Weather Louvre Test

458 – L.060M

Carried out for

Renson NV

Report 106808/5

Compiled by Samuel Twibill

14 February 2025

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Weather Louvre Test

458 – L.060M

Carried out for: Renson NV
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Belgium

Contract: Report 106808/5

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QUALITY ASSURANCE

Issue	Date	Compiled by:	Approved by:	Signature
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1 INTRODUCTION

This report concerns tests conducted on a louvre to determine the Pressure Drop versus Airflow Curves, with the associated Coefficient of Entry and Coefficient of Discharge, using the test methods contained within BS EN 13030:2001. It should be noted that BS EN 13030:2001 simply provides a method for testing and rating louvre samples, there are no minimum permitted values or recommendations for louvre performance.

The work was commissioned by Renson NV and was carried out at BSRIA North on 5th December 2024, by Thomas Costello of BSRIA Ltd.

Items received for test.

Test Item	BSRIA ID
458 – L.060M	106808A5

1.1 TEST ITEM INFORMATION

Contract		106808
Date		25/11/2024
Manufacturer		Renson NV
Louvre Model		458 – L.060M
Material		Aluminium
Painted		Yes. Unit is painted grey
Core Area Height		977 mm
Core Area Width		983 mm
Blade Pack Depth		55 mm
Frame Depth		65 mm
No. of Blades		16
Blade Pitch		60 mm
Blade Angle		25° approx.
No. of Banks		1
Guard Type		None
Guard Spacing		N/A
Side Channels		No
Water Drip Tray		Yes – Internal
Blade Orientation		Horizontal

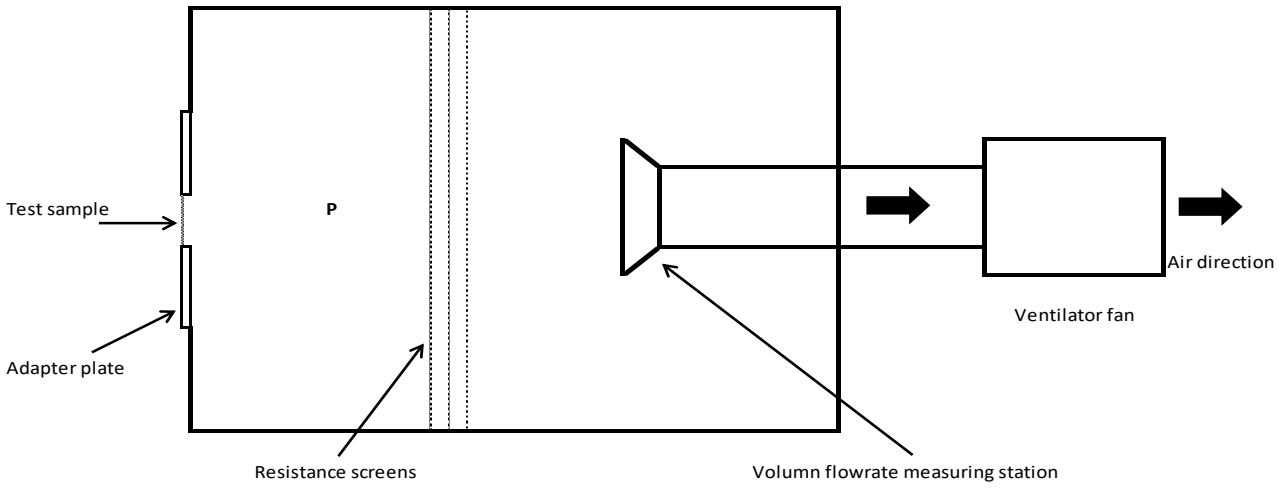
Note: Weather louvre core area - product of the minimum height H and minimum width W of the front opening in the weather louvre assembly with the louvre blades removed.
Blade Pack Depth refers to the distance from front of first bank to rear of last bank.
All measurements are of the physical sample tested in this report and done to the best of our ability where possible, some measurements may not be possible due to access within the test sample. For true measurements refer to the manufacturer and/or technical drawings if supplied.

