Universal Louvre
Tests - and results - that count

Why test?

A louvre system must be capable of meeting a number of important but conflicting functional requirements, including low air pressure drop, good rain defence, low cost and aesthetically pleasing appearance. The minimum balance of these can vary enormously from job to job, so the design of the system must be sufficiently versatile not to compromise any criteria beyond acceptability.

The specifier faces a difficult task. There is no British Standard for louvre systems so the decision to specify a particular system is made all the harder when there are no guidelines laid down for testing procedures. From those manufacturers that can actually provide test data there may be almost as many different tests as there are systems. It may also be possible to 'tailor' a test to suit the characteristics of a particular system.

The only way the building designer can gain objective information is from the results of repeatable tests under realistic simulations of naturally occurring conditions. To achieve this the HEVAC Association has developed a test which it is hoped will become the British and European standard.

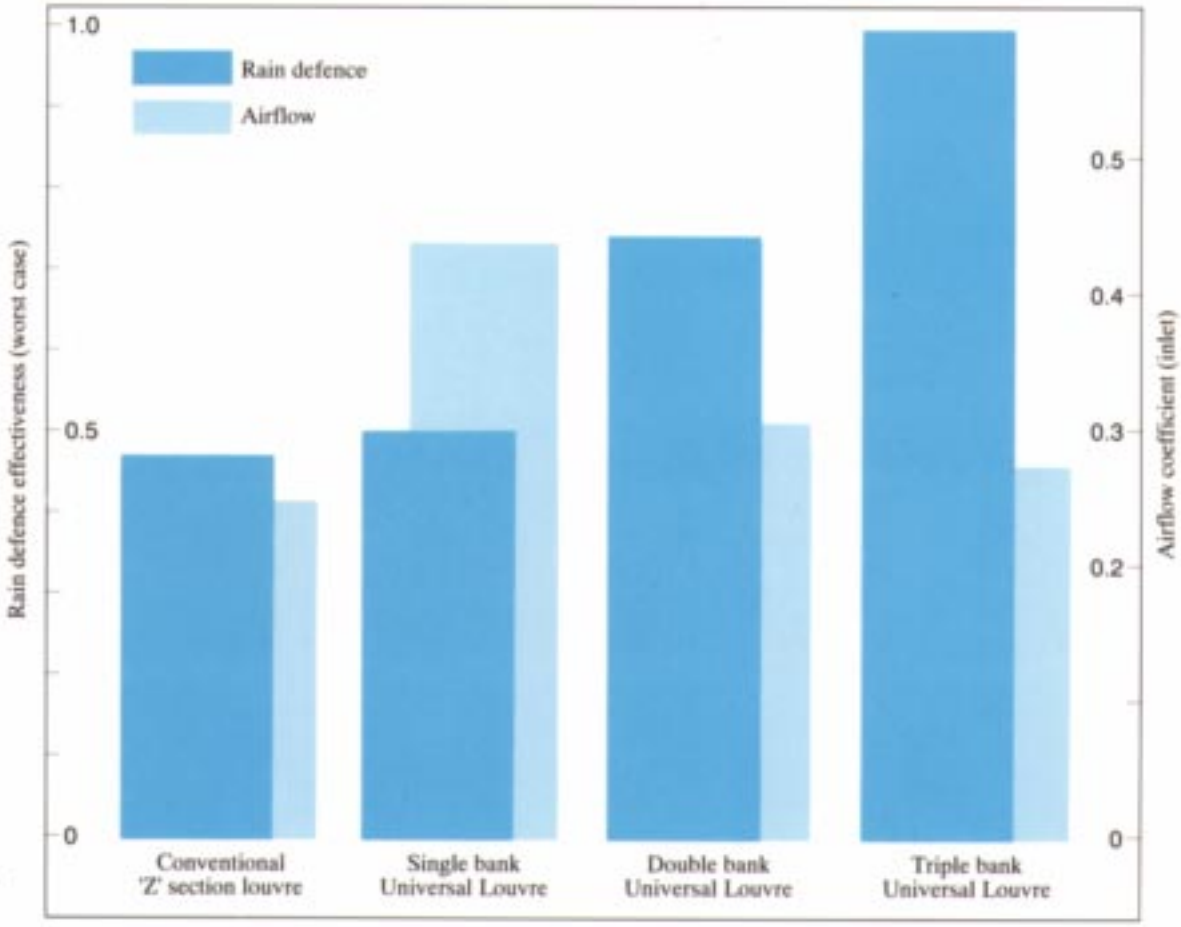
The test facilities

Colt Universal Louvre has been tested by BSRIA on their own test rig conforming with the HEVAC test method and by Colt at our own modern BS5750 approved test facilities. BSRIA have periodically witnessed Colt tests and authenticated the results. These are available on request.

