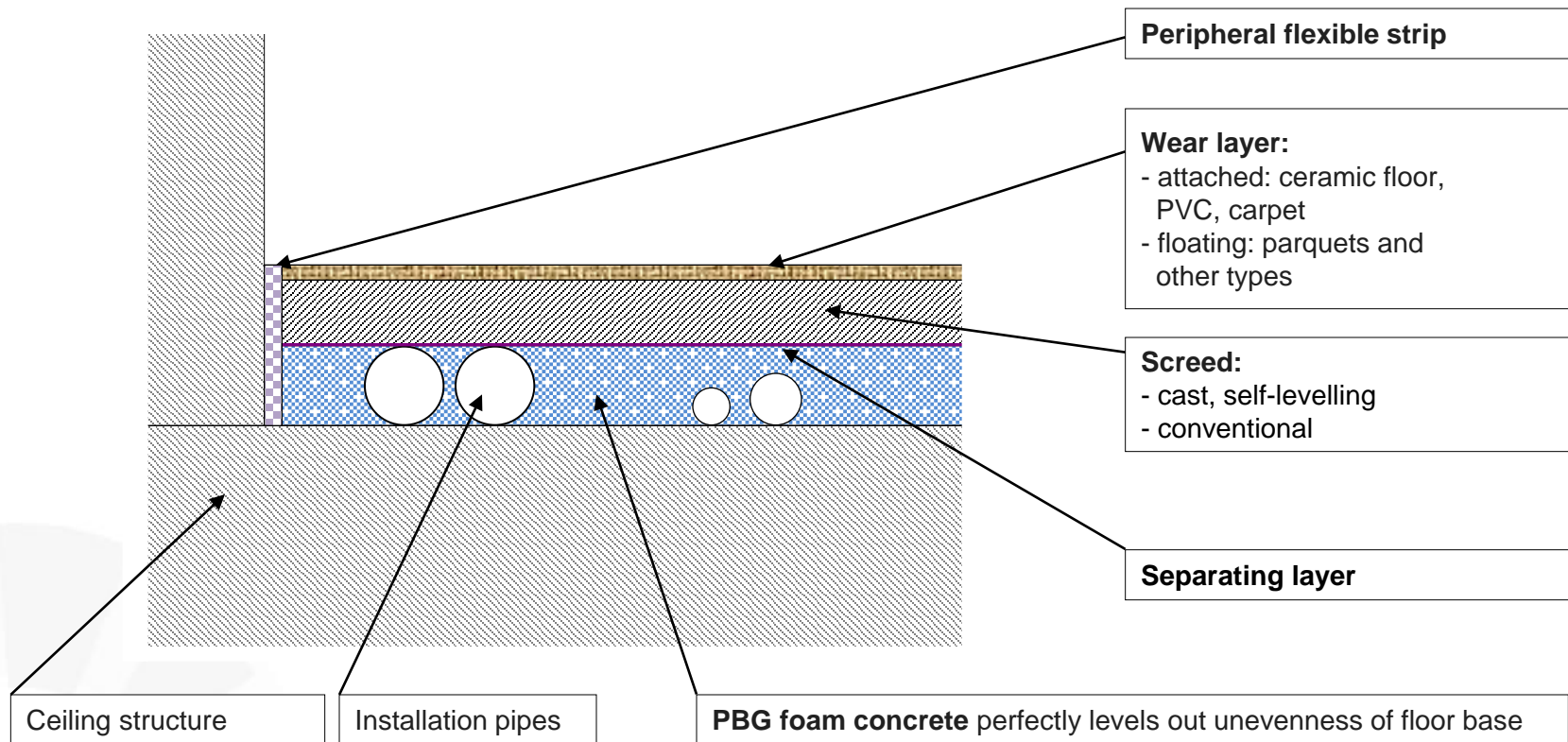
... floor structures with PBG excellently reduce low-frequency noise

Benefits of SIRCONTEC Acoustic Floor

- Minimized floor thickness
- Fast implementation at lowest price per m²
- Uniform screed thickness all over the surface
- Requirements of even the strictest standards for impact noise insulation are fulfilled
- Suitable also for high-rise buildings

