

TESTRAPPORT

57226/1

ENGLISH TRANSLATION

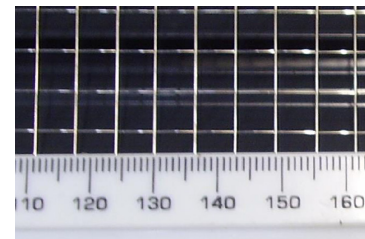
According to EN 13030: 2001: "Ventilation of buildings - Grilles - Performance testing of air grilles subjected to simulated rain"

**Weather Louvre Test
412 [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	412 [mesh 6] without drain profile
Material	Aluminium
Painted	Yes - dark grey
Blade Height	988 mm
Blade Width	1000 mm
Blade Depth	25 mm
Frame Depth	30 mm
No. of Blades	48
Blade Pitch	20 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



59126A1 (front)



59126A1 (back)

INTRODUCTION

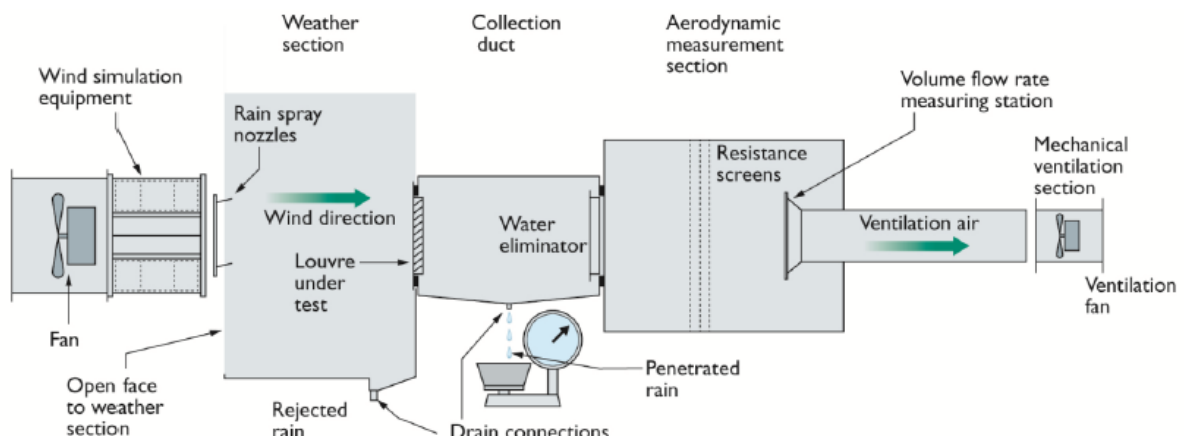
This report concerns tests conducted on a louvre to determine the Rainwater Penetration and the Pressure Drop versus Airflow Curve, with the associated Coefficient of Entry using the test methods contained within EN 13030 : 2001. The work was commissioned by nv RENSON Ventilation sa and was carried out at BSRIA on 14 – 31 May 2013.

