MB Flat Screed System
EFS-40

Applications
The EFS-40 is a heating and cooling system for general commercial and residential buildings (new construction and renovations) with a minimum installation height and mass, quick drying and controllability.

Technical data: MB Euro System pipe 17 (MB-ER17)

Construction height	min. 40 mm
Pipe covering	min. 20 mm
Construction mass	approx. 75 kg/m²
Compressive/flexural strength	C35 (35 N/mm²)/F6 (6 N/mm²)

Technical data: MB Euro System pipe 12 (MB-ER12)

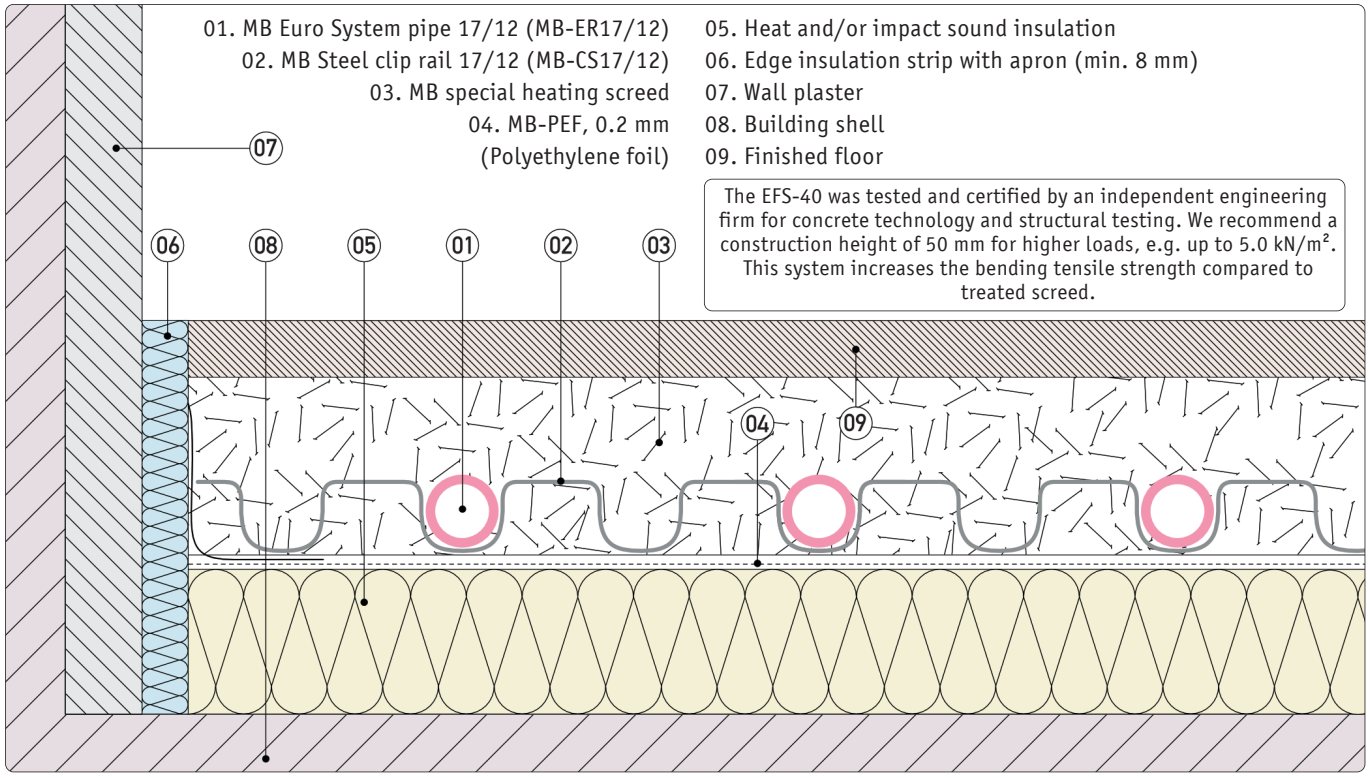
Construction height	min. 40 mm
Pipe covering	min. 25 mm
Construction mass	approx. 75 kg/m²
Compressive/flexural strength	C35 (35 N/mm²)/F6 (6 N/mm²)

General floor construction
MULTIBETON develops and produces energy-efficient heating and cooling systems for a vast variety of applications. Planning the floor construction includes the criteria for thermal and sound insulation along with structural requirements. Planning the floor construction must comply with the relevant laws, regulations, directives and standards. The MB Euro System pipes (MB-ER17/12) and the MB Steel clip rail (MB-CS17/12) allow the planner to choose from two different sized and diffusion resistant heating and cooling components. The MB Euro System pipe (MB-ER17/12) is installed warm and therefore strainless and twist-free in the MB Steel clip rail (MB-CS17/12).

System installation
Installation follows the MULTIBETON plan. Then follow the MULTIBETON installation and technical guidelines. Planning and creating the MULTIBETON underfloor heating/cooling must further comply with the relevant laws, regulations, directives and standards. Additional instructions of manufacturers for other trades and the recognised rules of technology and proper trade workmanship must be observed.

