

## Installation Instructions to BEKA Mats as Wall Heating

### 1. General Remarks

The BEKA wall heating can be installed to nearly any load bearing wall surface. If the installation is at an outer wall, then the u-value of the wall must be better than  $0,35 \text{ W / (m}^2\text{K)}$ . Occasionally an additional layer of insulation might be necessary. General remarks can be read in → TI-B10 – Questions before lay-out of BEKA wall heating. For wall heating the BEKA- heating- and cooling mats are mostly embedded directly into the plastering.

For the installation of wall heating special building materials are not required. Fundamentally the wall construction can be any standard type wall. After fastening the BEKA heating- and cooling mats to the raw wall the mats can be plastered with all types of mineral plaster. Coarse grained rubbing plaster is not permissible because of the danger that the capillaries could get damaged. Common plaster types and qualities would be: machine plaster type: MP75 GF. Basically the thickness of the plaster should be chosen only as thick as necessary. Normally a thickness of 12 to 15 mm is sufficient. The thickness of this layer has an effect to the reaction time of the BEKA wall heating (thin layer thickness = fast reaction time!). The pre-treatment of the grounding is done according to manufacturer's guidelines.

Before starting the work a (layout) pattern for the arrangement of the mats must be prepared for a work base. In it all mats with their measurements, the direction of arrangement and the supply lines must be lined out. In the pattern all areas which will be kept empty, as for inner walls or for closets and permanently fixed furniture should not be covered, since there is no heating required at those areas. For the utilisation of BEKA mats for wall heating the mats must be positioned and fixed to the raw wall in appropriate manner until plastering.

Therefore the mats supplied with butyl adhesive tape already attached to it. After the protective foil is peeled-off the mats are simply fixed to the raw ceiling by means of the

adhesive tapes. The mats can also be staple-fixed if dry-build construction boards are used as a wall base.

### 2. Arrangement of the Connecting Lines and of the Collecting Pipes

The collecting pipes and the supply lines for the BEKA wall heating, plastering version, are placed into the base board or in a special wall groove. Remarks for this version are given in the technical information TI-B10.

It could be that building regulations are against the positioning of collector pipes in wall grooves, because of possibly changes in the building static. Normally groove depths of 15 to 20 mm are sufficient. The possible weakening of the wall must be clarified prior to the changes.

For renovation purposes the old layer of plaster, if still load bearing, can remain. In this case it is sufficient to mill grooves into the plaster for later accommodation of the collector pipes.

If inner wall insulation is required or desired, then the insulation panels can get cut-outs for the reception of the collector pipes. The insulation panels are to be fixed to the raw wall according to manufacturer's installation guidelines. For the accommodation of the main pipes the panels are simply fixed in spaces one to another.

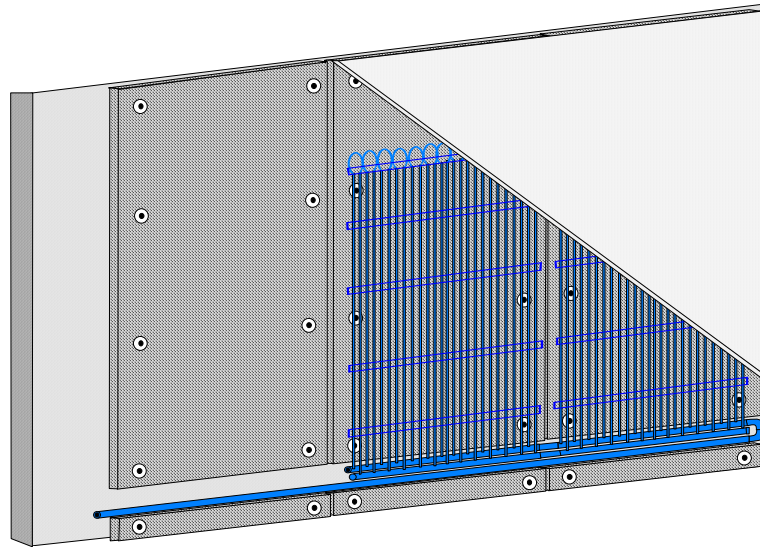


Figure 1 Arrangement of the collector pipes and piping according to "Tichelmann" by utilisation of insulation sheets for the formation of installation grooves.

### 3. Installation Steps

Take BEKA mat out of the package, roll-out onto a clean flat surface and burden the loop side with a flat. The mats can be stored up to 15 layers on top of another. Before further processing the mats should be stress relieved for one day.

1. Preparation of the raw wall  
smoothen unevenness.  
Apply grounding (primer)  
Lay down the arrangement of the mats on the wall and fix temporarily  
Attach clamps for reception of supply lines and collector pipes
2. Connect the BEKA mats to the water line and make pressure test.  
Install the supply lines.  
Connect the BEKA mats to the supply lines (→ TI-M02 – Instruction for thermal welding of plastics ).  
Do pressure test of the finished installed system (→ TI-M07 – Test instructions for BEKA- heating- and cooling systems)  
Set an idle pressure of 3 bar and retain this pressure during the time of installation until start of operation!

3. Fastening of the mats to the raw wall with:

- adhesive tape → TI-M17
- Stick-in dowels –Double dowel clamps from Fa. Hilti – Type: EDD 4-12
- fasten with staples made of non-corroding steel (valid for the fixing to plasterboards!) The staples a positioned over the strap of the spacer-strips. The staple applying force and the lengths of the staples should be chosen, that the mats are fastened securely, but the spacers will not tear.  
→ TI-M19

Align the mats  
Tighten the capillary tubes

4. Apply plastering and smoothen (pay attention to manufacturer's instructions!)  
Apply plaster - minimal thickness, normally 10 to 15 mm are sufficient.  
If capillaries are damaged repair by soldering the tube ends. If required exchange the total → TI-M01