Verosol and the LEED rating system

- **LEED for New Constructions & Major Renovations v2.2 October 2005**
- **LEED for Existing Buildings: Operations & Maintenance: January 2008**

LEED for New Constructions & Major Renovations v2.2 October 2005
The products from Verosol can make a contribution to the LEED rating systems on the following subjects:

Sustainable Sites:

- **Credit 8. Light Pollution Reduction (1 point possible)**

Intent: minimizing light trespass from buildings and site, reduce sky-glow, improve night-time visibility through glare reduction, and reduce development impact on nocturnal environments

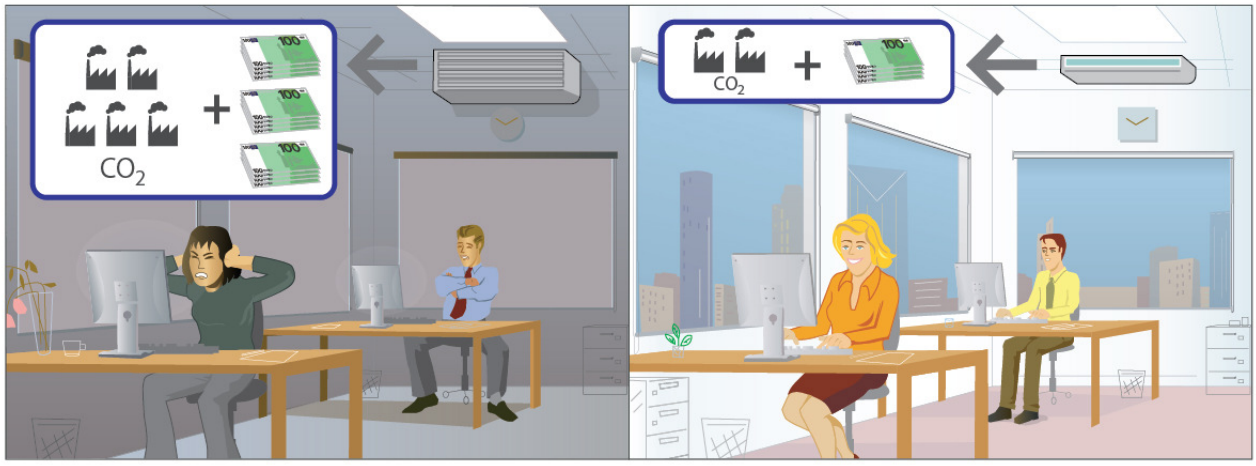
Verosol:
When internal lighting in a building is needed during night-time, a contribution to the reduction of night sky pollution can be achieved by closing the blinds. This contribution will be even more, when by using a non-transparent fabric in the blinds.

Energy and Atmosphere:

- **Credit 1. Optimize energy performance (1-10 points possible)**

Intent: Achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with energy use. Pls. Note: 2 point mandatory for all LEED for New Constructions projects registered after June 26,2007

Verosol:
In the requirements 4 options are mentioned as compliance path. The most general and accessible path is to go for option I: Whole building energy simulation. For this point the energy saver calculator can be a tool to use to show the differences in type of glass used, the amount of glass used in the building in combination with fabrics from Verosol and other alternatives. Fabrics from Verosol will contribute positively to minimizing energy consumption. Depending on the impact of the energy saving the points 1 to 10 are given.



Indoor Environmental Quality:

- **EQ Prerequisite 1: Minimum IAQ (Indoor Air Quality) Performance Required**

Intent: Establish minim indoor air quality (IAQ) performance to enhance indoor air in buildings, this contributing to the comfort and well-being of the occupant.

