A guide to SUSTAINABLE COMFORT

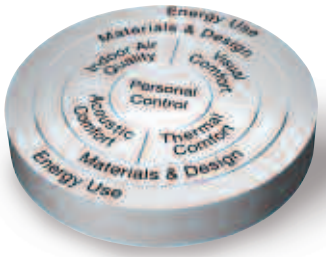
HunterDouglas

A guide to SUSTAINABLE COMFORT

Hunter Douglas high performance solutions contribute to sustainable building architecture - from advanced solar control systems to intelligent façade solutions and high performance acoustic ceilings, our products and materials significantly contribute to energy savings and enhance interior comfort.

Content

'An inspirational environment stimulates the creativity and effectiveness of people'



Improving Indoor Environmental Quality

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 architects. Indoor Environmental Quality (IEQ) is an important aspect of such an environment.

The overall well-being of building's occupants and their associated productivity contributes to the cost benefit of sustainable design. Furthermore workspaces which are comfortable, naturally lit and allow occupant's access to the outdoors can reduce turnover and costly absenteeism.

Indoor Environmental Quality (IEQ) includes at least 5 elements:

- **Visual Comfort**
- **Thermal Comfort**
- **Acoustic Comfort**
- **Indoor Air Quality**
- **Personal Control**

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 engineering and production processes minimise embodied environmental impact while meeting the highest standards for commercial, hospitality, industrial, institutional, and commercial applications.

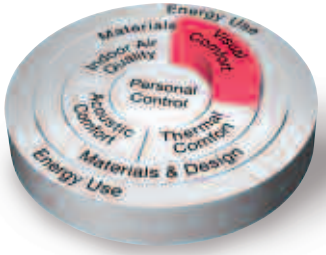
Project : Unilever-Bestfoods, Rotterdam, the Netherlands
Product : Venetian Blinds
Architect: JHK Architects

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's happening outside and this in turn contributes to a sense of wellbeing and an increase in productivity.

Visual

‘There is no substitute for free natural daylight’

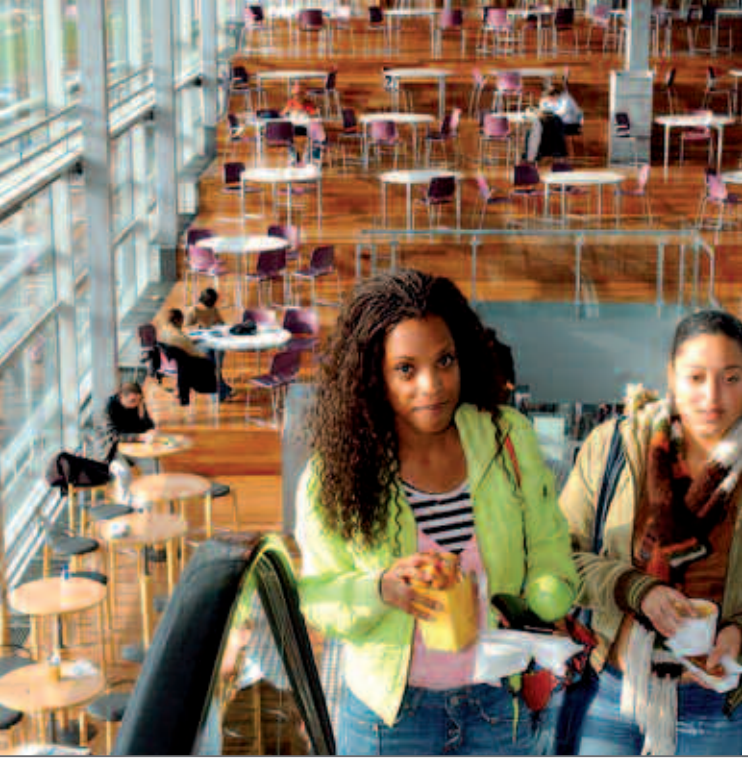


Visual Comfort

A well-designed shading solution can significantly enhance the comfort and well being of a building's occupants.

