

# Brine/Water

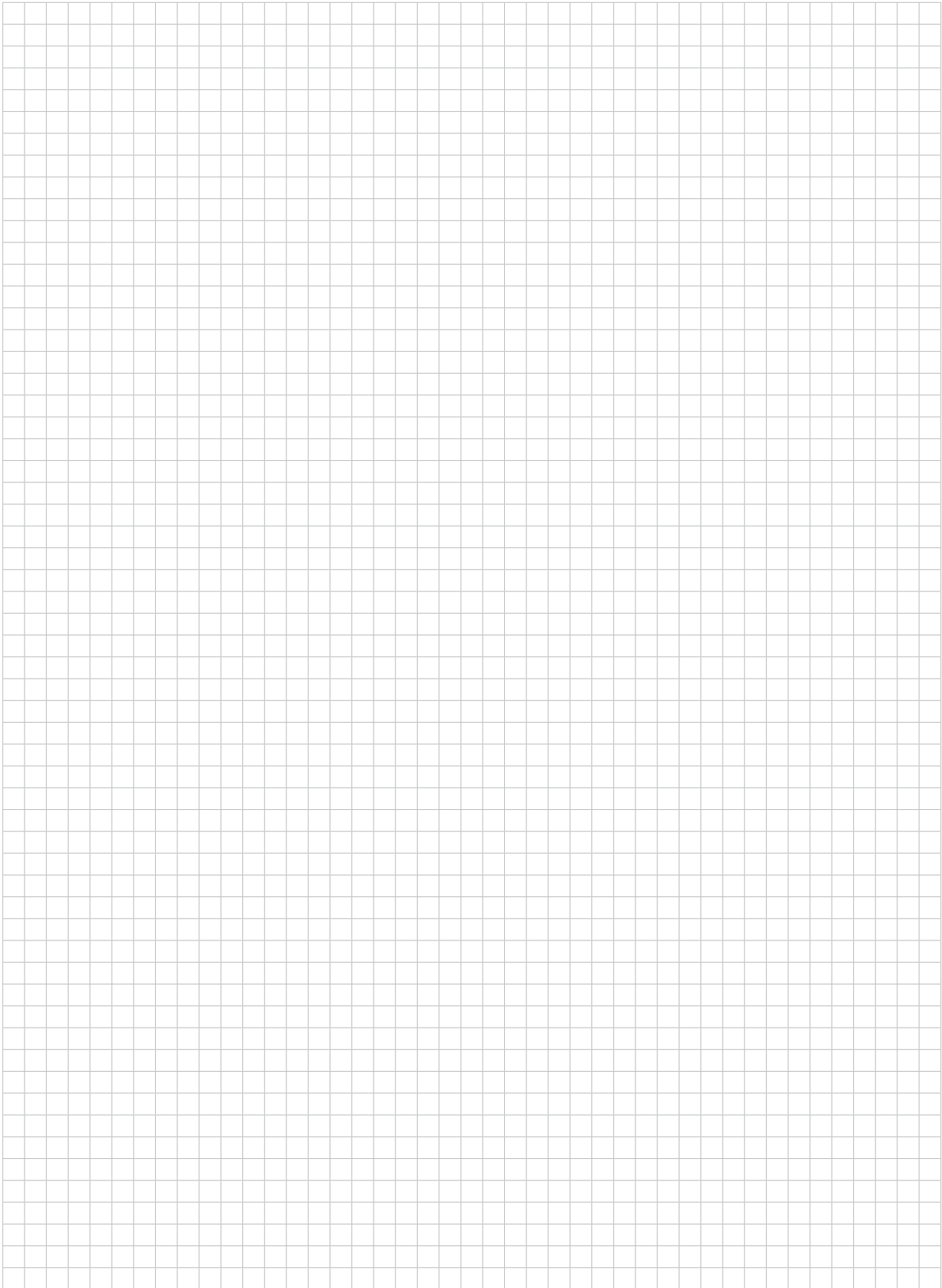
# Optiheat Inverta TWW

OH I 4esr TWW



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### OH I 4esr TWW, brine/water with Optiplus 3 controller

|   |           |       |                                |           |           |
|---|-----------|-------|--------------------------------|-----------|-----------|
| Heat pump type  |           |       | Optiheat Inverta OH I 4esr TWW |           |           |
| Model   |           |       | All in One                     |           |           |
| Controller Optiplus   |           |       | integrated                     |           |           |
| WPZ-test number   |           |       | CH-HP-00616                    |           |           |
| Standard performance data (as per EN 14511:2013, part load operation 60 Hz) |           |       | W 35                           | W 45      | W 55      |
| Heat output   | at B0     | kW    | 3.8                            | 3.5       | 3.2       |
| Power range   | min./max. | kW    | 2.0 - 7.5                      | 1.8 - 6.9 | 1.6 - 5.8 |
| COP   | at B0     | -     | 4.7                            | 3.5       | 2.7       |
| El. power consumption   | at B0     | kW    | 0.8                            | 1.0       | 1.2       |
| Cooling output  | at B0     | kW    | 3.0                            | 2.5       | 2.0       |
| Standard performance data (as per EN 14511:2013, part load operation 40 Hz) |           |       | W 35                           | W 45      | W 55      |
| Heat output   | at B0     | kW    | 2.5                            | 2.3       | 2.1       |
| COP   | at B0     | -     | 4.6                            | 3.5       | 2.6       |
| El. power consumption   | at B0     | kW    | 0.6                            | 0.7       | 0.8       |
| Cooling output  | at B0     | kW    | 2.0                            | 1.6       | 1.3       |
| Standard performance data Cas per EN 14511:2013, part load operation 50 Hz) |           |       | W 35                           | W 45      | W 55      |
| Heat output   | at B0     | kW    | 3.1                            | 2.9       | 2.6       |
| COP   | at B0     | -     | 4.7                            | 3.5       | 2.6       |
| El. power consumption   | at B0     | kW    | 0.7                            | 0.8       | 1.0       |
| Cooling output  | at B0     | kW    | 2.5                            | 2.1       | 1.6       |
| Energy class / Performance data (average climatic conditions)               |           |       |                                |           |           |
| Energy efficiency class 35°C / 55°C   |           |       | A+++/A++                       |           |           |
| Rated thermal output Prated 35°C / 55°C                                     |           | kW    | 7.0/5.9                        |           |           |
| Energy efficiency ηS 35°C / 55°C  |           | %     | 212/144                        |           |           |
| SCOP (according to EN 14825) 35°C / 55°C                                    |           |       | 5.5/3.8                        |           |           |
| Sound (at B0/W55)   |           |       |                                |           |           |
| Sound power level <sup>2)</sup>   | Lwa       | dB(A) | 44                             |           |           |
| Sound pressure level in 1 m <sup>3)</sup>                                   | Lpa       | dB(A) | 29                             |           |           |
| Field of application/application limits                                     |           |       |                                |           |           |
| Heat source temperature   | min./max. | °C    | -6 / +20                       |           |           |
| Heat flow temperature   | min./max. | °C    | +25 / +62                      |           |           |
| Vaporiser, brine side (at B0/W35)   |           |       | minimum                        | nominal   | maximum   |
| Volume flow minimum / nominal (ΔT 3K EN 14511) / maximum <sup>4)</sup>      |           | m³/h  | 0.35                           | 0.95      | 1.75      |
| Pressure drop via heat pump   |           | kPa   | 1                              | 6         | 27        |
| Free compression <sup>5)</sup>  |           | kPa   | 72                             | 69        | 25        |
| Medium water / ethylene glycol  |           | %     | 75 / 25                        |           |           |
| Built-in brine pump   |           |       | UPM3 25-75                     |           |           |

1) Energy class for climate area medium / space heating low temperature application

