Certificate

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Certificate No: 53161/1 **Issue No: 1** **Date of issue: 18 May 2009**

This is to certify that

BSRIA Limited

Has tested a sample of the product described below in accordance with the test methods contained within EN 13030 : 2002 and have determined the item met the detailed classification shown on pages 3 and 4 of this certificate. For further details of the test item see Page 2 of this certificate

Manufacturer/Agent	QEF Ltd Commercial Centre Dublin Road Kilkenny Ireland
Product	75-35 Flat Blade Louvre
Test location	BSRIA Old Bracknell West Bracknell Berkshire RG12 7AH
Date of test	21 to 23 March 2009
Expiry date	18 May 2012
Test engineer	M Roper / M Evans
Quality approved	Phil Stonard Principal Engineer MicroClimate & Test

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TEST ITEM INFORMATION

Contract	53161A	
Date	23/04/2009	
Manufacturer	QEF	
Louvre Model	75-35 Flat Blade Louvre	
Material	Aluminium	
Painted	No	
Blade Height	900	mm
Blade Width	996	mm
Blade Depth	38	mm
Frame Depth	105	mm
No.of Blades	12	
Blade Pitch	75	mm
Blade Angle	45	Degrees
No.of Banks	1	
Guard Type	Insect	
Guard Spacing	40	
Side Channels	Yes	
Water Drip Tray	Yes	
Blade Orientation	Horizontal	

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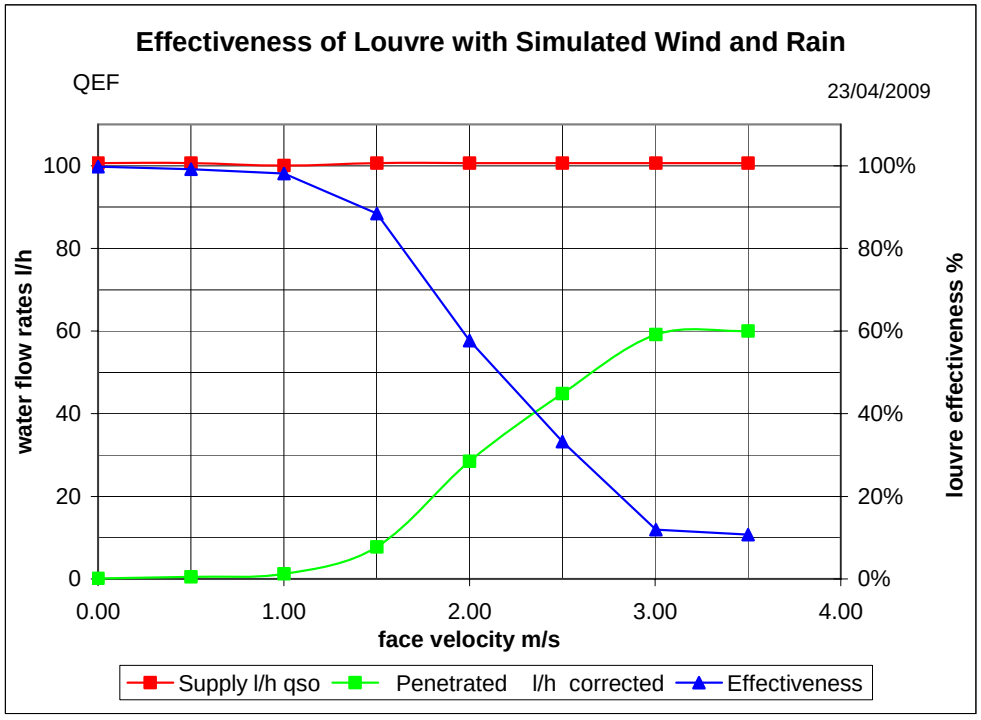
WATER PENETRATION test

MANUFACTURER QEF Date 23/04/2009
MODEL 75-35 Flat Blade Louvre Contract 53161A

			louvre height	900	mm
Simulated rainfall	75	mm/hr	louvre width	996	mm
Wind speed	13.0	m/s	louvre area	0.896	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	100.6	0.1	99.8%	A
0.45	0.50	100.6	0.6	99.2%	A
0.90	1.00	100.1	1.3	98.1%	B
1.35	1.50	100.6	7.8	88.4%	C
1.79	2.00	100.6	28.5	57.7%	D
2.24	2.50	100.6	44.9	33.3%	D
2.69	3.00	100.6	59.2	12.0%	D
3.14	3.50	100.6	60.0	10.7%	D



