

Solar Screen Shading

A close-up, macro shot of a green solar screen fabric. The fabric has a fine, woven texture with a repeating diamond or grid pattern. It is draped and folded, creating soft shadows and highlights that emphasize its texture. The background is a blurred, lighter green, suggesting an outdoor setting.

HunterDouglas

WINDOW COVERINGS

SUN CONTROL

Innovative products

make innovative projects

Hunter Douglas Screen Fabrics meet the highest levels of performance and sustainability

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WINDOW COVERINGS

SUN CONTROL

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INTRODUCTION

Hunter Douglas solar control solutions are found in some of the world's most sustainable buildings. Our innovative, high-performance screen fabrics help manage heat and control glare to reduce energy consumption.

Working with architects and designers, Hunter Douglas solar control solutions integrate with other green building strategies to create sustainable buildings that are not only better for the environment, but also better for the people who use them.



Project : City Hall, Alphen a/d Rijn, the Netherlands
Architect : Erick van Egeraat Associates
Product : Roller Blinds, Screen

A well-designed solar-control solution will significantly enhance the comfort and well-being of a building's occupants by managing natural light, thermal gain and reducing glare



I.E.Q.

Green buildings are not only about recycled content or reducing energy. Creating a pleasant and attractive environment and minimising environmental impact is a challenge faced by an ever increasing number of architects. Indoor Environmental Quality (IEQ) is an important aspect of such an environment.

The overall well-being of a building's occupants and their associated productivity is the number one cost benefit of sustainable design. Furthermore workspaces which are naturally lit and allow occupant's connection to the outdoors can reduce turnover and absenteeism.

Indoor Environmental Quality represents a primary measure of this design element, including factors such as good acoustics, good air quality, visual comfort, thermal comfort, and individual control.

Hunter Douglas products and solutions are designed to improve Indoor Environmental Quality and conserve energy. These systems help create built environments that are comfortable, healthy, productive, and sustainable.



Above : InBev, Leuven, Belgium
Architect: Poponcini & Lootens
Product : Exterior Roller Blinds, Screens

Left : Hotel de Région, Strasbourg, France
Architect: Chaix & Morel
Product : Roller Blinds, Screen

*An inspirational environment
stimulates people's
creativity and effectiveness*



Project : Renting Cars WTS nv/sa, Lummen, Belgium
Product : External Roller Blinds

ECONOMISE

IMPROVING IEQ TO BOOST PRODUCTIVITY

When the comfort and well-being of employees improves, it is generally acknowledged that productivity rises. Studies show that improvements in Indoor Environmental Quality typically result in productivity increases of several percent.

Thermal and visual comfort are important components of Indoor Environmental Quality. By managing natural light, thermal gain, and glare, Hunter Douglas shading systems improve Indoor Environmental Quality in both the thermal and visual domains.

By managing light and heat at the window, shading solutions generate energy savings that can reach 50% or more and in sun-belt areas, shading systems can pay for themselves in as little as three years.

In the conceptual stages of a building, emphasis is often much more on energy savings and pay back times than on Indoor Environmental Quality. An analysis of the figure below shows that the effect of good IEQ, can be much greater than the reduced cost due to energy savings.



Since salaries and other employee costs typically represent 80% of the operating expense of a typical office, a 1% increase in productivity due to good IEQ, will easily cover the entire energy bill!

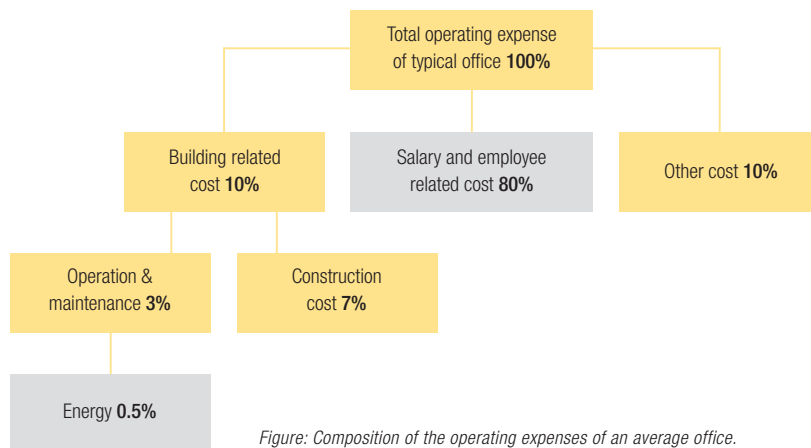


Figure: Composition of the operating expenses of an average office.

Window Shadings can reduce dependence on artificial lighting, harnessing natural light to cut electricity bills significantly.

They also manage solar heat - blocking the sun when it's hot, but not when it's cold - to lower energy consumption of HVAC systems.

Motorised/automated shading systems track the sun to ensure best performance throughout the day.