2) As per EN9614-2 and EN12102

3) Sound pressure = free field value

4) For installation planning: see diagram

5) Free compression at highest pump rotation speed, pumps output-regulated

Observe local conditions and regulations

### OH I 4esr TWW, brine/water with Optiplus 3 controller

| Condenser, heater side (at B0/W35)  |  |      | minimum    | nominal | maximum |
|---|--|------|------------|---------|---------|
| Volume flow minimum / nominal ( $\Delta T$ 5K EN 14511) / maximum <sup>4)</sup> |  | m³/h | 0.35       | 0.65    | 1.3     |
| Pressure drop via heat pump   |  | kPa  | 2          | 6       | 23      |
| Free compression <sup>5)</sup>  |  | kPa  | 72         | 69      | 40      |
| Medium water  |  | %    | 100        |         |         |
| Built-in heating pump   |  |      | UPM3 25-75 |         |         |

| Dimensions/connections/miscellaneous      |           |         |                  |
|---|-----------|---------|------------------|
| Dimensions                                | D x W x H | mm      | 700 x 600 x 1900 |
| Total weight                              |           | kg      | 300              |
| Heating circuit connection                | AG        | Inch    | 1"               |
| Heat source connection                    | AG        | Inch    | 1"               |
| Cooling agent / filling quantity          |           | -- / kg | R-410A / 1.35    |
| GWP / CO <sub>2</sub> e                   |           | --- / t | 2090/2.8         |
| Refrigeration oil filling quantity        |           | l       | 0.4              |
| Safety valve (brine / heating)            | p         | bar     | 3.0              |
| Switching point brine pressure controller | p         | bar     | 0.4              |

| Domestic hot water tank  |  |         |      |
|--|--|---------|------|
| Net volume   |  | l       | 220  |
| Capacity as per EN16147 <sup>6)</sup><br>(equiv. tap temperature 40°C) |  | l       | 310  |
| Heat loss in stand-by mode as per EN12897 <sup>6)</sup>                |  | kWh/24h | 1.15 |
| Max. operating pressure storage tank                                   |  | bar     | 6    |

| Electrical data   |  |    |                            |
|---|--|----|----------------------------|
| Operating voltage   |  |    | 1 / N / PE / 230 V / 50 Hz |
| External fuse protection unit   |  | AT | 13                         |
| Power el. emergency heating element 230 V                             |  | kW | 2.5                        |
| Max. operating current unit / emergency heating element <sup>7)</sup> |  | A  | 11.0 / 11.5                |
| Starting current (soft start speed control)                           |  | A  | 7                          |
| Protection class  |  | IP | 20                         |
| Max. power consumption circulation pumps                              |  | kW | 0.1                        |
| Max. power consumption total  |  | kW | 2.6                        |

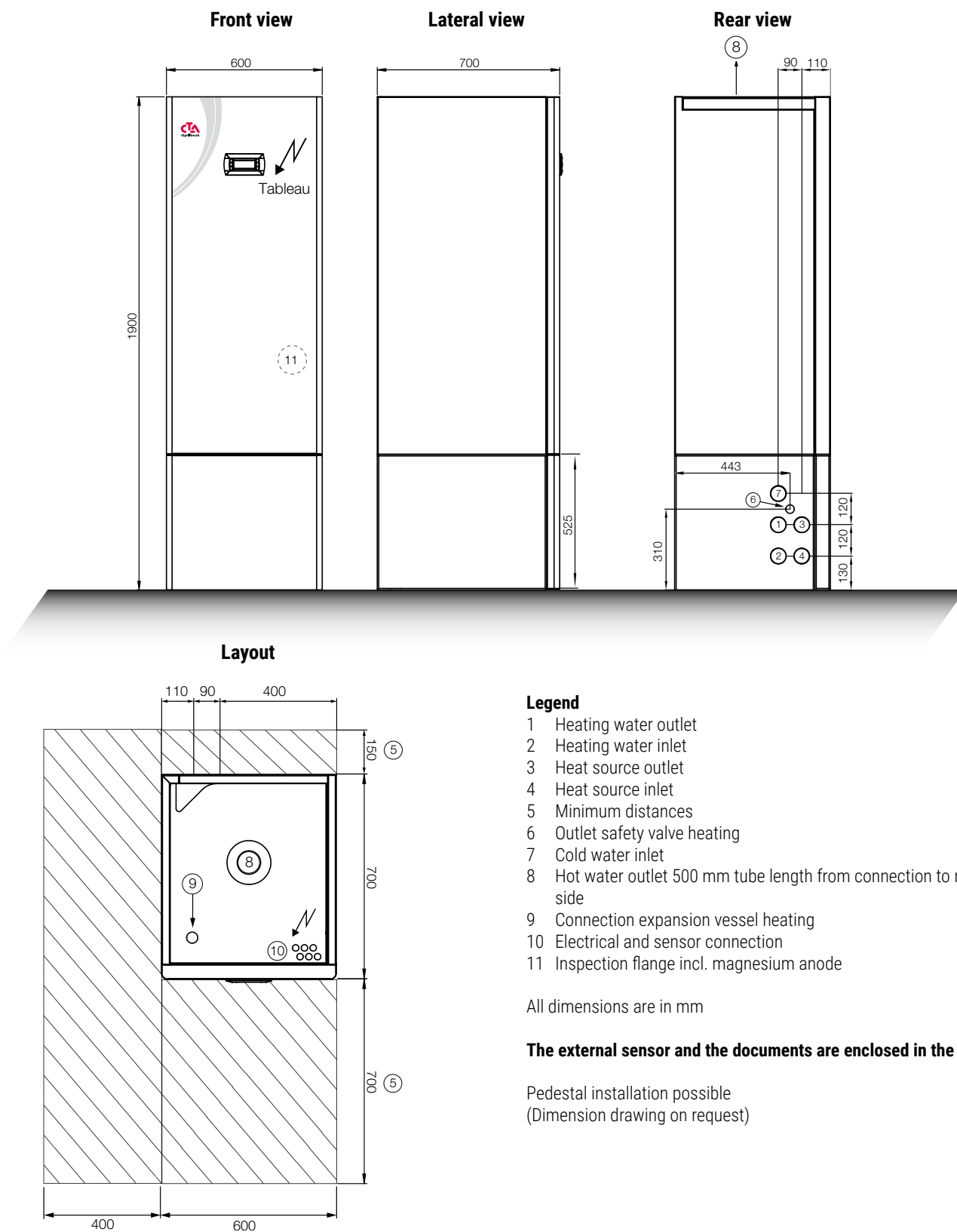
6) With DHW tank charged on 60°C

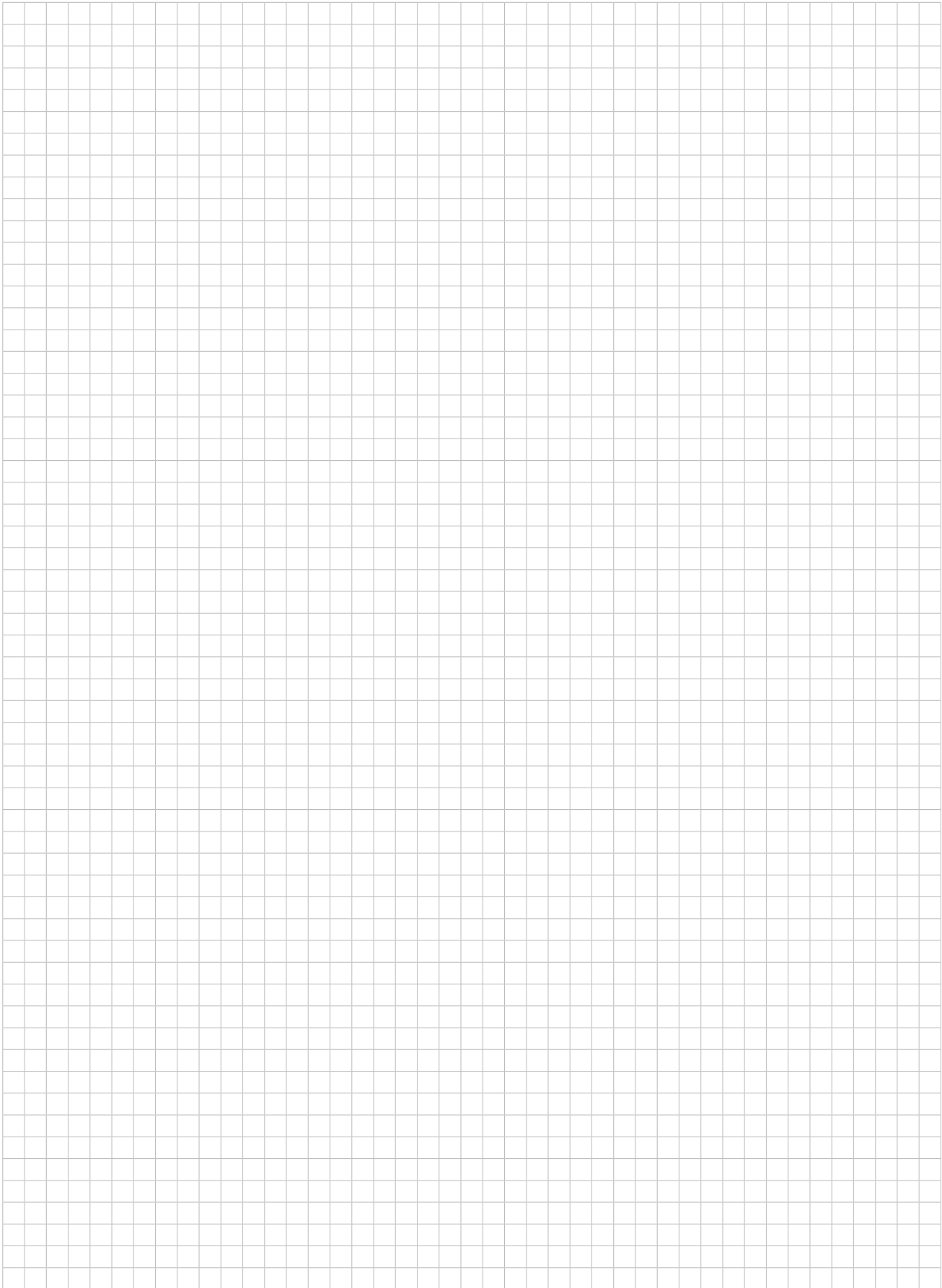
7) Heat pump operation and emergency heating element reciprocally locked

