EFECTIS France
Espace Technologique Bâtiment Explorer
Route de l'Orme des Merisiers
91190 SAINT-AUBIN | FRANCE

CLASSIFICATION REPORT No. EFR-19-000768 - Revision 2

According to standards EN 12101-8: 2011, EN 1366-10: 2022 + A1: 2024 and EN 13501-4

Reference laboratory assessment report	▪ EFR-19-000768 – Revision 1
Regarding	A range of VUW120-type smoke exhaust dampers, fitted in an aerated concrete wall - Sales reference of the damper: VUW120
Sponsor	RF TECHNOLOGIES Lange Ambachtstraat, 40 B - 9860 OOSTERZELE BCE 0427.205.519

This classification report supersedes classification report EFR-19-000768 – Revision 1.

DOCUMENT FOLLOW-UP

Version	Modification	Comment	Date		
0	Document creation	/	21/03/2019	Editor	M. Fenucci
				Verifier	/
				Approver	/
1	Integration of § 4: reference tests		28/11/2029	Editor	R. Stouvenot
				Verifier	R. Chiva
				Approver	R. Chiva
2	- Validation of BEN BELIMO actuator - Update of Field of application results (§.9.) regarding EN 1366-10: 2022 + A1: 2024 - Addition of BCE number		01/12/2025	Editor	C. Salsi
				Verifier	R. Stouvenot
				Approver	R. Stouvenot

1. INTRODUCTION

This classification report defines the classification assigned to VUW 120-type smoke exhaust dampers in accordance with the procedures set out in the standard EN 13501-4: 2016 "Fire classification of construction products and building elements – Part 4: Classification using data from fire resistance tests on components of smoke control systems: ducts and smoke extract ducts", in the standard EN 1366-10: 2022 + A1: 2024 “Fire resistance test of service installations – Part 10: Smoke control dampers” and in the standard EN 12101-8 "Smoke control dampers".

2. BODY

EFECTIS France
Espace Technologique Bâtiment Explorer
Route de l'Orme des Merisiers
91190 SAINT-AUBIN | FRANCE

Notified body number: 1812

3. SPONSOR

RF TECHNOLOGIES
Lange Ambachtstraat, 40
B - 9860 OOSTERZELE

4. REFERENCE TESTS

EFR-18-U-001101
EFR-18-H-001102
EFR-24-001623
EFR-24-001625

5. REFERENCE AND ORIGIN OF THE TEST SPECIMENS

Reference:	VUW120
Origin:	RF TECHNOLOGIES Lange Ambachtstraat, 40 B - 9860 OOSTERZELE

6. OVERALL PRINCIPLE

6.1. TYPE OF FUNCTION

VUW120-type dampers are defined as "smoke exhaust dampers".

Their function is to be fire-resistant as regards the fire resistance performance characteristics stipulated in section 5 of the classification standard EN 13501-4.

6.2. GENERAL POINTS

The test specimen is a multi-compartment smoke exhaust damper embedded in an aerated concrete wall, with mechanism on the exposed-to-fire side.

The smoke exhaust damper consists of the following components:

- A tunnel.
- A horizontally-mounted mobile blade.
- A control mechanism.

The main characteristics of the damper are as follows:

- Nominal dimensions: 300 x 300 to 1500 x 1000 (w x h)

6.3. DETAILED DESCRIPTION OF THE ELEMENTS

6.3.1. Damper tunnel

The rectangular tunnel is made by assembling four 15mm-thick IGNIBOARD (KEEN EAGLE) plasterboard panels, allowing room for flow cross-section dimensions of 1494 x 994 mm (w x h).

The length of the tunnel is 330 mm. The panels are clamped together using four steel clips with dimensions of 32 x 8 mm (w x h).

The smoke exhaust damper is fitted with two 130 mm Ø inspection apertures with galvanised steel covers on the upper and lower sides of the damper, i.e. on the 1500 mm-long sides.

Both ends of the tunnel are fitted with a 1.25 mm-thick connection flange, with dimensions of 10 x 33 x 35 x 16,5 x 35mm, fastened to the tunnel using screws (Ø 4 x 15 mm) positioned every 100mm to 200mm inside the tunnel. The total length of the damper therefore reaches 400 mm, taking into account both flanges.

Cold sealing between the plasterboard panels of the tunnel and between the tunnel and the blade is provided by an EPDM seal and a silicone seal with cross-section dimensions of 26.7 x 12mm (w x h) respectively. The first half of the seal is placed on a semi-perimeter next to the control mechanism and the second half of the seal is placed on the remaining semi-perimeter on the opposite side to the damper blade axis. The galvanized steel sections with dimensions of 35 x 7,3 x 1.25 mm (w x h x th) forming the blade stops and fitted with the silicone seal are fixed to the inside of the tunnel using steel blind nuts (Ø 4.8mm), positioned every 100 to 200 mm.

