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test report
ORIGINAL REPORT in attachment

TESTRAPPORT 59126/6 ENGLISH TRANSLATION

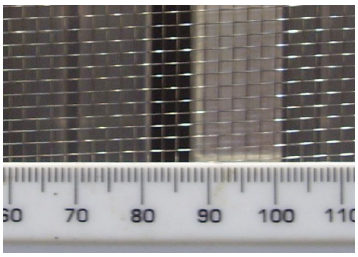
According to EN 13030: 2001: "Ventilation of buildings - Grilles - Performance testing of air grilles subjected to simulated rain"

Weather Louvre Test L.050W-V

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


59126A5 (front)


59126A5 (back)

TEST INFORMATION

Contract	**59126**
Date	16-12-15
Manufacturer	nv RENSON Sunprotection-Projects sa
Louvre Model	L.050W-V
Material	Aluminium
Painted	No
Blade Height	998 mm
Blade Width	954 mm
Blade Depth	145 mm
Frame Depth	157 mm
No. of Blades	19
Blade Pitch	50 mm
Blade Angle	60° approx. to the airflow
No. of Banks	1
Guard Type	Insect
Guard Spacing	10 mm
Side Channels	Yes
Water Drip Tray	Yes
Blade Orientation	Vertical

INTRODUCTION

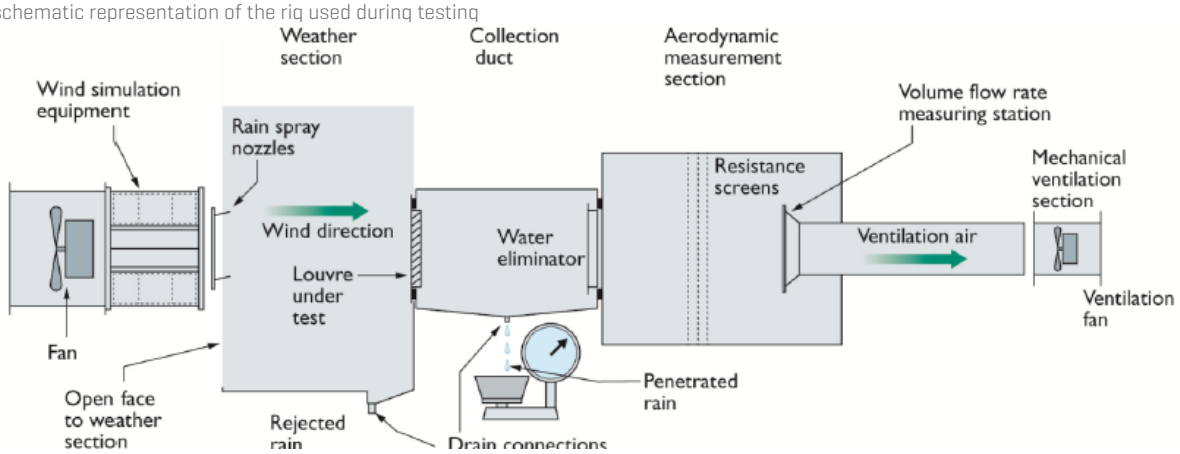
This report concerns tests conducted on a louvre to determine the Rainwater Penetration and the Pressure Drop versus Airflow Curve, with the associated Coefficient of Entry using the test methods contained within EN 13030 : 2001. The work was commissioned by nv RENSON Sunprotection- Projects sa and was carried out at BSRIA on 16 – 22 December 2015.

Items received for test

Test Item	BSRIA ID
L.050W-V	59126A6

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

L.050W-V

Uitgevoerd in opdracht van	nv RENSON Sunprotection-Projects sa Industriezone 2 Vijverdam Maalbeekstraat 10 8790 Waregem België
Contract :	**Report 59126/6**
Datum :	**27 April 2016**
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**
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Compiled by:	Approved by:
Name: Andrew Freeth	Name: Mark Roper
Title: Senior Test Engineer	Title: Principal Test Engineer