Observe local conditions and regulations

# Dimension drawings Optiheat Inverta TWW

OH I 4esr TWW





# Power curves

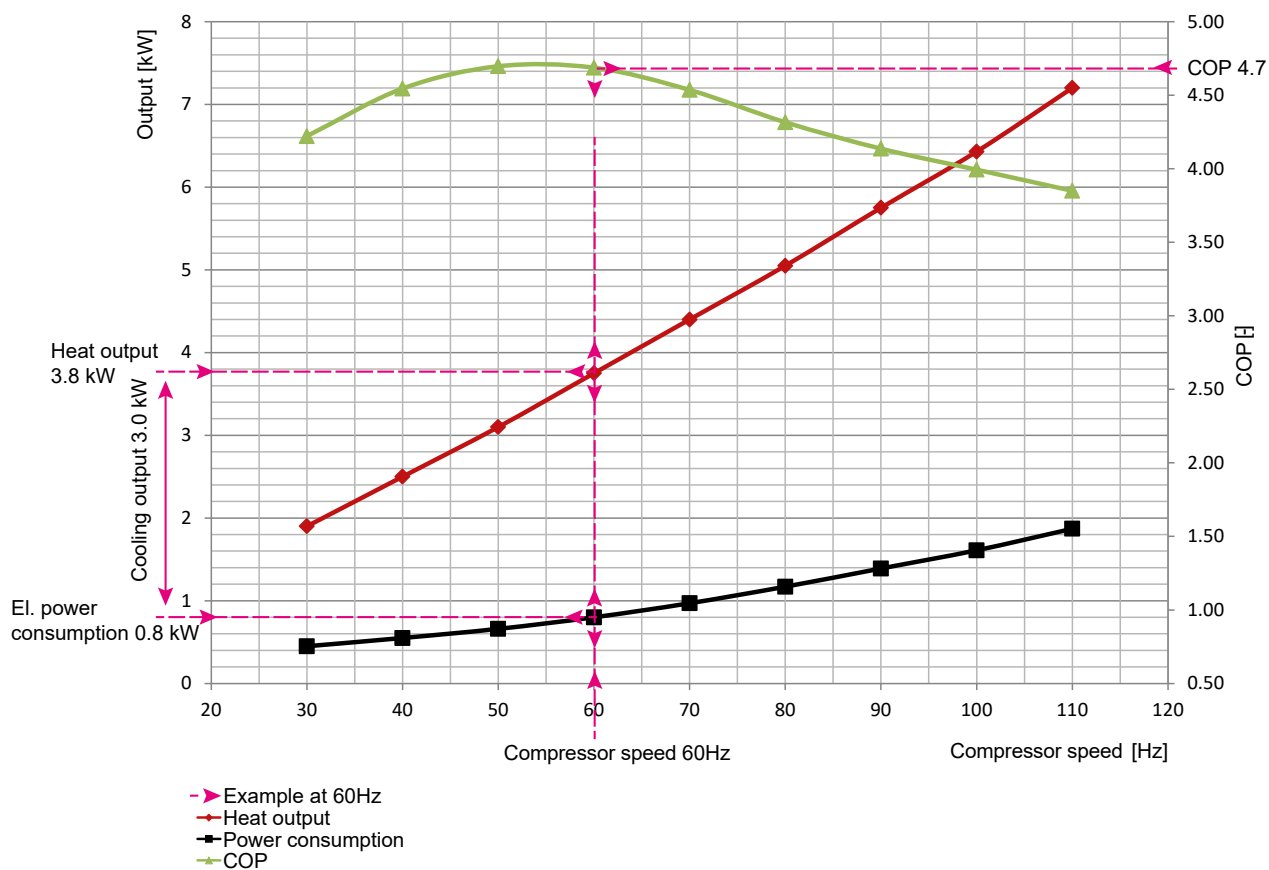
## Optiheat Inverta TWW

OH I 4esr TWW with Optiplus 3 controller

Volume flow source minimum / nominal ( $\Delta T$  3K EN 14511) / maximum    0.34 / 0.90 / 1.90 m<sup>3</sup>/h  
 Volume flow heater minimum / nominal ( $\Delta T$  5K EN 14511) / maximum    0.35 / 0.65 / 1.30 m<sup>3</sup>/h