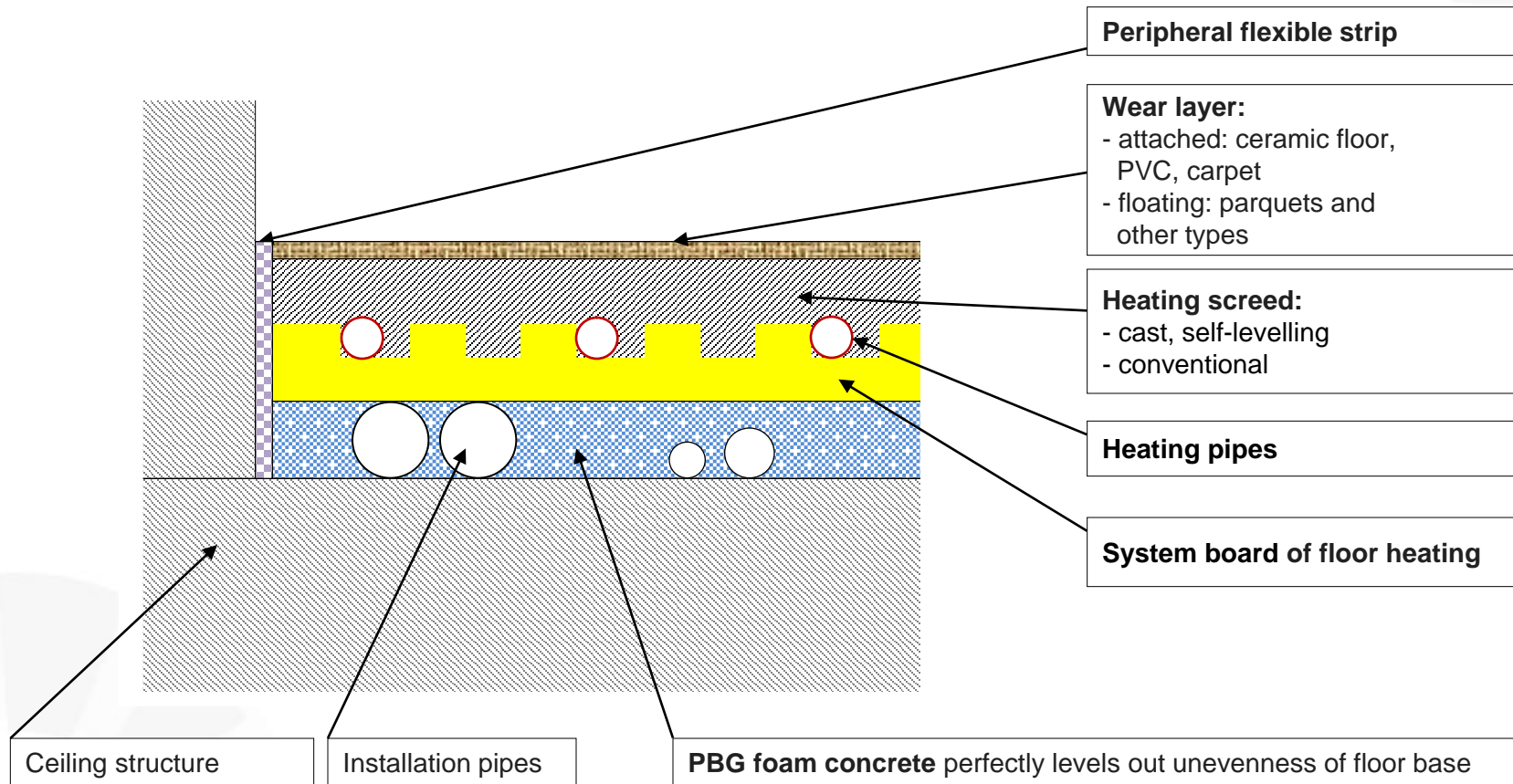
Overall comparison of impact noise insulation materials please find on:
www.sircontec.com/floors in “ Documents to download“

