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CERTIFICATE

Notified Body No. 0370

NO. **0370-CPR-3152**

TEST CERTIFICATE

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product:

SMOKE EVACUATION DAMPERS

MODEL: MFSD – DOGU – 90 FIRE SMOKE DAMPERS

Place on the market under the name of:

DOGUŞ TEKNIK KLIMA VE HAVALANDRIMA SISTEMLERI

Oruç Reis Mah.Giyimkent Sitesi Vadi Cad. No:10 Esenler/İstanbul

And produced in:
Malkara Organize Sanayi Bölgesi 1. Yol No.: 1 Malkara/Tekirdağ

This certificate attests that all provisions concerning the assessment and verification of constancy of performance and the performances described in Annex ZA of the standard

EN 1366-10:2011+A1:2017

under system 1 are applied and that the product fulfils all the prescribed requirements set out above.

This certificate was first issued on 3rd February 2020 and will remain valid as long as the test methods and/or factory production control requirements included in the harmonised standard, used to assess the performance of the declared characteristics, do not change, and the product, and the manufacturing conditions in the plant are not modified significantly. It is confirmed on 8th March 2020.

The monitoring assessment will be done before March 2023

Bellaterra, 8th March 2020

Xavier Ruiz Pena
Managing Director, Product Conformity B.U

This document is not valid without its technical annex, whose number coincides with the number of certificates

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TECHNICAL ANNEX 0370-CPR-3152

Test Report

1. SCOPE

Fire resistance test, in conformity with the general requirements of the standard EN 1366-10:2011+A1:2017 Fire resistance tests for service installations. Smoke control dampers.

2. TEST

Laboratory Name : APPLUS

Laboratory Address : GAI Technological Center, S.A. (APPLUS)
Campus UAB - Ronda de la Font del Carme s/n
08193 Bellaterra (Barcelona)

3. DESCRIPTION OF THE TEST SPECIMENS

3.1. General

Product Identification:
SMOKE EVACUATION DAMPERS " MFSD – DOGU– 90 FIRE SMOKE DAMPERS ".

Direction of fire:
The test specimen was installed within the supporting construction. Actuator of the motorized damper was on the unexposed side.

Manufacturer:
DOGUŞ TEKNIK KLIMA VE HAVALANDRIMA SISTEMLERI Malkara Organize Sanayi Bölgesi 1. Yol No.: 1 Malkara/Tekirdağ

Sponsor of test:
DOGUŞ TEKNIK KLIMA VE HAVALANDRIMA SISTEMLERI Oruç Reis Mah.Giyimkent Sitesi Vadi Cad. No:10 Esenler/İstanbul

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3.2. Construction

SMOKE EVACUATION DAMPERS " MFSD – DOGU – 90 FIRE SMOKE DAMPERS " was mounted within a masonry supporting construction, made of aerated concrete blocks with the mounting clearances dimensions of 660 x 660 mm (w x h).

The supporting construction was supplied by the test laboratory (Applus) and consisted of aerated concrete blocks which have a density of 650 kg/m3 and thickness of 200 mm.

3.3. Components:

3.3.1. Damper Body

Damper body fixed to the supporting construction by steel screws on the flanges. Ceramic wool was used between the body and supporting construction.

• Material : G90 galvanized steel plate with a thickness of I ,25 mm
• Dimensions : 650 x 300 x 300 mm (w x h x d)
• Insulation :
- Type : Ceramic wool- Blanket 1260; Manufacturer: TEKNOTHERM
Den3➢sity : 128 kg/m

➢ Thickness : 25 mm
➢ Location : Around the damper body, between the body and supporting construction.

• Reinforcement :
- Type : Galvanized steel 'L' profile flanges

➢ Dimensions : 650 x 50 x 65 mm (I x h x d)
➢ Location : At the outer perimeter of the damper body. There were 2 ports on each edge. See figures for details.
➢ Fixing : Plus head steel screw
▪ Dimensions : 6 X 20 mm (Ø x I)
▪ Location : 5 pcs. were used on each edge to connect the flanges to the supporting construction.

- Type : G90 galvanized steel omega profile with a thickness of I ,25 mm

➢ Dimensions : 906/946 x 20 x 80/144 mm (w x h x d)
➢ Location : 2 pcs. were used at the inner parameter of the damper body, surrounding the blades.
➢ Fixing : Plus head steel screw
▪ Dimensions : 6 X 20 mm (Ø x I)

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▪ Location : 5 pcs. were used on each omega profile, connecting them to the damper body.