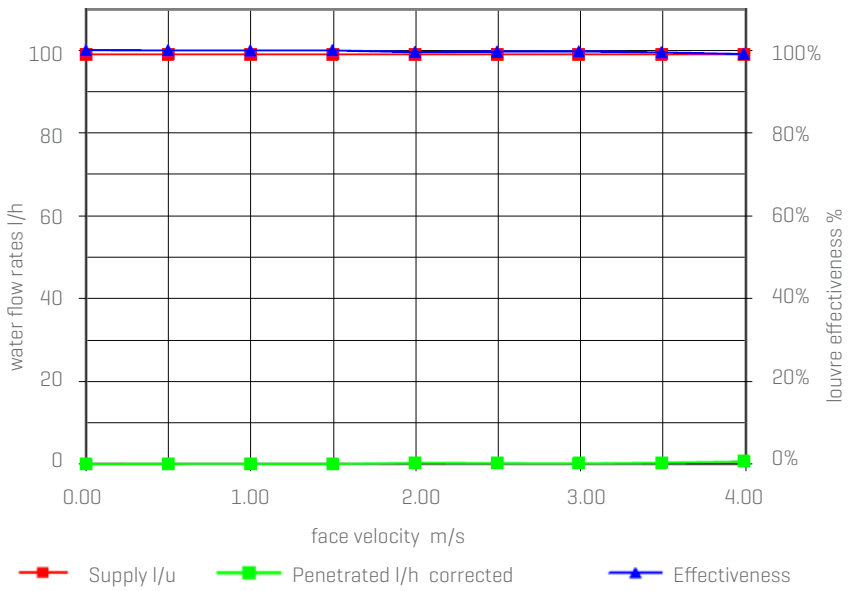
DISCLAIMER

RAINWATER PENETRATION

MANUFACTURER	nv RENSON Sunprotection-Projects sa	Date	Date 17/12/2015
MODEL	411 (mesh 2,3) with drain profile	Contract	59126
		louvre height	998 mm
Simulated rainfall	75 mm/hr	louvre width	954 mm
Wind speed	13.0 m/s	louvre area	0,952 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	0,0	100,0%	A
0,47	0,50	99,0	0,0	99,9%	A
0,95	1,00	99,0	0,0	99,9%	A
1,42	1,50	99,0	0,0	99,9%	A
1,90	2,00	99,0	0,3	99,5%	A
2,37	2,49	99,0	0,3	99,6%	A
2,85	2,99	99,0	0,2	99,7%	A
3,32	3,49	99,0	0,4	99,5%	A
3,80	3,99	99,0	0,7	99,1%	A

