wSYSTEM GUIDE

Instructions for handling and installation of the water-based system

water-based clay climate system

ArgillaTherm®
Natural Clay Climate Systems

Instructions for handling and installation of the water-based heating-/cooling system

AREAS OF APPLICATION

- Ceiling heating
- Ceiling heating system
  - without mechanical air dehumidification
  - mechanical air dehumidification
  - with passive cooling by night ventilation
- Wall heating

TRANSPORT

- Protect from humidity
- Do not stack on top of each other

STORAGE

- Protect from humidity
- Do not store outside

INSTALLATION- AND PROCESSING TEMPERATURE

- > 10 °C
- Provide sufficient ventilation!

REFERENCE

Individual installation videos can be viewed **www.argillatherm.de**
on our homepage **www.argillatherm.de**
under the tab “service” submenu “Montage”.

INTRODUCTION

You need the ArgillaTherm project report to accurately assign the material required for each room.

Plan the pipe routing to the heating circuit distributor or connection point and make the corresponding breakthroughs into the adjoining rooms and corridors. For timber wood construction it is recommended to take this into account when planning the building.

Depending on the floor plan, the connections lead via corridors (installation by means of click rails) or through other heated rooms via correspondingly free tracks in the clay-grooved panels.

Installation of the system panels and compensation panels according to the quantities listed in the Project Report.

Follow the data below for easys planning of the heating circuits and pipe layings:

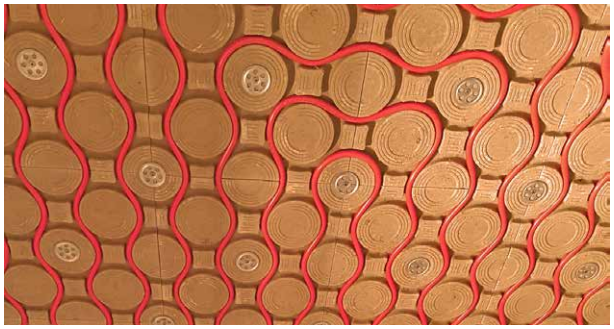
Maximum heating ciruit length including connections: 80 m (pressure loss 150 mbar) or 100 m (pressure loss 250 mbar) depending on design accoring to the Project Report

1 m² system panles = 7,23 panels
= 11 running meters heating pipe

50 system panels ≈ 76 running meters heating pipe

System components of the wSYSTEM

High-performance clay module



High-performance clay modules installed, then installation of the pipes

Surface coating with clay plaster/clay paint or lime plaster/mineral paint

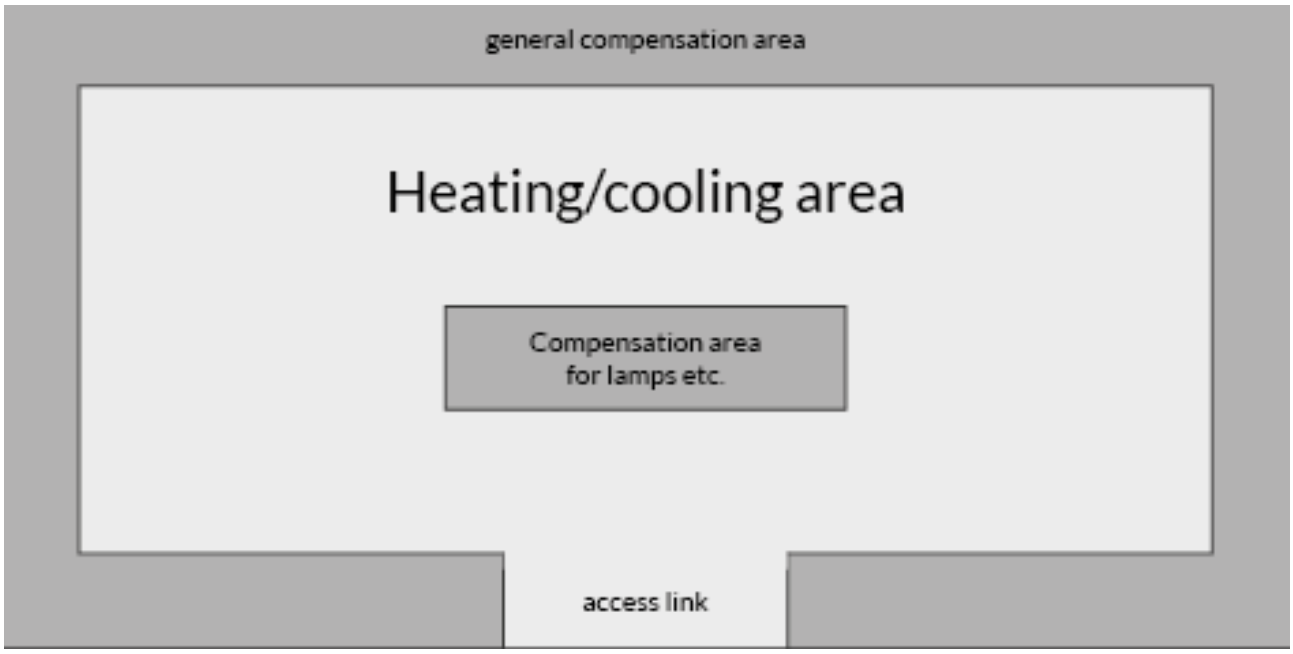
Interface / trades

Task	Trade
Substructure	mason / carpenter / drywaller
Installation of clay grooved panels & clay compensation panels	drywaller / Heating engineer
Pipe laying, installation of ceiling sensor	Heating engineer
Clay or lime plaster (1. layer, filling of the grooves)	clay builder / stuccoer / plasterer
Connection of heating circuit, pressure test	heating engineer
Connection of sensor / thermostat	electrician
Clay or lime plaster (Surface layer/Paint)	clay builder / stuccoer / plasterer (painter)
Functional heating	heating engineer

Further technical information can be found in the product data sheets. These are available for download at www.argillatherm.de

If you have any questions, please do not hesitate to contact our application engineering: **+49 (0) 551 389 356-12.**

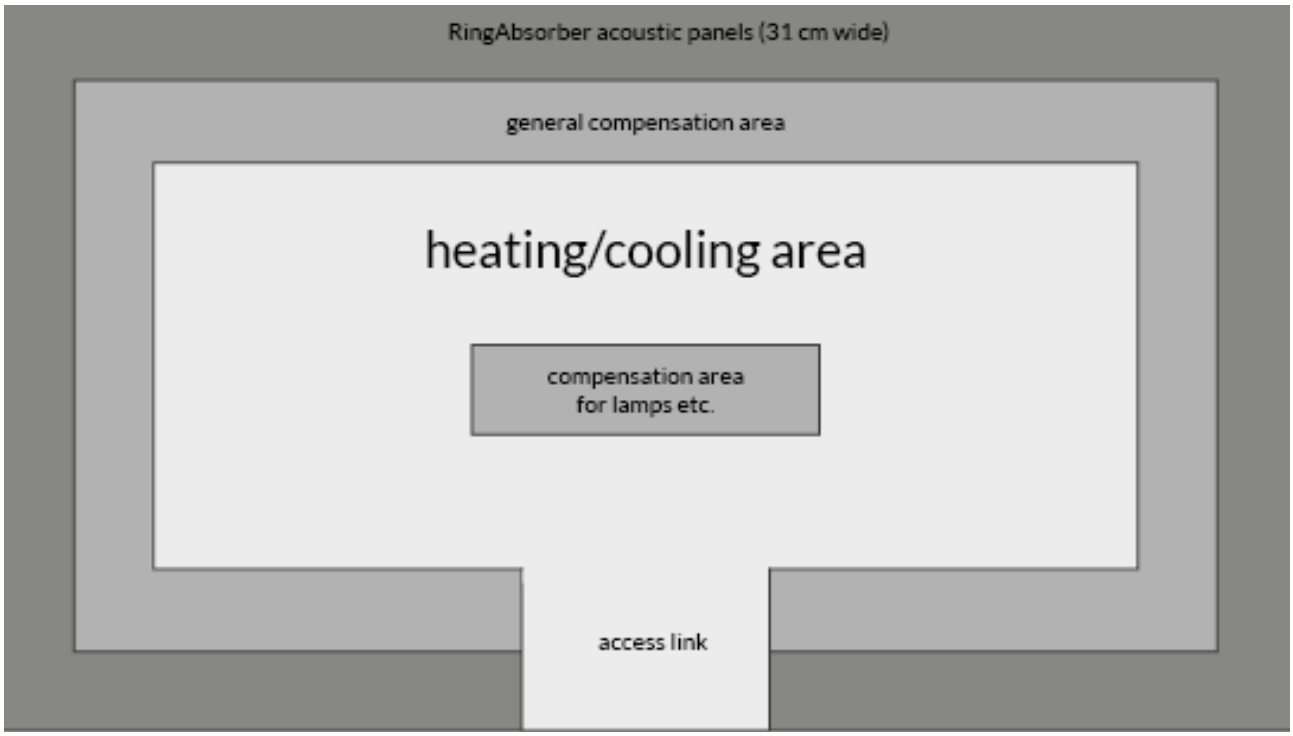
LAYOUT VARIATIONS for fully covered ceilings



The size of the heating/cooling area depends on the required output!

The heating-/cooling area is usually calculated in whole rows of ArgillaTherm Climate Clay Modules. The remaining area is covered with clay compensation panels. The compensation area(s) for lamps, etc. can be individually defined.

VARIATION WITH RINGABSORBER

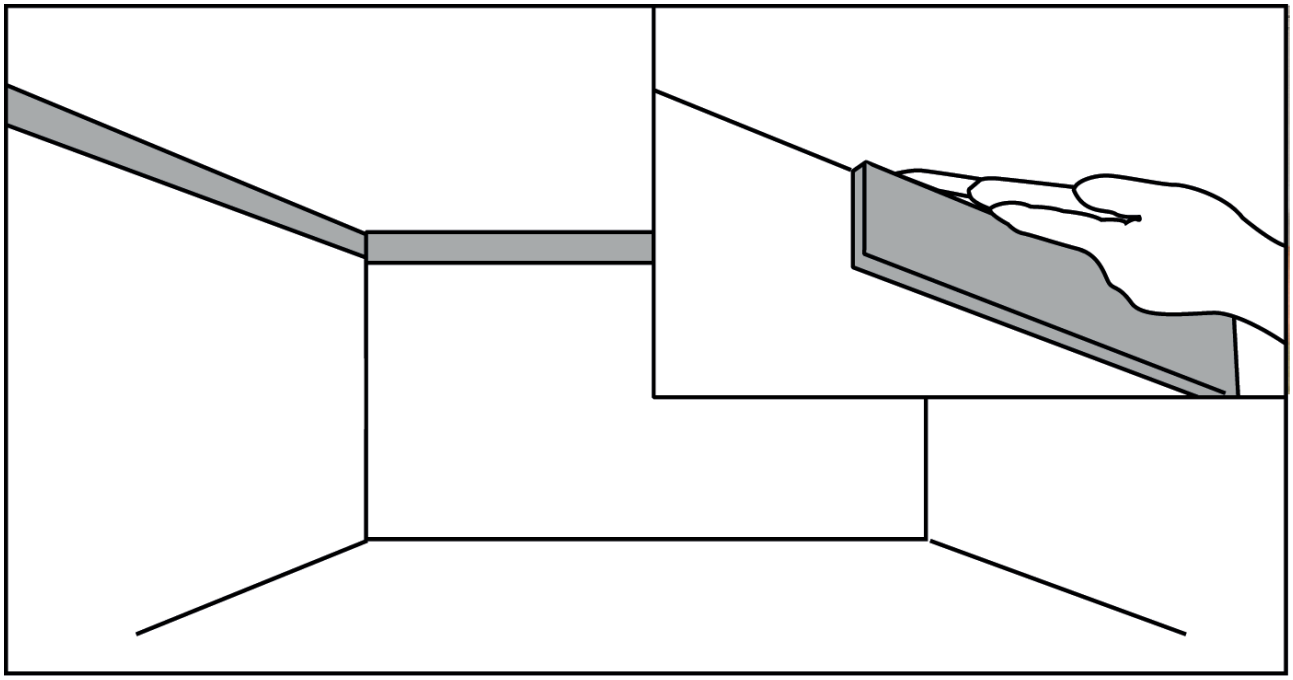


The heating-/cooling area is usually calculated in whole rows of ArgillaTherm Climate Clay Modules. The remaining area between RingAbsorber acoustic panels and heating/cooling area is covered with clay compensation panels. The compensation area(s) for lamps, etc. can be individually defined.

