RENSON®
Creating healthy spaces

test report
ORIGINAL REPORT in attachment

TESTRAPPORT 59126/4 — ENGLISH TRANSLATION

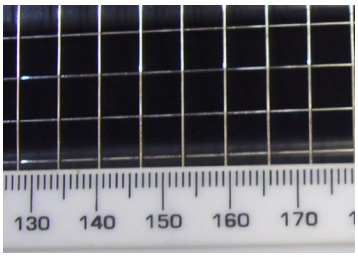
According to EN 13030: 2001: "Ventilation of buildings - Grilles - Performance testing of air grilles subjected to simulated rain"

Weather Louvre Test
451 (mesh 6) without 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	451 (mesh 6) without drain profile
Material	Aluminium
Painted	Yes – dark grey
Blade Height	1020 mm
Blade Width	1000 mm
Blade Depth	50 mm
Frame Depth	60 mm
No. of Blades	15
Blade Pitch	65 mm
Blade Angle	45° approx.
No. of Banks	1
Guard Type	Bird/vermin
Guard Spacing	5 mm
Side Channels	No
Water Drip Tray	Yes
Blade Orientation	Horizontal


59126A4 (front)


59126A4 (back)

INTRODUCTION

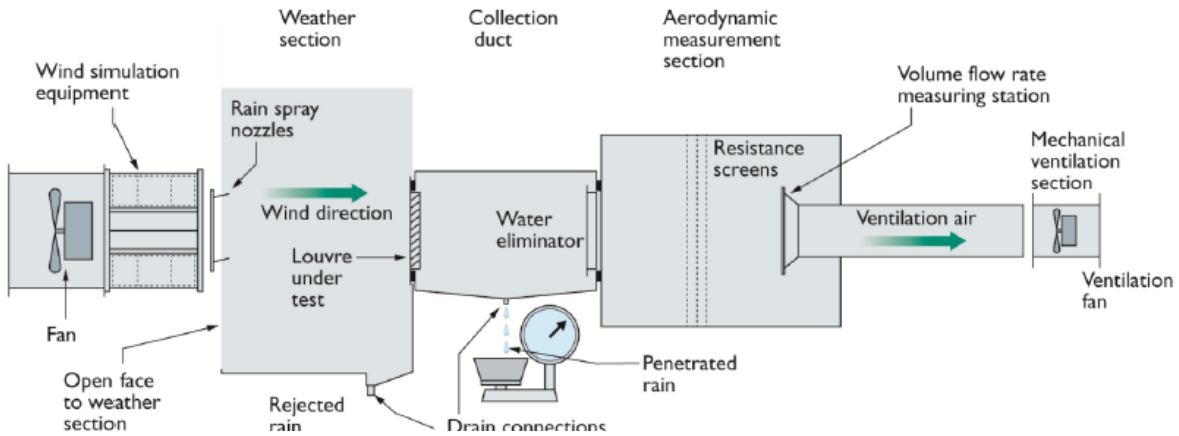
This report concerns tests conducted on a louvre to determine the Rainwater Penetration and the Pressure Drop versus Airflow Curve, with the associated Coefficient of Entry using the test methods contained within EN 13030 : 2001. The work was commissioned by nv RENSON Sunprotection- Projects sa and was carried out at BSRIA on 7 – 20 October 2015.

Items received for test

Test Item	BSRIA ID
451 (mesh 6) without drain profile	59126A4

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 59126/4**
Datum :	**18 December 2015**
Door :	BSRIA Ltd Old Bracknell Lane West, Bracknell, Berkshire RG12 7AH UK
Tel :	**+44 (0)1344 465600**
Fax :	**+44 (0)1344 465626**
E :	**bsria@bsria.co.uk**
W :	**www.bsria.co.uk**