Maandag
15.30 Hopla
15.35 Bumba
15.40 Pocoyo
15.45 Wizzy en Woppy
15.50 Het vergeten speelgoed
16.00 Strawberry Shortcake

Project : De Lijn, Mechelen, Belgium
Architect : S/VR Storme-Van Ranst
Product : Roller Blinds, Comfort Screen

COMFORT

THERMAL COMFORT

Temperature control & power saving

Early in the 1960's, curtain-wall buildings began appearing in Europe. These structures typically had sealed building envelopes and inoperable windows that required new ways of managing heat and light. Hunter Douglas was at the forefront of pioneering solutions to address the problem of overheating in summer due to solar heat gain.

From commercial buildings to hospitals and schools, more and more buildings utilise substantial areas of glazing. This trend makes integration of shading solutions for solar control even more important - allowing the building to optimise the use of solar energy and natural daylight and enhance indoor environmental quality.

Far right : Showroom Y & N Claessens, Wilrijk, Belgium
Architect: Dirk Vanlerberghe
Product : Roller Blinds, Smartscreen

Right : Il Sole 24 Ore, Milan, Italy
Architect: Renzo Piano
Product : Screen Classic 525





By controlling incident solar energy before it enters the building envelope, Hunter Douglas shading systems regulate the temperature and reduce the need for air conditioning.

Motorised External Roller Shades manage the sun's energy very effectively, controlling light and heat before it reaches the building. With the proper shading fabrics, glare is filtered before it can impact performance and views to the outside are not interrupted. Designed for use in a wide variety of hot and cold climates, external shades reduce building energy consumption.



Indoor Sunscreens have a moderate effect on thermal comfort (up to class 2, EN 14501)

Outdoor solar shading has the best thermal comfort (up to class 4, EN 14501)

External screen shadings featuring Enduris™ Glass Core Technology have been tested to eliminate up to 90% of heat from solar radiation (up to 64% with internal blinds)

Research studies have shown that people perform best at an air temperature of about 22 °C. If it is colder than 20 °C, or warmer than 25 °C, performance starts to drop significantly

COMFORT

VISUAL COMFORT

Research shows that people prefer to work in natural daylight and maintain visual contact with the outdoors. Real value is attached to knowing what the weather is like and what is happening outside and this in turn contributes to the well-being of people and increases their productivity.

Light management

Hunter Douglas Internal Shading systems optimise natural lighting providing excellent contact with the outdoors. Roller Shades, daylight blinds and other systems reflect natural light deeper into the space, spreading the benefits among more people and reducing dependence on artificial light.

Shading solutions such as Roller Shades with screen fabrics allow people to control how much daylight falls on their workspace, allowing them to eliminate glare and annoying reflections on the computer screen, for example.

Right : Shaw Communications Inc., Calgary, Canada
Architect: Cohos Evamy
Product : Motorized Roller Shades



VISUAL COMFORT

Optimises visual comfort by distributing light more effectively

The latest generation of high performance screen fabrics are the metalised screen fabrics, to reflect solar energy directly to the outdoors, and the dual-colour screen fabrics with a darker side facing in for best view-through.

In addition, shades installed in a bottom-up configuration can be used to shield occupants from direct sun exposure, while allowing natural daylight at the top of window.



Above : Hotel de Région, Strasbourg, France
Architect : Chaix & Morel
Product : Screen 2 - 3%



Office workers were found to perform significantly better on tests of mental function and memory recall when they had a view of the outdoors





Project : L.J.G. Synagogue, the Hague, the Netherlands
Architect : M. Eekhout and R. Prins
Product : Roller Blinds

ENERGY AND LIGHT

MEASURING ENERGY AND LIGHT FOR IEQ

Measuring Energy and Light consumption is a key factor in developing an effective shading strategy. The Hunter Douglas Energy and Light software can predict how solar shading systems will filter light, and how they will affect energy consumption.

By analysing key data points the Energy & Light Tool can determine the right light shading levels for optimal IEQ:

- Amount and type of glass
- Orientation of the façade
- Geographical location
- Climate
- Seasonal changes

The Energy & Light Tool will recommend the right shading strategy to meet the performance level and specification of the project. By achieving optimal control over light, one can maximise expensive assets like floor space and layouts in the building design.

Project : Four Seasons Centre for the Performing Arts,
Toronto, Ontario
Architect: Diamond and Schmitt Architects, Inc.
Product : Exterior Motorized Roller Shades





ENERGY AND LIGHT

Energy calculation

A thermal simulation package, the Energy Tool can calculate how much cooling and heating energy can be saved when using a solar shading system, compared to a scenario without shading.

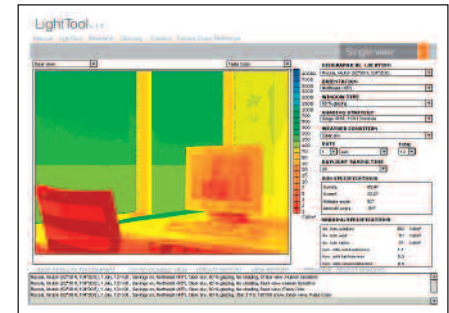
The Energy Tool helps make thermal comfort tangible by calculating solar energy transmittance for a model office with and without window shadings and with different types of glass. It takes into account factors such as geographic location, orientation, time of day, and can also account for the effects of daylight responsive artificial lighting.

