Weather Louvre Test

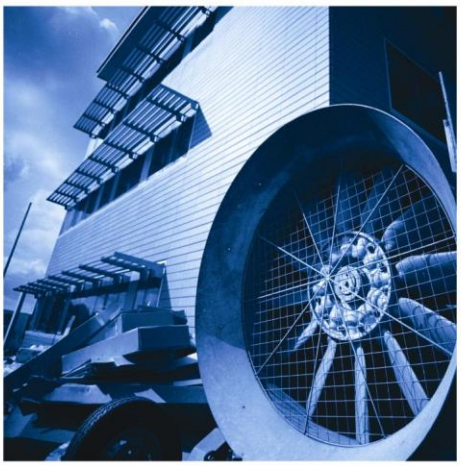
425 (mesh 6) without drain profile

Report 59126/3

Carried out for
nv RENSON Sunprotection-Projects sa

By Andrew Freeth

18 December 2015



Weather Louvre Test 425 (mesh 6) without drain profile

Carried out for:

nv RENSON Sunprotection-Projects sa
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Maalbeekstraat 10
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Belgium

Contract: **Report 59126/3**

Date: **18 December 2015**

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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 6 – 20 October 2015.

Items received for test

Test Item	BSRIA ID
425 (mesh 6) without drain profile	59126A3

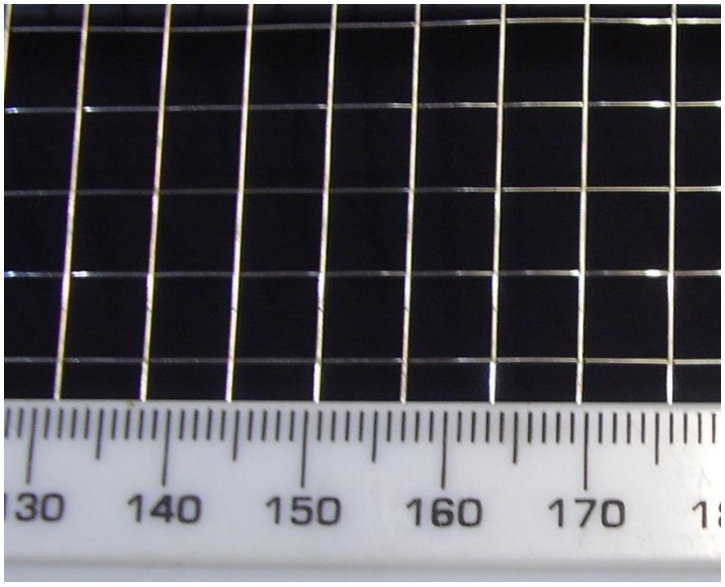
1.1 TEST ITEM INFORMATION

Contract		59126
Date		5-10-15
Manufacturer		nv RENSON Sunprotection-Projects sa
Louvre Model		425 (mesh 6) without drain profile
Material		Aluminium
Painted		Yes – dark grey
Blade Height		970 mm
Blade Width		1000 mm
Blade Depth		70 mm
Frame Depth		80 mm
No. of Blades		10
Blade Pitch		95 mm
Blade Angle		45º approx
No. of Banks		1
Guard Type		Bird/Vermin
Guard Spacing		10 mm
Side Channels		No
Water Drip Tray		Yes
Blade Orientation		Horizontal

Figure 1 Test item 59126A3 (front)