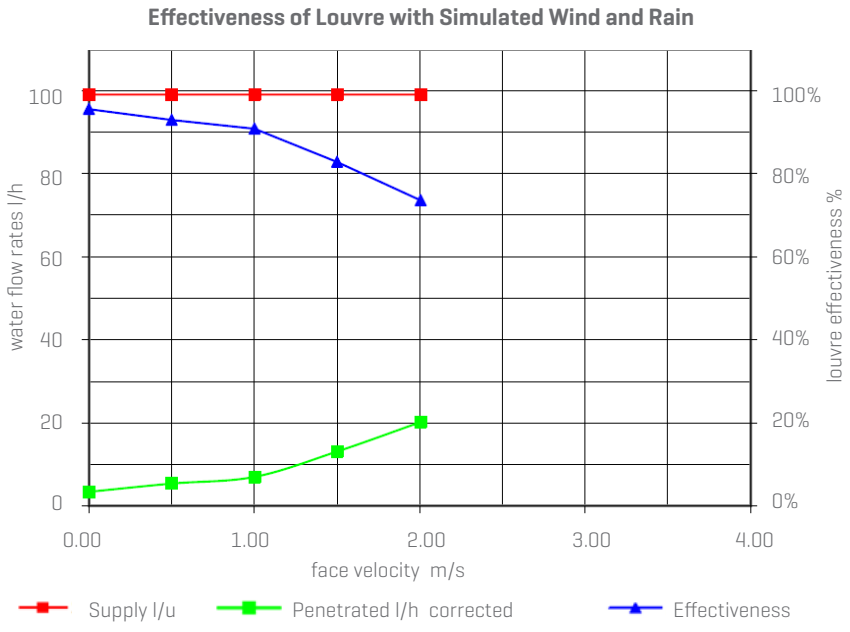
Compiled by:	Approved by:
Name: Andrew Freeth	Name: Mark Roper
Title: Senior Test Engineer	Title: Principal Test Engineer

RAINWATER PENETRATION

MANUFACTURER	nv RENSON Sunprotection-Projects sa	Date	20/10/2015
MODEL	451 (mesh 6) without drain profile	Contract	59126

		louvre height	1020 mm
Simulated rainfall	75 mm/hr	louvre width	1000 mm
Wind speed	13.0 m/s	louvre area	1,020 m2

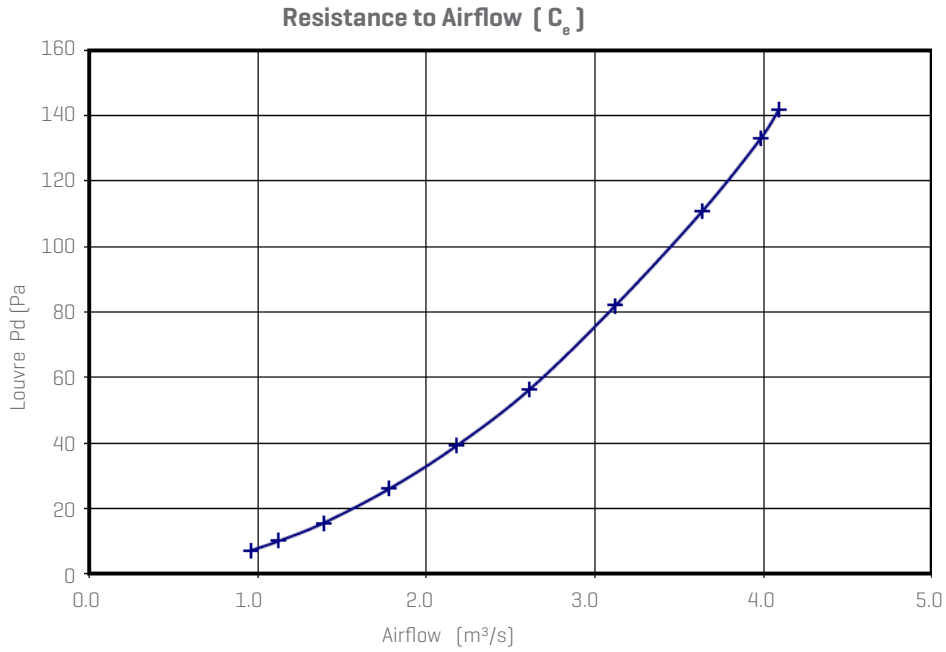
VENTILATION RATE		WATER FLOW RATES		Effectiveness	Class
Volume m3/s	Velocity m/s	Supply l/u	Penetrated l/u		
0,00	0,00	99,0	3,5	95,5%	B
0,51	0,50	99,0	5,4	92,9%	C
1,02	1,00	99,0	7,1	90,8%	C
1,53	1,50	99,0	13,2	82,8%	C
2,05	2,01	99,0	20,2	73,6%	D