Performance specifications as per EN 14511

Heat output in kW



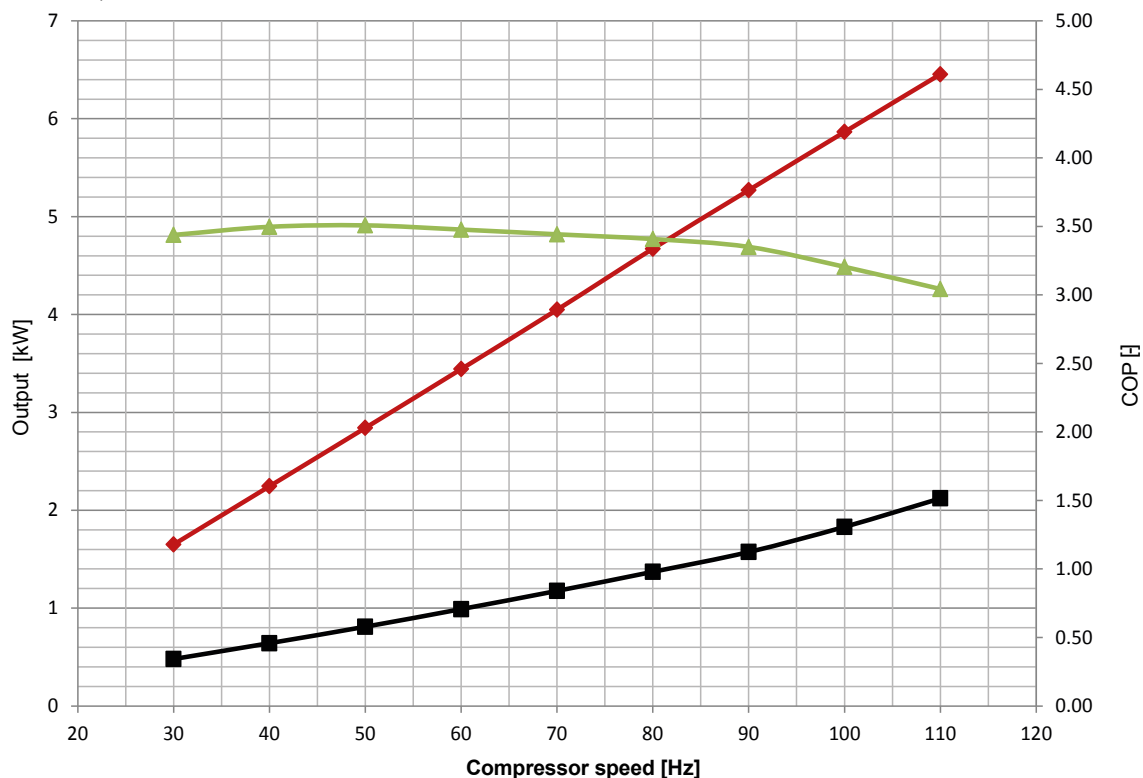


# Power curves

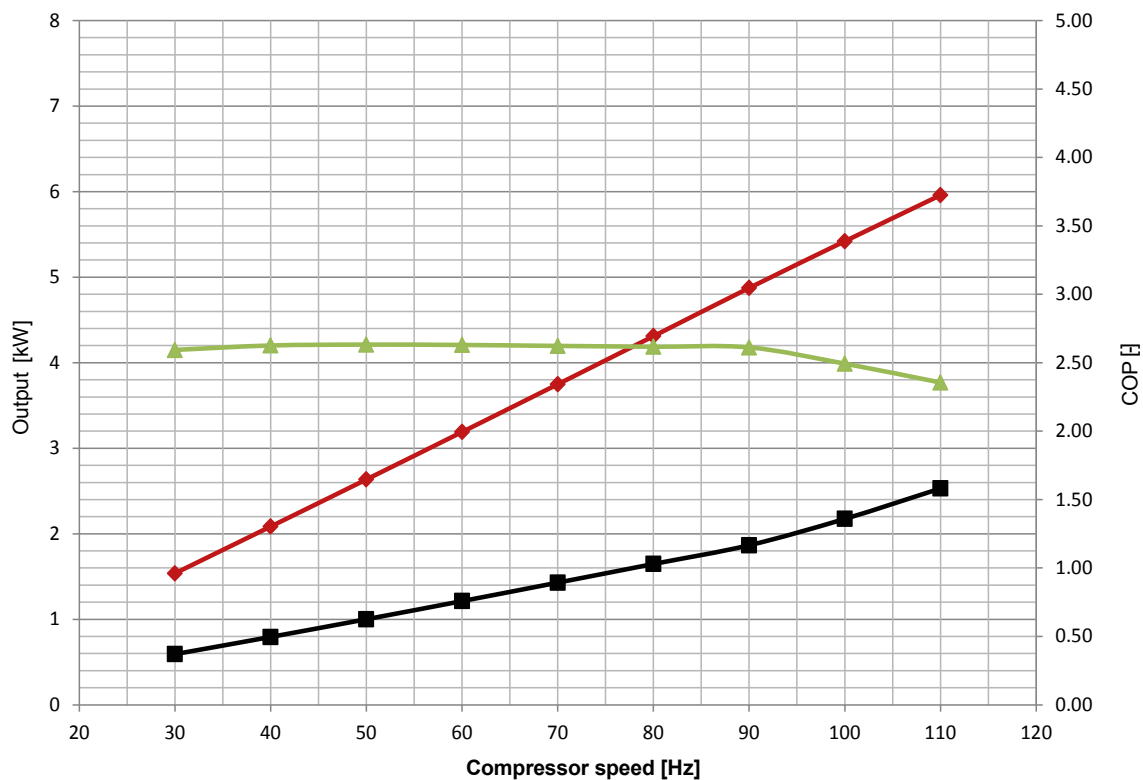
## Optiheat Inverta TWW

### OH I 4esr TWW with Optiplus 3 controller

Heat output in kW at B0/W45



Heat output in kW at B0/W55

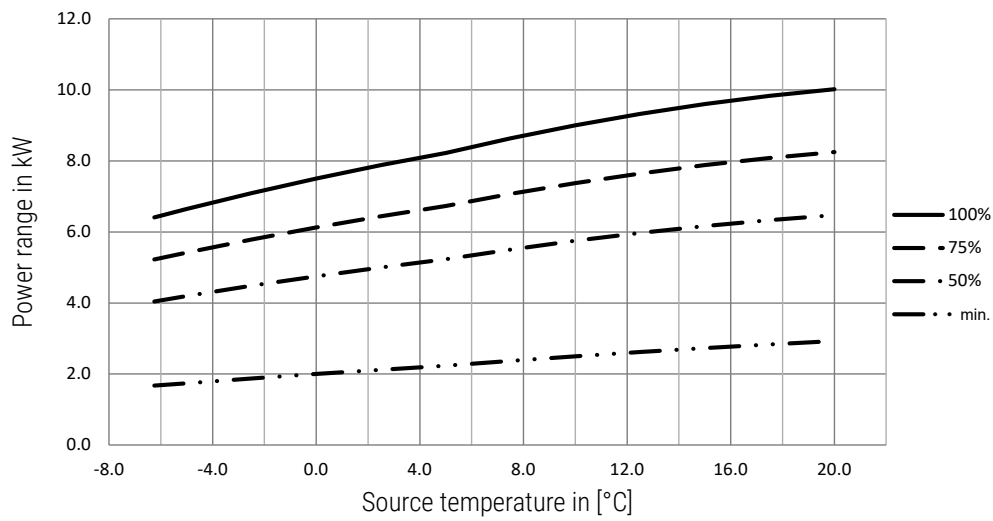


◆ Heat output  
 ■ Power consumption  
 ▲ COP

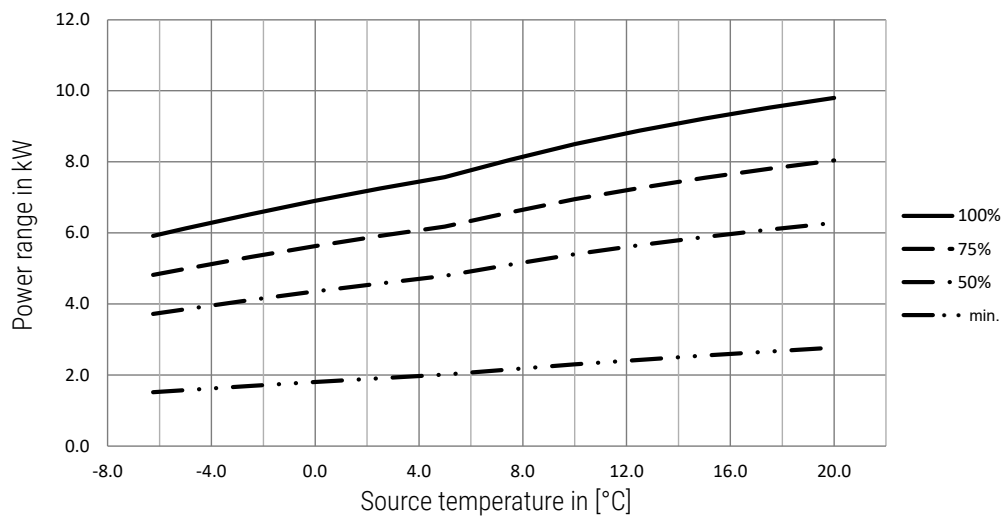
# Heat output

## Optiheat Inverta TWW OH I 4esr TWW

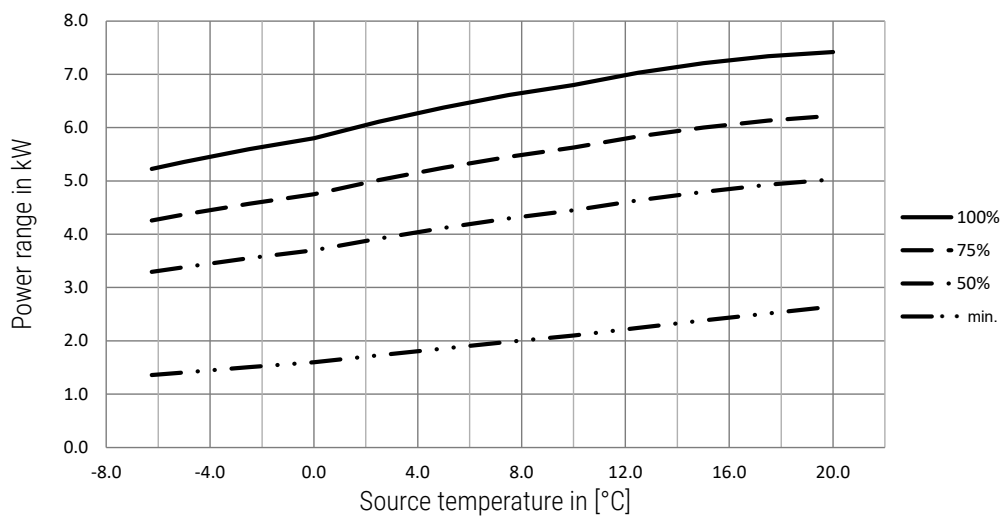