A sodium silicate intumescent seal covered with a layer of PVC and with cross-section dimensions of 55 x 2 mm (w x th) is positioned on the inside and outside of the tunnel, level with the blade axis, and fixed to the tunnel using three rows of steel nails (Ø 1 x 12mm) positioned every 50 mm.

A 26 mm Ø hole is made in the damper tunnel in order to control the damper blade using the mechanism. The bearings of the blade axis are inserted in the 14 mm Ø holes made halfway up both sides of the damper tunnel.

6.3.2. Blade

The damper blade, with dimensions of (W-22) x (H-22) x 63 mm (w x h x th), is made using two 24 mm-thick IGNIBOARD boards, 15 mm apart on each side of the blade axis.

The thickness of the 24 mm boards is reduced by a 15 mm groove on the outer contour of the blade, and on the control mechanism.

The blade axis is made using steel with dimensions of Ø 12 x 100 mm and is welded to a steel U-shaped section with dimensions of 30 x 15 x 1.5 mm (w x h x th). The two parts are inserted in a rectangular steel tube with dimensions of 30 x 15 x 1.5 mm (w x h x th).

IGNIBOARD strips with cross-section dimensions of 40 x 15 mm (w x th) are positioned between the two boards that make up the mobile blade, on the upper edge and the lower edge of the damper blade. They are fixed to the damper blade using steel clips with dimensions of 25 x 10mm (w x h) positioned every 100mm.

Both boards that make up the mobile blade are fixed together using eight M5 x 80 mm screws and two M5 x 70 mm screws (mechanism side), with M5 washers and M5 nuts.

The control mechanism is fixed in the same way as the damper blade.

6.3.3. Mechanism

The damper blade is controlled in open or closed position using a control mechanism, reference BLE or BEN (BELIMO).

The control mechanism is fully installed on the outside of the damper and is composed of the following elements:

- a steel base plate with dimensions of 205 x 120 x 3 mm (w x h x th) including the mechanism part,a two-way motor and transmission providing the link between the mechanism and the mobile blade.

The base plate is fixed to the inside of the damper tunnel using three M6 x 20 mm screws.

When completing the opening/closing cycles of the blade only, the control mechanism is thermally protected by two semi-covers made using 18 mm to 25 mm-thick GEOSTAFF plasterboards. The lower semi-cover is positioned on the base plate prior to installation of the motor. Both semi-covers are fixed together using three M5 x 110mm screws, M5 nuts and M5 washers. The upper semi-cover is removed before the fire resistance test.

The torque of the actuator is transferred to the blade on the inside of the tunnel through a 18 mm Ø steel shaft.

7. INSTALLATION OF THE TEST SPECIMENS

The smoke exhaust damper is embedded in an aerated concrete wall:

- Minimum bulk density: 550 kg/m^3
- Minimum wall thickness: 100 mm
- Dimensions of the opening: (W + 100) x (h + 100) mm (w x h).

The test specimen is sealed in the concrete wall using mortar made according to the following dosage and characteristics:

- Cement, reference CEM II/B-M (S-V-L) 32,5 R (BATI PRO): 25 kg
- Sand: 60 litres
- Water: 20 litres
- Drying period: more than 28 days
- Application: by spatula

On the exposed-to-fire side, two brackets are positioned below the damper, approximately 150mm from each end, and fastened to the supporting construction using two M5 x 90 mm screws. The brackets are each made of three rectangular steel tubes with cross-section dimensions of 30 x 15 x 1 mm (w x h x th) welded together and forming an angle bracket with dimensions of 40 x 40 mm (w x h).

The damper is then connected to a horizontal smoke control duct, the performance of which is at least EI 120S with a negative pressure of -1500/+500 Pa.

A flange, made with a duct material of 50 mm or more connects the duct to the wall with an overlap on the duct of 90 mm. The flange is connected to the duct using Ø 5 x 90 screws (2) every 150 mm and the corresponding duct glue (1). The flange is placed on the wall using 50mm wide duct material strips over a height of 70 mm. The strips are fixed in the concrete wall using a screwing material suited to the type of wall (3).

8. FIRE RESISTANCE CLASSIFICATIONS

8.1. CLASSIFICATION REFERENCE

This classification procedure was conducted in accordance with section 7.2.4 of the standard EN 13501-4.

