Louvre Airflow Test

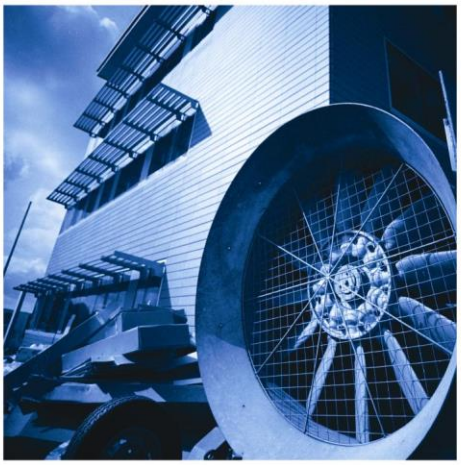
L.066P

BSRIA Final Report 60242/3

Carried out for
nv RENSON Sunprotection-Projects sa

By Andrew Freeth

13 July 2017



Louvre Airflow Test
L.066P

Carried out for:

nv RENSON Sunprotection-Projects sa
Maalbeekstraat 6
B-8790 Waregem
Belgium

Contract: **BSRIA Final Report 60242/3**

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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 BSRIA Test	**Title:** Principal Test Engineer BSRIA Test

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1 INTRODUCTION

This report concerns tests conducted on a louvre to determine the Pressure Drop versus Airflow Curve, with the associated Coefficient of Entry and Discharge 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 3 - 4 May 2017.

Items received for test

Test Item	BSRIA ID
L.066P	60242A3

1.1 TEST ITEM INFORMATION

Contract		60242
Date		3-5-17
Manufacturer		nv RENSON Sunprotection-Projects sa
Louvre Model		L.066P
Material		Aluminium
Painted		No
Core Area Height		983 mm
Core Area Width		983 mm
Blade Pack Depth		55 mm
Frame Depth		60 mm
No. of Blades		15
Blade Pitch		65 mm
Blade Angle		0º (to the air flow)
No. of Banks		1
Guard Type		None
Guard Spacing		N/A
Side Channels		No
Water Drip Tray		Yes
Blade Orientation		Horizontal

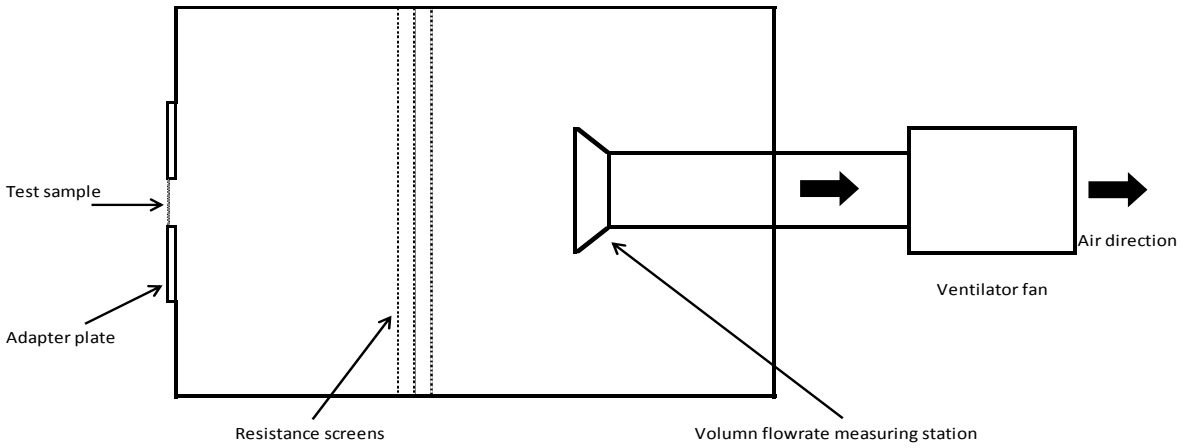
Note: Weather louvre core area - product of the minimum height H and minimum width W of the front opening in the weather louvre assembly with the louvre blades removed
Blade Pack Depth refers to the distance from front of first bank to rear of last bank.

