kiwa
Partner for progress

Test Report

Client

Hauff Technik GmbH & Co. KG
Giengener Straße 35
89428 Syrgenstein - Landshausen

Order no.

A 9070 / 2009

Date of contract	:	September 3rd, 2009
Contract	:	Testing of the water-tightness of a sealing system Universal casing UFR 200 with dummy plug HBD 200
Delivery of test items	:	Client
Date of receipt of test items		September 3rd, 2009
Testing period	:	October 1st – 8th, 2009

Augsburg, January 27th, 2010
cl/di

Department Manager

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Holger Dietrich

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This Test Report consists of 7 pages
It may only be published unabridged
The test results relate only on the items tested. The test material is dissipated

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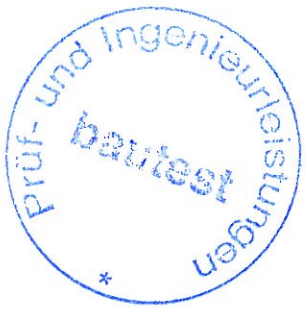

1 General

Kiwa Bautest GmbH was contracted by Hauff-Technik GmbH & Co. KG to evaluate the water tightness of a casing with a smoothing flange and a three web sealing.

Therefore a prefabricated test setup was delivered by Hauff-Technik GmbH & Co. KG to our test laboratory in Augsburg.

The test setup consists of a concrete test member with a encased universal plastic casing UFR 200 with smoothing flange and with two profile web sealings and a dummy plug (in that case: foundation slab lead-through HBD 200).

All tests were carried out by employees of our according to DIN EN ISO / IEC 17 025 chartered laboratory in Augsburg.

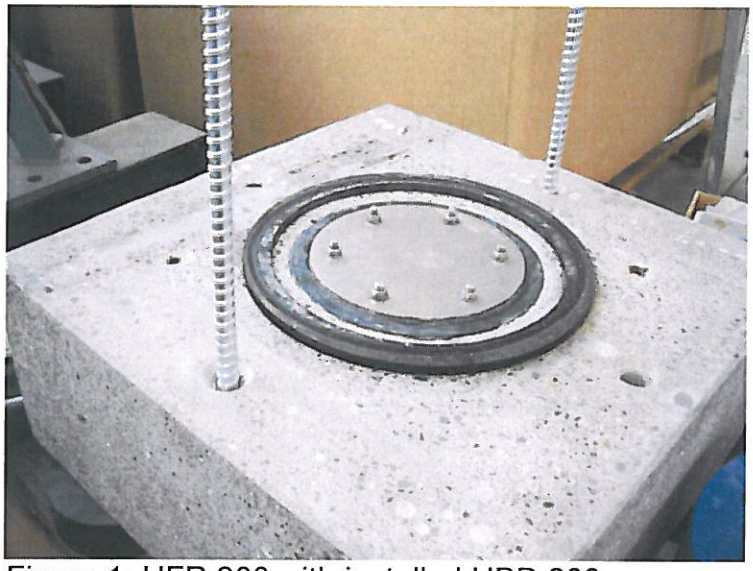

Figure 1: UFR 200 with installed HBD 200

2 Test procedure

2.1 Test preparation (Hauff-Technik)

According to the Manufacturer information the test setup was pre-assembled by the Manufacturer as follows:

A casing UFR 200 was encased in a concrete test member (ca. 40 x 40 x 30 cm). Afterwards the casing was assembled with a foundation slab lead-through HBD 200 in the function as a dummy plug. The grouting of the seal annulus (HBD) occurred in the middle of the concrete test member.

Furthermore a compression bell with manometer and rubber ring seal was provided by the Manufacturer. The compression bell is designated to be put on the test member and pressed against the concrete by four tension rods (see Figure 2).

2.2 Test procedure (Kiwa Bautest)

The test member which was delivered by the Manufacturer was a pre-assembled concrete test member with a test setup in accordance with section 2.1 and with a pre-assembled manometer (see Figure 2 to Figure 4). A calibration of the manometer was not carried out by Kiwa Bautest GmbH.

After consultation with the Manufacturer a tightness test with a water filled pressure bell over a period of 7 days with a nominal pressure of 2,5 bar was carried out. The filling of the pressure bell with water was carried out until the water-level reached the inlet and the air bleed valve respectively.

Minor pressure fluctuations concerning the hygroscopic properties of the concrete or the temperature volume charge of the water may not be excluded.

