

Extended Application according to EN 15882-2:2022 of test results of two fire dampers, manufactured by Rf-Technologies, mounted in a seal, manufactured by svt Brandschutz Vertriebsgesellschaft mbH International, in a standard flexible wall

| | |
|-----------------|--|
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| Sponsor | svt Brandschutz Vertriebsgesellschaft mbH International Glüsinger Strasse 86 21217 SEEVETAL GERMANY |
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CONTENTS

| | |
|--|----|
| 1. General | 3 |
| 1.1 Relevant standards | 3 |
| 1.2 Details of the product or building element concerned | 3 |
| 2. Revision information | 3 |
| 3. Test reports and test results in support of this extended application report | 3 |
| 3.1 Test reports | 3 |
| 4. Test results in accordance with this test method | 4 |
| 5. Additional supporting test data used in the extended application process | 7 |
| 6. Extended application | 9 |
| 6.1 Principles applied for the extension of the field of application | 9 |
| 6.2 Alternative penetration seals | 9 |
| 6.3 Change in gap between the damper and the supporting construction, Increase in size | 10 |
| 7. Extended application results | 10 |
| 7.1 Application range - product family | 10 |
| 7.2 Fire performance parameters | 10 |
| 8. Additional statement | 12 |
| APPENDIX A: DRAWINGS | 13 |
| APPENDIX B: ADDITIONAL SUPPORTING TEST DATA | 17 |

1. GENERAL

1.1 RELEVANT STANDARDS

This extended application report concerns test results obtained in accordance with test method EN 13501-3:2005+A1:2009.
The extended application process is carried out in conformity with the extended application standard EN 15882-2:2022 and EN 15725: 2023.

1.2 DETAILS OF THE PRODUCT OR BUILDING ELEMENT CONCERNED

Product Technical Specifications

The specifications of the tested product can be found in 4.1.1.

Product family

The product families are 'CU2' and 'CR2'.

Intended use

These fire dampers can be installed where air ducts penetrate fire-resistant compartment walls. The damper will close in case of a fire and thus restore the fire resistance of the wall that was compromised by placing the duct through it.

End use application

In an aperture in walls, with a seal between damper housing and wall.

2. REVISION INFORMATION

This is the first issue of the test report.

3. TEST REPORTS AND TEST RESULTS IN SUPPORT OF THIS EXTENDED APPLICATION REPORT

3.1 TEST REPORTS

| | |
|--|--|
| Name of laboratory and its notified body number | Efectis Nederland BV 1234 |
| Name of sponsor | svt Brandschutz Vertriebsgesellschaft mbH International |
| Test report ref. no. | 2022-Efectis-R000060[Rev.2] |
| Date of test | The 20 th of December 2021 |
| Test method | EN 1366-2:2015 |
| Name of laboratory and its notified body number | Institut für Brandschutztechnik und Sicherheitsforschung 1322 |
| Name of sponsor | Rolf Kuhn GmbH |
| Test report ref. no. | 318112801-1 |
| Date of test | The 22 nd of November 2018 |

| | |
|--|--|
| Test method | EN 1366-3:2009 |
| Name of laboratory and its notified body number | Institut für Brandschutztechnik und Sicherheitsforschung 1322 |
| Name of sponsor | Rolf Kuhn GmbH |
| Test report ref. no. | 319042409-1 |
| Date of test | The 10 th of April 2019 |
| Test method | EN 1366-3:2009 |
| Name of laboratory and its notified body number | MPA Braunschweig 0761 |
| Name of sponsor | Rolf Kuhn GmbH |
| Test report ref. no. | (3676/127/10) Mu |
| Date of test | The 22 nd of June 2010 |
| Test method | EN ISO 11925-2 |
| Name of laboratory and its notified body number | MPA Braunschweig 0761 |
| Name of sponsor | Rolf Kuhn GmbH |
| Test report ref. no. | (2302/129/21)-2/2021- \Br/Mu |
| Date of test | The 2 nd of September 201 |
| Test method | EN ISO 11925-2 |

4. TEST RESULTS IN ACCORDANCE WITH THIS TEST METHOD

4.1.1 Efectis Netherlands Test Report 2022-Efectis-R000060[Rev.2]

This report contains the results of a fire test which was carried out according to EN 1366 2:2015 on two fire dampers: a fire damper of type CU2 (situated left seen from the unexposed side) and a fire damper of type CR2 (situated right seen from the unexposed side) both manufactured by Rf-Technologies and mounted into a standard flexible supporting construction.

Damper type CU2 was a valve damper activated by an actuator, type BELIMO T-BFN24-T, located on the unexposed side. Damper CR2 was a valve damper activated by an actuator, type BELIMO T-BFN24-T, located on the unexposed side.