- Type : G90 galvanized steel blade flanges with a thickness of 1,25 mm

➢ Dimensions : 888/906 .x 9 x 80/144 mm (w x h x d)

➢ Location : 1 pcs. Was used. They were placed on the omega profiles at the inner top and bottom edges of the damper.

➢ Fixing : Plus head steel screw - Fixing damper flanges to the supporting construction

▪ Dimensions : 6 X 20 mm (Ø x I)

▪ Location : 5 pcs. were used on flanges that connects the damper body and the supporting construction on each edge.

3.3.2. Blades

The damper consisted of 7 blades.

• Material : G90 galvanized steel sheet with a thickness of 1 ,25 mm
• Dimensions : 133 x 936 mm (h x w)
• Fasteners :
- Type : Steel brackets

➢ Dimensions : 55 x 21 mm (h x w)

➢ Location : Connecting the blades to the blade shafts. 3 pcs. were used on each blade with c.t.c. distance of 380 mm.

➢ Fixing : Steel bolt

▪ Dimensions : M5

▪ Location : 2 pcs. were used on each steel bracket.

- Type : Steel square bar blade shaft

➢ Dimensions : 940 x 17 x 17 mm (w x h x d)

➢ Location : Connecting each blade to the damper body.

3.3.3. Accessories:

• Damper motor : G90 galvanized steel plate with a thickness of 1 ,25 mm

- Type : Spring-return damper blade actuator – TS05-230S Manufacturer: SOLOON CHINA

➢ Dimensions : 102X160X59 (w x h x Sd)

➢

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➢ Fixing : Actuator was directly connected to the actuator shaft and its movement was limited by bolts at its bottom edge.

• Actuator shaft :
: Stainless steel bar - Type
➢ Dimensions : 10 x 960 mm (Ø x I)
➢ Location : Connected to the actuator. Transferring the movement from actuator to the blades.

• Blade-motor connection bracket:

- Type : 1 set of mounting brackets. Consisted of 3 galvanized steel parts.
➢ Location : 1 set was used. Between the actuator shaft and the fourth blade from the bottom.
➢ Fixing : 2 pcs. of M5 bolts connecting the bracket to the third blade from the bottom.

For detailed information see figures l -2.

Brand, type, quantity and dimension information of the components, when it is not possible to be verified by the laboratory, are given according to the sponsor's declaration. Drawings included in this report are provided by the test sponsor.

4. DESCRIPTION OF THE TEST SPECIMENS

4.1. Verification of specimen

Test laboratory (Applus) verified the used materials and parts against the supplied data and drawings during installation of the test specimen and not involved in the selection of it.
The test specimen was assembled by the test sponsor.

The functionality of the test of the damper has been made before the fire resistance test by both laboratory and customer.

4.2. Direction of fire

The test specimen was installed within the supporting construction. Actuator of the motorized damper was on the unexposed side.

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4.3. Conditioning

From the moment of installation until the fire resistance test, the construction was stored in the laboratory of Applus under the following conditions:
Ambient temperature of the laboratory : 19,8 ± 3,5 oc
Relative humidity : 58 ± 10 %.

5. TEST REPORTS

5.1. Method

The fire test was conducted according to EN 1366-10:2011+A1:2017.

The heating of the furnace followed the standard fire curve, as specified in the EN 1366-10:2011+A1:2017.

The target pressure in the furnace was 0 Pa at 500 mm above notional floor level, as specified in

the EN 1366-10:2011+A1:2017.

5.2. Measurements

Following test data were measured during the test:

Ambient temperatures inside the furnace with six plate thermocouples (Furnace TCl to Furnace TC6), evenly distributed over the directly heated surface (see figure A1)

The pressure in the furnace, measured at a height of 2,9 meter above the furnace floor level (see figure A3)

Ambient temperature in the laboratory (see figure A4) There was no need to use roving thermocouple.

6. OBSERVATIONS

Table 1: Observations during heating

0	Heating started.
20	Deformation on the damper body.
30	Damper blades started to glow.
120	Test was terminated after consulted with the sponsor.

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7. TEST RESULTS

The results are given in Table 2, 3 and appendix B.

During the heating the temperature in the laboratory complied with the EN 1366-10:2011+A1:2017.