Effectiveness of Louvre with Simulated Wind and Rain



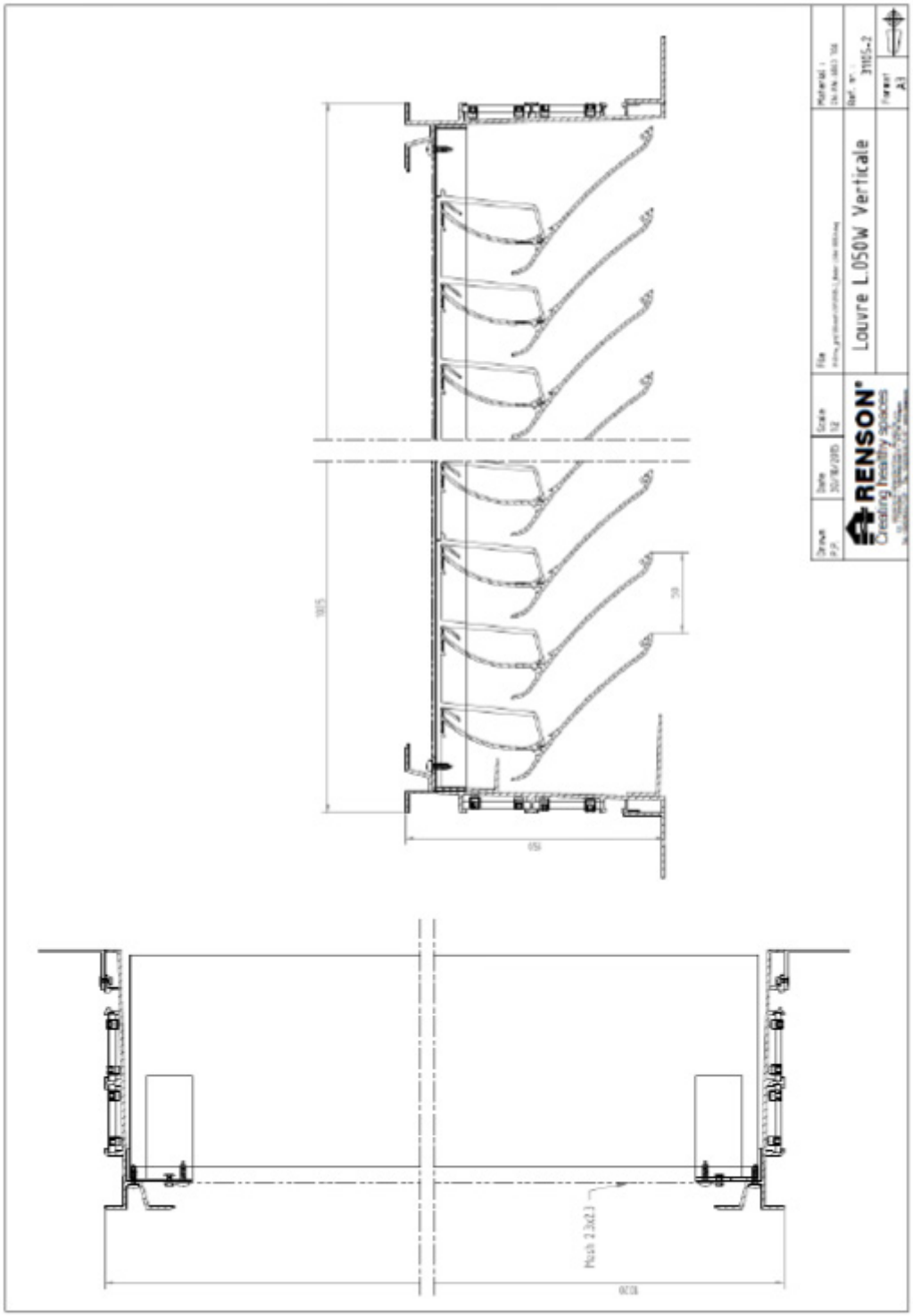
Note: The louvre developed a water leak from a corner which became significant at 3.5m/s. The louvre was removed & the corner re-sealed. The 3.5m/s test was repeated & used in this report. In addition to the standard velocities, 4m/s was also requested and followed the 3.5m/s test.

COEFFICIENT OF ENTRY

MANUFACTURER	nv RENSON Sunprotection-Projects sa	Date	16/12/2015
MODEL	LO50W-V	Contract	59126
air temperature	17.8 °C	louvre height	998 mm
barometer	1010 mbar	louvre width	954 mm
air density	1,197 kg/m3	louvre area	0,952 m2

	louvre face velocity	air flow rate		
louvre pd Pascal	**m/s**	**Test m³/s**	**theoretical m³/s**	**Coëfficiënt Ce**
6,5	1,06	1,009	3,127	0,323
10,4	1,31	1,244	3,956	0,314
17,0	1,61	1,536	5,057	0,304
24,0	1,92	1,832	6,009	0,305
29,7	2,11	2,006	6,685	0,300
44,0	2,57	2,450	8,136	0,301
65,0	3,13	2,976	9,889	0,301
90,0	3,70	3,522	11,637	0,303
111,0	4,07	3,877	12,923	0,300
122,0	4,28	4,080	13,548	0,301
			Ce moyen	0,305
			Classe	2