Both the BSRIA and Colt test rigs operate on a similar principle. The louvre to be tested is installed into a 'wall' with a simulated rain spray directed at it from overhead nozzles and with wind conditions simulated by an array of fans. Suction is provided by a separate fan in ductwork behind the louvre. This system simulates real installed conditions as accurately as is practicable.

The Colt test rig can simulate rainfall up to 178mm/hr, winds up to 18m/s (40mph) and suction velocities up to 4m/s.

The Universal Louvre test results shown below are from a BSRIA test to the HEVAC standard under the most extreme conditions specified - 75mm/hr rainfall, 13 m/s wind and 3.5m/s inlet velocity - a real test for any louvre system.



The graph clearly demonstrates how well Universal Louvre performs under tests that simulate naturally occurring weather conditions.

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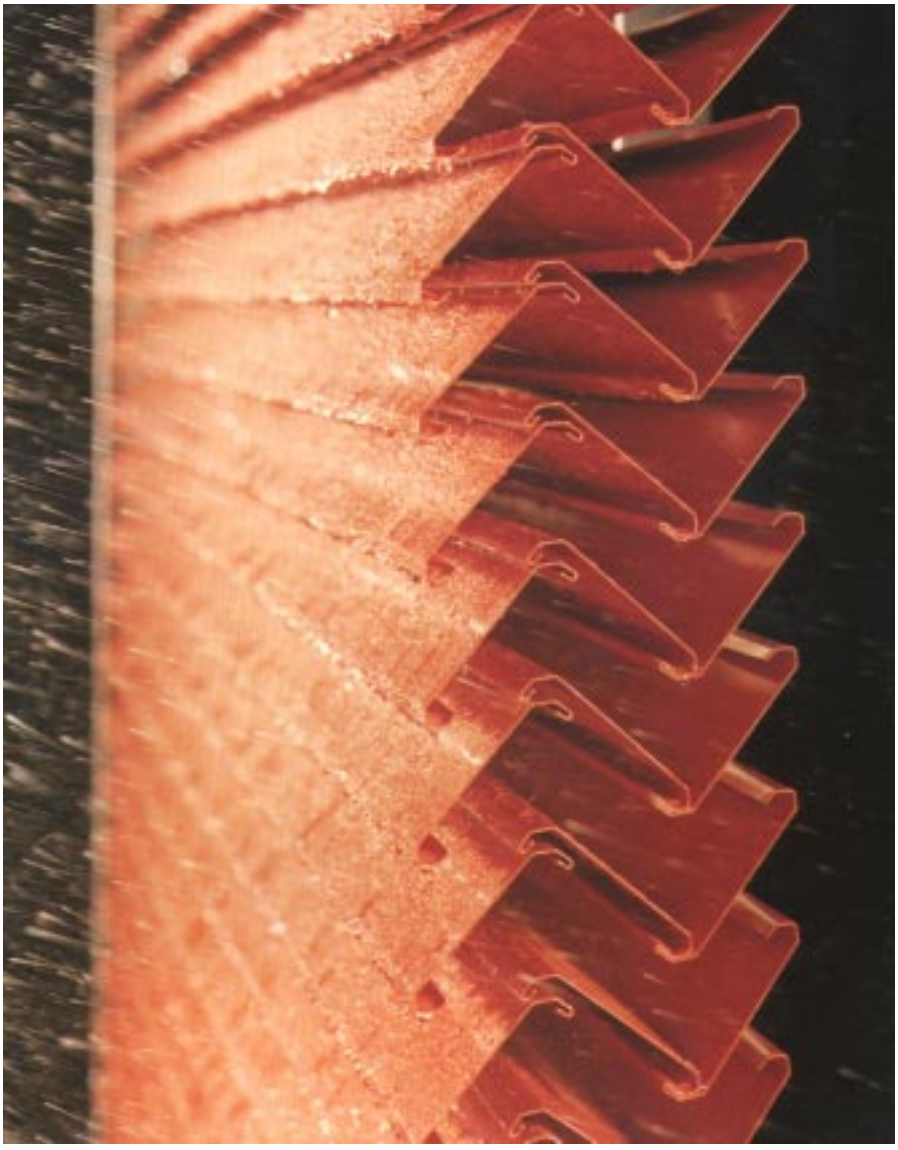