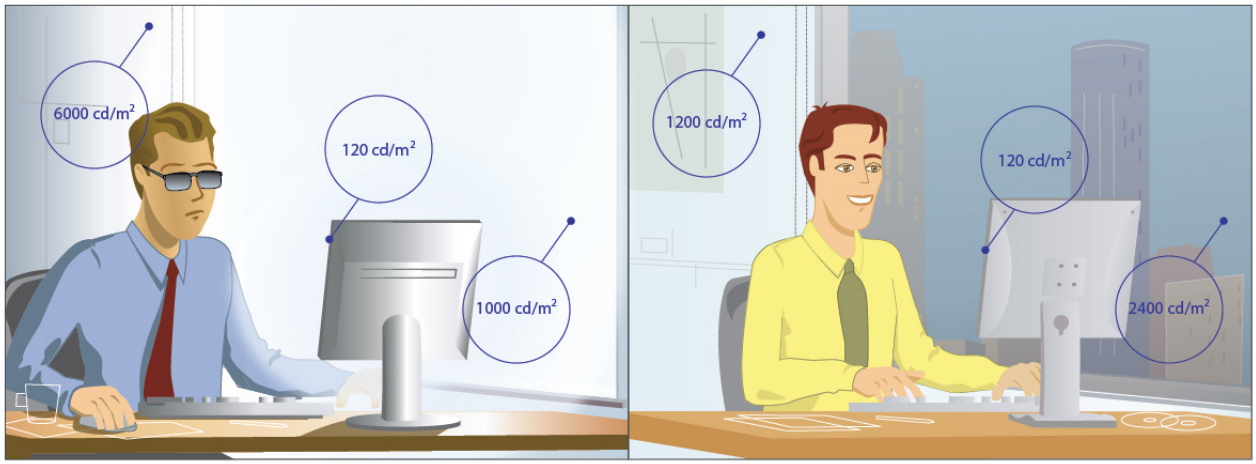
Verosol:
This chapter is about having an indoor air quality management plan. In the details window covering fabrics are not mentioned specific, like Adhesives & Sealants (4.1.), Paints&coatings (4.2), Carpet systems (4.3), and Composite wood &Agrifiber Products (4.4.)

But this is the point were the Greenguard certification on Indoor Air Quality comes in. Having our product ranges certified on Indoor Air Quality Greenguard Programme (incl. Children and School application) is making a strong contribution to the IAQ management plan of a building. Verosol is IAQ / Greenguard certified for the 3 fabric ranges: Verosol (816, 812, 849, 878), SilverScreen and EnviroScreen (802, 810).

- **Credit 6.1 Controllability of Systems – Lighting (1 point possible)**

Intent: Provide a high level of lighting system control by individual occupants or by specific groups in multi-occupant spaces (i.e. classrooms or conference areas) to promote the productivity, comfort and well-being of building occupant.

Verosol:
Additional to the intent is mentioned in this paragraph that individuals should be able to influence their personal needs and preferences. By using individual operated twin-blinds, with a transparent + non-transparent fabric, one creates an optimal solution. Individuals in the room are able to position the blinds to their personal needs at that moment: completely closed when a presentation is given, or open on a cloudy day, or the transparent fabric lowered on a sunny day, still enabling individuals in the room to do computer work without glare problems. By offering this personalised solution, like a view trough, even on sunny days, individuals are aware of the time and weather during the day, which will contribute positively to their natural wake-sleep -rhythm and well-being and with that to their productivity.

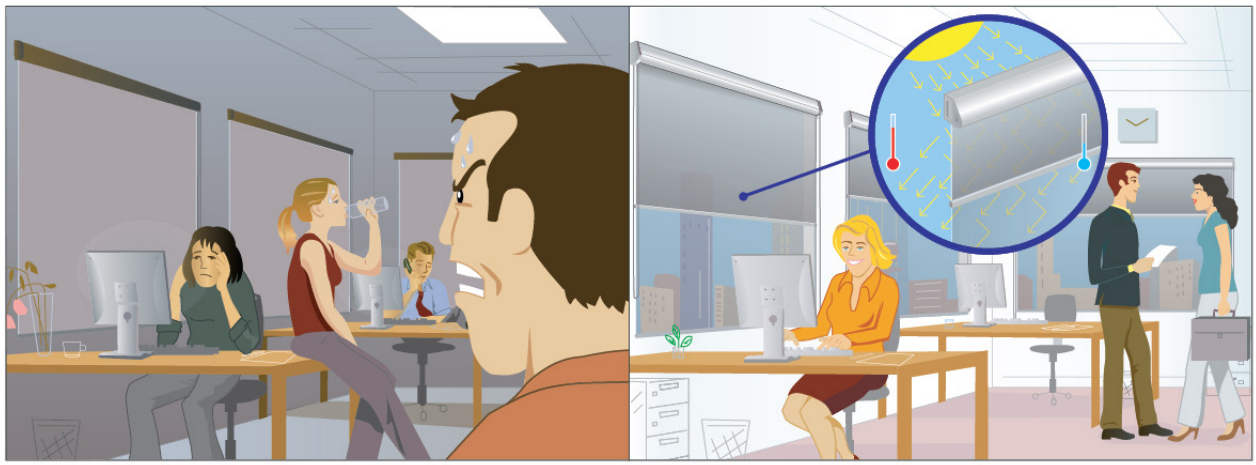


- **Credit 6.2 Controllability of Systems – Thermal Comfort (1 point possible)**

Intent: provide a high level of thermal comfort system control by individual occupants or by specific groups in multi-occupant spaces (i.e. classrooms or conference areas) to promote the productivity. Comfort and well-being of building occupants.

