

TESTRAPPORT
59126/5
ENGLISH TRANSLATION

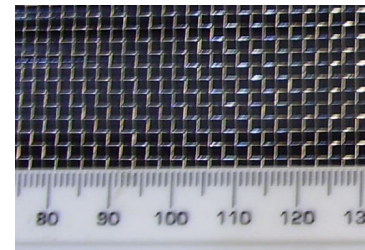
According to EN 13030: 2001: "Ventilation of buildings - Grilles - Performance testing of air grilles subjected to simulated rain"

**Weather Louvre Test
 411 [mesh 2,3] with
 drain profile**

carried out by : BSRIA Ltd
 Old Bracknell West, Bracknell
 Berkshire RG12 7AH [Engeland]

commissioned by : nv RENSON Sunprotection-Projects sa
 Maalbeekstraat 10
 8790 Waregem [België]

Date of issue : 18 December 2015



Close-up of guard

TEST INFORMATION

Contract	59126
Date	5-10-15
Manufacturer	nv RENSON Sunprotection-Projects sa
Louvre Model	411 [mesh 2,3] with drain profile
Material	Aluminium
Painted	Yes - dark grey
Blade Height	990 mm
Blade Width	1000 mm
Blade Depth	20 mm
Frame Depth	26 mm
No. of Blades	29
Blade Pitch	33 mm
Blade Angle	45° approx.
No. of Banks	1
Guard Type	Insect
Guard Spacing	5 mm
Side Channels	No
Water Drip Tray	Yes
Blade Orientation	Horizontal



59126A5 (front)



59126A5 [back]

INTRODUCTION

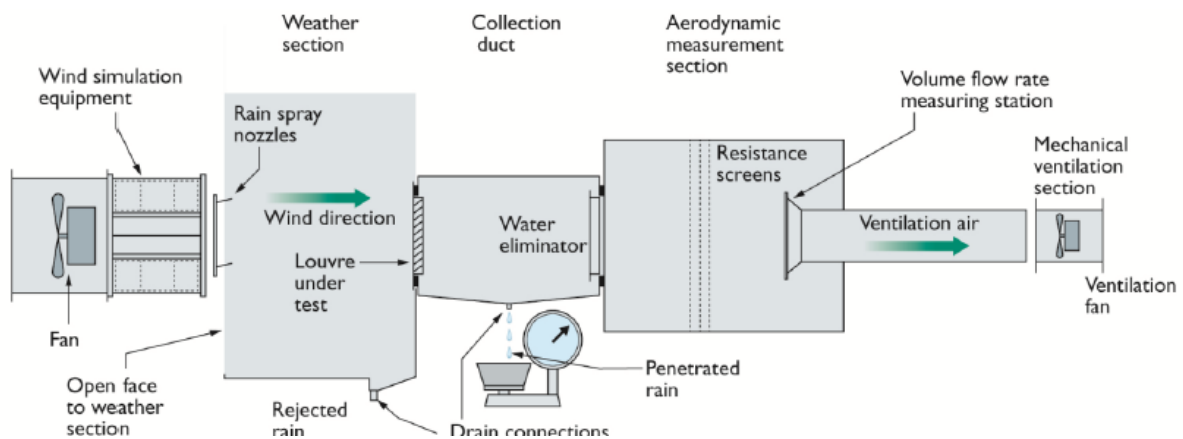
This report concerns tests conducted on a louvre to determine the Rainwater Penetration and the Pressure Drop versus Airflow Curve, with the associated Coefficient of Entry using the test methods contained within EN 13030 : 2001. The work was commissioned by nv RENSON Sunprotection- Projects sa and was carried out at BSRIA on 7 October 2015.

Items received for test

Test Item	BSRIA ID
411 (mesh 2,3) with drain profile	59126A5

TEST METHOD

A schematic representation of the rig used during testing



The test comprises of two parts:

- **WATER PENETRATION**

The weather louvre is subjected to fan driven wind at a speed of 13 m/s and water sprayed as rainfall at a rate of 75 l/h. In addition to the simulated wind and rain, air is drawn through the louvre at various set velocities [0, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0 and 3.5 m/s].