Light calculation

The Light Tool thoroughly analyses how light will enter a building and presents detailed 3-dimensional simulations. As the quantity of daylight may vary significantly from window to window, elevation or floor level, each window needs the correct solar shading solution to regulate light and heat entering the building.



Photo: © Tim Griffith



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*Maximizing the use of daylight without glare
and providing daylight-responsive lighting controls
in a serie of five studies
a median productivity gain of 4% was found*

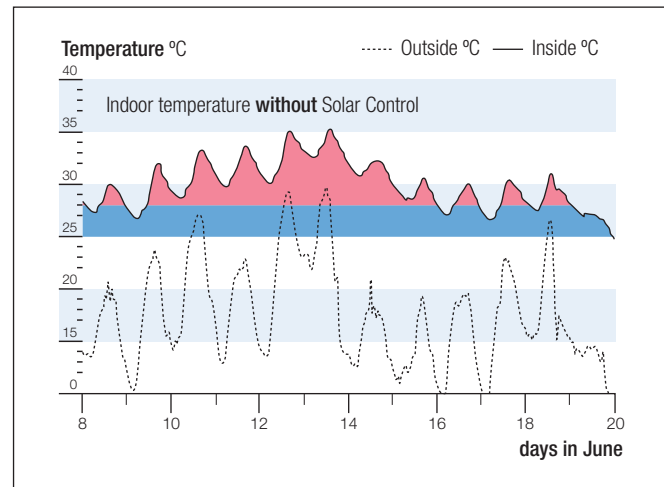
SAVING

SAVING ENERGY ON HEATING AND COOLING

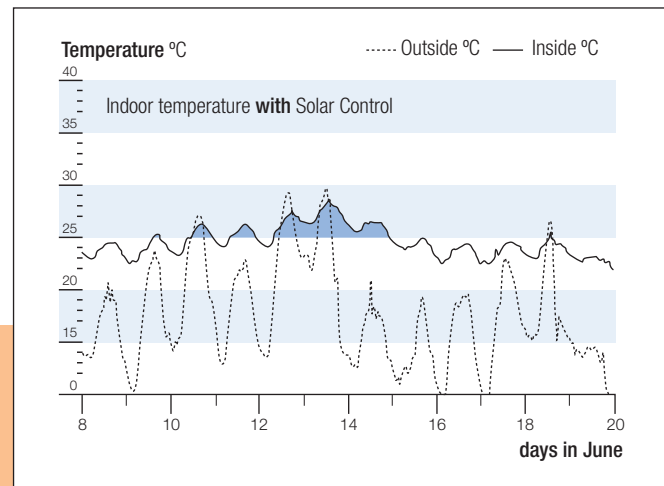
Energy optimised design requires an integrated approach to achieve maximum savings on heating and cooling, with subsequent reductions in CO₂ emissions.

Exterior solar shading solutions can substantially reduce cooling loads by decreasing the primary energy requirement of the building, which is one of the most valuable steps in sustainable design.

Right : Mutualite Socialiste de Mons-Borinage, Frameries, Belgium
Architect : I.G.R.E.T.E.C.
Product : Roller Blinds, ComfortScreens



Graph of temperature levels without shading



Graph of temperature levels with shading



Fitted externally, Hunter Douglas Sunscreens can reduce the maximum temperature in a room by 5 - 10 °C without air conditioning

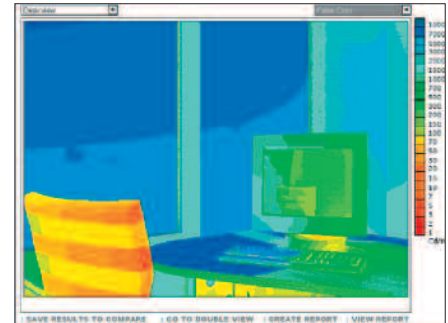


SAVING

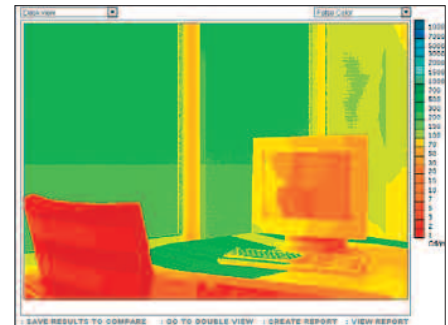
SAVING ENERGY BY USING NATURAL DAYLIGHT

Over 40% of the electric energy in a modern office building may be used for artificial lighting. High-performance day lighting solutions can drastically reduce this need, delivering savings up to 50 to 75%, according to the Lighting Research Center in New York.