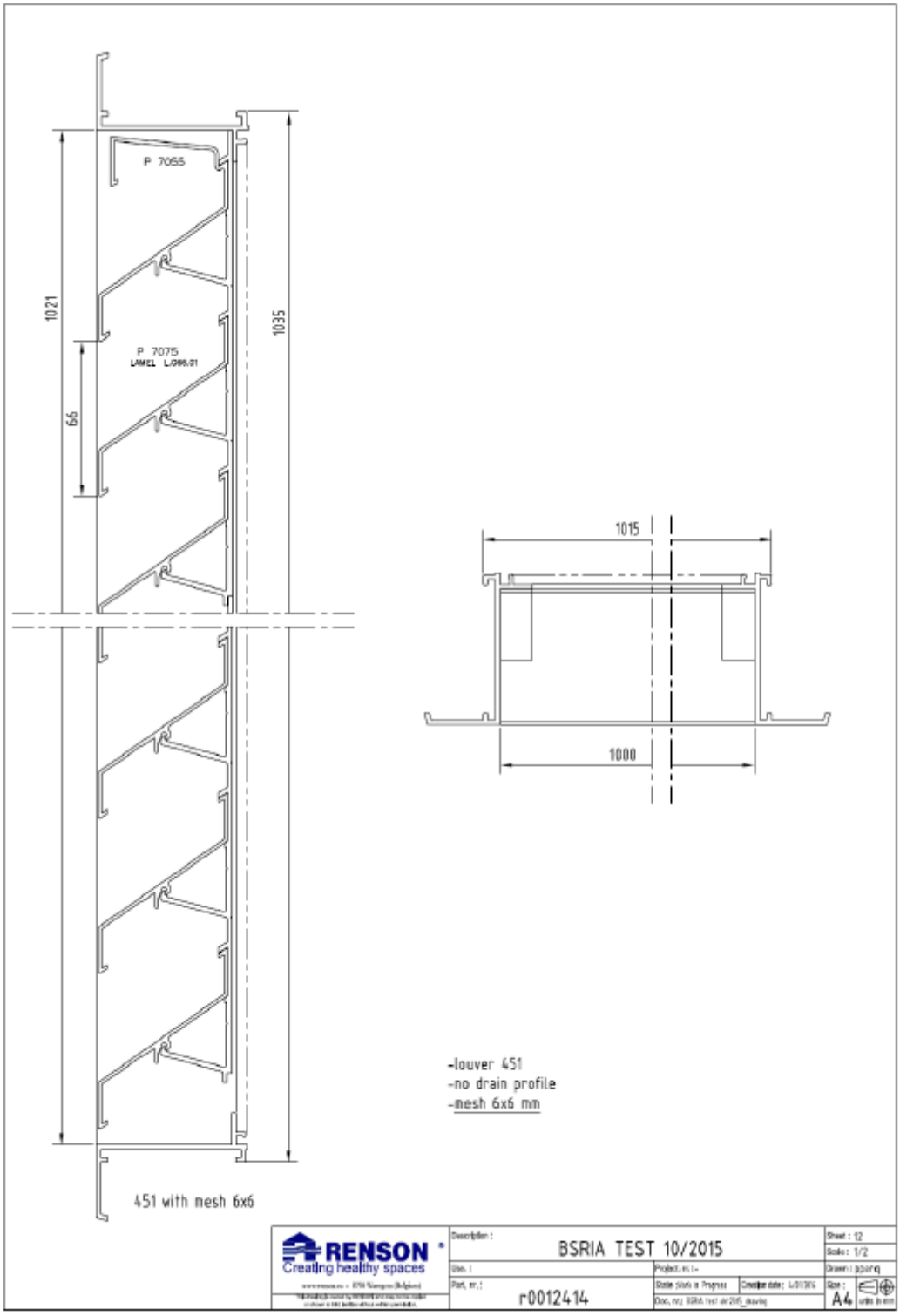
COEFFICIENT OF ENTRY

MANUFACTURER	nv RENSON Sunprotection-Projects sa	Date	07/10/2015
MODEL	451 (mesh 6) without drain profile	Contract	59126
air temperature	16.4 °C	louvre height	1020 mm
barometer	998,5 mbar	louvre width	1000 mm
air density	1,197 kg/m3	louvre area	1,020 m2

	louvre face velocity	air flow rate		
louvre pd Pascal	**m/s**	**Test m³/s**	**theoretical m³/s**	**Coëfficiënt Ce**
7,1	0,94	0,958	3,514	0,273
10,0	1,10	1,124	4,170	0,270
15,5	1,36	1,389	5,192	0,268
26,0	1,75	1,781	6,724	0,265
39,0	2,13	2,176	8,235	0,264
56,6	2,56	2,616	9,912	0,264
82,0	3,06	3,122	11,941	0,261
111,0	3,57	3,641	13,894	0,262
133,0	3,91	3,983	15,208	0,262
142,0	4,01	4,094	15,714	0,261
			Mittelwert Ce	0,265
			Klasse	3