By managing natural light, thermal gain and glare, Hunter Douglas systems improve the Indoor Environmental Quality by:

- Directing natural daylight for productive workspaces
- Providing direct access to exterior views
- Reducing glare on computer screens and other reflective surfaces
- Managing thermal gain from incident solar energy
- Personal comfort control of local light, air and temperature variables.



'Students with adequate natural daylight in their classrooms showed 20% faster progress in math tests and 26% in reading tests during one year'

Hunter Douglas systems improve the Indoor Environmental Quality and conserve energy through a range of solutions:

☑ **Window Coverings** optimises natural lighting and reduce glare. Daylight blinds reflect natural light deeper into a space, harvesting the natural light and reducing dependence on artificial lighting. By managing the amount of direct sunlight penetrating a space, glare will be reduced without hindering outward visibility.

Internal shading systems such as roller blinds which can block up to 90% of UV radiation and horizontal blinds allow personal control over how much daylight falls on to a workspace and eliminates unwanted glare and reflection from PC screens.

☑ **Daylight enhancing blinds** can optimise daylight penetration into a space by tilting to bounce light off reflective ceilings, which in turn can help reduce artificial lighting up to 50% depending on the space and location of the building.

Most Hunter Douglas shades and blinds are GREENGUARD® and GREENGUARD Children and Schools™ certified.

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

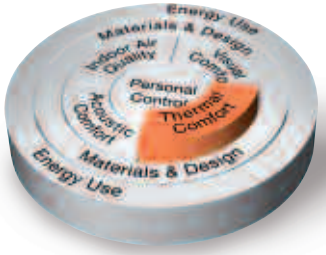
Project : Telindus Headquarters, Haasrode, Belgium
Product : Venetian Blinds 60 mm
Architect: Jo Crepain

Thermal Comfort

Managing thermal comfort is a key factor in achieving good Indoor Environmental Quality and a sense of well-being for occupants.

thermal

'Indoor temperatures are directly influenced by solar heat gain through the window'



Thermal Comfort

As more and more buildings are constructed with substantial areas of glazing, developing strategies that enhance natural daylight, reduce glare and regulate thermal gain are essential in managing thermal comfort and achieving good Indoor Environmental Quality.

'People perform best when the air temperature is approx. 22 °C. Below 20 °C and above 25 °C, performance starts to drop significantly'

Indoor temperatures are directly influenced by solar heat gain through windows and façades. Hunter Douglas solutions contribute to the reduction of energy use and conserve energy with different design solutions:

☑ **External systems regulate heat**

Exterior solar shading solutions can substantially reduce cooling loads. Decreasing the primary energy requirement of the building is one of the most valuable steps in sustainable design. Architects are increasingly designing double-skin passive and active ventilated façades to lower buildings' energy requirements for heating and cooling. Whilst more expensive to build than a traditional design, such façades provide significantly higher levels of environmental control and offer both long-term financial and sustainability advantages. Integrating external and internal solutions is a key element in reducing energy hungry cooling power that affects the environmental impact of the building.

Designed for use in a wide variety of hot and cold climates, Hunter Douglas external blinds, sun control systems and louvers can pay for themselves in as little as three years.

☑ **Ventilated Rain Screen Façade**

Hunter Douglas energy-saving building envelopes, with shading systems that control solar heat gain or ventilated façades that help moderate temperatures, can significantly upgrade the performance and efficiency of a building. External solutions help regulate temperature and reduce the need for air conditioning during summer and heating in winter time.

☑ **Custom application**

From motorised folding screens and sliding shutters to large scale custom louvered blinds, the Hunter Douglas engineering team collaborates with architects and designers to develop innovative and sophisticated solutions that meet the aesthetic and performance requirements for any project.