01. MB Euro System pipe 17/12 (MB-ER17/12)
02. MB Steel clip rail 17/12 (MB-CS17/12)
03. MB special heating screed
04. MB-PEF, 0.2 mm (Polyethylene foil)
05. Heat and/or impact sound insulation
06. Edge insulation strip with apron (min. 8 mm)
07. Wall plaster
08. Building shell
09. Finished floor

The EFS-40 was tested and certified by an independent engineering firm for concrete technology and structural testing. We recommend a construction height of 50 mm for higher loads, e.g. up to 5.0 kN/m². This system increases the bending tensile strength compared to treated screed.



The illustration and design are non-binding and only exemplary.

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Shorter construction time, functional heating and flooring installation
The speciality heating screed can be walked on only 3 days after installing the screed. Functional heating: From the 4th day at a flow temperature of 20 to 25 °C, increase + 5 K/day up to the design temperature, approx. 8th to 12th day maximum flow temperature, then ready to install flooring after passing the humidity measurement. We recommend covering the screed with MB-PEF (Polyethylene foil) as soon as it can be walked on (normally 3 days from installing the screed) to avoid it from curing too quickly.

Heated/cooled screed in general
Screed is one of the key components in heated or cooled floor construction. It must offer good thermal conduction, the required strength values and adequate temperature resistance. The maximum temperature load of the screed normally should not exceed 50 °C.

MULTIBETON special heating screed
A mixture (200 L mixer screed pump) from 50 kg cement, 4.0 L MB-PVP (= 1 L/m²), 8 kg KrampeHarex steel fibre KE 20/1.7 (= 2 kg/m²) and sand (grain 0-8) must be properly prepared according to the standards and according to the particle-size distribution curve. For heating screed 4 cm thick, this yields about 4.0 m². Use water very sparingly. The steel fibres must always be added to the MULTIBETON special heating screed.

Thermal and impact sound insulation/film
The insulation requirements and insulation thickness must be specified by the planner in compliance with laws and standards. In addition, sound insulation requirements must be met. If a construction project requires additional sound insulation, this must be expressly requested by the builder beforehand. When installing the impact sound insulation, this should preferably be done as one layer. The thermal and impact sound insulation is covered with MB-PEF (Polyethylene foil). This protects the insulation against moisture and water vapour.

Construction waterproofing
Building parts in contact with the ground must be sealed in compliance with the standards. These are floors on the ground floor in buildings without basement, or basement floors. The need and form is determined by the structural design. This seal must be installed before the surface heating is installed.

State of construction
Windows and exterior doors should be installed before MULTIBETON underfloor heating is installed. Building service installations and wall plaster have been completed and pipe slits sealed.

Levelling courses
If the required flatness tolerances of the load-bearing floor are not met, it must be levelled with a levelling course. This requirement applies to all load-bearing floors in existing buildings and new constructions. The type of levelling course must be compatible with the planned surface heating system and room use.

Joints
Liquid screed expands and contracts by nature. Joints must be placed to allow for this expansion and contraction without damaging the screed. A joint plan showing the type and location of joints must be drawn. The joint plan is drawn by the building planner and must be submitted to the installer as part of the technical specifications.

Flooring
Since underfloor heating is quite common, the builder has vast flooring options. Almost all manufacturers offer flooring suitable for underfloor heating. Flooring such as textile flooring, natural stone, elastic flooring, ceramic flooring, parquet, laminate and even wooden flooring can be used.

Edge insulation strip
Edge insulation strips have the following important functions, among others: 1. Sound insulation, 2. Compensating expansion in the heated load distribution layer, 3. Insulation between cold building parts and the heated screed. Under the standard, the edge insulation strip must be secured to prevent shifting when the screed is laid. The edge insulation strip must have at least 5 mm to expand. The edge insulation strip is placed on the finished floor or, in the case of two-ply insulation, over the bottom insulation layer. Once the flooring has been laid, the protruding edge insulation strips are cut.

Load-bearing surface
The load-bearing floor must be sufficiently dry to hold the load distribution layer and be even. It must not have bumps, pipework or similar. Avoid acoustic bridges and/or fluctuations in the screed thickness. If piping needs to be installed on the load-bearing floor, these must be defined. The floor must be matched to a level surface to hold the insulating layer. Levelling courses must be flush once installed. Fills may be used if their viability has been established. The height reference point on the site which must be met must be checked to ensure the planned construction height is given throughout.

Silent cooling
MULTIBETON underfloor heating is ideal as “Silent cooling”. These systems are inexpensive, as they only require a cooling unit or a reversible heat pump with the corresponding control unit. The maximum output (30 - 50 W/m²) of “Silent cooling“ comes from the dew point calculation, the calculated lowest cooling flow temperature and the user’s comfort level.
The design of the cooling components, including the insulation of the heating circuit manifolds, must be carried out in proper trade workmanship.

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