

**TESTRAPPORT**
**59126/7**
**ENGLISH TRANSLATION**

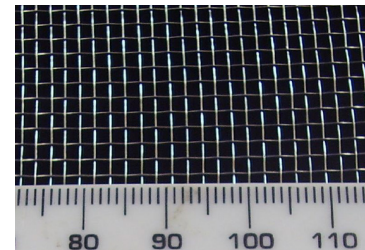
According to EN 13030: 2001: "Ventilation of buildings - Grilles - Performance testing of air grilles subjected to simulated rain"

**Weather Louvre Test  
475/L.075W**

**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 :** 27 April 2016



Close-up of guard

**TEST INFORMATION**

Contract	59126
Date	16-12-15
Manufacturer	nv RENSON Sunprotection-Projects sa
Louvre Model	475/L.075W
Material	Aluminium
Painted	Yes – dark grey
Blade Height	1010 mm
Blade Width	1000mm
Blade Depth	75 mm
Frame Depth	83 mm
No. of Blades	13
Blade Pitch	75 mm
Blade Angle	45° approx.
No. of Banks	1
Guard Type	Insect
Guard Spacing	10 mm
Side Channels	No
Water Drip Tray	Yes
Blade Orientation	Horizontal



59126A7 (front)



59126A7 [back]

## INTRODUCTION

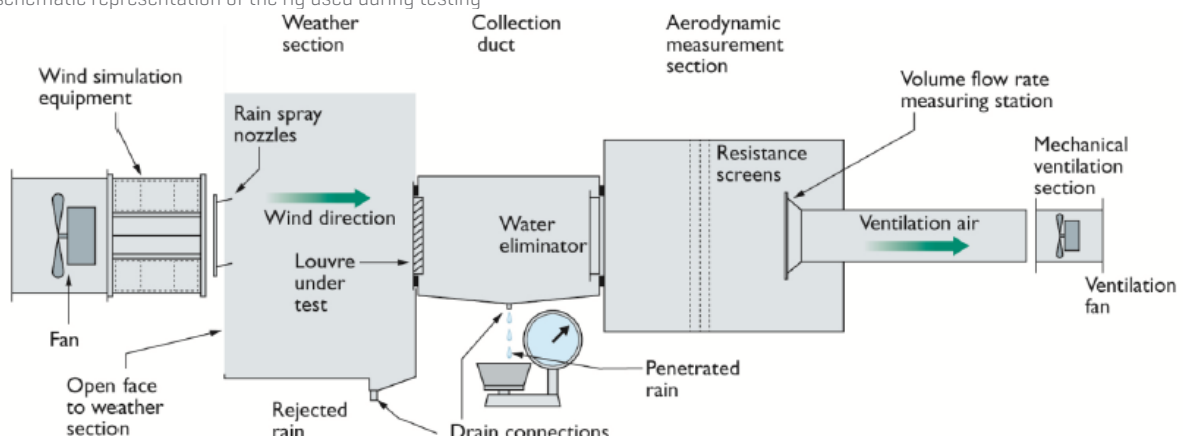
This report concerns tests conducted on a louvre to determine the Rainwater Penetration and the Pressure Drop versus Airflow Curve, with the associated Coefficient of Entry using the test methods contained within EN 13030 : 2001. The work was commissioned by nv RENSON Sunprotection- Projects sa and was carried out at BSRIA on 13 January – 4 February 2016.

Items received for test

Test Item	BSRIA ID
475/L.075W	59126A7

## 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 59126/7

Datum : 27 April 2016

**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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This report has been prepared by BSRIA Limited, with reasonable skill, care and diligence in accordance with BSRIA's Quality Assurance and within the scope of our Terms and Conditions of Business.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

