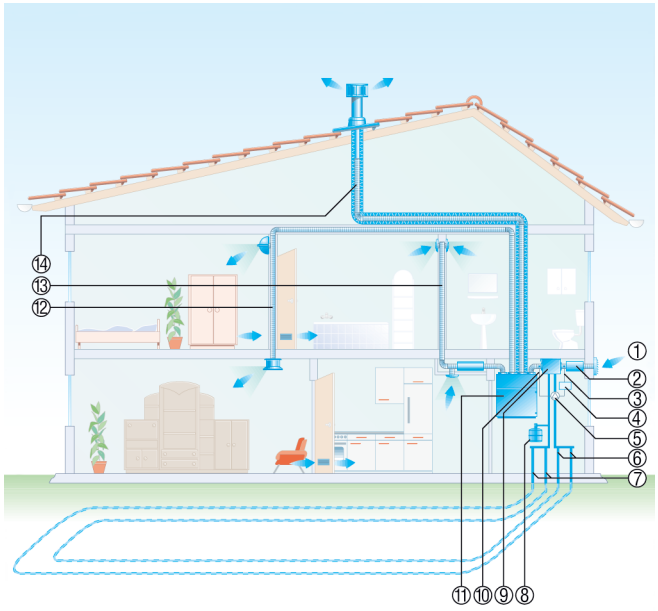
FUNCTIONAL DESCRIPTION

EW-Z

System description of brine earth heat exchanger

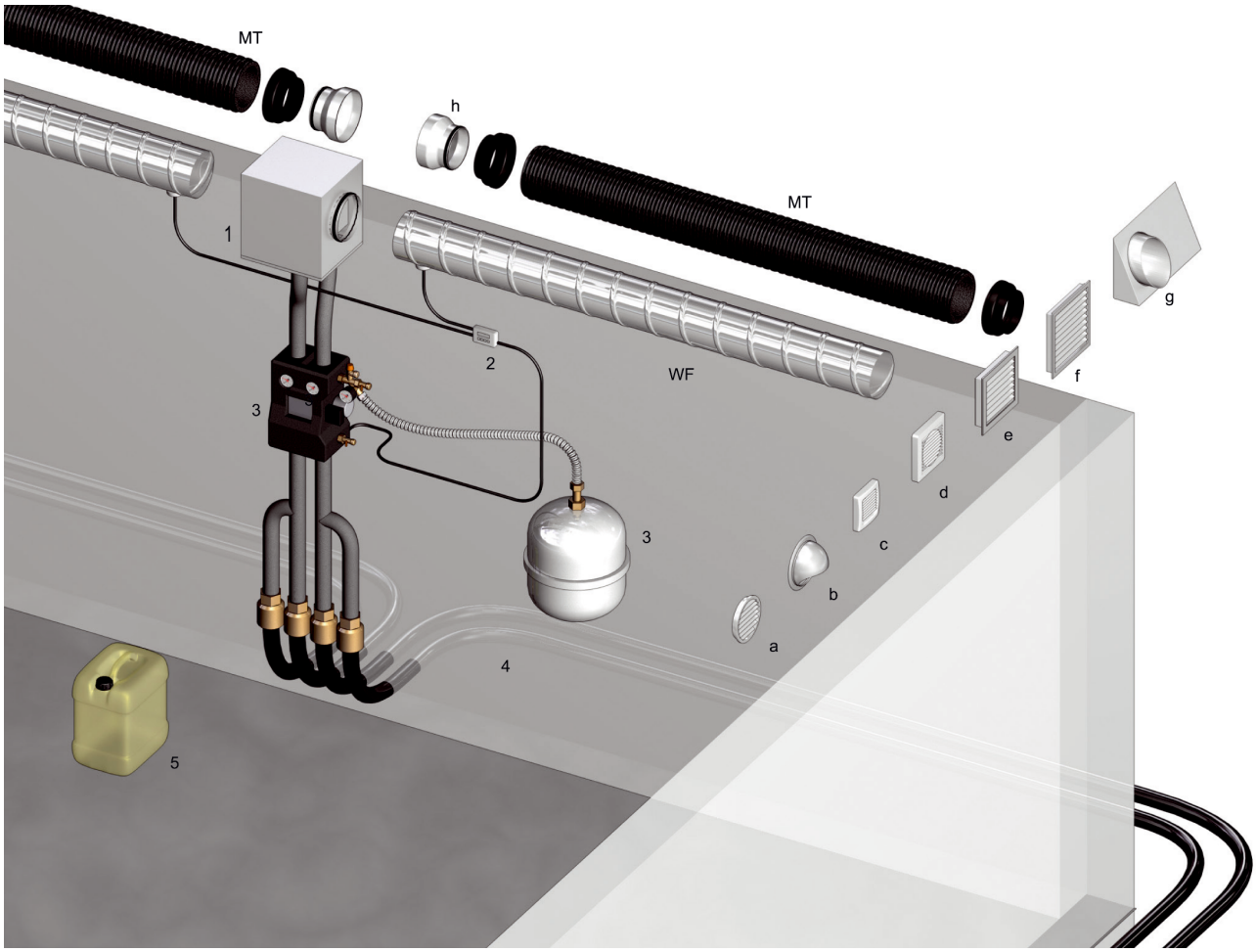
- Ventilation units for heat recovery run the risk of the heat exchanger icing up in winter. This results in condensation freezing if the temperature of the supplied outside air is around 0°C. This icing greatly reduces the efficiency of the heat exchanger. In extreme cases, the supply air temperature required can no longer be reached.
- To prevent this effect, the outside air has to be heated before it reaches the ventilation unit's heat exchanger. An ideal and effective way of doing this involves preheating with a earth heat exchanger. This makes use of the earth's heat from a depth not encountering frost.
- The simplest solution is to feed the outside air through a duct laid in the ground before it reaches the ventilation unit. This method does however involve risks in terms of air hygiene and any maintenance work which may be required.
- The brine earth heat exchanger from MAICO avoids these risks through the use of high-quality technology. The outside air is not preheated directly in the ground but in a brine-air heat exchanger upstream of the ventilation unit. The brine for the brine-air heat exchanger on the other hand is fed through a closed circuit in the ground. There are no hygiene issues with this solution and access to the outside air duct is possible at all times, as it is not laid in the ground.
- In detail, the MAICO brine earth heat exchanger works as follows:
  - A sensor measures the outside air temperature. If this drops below a predefined value limit, the brine earth heat exchanger pump starts up. This pumps a glycol-water mixture through the 2 parallel ducts of the brine circuit, which have been laid in the ground. The ducts are at a depth of between 1.2 and 1.5 metres. This guarantees that the surrounding earth is free of frost. The brine that is being pumped through also takes on this temperature.