The Hunter Douglas' Energy Tool quantifies the savings in both energy use and installation capacity.



Luminance values in cd/m^2 without Solar Shading



Luminance values in cd/m^2 with light coloured Hunter Douglas Roller Blind

Left : ING office, Riemst, België
Architect: Crepain Binst Architecture
Product : Roller Blinds, Screen

Power savings for cooling can be more than 60% when the screen fabric is used for external shadings which aids in the reduction on green house gas emissions





Project : Université de Jussieu 16M, Paris, France
Architect : Périphérique SOA
Product : Screen Classic 525 + Screen Vision 5%

CONTROL

SHADING CONTROL

Controlling the light and glare that enters through a window is critical to occupants' visual comfort. To fully harvest the benefits of daylight, it needs to be regulated, attenuated or diffused. Motorised shadings with sunscreens is an excellent solution to provide the dynamic function needed to adapt to the ever changing characteristics of daylight.

Control strategies can be developed to expand on the comfort criteria to allow adjustments to suit individual needs and preferences.

Shading systems automated by the Hunter Douglas EOS® PRO Control system will maximise use of available daylight while also controlling glare, thermal gain and energy efficiency with the ease of use and reliability that you expect from Hunter Douglas.



HunterDouglas

SHADING CONTROL

Sun control systems which dynamically adjust to the angle of the sun, dependant on the location and orientation of the building, allows for optimal placement of the shading system. Our shading systems can automatically adjust to changing weather conditions and schedule multiple levels of activity; such as regular window cleaning, or evening privacy adjustments.

Versatile controls allow the shades to integrate with any other automated and/or building management systems, making it ideal for both new construction and retrofits.

Right : Banque Degroof, Brussels, Belgium
Architect: Art & Build
Product : External Roller Blinds

Left : Hotel Parc Beaumont Pau, France
Architect: Ami. A. Lenglar
Product : E Screen 7510



Automated control systems for solar shading and window coverings can maximise energy reduction and light control

Convenience: motorised shades are easy to operate

Automation: research shows that automated sun-tracking shades enable energy savings from lighting and HVAC systems by maximizing control of glare and solar heat gain

Oversized Shades: motorised systems are a good option for shading large windows

Design Customization: exclusive high performance screen fabric options are available for internal and external motorised roller shades

*The effects of solar shading systems are factored into analysis of building energy usage as follows:
Manual shading = 0% Automated shading = 75%*





Project : Hesse Noord Natie, Antwerp, Belgium
Architect : Conix Architects cvba
Product : Roller Blinds

SCREEN FABRICS

SOLAR SHADING SCREEN FABRICS

Environmental Impact and Human Health

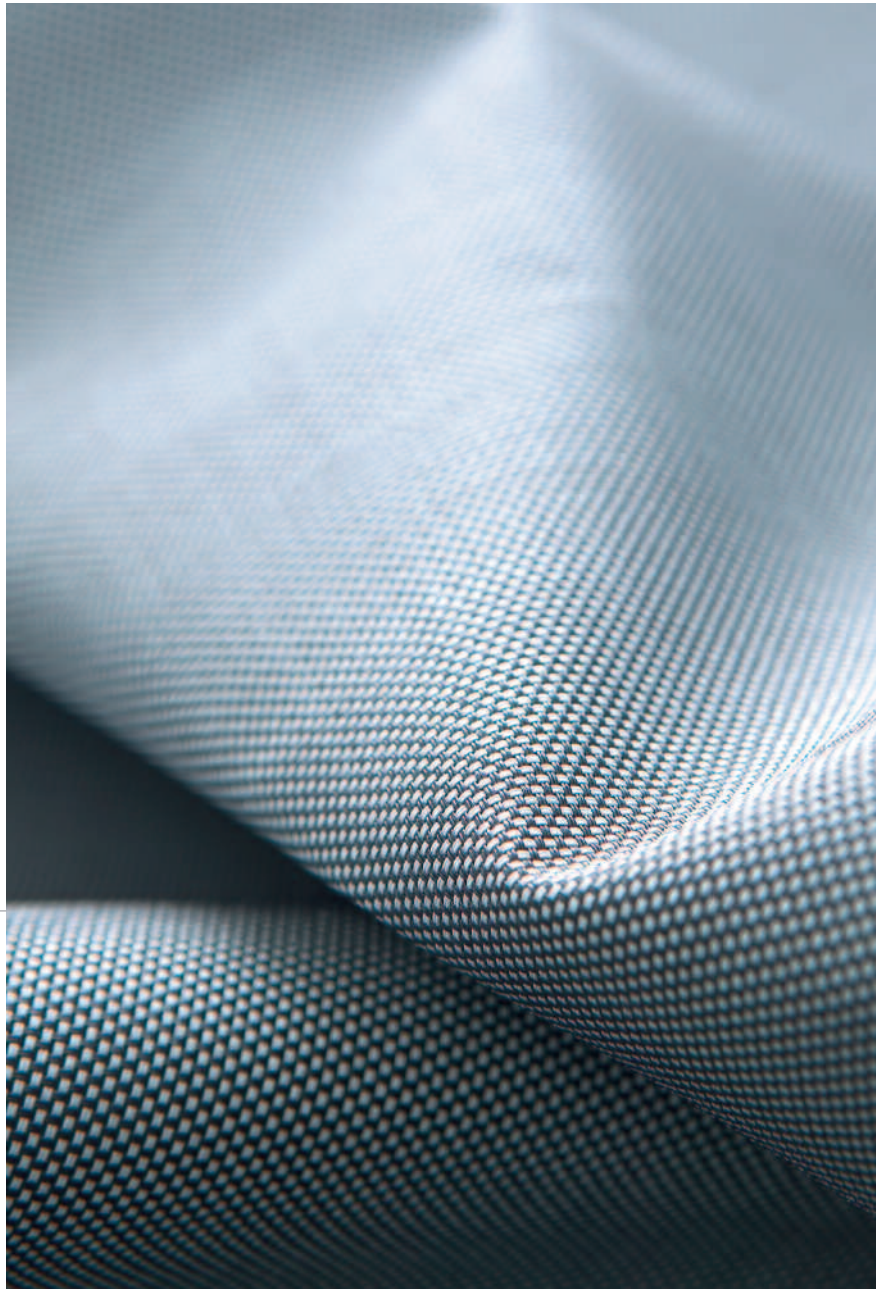
Hunter Douglas not only designs shading solutions that enhance comfort, productivity, health, and sustainability, but we also utilize engineering and production processes that minimize embodied environmental impact of these systems.