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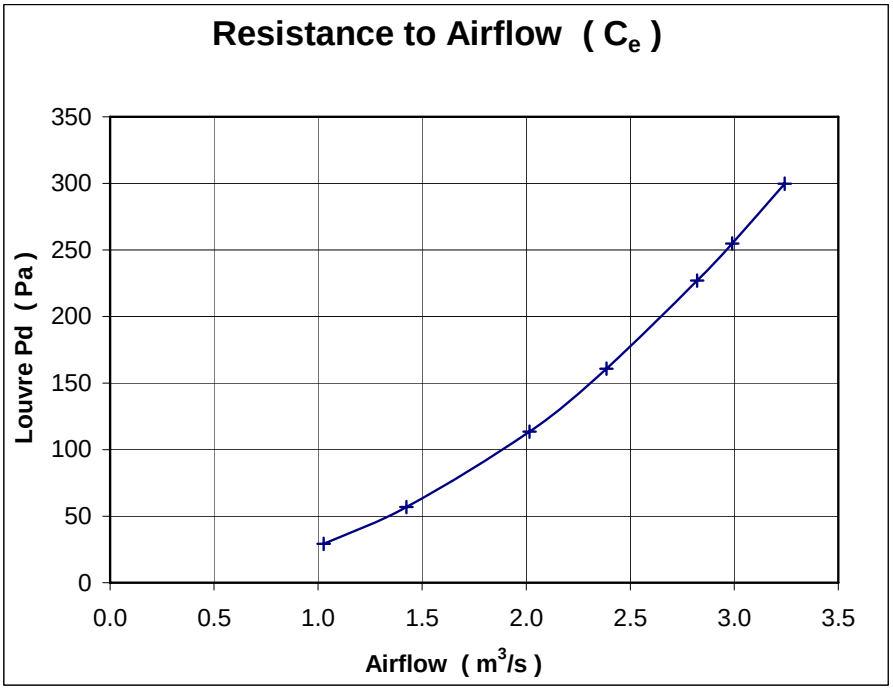
ENTRY LOSS COEFFICIENT

MANUFACTURER QEF Date 23/04/2009
MODEL 75-35 Flat Blade Louvre Contract 53161A

air temperature	22.3	°C	louvre height	900	mm
barometer	1015	mbar	louvre width	996	mm
air density	1.192	kg/m^3	louvre area	0.896	m^2

	louvre face velocity	air flow rate		
louvre pd Pascals	m/s	test m^3/s	theoretical m^3/s	coefficient C_e
29.3	1.14	1.026	6.285	0.163
56.8	1.59	1.424	8.750	0.163
113.5	2.25	2.016	12.370	0.163
160.8	2.66	2.386	14.723	0.162
227.1	3.15	2.822	17.497	0.161
254.9	3.34	2.990	18.537	0.161
299.7	3.62	3.243	20.100	0.161
			mean C_e	0.162
			Class	4



CLASSIFICATION OF WEATHER LOUVRES

Weather louvres shall be classified by their ability to reject simulated rain.

Penetration Classification

Table 1 shows difference classifications based on the maximum simulated rain penetration per square metre of louvre. The effectiveness is determined in accordance with section 8 of EN 13030:2001.

Water penetration rating at a given louvre face velocity is determined by the water penetration while the louvre is subjected to a 13 ms^{-1} simulated wind velocity and a simulated rain fall at the nominal rate.

Table 1 Penetration classification

Class	Effectiveness	Maximum allowed penetration of simulated rain $l.h^{-1}.m^{-2}$
A	1 TO 0,99	0,75
B	0,989 TO 0,95	3,75
C	0,949 TO 0,80	15,0
D	Below 0,8	Greater than 15,0

These classifications apply to various core velocities.

Discharge Loss Coefficient

The discharge loss coefficient given in Table 2, shall be determined in accordance with section 6.2.4.

Table 2 Discharge loss coefficient classification

Class	Discharge Loss Coefficient
1	0,4 and above
2	0,3 to 0,399
3	0,2 to 0,299
4	0,199 and below

(Note: The above also applies to entry loss coefficient)