Table 4-1 test results from report 2022-Efectis-R000060[Rev.2]

| Damper type CU2 | | |
|---|---|---|
| Specifications | | |
| Dimensions | Inner dimensions: 800 x 1200 mm (w x h) Length: 400 mm | |
| Blade pivot axis orientation | Vertical | |
| Actuator | BELIMO T-BFN24-T | |
| Location | Unexposed side, bottom of the fire dampers | |
| Sensor | Mounted on the unexposed side | |
| Seal | | |
| Manufacturer | svt | |
| Type | 2 x 50 mm mineral wool type "Hardrock 040" Ablative coating ""PYRO-SAFE FLAMMOTECT-A" on both sides mineral wool is glued into place with ""PYRO-SAFE FLAMMOTECT-A" | |
| Dimensions | Max width 300 mm from damper housing to wall | |
| Test results fire test | | |
| Criterion | Time (min.) | Time of reaching a criterion measured from the start of the test in accordance with EN 1366-2:2015 |
| Integrity (E) | | |
| -Cotton pad | 117 | Applied |
| -Gap gauge Ø 6 mm | 132 | Not applied |
| -Gap gauge Ø 25 mm | 132 | Not applied |
| -Sustained flaming > 10 seconds | 132 | No failure |
| -Leakage | 132 | No Failure, max. 71.5 m ³ /h at 26 min. |
| Insulation (I) | | |
| -Average temperature | 132 | No failure |
| -Maximum temperature | 120 | Failure (tc4) |
| Leakage (S) | - | No failure, max. 71.5 m ³ /h at 26 min. |
| Test results leakage test at ambient temperature | | |
| Side | | Conclusion |
| Leakage (Nm ³ /h.m ²) through the fire damper (mechanism exposed side) | | Satisfied |
| Leakage (Nm ³ /h.m ²) through the fire damper (mechanism unexposed side) | | Satisfied |

Table 4-2 test results from report 2022-Efectis-R000060[Rev.2]

| Damper type CR2 | | |
|---|---|---|
| Specifications | | |
| Dimensions | Inner dimensions: Ø 630 mm Length: 375 mm | |
| Blade pivot axis orientation | Vertical | |
| Actuator | BELIMO T-BFN24-T | |
| Location | Unexposed side, bottom of the fire dampers | |
| Sensor | Mounted on the unexposed side | |
| Seal | | |
| Manufacturer | svt | |
| Type | 2 x 50 mm mineral wool type "Hardrock 040" (manufactured by Rockwool) Ablative coating "PYRO-SAFE FLAMMOTECT-A" on both sides (1.0mm Dry Film Thickness) Mineral wool is glued into place with "PYRO-SAFE FLAMMOTECT-A" | |
| Dimensions | Max width 300 mm from damper housing to wall | |
| Test results fire test | | |
| Criterion | Time (min.) | Time of reaching a criterion measured from the start of the test in accordance with EN 1366-2:2015 |
| Integrity (E) | | |
| -Cotton pad | 132 | Not applied |
| -Gap gauge Ø 6 mm | 132 | Not applied |
| -Gap gauge Ø 25 mm | 132 | Not applied |
| -Sustained flaming > 10 seconds | 132 | No failure |
| -Leakage | 132 | No failure, max. 67.3 m ³ /h at 6.5 min. |
| Insulation (I) | | |
| -Average temperature | 132 | No failure |
| -Maximum temperature | 132 | No failure |
| Leakage (S) | 132 | No failure, max. 5.2 m ³ /h at 64 min. |
| Test results leakage test at ambient temperature | | |
| Side | | Conclusion |
| Leakage (Nm ³ /h.m ²) through the fire damper (mechanism exposed side) | | Satisfied |
| Leakage (Nm ³ /h.m ²) through the fire damper (mechanism unexposed side) | | Satisfied |

5. ADDITIONAL SUPPORTING TEST DATA USED IN THE EXTENDED APPLICATION PROCESS

These reports contain the results of a fire test which were carried out according to EN 1366 3:2009 on cable insulation with Flamro BSB-V and both manufactured by Rolf Kuhn GmbH and mounted into a standard flexible supporting construction. These test reports describe two different ablative fire protection paints, “PYRO-SAFE FLAMMOTECT-A” and “FLAMRO BML”, which were applied on mineral wool slabs where the standard configuration for large cable penetration seals was penetrating the slabs.

Table 5-1 test results from report 318112801-1

| Criterion | Time (min.) | Time of reaching a criterion measured from the start of the test in accordance with EN 1366-3:2009 |
|--|--------------------|---|
| Integrity (E) -Cotton pad -Sustained flaming > 10 seconds | 132 132 | No failure No failure |
| Insulation (I) -Maximum temperature | 132 | No failure |

Table 5-2 test results from report 319042409-1

| Criterion | Time (min.) | Time of reaching a criterion measured from the start of the test in accordance with EN 1366-3:2009 |
|--|--------------------|---|
| Integrity (E) -Cotton pad -Sustained flaming > 10 seconds | 125 125 | No failure No failure |
| Insulation (I) -Maximum temperature | 125 | No failure |

These reports contain the results of a fire test which were carried out according to EN ISO 11925-2 on the materials "PYRO-SAFE FLAMMOTECT-A" and "FLAMRO BML".