We employ best available techniques to reduce corporate environmental impact, to protect and conserve resources by using the right materials and reduced energy.

Through superior design and efficient manufacturing techniques we continuously seek ways to improve the material lifecycle from production to recycling.

Low emitting materials maintain air quality

Many of our FR fabrics are certified for low emissions by the GREENGUARD® Institute, meet the stricter requirements for GREENGUARD Children and Schools™ certification. Careful selection of low-emitting materials such as sunscreen fabrics minimizes the presence of contaminants such as volatile organic chemicals (VOC's), odors, and dust.



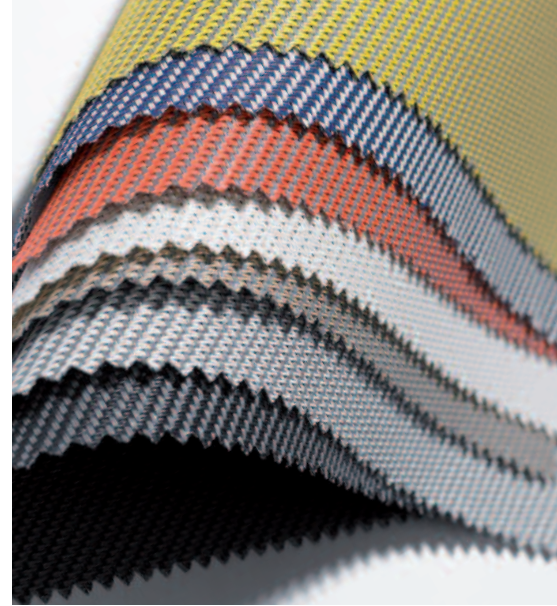
PROPERTIES

Outstanding properties produce to high standards

High performance Screen Fabric used for solar protection must meet a large range of technical requirements such as safety, easy maintenance and outstanding aesthetics.

Hunter Douglas offers a comprehensive line of sunscreen fabrics, giving designers the most choice in the industry for light control and aesthetics. All fabrics are flame retardant and meet or exceed European and North American standards for performance and sustainability.

With a complete range of aesthetic and performance qualities, there are Hunter Douglas screen fabrics to meet nearly any design and performance requirement.



Designed for long product life, low maintenance and easy care

Outstanding solar properties to control glare and maximise outward visibility

Certified by GREENGUARD® and ÖKOTEX Standard 100 Designing products for low off-gassing to maintain indoor air quality

