

Test report no. 21DE-02579a (eng)  
Replacement for 21DE-02579



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Project:	Water tightness test of the glass fibre building entry Hauff GFH 20
Producer:	Hauff-Technik GmbH & Co. KG
Date of Order:	12 October 2021
Examination of:	Water tightness test with $\geq 1,0$ bar for 28 days, $\geq 1,5$ bar for 1 day, $\geq 2,0$ bar for 1 day and $\geq 2,5$ bar for 10 days
Description: <sup>a)</sup>	Glass fibre building entry Hauff GFH 20 installed in a calcium silicate masonry unit with a 20 mm borehole and an exterior waterproofing polymer modified bituminous coating (PMBC) according to DIN EN 15814 (waterproofing class W1.1/2.1E <sup>k</sup> ) according to DIN 18533-1)
Number of samples/ specimen:	1
Sampling by:	-
Sampling receipt:	20 October 2021
Test period:	9 Nov. 2021 – 21 Feb. 2022

Gersthofen, 21 February 2022

p. p.

Dr.-Ing. Massimo Sosoro  
- Technical director -

p. p.

M. Eng. Johannes Thienel  
- Project manager -

The test results relate only on the items tested. Without the written approval of the testing laboratory, a duplication in extracts of the test report is not permitted. In case of doubt and disagreement the original version of the test report is valid.

<sup>a)</sup> Information provided by the client <sup>k)</sup> Modification.

Managing director: Prof. Dr. Roland Hüttl, Dr. Gero Schönwaßer  
District court of Hamburg, HRB 130568, St.Nr.: 46/736/03268



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## 1. General

Kiwa GmbH Augsburg was contracted by Hauff-Technik GmbH & Co. KG to test the water tightness of the glass fibre building entry GFH 20 [1] installed in a calcium silicate masonry unit with an exterior waterproofing polymer modified bituminous coating (PMBC) according to DIN EN 15814.

Therefore Hauff-Technik GmbH & Co. KG delivered a test block with the exterior waterproofing polymer modified bituminous coating (PMBC) PCI Pecimor 2K [2] according to DIN EN 15814 and already installed glass fibre building entry GFH 20 as well as the necessary components for the test to our test laboratory in Gersthofen, Germany. The assembly of the test setup was performed by an employee of Hauff-Technik GmbH & Co. KG (see Figure 1).



Figure 1. Test setup – complete system

## 2. References

- [1] Hauff-Technik GmbH & Co. KG - „Montageanweisung GFH 20 (PRO) – Glasfaser-Hauseinführung“.
- [2] PCI Technisches Merkblatt 302 - „Bitumen-Dickbeschichtung PCI Pecimor® für Kelleraußenwände und Fundamente“. Stand Mai 2019.
- [3] WIKA Alexander Wiegand SE & CO. KG - “Abnahmeprüfzeugnis nach EN 10204 - 3.1. Auftrags-Nr. 23811406/3“ – Zeugnis-Nr. WC018747.

### 3. Test procedure

#### 3.1 Test preparation (Hauff Technik GmbH & Co. KG)

According to information given by the manufacturer the test setup was assembled by Hauff-Technik GmbH & Co. KG as follows:

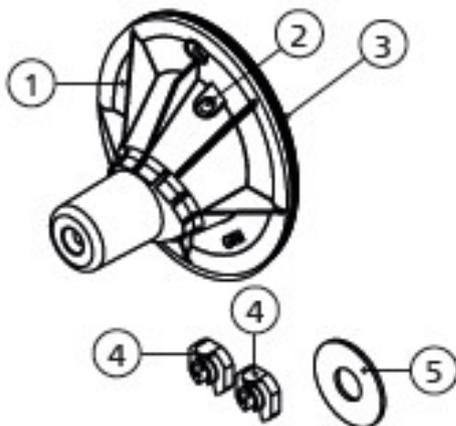
A borehole with a diameter of 20 mm was drilled in a calcium silicate masonry unit with the dimensions 300 mm x 300 mm x 300 mm.