Table 5-3 test report (3676/127/10) Mu vom 22.06.2010 Ignitability classification parameter results of "PYRO-SAFE FLAMMOTECT-A"

| Flame application time: 15 s | | | | | |
|-------------------------------------|--------------------|-----------------------------------|------------------|-------------------|--------------------------|
| Sample | Ignition of sample | Maximum flame Height | t ₁₅₀ | Afterburning time | Ignition of filter paper |
| | {Y=Yes/N=No} | [mm] | [s] | [s] | {Y=Yes/N=No} |
| Surface ignition | | | | | |
| 1 | Y | 30 | not reached | - | N |
| 2 | Y | 40 | | - | N |
| 3 | Y | 40 | | - | N |
| 4 | Y | 30 | | - | N |
| 5 | Y | 30 | | - | N |
| 6 | Y | 40 | | - | N |
| Maximum | | 40 | | | |
| Classification parameters | | 150 mm reached within 20 s | | | N |
| | | Ignition of filter paper | | | N |
| Edge ignition | | | | | |
| 1 | Y | 40 | not reached | - | N |
| 2 | Y | 40 | | - | N |
| 3 | Y | 40 | | - | N |
| 4 | Y | 40 | | - | N |
| 5 | Y | 40 | | - | N |
| 6 | Y | 30 | | - | N |
| Maximum | | 40 | | | |
| Classification parameters | | 150 mm reached within 20 s | | | N |
| | | Ignition of filter paper | | | N |

Table 5-4 test report (2302/129/21)-2/2021- \Br/Mu vom 02.09.2021 Ignitability classification parameter results of “FLAMRO BML”

| Flame application time: 15 s | | | | | |
|-------------------------------------|--------------------|-----------------------------------|------------------|-------------------|--------------------------|
| Sample | Ignition of sample | Maximum flame Height | t ₁₅₀ | Afterburning time | Ignition of filter paper |
| | {Y=Yes/N=No} | [mm] | [s] | [s] | {Y=Yes/N=No} |
| Surface ignition | | | | | |
| 1 | <150 | - | not reached | - | N |
| 2 | <150 | - | | - | N |
| 3 | <150 | - | | - | N |
| 4 | <150 | - | | - | N |
| 5 | <150 | - | | - | N |
| 6 | <150 | - | | - | N |
| Maximum | | - | | | |
| Classification parameters | | 150 mm reached within 20 s | | | N |
| | | Ignition of filter paper | | | N |
| Edge ignition | | | | | |
| 1 | <150 | - | not reached | - | N |
| 2 | <150 | - | | - | N |
| 3 | <150 | - | | - | N |
| 4 | <150 | - | | - | N |
| 5 | <150 | - | | - | N |
| 6 | <150 | - | | - | N |
| Maximum | | - | | | |
| Classification parameters | | 150 mm reached within 20 s | | | N |
| | | Ignition of filter paper | | | N |

6. EXTENDED APPLICATION

6.1 PRINCIPLES APPLIED FOR THE EXTENSION OF THE FIELD OF APPLICATION

This extended application procedure is based on Method 1: Established influence(s) of product and end use parameters in accordance with the relevant extended application standard EN 15882-2:2022.

6.2 ALTERNATIVE PENETRATION SEALS

In paragraph 6.3 of EN 15882-2: 2022 the following is stated about tested ablative batt material: “Tested ablative batt material may be replaced by an alternative ablative batt material providing at least the same density, thickness and reaction to fire characteristics are equal or greater than that tested, and there is supporting test evidence to EN 1366-3.”

The test results of the EN 1366-3 test on the two different ablative batt materials have been compared with each other. Both the ablative batt materials have been applied to the mineral wool slab with the EN 1366-3 tests on the standard configuration for large cable penetration seals.

The ablative batt material "PYRO-SAFE FLAMMOTECT-A" has been applied on the mineral wool slab of the seal in the EN 1366-2 test. The nominal density of the mineral wool slabs used in the EN 1366-2 test was 150 kg/m³. The nominal density of the mineral wool slabs used in the EN 1366-3 test are equal and was 150 kg/m³.

In the EN 1366-3 test results the temperatures on the mineral wool slab were not determining the result of the test. At the end of the test, after 125 and 132 minutes, the maximum temperature rise was 89.5 °C. The difference in temperature of the mineral wool bat with the two applied ablative batt materials is given in graphs in Figure B 1 and Figure B 2. The temperature rise during the two tests can also be seen here.

The test results of the EN ISO 11925-2 tests on "PYRO-SAFE FLAMMOTECT-A" and "FLAMRO BML" are both leading to an E classification according to EN 13501-1.

6.3 CHANGE IN GAP BETWEEN THE DAMPER AND THE SUPPORTING CONSTRUCTION, INCREASE IN SIZE

In table 5 of EN 15882-2:2022, reference X.50 states the following regarding the increase of the gap between damper and the supporting construction:

| Rule | Reference | |
|------------------------------|-------------------|---|
| Parameter | | Change in gap between the damper and the supporting construction |
| Factors | | Increase in size |
| Factor influence on criteria | Integrity (E) | See rule |
| | Insulation (I) | See rule |
| | Smoke Leakage (S) | See rule |
| | Rules | Increase in a filled gap of up to 50 % is permitted limited to a maximum of 30 mm (e.g. a 100 mm gap would allow an increase to 130 mm not 150 mm). |

7. EXTENDED APPLICATION RESULTS

7.1 APPLICATION RANGE - PRODUCT FAMILY

7.1.1 ALTERNATIVE PENETRATION SEALS

Based on the rule in paragraph 6.3 of EN 15882-2: 2022 one of the two ablative batt materials "PYRO-SAFE FLAMMOTECT-A" and "FLAMRO BML" may be used on the seal of the fire dampers.