You can find further variations in the Project Report.

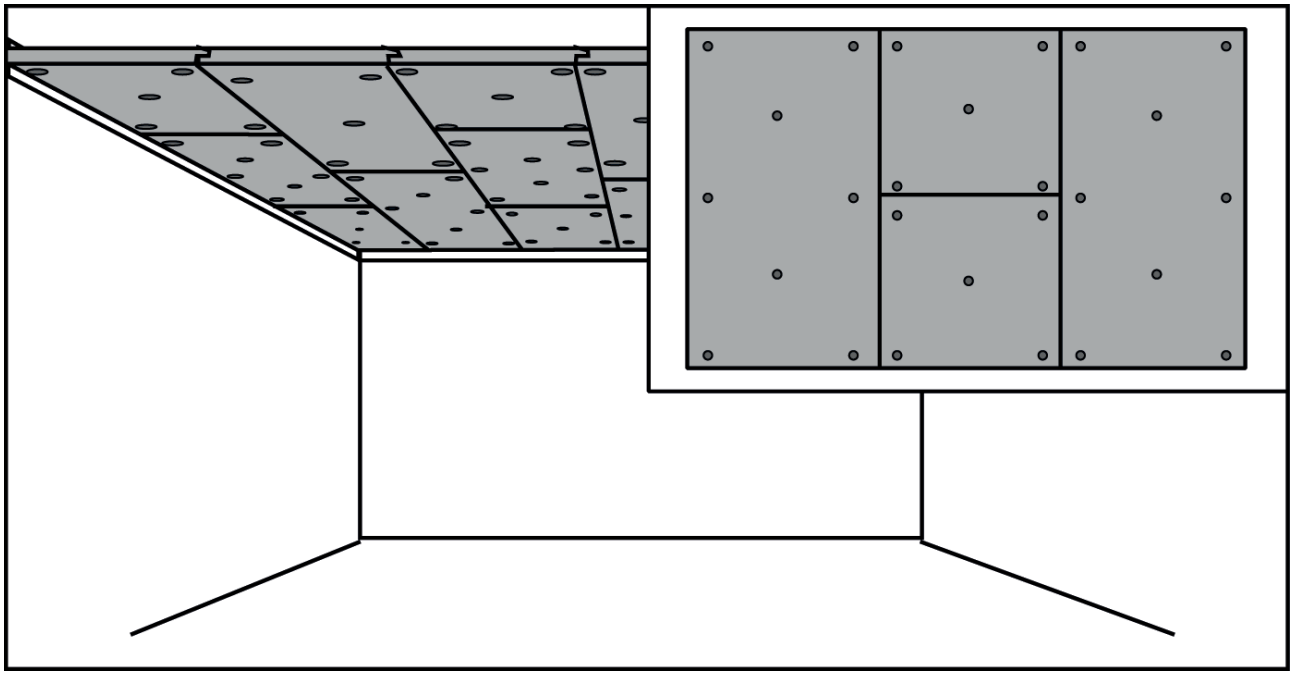
INSTALLATION INSTRUCTIONS
for fully covered ceilings

STEP 1



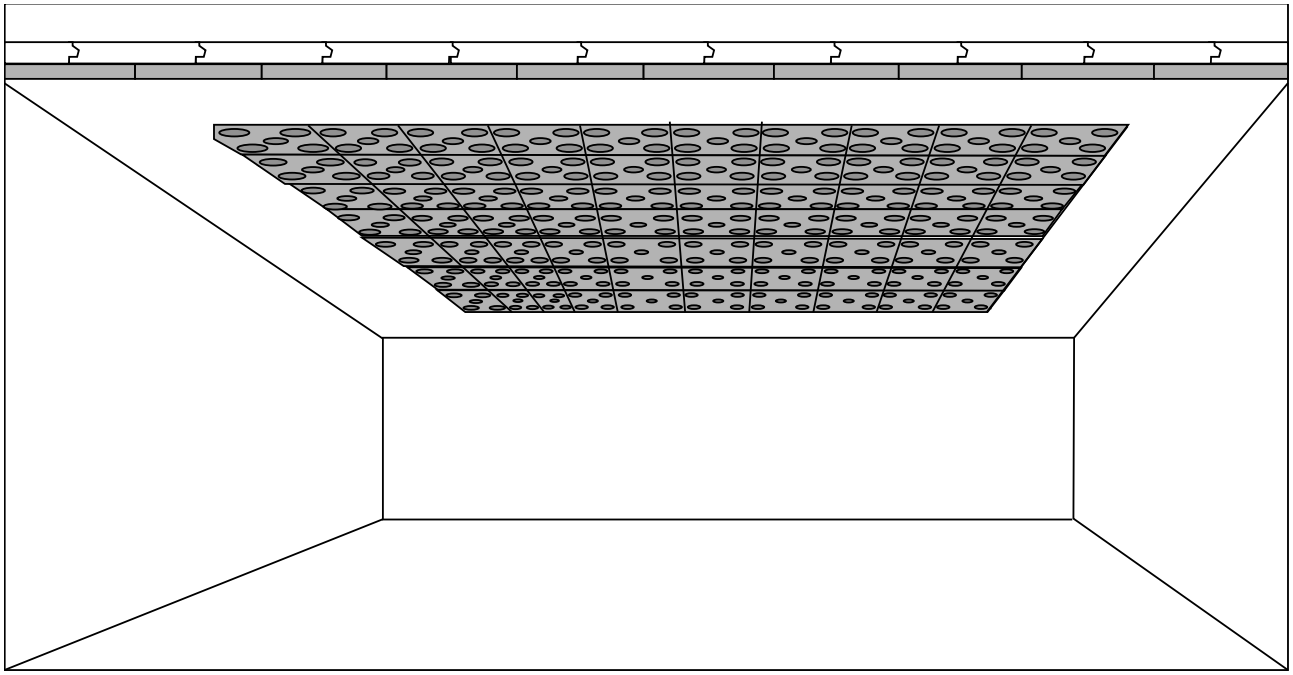
Install edge insulation strips 50x10mm around the ceiling.
Skip this step if you use the variation with RingAbsorber acoustic panels or a variation with a partially covered ceiling without compensation area. Recommendation: ArgillaTherm wood-fiber insulation strips.

STEP 2



Attach 22 mm OSB or ESB-Plus P5 chipboards (in buildings with increased fire protection requirements) with tongue and grove connection directly to the ceiling or to a suitable substructure (e.g. Protector metal ceiling suspension with type statistics ArgillaTherm). Do not exceed axis lenght of 10m; integrate corresponding expansion joints! Recommended for direct installation on solid ceilings: Fischer frame plugs SXR 8x80T or SXR 8x100T or nail anchors 6x30/50.
Important: Mark the course of power cables on the ceiling to protect them from damage.

STEP 3



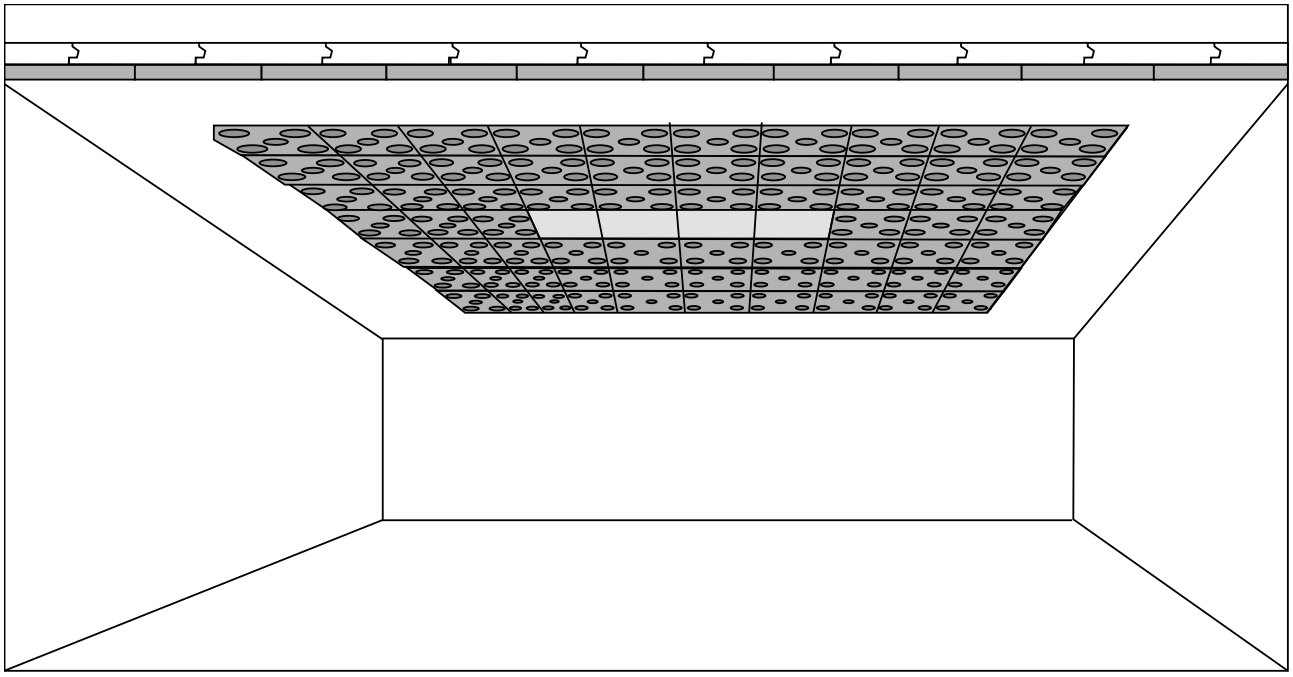
You can find the size of the heating / cooling area in the Project Report (example in the illustration: 7x10 rows of Climate Clay Modules ≙ 2,60 x 3,72 m). Do not exceed axis lenght of 10m; integrate corresponding expansion joints!

Important: The panel joints of the Clay Climate Modules must be offset from the joints of the OSB or ESB panels. All Clay Climate Modules are first fastened with a screw load distribution disc in the middle of the panels.

Important: Panels are layed on cross joint!

