

Providing an attractive finishing touch  
*Designs for dynamic facades*



# Façade technology that defies the future

## A NEW VISION

The building envelope is undergoing a revolution. The facades of non-industrial buildings have been largely made of stone, brick, wood and metal cladding. Nowadays, modern architecture can bring the façade to life.

## TECHNOLOGICAL LEAD

The façade has started to 'breathe'. It has become a central element which can provide added value to the users to the building, when systems such as movable solar shading, energy efficient light-optimising technology and photovoltaic cells are integrated into it.

Colt is familiar with these technologies and there are many such Colt systems to be found all over the world. We don't only consider what is currently available but also develop new applications. By providing design support which provides the most appropriate solution, we can help our customers get the best performance out of their building.

## 'COMPETENCE IN SOLAR SHADING TECHNOLOGY.'





# The sun as your partner

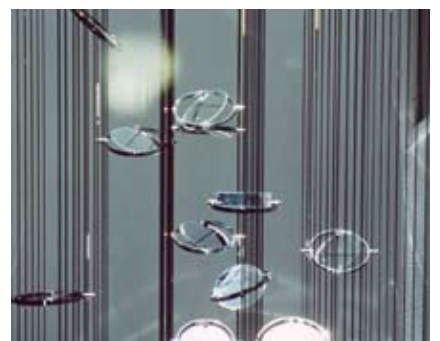
## SUNNY FORECASTS - PLENTY OF FREE LIGHT EVERY DAY

The master builders of classical antiquity knew how to marry up function and form. They designed well lit dwellings which made best use of natural resources, by taking into account the path taken by the

sun, the orientation of a building and the variations in annual light intensity.

Nowadays, solar architecture is making a comeback, with the use of glass, metal and wood as well as modern man-made materials such as textile weaves, terracotta and acrylics for the building envelope.

However, the objective remains to optimise the levels of natural daylight in the internal space. Rooflights and structural glazing can play an important role here.





## OPTIMUM NATURAL LIGHT IN THE INTERNAL SPACE - A QUESTION OF DESIGN

Natural daylight offers many benefits. People feel better in spaces that are well lit; energy costs are reduced and productivity improves. In that respect, nothing can compare to sunlight. But how can light be measured? Depending on the season and the degree of cloud cover, the intensity of natural daylight is between 5,000 and nearly 100,000 Lux – a huge variation.

Natural daylight entering through skylights in the roof is around five times more intense than daylight entering through windows.

Colt rooflights and structural glazing enable architects to use natural light to great effect, can integrate ventilation and allow stunning architectural features.

Colt has other products and systems which can enhance the effect of natural light in a building.

# Shading, directing daylight and energy saving

## THE FUNCTION OF FIXED AND CONTROLLABLE SOLAR SHADING

Buildings with large areas of glazing make the best use of natural daylight and passive solar heat. But there can be too much of a good thing: too much daylight in the wrong places can lead to glare, and too much sun can lead to overheating.

Colt's solar shading systems eliminate excessive glare and reduce solar heat gains in the summer. During the hotter months of the year, the building is protected against overheating by Colt's adjustable heat reflecting louvres, which are oriented according to the position of the sun. Radiation from the sun is partially absorbed and reflected by the louvres, which reduces heat gains within the building.

Modern glazed buildings frequently use more energy for cooling in summer than for heating in winter. The use of external solar shading can enable the cooling loads to be greatly reduced or eliminated.

In the winter months, the situation is reversed, as buildings lose heat through their glazing. Colt's solar shading louvres can be positioned so as to reduce heat loss as well as to help capture any heat coming from the winter sun.

The quality of daylight changes continuously within a building, depending on the time of day, the weather and the season.

Colt's solar shading louvres can be oriented to enhance the levels of natural light while minimising glare, providing ideal natural light quality in the building throughout the daylight hours all year round, and reducing as much as possible the need for artificial lighting. This can be achieved by the use of transparent or translucent louvres, which provide good light quality even when closed.