7.1.2 CHANGE IN GAP BETWEEN THE DAMPER AND THE SUPPORTING CONSTRUCTION, INCREASE IN SIZE

Based on the rule X.50 the dimensions of the gap may be increased to 330 mm (the gap was 300 mm and may be increased by a maximum of 30 mm).

7.2 FIRE PERFORMANCE PARAMETERS

This shall state the fire resistance classification in accordance with EN 13501-3 and the new/revised field of extended application of the new design:

| Damper type CU2 | | |
|---|---------------------------------|---|
| ExAp results | | |
| Criterion | Time (min.) | Time of reaching a criterion measured from the start of the test in accordance with EN 1366-2:2015 |
| Integrity (E) -Cotton pad -Gap gauge Ø 6 mm -Gap gauge Ø 25 mm -Sustained flaming > 10 seconds -Leakage | 117 132 132 132 132 | Applied Not applied Not applied No failure No Failure, max. 71.5 m ³ /h at 26 min. |
| Insulation (I) -Average temperature -Maximum temperature | 132 120 | No failure Failure (tc4) |
| Leakage (S) | - | No failure, max. 71.5 m ³ /h at 26 min. |
| ExAp results leakage test at ambient temperature | | |
| Side | | Conclusion |
| Leakage (Nm ³ /h.m ²) through the fire damper (mechanism exposed side) | | Satisfied |
| Leakage (Nm ³ /h.m ²) through the fire damper (mechanism unexposed side) | | Satisfied |

| Damper type CR2 | | |
|---|---------------------------------|--|
| ExAp results | | |
| Criterion | Time (min.) | Time of reaching a criterion measured from the start of the test in accordance with EN 1366-2:2015 |
| Integrity (E) -Cotton pad -Gap gauge Ø 6 mm -Gap gauge Ø 25 mm -Sustained flaming > 10 seconds -Leakage | 132 132 132 132 132 | Not applied Not applied Not applied No failure No failure, max. 67.3 m ³ /h at 6.5 min. |
| Insulation (I) -Average temperature -Maximum temperature | 132 132 | No failure No failure |
| Leakage (S) | 132 | No failure, max. 5.2 m ³ /h at 64 min. |
| ExAp results leakage test at ambient temperature | | |
| Side | | Conclusion |
| Leakage (Nm ³ /h.m ²) through the fire damper (mechanism exposed side) | | Satisfied |
| Leakage (Nm ³ /h.m ²) through the fire damper (mechanism unexposed side) | | Satisfied |

8. ADDITIONAL STATEMENT

The extended application results relate to the behaviour of a product/product family under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product/product family in use.