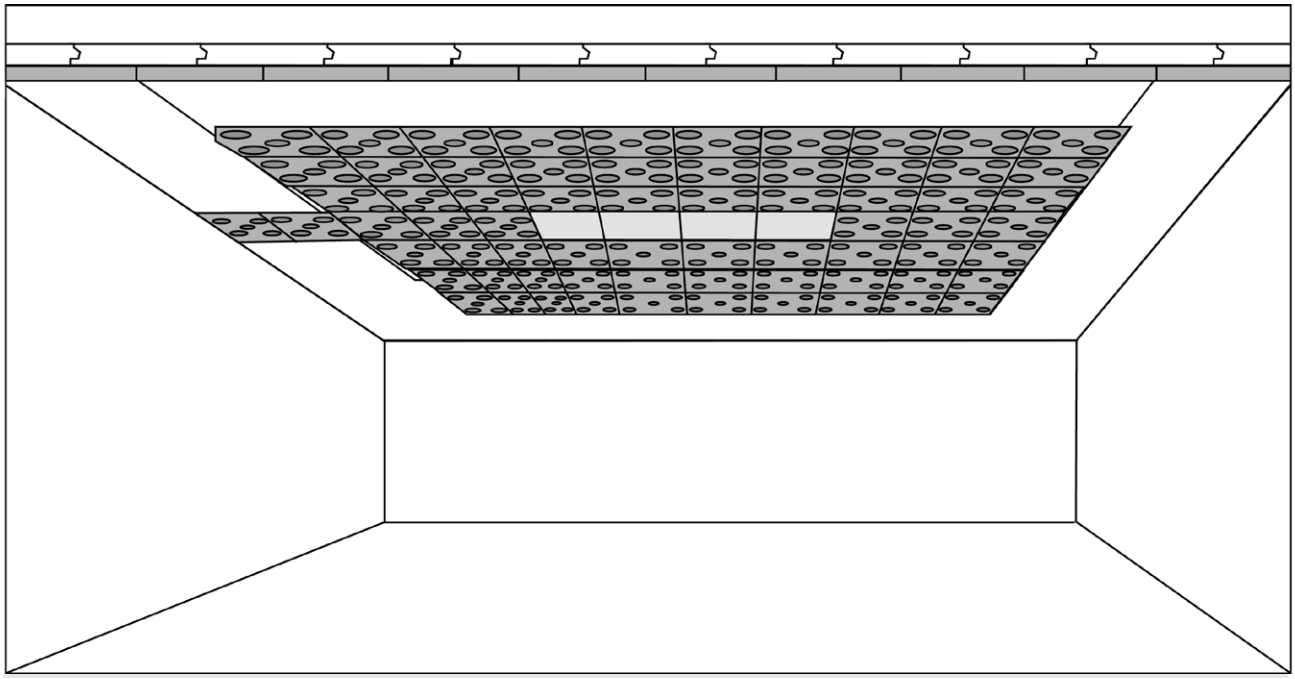
Set torque of the cordless screw driver to 4-5 Nm. The over torque is 8,50 Nm.
The grooved panels consist of clay with an approximately 6 times higher proportion of swellable clay minerals. For this reason, minor dimensional deviations cannot be ruled out. After each row of panels laid, please check the dimensions in both directions and compensate for any irregularities with the next row of panels.

STEP 4



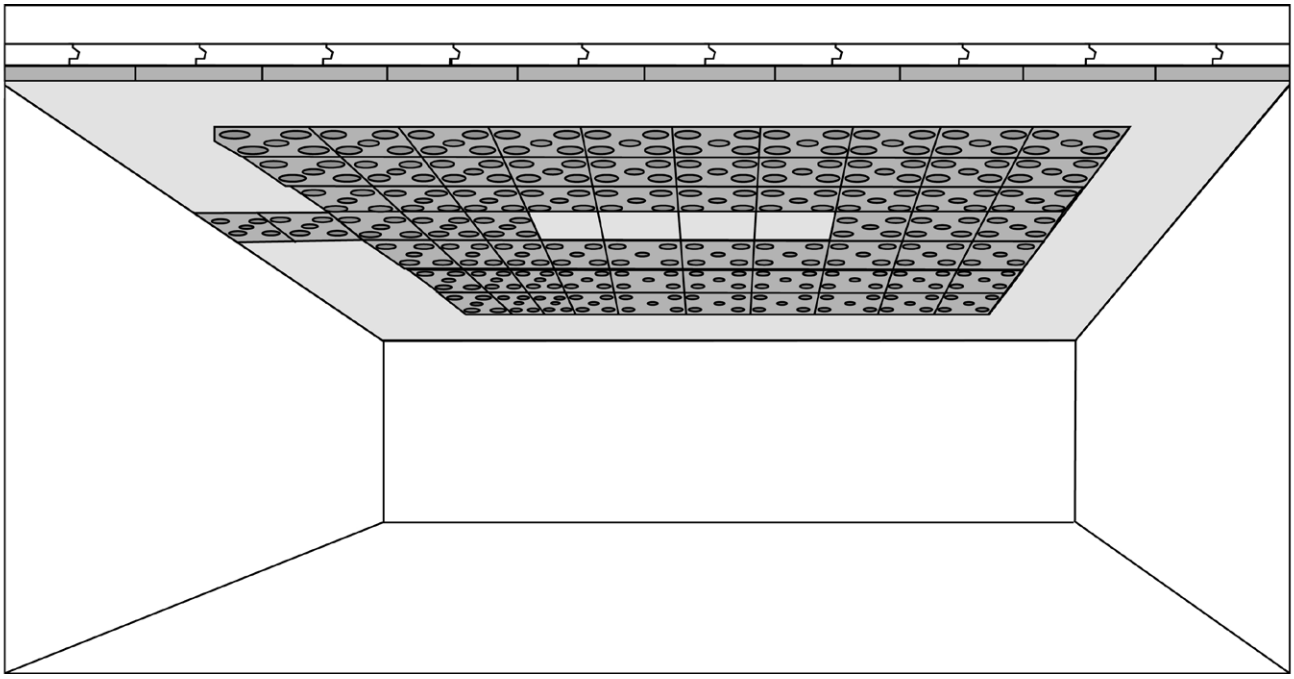
Individually replace the given number of Clay Climate Modules in the ArgillaTherm Project Report with clay levelling panels (areas for lamps, smoke detectors, sprinklers, etc.). In the picture example, four plates were replaced in one piece, but they can also be replaced individually.

STEP 5



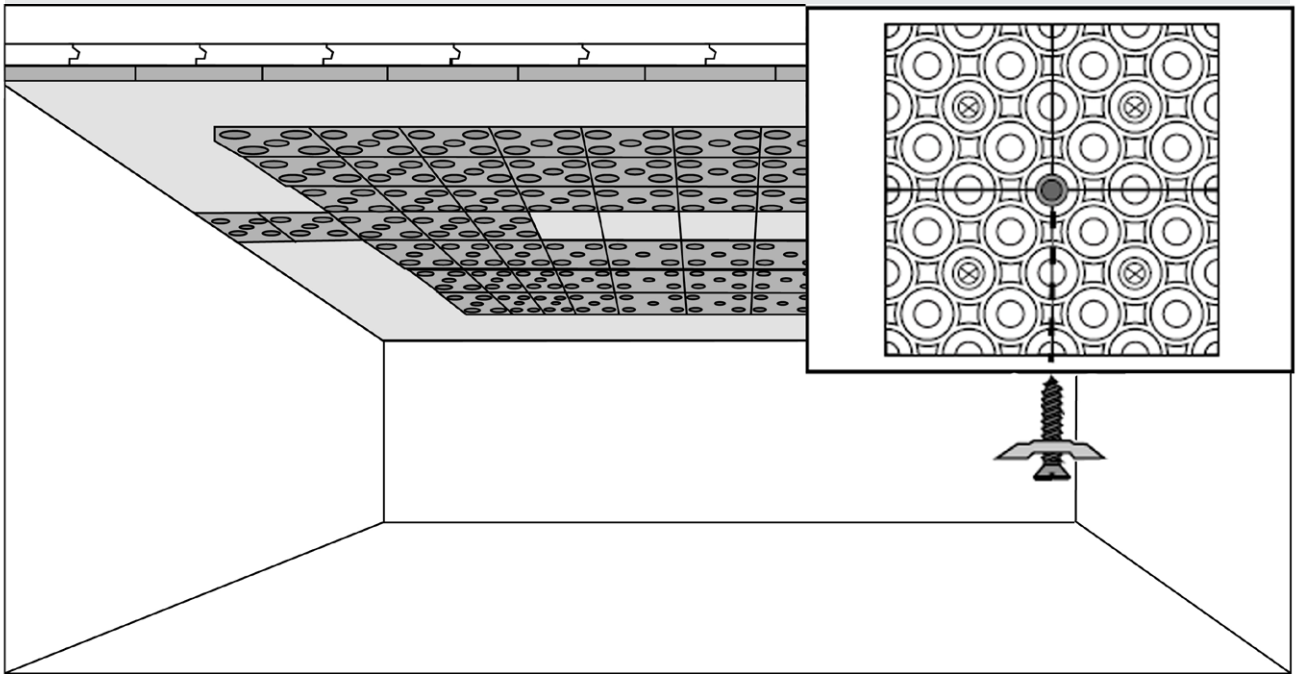
The connecting section for the wall ducting of the pipes (usually to the corridor) should be made with Clay Climate Modules (one panel each for two heating circuits) or optionally with 13 mm thick ArgillaTherm clay lightweight panels. The pipes will later be mounted on them.

STEP 6



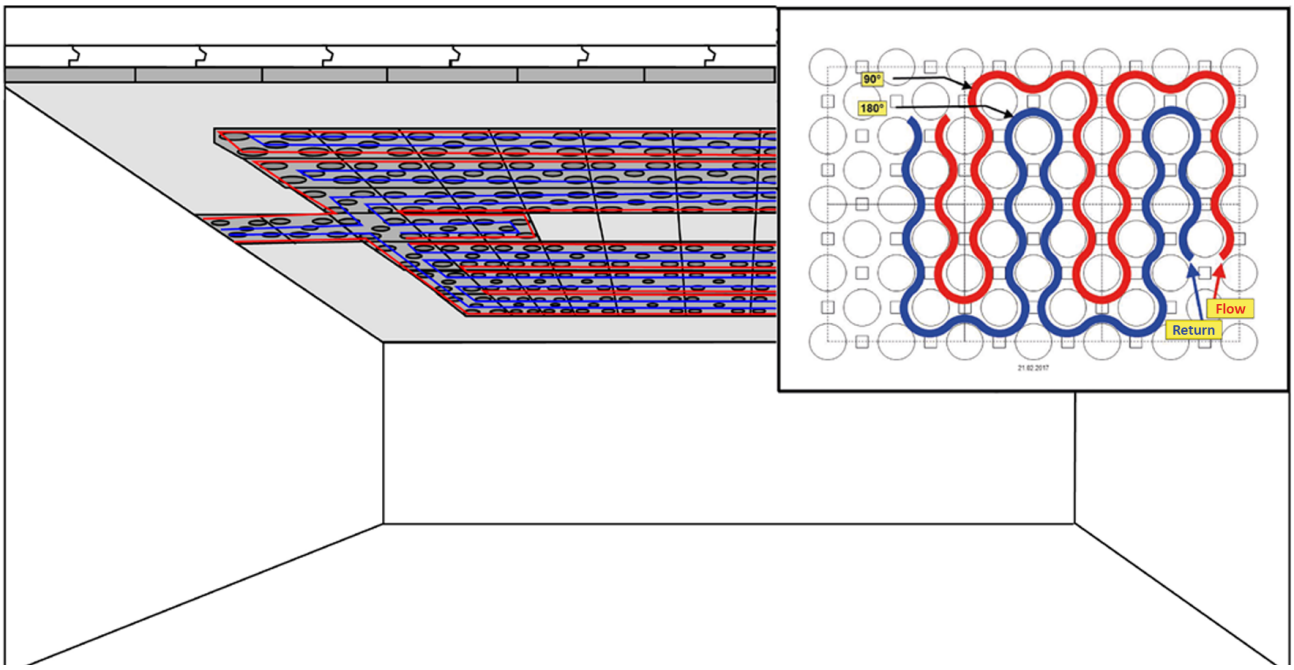
Cover the remaining areas with clay compensation panels. If possible, use fibre-free boards for ceiling cooling systems. For use of the acoustic solution: Fix the RingAbsorber panels to the OSB-, ESB- or Cetris-panels-substructure all around the room and then cover the remaining surfaces with clay levelling panels.