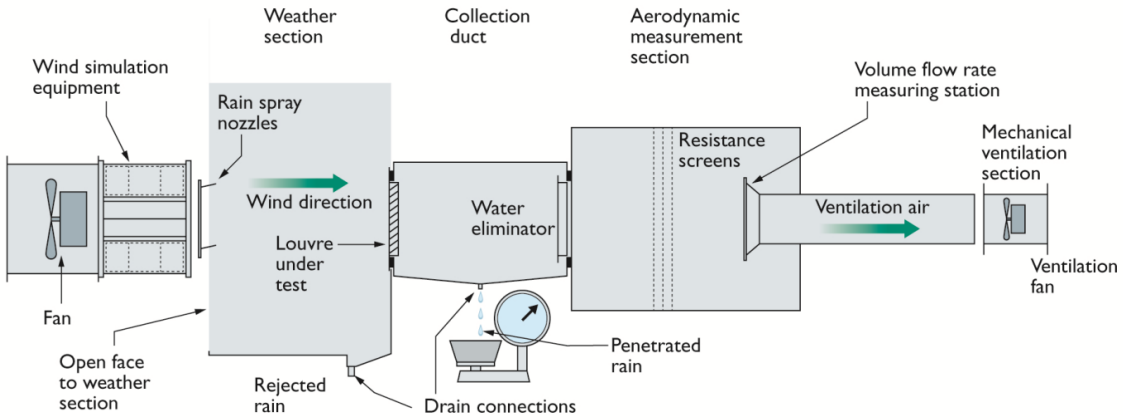
Figure 2 Test item 59126A3 (rear)

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

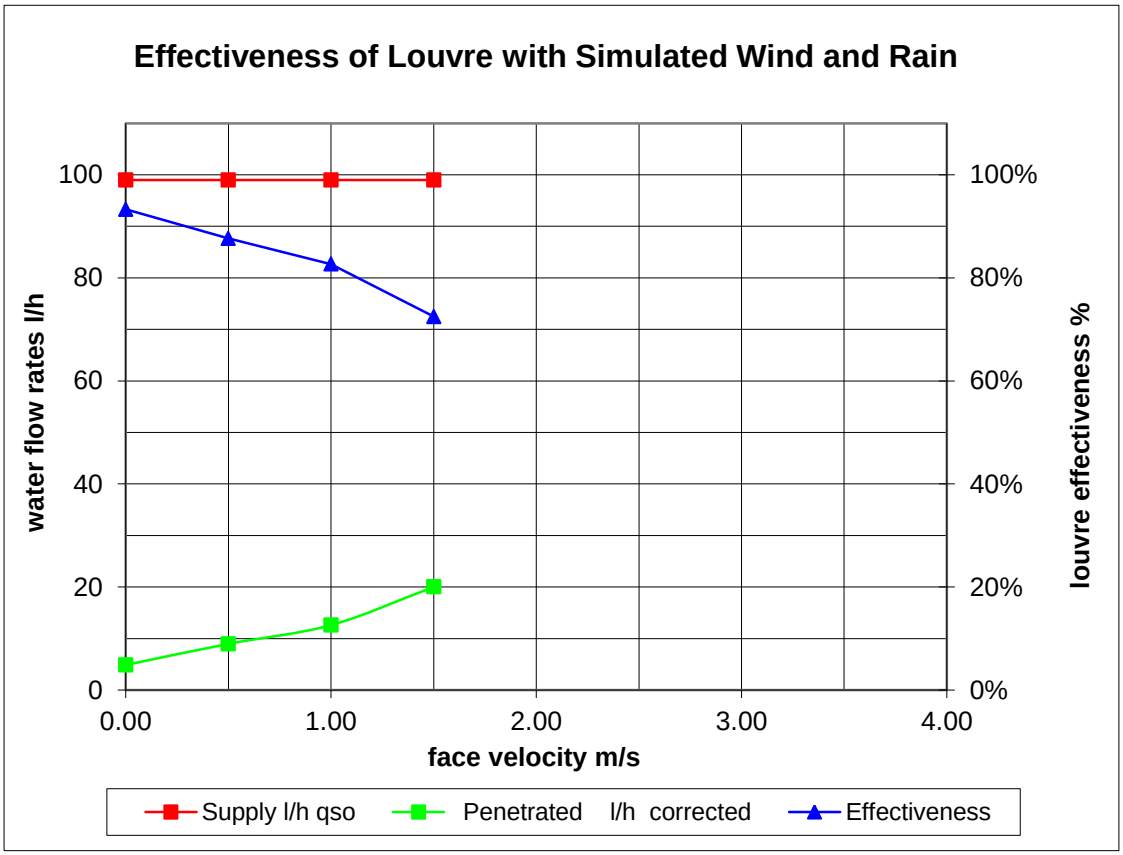
3 RESULTS

3.1 RAINWATER PENETRATION

MANUFACTURER nv RENSON Sunprotection-Projects sa Date 20/10/2015
MODEL 425 (mesh 6) without drain profile Contract 59126

			louvre height	970	mm
Simulated rainfall	75	mm/hr	louvre width	1000	mm
Wind speed	13.0	m/s	louvre area	0.970	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	4.9	93.3%	C
0.48	0.50	99.0	9.0	87.7%	C
0.97	1.00	99.0	12.6	82.7%	C
1.46	1.50	99.0	20.0	72.5%	D