## RAINWATER PENETRATION

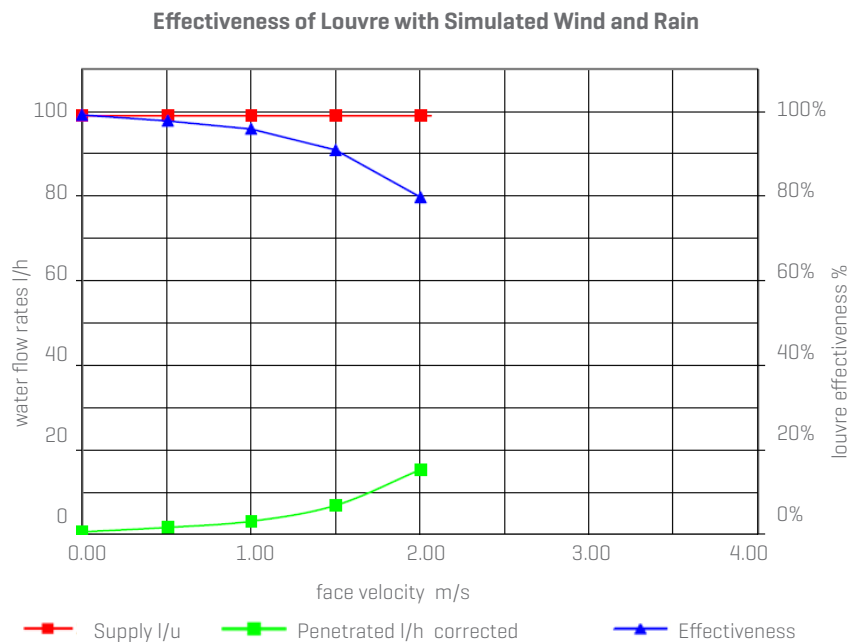
MANUFACTURER nv RENSON Sunprotection-Projects sa  
 MODEL 475/L.075W

Date 13/01/2016  
 Contract 59126

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

louvre height 1010 mm  
 louvre width 1000 mm  
 louvre area 1,010 m<sup>2</sup>

VENTILATION RATE		WATER FLOW RATES		Effectiveness	Class
Volume m <sup>3</sup> /s	Velocity m/s	Supply l/u	Penetrated l/u		
0,00	0,00	99,0	0,6	99,2%	A
0,51	0,51	99,0	1,7	97,8%	B
1,01	1,00	99,0	3,1	95,9%	B
1,52	1,50	99,0	6,9	90,9%	C
2,02	2,00	99,0	15,4	79,7%	D



NOTE: Test was halted at 2.0 m/s at the client's request.

## COEFFICIENT OF ENTRY

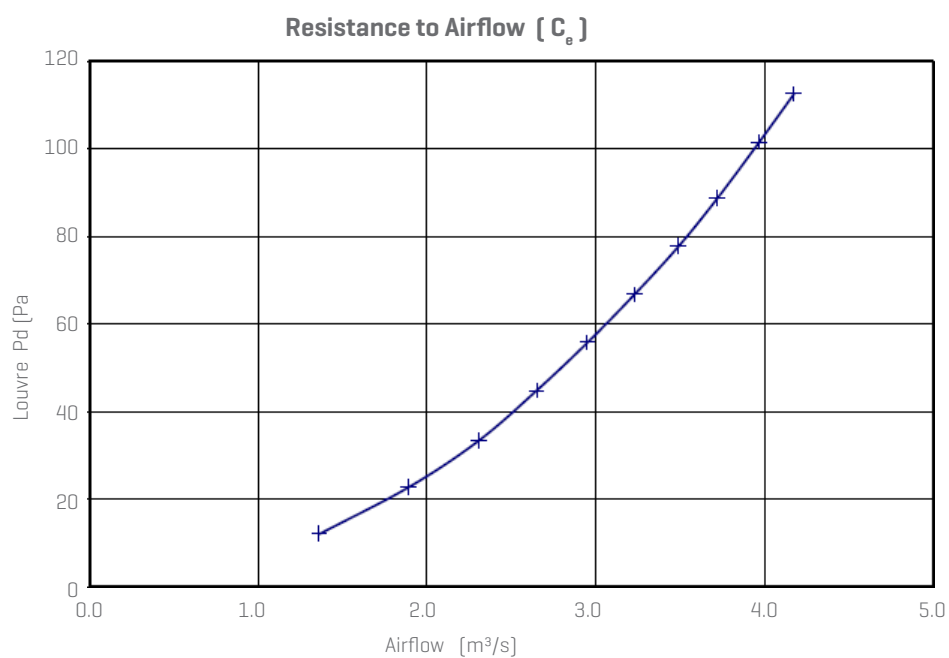
MANUFACTURER nv RENSON Sunprotection-Projects sa  
 MODEL 475/L.075W