APPENDIX: A MANUFACTURER'S DRAWING



Weather Louvre Test

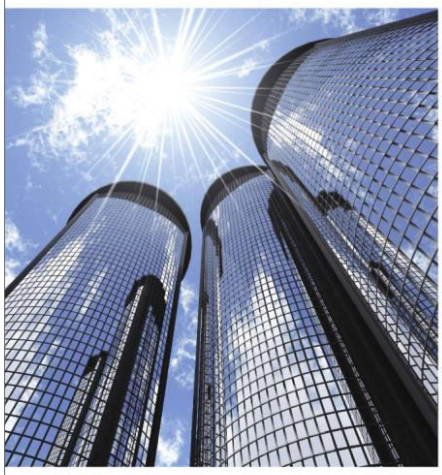
L.050W-V

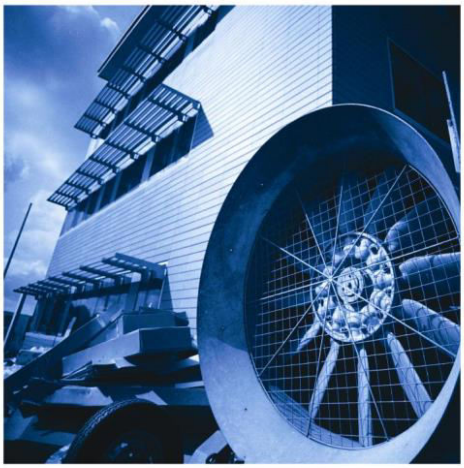
Report 59126/6

Carried out for
nv RENSON Sunprotection-Projects sa

By Andrew Freeth

27 April 2016





Weather Louvre Test L.050W-V

Carried out for:

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

Contract: **Report 59126/6**

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

CONTENTS

APPENDICES

FIGURES

1 INTRODUCTION

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1.1 TEST ITEM INFORMATION

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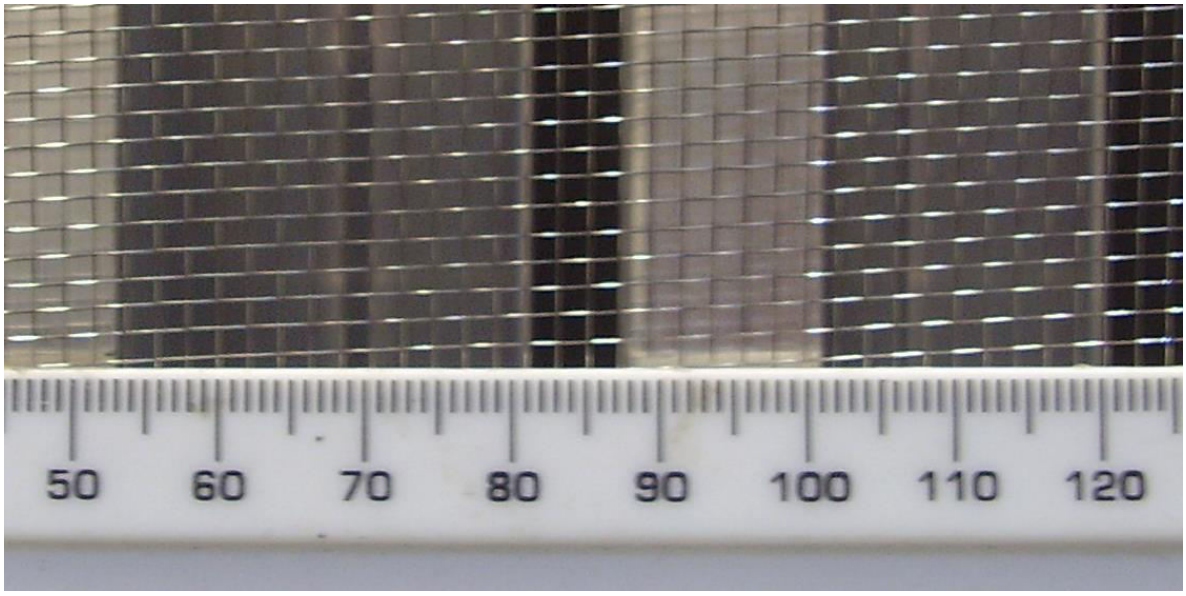
Manufacturer		nv RENSON Sunprotection-Projects sa
Louvre Model		L.050W-V
Material		Aluminium
Painted		No
Blade Height		998 mm
Blade Width		954 mm
Blade Depth		145 mm
Frame Depth		157 mm
No. of Blades		19
Blade Pitch		50 mm
Blade Angle		60º approx. to the airflow
No. of Banks		1
Guard Type		Insect
Guard Spacing		10 mm
Side Channels		Yes
Water Drip Tray		Yes
Blade Orientation		Vertical

Figure 1 Test item 59126A6 (front)

