Regulatory Information Report

RIRF24020

Fire resistance test for penetrations through the vertical separating element

Client:	Agnitek Pty Ltd
Test method:	AS1530.4-2014
Report Date:	29/06/2024
Test number:	PF24020

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1.1 Document Revision Schedule

Revision #	Date	Description
1	29/06/2024	Issued to Client

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		29/06/2024
Authorised by:	Andrew Bain (Authorized signatory)		29/06/2024

ACCREDITED
IANZ
TESTING LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

2. Report Summary

Service penetration was tested passing through 64mm Steel Stud wall with two layers of 13mm FR plasterboard each side.

Specimen #	Service	Actual Integrity (min)	Actual Insulation (min)	FRL
1	DN12 PB Pipe	123 NF	123 NF	-/120/120
2	DN20 PB Pipe	123 NF	123 NF	-/120/120
3	DN20 Pex-Al-Pex Pipe	123 NF	103	-/120/90
4	DN32 Pex-Al-Pex Pipe	123 NF	68	-/120/60
5	DN75 HDPE Pipe	104	86	-/90/60
6	DN65 PVC-C Pipe	32	32	-/30/30
7	DN40 PVC-C Pipe	123 NF	40	-/120/30
8	Air Conditioning Bundle – 2×Pair coil with PE insulation and 2×TPS cable	123 NF	48	-/120/30
9	Air Conditioning Bundle – 2×Pair coil with FR insulation and 2×TPS cable	123 NF	81	-/120/60

NF – No failure during the test

3. General Information

3.1 Testing Scope

Applicable Standards:

AS 1530.4-2014 Section 10: Service penetrations and control joints

AS 4072.1-2005 (r. 2016) Components for the protection of openings in fire-resistant separating elements. Part 1: Service penetrations and control joints

Departures from Testing Method:

There were no departures from the testing method.

Test conditions:

Conditions complied with the Standard.

3.2 Contact Details

Accredited testing laboratory

Fire TS Lab - Passive Fire Inspection and Test Services Ltd

Accreditation Number - 1335

1/113 Pavilion Drive, Mangere, Auckland, 2022

New Zealand

Contact e-mail: tests@firelab.co.nz

Client/Applicant:

Agnitek Pty Ltd

8 Clare St, Bayswater, VIC, 3153

Australia

Contact e-mail: info@agnitek.com.au

Manufacturer:

Same as Client/Applicant

3.3 Specimen Preparation, Conditioning and Timeline

Specimens conditioning and delivery to Laboratory:

Separating element was built by the Laboratory in line with Client instructions. Installation of fire stopping system was performed by the Laboratory in line with Client instructions. The Laboratory was not involved in sampling of the materials. The Laboratory checked materials during construction of the specimen.

Testing date:

28/02/2024

Installation completion date:

21/02/2024

Termination of The Test:

The test was discontinued at 123 minutes.

3.4 Use of Reports

A regulatory information report was issued in addition to the full test report PF24020. This provides the minimum information required for regulatory compliance.

This report shall not be reproduced, except in full.

The specimen was a symmetrical construction.

This report details the methods of construction, test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in AS 1530.4. Any significant variation with respect to size, constructional details, loads, stresses, edge or end conditions, other than that allowed under the field of direct application in the relevant test method, is not covered by this report.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

The test results relate to the specimens of the product in the form in which they were tested. Differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product, which is supplied or used, is fully represented by the specimens, which were tested.

The specimens were supplied by the sponsor and the Laboratory was not involved in any of selection or sampling procedures.

The results of these fire tests may be used to directly assess fire hazard, but it should be recognized that a single test method will not provide a full assessment of fire hazard under all fire conditions.

4. Specimen Description

4.1 Supporting Construction

Separating element		
1.1	Item	64mm Steel Stud with two layers of 13mm FR plasterboard each side
	Dimensions	Width / Height (W/H): 1200mm × 1200mm
		Wall Thickness (T): 116mm
		Cavity: 64mm

Materials		
1.2	Item / Product Name	Steel Track
	Dimensions	Width / Height (W/H): 64mm × 30mm
		Thickness (T): 0.55 BMT
	Additional Info	Installed to top and bottom of refractory frame
1.3	Item / Product Name	Steel Stud
	Dimensions	Width / Height (W/H): 64mm × 34mm
		Thickness (T): 0.50 BMT
	Additional Info	Fixed to steel tracks, used to construct steel stud frame
1.4	Item / Product Name	Metal Pin Anchor
	Thickness	6.5mm × 32mm
	Installation	Used to fix bottom track and steel studs to refractory frame
1.5	Item / Product Name	AGNI-Board
	Dimensions	Width / Height (W/H): 600mm × 1200mm
		Thickness (T): 50mm
		Density (ρ): 160 kg/m^3 nominal, 190.95 kg/m^3 measured
	Installation	Installed to steel stud frame between specimens, trimmed to flush with steel studs
	Item / Product Name	Fire Rated Plasterboard