Also required is to provide individual comfort controls for at least 50% of the building occupants to enable adjustments to suit individual task needs and preferences and provide comfort system controls for all shared multi-occupant spaces to enable adjustments to suit group needs and preferences.

Verosol:
As mentioned in point 6.1. a twin blind solution, with a transparent + non-transparent fabric, creates also for this point an optimal solution. The highly reflective metallized backing of both the transparent as non-transparant fabric will provide the maximum thermal comfort possible under the given personal or group needs and preferences. It minimises the direct and indirect radiant heat.



- **Credit 7.1 Thermal Comfort – Design (1 point possible)**

Intent: Provide a comfortable thermal environment that support the productivity and well-being of building occupants.

The requirements also refers to an ASHREA standard 55-2004. This standard combines comfort criteria: desired quality and occupant satisfaction with building performance.

Verosol:
Thermal comfort is one of the key selling points of Verosol. The high reflectance metallized backing when used under the right conditions guarantees' a (thermal) comfort atmosphere for the occupants. Blinds can meet the personal demands of the occupants: personal design, by using different transparencies of fabrics and even choosing their own colour, without influencing the uniform look at the outside. Each blinds can be an individual designed for the occupant.

- **Credit 8.2 Daylight & Views – Views 90% of Spaces (1 point possible)**
- **Credit 8.1 Daylight & Views – Daylight 75% of Spaces (1 point possible)**

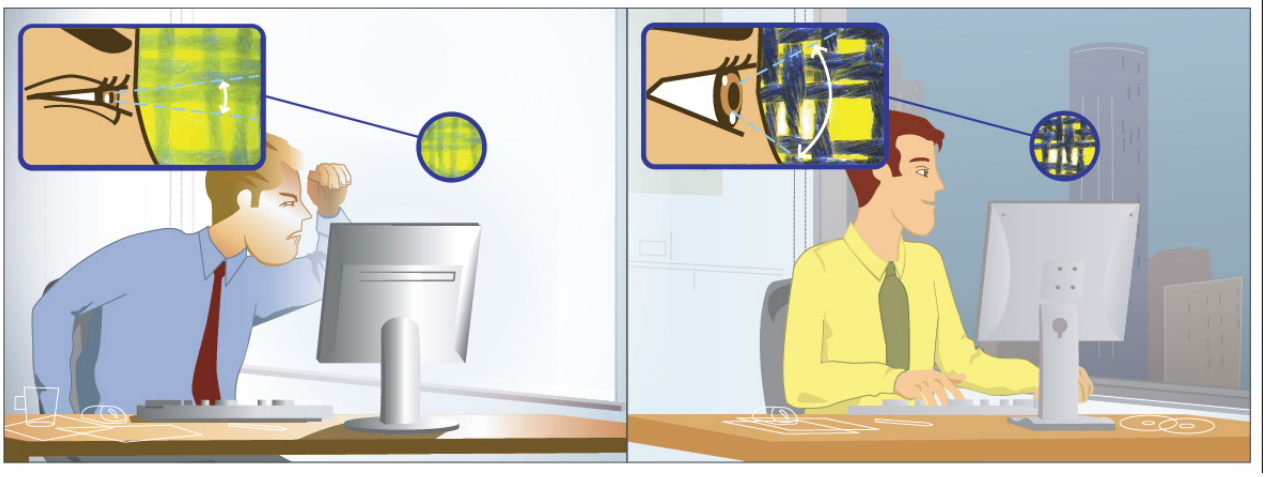
Intent: Provide for the building occupant a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

To meet these 2 requirements 3 options are mentioned:
1. Calculation: of the glazing factor
2. Simulation: by computer simulation
3. Measurement: Indoor light measurements

In all of the above mentioned options: provide daylight re-directions and/or glare control control devices to avoid high contrast situations that could impede visual tasks.

Verosol:
Products from Verosol can make a clear contribution: The use of transparent, still highly reflective fabrics, to create outside views, without having glare problems. Furthermore "Daylight Harvesting" is possible by placing the window covering products not on top of window/ceiling, but lower, to enable daylight to enter the room. This is of course depending

on the height of the windows. By controlling the blinds and artificial light by a building management system, daylight harvesting can be further optimised.