STEP 7



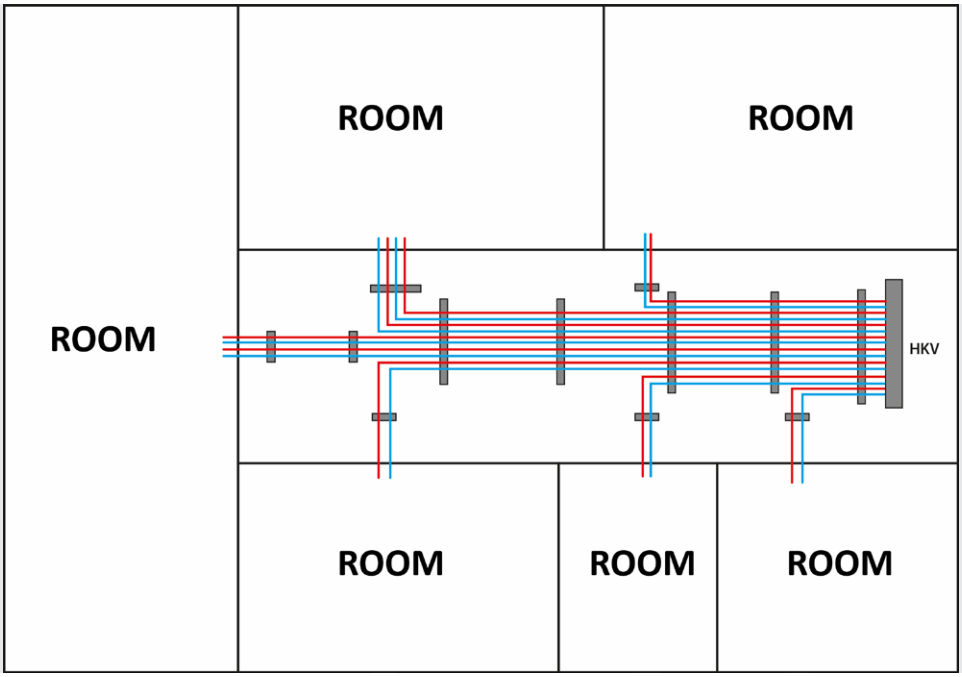
Once the ceiling has been completely covered, screw together all the cross points of the Clay Climate Modules and the transitions to the clay levelling panels. Fix to ceiling cut-outs (e.g. for recessed luminaires, stairwell) all round at all screw points.

STEP 8



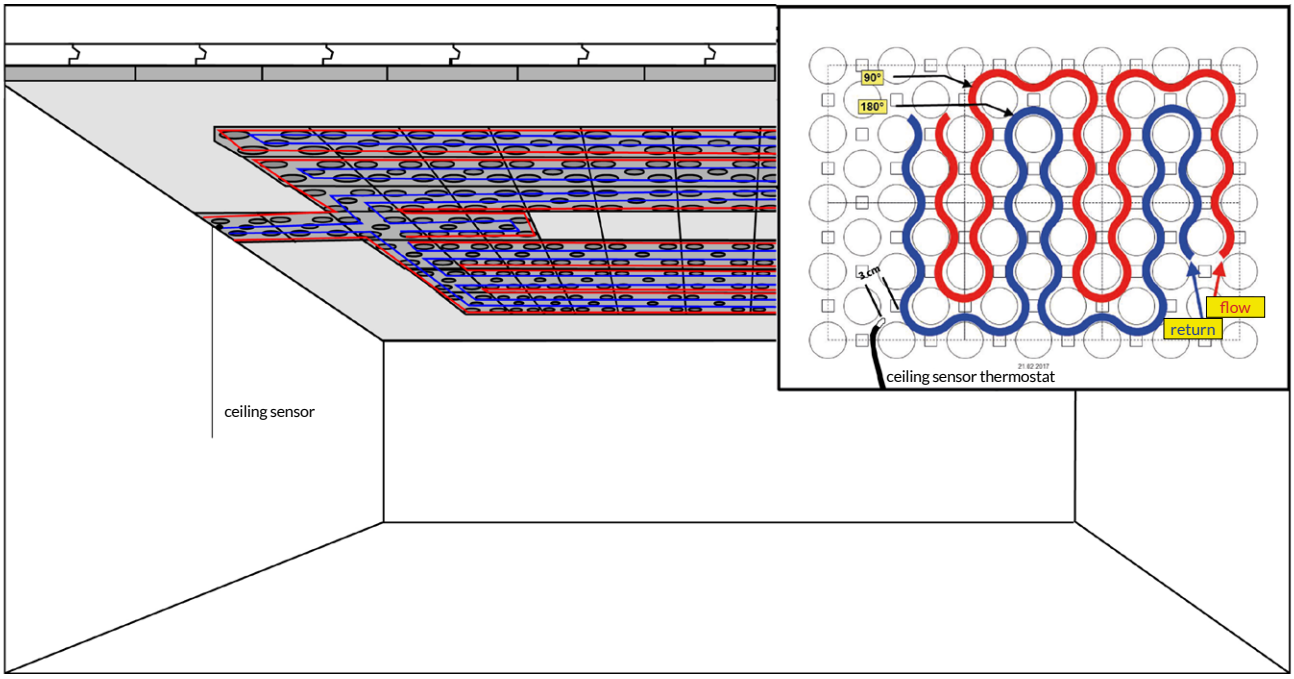
Meander-shaped installation of the ArgillaTherm PB plastic pipe in the Clay Climate Module. A Clay Climate Module has 4 tracks. Track 1 & 4 for the forward, track 2 & 3 for the return. Measure the pipe requirement for the connection to the heating circuit distributor and let it hang in the adjoining room.
Important: It is essential to use a pipe winder!
Then check the pipes for firm and correct seating in Clay Climate Modules. If necessary, secure any protruding or unstable pipe with retaining clips (delivery programme ArgillaTherm).

STEP 9



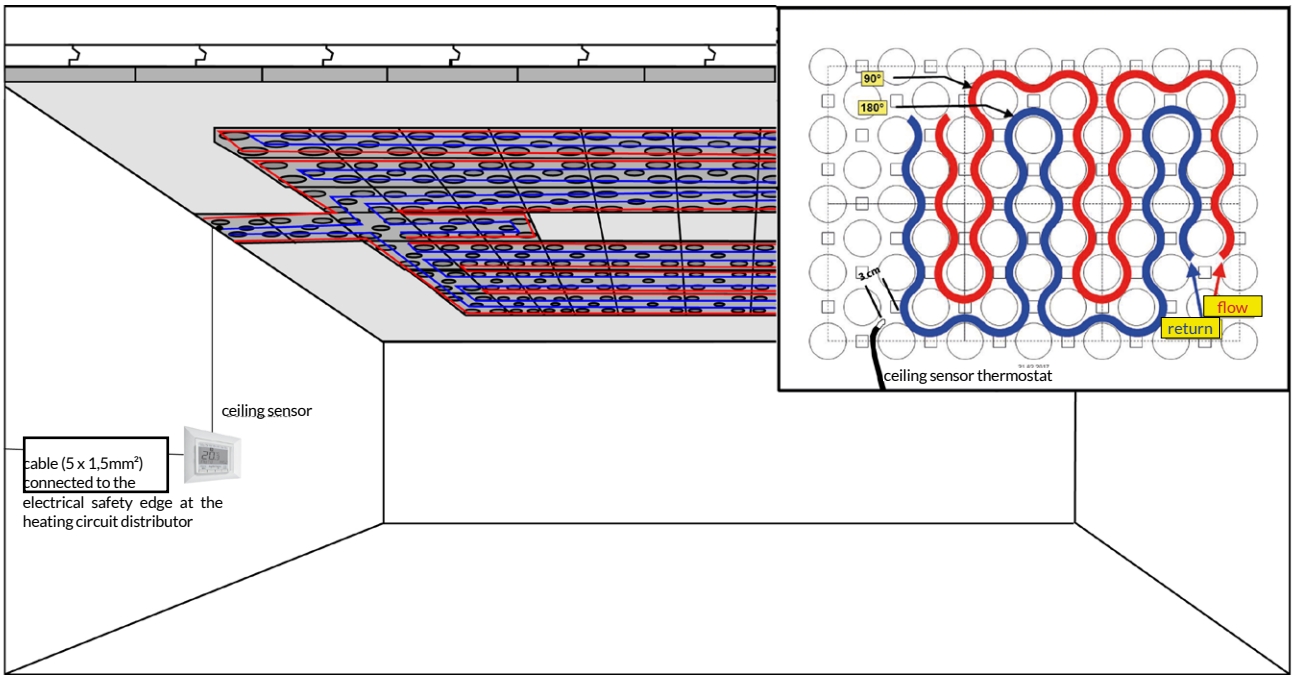
In rooms that are not directly temperated and serve to connect the pipes to the heating circuit distributor or connection point (corridor, technical room), the pipes are mounted on the ceiling with the aid of toothed rails (pipe clamping rails). Depending on energy requirements and wishes, the pipes are provided with insulation (no insulation = full temperature control, insulation of the flow = light temperature control). Mark the pipes with run length, space, heating circuit, flow or return. Finally, these ceilings are closed with suitable drywall panels. The heating circuit distributor or connection points should remain accessible by installing inspection flaps.

STEP 10



Lay the ceiling sensor to the room thermostat without empty conduit in the clay grooved plates. Place the white sensorhead 3 cm from the return pipe at least 10 cm away from the wall.
Recommendation: A second sensor (spare) can be installed for protection.

STEP 11



Installation of the ArgillaTherm room thermostat (free choice of position).
Connect the ceiling sensor and connect the thermostat to the electrical strip on the heating circuit distributor using a cable (5 x 1.5 mm²).