Table 2: Test results of the test specimen

	Results
Integrity, – Cotton pad – Gap gauges Ø 6 mm Ø 25 mm – Flames longer than 10 s	 no failure (not appliec) no failure (not appliec) no failure (not appliec) no failure
The heating was terminated at the 120th minute after consulted with the sponsor.	

8. SUMMARY

The most important results of the examination are given in table 3.

Table 3: Summary of test results of the test specimen

Criteria	Result
Integrity	120 minutes
Insulation	120 minutes

The results only relate to the behaviour of the specimen of the element of construction under the particular conditions of the test they are not intended to be the sole criteria for assessing the potential fire performance of the element in use nor do they reflect the actual behaviour in fires.

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Appendixes

Appendix A: Furnace and laboratory conditions

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Appendix A:

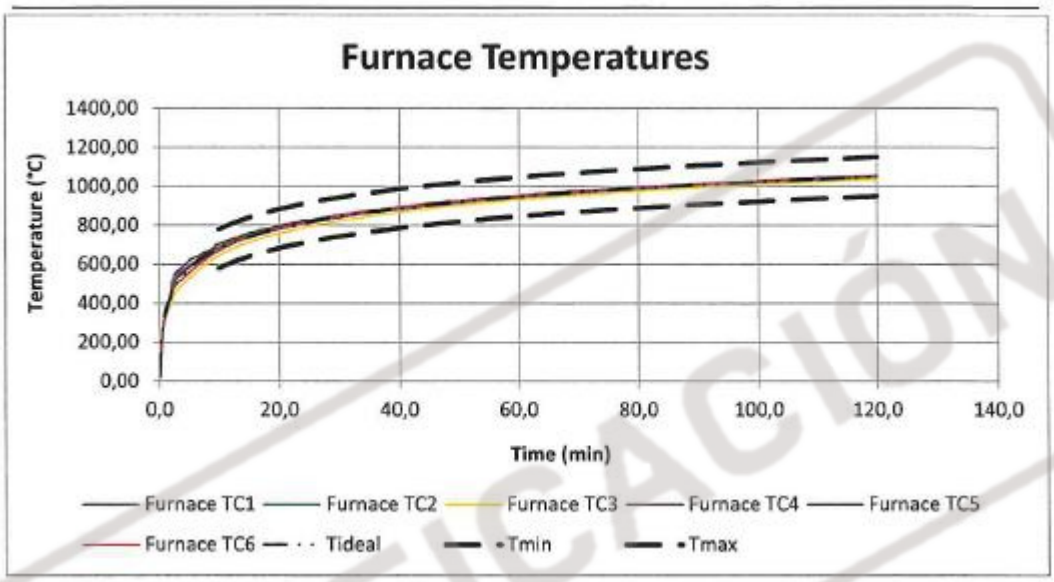

Figure A1: Furnace temperatures.