“COLT SOLAR SHADING SYSTEMS  
LET YOU GET TO GRIPS  
WITH LIGHT AND SHADE.”











# Solar C

## SIMPLE BUT EFFECTIVE

In the summer direct sunlight falling on a vertical glass surface can generate a heat load of as much as  $700 \text{ W/m}^2$ . An external solar shading system can deal with this problem.

Solar C is a relatively simple fixed brise soleil system. It is designed to be particularly effective at controlling solar heat gain while allowing a large proportion of diffused light through, thus also reducing glare. It is maintenance free and it exerts a minimal load on the building structure.

Solar C is pre-eminently suited for installation on the outside of buildings with a south-east to south-west orientation, above or in front of glazed surfaces. The C-shaped aluminium louvres - from which this product derives its name - are attached horizontally, vertically or at an angle.

Using a patented clip system the louvres can be adjusted in steps of  $15^\circ$ . This allows the system to be adjusted to meet the specifications of the project concerned.

‘COLT SOLAR SHADING SYSTEMS: A SYNTHESIS OF QUALITY, FUNCTIONALITY AND DESIGN’



# Solarfin

## LIGHT AND SHADE IN PERFECT HARMONY

Colt Solarfin is a fixed or controllable external solar shading system that may be installed either vertically or horizontally in front of the façade. A Solarfin shading system can reduce solar heat gain, lower airconditioning running costs, and lessen glare whilst maximising the use of natural daylight.

Solarfin solar shading systems consist of extruded elliptical fins within a supporting framework, which also has control mechanisms when it is movable.

Controllable solar shading systems can better optimise the flows of heat and light energy than fixed solar shading systems.

Since the louvres are designed to follow the path of the sun, daylight levels may be optimised whilst radiation levels reduced to a minimum. The likelihood of over-shading or under-shading that frequently occurs with fixed solar shading is reduced, since the louvres are always set to optimum shading angle.

On dull days, light sensors operate to fully open the fins to allow the occupants full vision to the outside at all times.

Controllable solar shading is also effective when fitted to glazed rooflights.

An additional benefit is that when closed, Solarfin can provide additional security and can help reduce winter heat loss.

There are many different louvre types available in various colour combinations.

## INNOVATIVE DRIVE TECHNOLOGY - PIA

PIA is a control system for movable solar shading devices which is integrated into the mullion framework. Since all the drive mechanisms are hidden, architects will like its unobtrusive, compact and hidden mechanisms. PIA louvres can be driven from 0° to 360° enabling greater flexibility of application, for instance for cleaning or for light reflection.





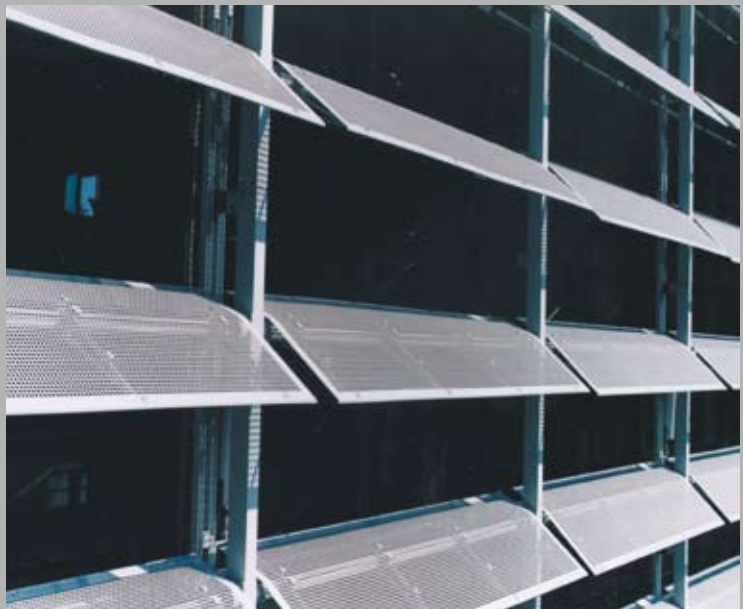
‘COLT SOLAR SHADING  
SYSTEMS: THE SKY’S THE LIMIT’