Items received for test

Test Item	BSRIA ID
412 [mesh 6] without drain profile	59126A1

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 59126/1**

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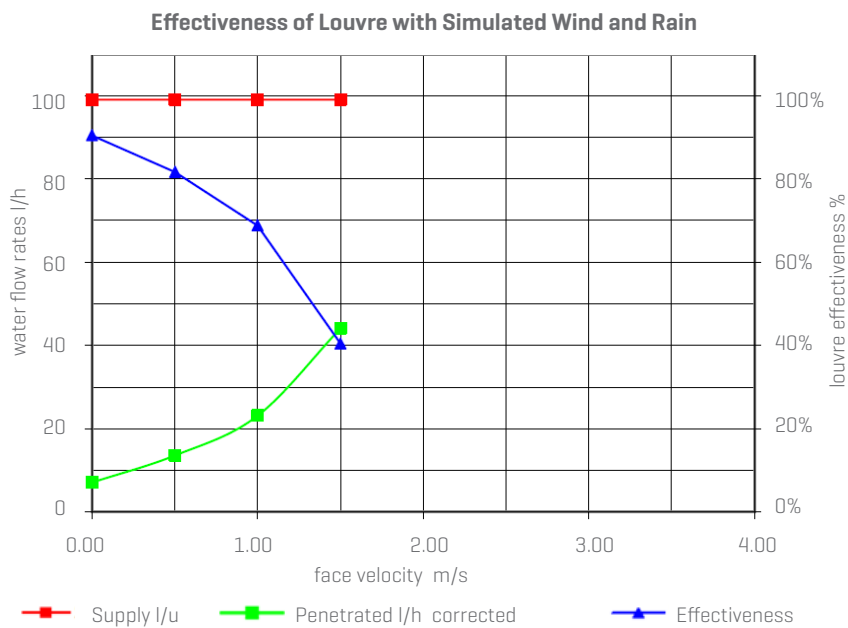
Compiled by: Name: Andrew Freeth Title: Senior Test Engineer	Approved by: Name: Mark Roper Title: Principal Test Engineer
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RAINWATER PENETRATION

MANUFACTURER	Renson	Date	06/10/2015
MODEL	412 (maille 6mm) sans récupérateur d'eau	Contract	59126
Simulated rainfall	75 mm/hr	louvre height	955mm
Wind speed	13.0 m/s	louvre width	1000 mm
		louvre area	0,955 m ²

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	7.1	90.4%	c
0.50	0.50	99.0	13.6	81.6%	C
0.99	1.00	99.0	23.1	68.8%	D
1.48	1.50	99.0	44.1	40.4%	D



COEFFICIENT OF ENTRY

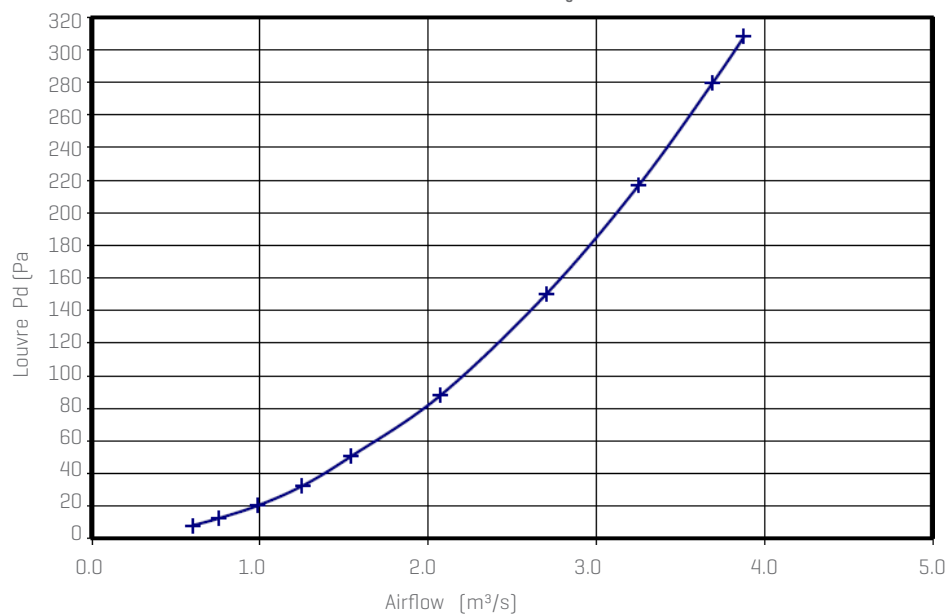
 MANUFACTURER nv RENSON Sunprotection-Projects sa
 MODEL 412 [mesh 6] without drain profile