8.2. CLASSIFICATIONS

The elements are classified according to the following combinations of performance parameters and classes.

The dampers that have been given this classification have undergone:
- 10,000 cycles (BELIMO BLE or BEN)

E	I	-	t	S	Vew	ho	i	<->	o	Operating pressure	multi	AA	C
E	**I**		**120**	**S**	**Vew**		**i**	<->	**o**	**-1500/+500Pa**	**multi**	**AA**	**C10000**

9. FIELD OF APPLICATION OF THE RESULTS

9.1. GENERAL POINTS

The requirements related to the field of application of all the fire dampers tested in accordance with EN 1366-2 apply, as well as the following items.

9.2. DIMENSIONS OF THE SMOKE EXHAUST DAMPERS

It is possible to use dampers with built-in dimensions:

- 300 x 300 to 1500 x 1000mm (BELIMO mechanism)

9.3. APPLICATION OF SMOKE EXHAUST DAMPERS IN VARIOUS POSITIONS

The classification indicated in section 8.2 of this classification report only applies to dampers installed on the vertical side of an aerated concrete wall with a minimum thickness of 100 mm and a minimum bulk density of 550 kg/m^3.

9.4. DISTANCE BETWEEN MOUNTING POSITIONS IN COMPARTMENT BOUNDARY APPLICATIONS

Individual dampers can be positioned in a supporting construction such that the distance between damper casing (maximum damper outer dimension excluding face flanges used for installation) is not smaller than 200 mm and the distance between the damper casing (maximum damper outer dimension excluding face flanges used for installation) and the supporting construction edge, joint or boundary (e.g. corner, roof junction) is not smaller than 75 mm.

9.5. PRESSURE DIFFERENCES

In accordance with standard EN 1366-10 - section 9.4, the performances stipulated in section 8.2 of this classification report are valid for any smoke exhaust damper operating at a vacuum pressure of -1500 Pa or at an overpressure of +500 Pa.

9.6. HIGH TEMPERATURES

The multi-compartment smoke exhaust dampers tested in accordance with the standard fire test curve in EN 1363-1 are suitable for single compartment uses over the same period of time.

9.7. CYCLING TEST

In conformity with the standard EN 1366-10 – paragraph 10.8.2., smoke control damper meeting the cycling requirements for use with combined smoke control and general HVAC applications and for smoke control systems that are cycle checked every day, are also applicable to systems where the smoke control dampers are operated only in the case of emergency.

In conformity with the standard EN 1366-10 – paragraph 10.8.3., smoke control damper meeting the cycling requirements for smoke control dampers that are operated only in the case of emergency are not applicable to other installations.

In conformity with the standard EN 1366-10 – paragraph 10.8.4., SCD tested without load are not valid for applications where testing with load is required.

9.8. INITIATION METHOD

Smoke exhaust dampers that have been tested for automatic activation (AA) systems are not suitable for use in manual activation (MA) systems.

9.9. APPLICATION TO SHAFTS, WALLS AND CONSTRUCTION OTHER THAN THAT THOSE TESTED

Compartment mounted multi-compartment smoke control dampers may be applied to builders work (e.g. ducts/shafts created on site – concrete, blockwork, etc.), or walls restricted bu the following:

- Multi-compartment smoke control dampers may be applied to shafts and walls constructed from materials of the same or greater density as those tested.
- Multi-compartment smoke control dampers may be applied shafts and walls of the same materials as those tested with the same or a greater thickness.

9.10. STANDARD DAMPER OPEN AND CLOSED POSITION

A SCD tested with blade open and then having to close for the test is applicable to SCDs when set in normal operation, either open or closed.