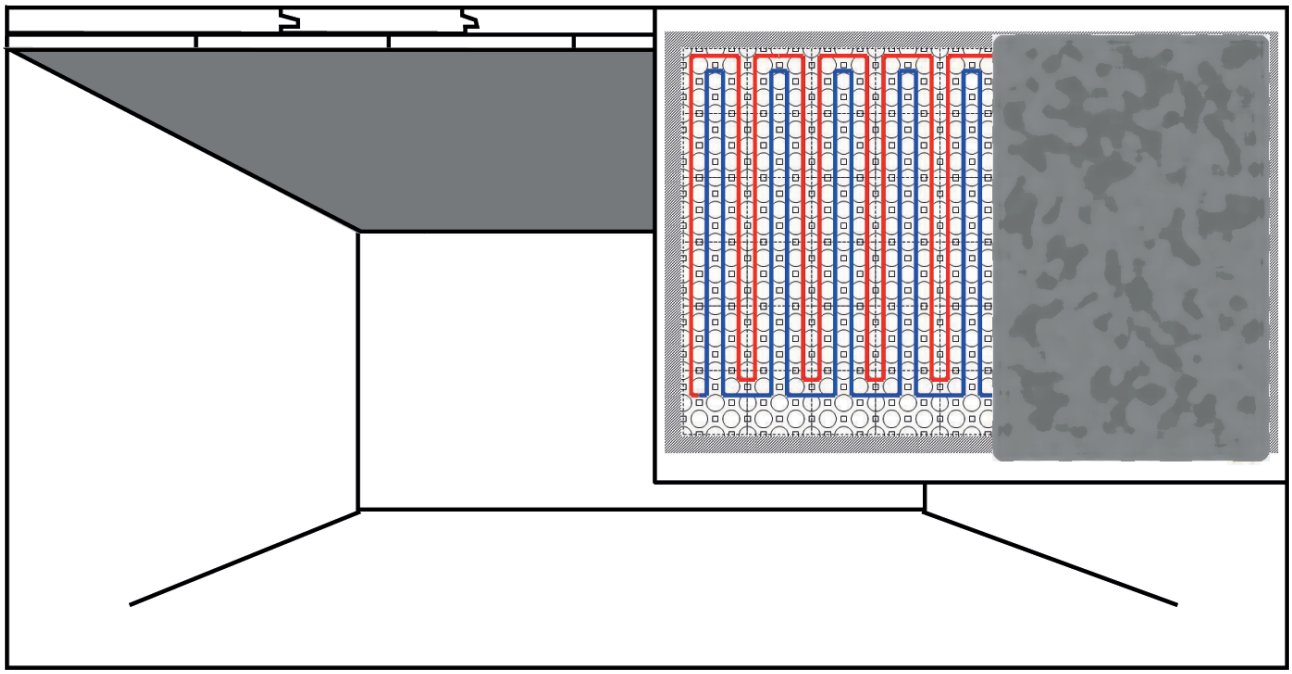
CEILING FINISH

Two plaster systems are available for surface coating:

CLAY PLASTER THERMO

LIME PLASTER >> continue page 15

STEP 12 for ceiling finish with clay plaster

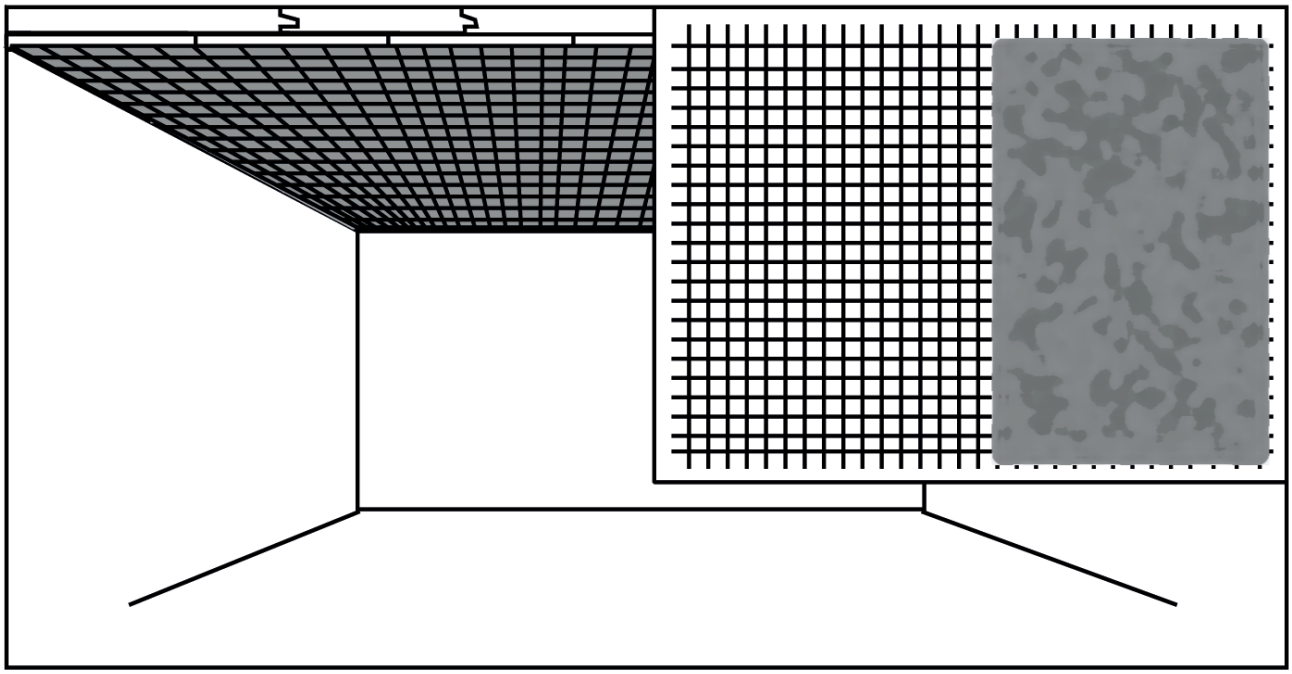


Important: Wet Clay Climate Modules and clay levelling panels slightly before applying the plaster!
Forcefully fill grooved slabs, joints and joints with clay-finish-plaster.
Important: Peel off plaster over the entire surface to grain thickness, i.e. only fill the grooves!
When applying by machine, make sure that the free panel grooves are completely filled and that the heating pipe is surrounded by plaster. For this purpose, the plaster is manually worked into the surface after pre-spraying.
Important: Allow the surface to dry completely! The colour of the clay plaster is then evenly light. Ensure good drying conditions during drying through good ventilation and sufficient temperature (>12° C) of the rooms. Video for plastering on www.argillatherm.de under Service/Montage.

STEP 13 for ceiling finish with clay plaster

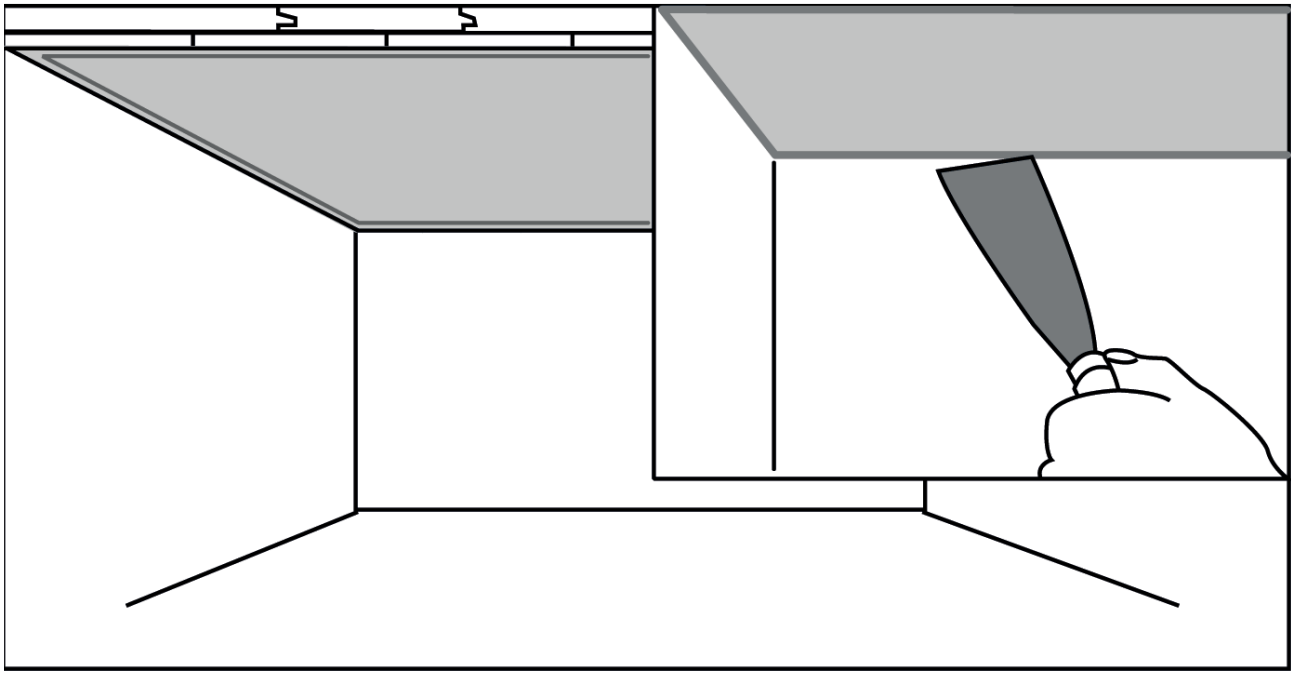
After the first layer of plaster the pressure test of the system takes place. Below you will find the corresponding protocol.

STEP 14 for ceiling finish with clay plaster



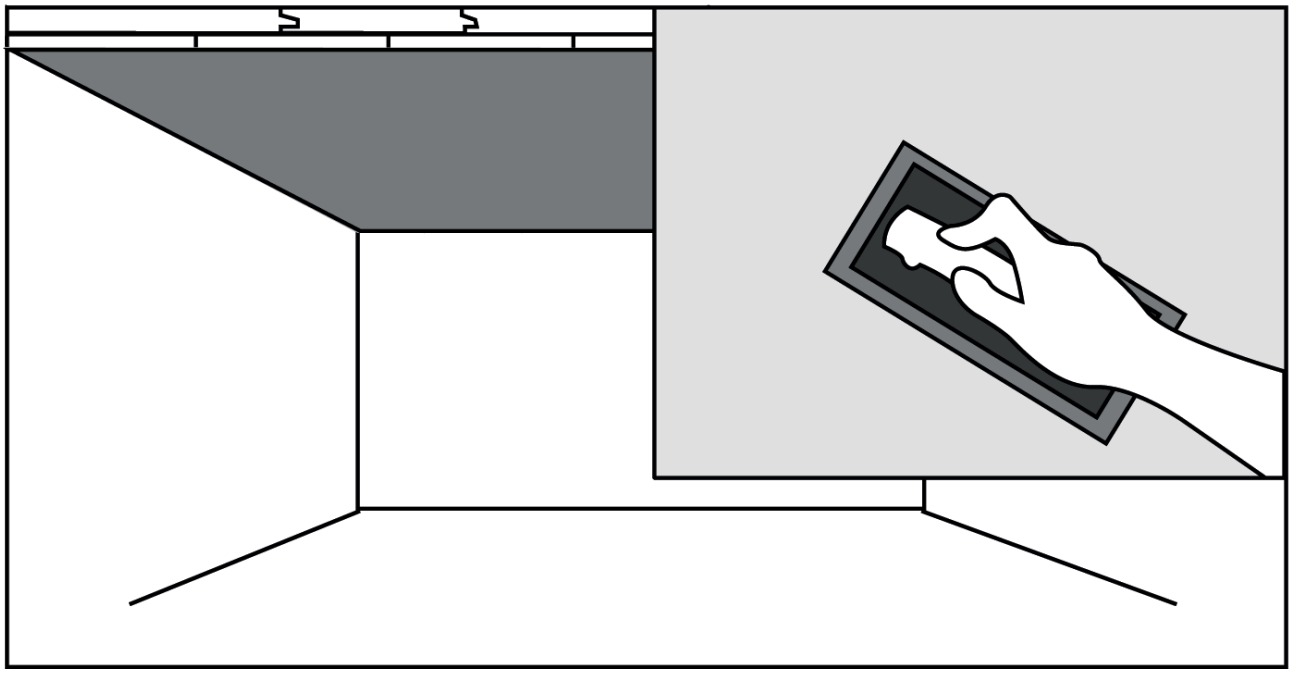
Important: Wet the clay surface slightly!
Apply approx. 3-5 mm clay plaster layer by hand or machine and work in 7x7 mm reinforcing fabric. For manual application we recommend the use of a toothed trowel.
Important: The reinforcement fabric should overlap by at least 10 cm!
At the earliest after the plaster surface has hardened hard as leather, apply a 2 mm covering plaster layer over the fabric and smooth it down sufficiently.