Figure 1 Test item 60242A3 (front)

Figure 2 Test item 60242A3 (rear)

2 TEST METHOD

A schematic representation of the rig used during testing



2.1 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.

2.2 TEST EQUIPMENT USED

Test equipment	BSRIA ID	Calibration Expiry Date
Airflow cones	364	7-1-18
Micromanometer	5	16-2-18
Micromanometer	682	2-2-18

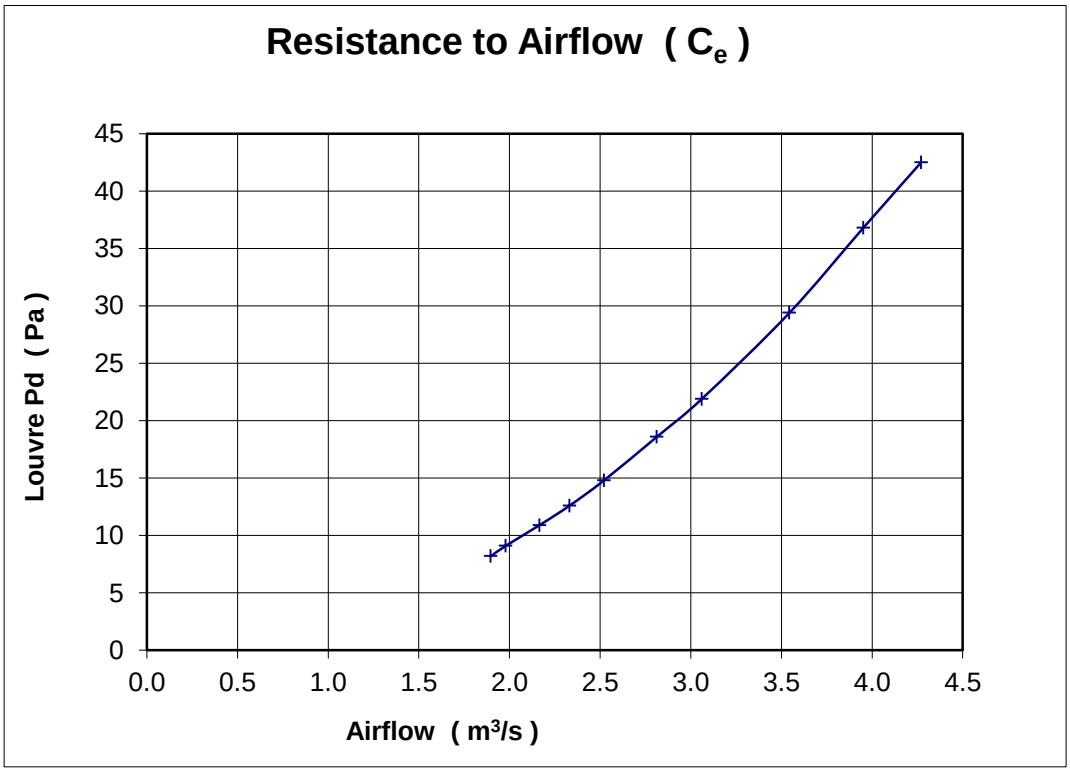
3 RESULTS

3.1 COEFFICIENT OF ENTRY

MANUFACTURER nv RENSON Sunprotection-Projects sa Date 03/05/2017
MODEL L.066P Contract 60242

air temperature	16.5	°C	louvre height	983	mm
barometer	1014	mbar	louvre width	983	mm
air density	1.215	kg/m^3	louvre area	0.966	m^2

	louvre face velocity	air flow rate		
louvre pd Pascals	m/s	test m^3/s	theoretical m^3/s	coefficient C_e
8.2	1.96	1.897	3.551	0.534
9.1	2.05	1.979	3.741	0.529
10.9	2.24	2.166	4.094	0.529
12.6	2.41	2.331	4.401	0.530
14.8	2.61	2.521	4.770	0.529
18.6	2.91	2.813	5.348	0.526
21.9	3.17	3.061	5.803	0.528
29.4	3.67	3.544	6.723	0.527
36.8	4.09	3.952	7.522	0.525
42.5	4.42	4.271	8.084	0.528
			mean C_e	0.529
			Class	1