Project : Ford Denayer, Antwerp, Belgium
Product : QuadroClad®
Architect: Ring Partners

Project : Apartments Zonegge, Zevenaar, the Netherlands
Product : Aerofoils 200AF
Architect: Van der Linde & Associates, Warnsveld

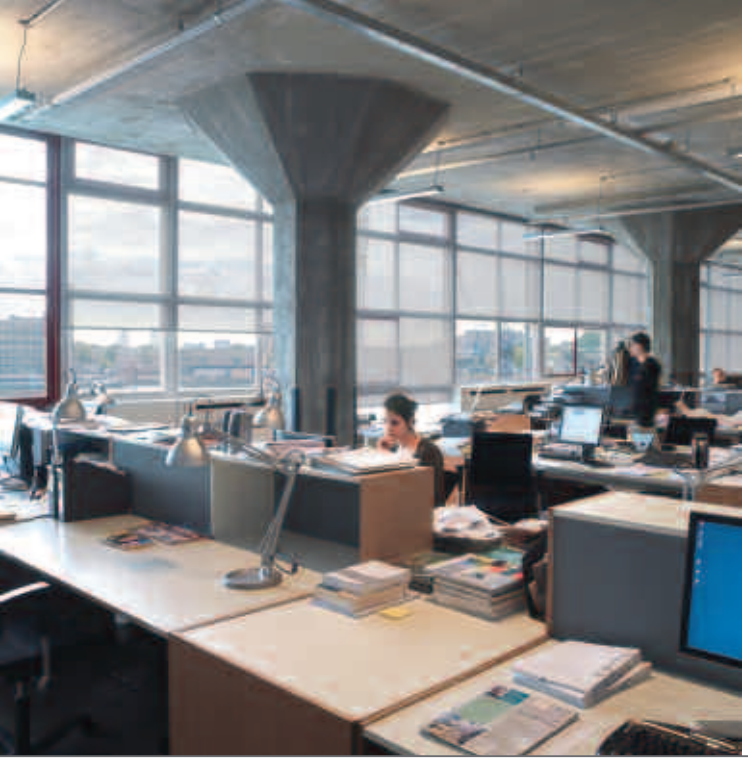
Project : Nesselande, Rotterdam, the Netherlands
Product : Sliding Shutters
Architect: Joke Vos Architecten

Personal Control

Well designed intelligent daylighting and shading systems can provide good comfort with personal control.

Personal control over our direct environment positively influences our appreciation of the Indoor Environmental Quality.

Control



'Individual climate control of ± 3° results in a 3% productivity increase'

Personal Control

Hunter Douglas solar control systems deliver uncompromising performance, backed by unmatched engineering. From Roller Blinds and Exterior Blinds to fully automated Sun Control Systems, Hunter Douglas integrates management of light and energy:

☑ Motorised systems also provide personal control over the direct environment which can positively influence occupant's appreciation of Indoor Environmental Quality.

Combining automated controls with a personal override to tilt or adjust the flow of daylight and heat improves personal comfort and productivity.

Project : 3D Impression
Product : Dynamic

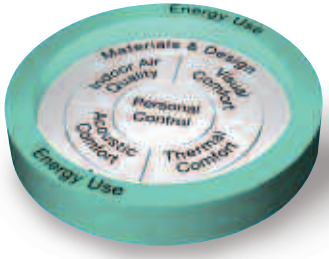
Project : Hotel Doca do Bom Successo, Portugal
Product : Sliding Shutters
Architect: Pesco Architects

Energy Use

Energy optimised design requires an integrated approach to achieve maximum energy and cooling savings and resulting reductions in CO_2 emissions.

Energy

'Modern solar shading can reduce CO_2 emissions in the EU alone by over 80 million tons'



Energy Use

Assessing the consequences of a shading strategy in the early stages of a design can have a significant impact on the energy use of a building. Solar shading transforms windows into dynamic valves for solar energy: blocking heat when unwanted and harvesting when required, in the winter for example.

Controlling and harvesting free renewable 'solar income' can significantly reduce the non-renewable energy needed for cooling, lighting and heating a building.

'Solar shading reduces both the investment and the running cost of HVAC installations'

Manage thermal gain to save cooling / heating

Automated solar shading not only reduces the energy consumption for cooling but also reduces the required cooling capacity. Reductions in both energy consumption and capacity can be as much as 50% making a compelling business case for investment in solutions that have a direct impact on the total cost of indoor climate control.

Shading systems automated by the Hunter Douglas EOS PRO Control system, manage the sun's energy very efficiently by controlling light and heat before it reaches the building. Control systems include simple switches to intelligent sun tracking that fully integrate with building management systems.