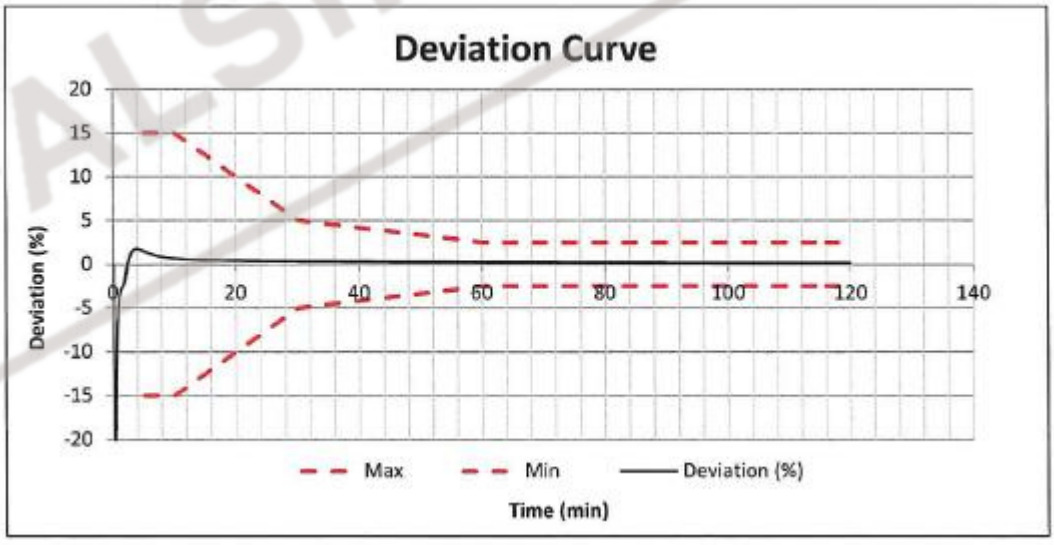

Figure A2: Deviation of the furnace temperatures

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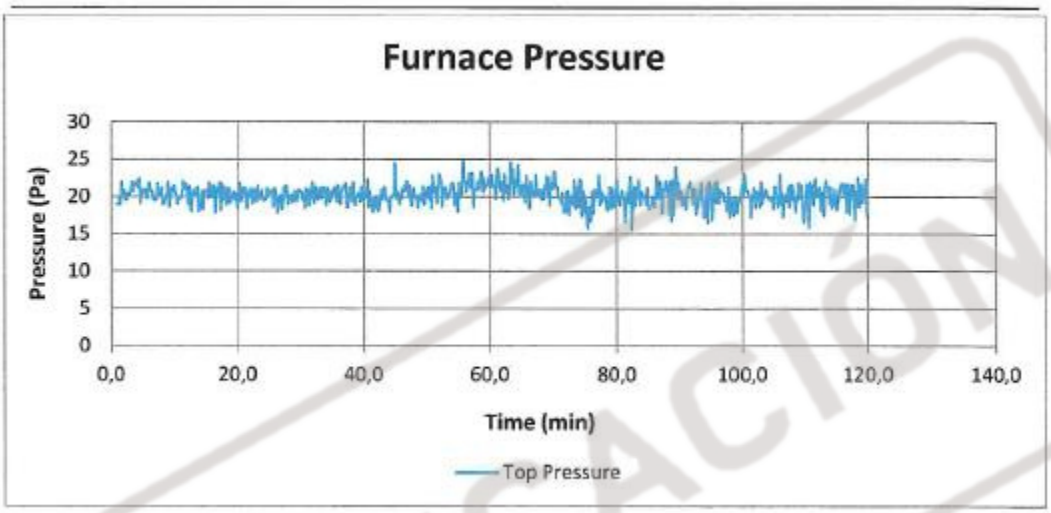

Figure A3: Pressure in the furnace

Brief deviations and peaks in the furnace pressure are caused by the deformation on the specimen and the change in the ambient conditions of the laboratory.

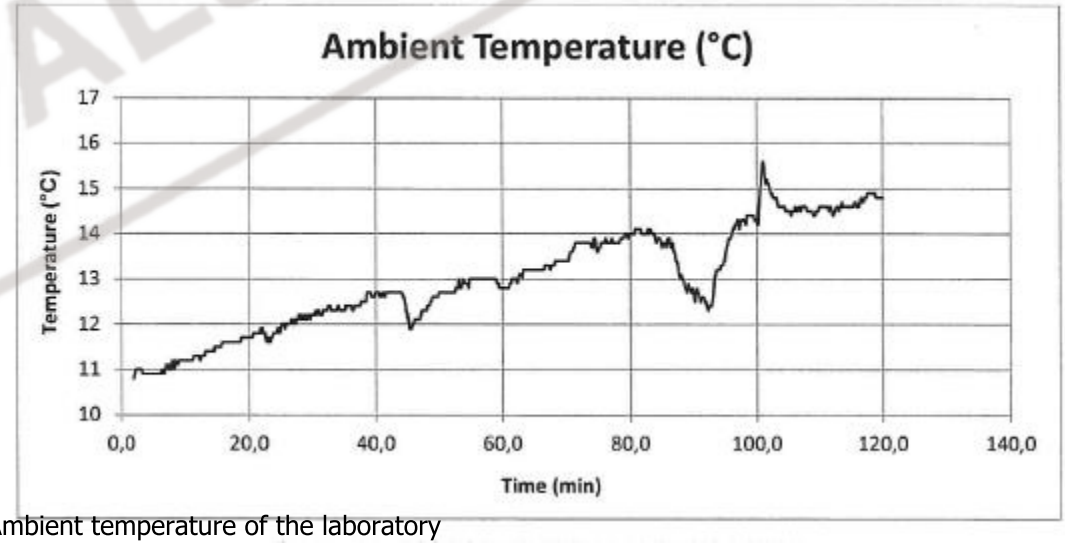

Figure A4: Ambient temperature of the laboratory