Each test is preceded by a suitable 'pre-test' soak which is typically around 30 minutes. Each test is run until the results become stable, and in any case, for a minimum of 30 minutes.

The penetrated water is collected in the collection duct and is measured and recorded against time elapsed.

A range of measurements are taken to give the characteristic curve for the test louvre.

- **PRESSURE DROP**

For this test, the Aerodynamic Measuring Section [AMS] is separated from the main rig. The louvre is then mounted in the upstream opening of the AMS.

Pressure tappings in the plenum walls of the AMS allow measurement of the static pressure within the plenum during testing. The airflow volume is calculated from the differential pressure at the measuring cones. The plenum has a set of settling screens within to produce even flow through the cones and therefore give accurate reading of the total volume.

By adjusting the fan speed, the total airflow through the system varies and therefore changes the pressure on the louvre under test. A range of measurements are taken to give the characteristic curve for the test louvre.

- **TEST EQUIPMENT USED**

Test equipment	BSRIA ID	Calibration Expiry Date
Water supply measurement	352	9-1-16
Rain measuring system	353	9-1-16
Airflow cones	364	9-1-16
Micromanometer	5	17-2-16
Micromanometer	682	7-1-16
Scales [water]	332	9-2-16

WEATHER LOUVRE TEST

Uitgevoerd in opdracht van nv RENSON Sunprotection-Projects sa
Industriezone 2
Vijverdam
Maalbeekstraat 10
8790 Waregem
België

Contract : **Report 59126/5**

Datum : 18 December 2015

Door : BSRIA Ltd
Old Bracknell Lane West,
Bracknell,
Berkshire RG12 7AH UK

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Compiled by: Name: Andrew Freeth Title: Senior Test Engineer	Approved by: Name: Mark Roper Title: Principal Test Engineer
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RAINWATER PENETRATION

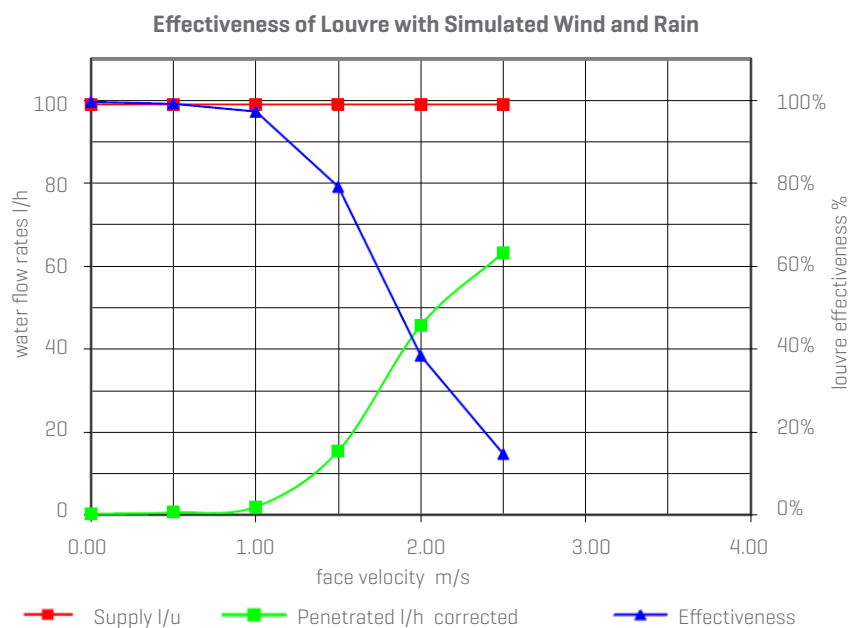
MANUFACTURER nv RENSON Sunprotection-Projects sa
 MODEL 411 [mesh 2,3] with drain profile

