

# Certificate

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**Certificate No:** 54763/2

**Issue No:** 1

**Date of issue:** 28 February 2011

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 : 2001 and has determined the item met the detailed classification shown on pages 3 to 6 of this certificate. For further details of the test item see Page 2 of this certificate

<b>Manufacturer/Agent</b>	N.V. RENSON PROJECTS IZ 2 Vijverdam Maalbeekstraat 6 B-8790 Waregem Belgium
<b>Product</b>	421 WK2
<b>Test location</b>	BSRIA Old Bracknell Lane West Bracknell Berkshire RG12 7AH
<b>Date of test</b>	22 December 2010 and 11 February 2011
<b>Expiry date</b>	28 February 2014
<b>Test engineer</b>	M Roper / A Freeth
<b>Quality approved</b>	Phil Stonard Laboratory Manager

## TEST ITEM INFORMATION

<b>Contract</b>	54763
<b>Date</b>	December 2010
<b>Manufacturer</b>	N.V. Renson Projects
<b>Louvre Model</b>	421 WK2
<b>Material</b>	Aluminium
<b>Painted</b>	No
<b>Blade Height</b>	1025 mm
<b>Blade Width</b>	1000 mm
<b>Blade Depth</b>	42 mm
<b>Frame Depth</b>	48 mm
<b>No. of Blades</b>	20
<b>Blade Pitch</b>	50 mm
<b>Blade Angle</b>	45 degrees
<b>No. of Banks</b>	1
<b>Guard Type</b>	Insect/None
<b>Guard Spacing</b>	8 mm
<b>Side Channels</b>	None
<b>Water Drip Tray</b>	Yes
<b>Blade Orientation</b>	Horizontal



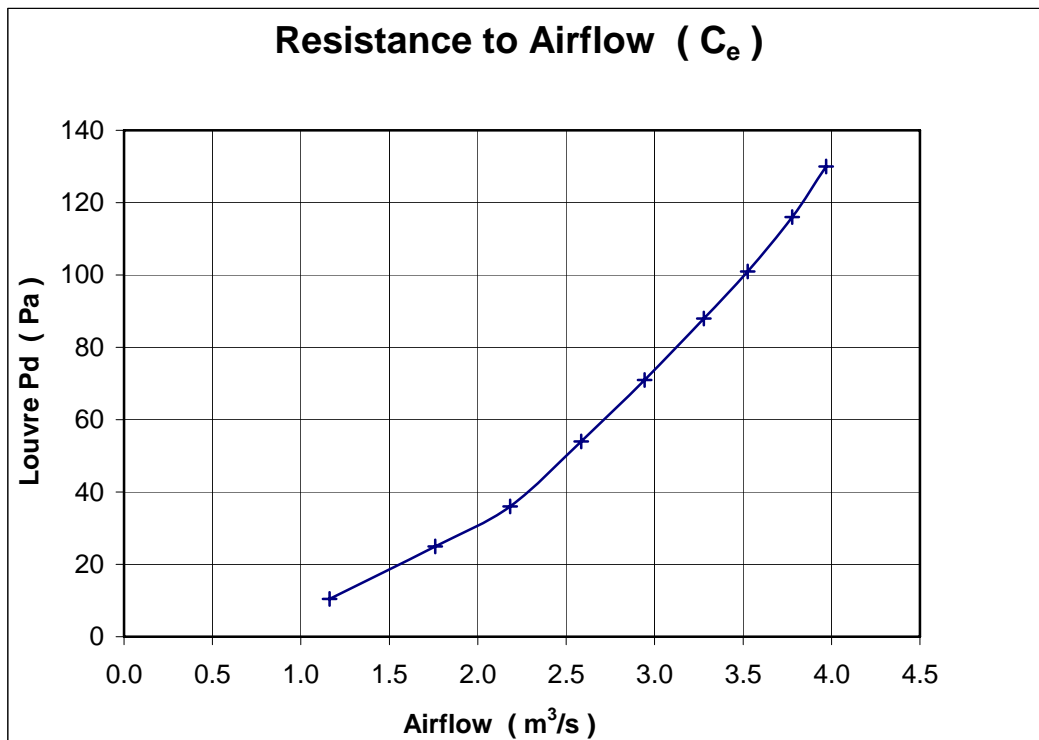
**COEFFICIENT OF ENTRY (with mesh)**

MANUFACTURER Renson  
 MODEL 421 WK2 (with mesh)