☑ Hunter Douglas External Window Coverings and Sun Control Systems can reduce the maximum temperature in a room by 5-10 °C without air conditioning.

Project : Telindus Headquarters, Haasrode, Belgium
Product : Venetian Blinds 60 mm
Architect: Jo Crepain

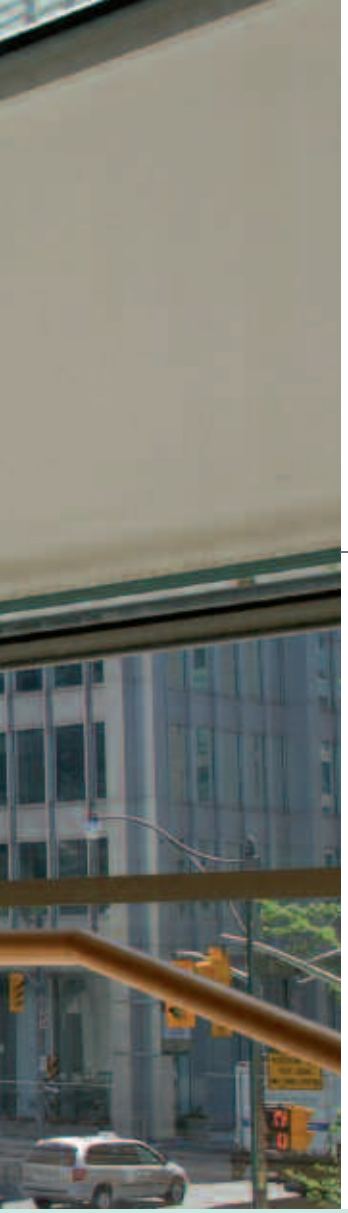
Project : Meerhoven Woningen, Veldhoven, the Netherlands
Product : Sliding Shutters
Architect: Rempt van der Donk architect, Rotterdam

Energy & Light Tool

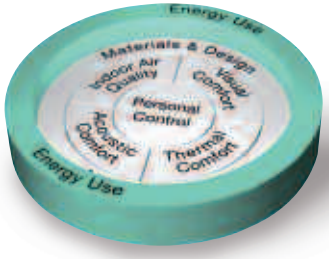
Providing good thermal and visual comfort with a minimum energy cost calls for a careful matching of glazing, sun control, lighting and HVAC equipment.

Light

Project : Four Seasons Centre for Performing Arts, Toronto, Canada
Product : External Roller Blinds
Architect: Diamond and Schmitt Architects, Inc.



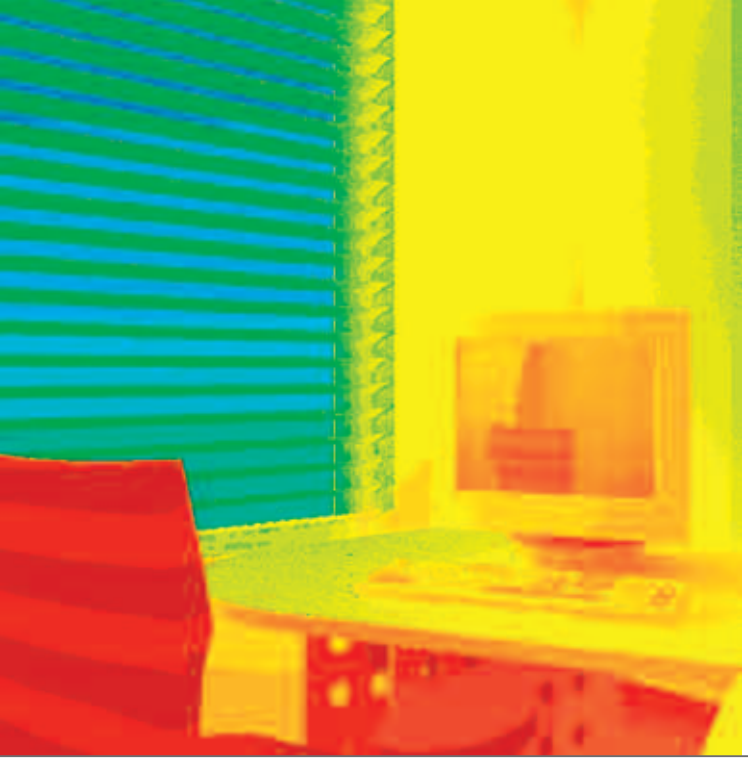
'Calculating visual & thermal comfort is a key element in developing a solar shading strategy'



Energy & Light Tool

Hunter Douglas has developed a state of the art Light and Energy software tool that can analyse how different internal and external solutions optimise light and heat and show the resulting energy consumption.