Date 07/10/2015
 Contract 59126

Simulated rainfall 75 mm/hr
 Wind speed 13.0 m/s

louvre height 990 mm
 louvre width 1000 mm
 louvre area 0,990 m²

VENTILATION RATE		WATER FLOW RATES		Effectiveness	Class
Volume m ³ /s	Velocity m/s	Supply l/u	Penetrated l/u		
0,00	0,00	99,0	0,3	99,6	A
0,50	0,50	99,0	0,6	99,1	A
0,99	1,00	99,0	2,0	97,3	B
1,49	1,50	99,0	15,5	79,1	D
1,98	2,00	99,0	45,8	38,4	D
2,48	2,50	99,0	63,3	14,7	D



COEFFICIENT OF ENTRY

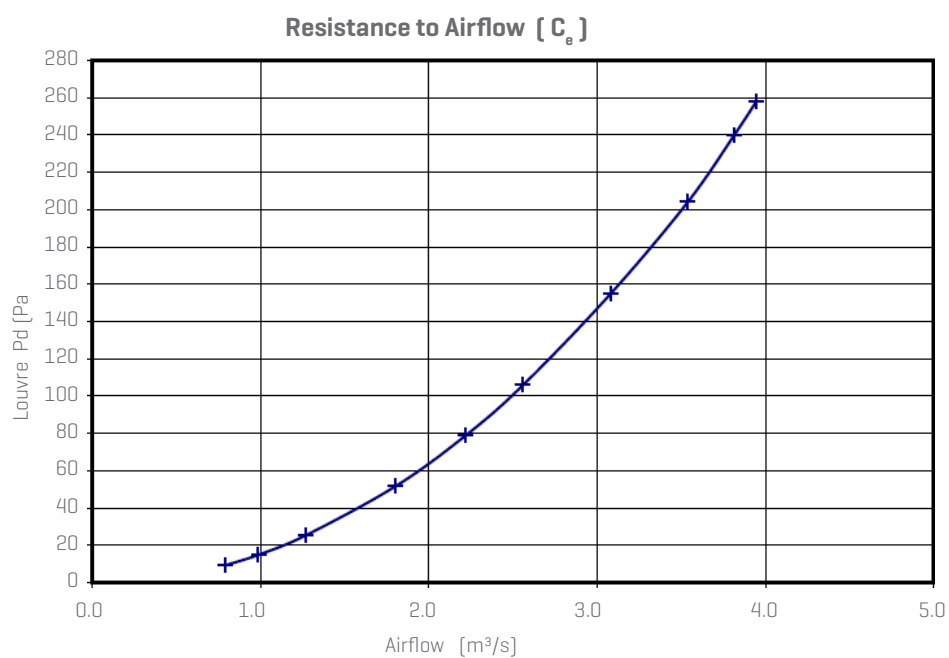
MANUFACTURER nv RENSON Sunprotection-Projects sa
 MODEL 411 [mesh 2.3] without drain profile