Design Council Award 1975

design '81 stuttgart

Australian design award

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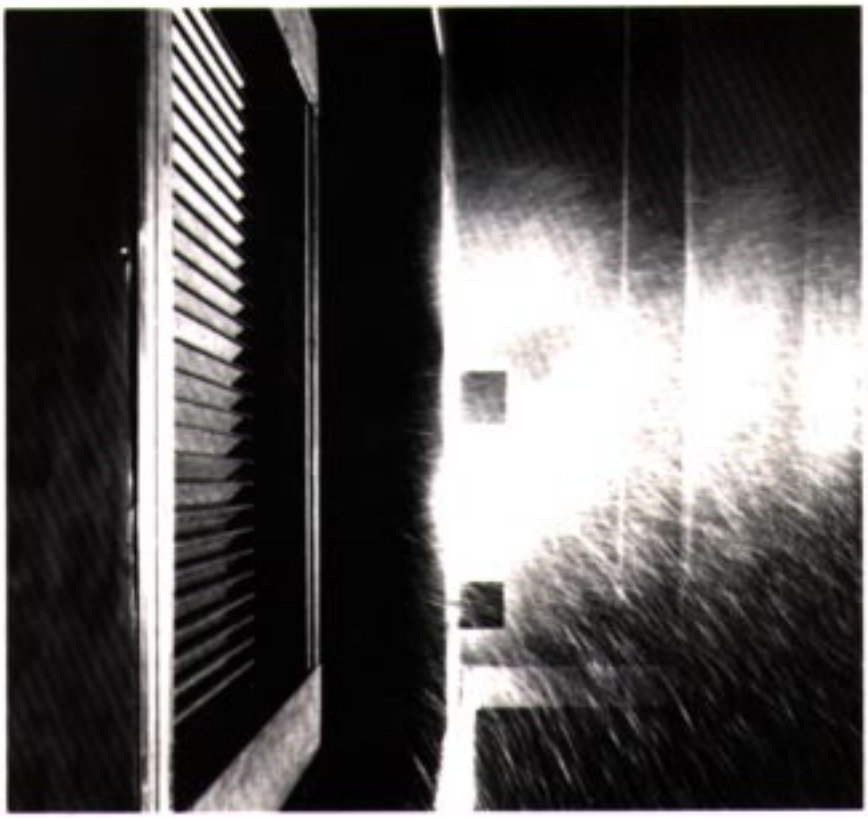
The tests

When it comes to rain penetration, single bank Universal Louvre and conventional louvre are much the same. But with airflow, Universal Louvre wins hands down - with 74% more ventilation than with the same area of conventional product (Conventional "Z" louvre coefficient is 0.25; Colt single bank Universal Louvre coefficient is 0.435).

