Choosing The Right Louvre

Specifying Louvre is always a compromise, and requires some judgement to take into account the particular needs of each application. At one end of the scale for example a car park may require maximum ventilation but little protection from rain penetration. Alternatively, a plant room containing special machinery or electrical equipment may still need high levels of ventilation but with maximum protection from water entry.

The ideal design solution is to produce a louvre system that offers the best **RAIN DEFENCE** and **AERODYNAMIC PERFORMANCE.** Unfortunately this seems to be unachievable. Nothing matches the overall performance standards set by the COLT UNIVERSAL LOUVRE range.

BACKGROUND

There has been a problem for many years in quantifying the performance of louvre systems due to the competing test standards and lack of application guidance for designers. The HEVAC Standard "LABORATORY TESTING AND RATING OF WEATHER LOUVRES WHEN SUBJECTED TO SIMULATED RAIN" (currently under discussion as a CEN European Standard), helps by including a useful classification method. However, the responsibility for recommending classifications for particular applications, still remains with the designer or specifier.

This guide is therefore intended to assist designers and specifiers to select the most appropriate louvre performance classification to suit each specific application.

CONSIDERATIONS

- Site location and **exposure**.
- Severity of local (site) **weather conditions**.
- **Location** and exposure of louvres on building.
- **Airflow rate** and direction though louvre.
- Maximum acceptable **pressure drop**.
- Degree and **depth of water penetration** acceptable.
- Special solution for sloping applications

THE HEVAC CLASSIFICATION METHOD

A copy of the HVEC standard is available from FETA (Federation of Environmental Trade Associations) Marlow, Bucks.

British manufacturers of louvre systems in conjunction with HEVAC and BSRIA have developed a test standard that will help designers differentiate between louvres to suit specific applications. A similar standard **AS/NZS 4740: 2000** has been developed for Australian and New Zealand conditions and again classifies louvres in terms of performance. The same extreme test criteria apply. Many factors may affect louvre performance, but the test environment at 13m/sec (50 kph) wind speed and 75mm/hr for a period of 30 to 60 minutes is fairly extreme.

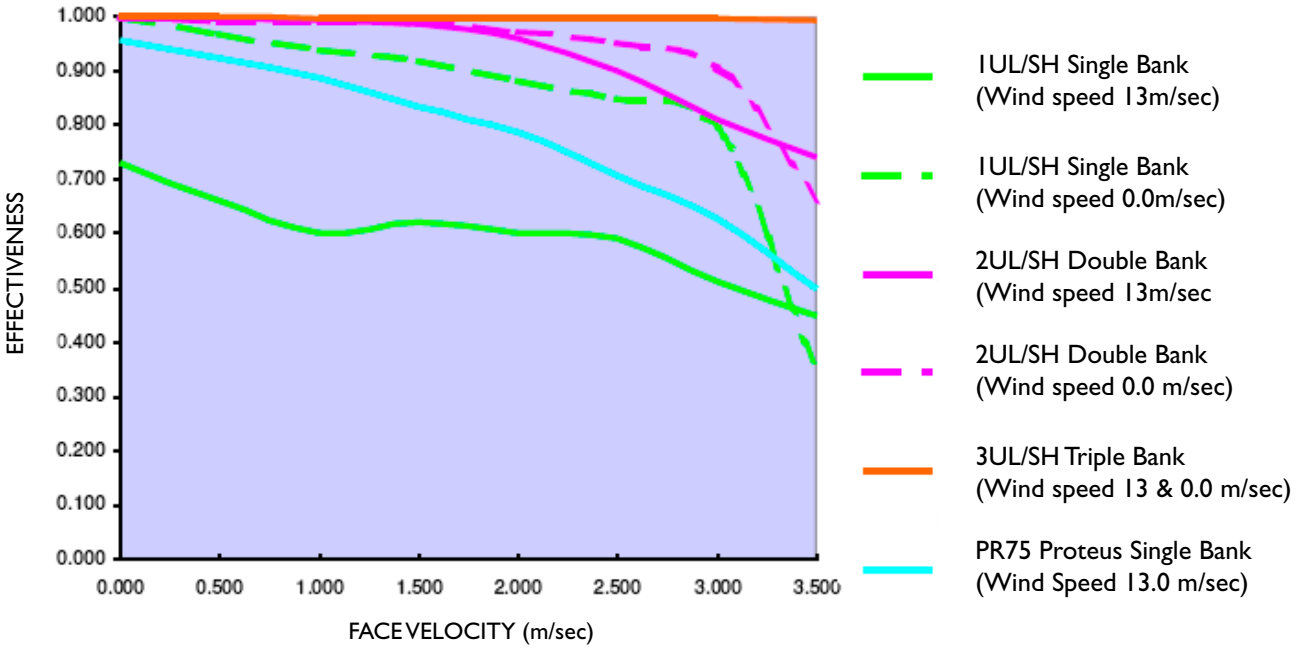
The effectiveness classification should be specified for the design air inlet velocity through the louvre, because it is velocity dependent. To help put this into perspective the table below show how "effectiveness" relates to actual rain entry under standard test conditions.

RAIN DEFENCE CLASSIFICATION		HEVAC TEST RESULTS	
Class	Effectiveness (1.0 = 100%)	(% Rain Defence Effectiveness)	Actual Rain Entry Rate litres/hr/m^2
A	1.0 0.99	100% 99%`	0.00 0.75
B	0.989 0.95	98% 95%	1.50 3.75`
C	0.949 0.80	90% 80%	7.50 15.00
D	Below 0.8	70% 60% 50%	22.50 30.00 37.50

A high coefficient means low resistance and high airflow performance.

AERODYNAMIC PERFORMANCE	
Class	Coefficient
1	0.40 and above
2	0.30 to 0.399
3	0.20 to 0.299
4	Below 0.20

LOUVRE WEATHERING TESTS



Weathering Effectiveness: (Under zero and 13.0 m/sec wind conditions and 75 mm/hr rain fall)

- While this chart shows both wind conditions and the relative performance statistics it is important to note that we recommend that all selections are based on the 13.0m/sec external wind velocity.
- This data is taken from BSRIA test report No 55130/1 December 1988.

APPLICATIONS

Recommendations for the selection of rain defence louvres, based on actual **design inlet air velocities:**

Class A	Where **excellent rain defence** is required and ventilation intake (suction) **velocities are above 1 m/s and up to 3.5 m/s.**	**3UL/SH** No appreciable water penetration
Class A	Where **excellent rain defence** is required and ventilation intake (suction) **velocities are up to 1 m/s**	**2UL/SH** No appreciable water penetration
Class B	Where **good rain defence** is required and ventilation intake (suction) **velocities are between 1 m/s and 2.2 m/s**	**2UL/SH** Some water entry but limited depth of penetration
Class C	Where **reasonably good rain defence is** of benefit and ventilation intake (suction) **velocities are between 2.2 m/s and 3.5 m/s**	**2UL/SH** Significant water entry but limited depth of penetration
Class D	Where **maximum airflow** is required but rain defence is not considered important or louvres are located in a sheltered position.	**1UL/SH** Limited protection from wind driven rain

CLASSIFICATIONS FOR COLT UNIVERSAL LOUVRE

3UL (Triple Bank)	Class	**A3 up to 3.5 m/s**
2UL (Double Bank)	Class	**A2 up to 1.0 m/s**
	Class	**B2 from 1.0 m/s to 2.2 m/s**
	Class	**C2 from 2.2 m/s to 3.5 m/s**
1UL (Single Bank)	Class	**D1**