Date 07/10/2015
 Contract 59126

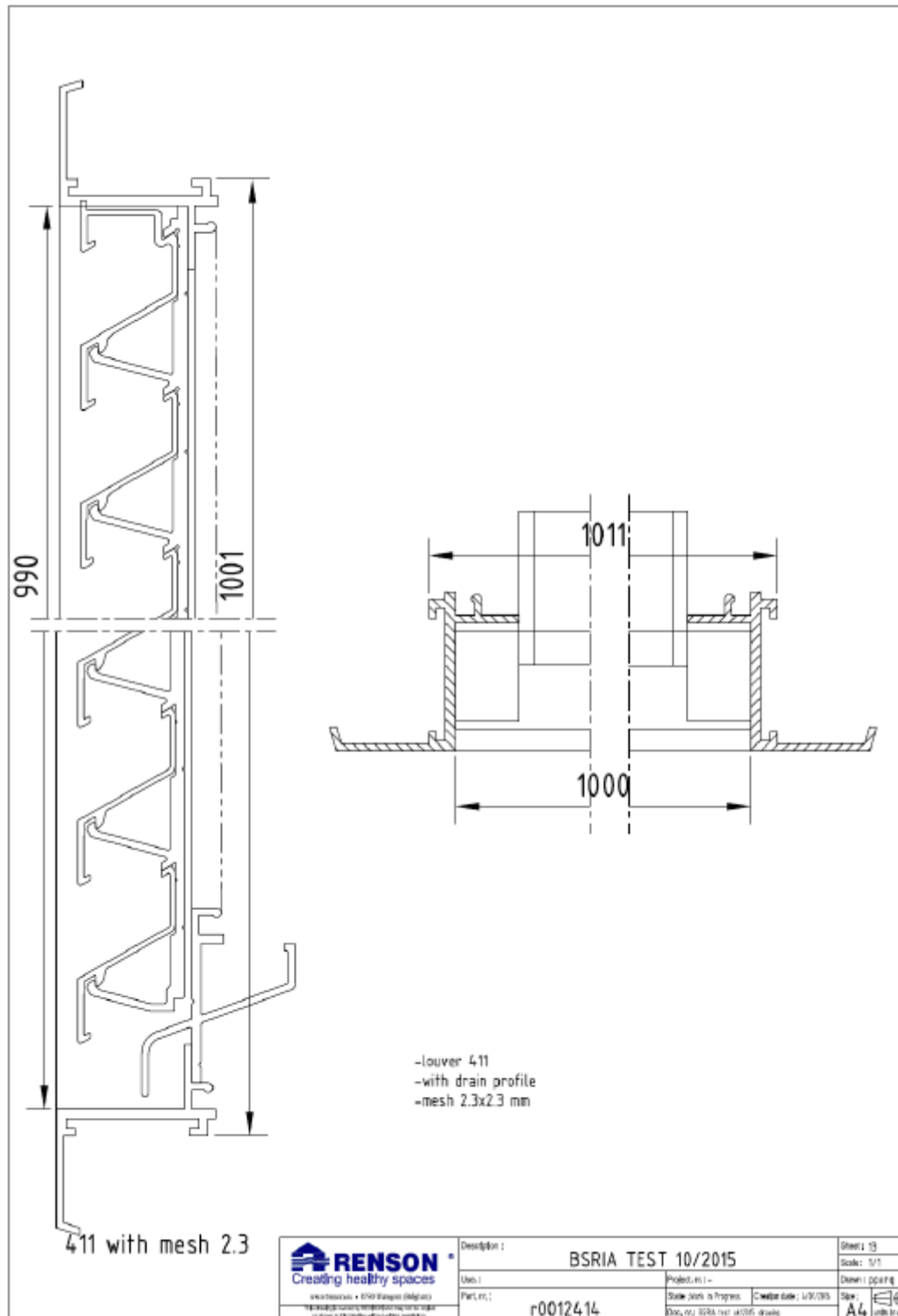
air temperature 16.5 °C
 barometer 998,9 mbar
 air density 1,197 kg/m³

louvre height 990 mm
 louvre width 1000 mm
 louvre area 0,990 m²

	louvre face velocity	air flow rate		
louvre pd Pascal	m/s	Test m ³ /s	theoretical m ³ /s	Coëfficient Ce
9,3	0,80	0,788	3,903	0,202
15,0	1,00	0,987	4,957	0,199
25,5	1,28	1,270	6,463	0,196
51,8	1,82	1,803	9,212	0,196
79,0	2,24	2,219	11,376	0,195
106,0	2,59	2,560	13,177	0,194
155,0	3,11	3,081	15,935	0,193
204,0	3,57	3,539	18,281	0,194
240,0	3,85	3,816	19,828	0,192
258,0	3,99	3,947	20,558	0,192
			Ce moyen	0,195
			Classe	4



APPENDIX: A MANUFACTURER'S DRAWING



Weather Louvre Test 411 (mesh 2,3) with drain profile

Report 59126/5

Carried out for
nv RENSON Sunprotection-Projects sa

By Andrew Freeth

18 December 2015



Weather Louvre Test 411 (mesh 2,3) with drain profile

Carried out for:

nv RENSON Sunprotection-Projects sa
IZ 2 Vijverdam
Maalbeekstraat 10
B-8790 Waregem
Belgium

Contract: **Report 59126/5**

Date: **18 December 2015**

Issued by: **BSRIA Limited**
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Bracknell,
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Compiled by:

Name: Andrew Freeth

Title: Senior Test Engineer

Approved by:

Name: Mark Roper

Title: Principal Test Engineer

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1 INTRODUCTION

This report concerns tests conducted on a louvre to determine the Rainwater Penetration and the Pressure Drop versus Airflow Curve, with the associated Coefficient of Entry using the test methods contained within EN 13030 : 2001. The work was commissioned by nv RENSON Sunprotection-Projects sa and was carried out at BSRIA on 7 October 2015.