1.6	Installation	Thickness (T): 13mm
		Width / Height (W/H): 1200mm × 1200mm
	Additional Info	2 × layers installed to each face of steel stud frame
1.7	Item / Product Name	Self Tapping Screw
	Dimensions	6g × 25mm
	Installation	Used to fix steel stud frame
1.8	Item / Product Name	Self Tapping Screw
	Dimensions	6g × 41mm
	Installation	Used to fix plasterboard to steel stud frame

4.2 Specimens

Services		
2.1	Item / Product Name	DN75 PE100 (HDPE) Pipe
	Dimensions	Inner Diameter (ID): 59.5mm
		Outer Diameter (OD): 75mm
		Thickness (T): 7.5mm
2.2	Item / Product Name	2.5mm² Twin + Earth TPS Cable
	Dimensions	Width / Height (W/H): 12.5mm × 6mm
2.3	Item / Product Name	Copper Pair Coil 3/4” + 3/8” with PE Insulation
	Dimensions	Overall Width / Height (W/H): 66.5mm × 37.5mm
		Insulation Thickness (T): 8mm
2.4	Item / Product Name	19mm 9.52×0.081/15.88×1.02 Pair Coil with FR Insulation
	Dimensions	Overall Width / Height (W/H): 108mm × 60mm
		Insulation Thickness (T): 18mm and 21.5mm
2.5	Item / Product Name	PE-Xb/AL/PE-Xb DN32 Gas Pipe
	Dimensions	Inner Diameter (ID): 24.5mm
		Outer Diameter (OD): 32.5mm
		Thickness (T): 3.5mm
2.6	Item / Product Name	DN40 PVC-C Pipe
	Dimensions	Inner Diameter (ID): 37mm

		Outer Diameter (OD): 48mm
		Thickness (T): 5.5mm
2.7	Item / Product Name	DN65 PVC-C Pipe
	Dimensions	Inner Diameter (ID): 58mm
		Outer Diameter (OD): 73mm
		Thickness (T): 7.5mm
2.8	Item / Product Name	DN12 PB Pipe
	Dimensions	Inner Diameter (ID): 8.5mm
		Outer Diameter (OD): 12.5mm
		Thickness (T): 1.5mm
2.9	Item / Product Name	DN20 PB Pipe
	Dimensions	Inner Diameter (ID): 22mm
		Outer Diameter (OD): 28mm
		Thickness (T): 3mm
2.10	Item / Product Name	PE-Xb/AL/PE-Xb DN20 Gas Pipe
	Dimensions	Inner Diameter (ID): 15.5mm
		Outer Diameter (OD): 20.5mm
		Thickness (T): 2.5mm

Sealants		
3.1	Item / Product Name	AGNI-Seal
	Dimensions	310mL
	Installation	Installed to all specimens

Fixings		
4.1	Item	AGNI-Strap Stainless Steel Ties
	Dimensions	Width / Length (W/L): 4.6mm × 200mm
	Installation	Used to fix intumescent around service
4.2	Item	AGNI-Clip – stainless steel clips
	Installation	Used to fix intumescent to separating element

4.3	Item	Self Tapping Screw
	Dimensions	6g × 25mm
	Installation	Used to fix intumescent to separating element

Intumescent		
9.1	Item	AGNI-Wrap
	Dimensions	Width (W): 25mm
		Thickness (T): 3mm
	Installation	Installed around service, against separating element
9.2	Item	AGNI-Sleeve
	Dimensions	Width (W): 300mm
		Thickness (T): 3mm
	Installation	Installed around service and passed through separating element