# Shadometal



‘INGENIOUS FAÇADE DESIGN  
USING METAL LOUVRES’



## METAL LOUVRES AS HIGH-QUALITY SYSTEM ELEMENTS

Colt Shadometal consists of either curved or straight fabricated metal louvres. If they are perforated, the amount of light and energy transmission can be accurately controlled.

### ROBUST AND CORROSION RESISTANT

Colt Shadometal fixed or controllable louvres are available either in polyester powder coated aluminium (to a RAL colour) or in corrosion-resistant stainless steel.

Shadometal louvres can control light entry, provide ventilation whilst maintaining rain defence, to provide screening, or a combination of these. Louvres can also be provided simply for aesthetic impact.

# Shadotex







## ‘COLT SOLAR SHADING TECHNOLOGY - VERSATILITY PAR EXCELLENCE’

### THE LIGHTWEIGHT AMONG LOUVRE SYSTEMS

Colt Shadotex is a unique, alternative solar shading solution. Shadotex 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 a high degree of external vision.

Shadotex is given its strength by coating the fabric in a special resin which dries hard. This type of product is extremely lightweight which allows large spans to be constructed without the need for additional supporting framework.

Associated parts of the louvre system, such as the corners, are made of the same material, which gives a visually homogenous impression. This system offers building designers a unique solution to external solar shading systems.



# Shadoglass



## GLASS LOUVRES AS EYECATCHERS

The fact that it is a solid material that we can nevertheless look through makes glass an attractive material. Architects like to make buildings look transparent and open. Colt Shadoglass can provide this feature.

Colt Shadoglass is a fixed or controllable external glazed solar shading system that may be installed either vertically or horizontally in front of the façade. It is also suitable as a primary or secondary facade element for ventilation.

Shadoglass glass louvre shading systems are operated by linear actuators that have the capability to operate complete facades. The glass louvres are available in various colours, surface finishes and coatings to meet specific design requirements. Depending on the chosen type of glass, frit or film, light and radiation transmission can be accurately achieved for every specific application. Photovoltaic cells may be integrated into the glass louvres so as to obtain further energy benefits.

A close-up, low-angle shot of a modern building's facade. The facade is composed of numerous blue, horizontal solar shading louvers. These louvers are arranged in a grid pattern, with some sections missing or partially open, revealing red window frames and dark interior spaces. The perspective is looking up, creating a sense of height and architectural scale. The lighting is bright, highlighting the metallic texture of the louvers and the vibrant red of the window frames.

'INNOVATIVE COLT SOLAR  
SHADING TECHNOLOGY  
SETS THE STANDARD'





# Shadovoltaic



## PV SYSTEMS FOR GREATER SUSTAINABILITY

Architects are increasingly aware of the opportunities offered by the use of building-integrated photovoltaics (BIPV).

Colt Shadovoltaic is a fixed or controllable external glazed solar shading system that may be installed either vertically or horizontally in front of the façade. Photovoltaic cells are integrated into the glass so as to generate electricity and also to provide shading.

As with Shadoglass, Shadovoltaic shading systems are operated by linear actuators that have the capability to operate complete facades. There are many options

of solar cell, from semi-transparent or fully transparent modules through to completely transparent solar cells, depending on design requirements.

This and the chosen type of glass, frit or film determines the light and radiation transmission as well as the amount of power generated.







Structural

'COLT LOUVRE SYSTEMS –  
GIVE FACADES A FACE'





## COLT BRINGS STRUCTURE TO THE BUILDING ENVELOPE

Louvre walls and panels are popular with designers for many applications in industrial and commercial buildings. Their purpose can be to control light entry, to provide ventilation whilst maintaining rain defence, to provide screening, or a combination of these. Louvres can also be provided simply for aesthetic impact.