Date 22/12/2010  
 Contract 54763

air temperature 11.5 °C      louvre height 1025 mm  
 barometer 1003 mbar      louvre width 1000 mm  
 air density 1.223 kg/m<sup>3</sup>      louvre area 1.025 m<sup>2</sup>

louvre pd Pascals	louvre face velocity	air flow rate		coefficient C <sub>e</sub>
	m/s	test m <sup>3</sup> /s	theoretical m <sup>3</sup> /s	
130.0	3.87	3.970	14.947	0.266
116.0	3.69	3.778	14.119	0.268
101.0	3.44	3.527	13.175	0.268
88.0	3.20	3.278	12.298	0.267
71.0	2.87	2.944	11.046	0.267
54.0	2.52	2.585	9.634	0.268
36.0	2.13	2.184	7.866	0.278
25.0	1.72	1.759	6.555	0.268
10.4	1.13	1.162	4.228	0.275
mean C <sub>e</sub>				0.269
Class				3



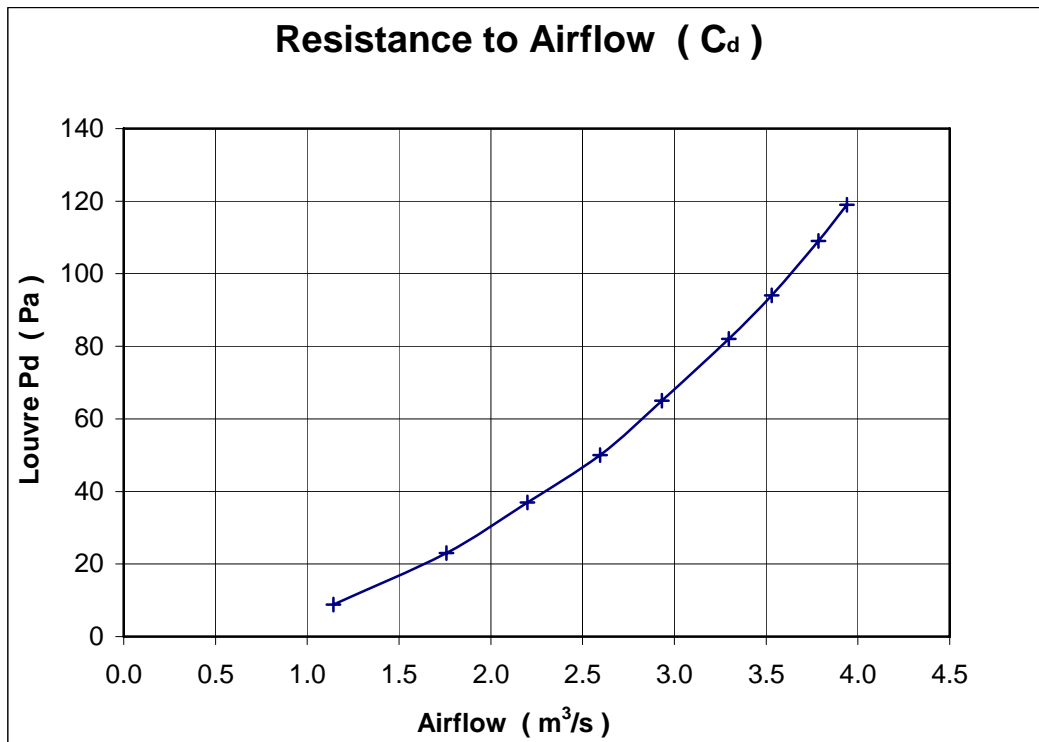
**COEFFICIENT OF DISCHARGE (with mesh)**

MANUFACTURER Renson  
 MODEL 421 WK2 Reversed (with mesh)