Items received for test

Test Item	BSRIA ID
411 (mesh 2,3) with drain profile	59126A5

1.1 TEST ITEM INFORMATION

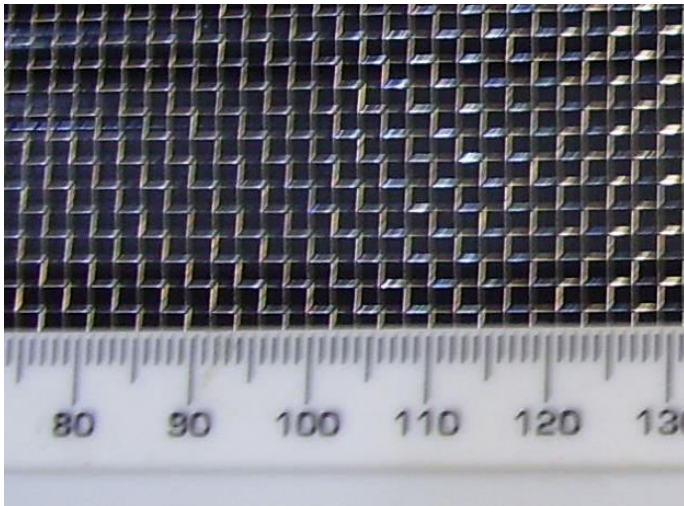
Contract	59126
Date	5-10-15
Manufacturer	nv RENSON Sunprotection-Projects sa
Louvre Model	411 (mesh 2,3) with drain profile
Material	Aluminium
Painted	Yes – dark grey
Blade Height	990 mm
Blade Width	1000 mm
Blade Depth	20 mm
Frame Depth	26 mm
No. of Blades	29
Blade Pitch	33 mm
Blade Angle	45° approx.
No. of Banks	1
Guard Type	Insect
Guard Spacing	5 mm
Side Channels	No
Water Drip Tray	Yes
Blade Orientation	Horizontal

Figure 1 Test item 59126A5 (front)



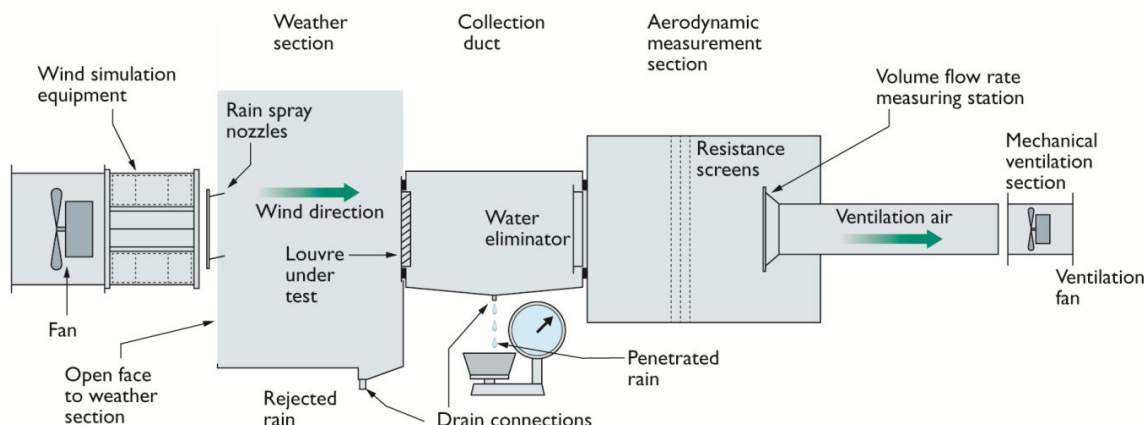
Figure 2 Test item 59126A5 (rear)



Figure 3 Close-up of guard

2 TEST METHOD

A schematic representation of the rig used during testing



The test comprises of two parts:

2.1 WATER PENETRATION

The weather louvre is subjected to fan driven wind at a speed of 13 m/s and water sprayed as rainfall at a rate of 75 l/h. In addition to the simulated wind and rain, air is drawn through the louvre at various set velocities (0, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0 and 3.5 m/s).

