Colt Louvre Systems

A guide to Colt Louvre for ventilation and screening



COLT LOUVRE

COLT

INTRODUCTION

Colt louvre systems offer control of ventilation whilst maintaining rain defence and visual screening. They can also be used simply for aesthetic impact.

This brochure describes our range of screening, ventilation and rain defence louvre systems, as well as acoustic louvres.

FEATURES & BENEFITS

Aesthetically pleasing – Colt louvre systems have a distinctive, sharp louvre profile which can be installed in continuous runs if required.

Reduced energy costs – All our louvre systems are designed to maximise the aerodynamic performance, thus reducing resistance to air flow and saving energy used in associated ventilation systems.

Enhanced Performance – Combining excellent levels of weather protection whilst maintaining high free areas so resulting in a low pressure drop.

A wide range – Colt louvre systems are available in various shapes, configurations, materials and finishes to meet the requirements of almost any project.

- Aluminium louvres include both extruded and roll formed options for ultimate flexibility. These can be provided in mill finish, polyester powder coated, pre-coat to match cladding or anodised.
- We also manufacture a range of mild steel and stainless steel roll formed louvres.
- Accessories include blanking panels (single skin and insulated), bird guards, insect mesh, doors, turrets and acoustic modules.

Design Input by Colt – Colt louvre systems can be uniquely configured to provide the right solution to meet your needs. Our design tools allow you to optimise a panel size and configuration to achieve the best rain defence, minimum pressure drop or a combination of the two – speak to one of our technical experts or download our unique product selector programme from our website or here.

Download our Louvre Selection Tool **here**.

With Colt louvre systems the possibilities are endless



Richmond College Middlesex. Product: 1UL/SH inverted louvre plant screen.



Wembley Stadium, London. Product 1UL/SH screening louvre.

TERMINOLOGY

Acoustic Louvre – Specially designed louvres where noise is the main concern.

- Developed to allow air to pass freely through the louvre panel but reduce noise entering, or leaving, the building.
- To achieve optimum rain defence, often combined with weather louvres.

Aerodynamic Area – A product of the area of the louvre panel and the aerodynamic coefficient. The latter can only be determined through wind tunnel testing, for example as part of EN13030 testing.

Av – Measured area of the ventilator/louvre (width x height)

AvCv – Aerodynamic free area (Av x Cv)

Cv – Coefficient of the ventilator/louvre (effective area of ventilator as a percentage of 1. This is a fixed figure and can only be found by testing.

Free Area – (also known as Percentage Free Area). Most specifications may require a specified free area. This measurement is based on the open area between the louvres, and will change depending on the sizes of the louvre panels. Smaller panels will have a smaller PFA for that reason. The concept of Percentage Free Area is totally meaningless in terms of performance as it is not related to the pressure drop or the aerodynamic effectiveness of the louvre. For this reason, the Cv is better used.

Grilles – Typically grilles are small (less than $2m^2$ in area), are preassembled and are often seen next to windows for ventilation duct terminations.

Screening/Cladding Louvre – The principal objective of screening louvres is to obstruct line of sight from normal vantage points by virtue of its design or orientation.

Weather Louvre – A louvre system developed to restrict the amount of rain which enters the building whilst still maximising the air flow through it. Usually specified on plant rooms or ducted supply air intakes where water entry is a concern.

COLT LOUVRE SYSTEMS

Screening Louvre: Single bank roll formed Universal Louvre - 1UL/SH & 1UL/DH

Ventilation & Weather Louvre:
Roll formed - 2UL (double bank), 3UL (triple bank)

When specifying louvres you always have to strike a balance, which requires some judgement, to achieve the best result for each individual 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 a louvre system that offers the best RAIN DEFENCE and AERODYNAMIC PERFORMANCE. Unfortunately, there is always a compromise to be made between weather performance and aerodynamic performance, but nothing matches the overall performance standards set by the Colt Louvre range.

To help put the performance classifications into perspective, the table below demonstates how “effectiveness” relates to actual rain entry under standard test conditions, which are representative of bad Northern European weather. The effectiveness classification should be specified for the design air inlet velocity through the louvre, since it is velocity dependent.