Date 22/12/2010  
 Contract 54763

air temperature 11.5 °C      louvre height 1025 mm  
 barometer 1003 mbar      louvre width 1000 mm  
 air density 1.223 kg/m<sup>3</sup>      louvre area 1.025 m<sup>2</sup>

louvre pd Pascals	louvre face velocity	air flow rate		coefficient Cd
	m/s	test m <sup>3</sup> /s	theoretical m <sup>3</sup> /s	
119.0	3.84	3.939	14.301	0.275
109.0	3.69	3.785	13.687	0.277
94.0	3.44	3.530	12.710	0.278
82.0	3.22	3.296	11.871	0.278
65.0	2.86	2.932	10.569	0.277
50.0	2.53	2.595	9.270	0.280
37.0	2.15	2.200	7.974	0.276
23.0	1.72	1.759	6.287	0.280
8.8	1.11	1.142	3.889	0.294
mean Cd				0.279
Class				3



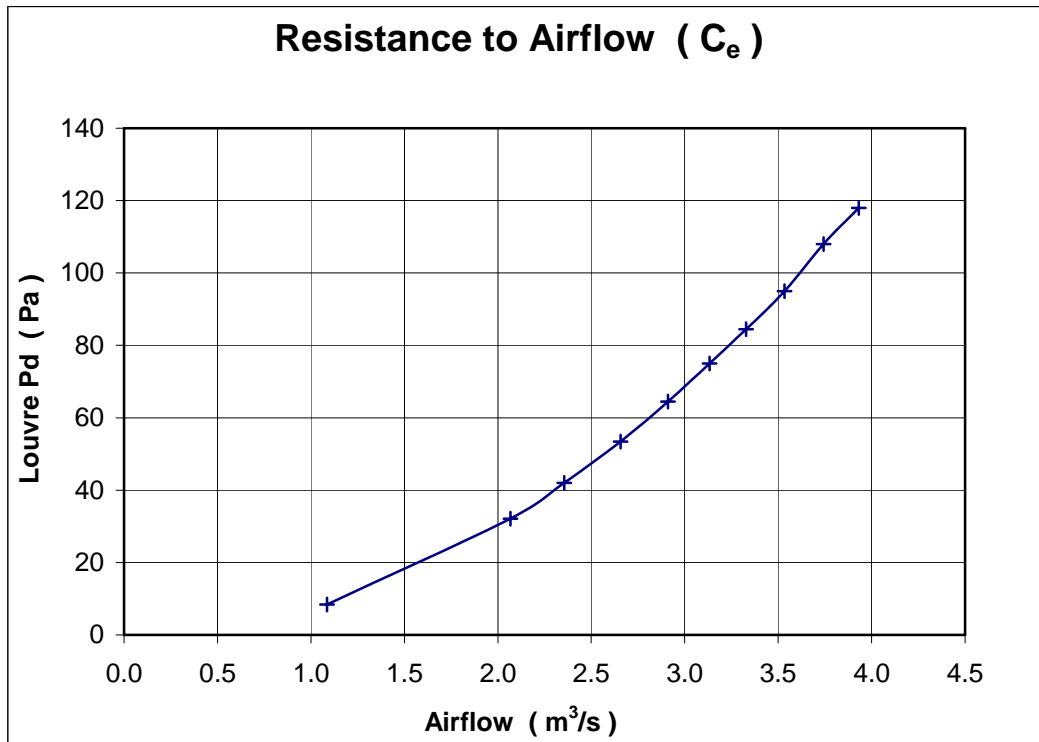
**COEFFICIENT OF ENTRY (no mesh)**

MANUFACTURER Renson  
 MODEL 421 WK2 (no mesh)

Date 11/02/2011  
 Contract 54763

air temperature 11.5 °C      louvre height 1025 mm  
 barometer 1007 mbar      louvre width 1000 mm  
 air density 1.228 kg/m<sup>3</sup>      louvre area 1.025 m<sup>2</sup>

louvre pd Pascals	louvre face velocity	air flow rate		coefficient C <sub>e</sub>
	m/s	test m <sup>3</sup> /s	theoretical m <sup>3</sup> /s	
118.0	3.84	3.931	14.212	0.277
108.0	3.65	3.742	13.597	0.275
95.0	3.45	3.533	12.752	0.277
84.5	3.25	3.329	12.027	0.277
75.0	3.06	3.134	11.331	0.277
64.5	2.84	2.910	10.508	0.277
53.4	2.59	2.658	9.561	0.278
42.0	2.30	2.355	8.479	0.278
32.1	2.02	2.067	7.413	0.279
8.4	1.06	1.086	3.792	0.286
mean C <sub>e</sub>				0.278
Class				3