 Date 15.05.2013
 Contract 59126

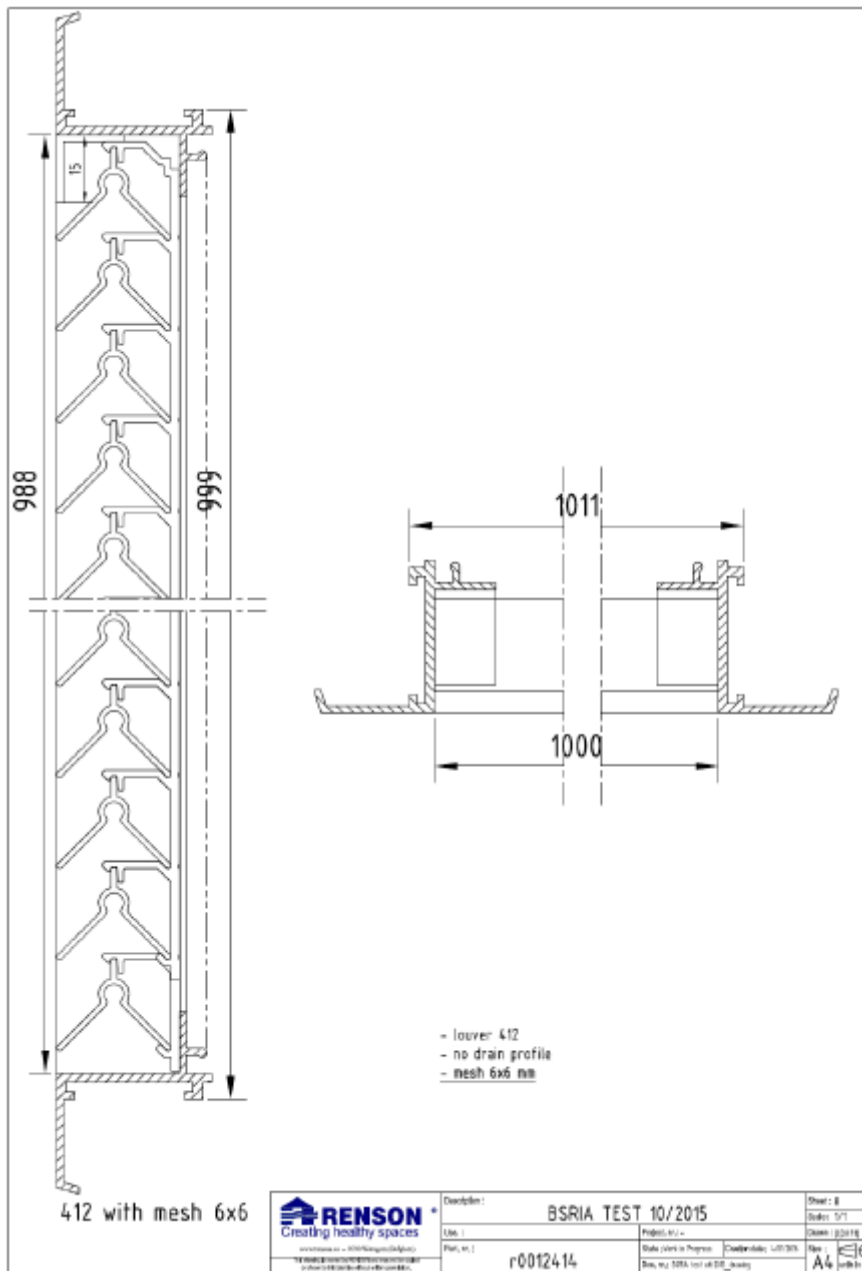
 air temperature 18,6 °C
 barometer 986,1 mbar
 air density 1,173 kg/m3

 louvre height 988 mm
 louvre width 1000 mm
 louvre area 0,988 m2

louvre pd Pascal	louvre face velocity	air flow rate		Coefficient Ce
	m/s	Test m³/s	theoretical m³/s	
8.0	0.61	0.602	3.649	0.165
12.4	0.77	0.756	4.543	0.166
20.2	1.00	0.987	5.799	0.170
32.3	1.27	1.253	7.333	0.171
50.3	1.56	1.541	9.151	0.168
88.0	2.10	2.076	12.103	0.172
150.0	2.74	2.703	15.802	0.171
216.5	3.29	3.250	18.984	0.171
280.0	3.74	3.695	21.590	0.171
308.0	3.93	3.880	22.643	0.171
			mean Ce	0.170
			Class	4