Issued in Saint-Aubin, December 1st 2025

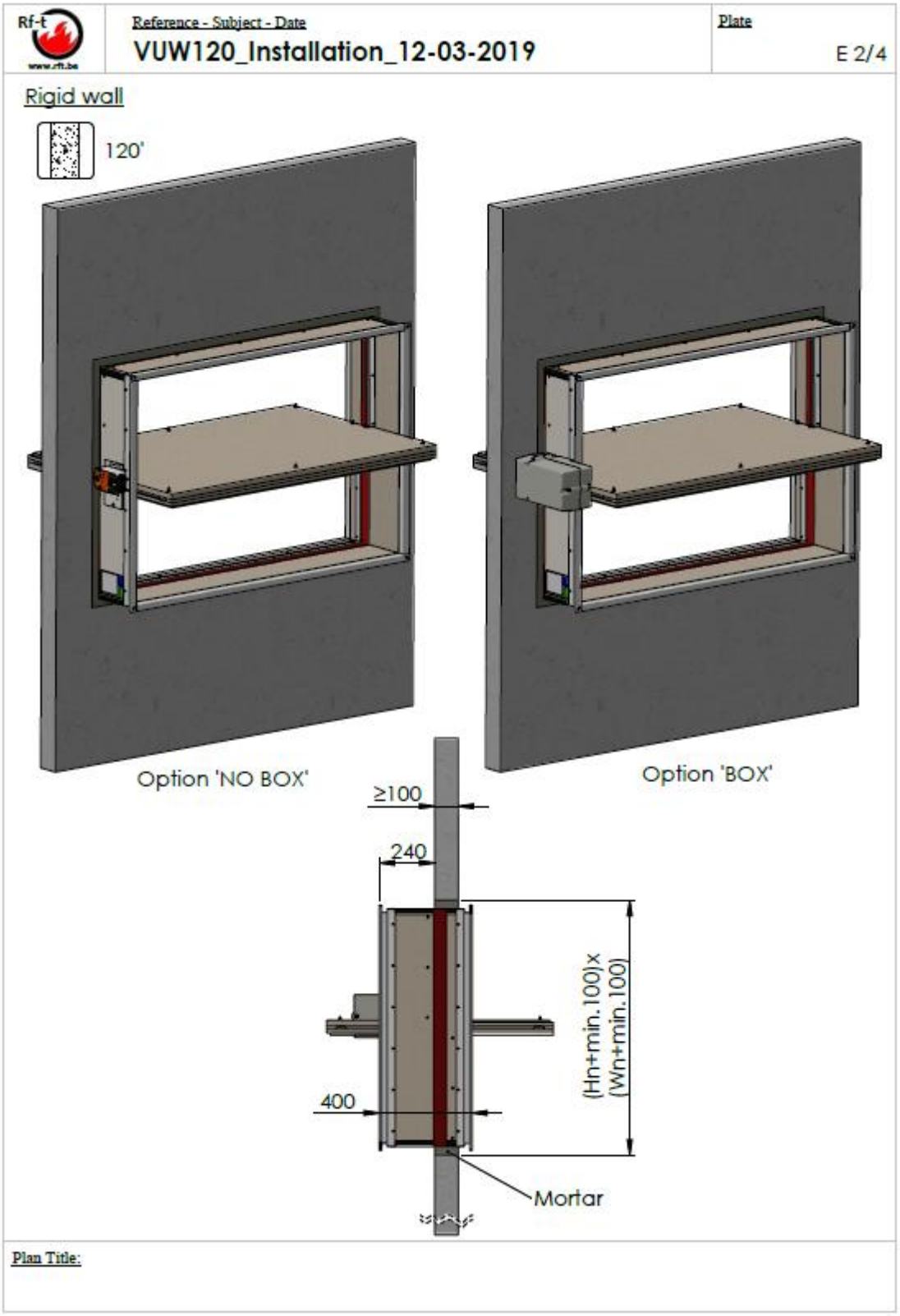
X Camille SALSI

Project leader
Signé par : Camille SALSI

X Romain STOUVENOT

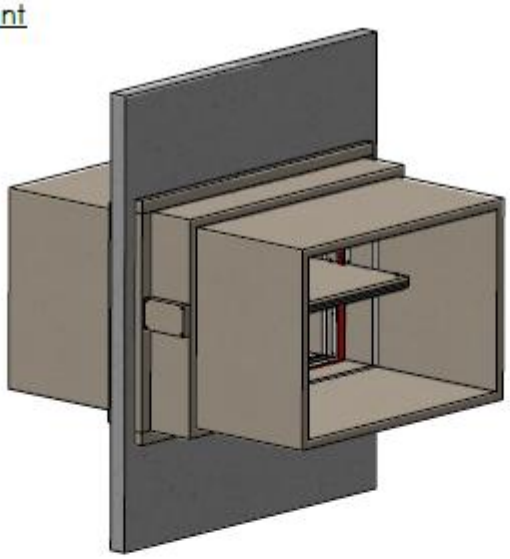
Supervisor
Signé par : Romain STOUVENOT

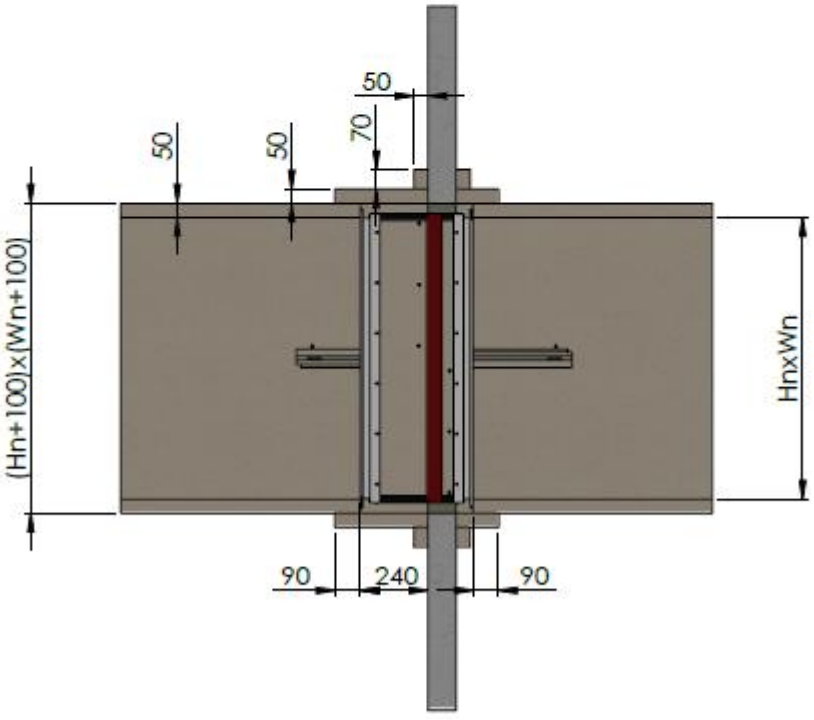
FIGURES APPENDIX



Reference - Subject - Date	Plate
VUW120_Installation_12-03-2019	E 3/4

Multi-compartment