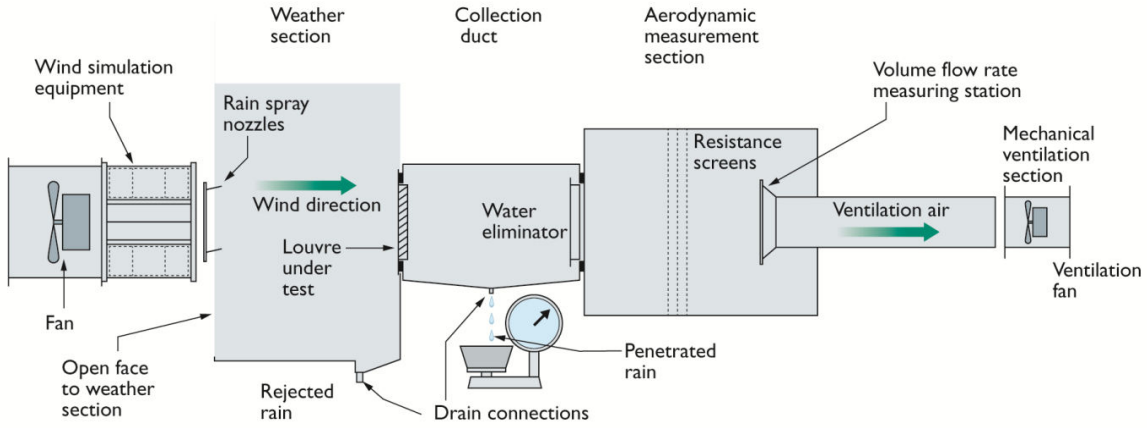
Figure 2 Test item 59126A6 (rear)

Figure 3 Close-up of guard



2 TEST METHOD

A schematic representation of the rig used during testing



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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 17/12/2015
MODEL L.050W-V Contract 59126

			louvre height	998	mm
Simulated rainfall	75	mm/hr	louvre width	954	mm
Wind speed	13.0	m/s	louvre area	0.952	m^2

VENTILATION RATE		WATER FLOW RATES		Effectiveness	Class
Volume m^3/s	Velocity m/s	Supply l/h	Penetrated l/h		
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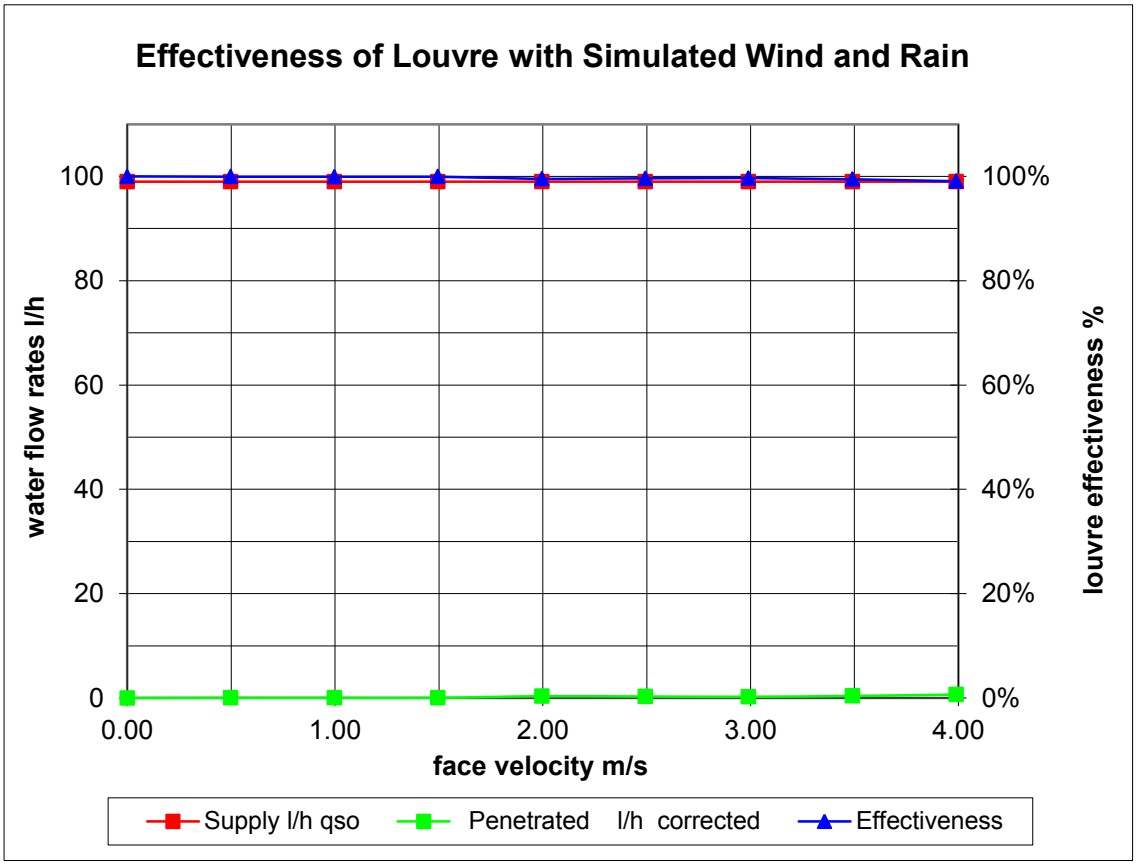