APPENDIX: A MANUFACTURER'S DRAWING



Weather Louvre Test

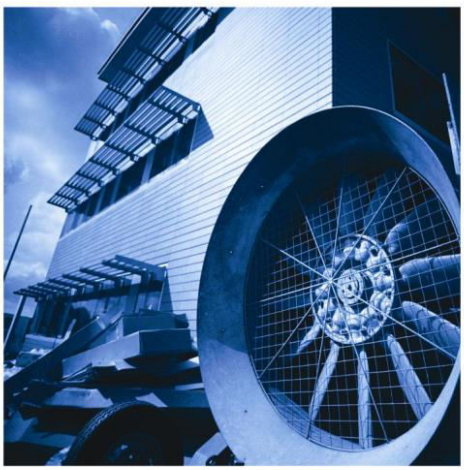
451 (mesh 6) without drain profile

Report 59126/4

Carried out for
nv RENSON Sunprotection-Projects sa

By Andrew Freeth

18 December 2015



Weather Louvre Test 451 (mesh 6) without drain profile

Carried out for:

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

Contract: **Report 59126/4**

Date: **18 December 2015**

Issued by: **BSRIA Limited**
Old Bracknell Lane West,
Bracknell,
Berkshire RG12 7AH UK

Telephone: +44 (0)1344 465600

Fax: +44 (0)1344 465626

E: bsria@bsria.co.uk W: www.bsria.co.uk

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

CONTENTS

APPENDICES

FIGURES

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 – 20 October 2015.

Items received for test

Test Item	BSRIA ID
451 (mesh 6) without drain profile	59126A4

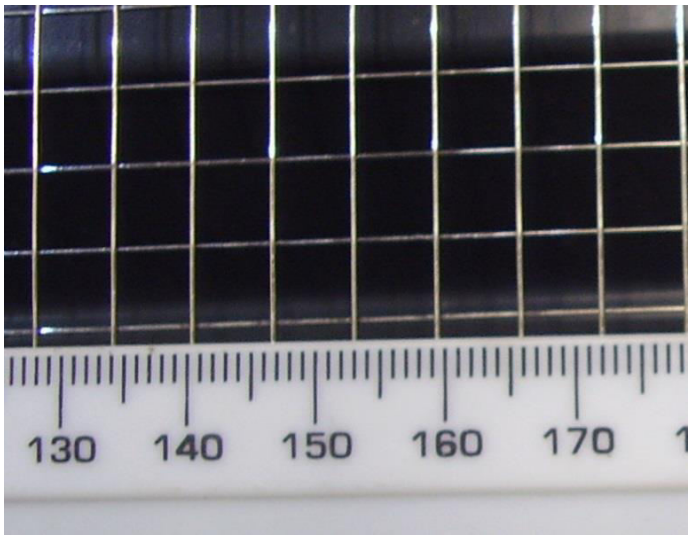
1.1 TEST ITEM INFORMATION

Contract		59126
Date		5-10-15
Manufacturer		nv RENSON Sunprotection-Projects sa
Louvre Model		451 (mesh 6) without drain profile
Material		Aluminium
Painted		Yes – dark grey
Blade Height		1020 mm
Blade Width		1000 mm
Blade Depth		50 mm
Frame Depth		60 mm
No. of Blades		15
Blade Pitch		65 mm
Blade Angle		45º approx.
No. of Banks		1
Guard Type		Bird/vermin
Guard Spacing		5 mm
Side Channels		No
Water Drip Tray		Yes
Blade Orientation		Horizontal

Figure 1 Test item 59126A4 (front)