5. Specimens

5.1 Specimen 1

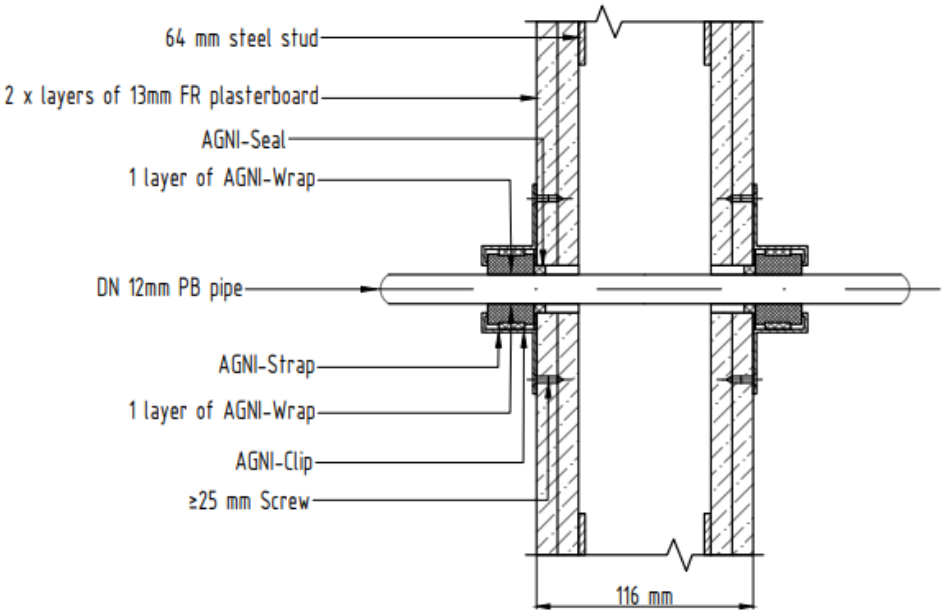

Figure 3 – Specimen 1

Service penetration details	
Service	DN12 PB Pipe
Aperture Diameter	28mm
Annular Spacing	Min: 3mm, Max: 12.5mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	26mm (nominal) deep sealant was installed in the annular space. 1 revolution of AGNI-Wrap was wrapped around the pipe with 10mm (nominal) overlap, then secured using a cable tie and fixed to the separating element with 2 screw and clip fixings. A bead of sealant was applied to the AGNI-Wrap to wall junction.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	No failure at 123 minutes