This tool analyses a number of key elements to determine the right light level for optimal IEQ: the amount and type of glass, the orientation of the façade, the geographical location, the climate and season.



'62% of the energy use in an office building can be influenced by Solar Control Solutions'

The Hunter Douglas Energy and Light tool contains precise data on Hunter Douglas sun control solutions. Switching scenarios and comparing their performance outcome data only takes a few moments:

☑ **Energy use & Light Control**

Choices made in the early design phases can have a huge impact on the energy use of a building. Quantitatively comparing the energy consequences of shading designs can be a big help. Based on certified data, the Hunter Douglas Energy & Light tool quantifies the energy requirement for heating, cooling and lighting for a sample space. The tool can also determine the required heating and cooling capacity.

Project : De Lijn, Mechelen, Belgium
Product : Venetian Blinds
Architect: S/VR Storme Van Ranst, Antwerp

Project : Bee-Line, Moscow
Product : Vertical Panels
Architect: Concept


1
2
Centrum
1
2
Centrum

Acoustic Comfort

The acoustic comfort in an office space, school or public building contributes to our well-being as poor acoustic comfort can affect health, communication, safety, productivity and learning.

Acoustic

Photography on page 4, 10, 18, 28, 44, 46, 48 by Joop Reijngoud

'Trying to hear in a poor acoustical environment is like trying to read in a room with the lights off'

Acoustic Comfort

In modern workplaces, there has been a trend towards open plan offices, which use individual workstations rather than traditional walled offices. With many employees regularly out of the office working from home or at satellite locations, the open office plan can be an effective and appropriate method of reducing space costs.

However, if workers experience poor acoustic comfort some of the benefit may be offset through decreased productivity. The intelligibility of speech is directly dependent on elements of the surrounding environment. Factors of the indoor environment affecting speech intelligibility include background noise level, reverberation time, and the size of the room.

All children will benefit from classrooms with low background noise and short reverberation times. Even children with hearing in normal ranges can miss as much as one-third of the words in a teacher's message when they are listening in noise. If the room is too noisy, even the most expert teacher will have difficulty achieving sufficient loudness for good understanding.

'Conversation noise had a greater negative impact on productivity than acoustic noise at the same level'

Hunter Douglas ceiling systems follow the principles of sustainability and Indoor Environmental Quality:

☑ Using high performance acoustical ceiling products, with NRC[1] ratings up to 0.85 Hunter Douglas Metal, Wood and Techstyle® ceilings deliver outstanding acoustic performance, comfort and aesthetic application. In additional, nearly all Hunter Douglas products meet low emissions standards for GREENGUARD® and GREENGUARD Children and Schools™ certification.

[1] NRC: Noise Reduction Coefficient

Project : Noorderdok, Almere, the Netherlands
Product : Techstyle® Acoustical Ceilings
Architect: Architect DP6 Architectuur Studio BV

Project : Saxion Hogeschool, Deventer, the Netherlands
Product : 30BD Linear Ceiling
Architect: P.A.M. Dirks Architect, Deventer

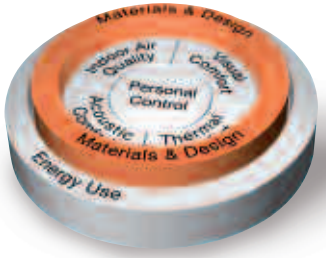
Materials & Design

Choosing the right material solution is key to designing healthy and sustainable environment as emissions of hazardous substances from materials effect both the natural environment and human health and safety.

