INTRODUCTION

Excessive solar heat gain and solar glare can be a costly and unwanted hindrance for building owners. In addition, Building Regulations Approved Document L2 now requires designers to reduce heat gain, with solar shading recommended as a preventative measure unless glass areas are minimised.

Colt solar shading systems offer designers the opportunity for distinctive architectural impact, whilst reducing solar heat gains.

SOLAR RADIATION & LOUVRES

External solar shading is one of the most effective ways to control the internal conditions of a building.

Radiation from the sun is transmitted, absorbed and reflected by the louvres. As a result solar heat gain is prevented from passing into the building, minimising ventilation requirements and reducing cooling loads. If a controllable system is installed, adjustable louvres track the position of the sun, thereby reducing the numbers of days when the building overheats. Equally, in winter the louvres may be adjusted in such a way that the building benefits from the heat from the sun, and they can be closed at night reducing heat loss.

At the same time, daylight levels are enhanced, and at the same time levels of glare are reduced.

COLT’S OFFER

- Calculation of sun angles and heat loads.
- Selection of the most appropriate system from a wide range of options.
- Louvre panels are available in various configurations, materials, finishes and coatings to meet the requirements of almost any project.
- Three advanced control options are available, ICS 4-Link for large or medium sized projects, Soltronic for smaller projects, and the innovative Girasol thermohydraulic system, which requires no external energy source.
- All systems are durable and reliable with low maintenance needs.

COLT’S TRACK RECORD

Colt has more than 40 years experience in designing solar shading solutions.

With operating companies located worldwide, Colt has a broad product portfolio to meet your needs.

Colt was the first to incorporate electricity generating photovoltaic cells into solar shading louvres.

Colt understands that a low energy building fails on its weakest link, so it can provide integrated solutions that cover many aspects of design including daylighting and natural ventilation solutions.

Colt is dedicated to innovation and has a comprehensive design capability, including prototyping and testing facilities. We would welcome the opportunity to develop solutions to match your unique requirements.

SOLAR SHADING SYSTEMS LEAFLET

This leaflet shows the different systems Colt can offer. Firstly, the five standard carrier systems are outlined. Then the different louvre types are shown.
SUN PATH DIAGRAMS

East facade

South facade

Notes: 1. When louvre angle > 90° - facade is in the shade. 2. Normally the angle of the louvre follows the VSA (vertical shadow angle). When shading is not required (i.e. when facade is in the shade or when the sky is overcast), the louvres may be set for maximum daylight entry or vision to the outside, or are closed for night security and improved insulation.

TOTAL CONTROL

Although fixed solar shading performs well on a South facing facade, performance is dramatically reduced on a East or West facing facade which receives a large amount of sunshine during the day.

A controllable shading system can best overcome this problem. Sun tracking louvres follow the path of the sun, making sure the solar shading system always optimises the amount of daylight entry.

On dull or overcast days the louvres are controlled in such a way that if clouds pass over the building, the louvres will automatically open to maximise daylight entry and then later revert back to their original position.

The Sun path diagram (right) for latitude 52°N shows the position of the sun throughout the day during the months of June, March/September and December.
CARRIER SYSTEM 1

Intended for wider spans, carrier system 1 incorporates a central aluminium torsion tube along the length of the louvre, and is ideal for continuous facades, as well as for roofs.

For glass, cross sectional louvre widths from 300mm and up to 600mm are available.

This carrier system is also suited for use with metal, fabric, wood, terracotta clay and translucent acrylic louvres.

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<tr>
<td>Torsion tube Ø mm</td>
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Note: Table to be used as a guide only. Allowable dimensions depend upon the specific requirements of the project.
Carrier System 2

CARRIER SYSTEM 2

Primarily intended for smaller spans or where frequent anchor points are available, carrier system 2 provides minimum obstruction to the glass area, thereby maximising daylight and enhancing the view to the outside.

For glass, carrier system 2 is available with cross sectional louvre widths of up to a maximum of 500mm.

This carrier system is also suited for use with metal, fabric, wood, terracotta clay and translucent acrylic louvres.

Glass Parameters Table

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Note: Table to be used as a guide only. Allowable dimensions depend upon the specific requirements of the project.
Carrier System 3

CARRIER SYSTEM 3

Like System 1, carrier system 3 is intended for wider spans and incorporates a discreet central aluminium torsion tube along the length of the louvre. It is ideal for continuous facades as well as for roofs.

For glass, louvre spans of up to 4000mm long can be achieved without any additional supporting structure.

Glass louvres can have a cross sectional width of up to 600mm.

This carrier system is also suited for use with metal, fabric, wood, terracotta clay and translucent acrylic louvres.

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<td>Angle of rotation °</td>
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Note: Table to be used as a guide only. Allowable dimensions depend upon the specific requirements of the project.
Carrier systems 1, 2, 3 and 5 are pivoted systems which require the supports to be connected to each side of the louvre. System 4 provides a back hung design solution with hidden control mechanisms integrated within the main vertical supports. This allows for seamless continuous louvres with unobtrusive supports when viewed from the outside, due to the louvres being installed in front of the supports.

For glass, carrier system 4 is suitable for smaller spans of up to 1800mm in length. It can utilise cross sectional louvre widths of up to 600mm, incorporating photovoltaic cells if required.

This carrier system is also suited for use with metal, fabric, wood, terracotta clay and translucent acrylic louvres.

### Glass Parameters Table

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</table>

Note: Table to be used as a guide only. Allowable dimensions depend upon the specific requirements of the project.
Carrier System 5

Carrier system 5 is a fully centre pivoted system which provides maximum transparency. Louvres are supported at each end by a bonded and extruded end cap.