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A range of measurements are taken to give the characteristic curve for the test louvre.

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By adjusting the fan speed, the total airflow through the system varies and therefore changes the pressure on the louvre under test. A range of measurements are taken to give the characteristic curve for the test louvre.

2.3 TEST EQUIPMENT USED

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Water supply measurement	352	9-1-16
Rain measuring system	353	9-1-16
Airflow cones	364	9-1-16
Micromanometer	5	17-2-16
Micromanometer	682	7-1-16
Scales (water)	332	9-2-16

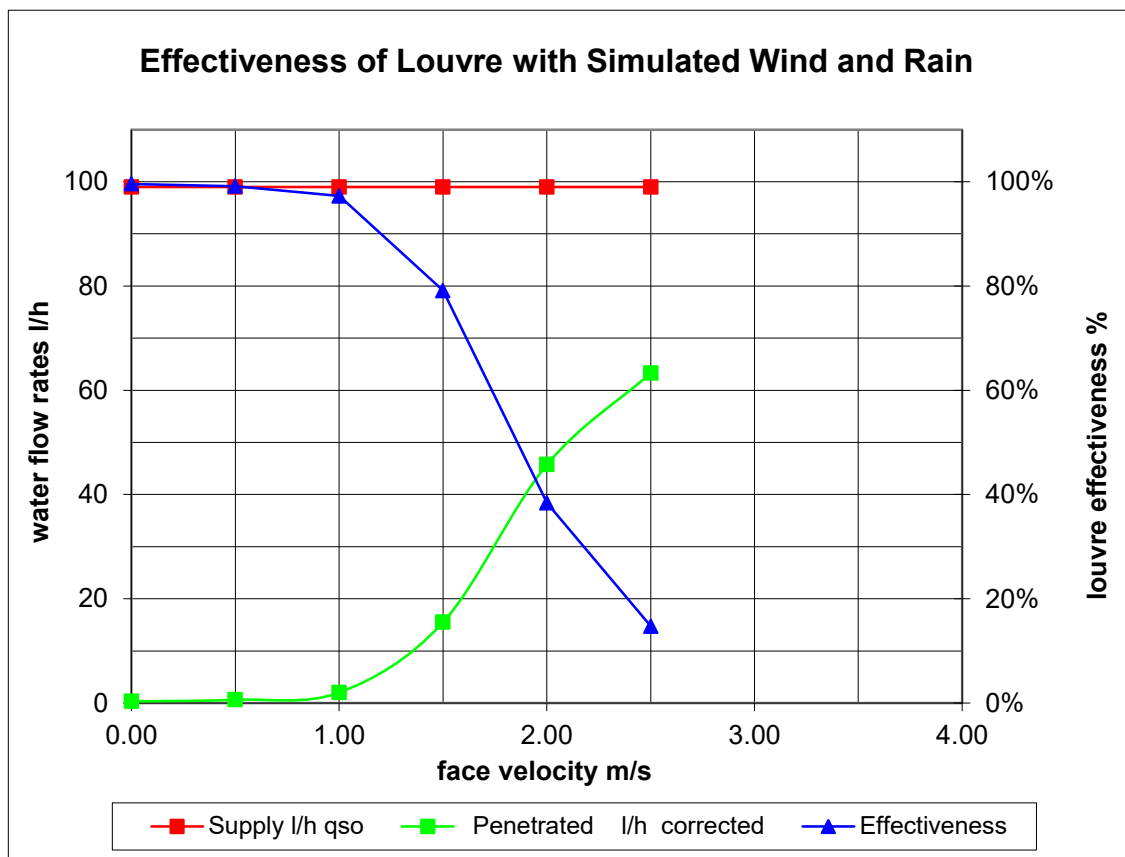
3 RESULTS

3.1 RAINWATER PENETRATION

MANUFACTURER nv RENSON Sunprotection-Projects sa Date 07/10/2015
 MODEL 411 (mesh 2,3) with drain profile Contract 59126