Material

Project : Taurus Media Office, Munich, Germany
Product : Sun Control type EL 80 AS Electrical, 80 mm
Architect: ALHO

'When every part of a building works together, comfortable, healthy and productive environments are created'



Materials

Hunter Douglas has a long history of innovation in developing responsible materials that contribute to sustainable buildings and IEQ through our window covering, sun control, ceilings and intelligent façades systems. We protect and conserve valuable resources by using the right materials and reduce energy use through superior design and efficient manufacturing techniques and continuously seek ways to improve the material lifecycle from production to recycling.

'Recycling aluminium takes 95% less energy than producing new material'

Recycled Aluminium

Hunter Douglas is at the forefront in aluminium recycling for high performance products including window coverings and ceilings. Our aluminium products for interior use are produced from recycled material that uses only 5% of the energy it takes to produce new aluminium. Therefore the emission of greenhouse gases will be reduced by 95%.

Hunter Douglas aluminium products are designed to be highly durable and built to last for many decades keeping them out of the waste stream. All scrap produced in the manufacture of Hunter Douglas aluminium products is recaptured and reprocessed.

☑ For more information of the recycled content of Hunter Douglas products, please check at a Hunter Douglas office in your area.

Project : Richard E. Lindner Athletic Center, Ohio, USA
Product : Planks & Tiles
Architect: Bernard Tschumi; glaserwords; Eva Maddox

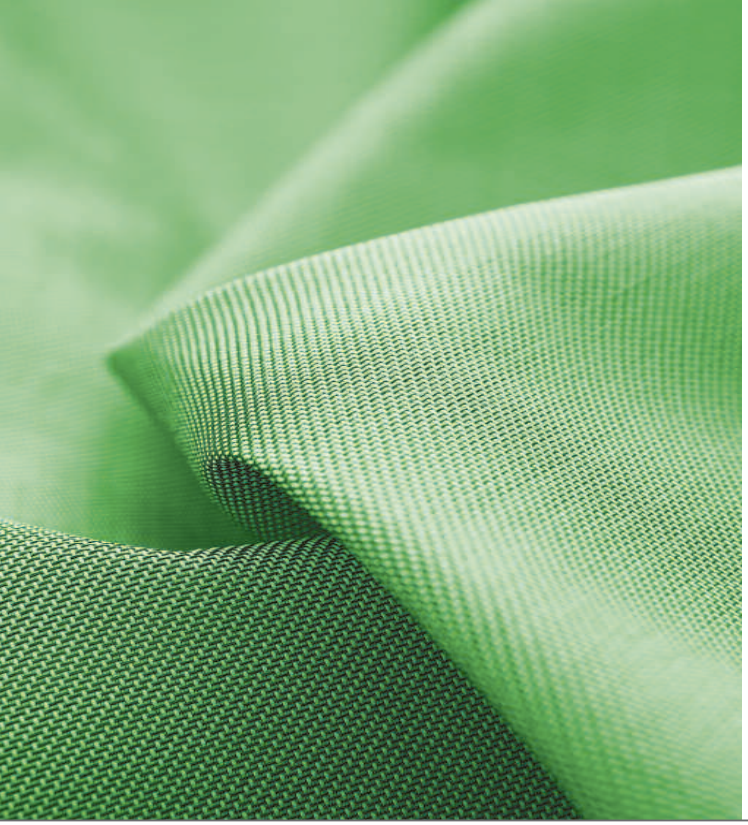
Photo: Mark Bealer

Terracotta
As a specialist in the area of Façade Ceramics, NBK a leading Hunter Douglas Company has developed Terrart®. Terrart® is a ventilated curtain wall/rain screen system whose exposed components, are made exclusively from terracotta.

This highly durable and long lasting natural material is UV resistant, frost resistant, maintains its shape and colour, strong surface texture, high chemical resistance and provides total design freedom. Architectural Terracotta is ideally suited to restoring and reconstructing old building façades as well as new buildings, fully meeting modern demands.
The Hunter Douglas NBK Terrart® ceramic production waste can be re-used during the production process.