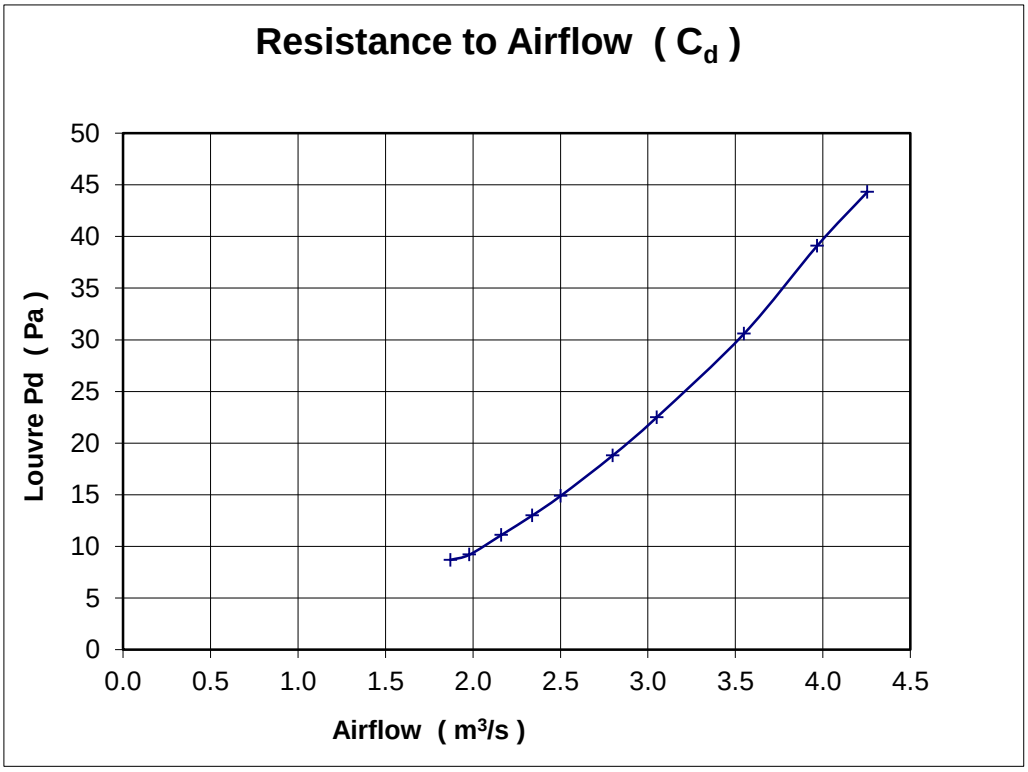
Graph equation $y = 2.2759x^{2.0226}$

3.2 COEFFICIENT OF DISCHARGE

MANUFACTURER nv RENSON Sunprotection-Projects sa Date 03/05/2017
MODEL L.066P Contract 60242

air temperature	16.5	°C	louvre height	983	mm
barometer	1014	mbar	louvre width	983	mm
air density	1.215	kg/m^3	louvre area	0.966	m^2

	louvre face velocity	air flow rate		
louvre pd Pascals	m/s	test m^3/s	theoretical m^3/s	coefficient C_d
8.7	1.94	1.872	3.657	0.512
9.2	2.05	1.980	3.761	0.526
11.1	2.24	2.162	4.131	0.523
13.0	2.42	2.339	4.471	0.523
14.9	2.59	2.502	4.786	0.523
18.8	2.90	2.798	5.376	0.521
22.5	3.16	3.051	5.882	0.519
30.6	3.67	3.550	6.859	0.518
39.1	4.11	3.968	7.753	0.512
44.3	4.40	4.254	8.253	0.515
			mean C_d	0.519
			Class	1



Graph equation $y = 2.3367x^{2.0321}$

APPENDIX: A MANUFACTURER'S DRAWING