Figure 1 Test item 106808A5 (front)

Figure 2 Test item 106808A5 (rear)

2 TEST METHOD

A schematic representation of the rig used during testing.



Aerodynamic Measuring Section

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 tapings 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	20-12-26
Micromanometer	1600	19-11-25
Micromanometer	1601	19-11-25
Temperature and Pressure Gauge	1605	21-11-25

3 RESULTS

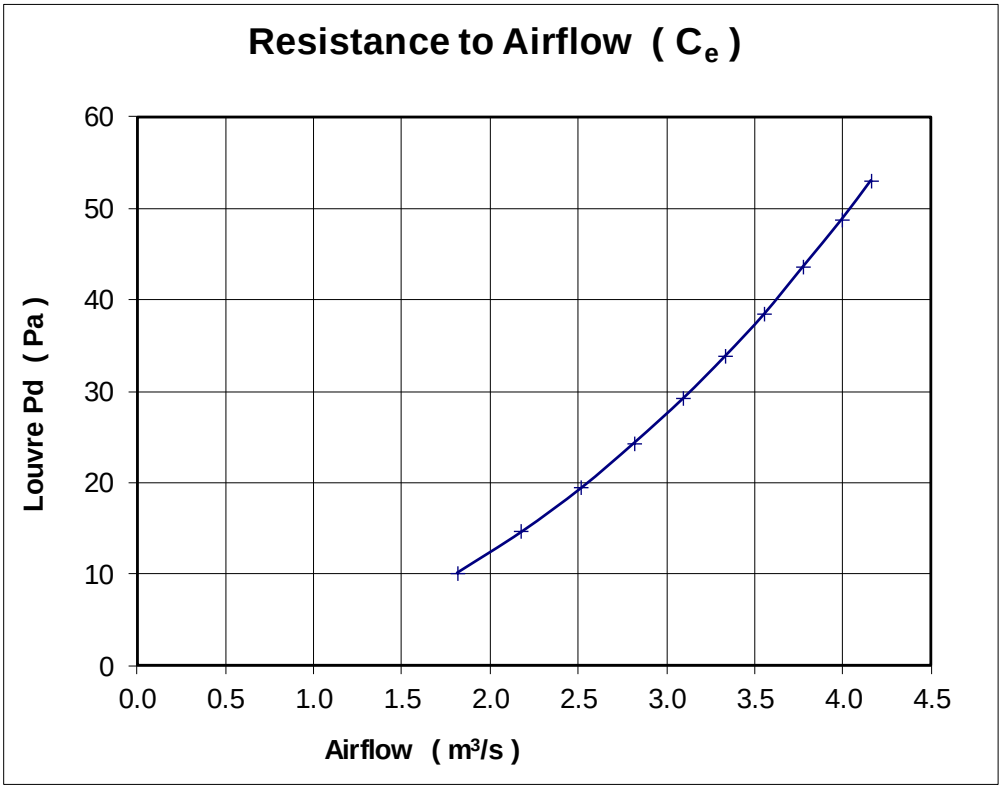
3.1 COEFFICIENT OF ENTRY

Manufacturer Renson NV
Model 458 – L.060M

Date 05/12/2024
Contract 106808

Air Temperature	15.3	°C	Core Area Height	977	mm
Barometer	1000.1	mbar	Core Area Width	983	mm
Air Density	1.203	kg/m^3	Core Area Area	0.960	m^2

	Louvre Face Velocity	Air Flow Rate		
Louvre p.d. Pa	m/s	Test m^3/s	Theoretical m^3/s	Coefficient C_e
10.1	1.89	1.814	3.935	0.461
14.6	2.27	2.180	4.732	0.461
19.4	2.62	2.519	5.454	0.462
24.3	2.93	2.818	6.104	0.462
29.2	3.23	3.098	6.691	0.463
33.8	3.47	3.335	7.199	0.463
38.4	3.70	3.556	7.673	0.463
43.5	3.93	3.773	8.167	0.462
48.7	4.16	3.994	8.641	0.462
53.0	4.33	4.162	9.015	0.462
			Mean C_e	0.462
			Class	1