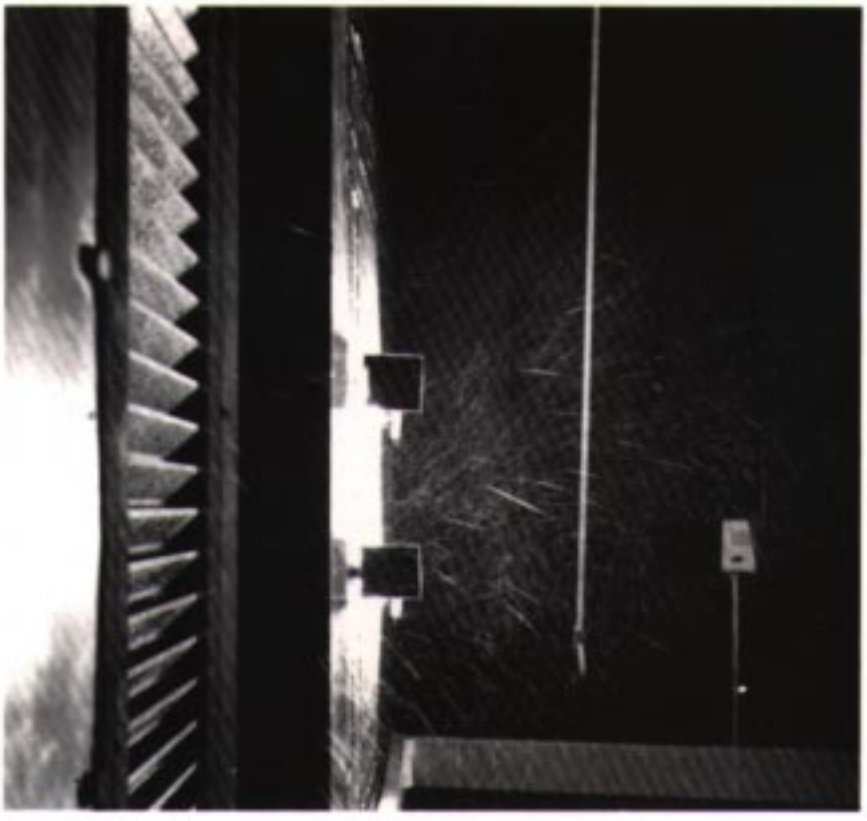


Double bank Universal Louvre is doubly effective at keeping rain out. Any water droplets that do reach inside the building are directed down at a sharp angle, falling just a short distance from the wall. In addition, the airflow performance is better than conventional single louvre (Colt double bank Louvre coefficient is 0.308).

At the peak of a severe thunderstorm, rainfall could be as much as 178mm/hr (7in/hr). Yet even when subjected to this kind of torrential battering, water penetration through triple bank Universal Louvre is minimal. Under more normal rain conditions, rain not dealt with by the louvre would be virtually impossible to detect and photograph. In addition the airflow performance is still comparable to a conventional single bank louvre (Colt triple bank Universal Louvre coefficient is 0.277).

For further comparison, a bank of conventional "Z" section louvre was also put on trial. For extra rain resistance, the louvre incorporated a front edge rain channel and a wire mesh between each blade,

This type of louvre performs well against the AMCA 500 test, but in the more realistic weather conditions of the Colt test, water droplets blown through the louvre mesh produced a fine mist. This penetrated several metres into the building - an unacceptably low performance standard.



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Standard test methods

AMCA 500

In this test, contrary to real life conditions, water is dripped down the front face of the louvre, and air is sucked through the panel from behind. The result is that the water is swept up and impinges on the top few blades, leaving the rest of the sample virtually dry. This is not truly representative of normal weather conditions. A louvre specifically designed to perform well in this test will not necessarily perform well under real life conditions.

EUROVENT 2/5

In this test the louvre is mounted on a duct and water is sprayed through a mesh above and in front of the louvre while a suction fan draws air through the louvre. The water spray is better than the AMCA test but the confines of an in-duct test mean no account can be taken of wind effects.

HEVAC

This test method was the result of collaboration, on behalf of HEVAC, between BSRIA, Colt and another louvre company in an attempt to standardise testing methods. It is much more representative of real weather conditions. However the test does not provide a single figure classification for rain defence effectiveness but a figure for each condition - from no wind, no suction through to 13m/s, 3.5m/s suction. There is therefore a temptation to quote a single figure result (the 'best' one) under no wind, no suction conditions, where virtually any louvre will perform adequately. Under these conditions coefficients tend to collect in the 0.9+ range, making differences seem unimportant, although the difference between Colt 1UL at 0.98 and a louvre at 0.9 is that the latter lets in 5 times as much rain!

See the tests for yourself

Perhaps the only way to determine whether a louvre panel is effective or not is to see for yourself. Colt believes it has a range of louvre profiles to meet most designers requirements. Any of these profiles plus any other design of panel can be subjected to the Colt testing procedure for an accurate comparison in identical test conditions.

For any given project, Colt would be pleased to arrange tests at the designers convenience, to provide the visual evidence necessary to satisfy oneself of the actual performance achievable for the louvre systems being considered.

Award winning design

Colt Louvre Systems have won Design Awards in Britain, Germany and Australia and can be supplied in aluminium (extruded or roll-formed), galvanised steel or stainless steel. A wide choice of finishes is available to the designers requirements.

Associated Publications

BSRIA Report - Double Bank Louvre

BSRIA Report - Triple Bank Louvre

The Louvre Specifiers Manual

Giant fans and waterjets, combined to create a 'storm', are directed at the louvres, allowing rain resistance and ventilation rates to be tested and checked.

The photograph shows Louvre for the Magnus offshore oil platform undergoing tests.