Inherent flame retardant properties that meet NFPA 701, M1, and/or B1

Resistance to mold and bacteria

No harmful heavy metals content such as lead and chromium

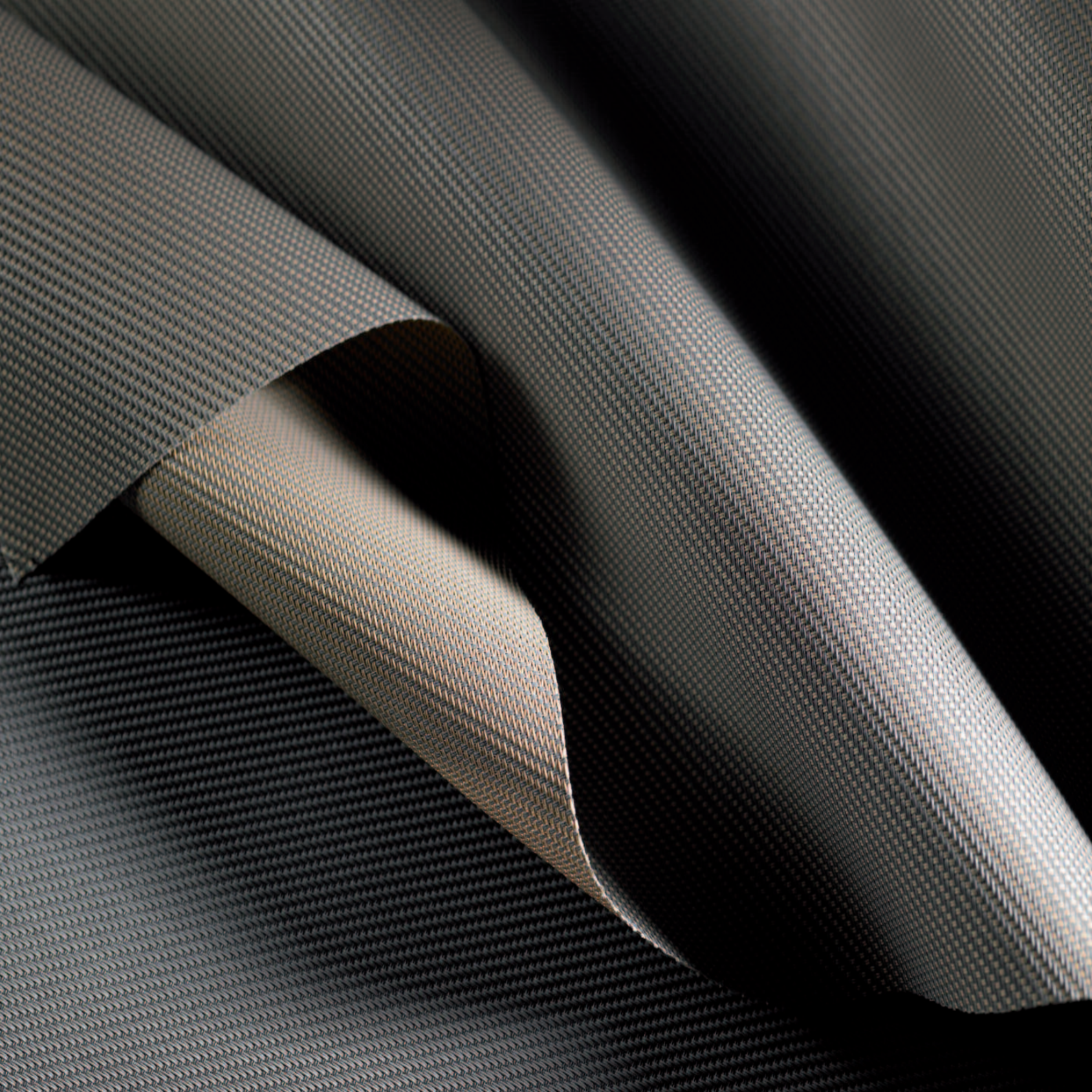
GreenScreen® PVC-free fabrics eliminates VOC's and off-gassing

Dimensional stability to eliminate sagging and pooling problems that can result in 'smiling' shades

Options to manage thermal gain, such as metalised and dual-colour fabrics

Durability and colourfastness to light





SELECTION

SOLAR SHADING SCREEN FABRICS

The Hunter Douglas Energy & Light Tool can provide recommendations on the right shading solution and materials that will optimise light and heat control for internal and external system. Key factors in developing a shading strategy include:

Building orientation

Glazing

Inside/outside application

Thermal & visual comfort

Outward visibility

Fenestration scheme

Air quality & safety

Green goals

LIGHT OR DARK COLOURS

The colour of a screen fabric is one of the most important and often overlooked factors in designing solar shading. Darker coloured fabrics absorb more heat and allow greater visibility. Lighter coloured fabrics will reflect more heat, but reduce outward visibility.

The ideal solution is a shading solution that reflects the most amount of heat, reduces glare and gives the greatest outward visibility. Examples include: Dual-coloured sunscreens with a lighter colour fabric facing the sun and a darker colour towards the interior and aluminised or metalised finishes applied to the window side both represents ideal solutions. These combinations reflect the most heat outwards with reduced interior glare, whilst giving the greatest outward visibility.

TRANSPARENCY

Enjoy exterior views and control the elements

Sunscreen fabrics function to maintain the views to the outside while effectively managing the effects of the sun. Sometimes called 'openness', transparency plays a key role in managing heat and light as it influences the amount of light and views that can pass through a shading fabric.

The regularity of the yarn coating and weaving also contributes to the transparency which ensures the space feels open and uncluttered. Hunter Douglas screen fabrics have a wide range of PVC-free (GreenScreen®) and glass-fiber fabrics that control light completely, with openness from 1%, 3%, and 5%; to 10%; to 'wide open' 25% open fabrics that are nearly transparent.