Two layers of the PMBC PCI Pecimor 2K [2] according to DIN 15814 were attached as an exterior waterproofing on the pressure surface (corresponding the building outer side).

A membrane of the insertion port was pierced with a screwdriver. Through this opening and the hole on the outside of the building was a fiberglass micropipe down to the final position performed. The GFH 20 (see figure 2) was placed and aligned on the wall surface so that the ventilation hole points upwards. The pipe fastening clip was placed directly in front of the insertion opening of the glass fiber micropipe and the plastic flange of the GFH20 was pressed against the outer wall. On the inside of the building, the pipe fastening ring is pushed over the glass fiber micropipe to the inside wall of the building. Then the fiberglass micropipe was pulled firmly inwards so that the outer flange is in full contact before the pipe fastening clip is clamped onto the pipe fastening ring (see figure 3).

The expansion resin (Resinator) was then poured from the cartridge into the glass fiber house entry GFH 20 injected (see Figure 4).

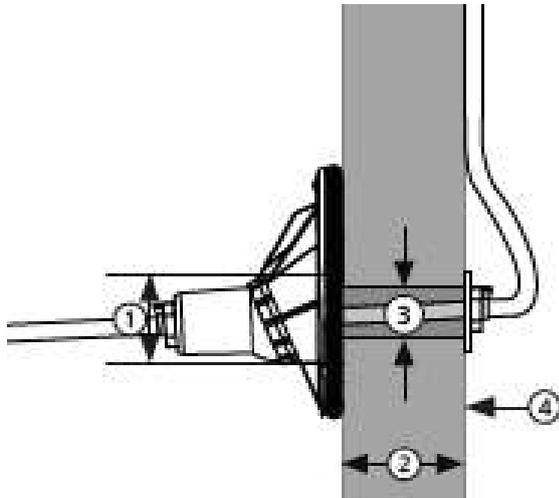
After 5 minutes, the resin cartridge was removed and the mixing nozzle pulled out with a twisting motion. A pressure bell with a manometer was attached above the system seal by Hauff-Technik GmbH & Co. KG. The pressure bell was sealed by an EPDM seal and the clamping pressure.



Pos.	Designation
1	Polymer flange GFH20
2	Filler opening for expansion resin RESINATOR
3	Sponge rubber ring
4	Pipe fastening clip
5	Pipe fastening ring

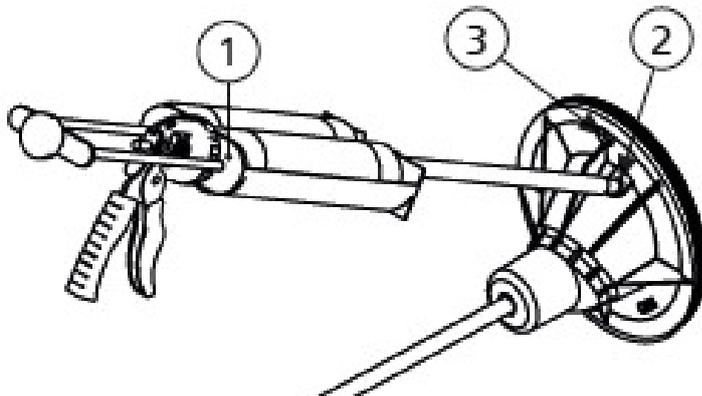
Figure 2. Glass fibre building entry - manufacturer's drawing.

<sup>a)</sup> Information provided by the client. <sup>k)</sup> Modification.



Pos.	Designation
1	Max. diameter of breaks $\varnothing 50$ mm
2	Wall thickness
3	Diameter of drill hole $\varnothing 20$ mm
4	Inside of building

Figure 3. Installation situation - manufacturer's drawing.



Pos.	Designation
1	Cartridge gun
2	Filler opening
3	Ventillation opening

Figure 4. Injection of the resin in the GFH 20 - manufacturer's drawing.

Fehler! Verweisquelle konnte nicht

a) Information provided by the client. k) Modification.