Sustainable
While technology has continuously progressed, the manufacture of Ceramic construction materials still centres on the three natural elements of fire, water and clay. The long tradition and great popularity of this building material is understandable, because it enabled the erection of more weather-resistant and fire-resistant structures in areas where natural stone was scarce.

Project : Ku'damm-Eck, Berlin, Germany
Product : NBK Ceramic
Architect: GMP, Hamburg



'Hunter Douglas screen fabrics offer high levels of performance and sustainability, while meeting the strictest international standards for durability and stability'

Enduris® GLASS CORE

GreenScreen® SOLAR SHADING FABRICS

Hunter Douglas has a full line of low VOC products certified by GREENGUARD® and Ökotex Standard 100, which is helping to maintain good Indoor Air Quality. Attractive and functional, our shading solutions feature a comprehensive range of fabrics to meet the design performance specifications of any fenestration scheme:

☑ **GreenScreen®** fabrics are the high-performance, PVC-free alternative to traditional shading materials. The fabric is FR rated, and meets the stringent standards for the European and North American markets. GreenScreen® fabrics do not contain heavy metals and is therefore certified to meet GREENGUARD® for low VOC emissions.

GreenScreen® fabrics are made from polyester yarn making it easier to recycle waste fabric to a variety of new textile possibilities rather than entering a landfill.

☑ **Enduris®** Glass Core technology for solar shading fabrics. The durability and stability of Enduris® technology comes from the inside out, starting with a fiberglass strand that makes it naturally fire resistant, dimensionally stable, and resistant to expansion and stretching due to heat.

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

Project : Potsdamer Platz, Berlin, Germany
Product : NBK Ceramic
Architect: Renzo Piano / Christoph Kohlbecker


PLATZ
Hugendubel Bücher
WÖHRL

SUSTAINABLE COMFORT
Pays

Good indoor environmental quality and substantial energy savings go hand in hand. IEQ benefits people and energy savings benefit the planet. With savings on primary energy for heating, cooling and lighting up to 25%, this recurring financial benefit is dwarfed if you add in the profit of a mere 1% increase in productivity. No matter how you look at it, sustainable comfort makes a very compelling business case.

To learn more about Hunter Douglas solutions for your next project, visit www.hunterdouglascontract.com or call one of our sales offices in your area.

HUNTER DOUGLAS WINDOW COVERING PRODUCTS

In the last 40 years, we've been fortunate enough to help turn countless innovative sketches into innovative buildings.

Architects, designers, investors, contractors and real estate owners from around the world have taken advantage of Hunter Douglas' unmatched product development, service and support. Chances are, you've seen more of Hunter Douglas than you think.

With major operation centres in Europe, North America, Latin America, Asia and Austrvernment buildings. Not only are the world's architects and designers our partners, they're our inspiration. They continue to raise the bar for excellence. We create products that help bring their visions to life:

Window Coverings, Ceilings, Sun Control Systems and Façades.

ARCHITECTURAL SERVICES

We support our business partners with a wide range of technical consulting and support services for architects, developers, installers and, last but not least, owners and occupants. We assist architects and developers with recommendations regarding materials, shapes and dimensions, colours and finishes. We also help creating design proposals, building simulations and energy calculations. Our services to installers range from providing detailed installation drawings and instructions to training installers and advising on the building site. For the owners and occupants, we provide comfort and energy savings, which enhances real estate value.

HUNTER DOUGLAS is a publicly traded company with activities in more than 100 countries with over 160 companies.

The origin of our company goes back to 1919, in Düsseldorf, Germany. Throughout our history, we have introduced innovations that have shaped the industry, from the invention of the continuous aluminium caster, to the creation of the first aluminium Venetian Blinds, to the development of the latest high-quality building products. Today we employ 20,000 people in our companies with major operation centres in Europe, North America, Latin America, Asia and Australia.

Innovative Products
Make Innovative Projects

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- www.hunterdouglascontract.com

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Norway
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Australia
Latin America
North America

*Research on the relation between indoor **environmental quality** and productivity clearly shows a positive and significant correlation. **Happier occupants** and higher productivity translate into more revenue or reduced cost.*

HunterDouglas

WINDOW COVERINGS | CEILINGS | SUN CONTROL | FAÇADES

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