*External shades contribute to energy savings
such as cooling load reductions of 40 to 60%*



PERFORMANCE

HIGH PERFORMANCE SCREEN FABRICS

A complete range of intelligent fabrics designed for endless possibilities

Fabrics with ENDURIS™ GLASS CORE Technology

A proprietary combination of superior-quality coatings and glass-fiber yarns, Fabrics with Enduris™ GLASS CORE Technology deliver great looks and transparency, along with outstanding strength and durability for large outdoor and indoor shade applications.

The durability and stability of fabrics with Enduris™ GLASS CORE Technology come from the inside out, starting with a fiberglass yarn that make it naturally fire resistant, dimensionally stable, and resistant to expansion and stretching due to heat. An innovative vinyl coating protects the fiberglass, providing additional durability with UV inhibitors.



Project : Art Institute of Chicago, USA

Architect : Renzo Piano

Product : Interior Roller Shades, Skylight Shades, Blackout Shades

Oeko • Tex
Association

Photo: © Bob Perzel

External screen shadings featuring Enduris™ Glass Core Technology have been tested to eliminate up to 90% of heat from solar radiation (up to 64% with internal blinds)

TECHNOLOGY

ENDURIS™ GLASS CORE TECHNOLOGY

Fabrics with ENDURIS™ GLASS CORE Technology contribute to sustainable buildings by effectively managing solar heat protection, diffusing incoming natural light and enhancing interior comfort that can increase occupant productivity.

DUAL COLOUR SUNSCREEN FABRICS

Dual colour fabrics with ENDURIS™ GLASS CORE Technology combine a distinct design aesthetic with outstanding properties for managing light and glare. Dual colour fabrics offer the ability to specify a consistent fabric colour to face the exterior without giving up colour choices for the interior.

Superior coating uniformity and surface aspect

High resistance to temperature variations

Chemically inert

Non-rotting

Low thermal conductivity

Glass fiber yarns are a natural composite material

Easy to clean





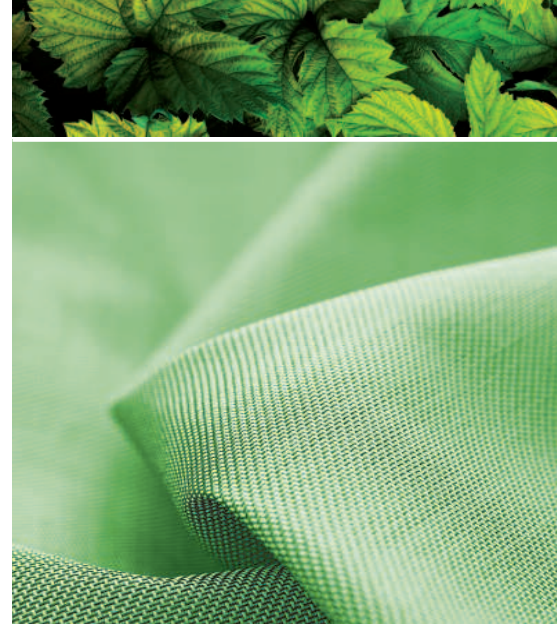
GREENSCREEN® SOLAR SHADING FABRICS

Fabrics with GreenScreen® are constructed from unsheathed yarns composed of high-tenacity polyester. The environmentally responsible GreenScreen® fabrics deliver superior solar control with many colour and openness choices. All deliver the durability and dimensional stability you demand, with flame retardance that meets the strictest international standards.

GreenScreen® Platinum fabrics - These fabrics feature an aluminised exterior fabric face that reflect solar energy directly to the outdoors and outward visibility, while fully maintaining the fabrics' flame retardance properties, dimensional stability, and design versatility.



Left : Volkswagen QC centre, China
Architect : Mrs. Yuwei, M&E design Intihite
Product : Comfort Screen



PVC-free with no VOC's to eliminate the need for off-gassing

Flame retardant fabrics meet or exceed North American and European standards

Environmentally friendly and completely recyclable

High performance fabric with outstanding shading coefficients

Optional metallic backings for increased glare control and optimised outward visibility

Specified on numerous LEED / BREEAM rated projects

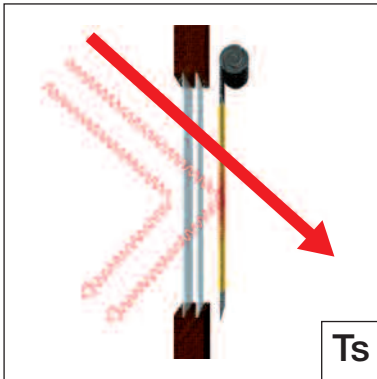
*Depending on the fabric colour chosen,
the temperature of a room can be lowered by 5 - 10 °C
by controlling direct radiation*

FENESTRATIONS

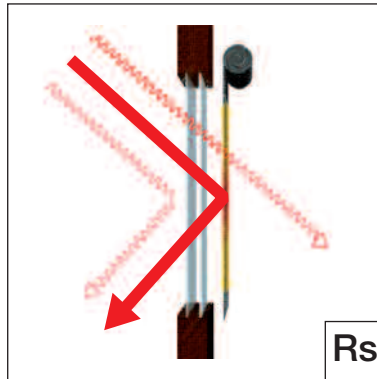
FENESTRATIONS

Fenestration is defined as the design and arrangement of openings, in a structure, 'particularly windows'. Fenestration schemes incorporate factors such as day lighting, solar control, glare reduction, and management of thermal gain, providing the most important elements of the building shell and a key contributor to sustainable buildings.