Date 13/01/2016  
 Contract 59126

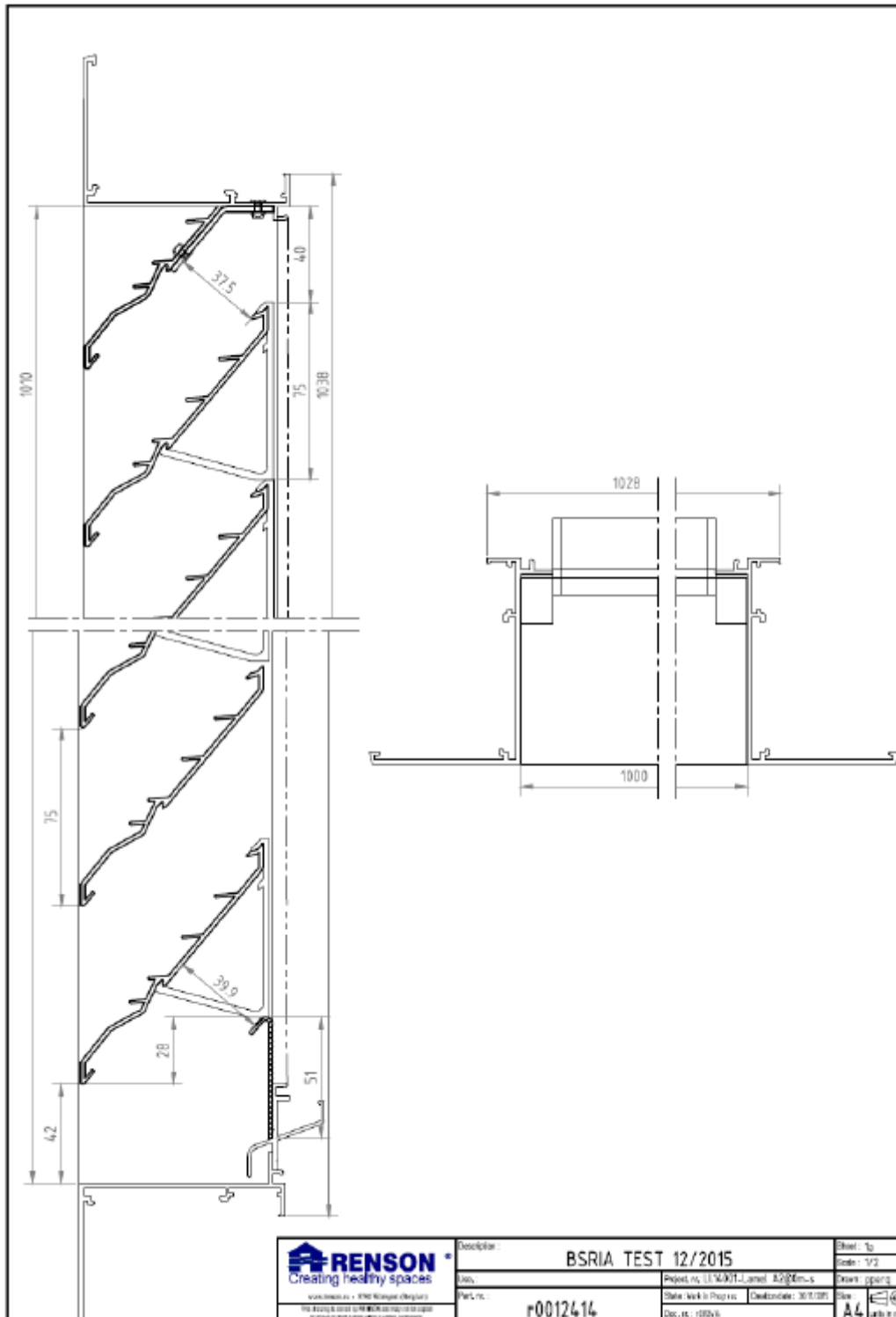
air temperature 18 °C  
 barometer 1006 mbar  
 air density 1,199 kg/m<sup>3</sup>

louvre height 1010 mm  
 louvre width 1000 mm  
 louvre area 1,010 m<sup>2</sup>

	louvre face velocity	air flow rate		
louvre pd Pascal	m/s	Test m <sup>3</sup> /s	theoretical m <sup>3</sup> /s	Coëfficient Ce
12,1	1,35	1,362	4,537	0,300
22,8	1,87	1,892	6,228	0,304
33,4	2,28	2,306	7,538	0,306
44,9	2,62	2,651	8,740	0,303
55,8	2,92	2,951	9,743	0,303
66,8	3,20	3,230	10,660	0,303
77,8	3,46	3,492	11,505	0,304
88,8	3,69	3,722	12,291	0,303
101,6	3,93	3,970	13,147	0,302
112,6	4,13	4,176	13,840	0,302
			Ce moyen	0,303
			Classe	2