Resistance to Airflow [C_e]


APPENDIX: A MANUFACTURER'S DRAWING



Weather Louvre Test 412 (mesh 6) without drain profile

Report 59126/1

Carried out for
nv RENSON Sunprotection-Projects sa

By Andrew Freeth

18 December 2015



Weather Louvre Test 412 (mesh 6) without drain profile

Carried out for:

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

Contract: **Report 59126/1**

Date: **18 December 2015**

Issued by: **BSRIA Limited**
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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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 - 8 October 2015.

Items received for test

Test Item	BSRIA ID
412 (mesh 6) without drain profile	59126A1

1.1 TEST ITEM INFORMATION

Contract	59126
Date	5-10-15
Manufacturer	nv RENSON Sunprotection-Projects sa
Louvre Model	412 (mesh 6) without drain profile
Material	Aluminium
Painted	Yes – dark grey
Blade Height	988 mm
Blade Width	1000 mm
Blade Depth	25 mm
Frame Depth	30 mm
No. of Blades	48
Blade Pitch	20 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

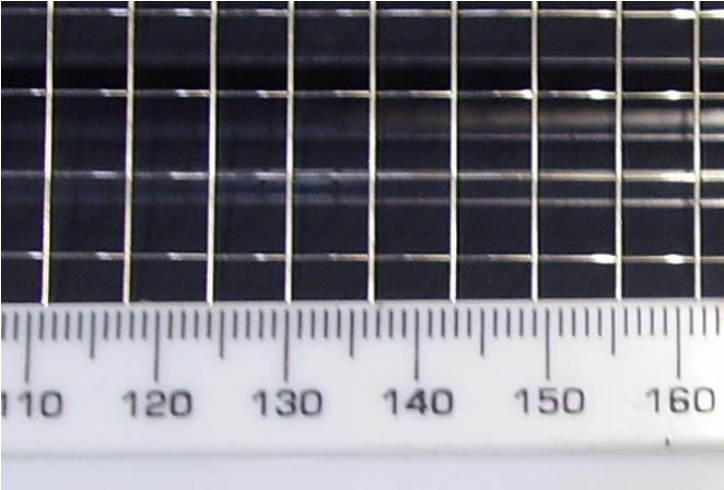
Figure 1 Test item 59126A1 (front)



Figure 2 Test item 59126A1 (rear)

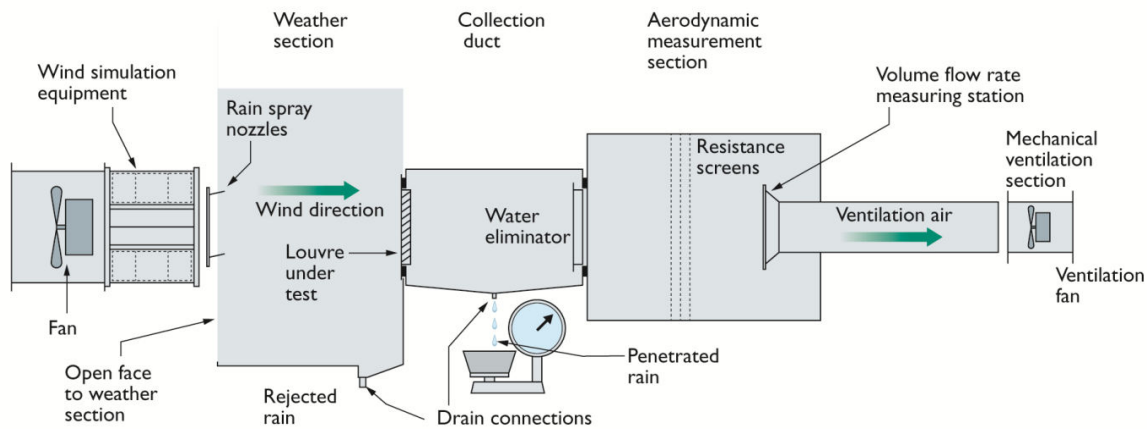


Figure 3 Close-up of guard



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

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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