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MANUFACTURER nv RENSON Sunprotection-Projects sa Date 16/12/2015
MODEL L050W-V Contract 59126

air temperature	17.8	°C	louvre height	998	mm
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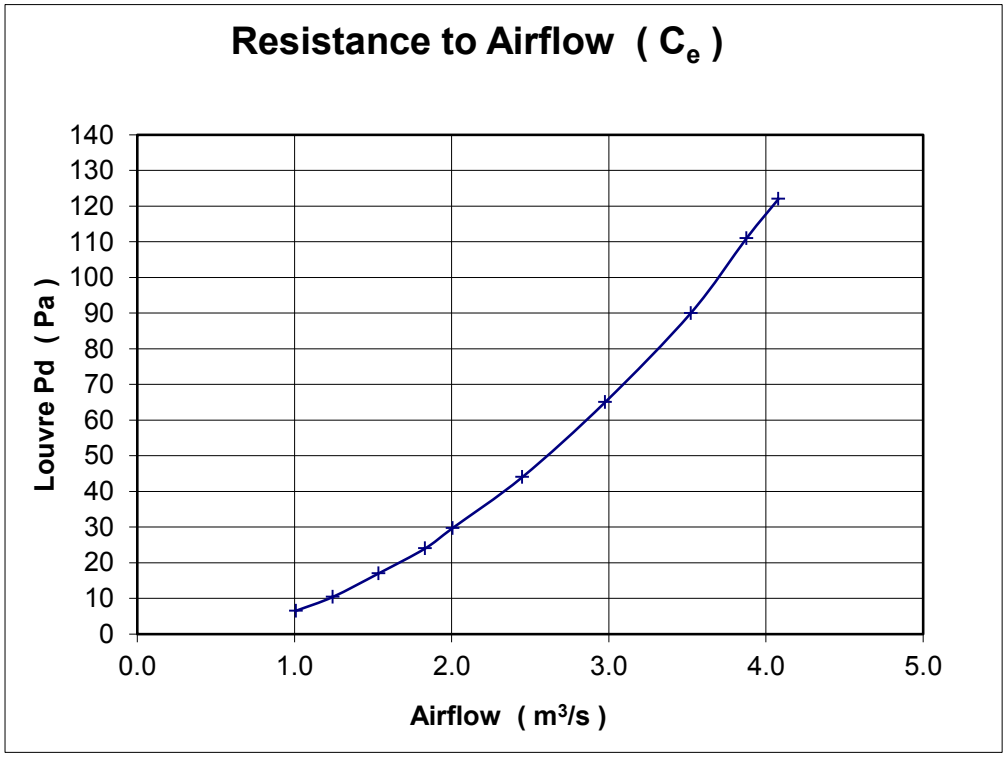
90.0	3.70	3.522	11.637	0.303
111.0	4.07	3.877	12.923	0.300
122.0	4.28	4.080	13.548	0.301
			mean C_e	0.305
			Class	2



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