**APPENDIX: A MANUFACTURER'S DRAWING**



# **Weather Louvre Test**

## **475/L.075W**

Report 59126/7

Carried out for  
nv RENSON Sunprotection-Projects sa

By Andrew Freeth

27 April 2016





# Weather Louvre Test 475/L.075W

## Carried out for:

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

Contract: **Report 59126/7**

Date: **27 April 2016**

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

Telephone: +44 (0)1344 465600

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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 13 January – 4 February 2016.

## Items received for test

Test Item	BSRIA ID
475/L.075W	59126A7

## 1.1 TEST ITEM INFORMATION

Contract	59126
Date	16-12-15
Manufacturer	nv RENSON Sunprotection-Projects sa
Louvre Model	475/L.075W
Material	Aluminium
Painted	Yes – dark grey
Blade Height	1010 mm
Blade Width	1000mm
Blade Depth	75 mm
Frame Depth	83 mm
No. of Blades	13
Blade Pitch	75 mm
Blade Angle	45° approx.
No. of Banks	1
Guard Type	Insect
Guard Spacing	10 mm
Side Channels	No
Water Drip Tray	Yes
Blade Orientation	Horizontal

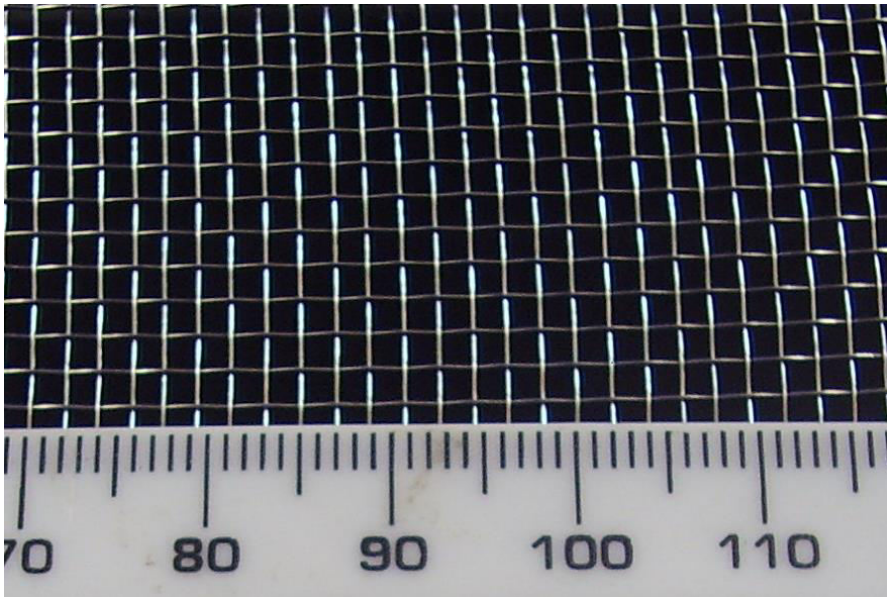
**Figure 1 Test item 59126A7 (front)**



**Figure 2 Test item 59126A7 (rear)**

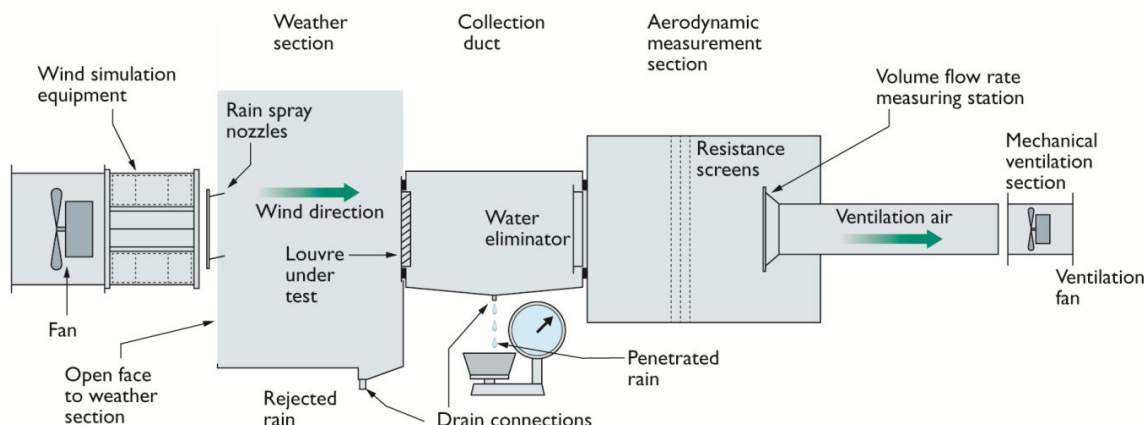


**Figure 3** Close-up of guard



## 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	09-04-16
Rain measuring system	353	09-04-16
Airflow cones	364	09-04-16
Micromanometer	5	16-02-17
Micromanometer	682	05-01-17
Scales (water)	332	09-04-16

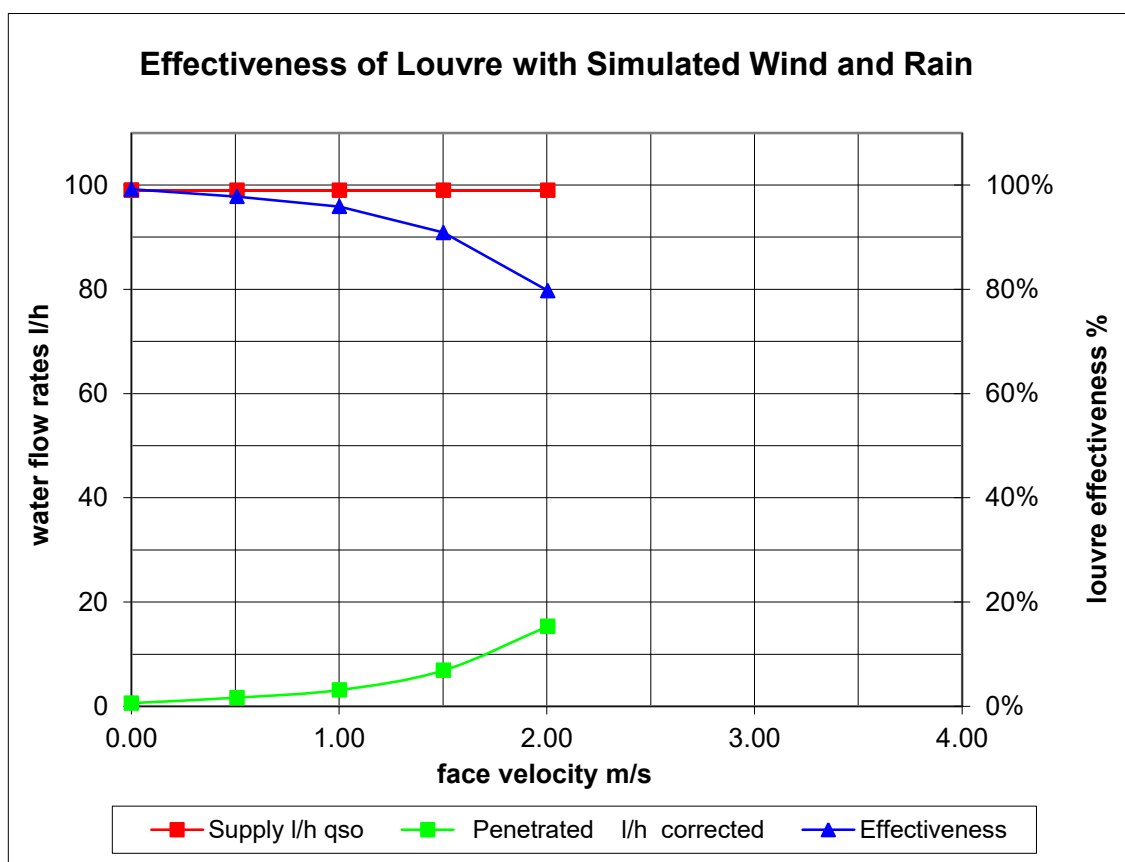
### 3 RESULTS

#### 3.1 RAINWATER PENETRATION

MANUFACTURER nv RENSON Sunprotection-Projects sa Date 13/01/2016  
 MODEL 475/L.075W Contract 59126