5.2 Specimen 2

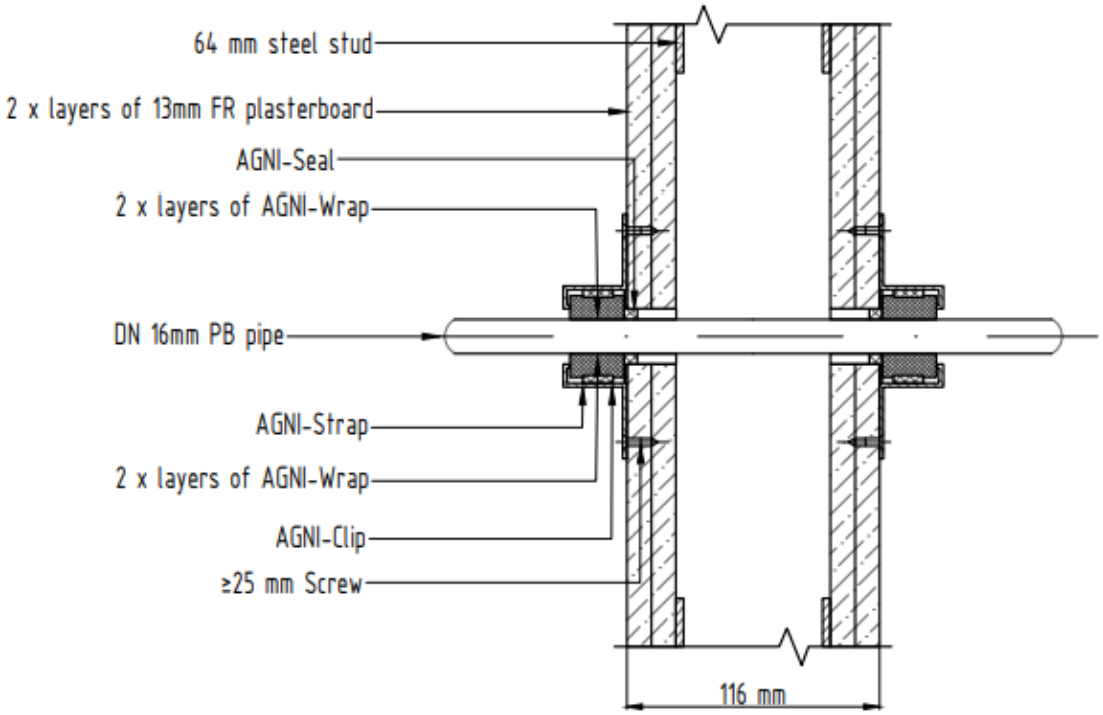

Figure 5 – Specimen 2

Service penetration details	
Service	DN20 PB Pipe
Aperture Diameter	45mm
Annular Spacing	Min: 3.5mm, Max: 13.5mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	26mm (nominal) deep sealant was installed in the annular space. 2 revolutions of AGNI-Wrap were wrapped around the pipe with 10mm (nominal) overlap, then secured using a cable tie and fixed to the separating element with 2 screw and clip fixings. A bead of sealant was applied to the AGNI-Wrap to wall junction.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	No failure at 123 minutes

5.3 Specimen 3

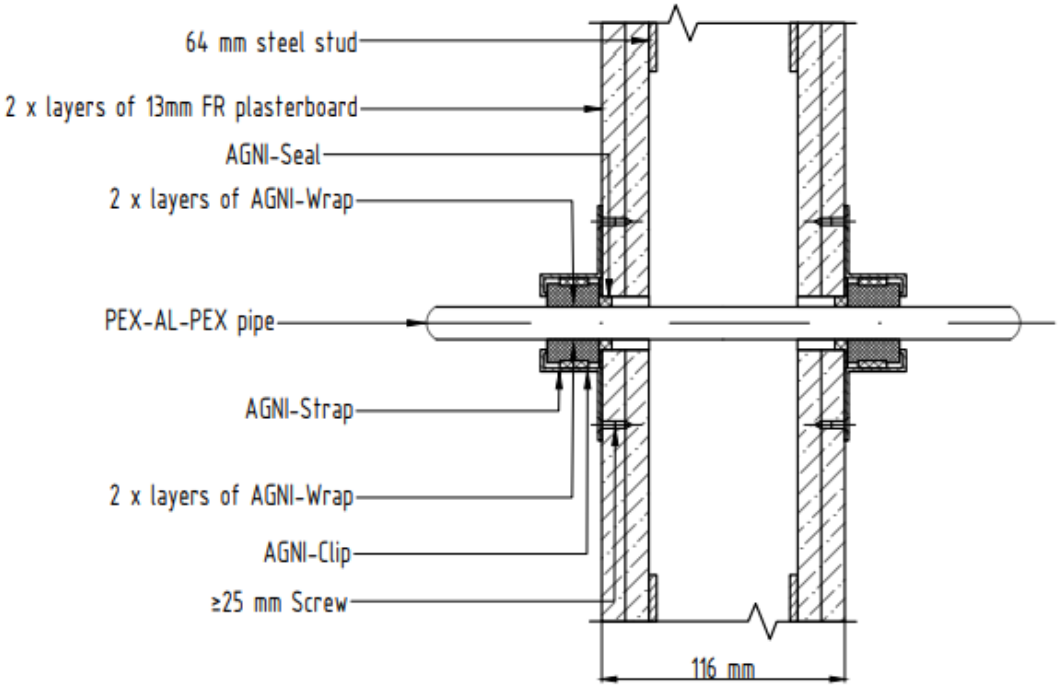

Figure 7 – Specimen 3

Service penetration details	
Service	PE-Xb/AL/PE-Xb DN20 Gas Pipe
Aperture Diameter	36.5mm
Annular Spacing	Min: 4mm, Max: 12mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	26mm (nominal) deep sealant was installed in the annular space. 2 revolutions of AGNI-Wrap were wrapped around the pipe with 10mm (nominal) overlap, then secured using a cable tie and fixed to the separating element with 2 screw and clip fixings. A bead of sealant was applied to the AGNI-Wrap to wall junction.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	103 minutes