Heat output at flow temperature W35



Heat output at flow temperature W45



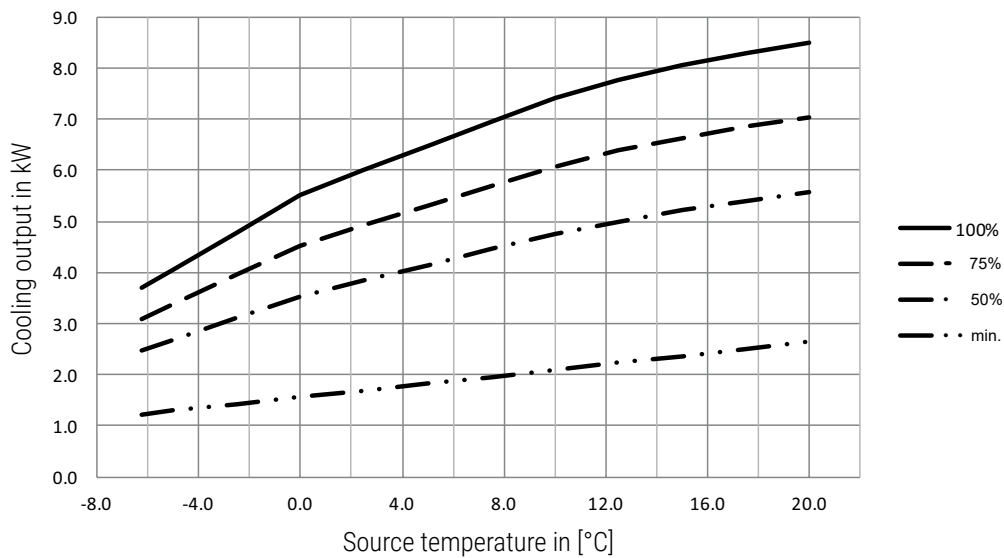
Heat output at flow temperature W55



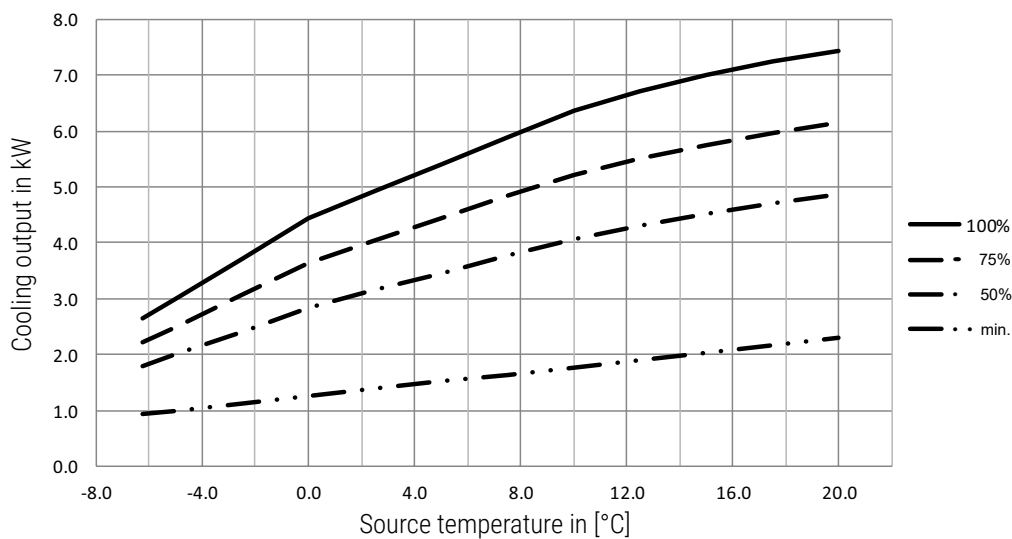
# Cooling output

## Optiheat Inverta TWW OH I 4esr TWW

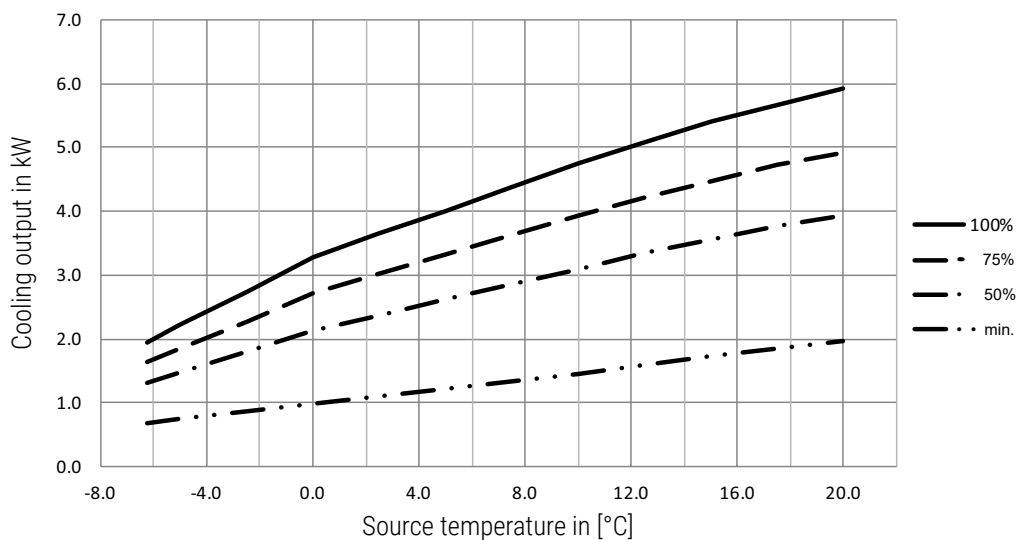
Cooling output at flow temperature W35



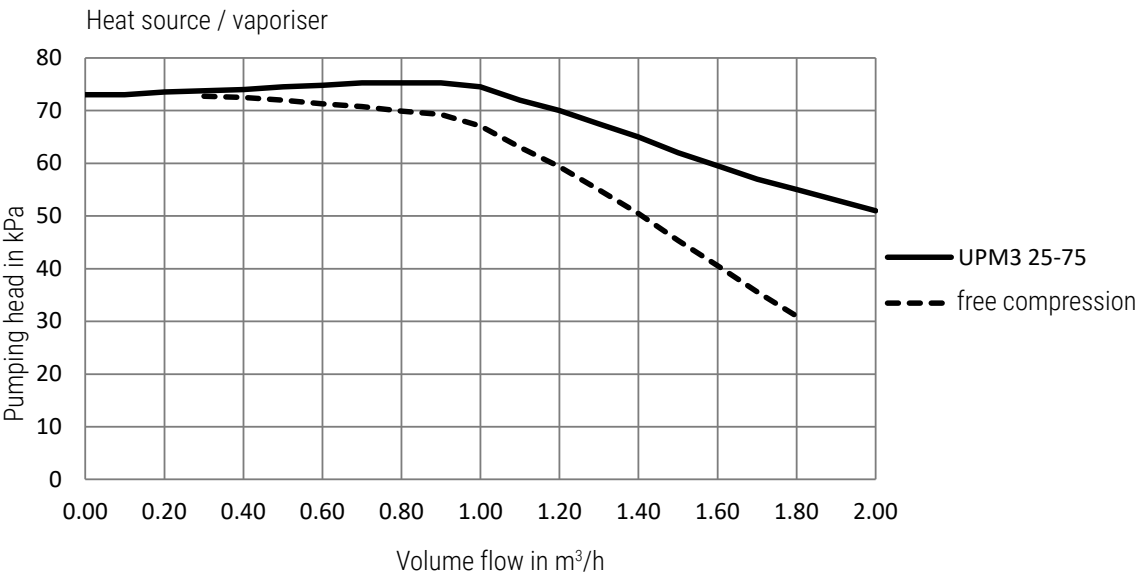
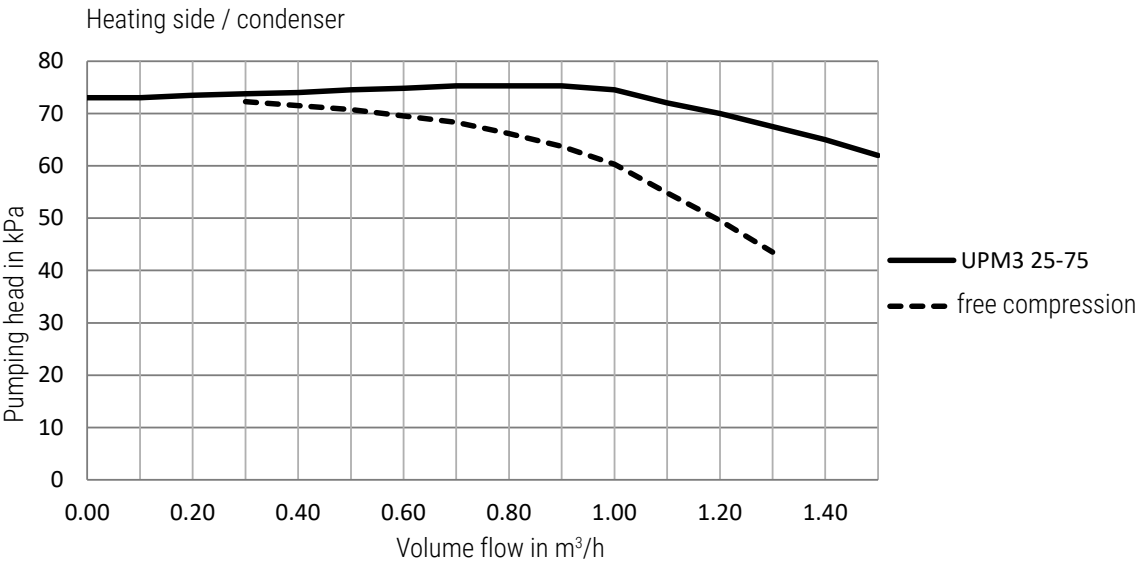
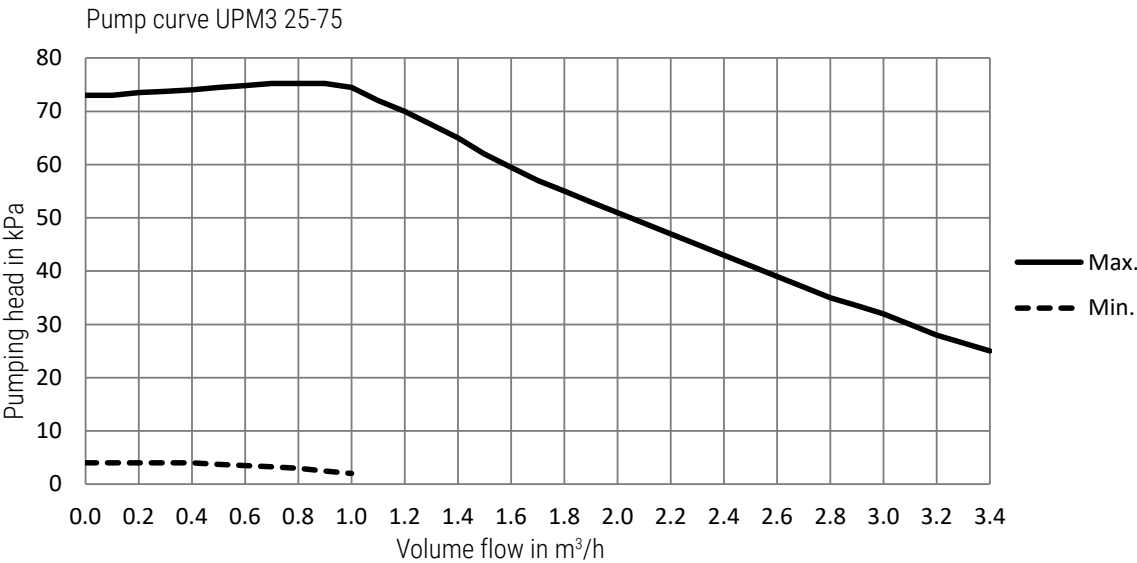
Cooling output at flow temperature W45