Floor without acoustic insulation



...fast and precise

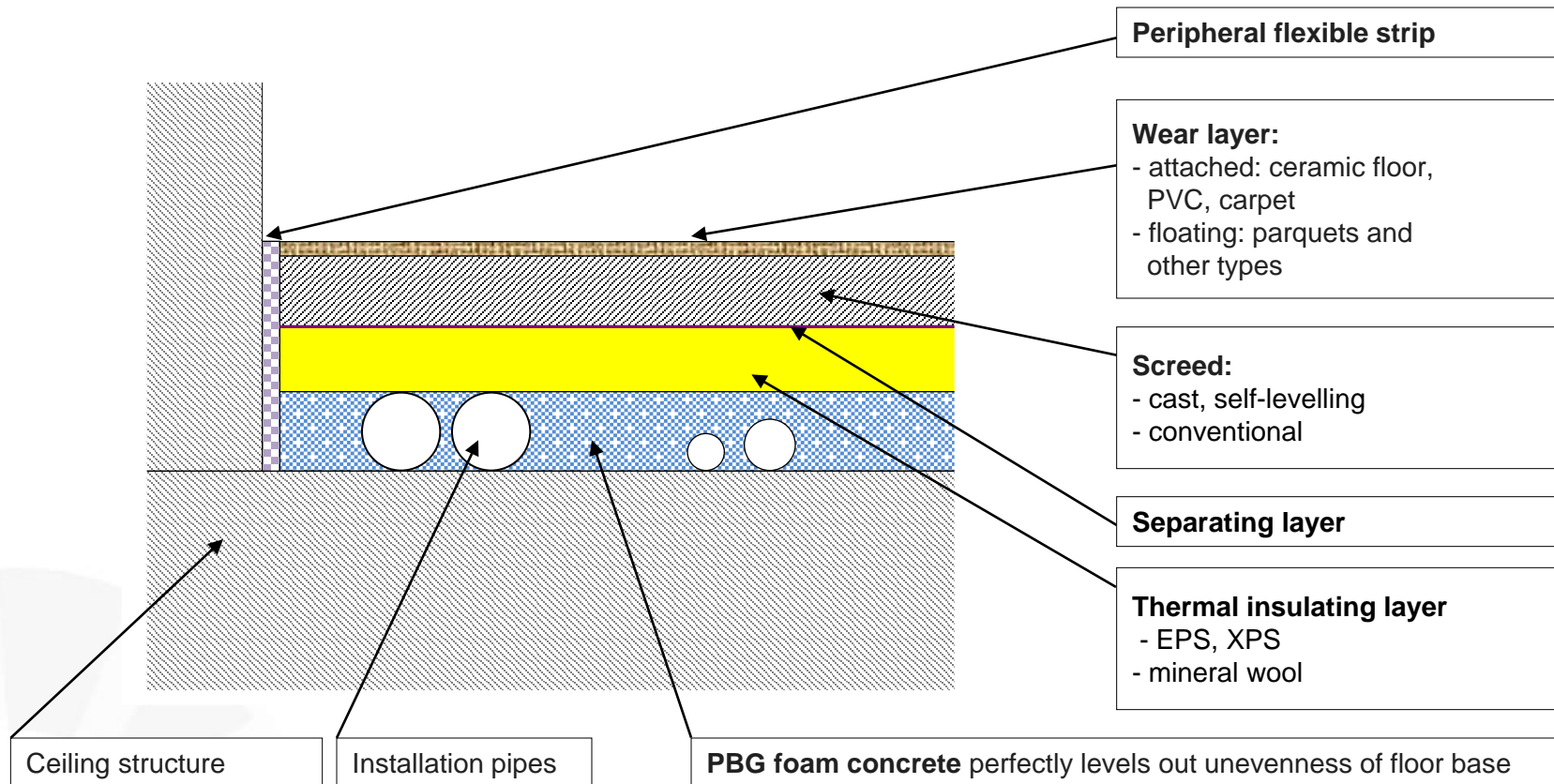
Floor without acoustic insulation with floor heating



...warm floor efficiently and precisely

Floor above unheated area or ground

without thermal bridges



...precise and efficient

Properties of PBG levelling layer

- Faster and economically more effective application in comparison with board layer applications => saves time and money
- PBG is self-levelling => very good flatness of the layer's surface
- Excellent floor insulation - removes acoustic and thermal bridges
- Excellent especially for damping low-frequency noise
- Liquid PBG fills up space and perfectly evens the base, i.e. minimizes screed thickness and consumption
- High fire resistance – A1
- High resistance to flooding
- High resistance to damage during placement of other floor layers
- Vapour permeable

Overall table comparison of materials for floor subbase levelling please find on:

www.sircontec.com/floors in " Documents to download"

Floor levelling layers - comparison

Floor levelling layers		Foam concrete	Polystyrene	Mineral wool
Material properties and parameters	Material	Liquid Cement, sand, water and foam, (fly ash)	Panels Foamed kopen, styropor, etc.	Panels Stone or glass fibre
	Production of the material	On site in mobile equipment	Only in factory	Only in factory
	Impact noise reduction	Excellent especially in low frequency damping	Poor in low frequency damping	Good in low frequency damping
	Ageing	With age it gains strength like conventional concrete	Permanent deformation may occur when loaded	Permanent deformation may occur when loaded
	Size and shape of element [mm]	Liquid, it perfectly fills up space	Panel 1000x500xthickness	Panel 1000/1200x500/600xthickness
Application of the material and layer properties	Application processing	Self-levelling, only vibration pipe	Placement with cutting to size => high risk of creating acoustic and thermal bridges	Placement with cutting to size => risk of creating acoustic and thermal bridges
	Application labour intensity	Very low	Very high, cutting to fit between pipes	Very high, cutting to fit between pipes
	Application speed	Very high	Low	Low
	Layer surface flatness	Very good	Insufficient, excessive screed production needed	Insufficient, excessive screed production needed
	Resistance of the layer to fire	Very high, A1	Medium, E	High, A1-A2
	Resistance of the layer to flooding	Very high	High, but hardly releases absorbed water	Low

Overall comparison of suitability and properties of materials for levelling layers can be downloaded on: www.sircontec.com in Download section

...PBG is the most suitable by all criteria

Main benefits of PBG (Foam Concrete) levelling layer

- Cost reduction for the whole floor structure
- Substantial time saving for the investor
- Minimized risk of floor defects

Overall table comparison of materials for floor subbase levelling please find on:

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Thank you for your attention!

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