



BUILDING DESIGN

Perforated, functional and decorative sun screens



Protecting and enhancing buildings with perforated metal sun shields



THE BENEFITS OF PERFORATED METAL SUN SCREENS

Following studies of buildings with perforated metal facades, it was estimated that in just one year, there was an energy saving of between 29 to 45 percent.

In addition, depending on the location of the building and the intensity of the sun, there was a decrease in solar irradiation of up to 77.9 percent.



UNIVERSITY OF SOUTHERN DENMARK (SDU)

Precision perforated aluminium panels have been used to create a dynamic facade and solar shading system at Denmark's first low-energy university. The screens, which adjust automatically, have been manufactured with RMIG's keyhole-perforated ImagePerf. The result is a living and expressive facade that gives the optimal balance of light and energy in and out of the building and creates a comfortable indoor climate for those using the rooms along the facade.

- Raw material: Aluminium 5005 EQ
- Thickness: 3.0 mm
- Pattern: RMIG ImagePerf
- Surface treatment: Natural anodising N1
- Architects: Henning Larsen Architects

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PERFORATED METAL SUN SCREENS OR SUN SHIELDS CAN ENHANCE THE APPEARANCE OF A BUILDING'S EXTERIOR. HOWEVER, THE OVERALL VALUE AND PURPOSE OF THE FACADE GOES MUCH FURTHER.

Offering protection from intense sunlight and adverse weather conditions while absorbing a controlled amount of heat and light, a sun screen can be the perfect combination of functionality, innovation and sustainable design.

Almost everyone can empathise with the discomfort that arises from trying to work in an office where the sun permeates to such a degree that it is almost blinding and too hot to be productive, or thinking back to childhood, attempting to study in a freezing school when

there has been a lack of adequate heating. The strength and beauty of a building with a perforated metal sun screen is that a climate controlled environment is created, allowing the right degree of natural light while conserving and deflecting the heat when necessary. This balanced atmosphere of light and warmth is achieved due to the hole pattern, the open area of the perforation, the angle, structure and mechanics of the sun screen, together with the raw material and finish used.



More than a simple matter of comfort or even added privacy for a building's occupants, this 'architectural visor' also scores highly on the environmental front.

One of the common goals for the creators and developers of today's built environment, whether it is a business, educational establishment, shopping mall or factory, is to try to conserve energy while reducing the environmental footprint.

The addition of a perforated or expanded metal facade goes some way to fulfilling this objective, meaning that any cost incurred in the installation can be recouped as the heating and electricity bill decreases.

What makes a perfect sun screen?

The scientific and mechanical make-up of a perforated metallic sun screen on a building needs to meet certain standards. While stainless steel and copper can be used as the core material, a commonly used metal is aluminium.

Aluminium is easy to recycle, lightweight to install on a structure, and involves very little maintenance while meeting all the environmental and sustainable requirements, as it can be manufactured economically and responsibly.

As important as the metal is the choice of finish that is applied, both in terms of longevity and aesthetic appeal. Various finishes can with benefit be used on perforated screens, such as anodising, hot dip and electro galvanising, as well as powder and wet coating.

THE VENDESPACE

The goal of achieving natural lighting in all areas of this unique sports complex has been successfully carried out by using a combination of large glass facades covered with specially designed perforated sun screens. Not only does this provide all those using the building with a comfortable indoor temperature, it also gives the necessary lighting and helps to reduce energy consumption.

- Raw material: Aluminium EN 5005
- Thickness: 2.0 mm
- Pattern: RMIG ImagePerf
- Finishing operation: Bending
- Surface treatment: Coating
- Architects: le Vendéspace® PAUL CHEMETOV architecte

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LEARNMARK HORSENS

When assigned to design this educational facility, it was important for the architects to combine the best possible indoor climate with an elegant exterior. 1,600 m² of expanded metal have been used to create decorative and versatile sun screens. To achieve a more vibrant facade, two different types of expanded metal panels have been used. This gives an interesting and light expression which is further enhanced when some of the panels are opened.