5.4 Specimen 4

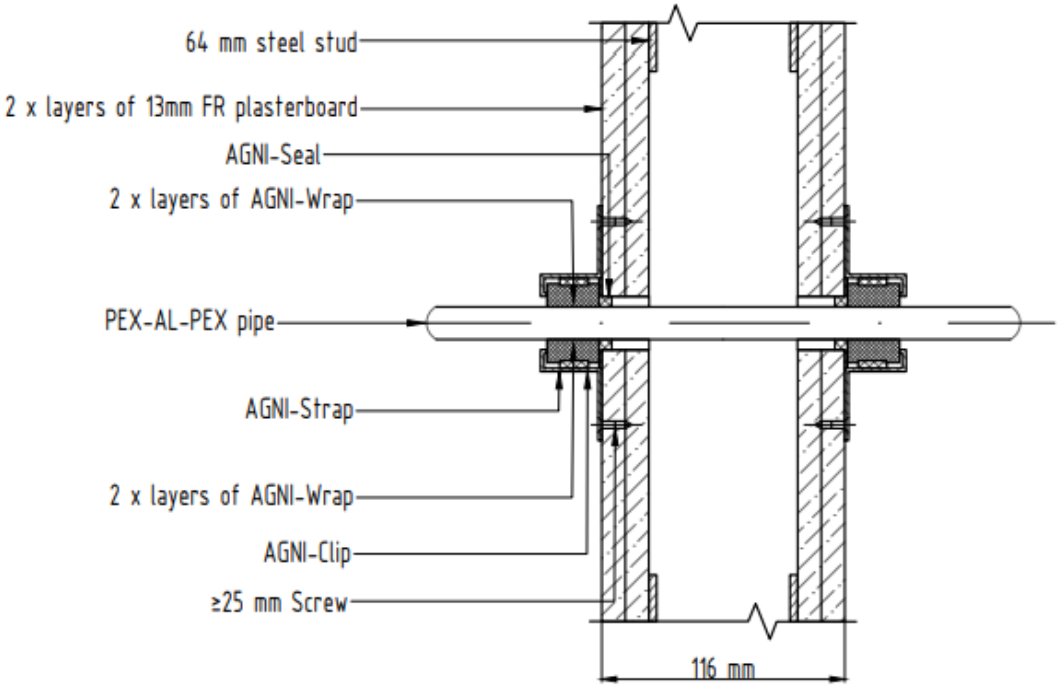

Figure 9 – Specimen 4

Service penetration details	
Service	PE-Xb/AL/PE-Xb DN32 Gas Pipe
Aperture Diameter	Min: 44.5mm, Max: 45.5mm
Annular Spacing	Min: 2.5mm, Max: 9.5mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	26mm (nominal) deep sealant was installed in the annular space. 2 revolutions of AGNI-Wrap were wrapped around the pipe with 10mm (nominal) overlap, then secured using a cable tie and fixed to the separating element with 2 screw and clip fixings. A bead of sealant was applied to the AGNI-Wrap to wall junction.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	68 minutes

5.5 Specimen 5

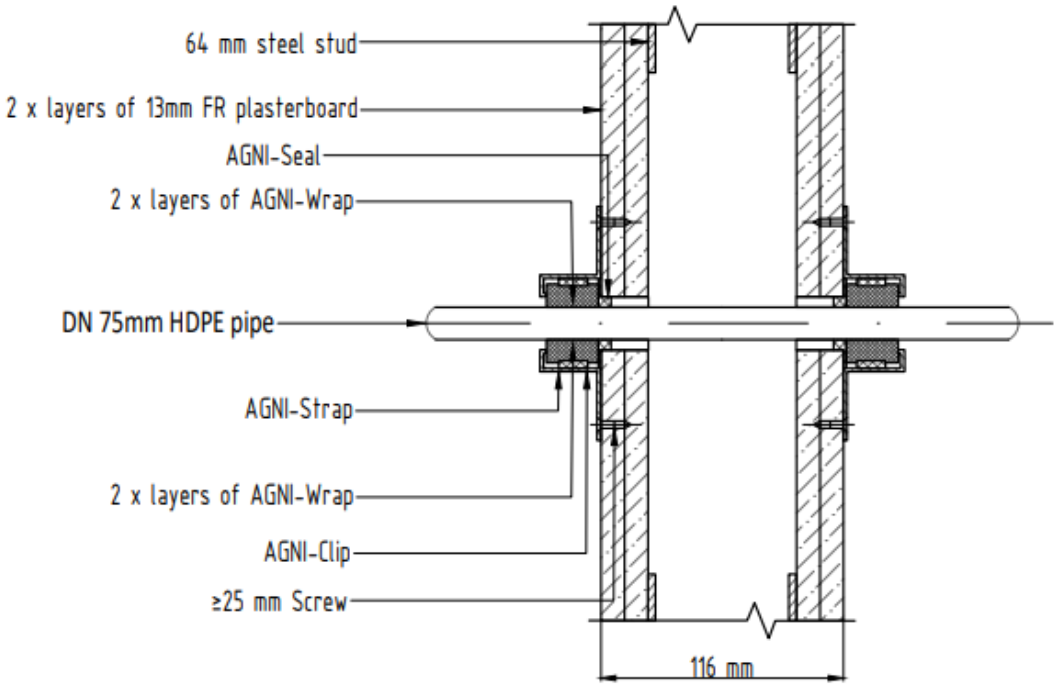

Figure 11 – Specimen 5

Service penetration details	
Service	DN75 PE100 (HDPE) Pipe
Aperture Diameter	89.5mm
Annular Spacing	Min: 5mm, Max: 9.5mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	26mm (nominal) deep sealant was installed in the annular space. 2 revolutions of AGNI-Wrap were wrapped around the pipe with 10mm (nominal) overlap, then secured using a cable tie and fixed to the separating element with 2 screw and clip fixings. A bead of sealant was applied to the AGNI-Wrap to wall junction.