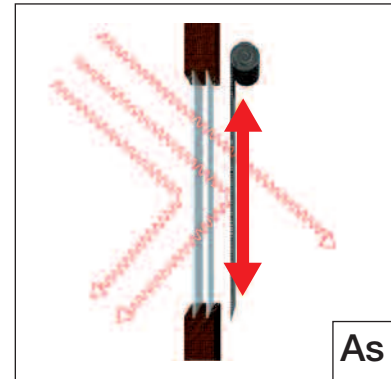
$$TS + RS + AS = 100\% \text{ OF SOLAR ENERGY}$$



Solar transmittance: proportion of solar energy transmitted through the fabric. **A low percentage means the fabric performs well at reducing solar energy.**

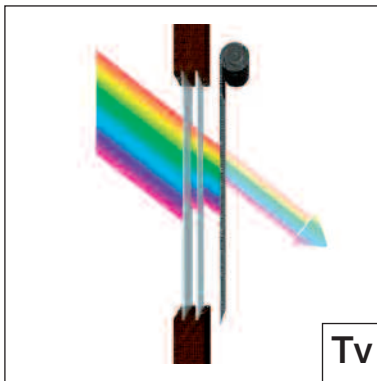


Solar reflectance: proportion of solar radiation reflected by the fabric. **A high percentage means the fabric performs well at reflecting solar energy.**



Solar absorptance: proportion of solar radiation absorbed by the fabric. **A low percentage means the fabric absorbs little solar energy.**

A window has a direct correlation to energy transmission; solar gains reduce the need for heating; solar control and natural ventilation can reduce air-conditioning and a window supplies natural daylight, therefore, saving energy used for artificial lighting.



Visible light transmittance: total percentage of light radiated through the fabric or glazing system. **The best indicator of glare control!**



g-Value: The g-Value, also known as solar heat gain coefficient (SHGC), is the solar energy which actually penetrates into a room through the blind and glazing (absorbed, re-radiated, convected & transmitted directly).

An object with a high g-value is more effective at transmitting solar heat gains inside during the winter

An object with a low g-value is more effective at reducing cooling loads during the summer by blocking heat gain from the sun

The lower the g-Value, the better the protection against 'solar heat gain'





Project : Il Sole 24 Ore, Milan, Italy
Architect : Renzo Piano
Product : Screen Classic 525 + Screen Vision 5%

IMPROVE

HUNTER DOUGLAS HOLISTIC APPROACH

Hunter Douglas Solar Control products and systems are designed to improve Indoor Environmental Quality and conserve energy. These systems help create built environments that are comfortable, healthy, productive, and sustainable. Our engineering and production processes minimise embodied environmental impact while meeting the highest standards for hospitality, industrial, institutional, and commercial applications.

Sustainable products include:

- GreenScreen® PVC-free fabrics for Roller Shades that are best in class for quality, performance, and design choices
- External louvered blinds, brise soleil, and sun louvers - the most effective shading systems available. Proven to deflect three times more thermal gain than traditional window shadings
- Advanced controls - including sun-tracking and intelligent, context-based solutions - that integrate fully with building management systems to optimise performance
- The industry's widest range of custom and design-built solutions to express the latest developments in green architecture



For the last 50 years, we've been fortunate enough to help turn countless innovative sketches into innovative buildings.

Architects and designers from around the world have taken advantage of Hunter Douglas' unmatched project development, service, and support. Chances are, you've seen more of Hunter Douglas than you think. Just look around.

With major operation centers in Europe, North America, Latin America, Asia, and Australia, we've contributed to thousands of high profile installations, from retail and commercial facilities to major transit centers and government buildings.

Not only are the world's architects and designers our partners, they're our inspiration. As they continue to raise the bar for excellence, we're creating projects to bring their visions to life.

Innovative Products Make Innovative Projects

HunterDouglas

WINDOW COVERINGS

SUN CONTROL



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Promoting sustainable
forest management
www.pefc.org



Hunter Douglas products and solutions are designed to improve indoor environmental quality and conserve energy, supporting built environments that are comfortable, healthy, productive, and sustainable.



Our paint and aluminium melting processes are considered to be one of the industry standards in terms of clean production processes. All aluminium products are 100% recyclable at the end of their lifecycle.



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CEILINGS

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FAÇADES

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