Colt louvre systems are highly adaptable. They are available in various configurations, materials, finishes and coatings to meet the requirements of almost any project. Besides louvre panels being available in aluminium, there are all manner of glass, textile, wood, terracotta clay and translucent acrylic louvres available depending upon the aesthetic and energetic requirements.

Colt louvre systems can be uniquely configured to provide the solution to your needs. They can be engineered to provide high aerodynamic performance and excellent rain defence.

## TO SUMMARISE:

Colt's holistic approach is based on the integrated use of different technologies and focuses on:

- reducing the building's cooling requirements with a solar shading system
- enhancing the quality of natural daylight
- Integrating into the building envelope solar energy conversion systems such as photovoltaic cells.

Architects and building designers can choose from a wide portfolio of solutions, and Colt experts have the specialist experience to help them identify the best design, also supplying calculations and simulation models.



# Colt control systems

## CONTROL BY DESIGN

The efficiency of a controllable shading system largely depends on the correct design of the control system. Here, Colt's experience as systems integrator means that there are a wide range of options available.

## THE OPTIONS

### 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.



‘THE DRIVE TECHNOLOGY SHOWS  
JUST HOW INNOVATIVE DYNAMIC  
SOLAR SHADING SYSTEMS ARE’

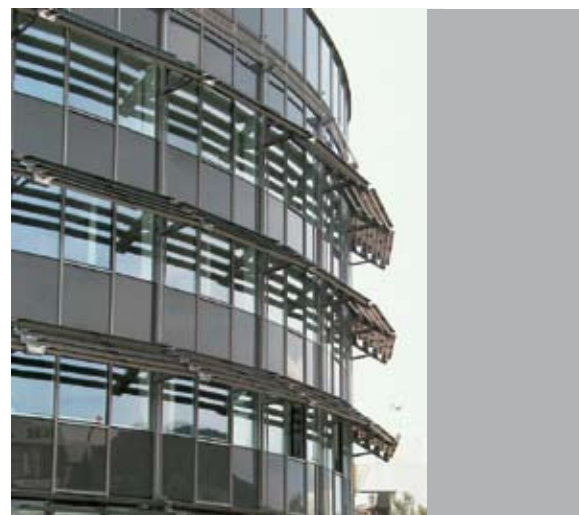


#### AN EXAMPLE OF AN INTEGRATED DESIGN APPROACH



The Wirtschaftshof (SBL) office building in Linz, designed by architect H. Schimek, is a good example of optimum energy management. The systems minimise solar heat gain, maximise the use of natural daylight and allow the generation of electricity through the application of photovoltaic technology.

Photovoltaic electricity generating cells are fixed onto the louvre blades, with an area of some 250m<sup>2</sup> producing 15,900kWh annually. This amounts to over 40% of the electricity required for the building. At the same time as a comfortable internal working environment has been provided, the aesthetic appeal of the building has been enhanced.



COLT INTERNATIONAL FORMS PART  
OF THE COLT INTERNATIONAL GROUP  
OF COMPANIES

Colt International is a Colt Group Company, one of Europe's leading independent providers of building services. Founded in 1931, Colt has been providing healthy, comfortable and safe working conditions in industrial and commercial buildings for more than 75 years. Colt systems harness the natural elements of the sun, wind and light to create energy efficient and healthy buildings, contributing to the creation of a sustainable built environment.

Colt offers a range of products and services across a wide spectrum of specialties including climate control, ventilation, solar shading and smoke control systems. This puts Colt in the unique position of offering architects and building designers an integrated approach to create the ideal internal climate. In addition, Colt's solar shading and glazing systems provide the architect with exciting opportunities to create stunning architectural features for their designs.

***'People feel better in Colt conditions'***

**Colt International**  
**[www.coltgroup.com](http://www.coltgroup.com)**