A 'trendline' for the above graph would follow $y = 3.0834x^{1.9915}$

3.2 COEFFICIENT OF DISCHARGE

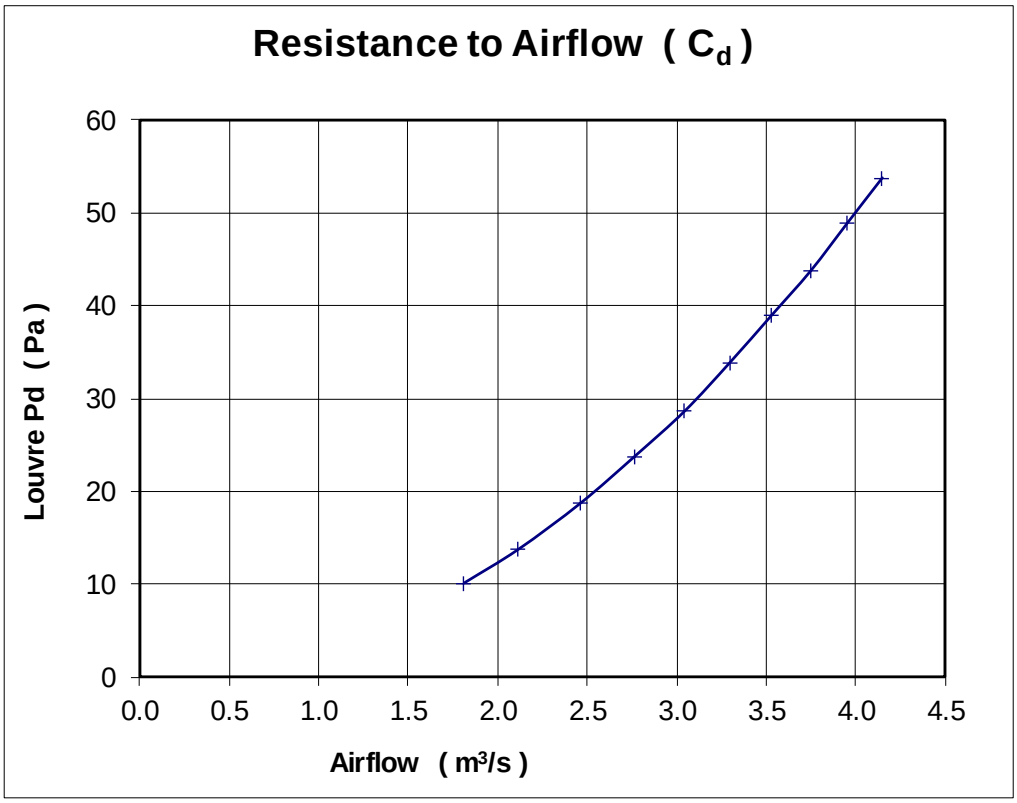
Manufacturer Renson NV
Model 458 – L.060M

Date 05/12/2024
Contract 106808

Air Temperature	16.5	°C	Core Area Height	977	mm
Barometer	999.5	mbar	Core Area Width	983	mm
Air Density	1.197	kg/m^3	Core Area Area	0.960	m^2

	Louvre Face Velocity	Air Flow Rate		
Louvre p.d. Pa	m/s	Test m^3/s	Theoretical m^3/s	Coefficient C_d
10.1	1.88	1.809	3.945	0.459
13.7	2.20	2.111	4.594	0.459
18.7	2.56	2.461	5.368	0.458
23.8	2.88	2.767	6.055	0.457
28.6	3.17	3.043	6.638	0.458
33.8	3.43	3.295	7.216	0.457
38.9	3.67	3.529	7.742	0.456
43.7	3.90	3.748	8.205	0.457
48.9	4.12	3.955	8.680	0.456
53.7	4.32	4.148	9.096	0.456

Mean C_d	0.457
Class	1



A 'trendline' for the above graph would follow $y = 3.0418x^{2.0184}$

APPENDIX A: MANUFACTURER'S DRAWING