STEP 15 for ceiling finish with clay plaster



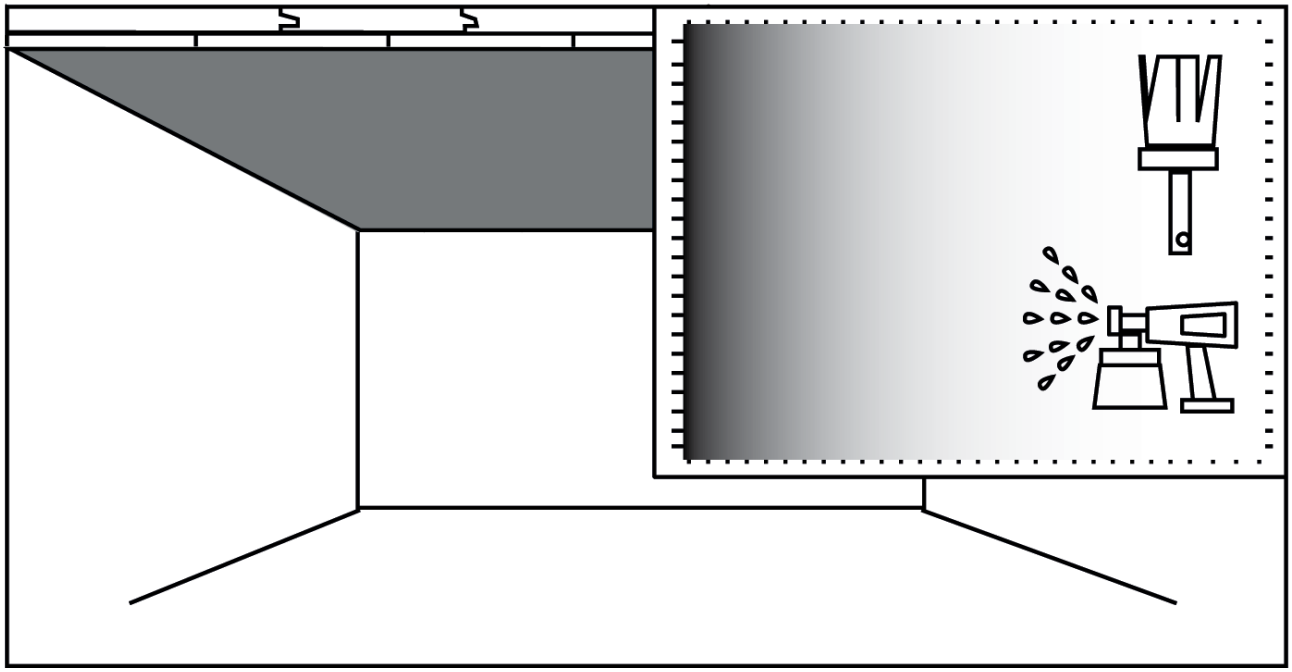
Create a circumferential connection joint in direct connection to the walls by means of a trowel cut. Alternatively, a tear-off strip can also be fitted around the room before the plastering work begins.

STEP 16 for ceiling finish with clay plaster



After sufficiently tightening (leather hard), smooth the surface again with a sponge trowel or a special felting machine and produce the desired surface quality (Q2 for clay roller plaster, min. Q3 for clay paint).

STEP 17 for ceiling finish with clay plaster



Apply the clay paint or clay roller plaster by brushing, rolling or spraying twice.
Important: For a uniform appearance, the mixing of the clay paint should be used and finished in one working day on a ceiling.
Recommendation for full surface ceilings: Use clay rolling plaster with a coarse structure
Recommendation for partial surface ceilings: Use clay finish plaster

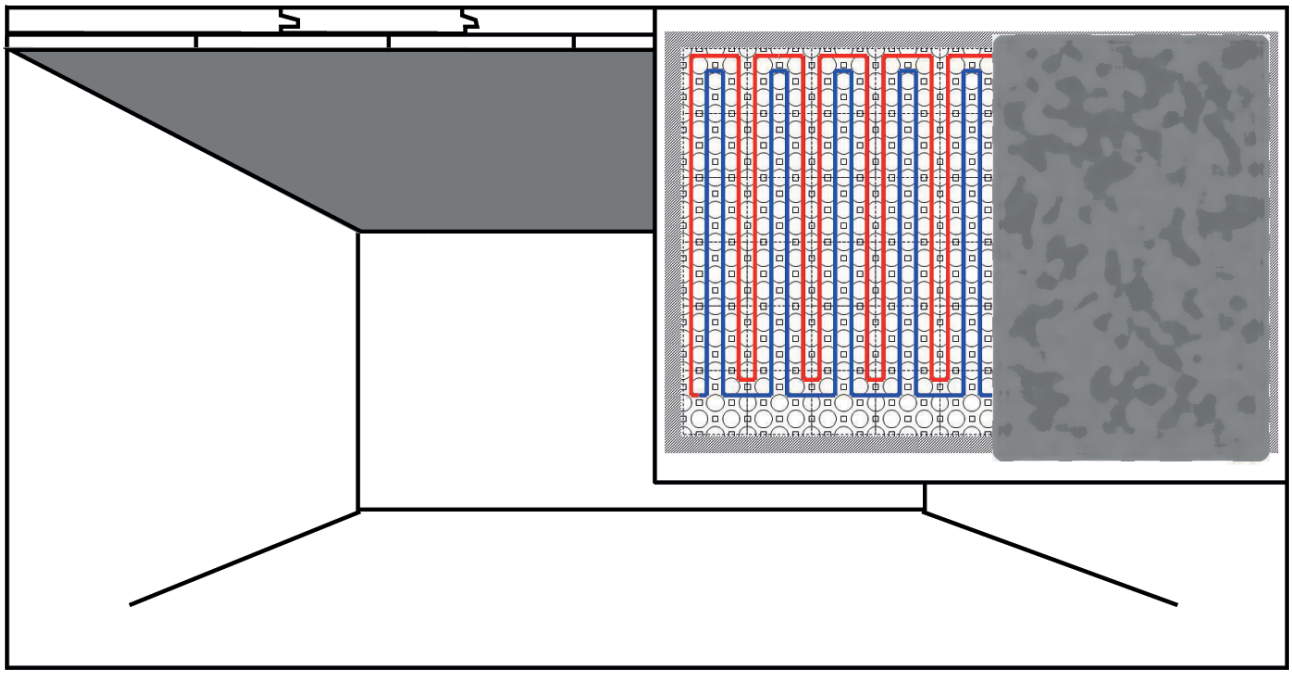
Clay or lime plaster?

The surface can be coated with clay plaster and clay paint as described in steps 12 to 17. Open-pored lime plaster and lime paint are also very suitable for surface coating.
The decisive factor is the permeability of the covering material, so that the sorption capacity of the high-performance clay modules is not significantly affected.
Tests have shown that both materials are on the same level in terms of permeability.

1 OSB/ESB/Cetris boards with tongue and groove as substructure
2 high performance clay modules and clay compensation panels
3 Polybutene pipe, PB 12 x 1.3 mm, oxygen tight according to DIN 4726
4 Clay plaster “Thermo” with integrated mesh
or
Natural lime base plaster with integrated mesh
5 Clayfix clay colour or clay finishing plaster
or
Lime paint Gräfix or natural lime finishing plaster

For ceiling cooling systems with a high power demand or moisture turnover, we generally recommend that the surface coating be applied with our natural lime plaster system.

STEP 12 for ceiling finish with lime plaster



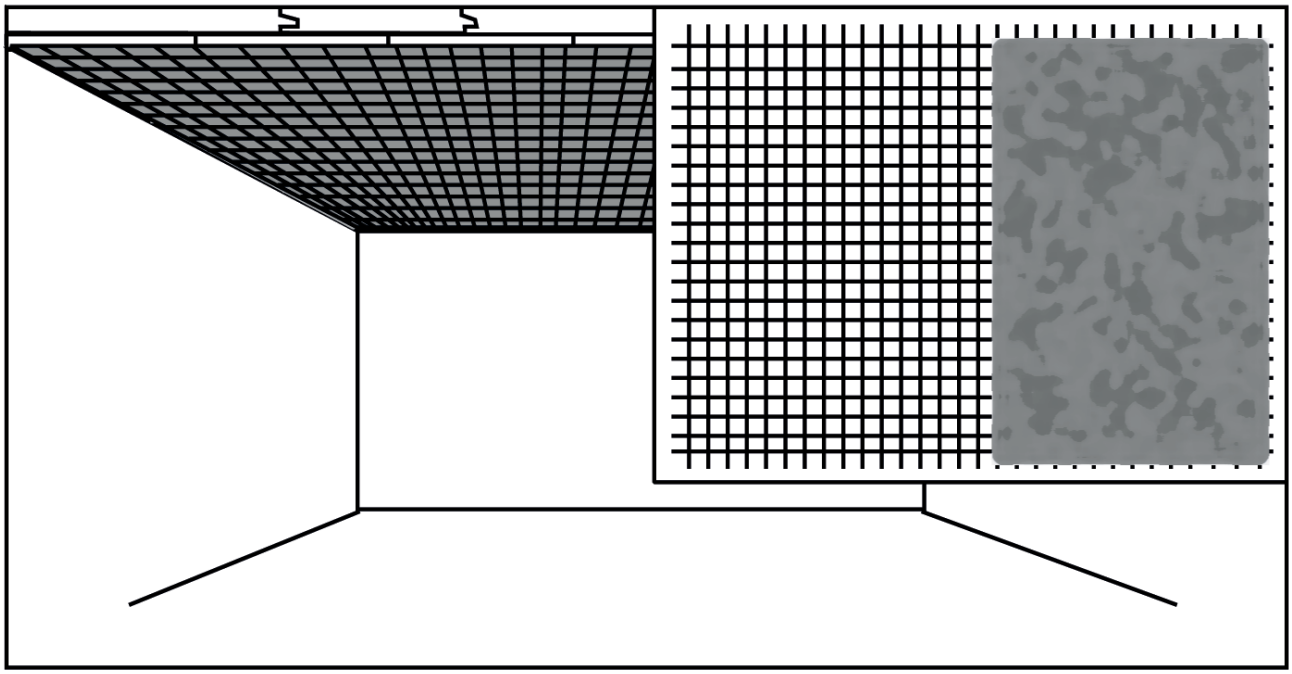
Important: Wet clay panels slightly before applying the plaster!
Forcefully fill grooved tiles, joints and butt joints with Natural Lime Base Plaster HP 66-20.