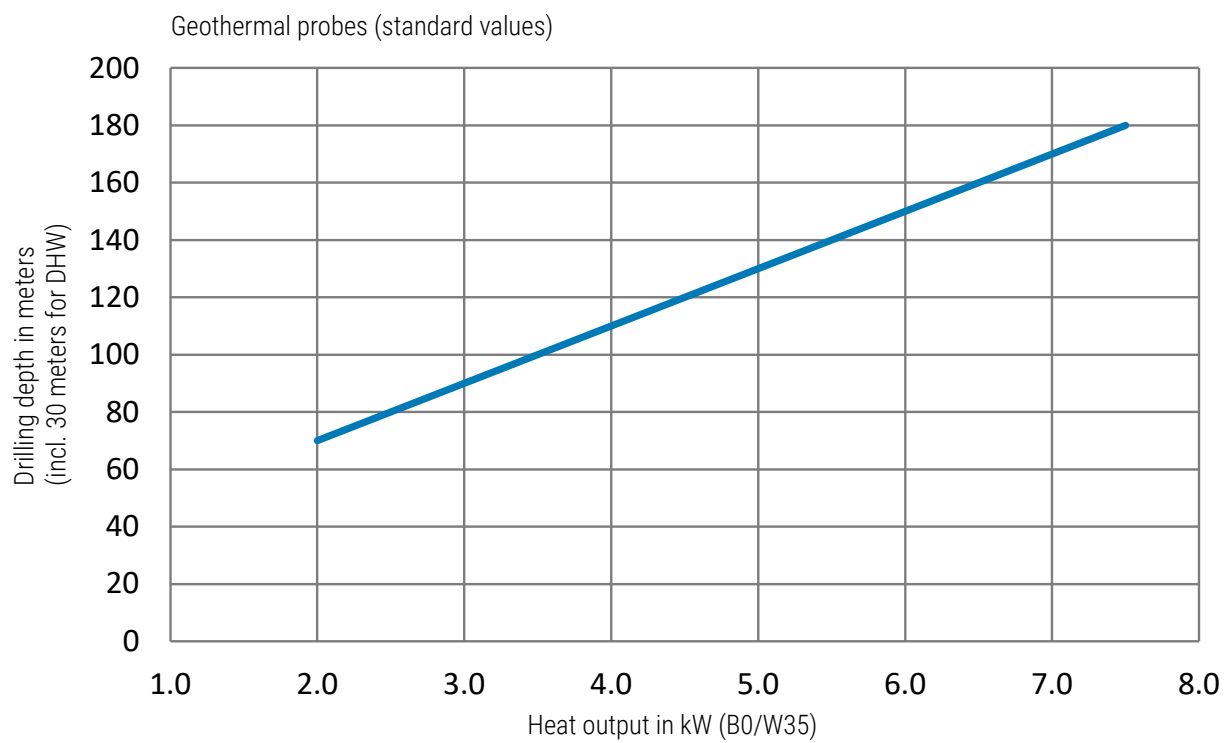
Cooling output at flow temperature W55



# Volume flow and pressure loss circulation pump Optiheat Inverta TWW OH I 4esr TWW



Standard values geothermal probes  
Optiheat Inverta TWW OH I 4esr TWW



**NOTE** Remark on the drilling depth: The additional geothermal probes requirements for hot water demand of 200 litres per day are included (total 30 meters).

# Function description

## Heat pump

Start the heat pump via the external temperature sensor (B9). This works directly in the heating circulation.

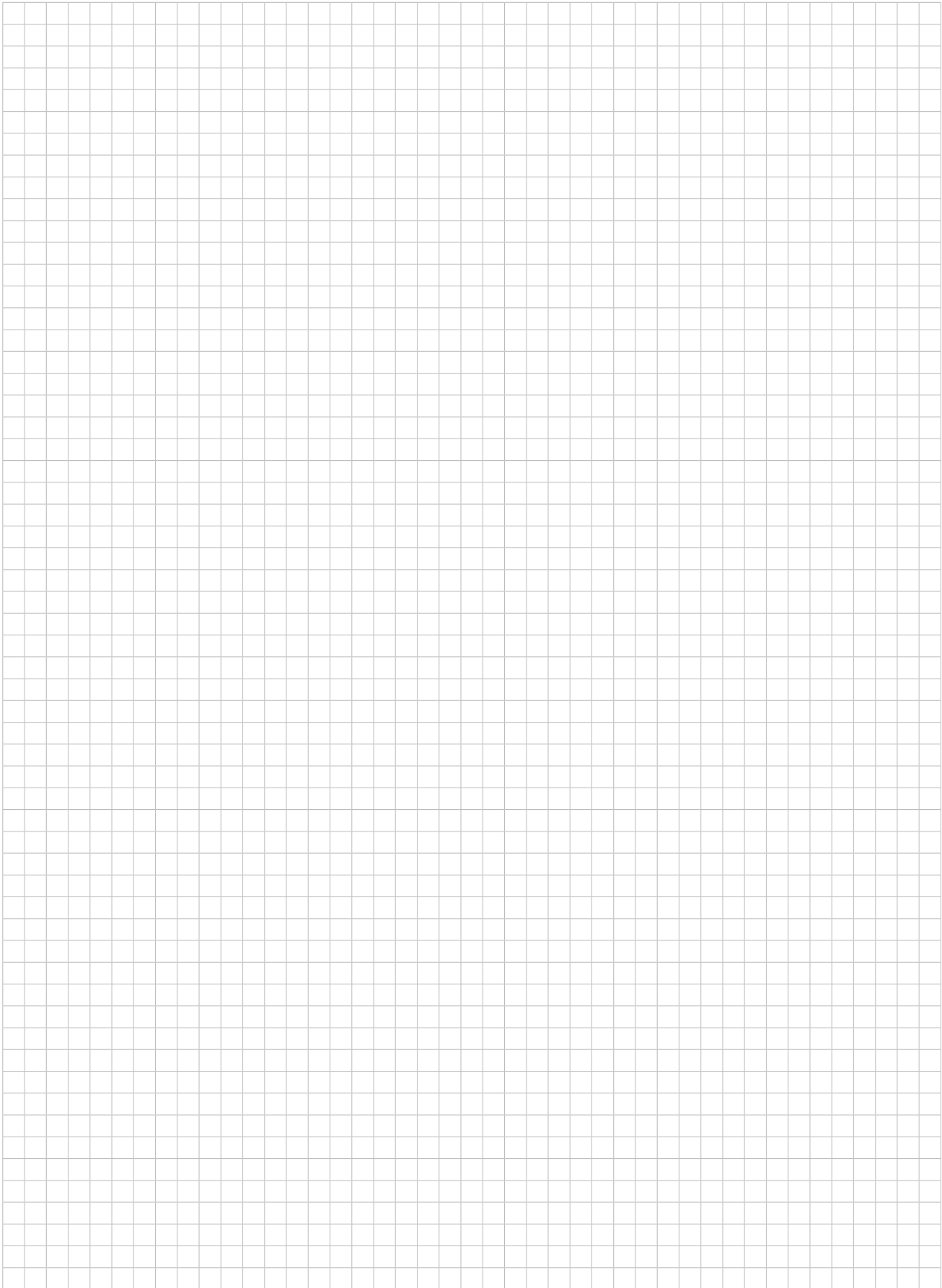
The heat pump is switched on and off via the return flow temperature (B71) depending on the external temperature. The machine has a starting delay in order to prevent wobbling. The integrated electrical heating element (K25) can be used as emergency heating.