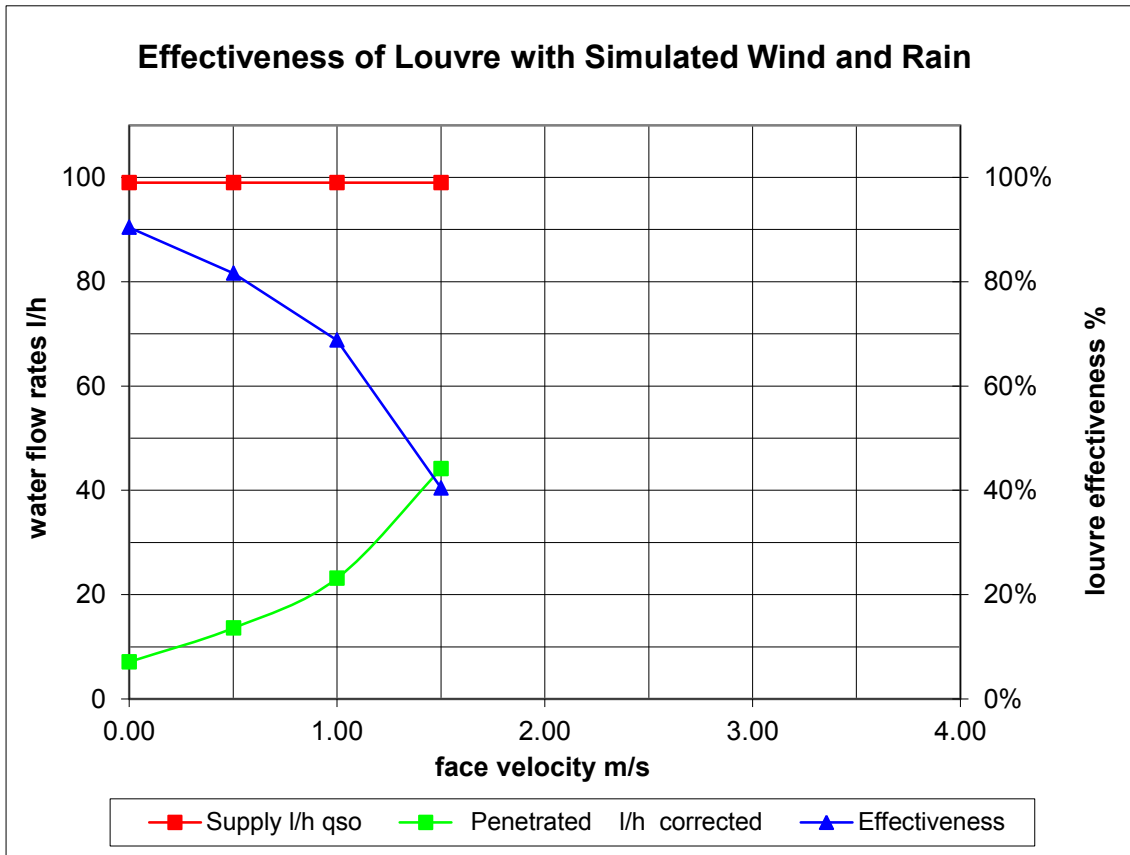
3 RESULTS

3.1 RAINWATER PENETRATION

MANUFACTURER nv RENSON Sunprotection-Projects sa Date 06/10/2015
 MODEL 412 (mesh 6) without drain profile Contract 59126

Simulated rainfall 75 mm/hr louvre height 988 mm
 Wind speed 13.0 m/s louvre width 1000 mm
 louvre area 0.988 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	7.1	90.4%	C
0.50	0.50	99.0	13.6	81.6%	C
0.99	1.00	99.0	23.1	68.8%	D
1.48	1.50	99.0	44.1	40.4%	D