Test results	
Structural adequacy	Not applicable
Integrity	104 minutes
Insulation	86 minutes

5.6 Specimen 6

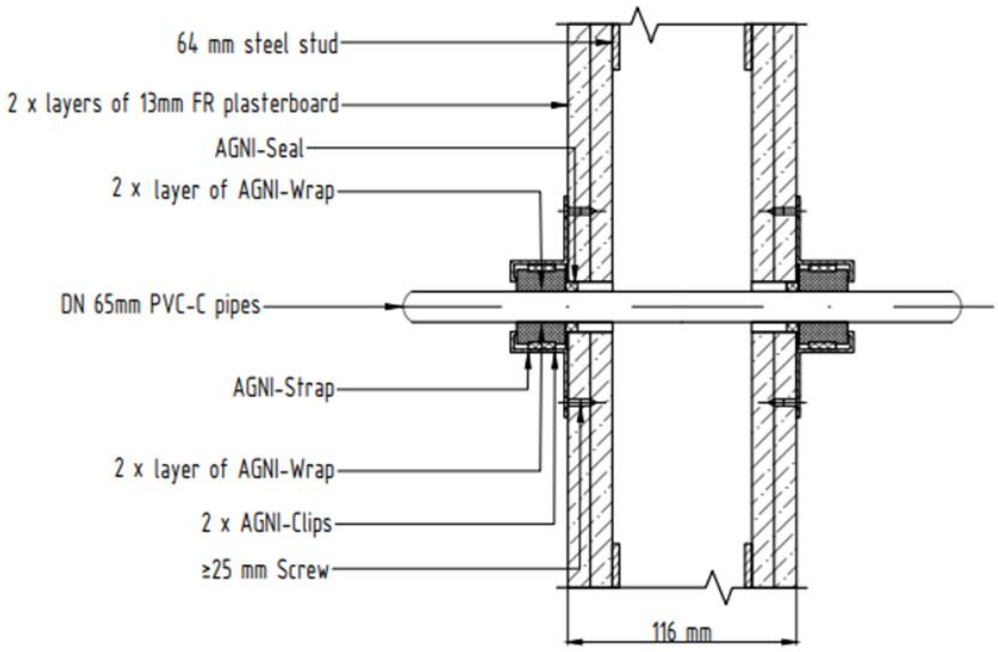

Figure 13 – Specimen 6

Service penetration details	
Service	DN65 PVC-C Pipe
Aperture Diameter	89.5mm
Annular Spacing	Min: 5mm, Max: 11.5mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	26mm (nominal) deep sealant was installed in the annular space. 2 revolutions of AGNI-Wrap were wrapped around the pipe with 10mm (nominal) overlap, then secured using a cable tie and fixed to the separating element with 2 screw and clip fixings. A bead of sealant was applied to the AGNI-Wrap to wall junction.

Test results	
Structural adequacy	Not applicable
Integrity	32 minutes
Insulation	32 minutes