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APPENDIX A: DRAWINGS

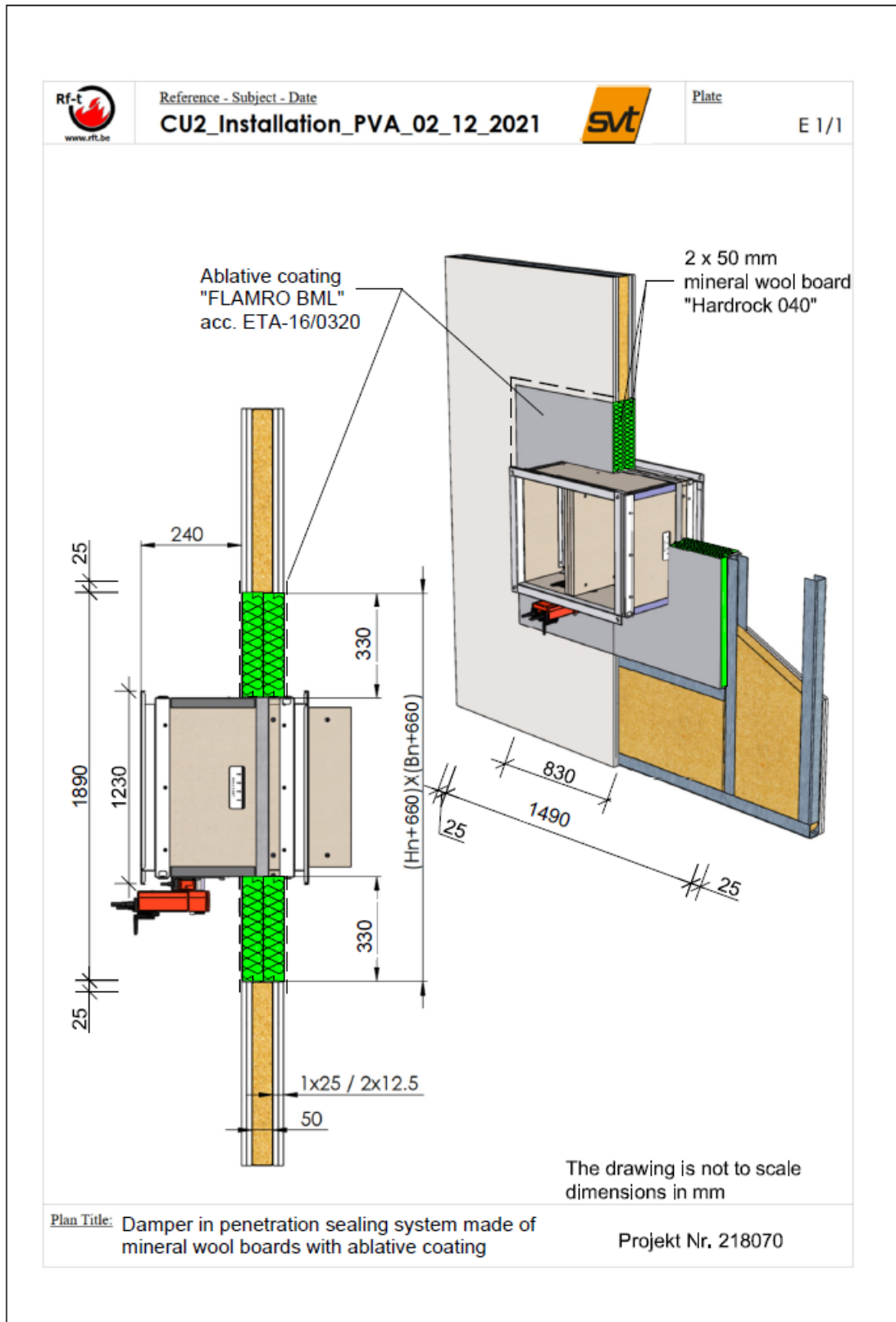


Figure 1 System CU2 with "FLAMRO BML"