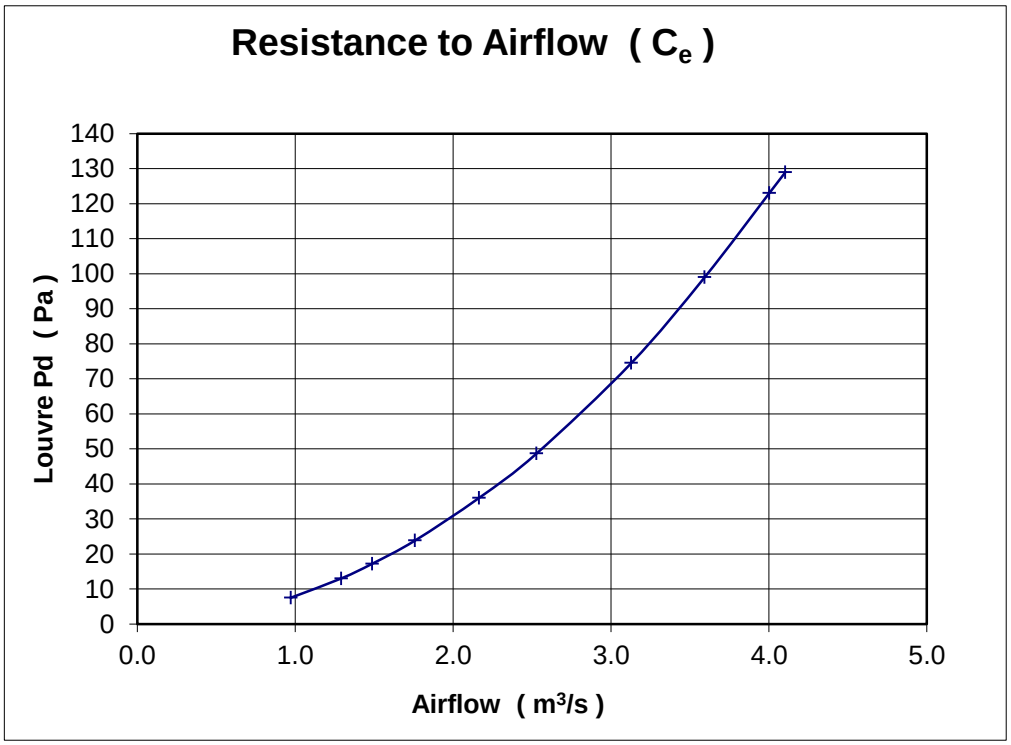


3.2 COEFFICIENT OF ENTRY

MANUFACTURER nv RENSON Sunprotection-Projects sa Date 06/10/2015
MODEL 425 (mesh 6) without drain profile Contract 59126

air temperature	18.7	°C	louvre height	970	mm
barometer	986.1	mbar	louvre width	1000	mm
air density	1.172	kg/m^3	louvre area	0.970	m^2

	louvre face velocity	air flow rate		
louvre pd Pascals	m/s	test m^3/s	theoretical m^3/s	coefficient C_e
7.5	1.00	0.973	3.470	0.280
13.0	1.33	1.292	4.568	0.283
17.2	1.53	1.488	5.254	0.283
23.8	1.81	1.758	6.181	0.284
36.0	2.23	2.165	7.602	0.285
48.7	2.61	2.529	8.841	0.286
74.5	3.23	3.129	10.935	0.286
99.0	3.70	3.593	12.606	0.285
123.0	4.13	4.002	14.051	0.285
129.0	4.23	4.104	14.390	0.285
			mean C_e	0.284
			Class	3



APPENDIX: A MANUFACTURER'S DRAWING