Simulated rainfall 75 mm/hr louvre height 990 mm
 Wind speed 13.0 m/s louvre width 1000 mm
 louvre area 0.990 m²

VENTILATION RATE		WATER FLOW RATES		Effectiveness	Class
Volume m ³ /s	Velocity m/s	Supply l/h	Penetrated l/h		
0.00	0.00	99.0	0.3	99.6%	A
0.50	0.50	99.0	0.6	99.1%	A
0.99	1.00	99.0	2.0	97.3%	B
1.49	1.50	99.0	15.5	79.1%	D
1.98	2.00	99.0	45.8	38.4%	D
2.48	2.50	99.0	63.3	14.7%	D



3.2 COEFFICIENT OF ENTRY

MANUFACTURER nv RENSON Sunprotection-Projects sa
MODEL 411 (mesh 2,3) with drain profile

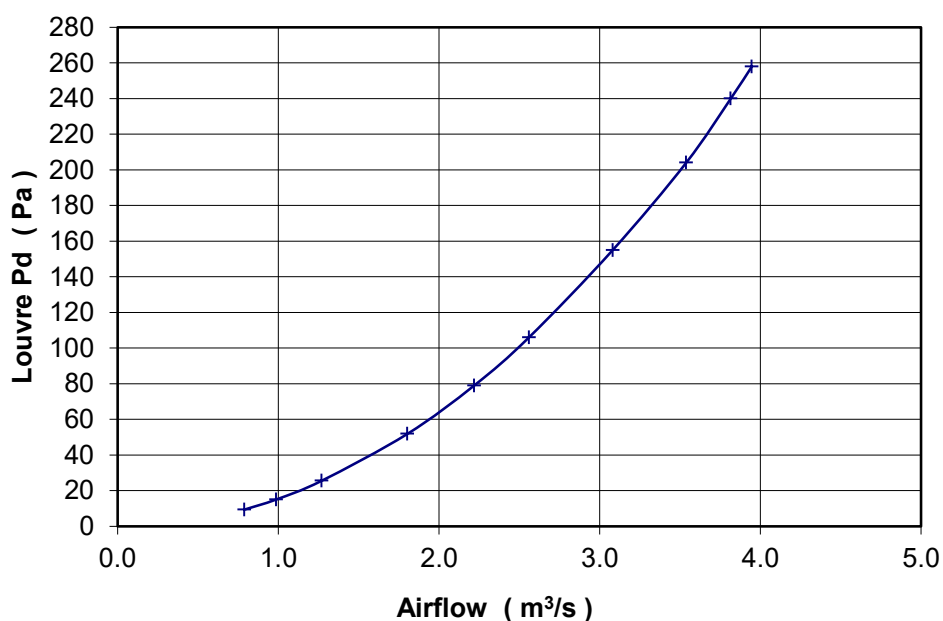
Date 07/10/2015
Contract 59126

air temperature 16.5 °C
barometer 998.9 mbar
air density 1.197 kg/m³

louvre height 990 mm
louvre width 1000 mm
louvre area 0.990 m²

louvre pd Pascals	louvre face velocity	air flow rate		coefficient C _e
	m/s	test m ³ /s	theoretical m ³ /s	
9.3	0.80	0.788	3.903	0.202
15.0	1.00	0.987	4.957	0.199
25.5	1.28	1.270	6.463	0.196
51.8	1.82	1.803	9.212	0.196
79.0	2.24	2.219	11.376	0.195
106.0	2.59	2.560	13.177	0.194
155.0	3.11	3.081	15.935	0.193
204.0	3.57	3.539	18.281	0.194
240.0	3.85	3.816	19.828	0.192
258.0	3.99	3.947	20.558	0.192
mean C _e				0.195
Class				4

Resistance to Airflow (C_e)



APPENDIX: A MANUFACTURER'S DRAWING