### 3.2 Water tightness test (Kiwa GmbH)

The test setup which was assembled by Hauff-Technik GmbH & Co. KG was built up in accordance to Section 3.1 with one manometer (see Figure 5).

A calibration of the assembled manometer (serial no. 5400TD8M [3]) was performed by WIKA Polska sp. z o.o. sp. k. (see Chapter 6).

After prior consultation with the manufacturer the test of the water tightness with permanently attached water pressure was performed as follows:

- ≥ 1,0 bar for 28 days
- ≥ 1,5 bar for 1 day
- ≥ 2,0 bar for 1 day
- ≥ 2,5 bar for 10 days.

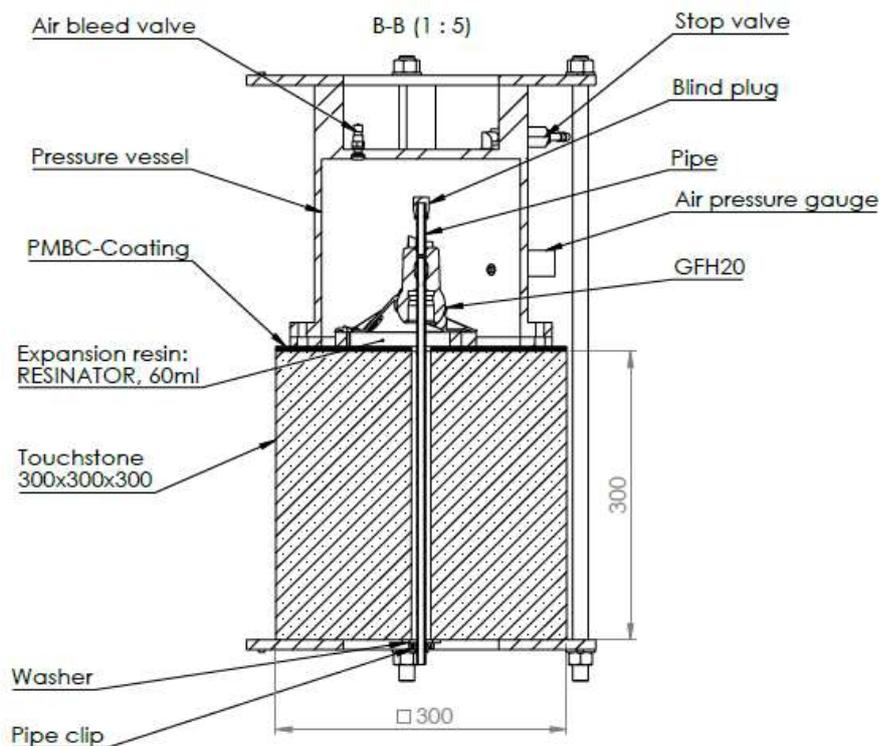


Figure 5. Detail of the test setup - manufacturer's drawing.

### 4. Test results

During the water tightness tests no leakages were detected at the system (see Table 1).

Table 1. Test results.

<sup>a)</sup> Information provided by the client. <sup>k)</sup> Modification.

Test specimen	Water pressure at the beginning of testing [bar]	Water pressure at the end of testing [bar]	Testing period [d]	Remark
Glass fibre building entry GFH 20	≥ 1,0	≥ 1,0	28	No leakages were detected at the system
	≥ 1,5	≥ 1,5	1	
	≥ 2,0	≥ 2,0	1	
	≥ 2,5	≥ 2,5	10	

## 5. Summary

*During the water tightness test of the glass fibre building entry GFH 20 which was installed in a calcium silicate masonry unit with an exterior waterproofing polymer modified bituminous coating (PMBC) according to DIN EN 15814 (waterproofing class W2.1E according to DIN 18533-1), no leakages of the system were detected at ≥ 1,0 bar for 28 days, ≥ 1,5 bar for 1 day, ≥ 2,0 bar for 1 day and ≥ 2,5 bar for 10 days.*

## 6. Calibration certificate

**Wika Polska sp. z o.o. sp. k.**  
 Inspection certificate according to EN 10204 – 3.1  
 Abnahmeprüfzeugnis nach EN 10204 – 3.1