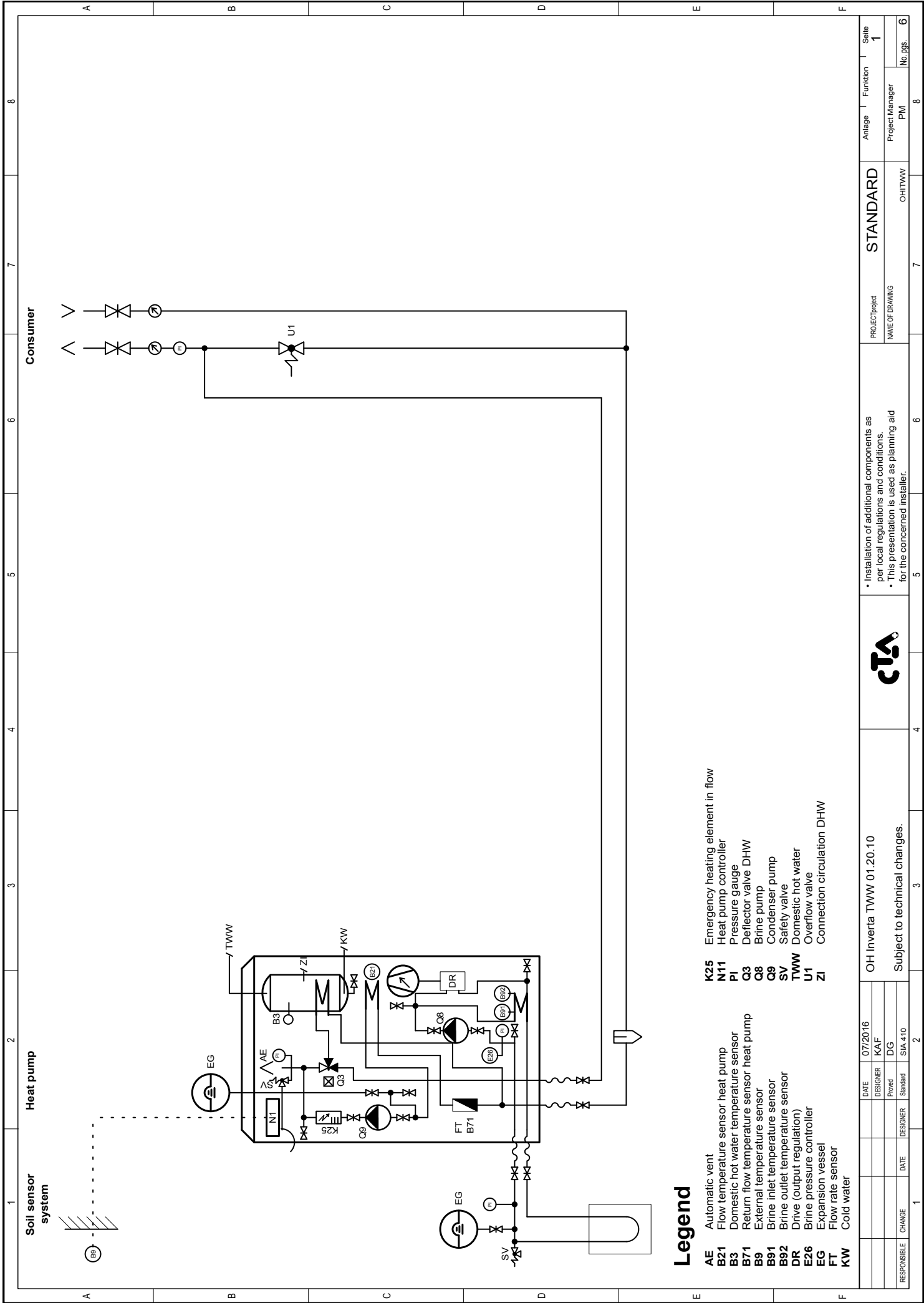
The condenser pump (Q9) is in operating during the entire heating period, DHW is charged according to the time program via the temperature sensor (B3), the deflector valve (Q3) is thus switched. The electrical heating element (K6) in the DHW storage is controlled by the heat pump controller.

## Free cooling

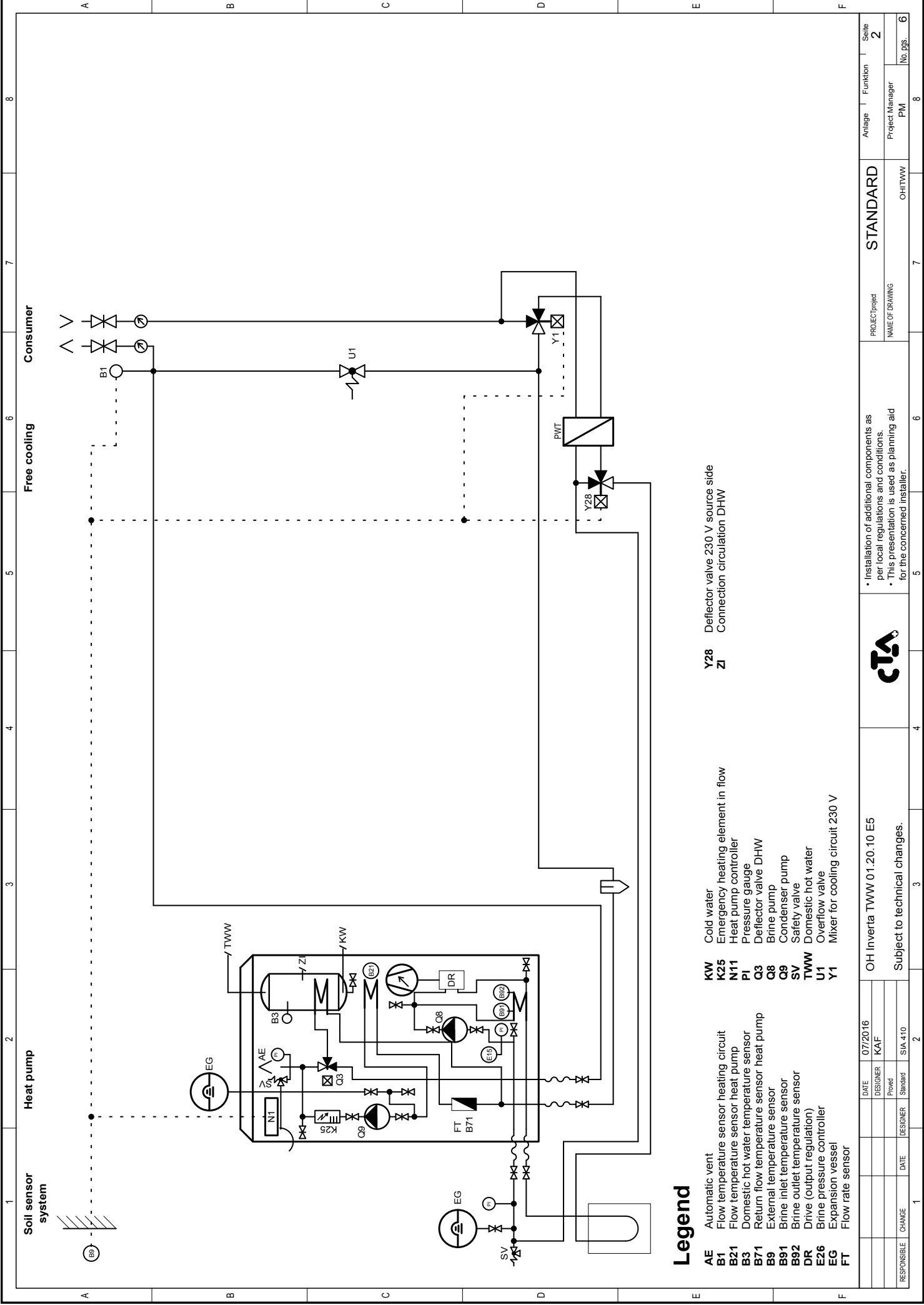
For passive cooling (free cooling), cooling is done without operating the cryogenic unit. Heat is directly returned to the connected source (soil sensor or ground water). For cooling requirement, the source circuit is controlled by means of a deflector valve (Y28) via the plate heat exchanger (PWT).

The heat pump controller runs a cooling curve via the ambient temperature (B9), this is controlled with the connected mixer (Y1) and the flow temperature (B1). For available room thermostat valves, these must be adaptable for the cooling as well as the heating operation.