  - This heat is transferred to the outside air that is being pumped in simultaneously, in a brine-air heat exchanger upstream of the ventilation unit. In this way, the outside air reaches a temperature above freezing. This reliably prevents the icing-up of the downstream air-air heat exchanger in the ventilation unit.
  - Furthermore, the same principle is used in summer to cool the outside air down. During the summer months, the ground is cooler than the hot air. Then the outside air transfers its heat to the brine in the brine-air heat exchanger, making itself cooler in the process.
- The brine earth heat exchanger from MAICO is made up of the following components:
  - EW-S Brine pump controller
  - EW-K 225 Brine-air heat exchanger
  - EW-Z Accessories set
  - EW-D 100 m PE pressure duct
  - EW-G 20 litres of Glykosol N
  - EW-F Replacement air filter

EW-Z



① Outside air
② Air filter
③ Outside air temperature sensor 1, before the brine-air heat exchanger
④ EW-S brine pump controller
⑤ Brine pump
⑥ Ducting with brine (forward flow)
⑦ Ducting with brine (return flow)
⑧ Expansion tank membrane
⑨ Brine-air heat exchanger
⑩ Outside air temperature sensor 2, after the brine-air heat exchanger
⑪ Ventilation unit
⑫ Supply air
⑬ Exhaust air
⑭ Outgoing air

EW-Z



1 Brine-air heat exchanger EW-K 225

2 Brine pump controller EW-S

3 Accessories set: Ready-made pump group, EW-Z

Pressure barometer, expansion tank membrane, etc.

4 Pressure duct, 100 m EW-D

5 Glykosol N EW-G

More ventilation components

MT MAICO Therm thermally insulated ventilation duct system

WF - Folded spiral-seams duct

a External grille, aluminium, round -

b Stainless steel cowl LH-V2A 12

c External grille SG 120

d External grille SG 15

e External grille, aluminium, angular -

f External grille, aluminium or galvanised sheet steel -

g Combi-wall connections KWH 16

h Reducer -