5.7 Specimen 7

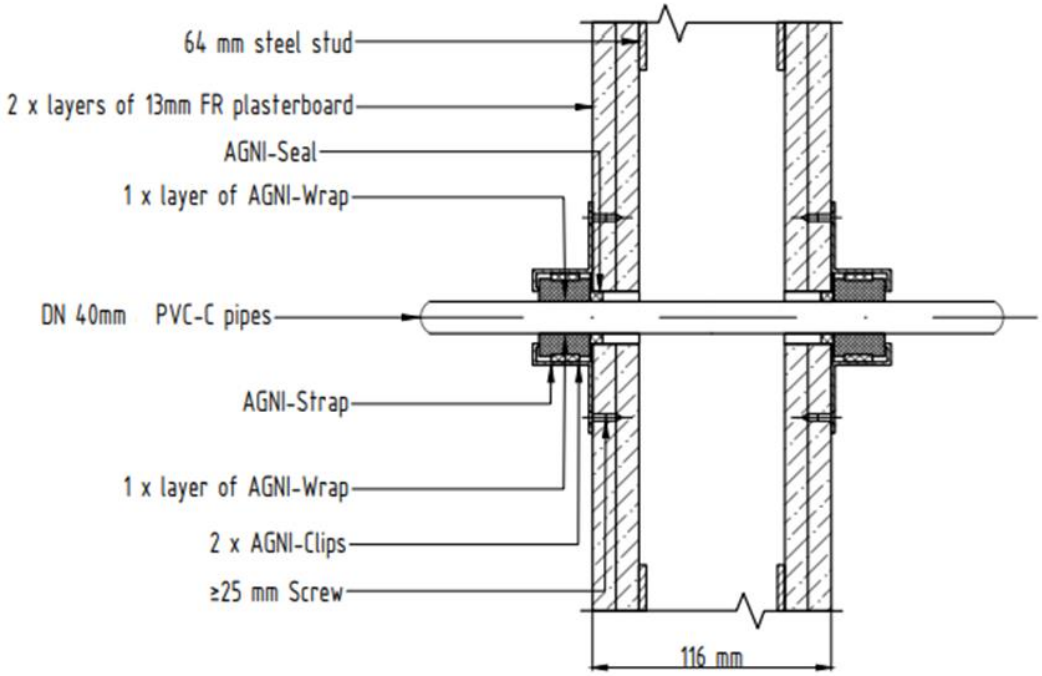

Figure 15 – Specimen 7

Service penetration details	
Service	DN40 PVC-C Pipe
Aperture Diameter	67.5mm
Annular Spacing	Min: 4.5mm, Max: 15mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	26mm (nominal) deep sealant was installed in the annular space. 1 revolution of AGNI-Wrap wrapped around the pipe with 10mm (nominal) overlap, then secured using a cable tie and fixed to the separating element with 2 screw and clip fixings. A bead of sealant was applied to the AGNI-Wrap to wall junction.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	40 minutes