Download our Louvre Selection Tool **here**.

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 European Standard EN 13030:2001 “Ventilation for buildings – Terminals – Performance testing of louvres subjected to simulated rain” helps by providing 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.

When trying to decide what weathering performance the louvre needs to achieve it is useful to think about the following considerations:

- Site location and exposure
- Severity of local (site) weather conditions
- Location and exposure of louvres on building
- Airflow rate and direction through louvre
- Maximum acceptable pressure drop
- Degree and depth of water penetration acceptable.



Above: *Checking airflow on installed louvre panel.* ***Right:*** *Installation of 1UL/DH louvre.*

APPLICATIONS

Recommendations for the selection of rain defence louvres, based on actual design inlet air velocities (for exhaust louvres take a velocity of 0 m/s, representing the worst case with the exhaust system switched off):

Class	Description	Application	Product solution
Class A	Where excellent rain defence is required and core velocities are between 1m/s and 3.5m/s	Mechanical inlet of ventilation of rooms, sensitive equipment close to the louvre	**3UL** No appreciable water penetration
Class A	Where excellent rain defence is required and core velocities are up to 1m/s	No air being mechanically drawn (just wind/wind driven rain) = Natural ventilation of plant rooms	**2UL** No appreciable water penetration
Class B	Where good rain defence is required and core velocities are between 1m/s and 2.2m/s	When some water ingress is acceptable = Ventilation where some water entering the building isn’t important	**2UL** Some water entry but limited depth of penetration
Class C	Where reasonably good rain defence is needed and core velocities are 2.2m/s to 3.5m/s	Where reasonably good rain defence is needed and core velocities are 2.2m/s to 3.5m/s	**2UL** Significant water entry but limited depth of penetration
Class D	Where maximum airflow is required but rain defence is not considered important	Screening/Plant louvre Product solution	**1UL** Only limited protection from wind driven rain

To download a data sheet, select here: **1UL | 2UL | 3UL | Acoustic**

EN 13030:2001 AND EQUIVALENT STANDARDS

The test environment as specified in the standard uses 13m/s (30mph) wind speed and 75mm/h water flow rate to simulate wind driven rain on the test sample. This establishes the basic resistance to weather, or rain defence, classification.

Some companies refer to a 'no wind' performance class which is meaningless and doesn't exist in the classifications specified in EN13030.

In addition to the basic classification of external wind and rain, a more challenging performance can be specified with an internal suction velocity through the louvre to consider the air demands of plantroom equipment, which can encourage additional rain water to be drawn through the louvres.

The standard also defines an aerodynamic performance class. This is based on the aerodynamic coefficient of the louvre panel.

However, it is worth noting that this test is based on louvre panels of only 1m x 1m in size. Whilst being very useful in allowing direct performance comparisons for louvres with different designs, it cannot accurately replicate the need for water collection and drainage needed where large louvre panels are installed.

Unlike other louvre types, Colt 2UL and 3UL panels have efficient drainage paths into their hollow section mullions, which in practice further increases their rain defence effectiveness.

The principles of EN 13030 are replicated in the USA under the AMCA Standard 500-L, "Laboratory Methods of Testing Louvers for Rating" and in Australia /New Zealand in AS/NZS 4740:2000: "Natural ventilators - Classification and performance".

CLASSIFICATIONS FOR COLT LOUVRE SYSTEMS

Louvre Type	Airflow	Rain defence with suction velocity
3UL (Triple Bank) *Without Bird Guard*	Cv Class 4	Class A up to 2.5m/s Class C up to 3.0m/s
With Bird Guard *3UL (Triple Bank)*	Cv Class 4	Class A up to 2.0m/s Class B up to 2.5m/s
2UL (Double Bank) *Without Bird Guard*	Cv Class 3	Class B up to 0.5m/s Class C up to 1.5m/s Class D up to 2.0m/s
2UL (Double Bank) *With Bird Guard*	Cv Class 3	Class A up to 0.5m/s Class B up to 1.0m/s Class C up to 1.5m/s
1UL (Single Bank) *Without Bird Guard*	Cv Class 2	Class D at all velocities
1UL (Single Bank) *With Bird Guard*	Cv Class 3	Class D at all velocities

BS EN13030 TEST RESULTS

The table below shows how "effectiveness" relates to actual rain entry under standard test conditions representative of bad Northern European weather. Specify for design air inlet velocity through the louvre since efficiency is velocity dependent.