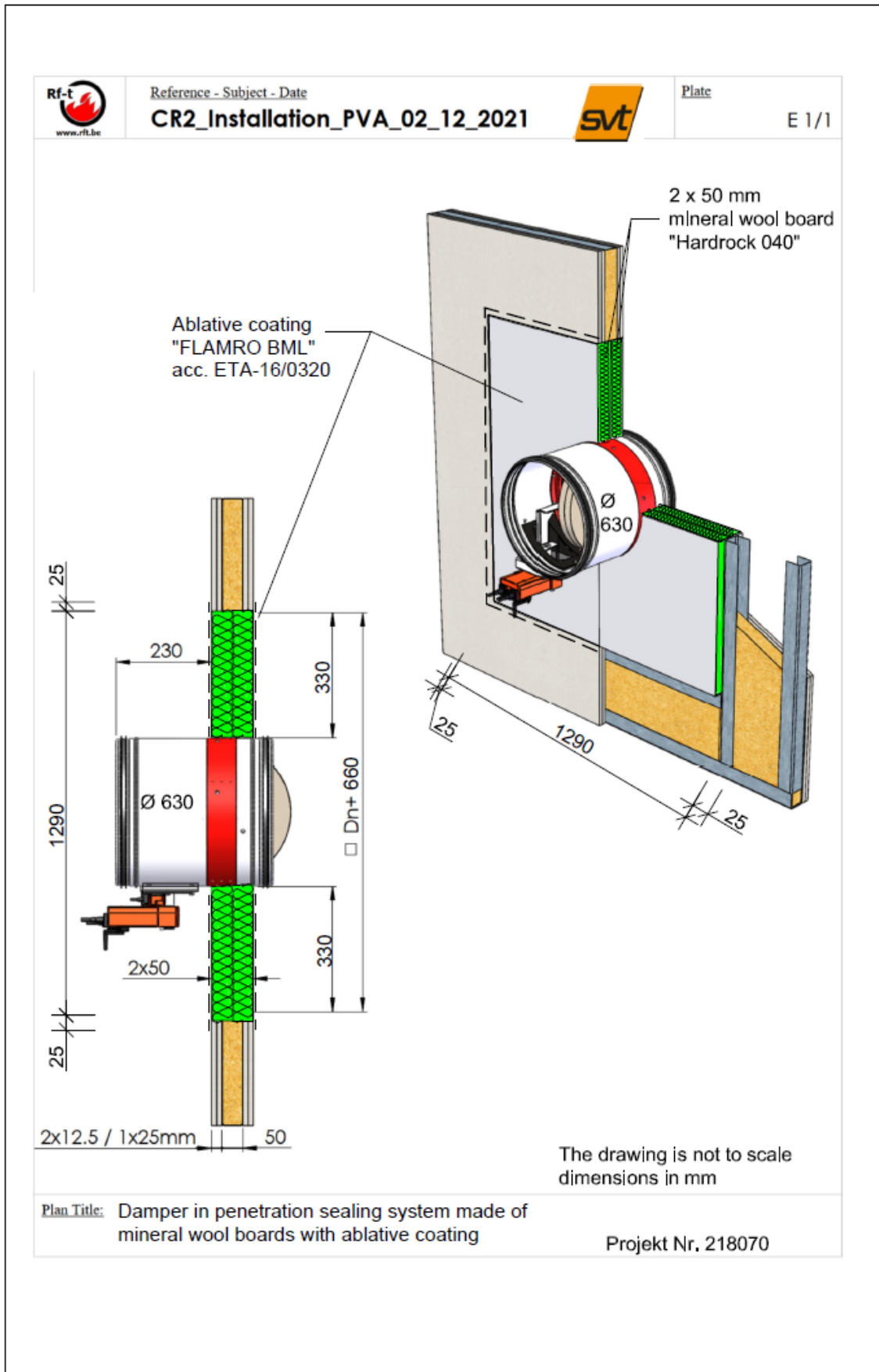


Figure 2 System CR2 with "FLAMRO BML"

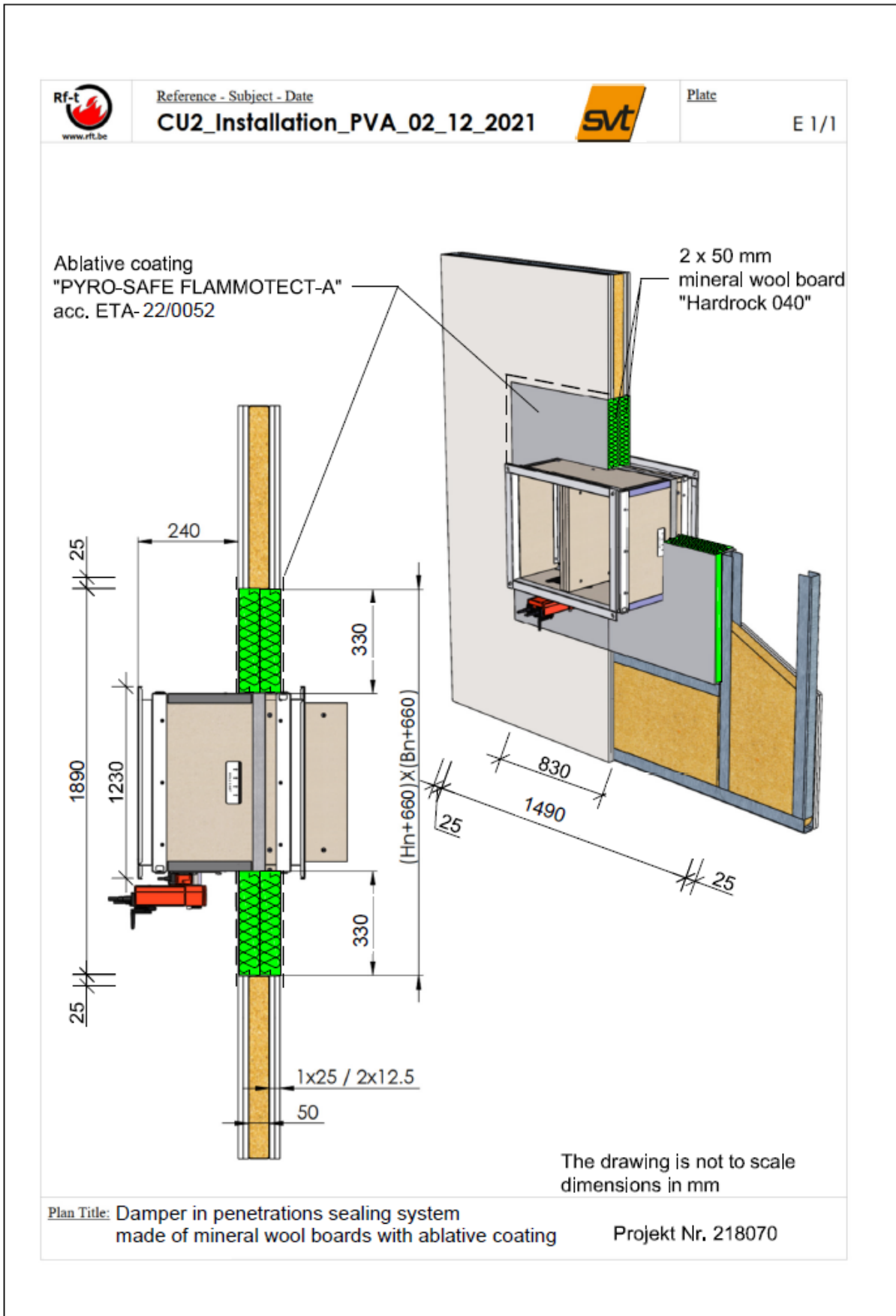


Figure 3 System CU2 with "PRYRO-SAFE FLAMMOTECT -A"