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Customer:  
Kunde: **Haufl-Technik GmbH & Co. KG**  
**Robert-Bosch-Straße 9**  
**Hemaringen**  
**89568**  
**DE**

Certificate No.  
Zeugnis-Nr. **WC018747**

Date  
Datum **19.03.2021**

Customer Order No. Kundenbestellnummer	<b>5000002840</b>	Customer Part. No. Kunden Artikel-Nr.		Order Date Bestelldatum	<b>26.03.2021</b>
Order No. / Item Auftrags-Nr. / Pos.	<b>23811406/3</b> <b>33013851</b>	Part No. Artikel-Nr.	<b>14225186</b>		
Model Typ	<b>111.10.063</b>	Serial number Seriennummer	<b>5403RYCK</b>	Scale range Anzeigebereich	<b>0 ... 2,5 bar rel.</b>
Class Klasse	<b>2,50 %</b>	Tag No. Messstellen-Nr.			
Reference Referenzgerät	<b>CPG2500 0,01% -1 ... 2,7 bar rel.</b>	Calibration No. Kalibriernummer	<b>SW-73-1-20 WPL 20-04</b>		
Article text Artikeltext	<b>Bourdon tube pressure gauges, model 111</b>				

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a) Information provided by the client. k) Modification.

**Wika Polska sp. z o.o. sp. k.**  
 Inspection certificate according to EN 10204 – 3.1  
 Abnahmeprüfzeugnis nach EN 10204 – 3.1

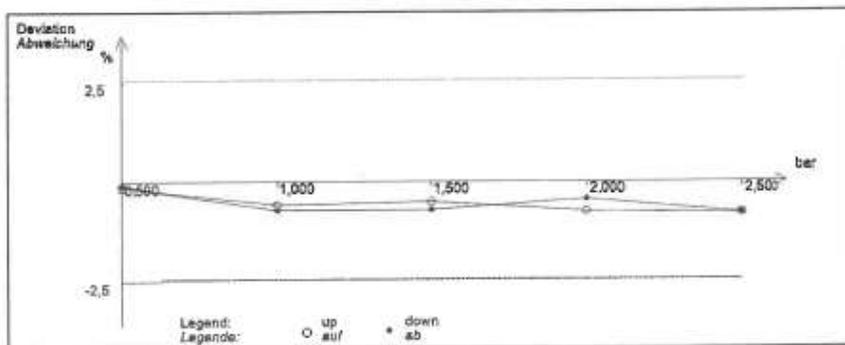


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 Seite:  
 Certificate No.: WC018747  
 Zeugnis-Nr.:  
 Date: 19.03.2021  
 Datum:

Customer: Hauff-Technik GmbH & Co. KG  
 Kunde: Robert-Bosch-Straße 9  
 Hemmingen  
 89568  
 DE

Result: Temperature 20°C +/- 5 K  
 Ergebnis: Temperatur

Test Item Prüfung bar	Standard Referenz bar	Meanvalue Mittelwert bar	rel. Deviation rel. Abweichung bar	Deviation Abweichung %	Hysteresis Hysterese %
0,500	0,503	0,503	-0,003	-0,12	-0,03
1,000	1,014	1,018	-0,016	-0,65	0,15
1,500	1,512	1,518	-0,015	-0,61	0,21
2,000	2,019	2,011	-0,015	-0,59	-0,31
2,500	2,520	2,520	-0,020	-0,79	0,00



Object keeps the specification.  
 Der Kalibriergegenstand hält die Fehlergrenzen nach Herstellerangaben ein.  
 Calibration was carried out according to the following norm: DIN EN 837-1  
 Die Kalibrierung erfolgte auf der Grundlage der folgenden Norm:  
 Remarks / Bemerkung:

Inspection Representative (SA) Examiner  
 Abnahmebeauftragter Ralf Gross Prüfer J.Głodowski

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Gersthofen, 21 February 2022

a) Information provided by the client. k) Modification.