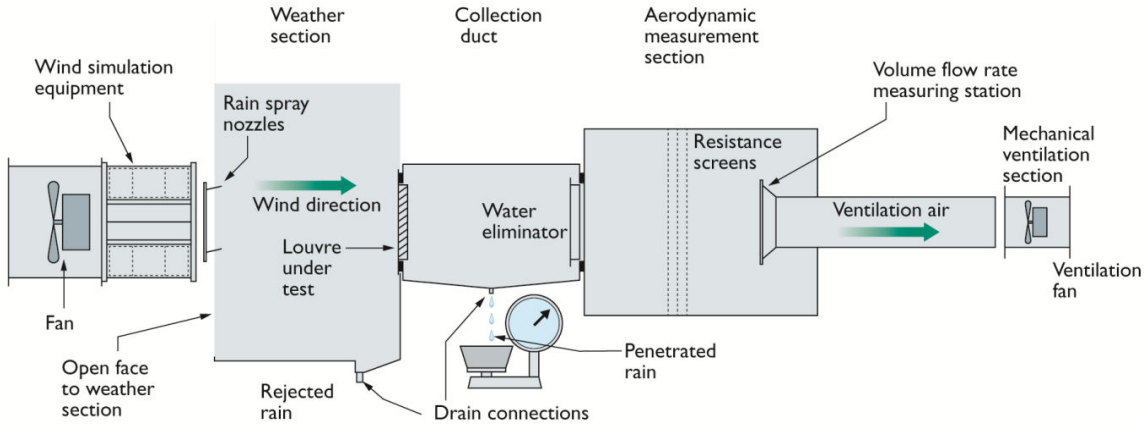
Figure 2 Test item 59126A4 (rear)

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).

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.

2.2 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 gives an 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.

2.3 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

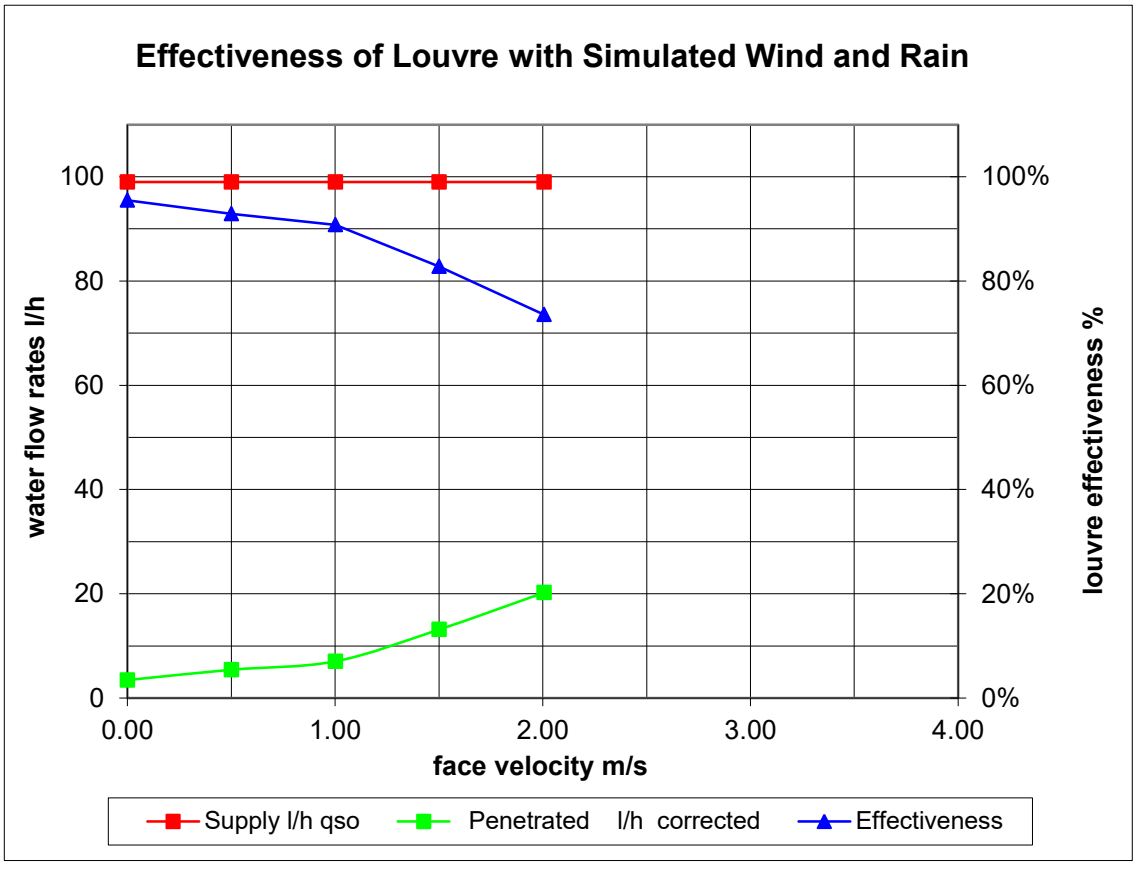
3 RESULTS

3.1 RAINWATER PENETRATION

MANUFACTURER nv RENSON Sunprotection-Projects sa Date 20/10/2015
MODEL 451 (mesh 6) without drain profile Contract 59126

			louvre height	1020	mm
Simulated rainfall	75	mm/hr	louvre width	1000	mm
Wind speed	13.0	m/s	louvre area	1.020	m^2