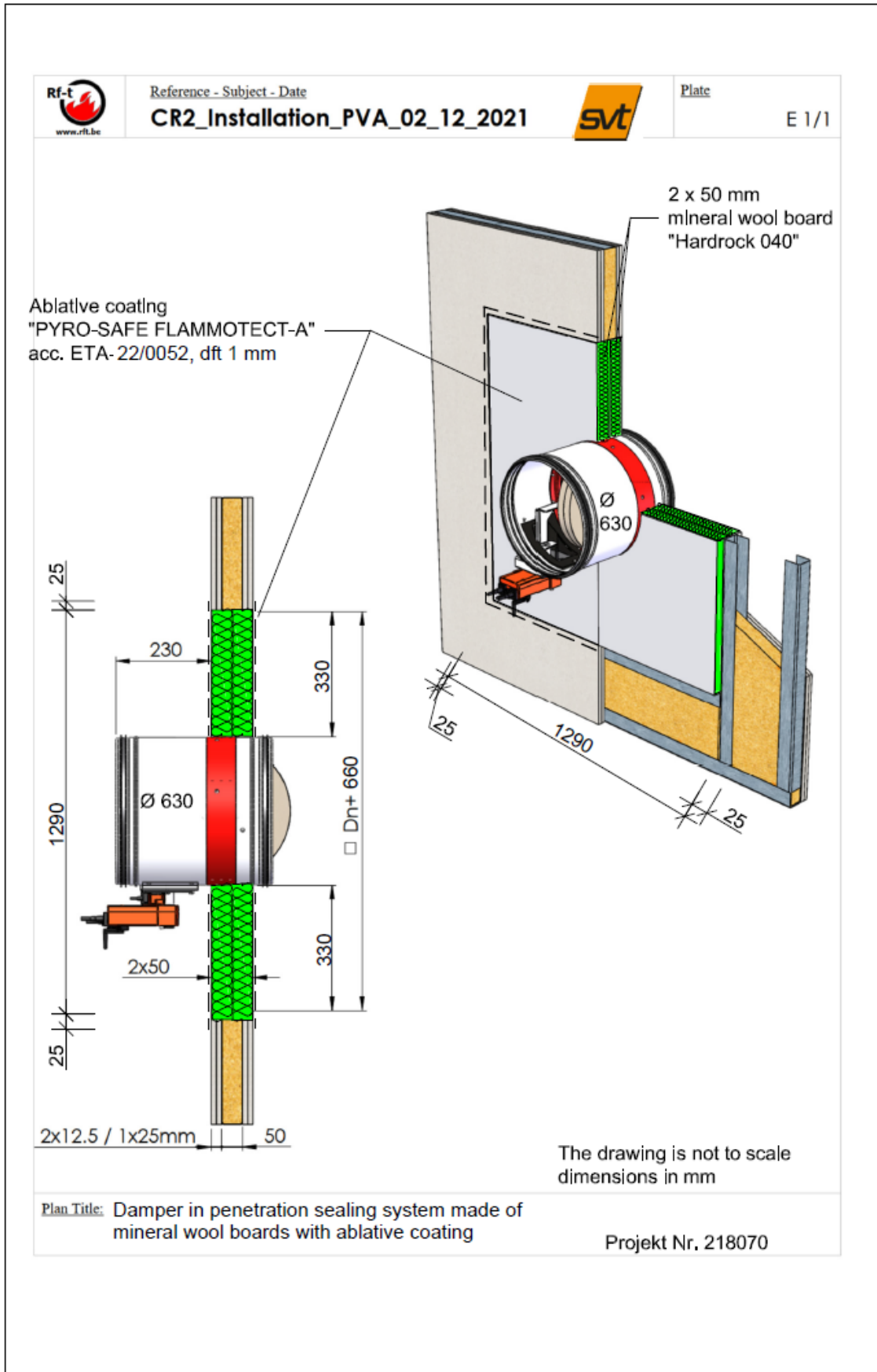


Figure 4 System CR2 with "PYRO-SAFE FLAMMOTECT -A"