Rain Defence Classification	Effectiveness *1.0 = 100%*	Rain Defence *Effectiveness %*	Rain Entry *l/hr/m3*
Class A	1.00 0.99	100% 99%	0.00 0.75
Class B	0.989 0.95	98% 95%	1.50 3.75
Class C	0.949 0.80	90% 80%	7.50 15.0
Class D	below 0.80	70% 60% 50%	22.5 30.0 37.5





AERODYNAMIC PERFORMANCE

A high coefficient means low resistance and high airflow performance.

Class	Coefficient
Class 1	0.40 and above
Class 2	0.30 to 0.399
Class 3	0.20 to 0.299
Class 4	below 0.20



Top: *Alder Hey Hospital, Liverpool.* ***Above:*** *London Screen Academy, London.* ***Right:*** *Sir Bobby Moore Academy, London.*

COLT SCREENING LOUVRE SYSTEMS

Screening applications are certainly the simplest from a performance perspective but arguably the most demanding from the viewpoint of aesthetics and configuration.

The principal objective of screening louvre is to obstruct line of sight from normal vantage points by virtue of its design or orientation.

Generally each run of louvre will have a continuous appearance unbroken by framing so as to blend in with the building, but it also can be made to provide contrast so as to introduce an architectural feature.

Colt 1UL/SH and 1UL/DH allow maximum airflow with minimum resistance and are ideal for screening areas such as plant rooms, roof top screening and car parks.

DESIGN CONSIDERATIONS

- What building elements do I want to hide?
- Do I want the louvre to blend with the surrounding building structure?
- Do I want the louvre to be a feature on my building?
- What effect do I want to create?
- What material and finish do I need?
- Do I need to maximise the light entry through the louvre system?
- Should louvre blades be inverted?

COST-SAVING DESIGN FLEXIBILITY

Colt has developed a design solution for Universal Louvre. This allows a basic installation of single bank louvres, which can be blanked off as part of an initial installation, but with the capability to be 'upgraded' at any later date, to suit either final design requirements or later modifications and use requirements.

This solution allows complete design flexibility and removes the need for final layouts to be decided in the initial stages as our Colt louvres can be retrofitted at optimum cost.

FEATURES AND BENEFITS

- **High aerodynamic efficiency** – this reduces air resistance, allowing the plant and the aperture to be minimised thereby saving running costs.
- **Durable and maintenance free** – UL is completely made from corrosion resistant materials.
- **The louvres are clipped to mullions rather than screwed or riveted** – so thermal movement can be easily accommodated.
- **Aluminium louvres in particular, have a recycled content of over 40%** – providing environmental benefits.
- **Proven performance** – UL has been tested to HEVAC 4th Edition.
- **Easy to install** – UL can either be delivered to site pre-assembled or as a kit of parts.

MATERIALS AND FINISHES

Colt ventilation and screening louvre are available in various shapes, configurations, materials, finishes and coatings to meet the requirements of almost any project.

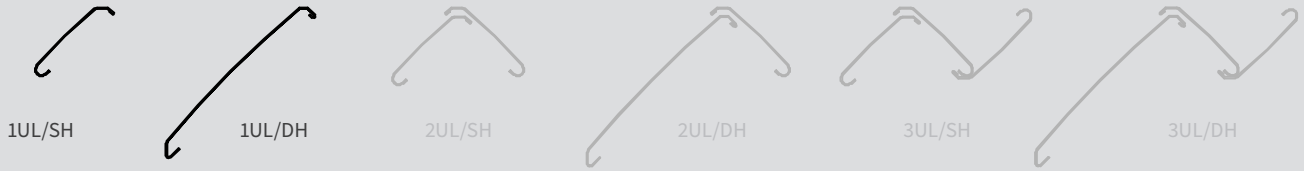
Colt screening louvres are roll formed allowing a range of materials and finishes to be produced. Standard products can be supplied in aluminium, mild steel or stainless steel. Aluminium versions can be supplied mill finish, painted or anodised.