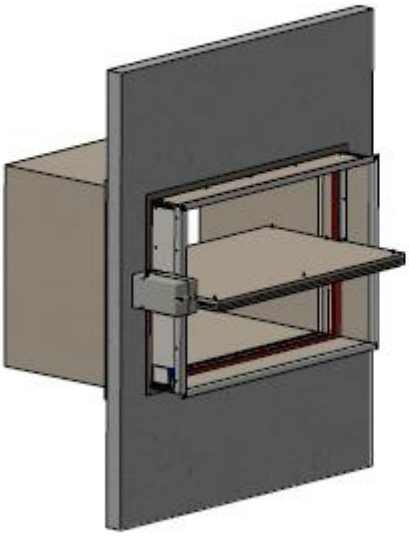




Plan Title:

Reference - Subject - Date	Plate
VUW120_Installation_12-03-2019	E 4/4

Single compartment



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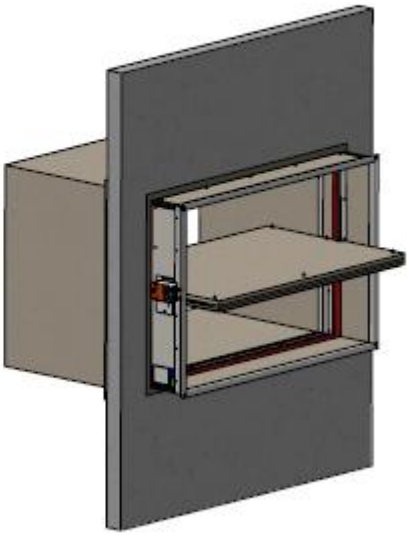

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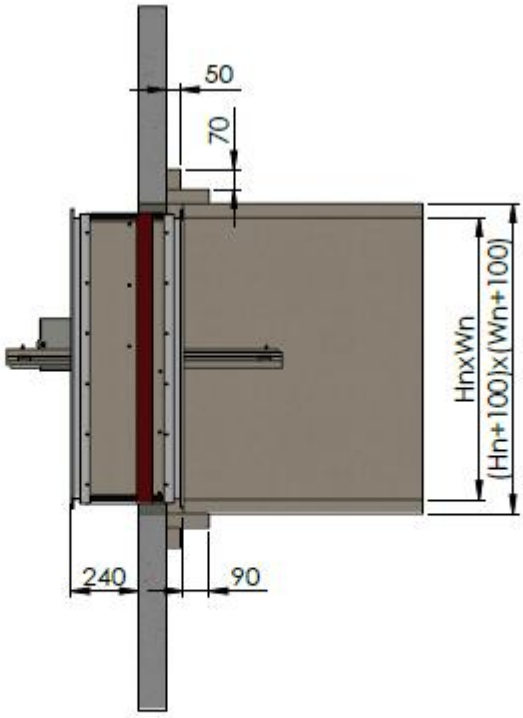

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