Important: Peel off the plaster to grain thickness over the entire surface, i.e. fill only the grooves!
When applying by machine, make sure that the free panel grooves are completely filled and the heating pipe is enclosed by plaster. For this purpose, the plaster is manually worked into the surface after pre-spraying and then peeled off.
Important: Allow the surface to dry completely! Ensure good drying conditions during the drying process through good ventilation and sufficient temperature (> 12 °C) of the rooms.

STEP 13 for ceiling finish with lime plaster

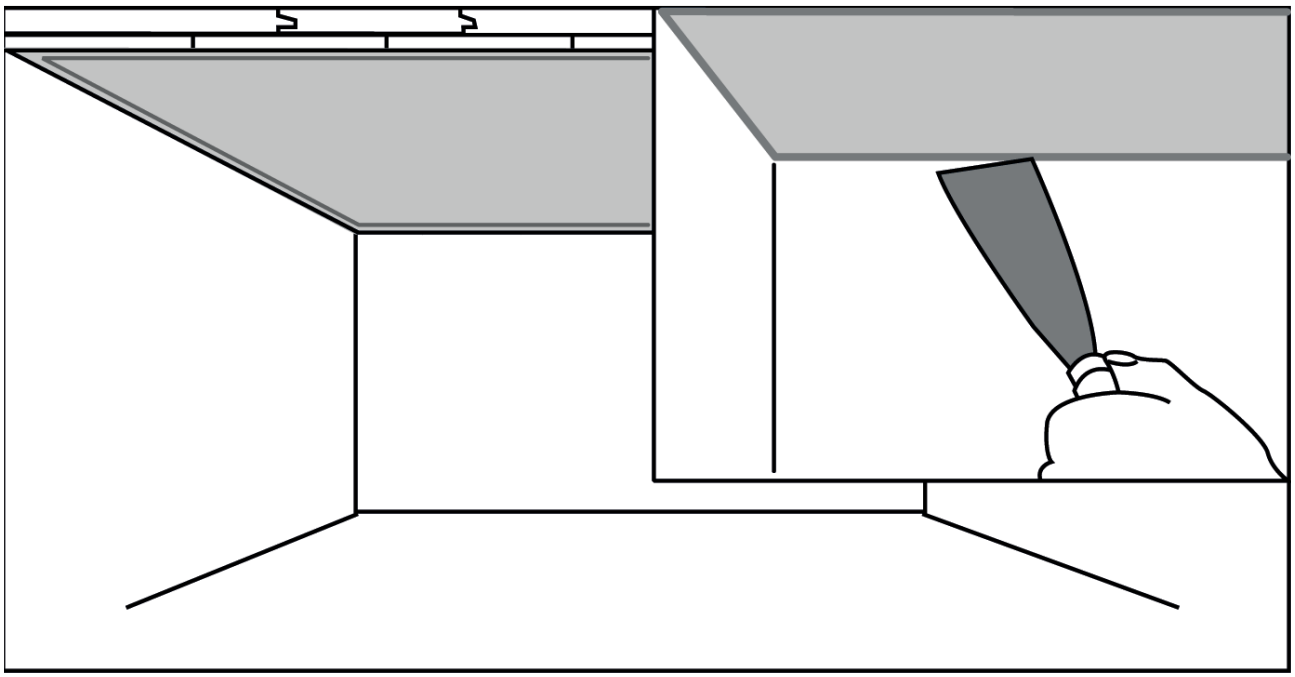
After the first layer of plaster the pressure test of the system takes place. Below you will find the corresponding protocol.

STEP 14 for ceiling finish with lime plaster



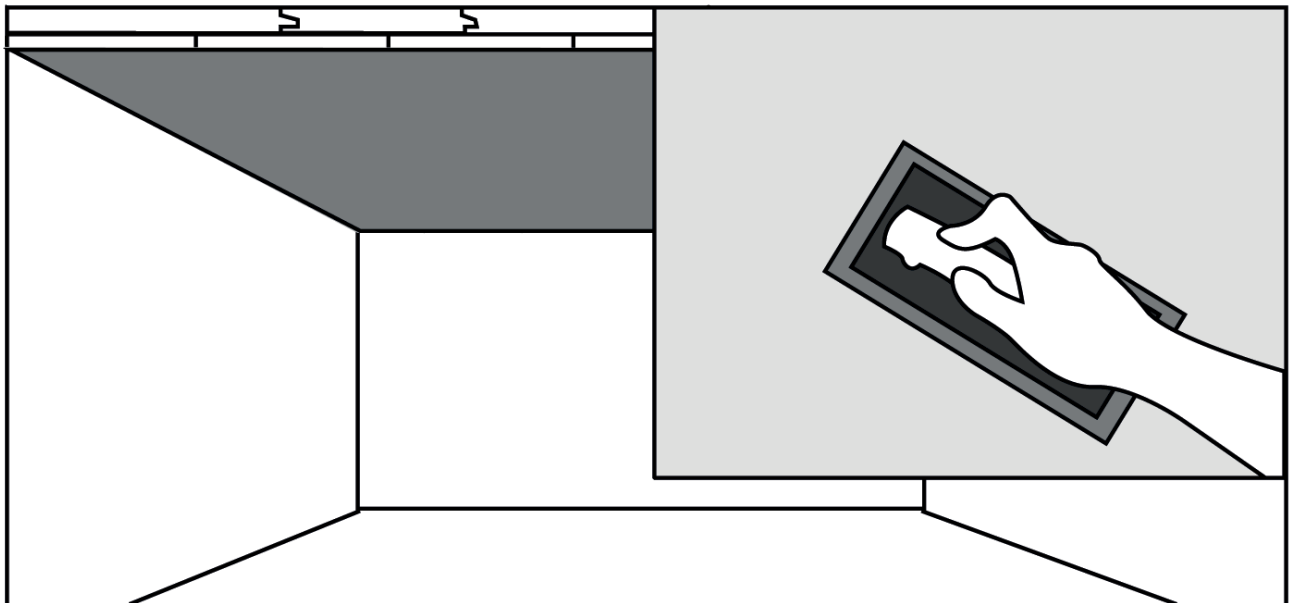
Apply Natural Lime Base Plaster HP 66-20 to a thickness of approx. 4-5 mm, comb open with a toothed trowel (8-10 mm) and place the ArgillaTherm reinforcement fabric over the entire surface with an overlap of at least 10 cm.
After the first layer of plaster has been applied, cover the fabric with a further layer (wet in wet) by approx. 2 mm and smooth it out well.

STEP 15 for ceiling finish with lime plaster



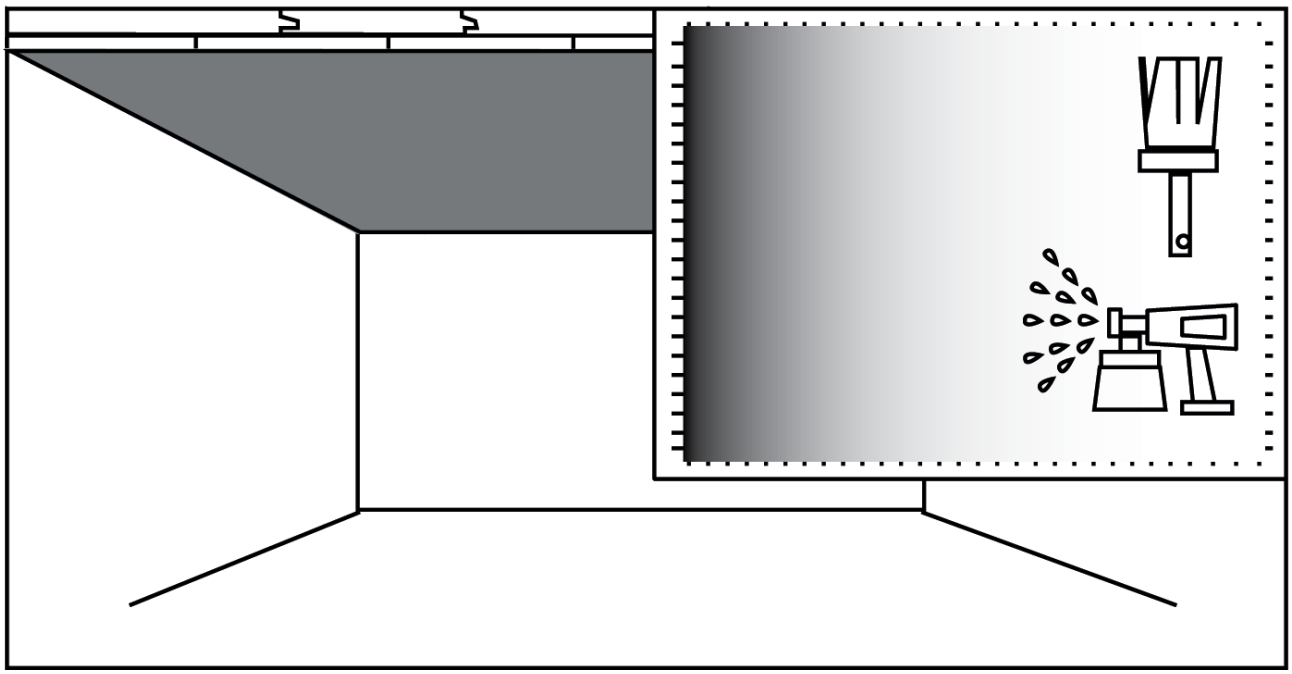
Create a circumferential connection joint in direct connection to the walls by means of a trowel cut. Alternatively, a tear-off strip can also be fitted around the room before the plastering work begins.

STEP 16 for ceiling finish with lime plaster



After setting, the surface is finely rubbed with a sponge trowel. Surface quality for the final coat of mineral paint 689-20 at least Q2.
Important: When drying and setting the plaster layers, ensure good ventilation of the rooms, but do not allow the plaster to dry out too quickly. If temperatures are too low and humidity is too high, the plaster binds too slowly and insufficiently.