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	3.5	95.5%	B
0.51	0.50	99.0	5.4	92.9%	C
1.02	1.00	99.0	7.1	90.8%	C
1.53	1.50	99.0	13.2	82.8%	C
2.05	2.01	99.0	20.2	73.6%	D

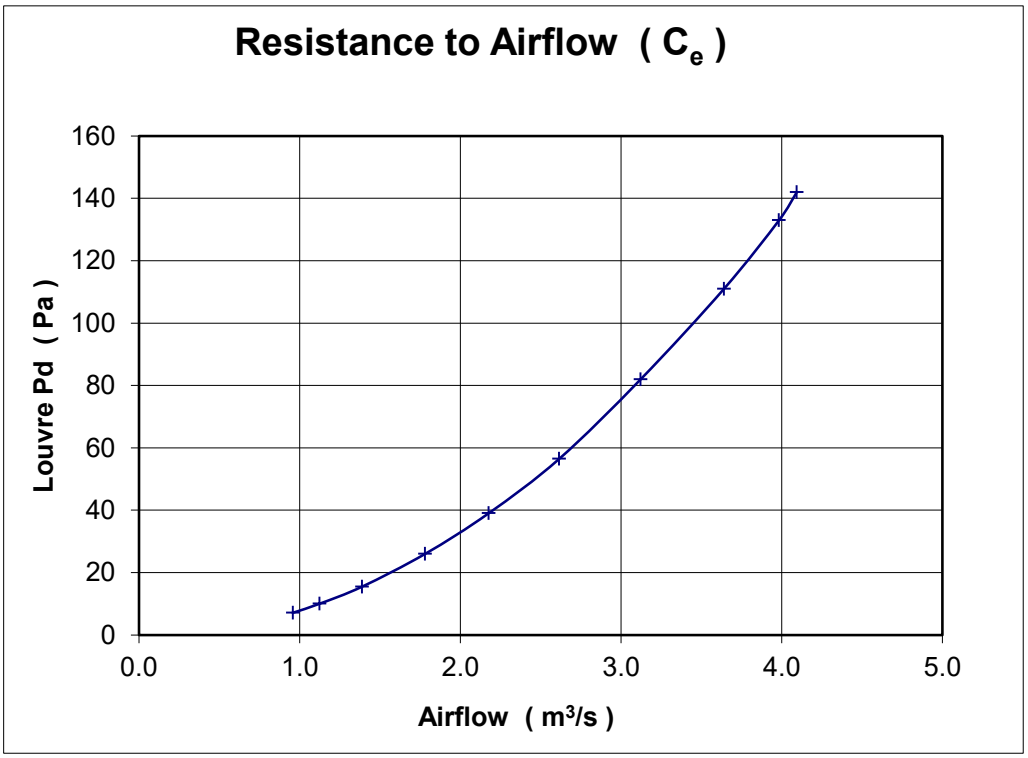


3.2 COEFFICIENT OF ENTRY

MANUFACTURER nv RENSON Sunprotection-Projects sa Date 07/10/2015
MODEL 451 (mesh 6) without drain profile Contract 59126

air temperature	16.4 °C	louvre height	1020 mm
barometer	998.5 mbar	louvre width	1000 mm
air density	1.197 kg/m^3	louvre area	1.020 m^2

	louvre face velocity	air flow rate		
louvre pd Pascals	m/s	test m^3/s	theoretical m^3/s	coefficient C_e
7.1	0.94	0.958	3.514	0.273
10.0	1.10	1.124	4.170	0.270
15.5	1.36	1.389	5.192	0.268
26.0	1.75	1.781	6.724	0.265
39.0	2.13	2.176	8.235	0.264
56.5	2.56	2.616	9.912	0.264
82.0	3.06	3.122	11.941	0.261
111.0	3.57	3.641	13.894	0.262
133.0	3.91	3.983	15.208	0.262
142.0	4.01	4.094	15.714	0.261
			mean C_e	0.265
			Class	3



APPENDIX: A MANUFACTURER'S DRAWING