APPENDIX B: ADDITIONAL SUPPORTING TEST DATA

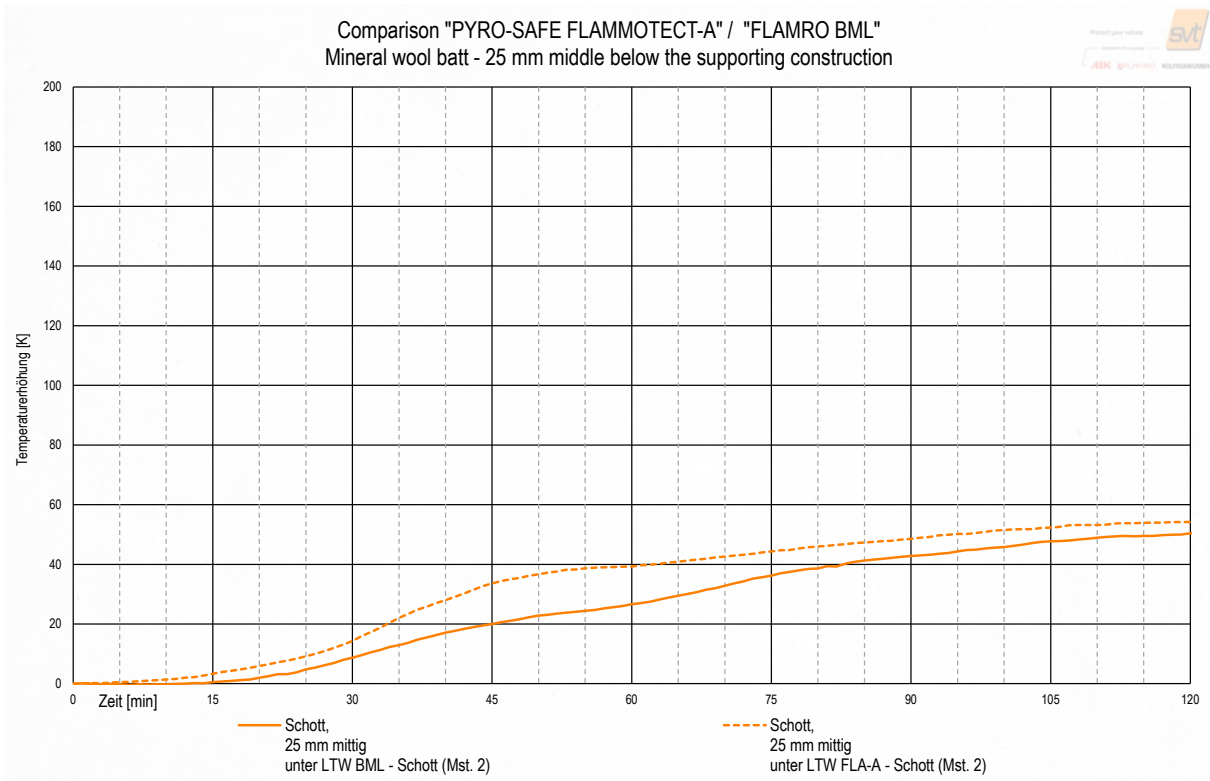


Figure B 1 Comparison between temperature measurements on the mineral wool batt

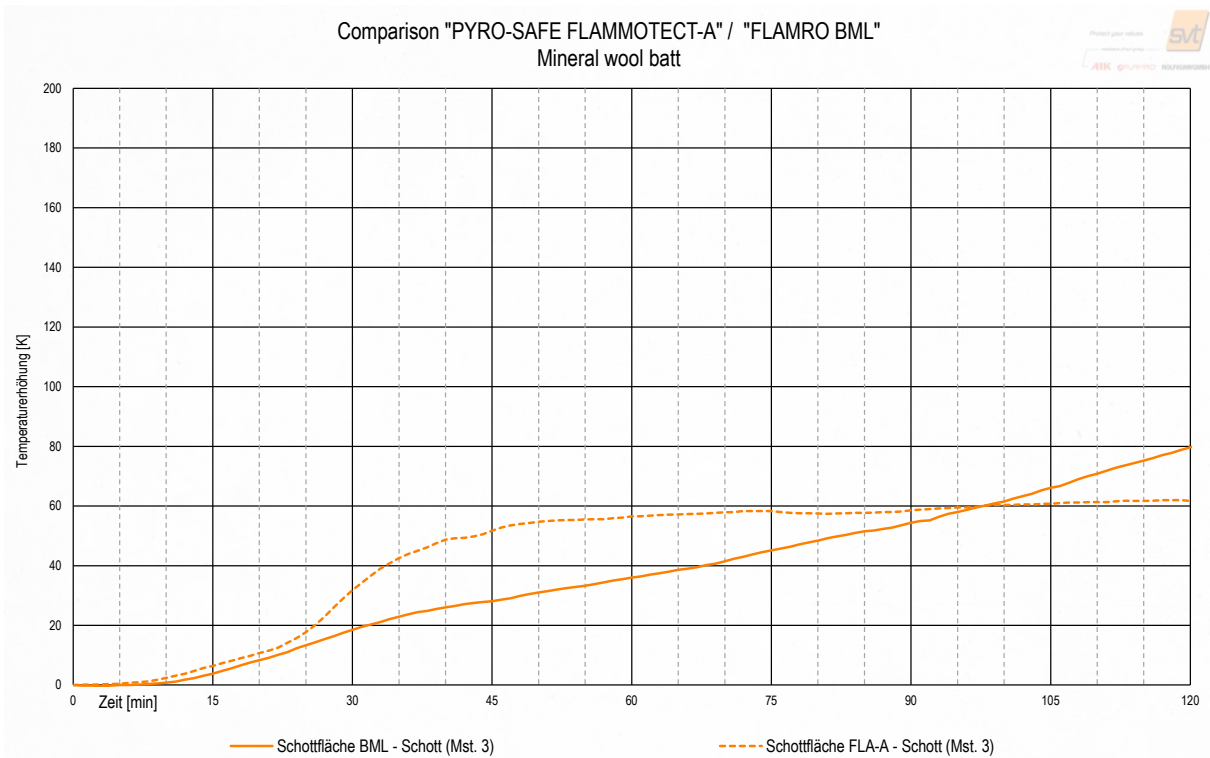


Figure B 2 Comparison between temperature measurements on the mineral wool batt