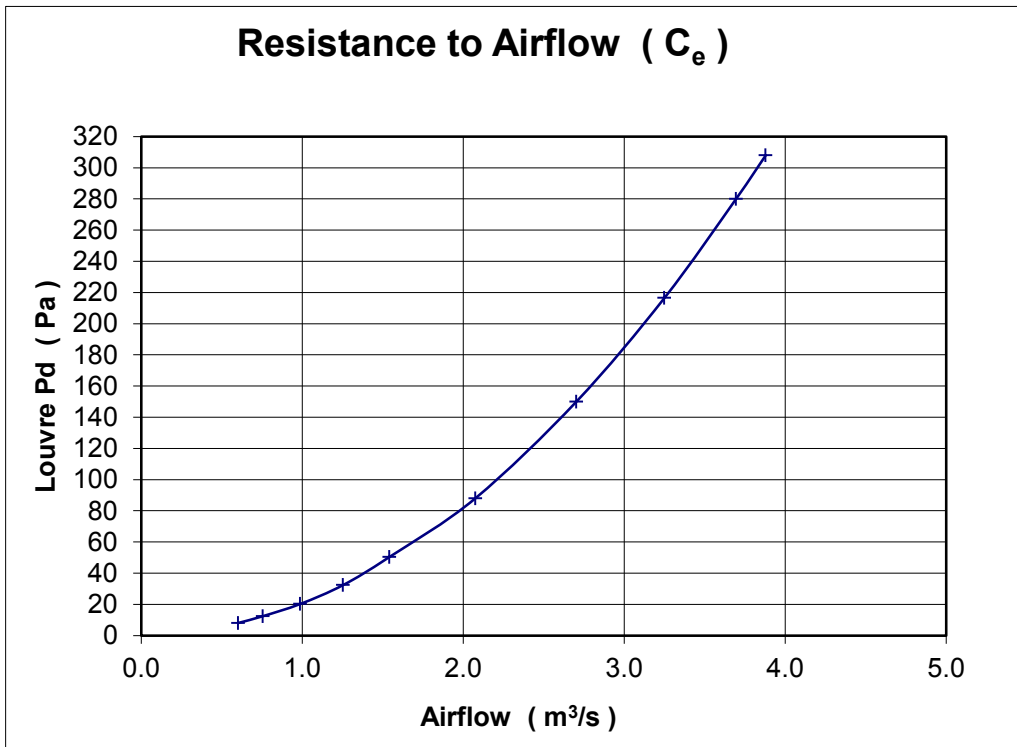
3.2 COEFFICIENT OF ENTRY

MANUFACTURER nv RENSON Sunprotection-Projects sa
MODEL 412 (mesh 6) without drain profile