Figure 2: Test setup

Figure 3: Test specimen

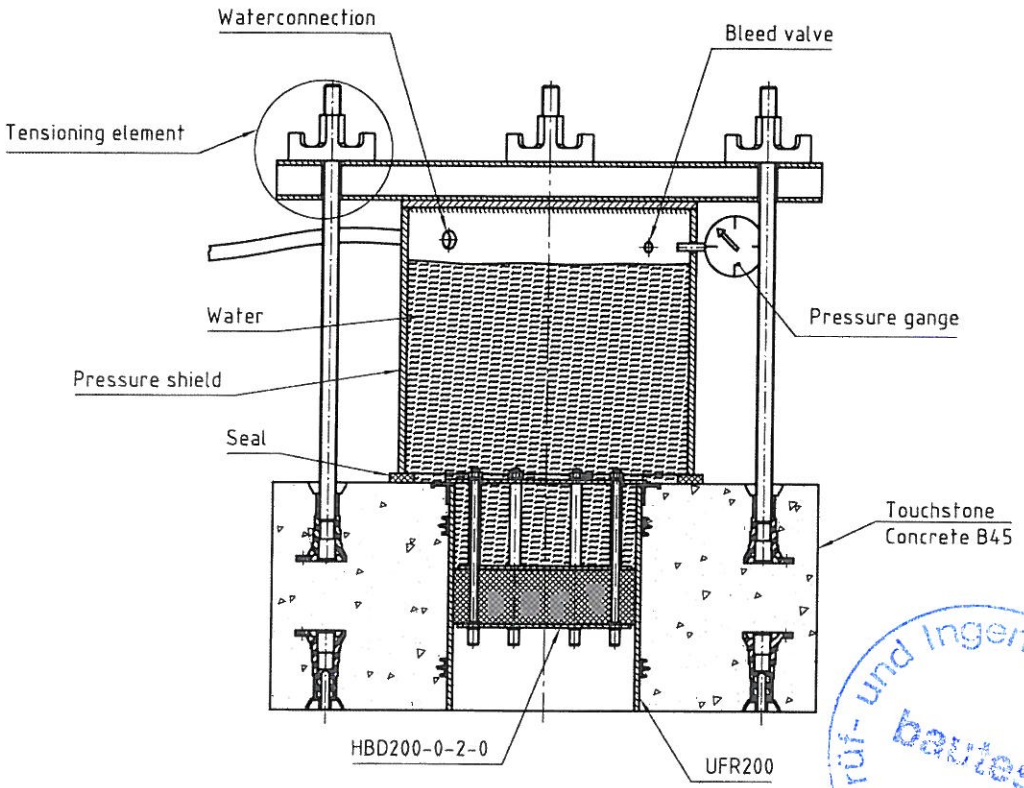

Figure 4: Test setup (Manufacturer drawing)

3 Test results

Subsequent the manometer display at the beginning and at the end of the tightness test is shown in Figure 5.

For example causal for the minor pressure decrease may be the hygroscopic properties of the concrete as well as a decrease of the tension force of the tension rods for the pressure bell fixing. A water discharge in the area of the sealing could not be detected.

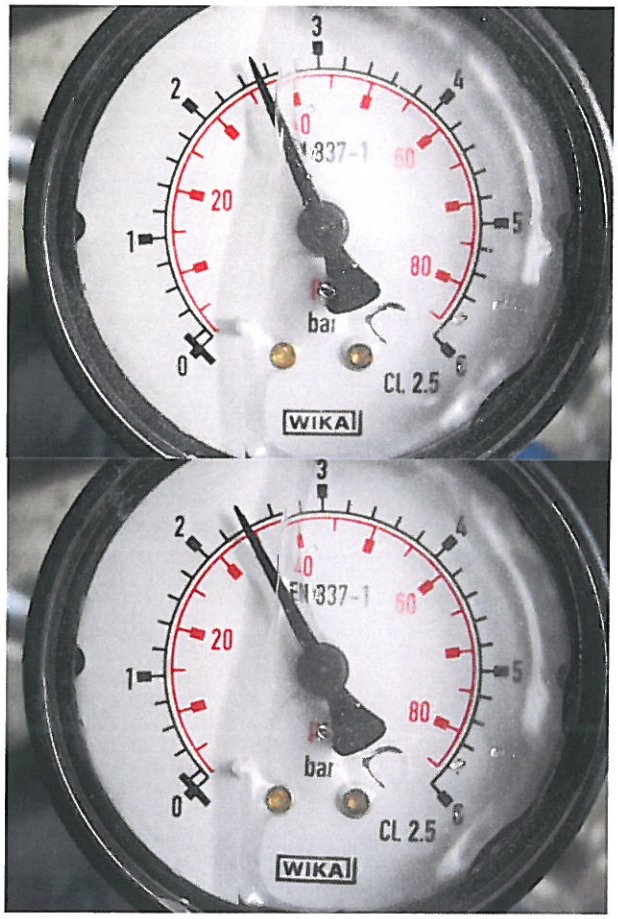

Figure 5: Tightness test with water filled pressure bell (above: manometer display at the beginning of the test at 10/01/2009 12:00; below: manometer display at the end of the test at 10/08/2009 12:10)

4 Summary

During the tightness test (universal casing with smoothing flange with two profile web sealings UFR 200 and dummy plug HBD 200) with water filled pressure bell with a nominal pressure of 2,5 bar no defect in water tightness as a result of water discharge could be detected.

Augsburg, January 27th, 2010