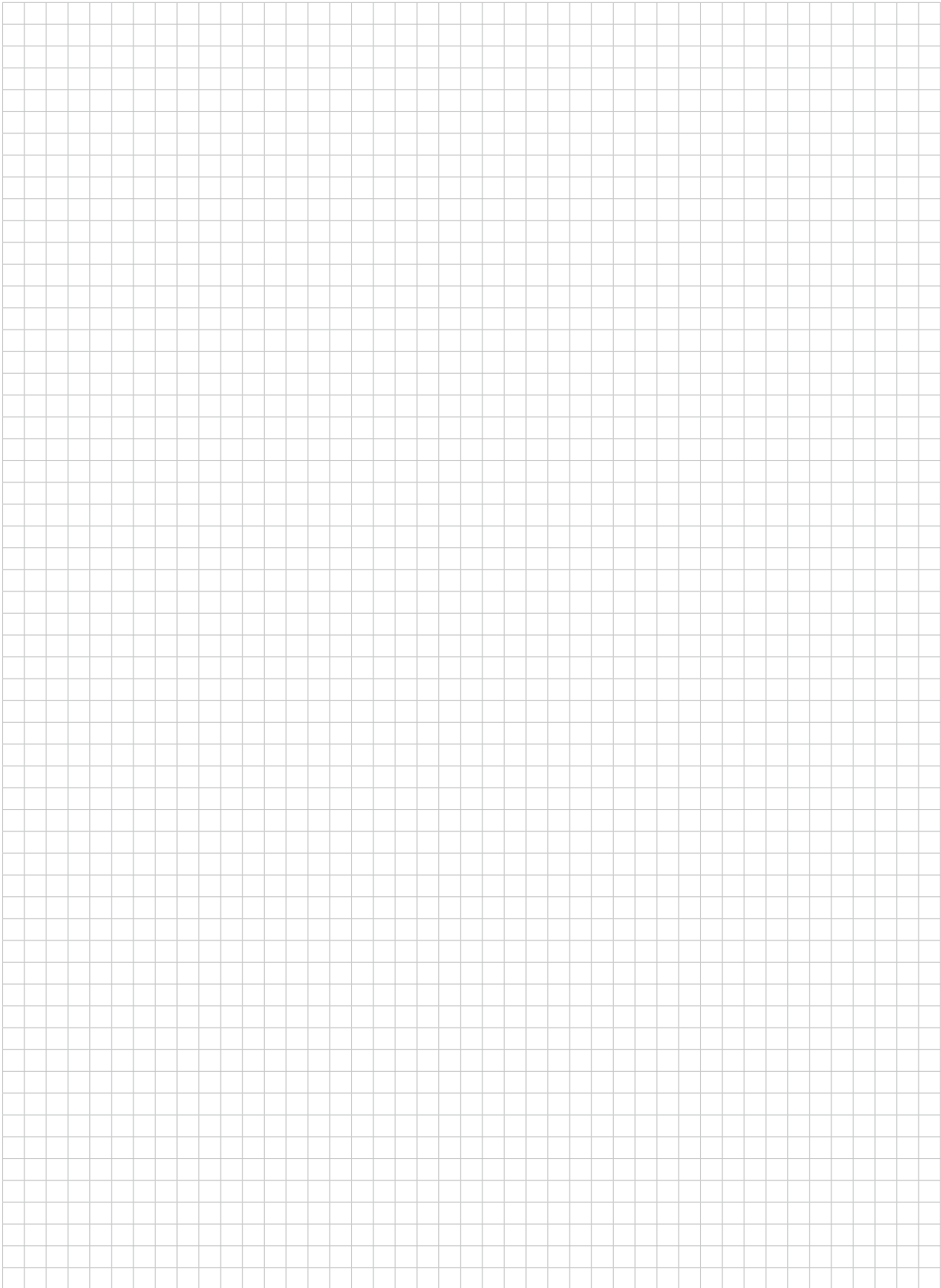


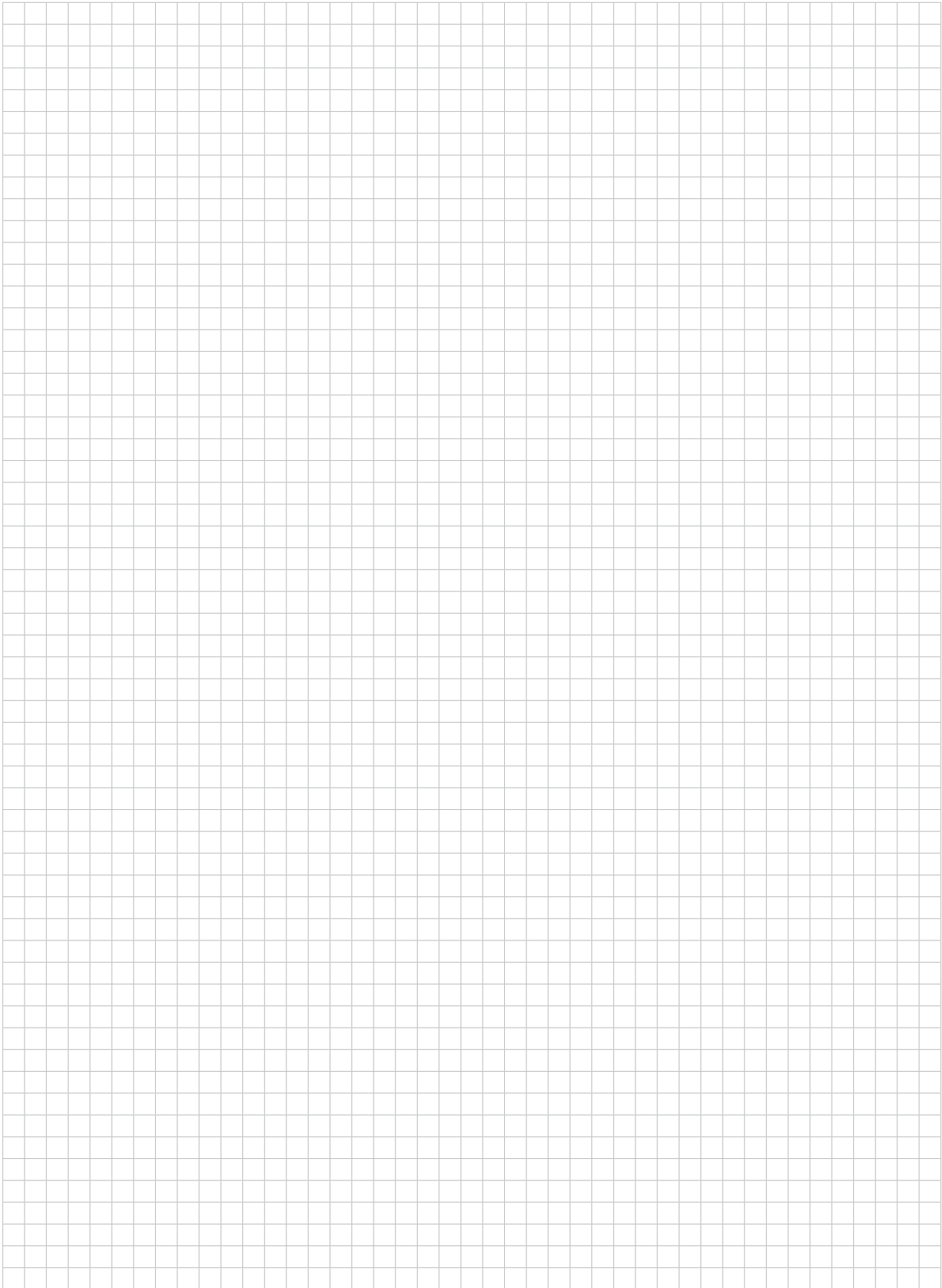


Legend

- AE Automatic vent
- B1 Flow temperature sensor heating circuit
- B21 Flow temperature sensor heat pump
- B3 Domestic hot water temperature sensor
- B71 Return flow temperature sensor heat pump
- B9 External temperature sensor
- B91 Brine inlet temperature sensor
- B92 Brine outlet temperature sensor
- DR Drive (output regulation)
- E26 Brine pressure controller
- EG Expansion vessel
- FT Flow rate sensor
- KW Cold water
- K25 Emergency heating element in flow
- N11 Heat pump controller
- PI Pressure gauge
- Q3 Deflector valve DHW
- Q8 Brine pump
- Q9 Condenser pump
- SV Safety valve
- TW Domestic hot water
- U1 Overflow valve
- Y1 Mixer for cooling circuit 230 V
- Y28 Deflector valve 230 V source side
- ZI Connection circulation DHW

|             |  |        |      |          |          |         |   |                               |  |     |  |  |  |                 |         |          |                 |          |          |
|-------------|--|--------|------|----------|----------|---------|---|-------------------------------|--|-----|--|--|--|-----------------|---------|----------|-----------------|----------|----------|
| RESPONSIBLE |  | CHANGE | DATE | DESIGNER | Standard | SIA 410 | 2 | OH Inverta TW 01.20.10 E5     |  | CTA |  | Installation of additional components as per local regulations and conditions.<br>This presentation is used as planning aid for the concerned installer. |  | PROJECT         | Project | STANDARD | Anlage          | Funktion | Seite    |
|             |  |        |      |          |          |         |   | Subject to technical changes. |  |     |  |  |  | NAME OF DRAWING | PM      | OHITWW   | Project Manager | PM       | 2        |
|             |  |        |      |          |          |         |   |                               |  |     |  |  |  |                 |         |          |                 |          | No. pgs. |
|             |  |        |      |          |          |         |   |                               |  |     |  |  |  |                 |         |          |                 |          | 6        |





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