STEP 17 for ceiling finish with lime plaster

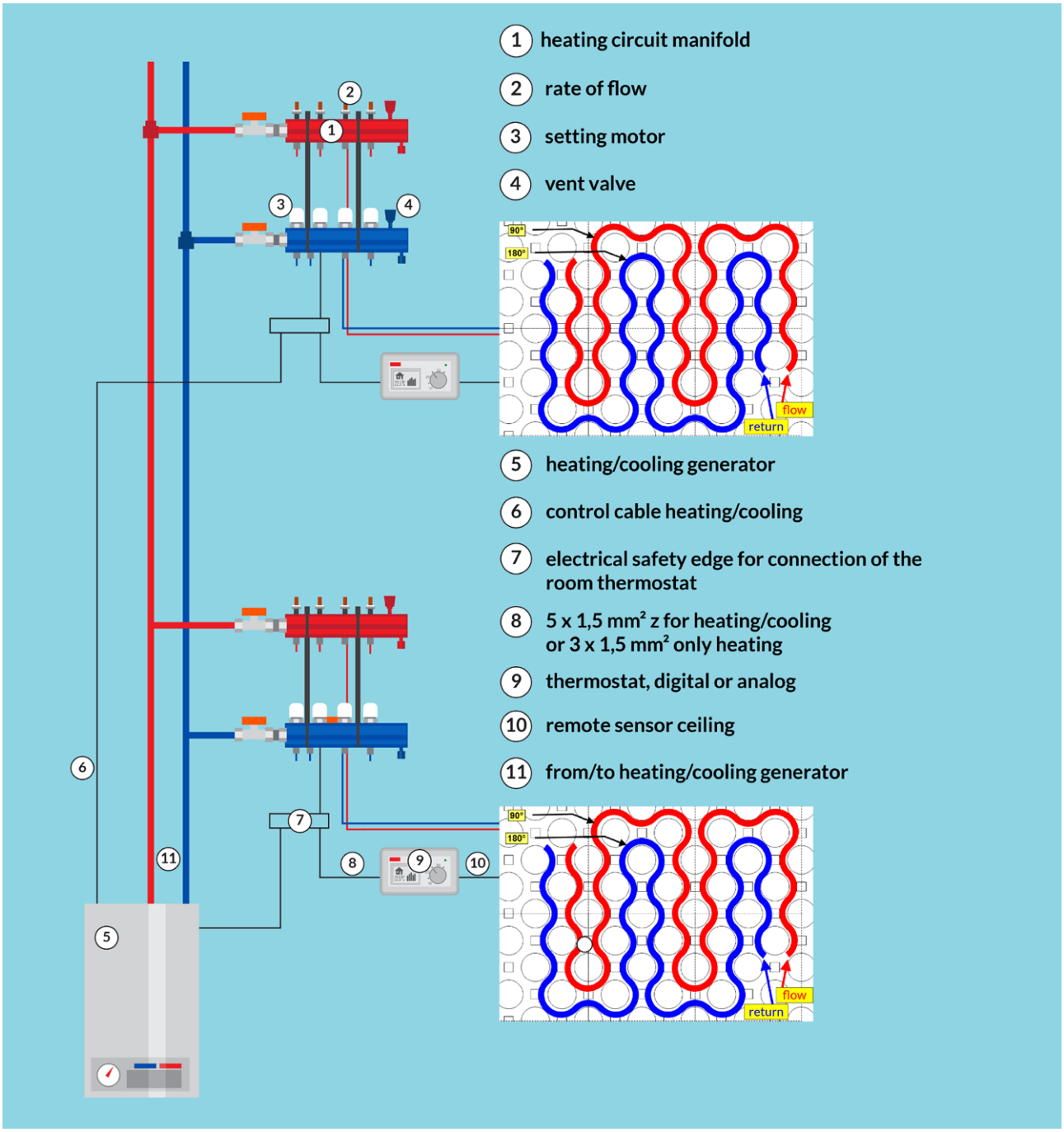


Apply ArgillaTherm 689-20 Mineral Paint medium by brushing, rolling or spraying twice.
Important: Ensure an even grain pattern!

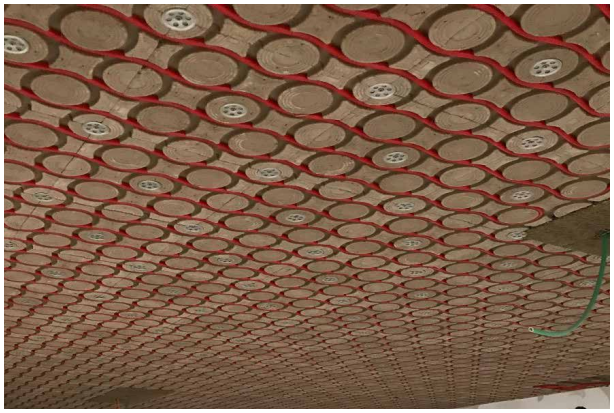
STEP 18

Then the first functional heating takes place according to the following protocol.

Circuit diagram - heating/cooling control

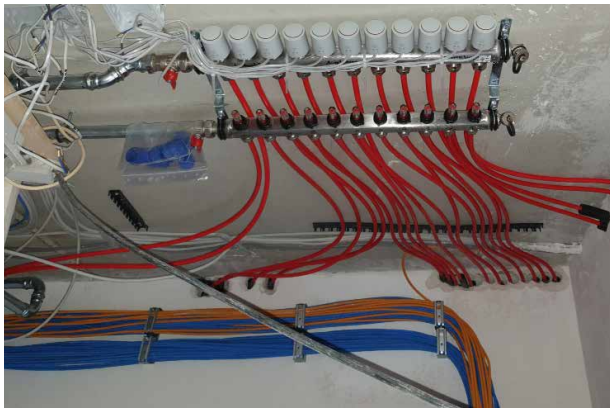


INSTALLATION EXAMPLES



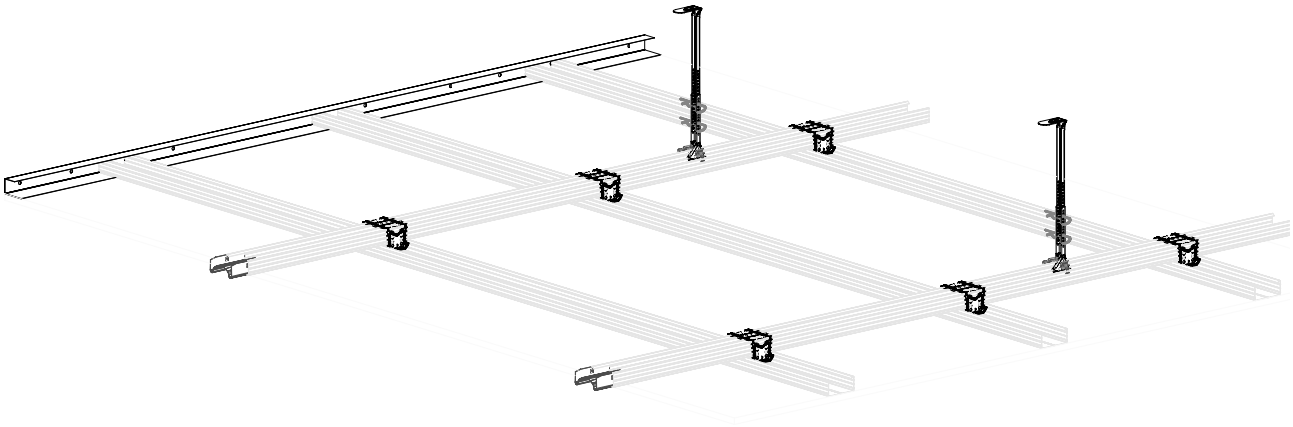
Combination of clay grooved panels and clay compensation panels after pipe laying

Fixing with substructure formwork and various ceiling outlets



Heating circuit distributor on the corridor ceiling, pipe mounting with clamping rails

CEILING SUSPENSION PROTECTOR



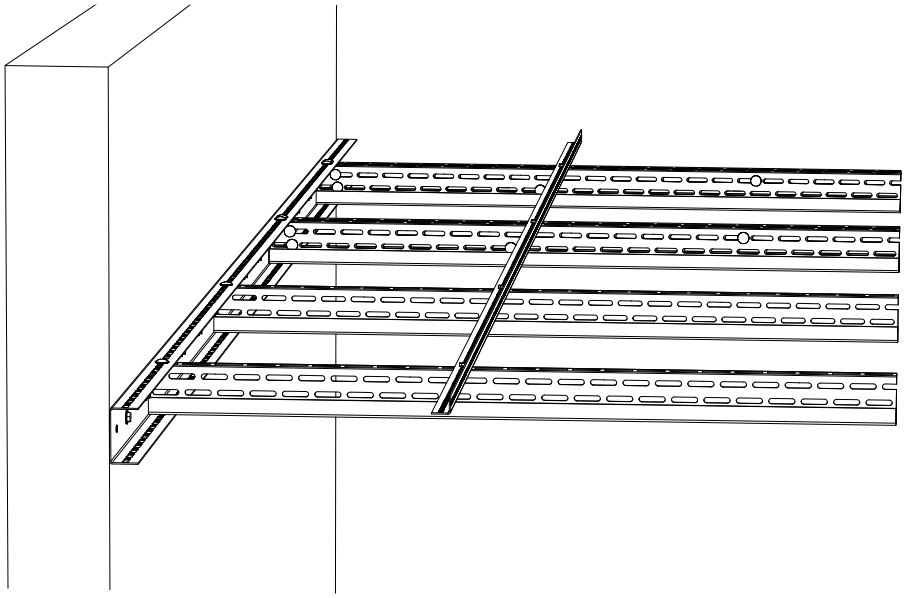
Variant I: 75kg load capacity (for UK made of 22mm OSB/ ESB-panels)

Axial dimension CD basic profile = 600mm
Axial dimension CD support profile = 600mm
Distance Nonius-Pendant = 600mm

Variante II: 85kg load capacity (for UK made of 18mm CETRIS-panels)

Axial dimension CD basic profile = 550mm
Achsmaß CD support profile = 550mm
Distance Nonius-Pendant = 550mm

If required, you can request the type statics!



Self-supporting through wall support with up to 7m span

This variant was used in a Dortmund renovation project to reduce impact noise from 64db to 36db.

SMALL SELECTION OF REFERENCES

NOTES

Protocol leak-test accoding to DIN EN 1264-4

Customer _____

Building / Property _____

Construction phase / floor / apartment _____

Plant section _____

Requirements

The pressure test is based on DIN EN 1264-4 and VOB 18380.
The tightness of the heating/cooling circuits of the panel heating/cooling system is ensured by a compressed air sample after drying of the clay/lime filling layer with the same surface and before application of the clay/lime surface plaster layer with fabric insert. The test pressure, deviating from the VOB, is about 2 times the operating pressure, maximum 4 bar.
The leak test is carried out after flushing and venting the individual heating circuits. It must be ensured that other system components are protected against excessive pressure.

Documentation

Max. premissible operating pressure 4 bar

Test compressed air _____ (min. 3 bar, max. 4 bar)

Test duration _____ h

No pressure drop was detected during the duration of the pressure test. No permanent form changes were determined on any components.

Confirmation

Location, Date	Location, Date	Location, Date
Customer / Owner Stamp / Signature	Site manager / Architect Stamp / Signature	Heating engineer Stamp / Signature

Protocol function heating according to DIN EN 1264-4

Customer _____

Building / property _____

Construction phase / floor / apartment _____

Plant section _____

Requirements

The functional heating must be carried out in accordance with DIN EN 1264-4 in order to check the function and must be carried out after complete drying of the clay/lime finish plaster layer with fabric insert and before applying the surface finish. A flow temperature between 20° C and 25° C must be maintained for at least 3 days and then themaximum design temperature for at least 1 day.
Apply the surface finish after the system has cooled down!

Documentation

Type of heat distribution layer	Clay system panels and clay plaster/lime plaster (Strike through if not applicable.)
End of plastering	_____
Beginning of functional heating (Flow 25° C)	_____
Beginning of functional heating (t_{max})	_____
End of functional heating	_____

Confirmation

_____	_____	_____
Location, Date	Location, Date	Location, Date
_____	_____	_____
Customer / Owner Stamp / Signature	Site manager / Architect Stamp / Signature	Heating engineer Stamp / Signature

water-based clay climate system

“ LIFE IS TOO SHORT
FOR A BAD INDOOR CLIMATE!

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