5.8 Specimen 8

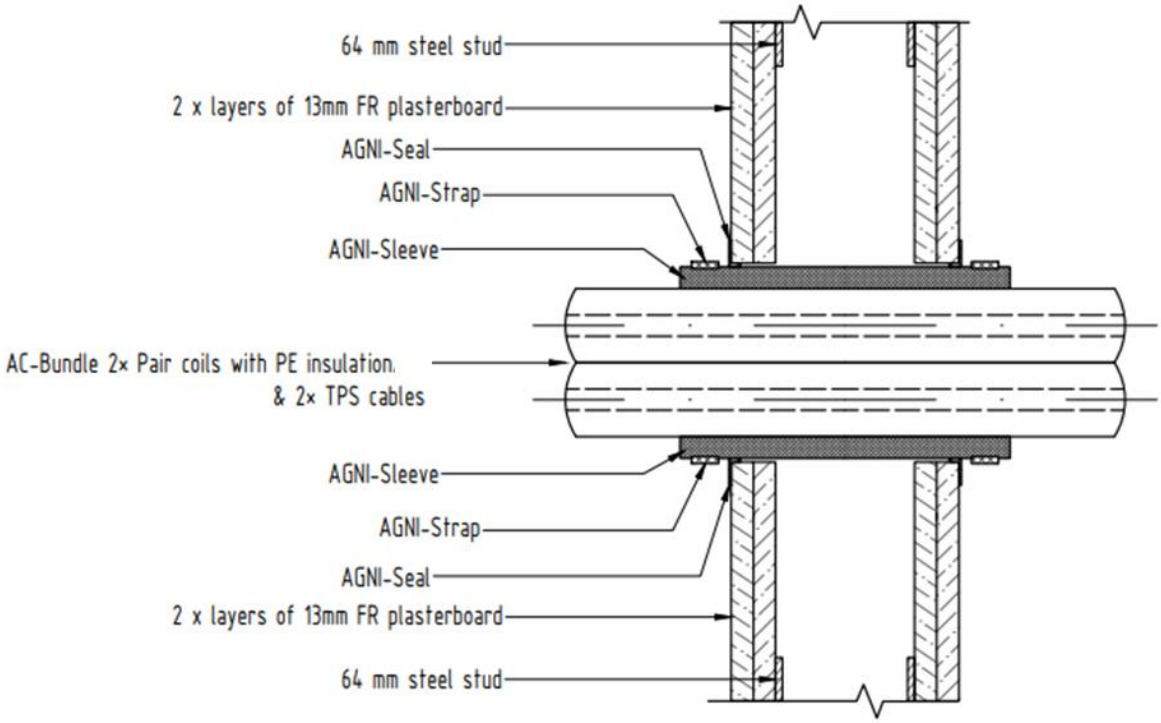

Figure 17 – Specimen 8

Service penetration details	
Service	Air Conditioning Bundle – 2 × Pair coil with PE insulation and 2 × TPS cable
Aperture Diameter	85mm
Annular Spacing	Min: 3mm, Max: 19mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	AGNI-Sleeve was secured around the bundle with a 60mm (nominal) overlap, using a cable tie. 26mm (nominal) deep sealant was installed in the annular space. A bead of sealant was applied into the AGNI-Sleeve to wall junction.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	48 minutes

5.9 Specimen 9

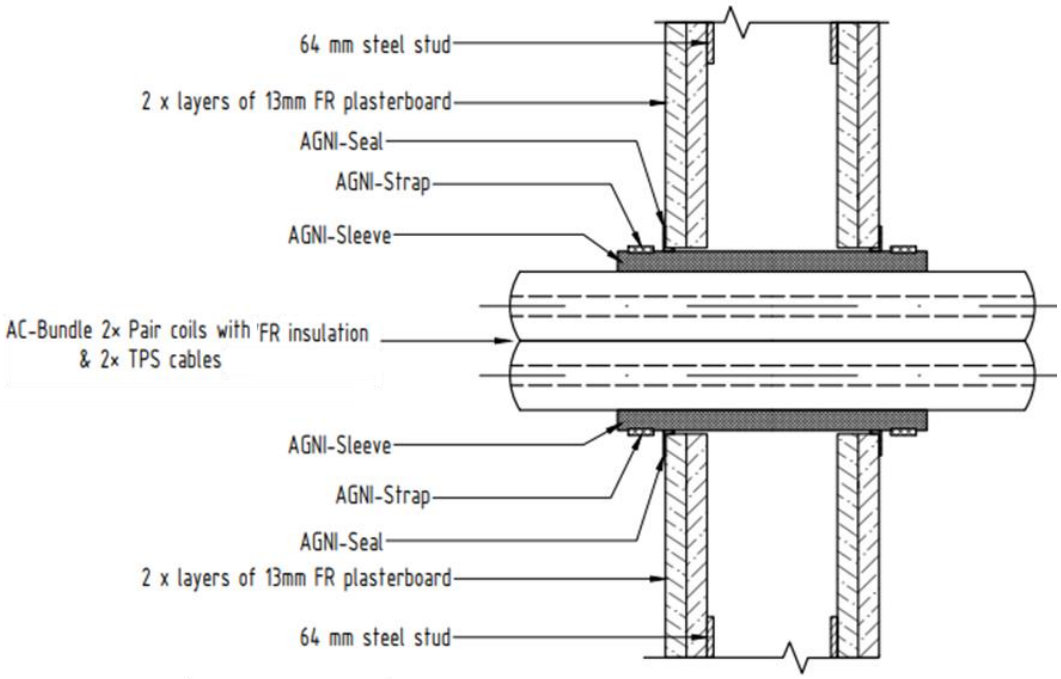

Figure 19 – Specimen 9

Service penetration details	
Service	Air Conditioning Bundle – 2 × Pair coil with FR insulation and 2 × TPS cable
Aperture Diameter	125mm
Annular Spacing	Min: 3mm, Max: 33mm

Local Fire-stopping system	
Application	Symmetrical – installed on both faces of separating element
System description	AGNI-Sleeve was secured around the bundle with a 60mm (nominal) overlap using a cable tie. 26mm (nominal) deep sealant was installed in the annular space. A bead of sealant was applied into the AGNI-Sleeve to wall junction.

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 123 minutes
Insulation	81 minutes

6. Observations during the test

Time min	Test face	SP#	OBSERVATIONS/REMARKS
32	U	6	Gap on the top side of pipe, red glow in expanded intumescent inside pipe, cotton pad test for 30 seconds over the gap – FAIL
39	U	7	Gap around diameter of pipe, red glow in expanded intumescent inside pipe, cotton pad test for 30 seconds over the gap – PASS
104	U	5	Crack between pipe and SE, red glow in aperture, cotton pad test for 30 seconds over the gap – FAIL
123			Test Discontinued

NOTE: E – Exposed Face (inside furnace)

U – Unexposed Face (outside furnace)

SE – Separating element