For glass, louvre spans of up to 1800mm long can be achieved without any additional support work. This system can utilise cross sectional louvre widths of up to 600mm.

System 5 is ideal for either horizontal or vertical applications.

This carrier system is also suited for use with metal, fabric, wood, terracotta clay and translucent acrylic louvres.

**Glass Parameters Table**

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</tr>
</tbody>
</table>

Note: Table to be used as a guide only. Allowable dimensions depend upon the specific requirements of the project.
Shadoglass describes a fixed or controllable external solar shading system that incorporates glass louvres. A Shadoglass shading system can reduce solar heat gain, lower air conditioning running costs, and lessen glare whilst maximising the use of natural daylight. The glass louvres are available in various colours, surface finishes and coatings to meet specific design requirements. This enables the designer to control the quality of light entering the building. Photovoltaic cells may be integrated into the glass so as to obtain further energy benefits.

**Features and benefits**

- Available as standard in widths of up to 600mm.
- Available in unsupported spans of up to 2m, supported spans of up to 4m (depending on windloads and other criteria).
- Wide range of colours, surface finishes and coatings.
- All principal support components manufactured from corrosion-resistant extruded aluminium alloy with stainless steel fixings.
- Fixed or controllable.
- May permit the integration of photovoltaic cells.
Shadovoltaic describes a fixed or controllable external solar shading system that incorporates glass louvres with photovoltaic cells integrated into the glass so as to generate electricity at the same time as providing shading. The louvres are available in various colours, surface finishes, patterns and coatings to meet specific design requirements.

Both monocrystalline and polycrystalline cells may be used. The photovoltaic cells may be integrated into the glass, either by attaching them onto the reverse side of the glass panels or by laminating them between two sheets of glass.

Features & benefits

- Combines the functions of solar shading with the generation of electrical power.
- Available in widths of up to 600mm.
- Available in supported spans of up to 4m (depending on windloads and other criteria).
- Wide range of colours, surface finishes, cell patterns and coatings.
- All principal support components manufactured from corrosion-resistant extruded aluminium alloy with stainless steel fixings.
- Fixed or controllable.
Shadotex is a unique, alternative solar shading solution. It consists of a special fabric stretched between two sides of a louvre support frame. The fabric is manufactured with a weave to prevent solar glare and solar heat gain. The fabric can also create attractive diffused light and can allow high external vision.

This type of product is extremely lightweight which allows large spans to be constructed without the need for additional supporting framework.

This system offers building designers a unique solution to external solar shading systems.

**Features & benefits**

- Modern & unique design.
- Optional fabric choice.
- High solar absorption.
- High solar reflection.
- Lightweight construction - ideal for large spans.
- Good external vision.
- A wide range of colours.
- Easy to clean (since it is resin/teflon coated).

Please refer to the ‘Shadotex’ leaflet for more details.
Shadometal is a fixed or controllable external solar shading system that may be installed either vertically or horizontally onto the building facade or roof. It may be combined with other Colt products such as rooflights and glazed facades. Shadometal can reduce solar heat gain, lower air conditioning running costs, and lessen glare whilst maximising the use of natural daylight.

**Features and benefits**

- Fins available as standard one-piece extrusions in widths up to 400mm and as multiple clipped together extrusions in widths up to 1050mm.

- Available in unsupported spans of up to 6m, supported spans of up to 10m (depending on windloads and other criteria).

- Can be perforated for improved light transmission.

- A wide range of standard profiles and bespoke profiles and designs can be developed on larger projects.

- All principal components manufactured from corrosion-resistant extruded aluminium alloy with stainless steel fixings.

- Shadometal is either fixed or controllable.

Please refer to the ‘Shadometal’ leaflet for more details.
Specially designed in collaboration with you to meet your specific project requirements on larger projects.

Bespoke Louvre Systems
Colt Solar Shading systems may be controlled in three different ways:

- Hand control via lever or crank handle.
- Electrically operated via actuators, which require a controller such as ICS 4-Link, SolTronic or a client BMS.
- Self powered via a thermal hydraulic controller Colt Girasol. This operates autonomously and requires no additional source of power other than the sun.

**GIRASOL**

Girasol operates solar shading louvres without the need for electrical power or a sophisticated control system.

Absorber tubes, enclosed by mirrors, force a hydraulic cylinder to open or close the louvres according to the position of the sun.

**ICS 4-LINK**

ICS 4-Link is ideally suited to larger projects with more complex control requirements.

It is a generic control system that can operate HVAC, smoke control and solar shading systems.

It has a wide variety of operating modes, including sun tracking, daylighting optimisation and PV illumination. It responds to timers and sensors to ensure that the building ‘reacts’ appropriately to the sun’s position and to the weather.

Remote operation is available via an internal modem interface and a manual override is also possible.

**SOLTRONIC**

SolTronic is ideally suited for small to medium sized projects.

It is a simplified version of ICS 4-Link and can control up to ten actuators in any single zone.

It responds to external weather conditions automatically calculating the position of the sun, and adjusts the position of the louvres accordingly.

*Actuator*  
*Girasol System*  
*Solar Shading System*  

Tubes are filled with a special hydraulic fluid and as the sun moves over the building, there will be an imbalance of heat between the two tubes and the louvres will open or close as appropriate.
COMMISSIONING

Proper commissioning by experts is essential. We recommend that our specialist staff commission and certify the system.

COLT SERVICE

Part of the Colt Group of companies, Colt Service offers a comprehensive range of maintenance packages incorporating the maintenance and repair of all building services equipment including non Colt products.

Colt Service provide a 24 hour, 365 day emergency cover as standard.

MAINTENANCE & TESTING

Colt solar shading systems require virtually no maintenance.

All components of any system should be serviced at least once a year and tested monthly.