Larger projects may allow the louvres to be produced with special surface finishes, perforated or from other materials such as copper or brass.





Top: *The Chilcomb Centre, Chichester.*
Bottom: *Meridien Modena Ferrari dealership, Hampshire. Product 1UL.*



COLT PERFORMANCE LOUVRE SYSTEMS

Weathering Louvre (2UL / 3UL)

Colt offers a range of high-performance screening for varying levels of weather protection and airflow, according to the specific needs of your building. From screening and ventilation façades in public, commercial and residential buildings through EfW and power stations to buildings in coastal or wet environments with high wind speeds. It is also used to hide substructure and plant, as well as to provide an architectural feature.

All our weather performance louvre share these benefits.

- High free area
- High air inlet and extraction performance
- Good pressure drop
- Continuous Louvre system
- Excellent Ce/Cd values.



Right: *Gateshead Energy Centre, Tyne & Wear. Product 2UL/DH.*



COLT ACOUSTIC LOUVRE SYSTEMS

Acoustic Louvre (CALM)

As part of the Colt Universal Louvre range, Colt offers Acoustic Panels to reduce noise egress.

Plant rooms, cooling towers, condenser plant and other sources of noise will often produce sound pressure levels which may exceed existing or required noise criteria at prescribed distances from the building.

Colt has a range of acoustic panels which complement the Universal Louvre range, which will meet the most stringent criteria.

To ensure the most economic solution, noise control must be considered at the earliest possible design stage. Retrofit installations of acoustic louvres can be significantly more expensive. If in doubt, please contact Colt for assistance.

STANDARD COLT ACOUSTIC LOUVRE RANGES

There are two standard acoustic louvre models:

- CALM-S, with a rectangular blade profile for optimum sound reduction.
- CALM-C with a curved blade profile for lower pressure drop.

The outer casings are 1.2mm galvanised mild steel sheet, with the acoustic louvre blades of aerofoil configuration formed from 0.7mm perforated galvanised mild steel sheet on the inner surface and 0.7mm galvanised mild steel sheet externally.

The infill is of inorganic, water repellent and non-hygroscopic mineral wool or glass fibre of 47kg/m^3 density and packed under not less than 5% compression to eliminate voids due to settlement.

Acoustic louvre banks over 1220mm wide and/or 3660mm high will normally be supplied as two or more modules for site assembly.

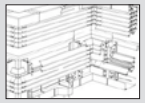
Please contact us for more information relating to the application, specification, installation and servicing of this product.



Right: *Great Portland Street, London. Acoustic louvre.*

To find out more, visit our website at
www.coltinfo.co.uk/shading-and-louvre

Louvre selection programme
Download our Excel sheet which enables users to make their own selection of Colt louvre systems based on the weathering classification and aerodynamic performance required for the system.



Click here

Colt International Licensing Ltd reserves the right to amend product specifications without prior notice. The information and technical details included in this literature are given in good faith and apply to uses described. Recommendations for use should be verified for suitability and compliance with actual requirements, specifications and any applicable laws and regulations. For other applications or conditions of use, please contact our technical team, the advice of which should be sought for uses of our products that are not specifically described herein. To ensure you are viewing the most recent and accurate product information, please scan the QR code.

COLT INTERNATIONAL LIMITED

Colt House | Ridgeway Office Park | Bedford Road | Petersfield | GU32 3QF
Tel: +44 (0)23 9245 1111
louvre@uk.coltgroup.com | ***www.coltinfo.co uk***

"Expertise built on experience."

Click here to access the NBS specification

"Expertise built on experience" *| Version Three | 04/2023*

Copyright © Colt International Licensing Limited 2022