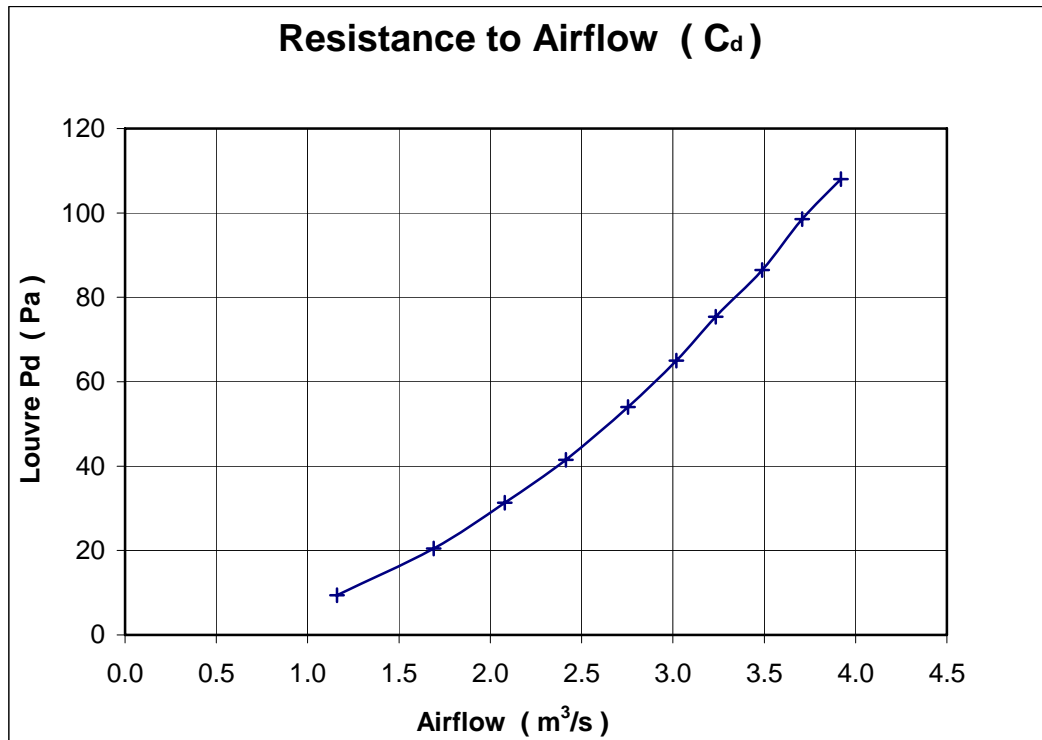
**COEFFICIENT OF DISCHARGE (no mesh)**

MANUFACTURER Renson  
 MODEL 421 WK2 Reversed (no mesh)

Date 22/12/2010  
 Contract 54763

air temperature 11.5 °C                      louvre height 1025 mm  
 barometer 1007 mbar                      louvre width 1000 mm  
 air density 1.228 kg/m<sup>3</sup>                      louvre area 1.025 m<sup>2</sup>

louvre pd Pascals	louvre face velocity	air flow rate		coefficient Cd
	m/s	test m <sup>3</sup> /s	theoretical m <sup>3</sup> /s	
108.0	3.82	3.919	13.597	0.288
98.5	3.62	3.707	12.985	0.286
86.5	3.40	3.489	12.168	0.287
75.4	3.16	3.235	11.361	0.285
65.0	2.94	3.018	10.548	0.286
54.0	2.69	2.754	9.614	0.286
41.5	2.35	2.413	8.428	0.286
31.3	2.03	2.078	7.320	0.284
20.5	1.65	1.690	5.924	0.285
9.4	1.13	1.160	4.011	0.289
mean Cd				0.286
Class				3



## CLASSIFICATION OF WEATHER LOUVRES

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

### Penetration Classification

Table 1 shows the different classifications based on the maximum simulated rain penetration per square metre of louvre. The classification is determined in accordance with section 8.2 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  $13 \text{ ms}^{-1}$  simulated wind velocity and a simulated rain fall at the nominal rate.

**Table 1 - Penetration classification**

Class	Effectiveness	Maximum allowed penetration of simulated rain $\text{l.h}^{-1}.\text{m}^{-2}$
A	1,00 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 8.3 of test standard EN13030:2001.

**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)