- Raw material: Aluminium EN 1050
- Thickness: 2.0 mm
- Pattern: LT200x80x24x2 and LT115x52x24x2
- Surface treatment: Powder coating
- Architects: Kjær & Richter A/S

For example, the anodising process for aluminium increases the thickness of the natural oxide layer by integrating with the metal substrate rather than just providing a coating. The result is an impermeable sun shield that is resistant to rust and abrasions, and at the same time maintains an attractive sheen.

Of course, with perforated metal sheets, the amount of space remaining (open area) after the perforation process is completed is absolutely crucial. In the case of building facades, this is set between 20-30 percent, as this measurement provides optimal heat and light, while also being able to conserve energy.

There are also choices to be made as to whether a sun screen is static, motorised, or sensor-controlled, as well as the angle at which it is positioned. An open collaboration between architects, builders, energy specialists and experts in the construction of sun screens will create the best results.

It is clear that the addition of a perforated or expanded metal sun screen to an existing or new structure presents an interesting challenge to the building community. The goal for any architectural and building project must surely be to create a hard-wearing, eye-catching facade that has the capability to deflect light and conserve heat, and that can be appreciated by the end user in terms of functionality, design and sustainability.

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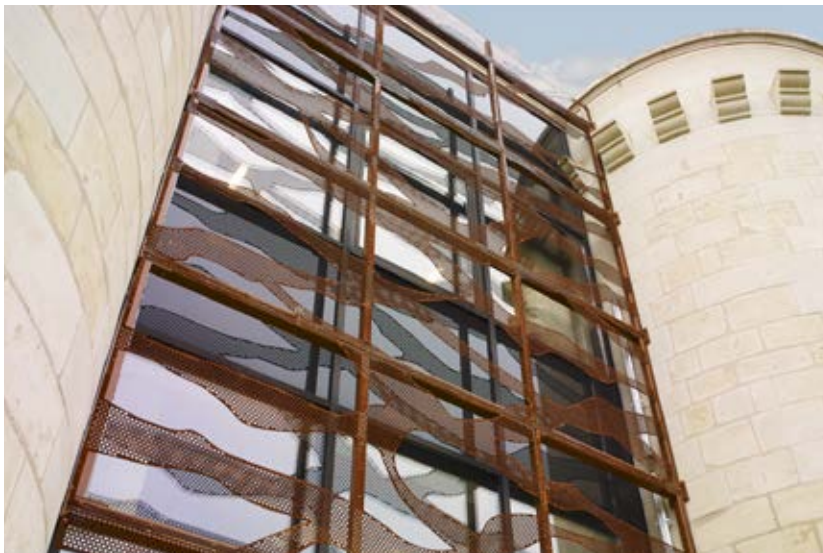
CHÂTEAU DE CANGÉ

Sun screens of decorative perforated metal bring a contemporary and modern twist to the architecture of this beautiful ancient monument. In connection with the restoration of the castle, which houses a library and media centre, perforated screens of corten steel with a rust patina were used to reduce the amount of direct sunlight to the open areas of the building.

- Raw material: Corten
- Thickness: 2.0 mm
- Pattern: R15T22
- Finishing operation: Cutting
- Architects: Dominique Blondel Architecte

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UNIVERSITÉ CATHOLIQUE

All the windows are protected by adjustable perforated stainless steel sun screens which help to reduce energy consumption while filtering through the right amount of natural light. Crucially, this creates a comfortable learning environment for students. Stainless steel is long-lasting, durable and recyclable, making this a cost-effective as well as sustainable solution.

- Raw material: Stainless steel EN 1.4307
- Thickness: 1.5 mm
- Pattern: LR4x20Z18x2
- Finishing operations: Bolt holes, corner cutting, bending, welding
- Architects: Garbit & Blondeau

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- Enjoy the unique finishing operations and surface treatments

RMIG is the world's largest manufacturer and supplier of perforated metal. In addition to exterior cladding, the company also supplies products for a large number of construction applications such as car park and security screening, acoustic wall linings, ceilings, lighting, street furniture, balustrades and walkways.

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