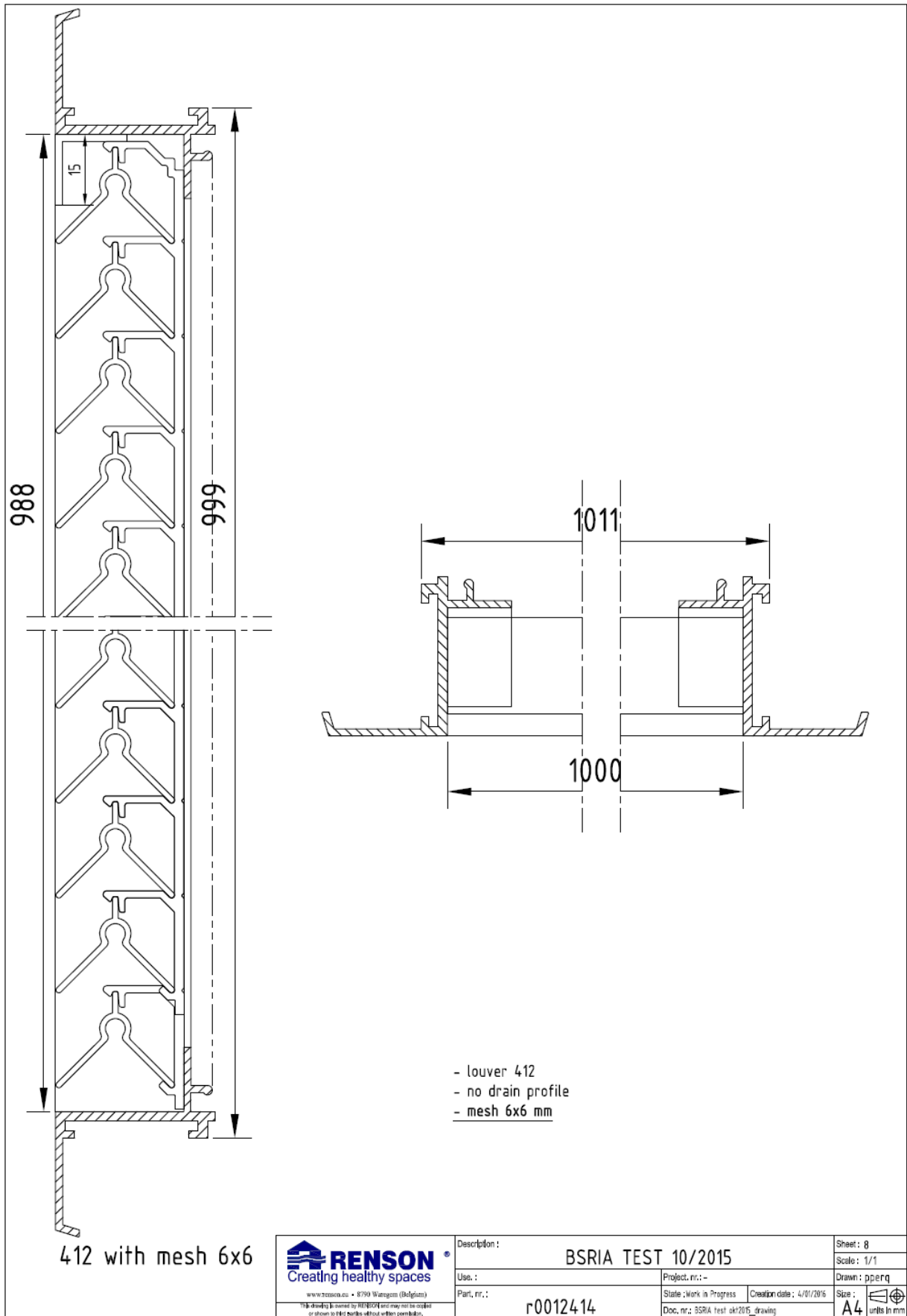
Date 06/10/2015
Contract 59126



air temperature 18.6 °C louvre height 988 mm
barometer 986.1 mbar louvre width 1000 mm
air density 1.173 kg/m³ louvre area 0.988 m²

louvre pd Pascals	louvre face velocity	air flow rate		coefficient C _e	
	m/s	test m ³ /s	theoretical m ³ /s		
8.0	0.61	0.602	3.649	0.165	
12.4	0.77	0.756	4.543	0.166	
20.2	1.00	0.987	5.799	0.170	
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280.0	3.74	3.695	21.590	0.171	
308.0	3.93	3.880	22.643	0.171	
				mean C _e	0.170
				Class	4



APPENDIX: A MANUFACTURER'S DRAWING



 <p><small>www.rension.eu • 8799 Warezem (Belgium)</small> This drawing is owned by RENSON and may not be copied or shown to third parties without written permission.</p>	Description : BSRIA TEST 10/2015		Sheet : 8
	Use. :	Project, nr. : -	Scale : 1/1
Part, nr. : r0012414	State : Work in Progress	Creation date : 4/01/2016	Drawn : pperq
Doc. nr. : BSRIA test okt2015_drawing			Size : A4  units in mm