Simulated rainfall 75 mm/hr louvre height 1010 mm  
 Wind speed 13.0 m/s louvre width 1000 mm  
 louvre area 1.010 m<sup>2</sup>

VENTILATION RATE		WATER FLOW RATES		Effectiveness	Class
Volume m <sup>3</sup> /s	Velocity m/s	Supply l/h	Penetrated l/h		
0.00	0.00	99.0	0.6	99.2%	A
0.51	0.51	99.0	1.7	97.8%	B
1.01	1.00	99.0	3.1	95.9%	B
1.52	1.50	99.0	6.9	90.9%	C
2.02	2.00	99.0	15.4	79.7%	D



NOTE: Test was halted at 2.0 m/s at the client's request.

### 3.2 COEFFICIENT OF ENTRY

MANUFACTURER nv RENSON Sunprotection-Projects sa  
MODEL 475/L.075W

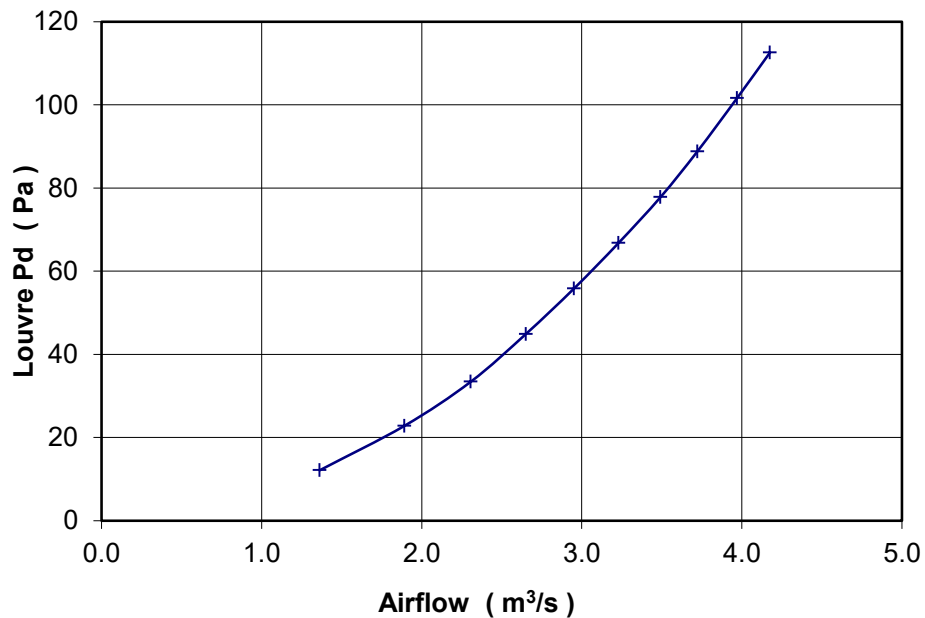
Date 13/01/2016  
Contract 59126

air temperature 18 °C  
barometer 1006 mbar  
air density 1.199 kg/m<sup>3</sup>

louvre height 1010 mm  
louvre width 1000 mm  
louvre area 1.010 m<sup>2</sup>

louvre pd Pascals	louvre face velocity	air flow rate		coefficient C <sub>e</sub>
	m/s	test m <sup>3</sup> /s	theoretical m <sup>3</sup> /s	
12.1	1.35	1.362	4.537	0.300
22.8	1.87	1.892	6.228	0.304
33.4	2.28	2.306	7.538	0.306
44.9	2.62	2.651	8.740	0.303
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88.8	3.69	3.722	12.291	0.303
101.6	3.93	3.970	13.147	0.302
112.6	4.13	4.176	13.840	0.302
mean C <sub>e</sub>				0.303
Class				2

**Resistance to Airflow ( C<sub>e</sub> )**





## APPENDIX: A MANUFACTURER'S DRAWING