Innovation & Design Process:

- **Credit 1.1 – 1.4 Innovation in Design (1-4 points possible)**

Intent: To provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED for New Construction Green Building Rating System and/or innovative performance in Green Building categories not specially addressed by the LEED for New Construction Green Building Rating System.

Requirement: In writing. Identify the intent of the proposed innovation credit, the proposed requirement for compliance, the proposed submittals to demonstrate compliance, and the design approach (strategies) that might be used to meet the requirements.

Verosol:
While the achievable points can be given for substantial energy performance and quantifiable environment benefits, a possibility is to show the differences in performances of the fabric's from Verosol compared to similar fabric from competition. Again it can be measured what the potential differences in energy performances will be, when used in proper conditions.

Furthermore by extracting the air gap between glass and Verosol blind and exhaust this heated air a very effective façade is realised whereas in winter this heat can be used to preheat fresh air (by a heat exchanger).

Concerning LEED for Existing Buildings: Operations & Maintenance: January 2008
The products from Verosol can make a contribution to the LEED rating systems on the following subjects:

Sustainable Sites:

- **Credit 8. Light Pollution Reduction (1 point possible)**

Intent: To eliminate light trespass from the buildings and site, improve night sky access and reduce development impact on nocturnal environments.

In the requirements is mentioned that a program must be implemented to ensure the lighting control system is being properly used to adjust lighting levels during all after-hours periods.

Verosol:
When internal lighting in a building is needed during night-time, a contribution to the reduction of night sky pollution can be achieved by closing the blinds. This contribution will be even more, when by using a non-transparant metallised fabric in the blinds.

Energy and Atmosphere:

- **Credit 1. Optimize energy efficiency performance (2-15 points possible, 2 points mandatory)**

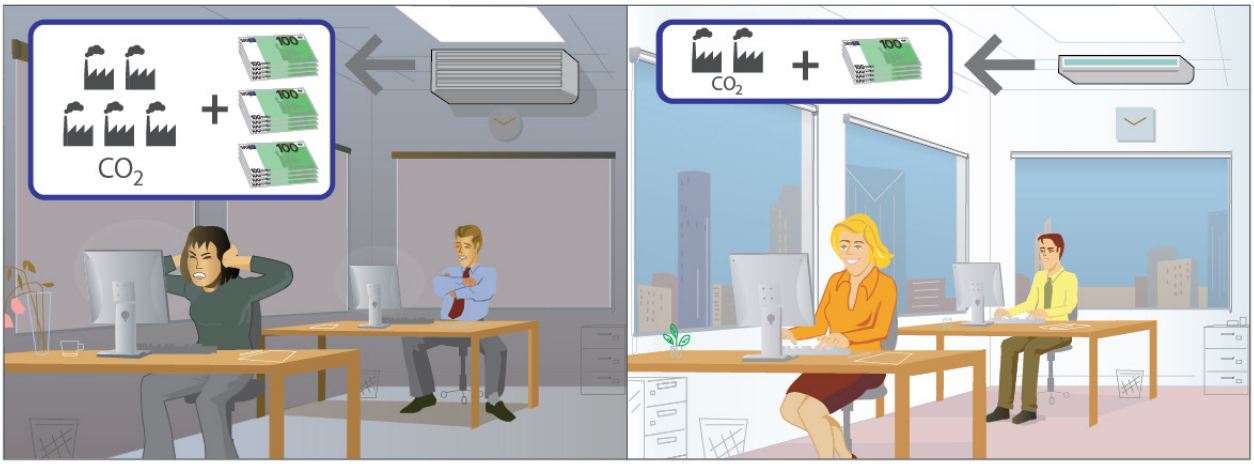
Intent: To achieve an increased level of operating energy performance relative to typical buildings of similar type to reduce environmental impacts associated with excessive energy use. Pls. Note: 2 point mandatory.

Verosol:
In the requirements 3 options are mentioned as compliance path. Which path to choose is depending on the fact if the building has an EPA rating using the ENERGY STAR.
In general, for this point the energy savings calculator can be a tool to use to show the differences in type of glass and shading used in similar buildings, the amount of glass used in the building in combination with fabrics from Verosol and other alternatives. Fabrics from Verosol will contribute positively to minimizing energy costs. Depending on the impact of the energy saving the points 2 to 15 can be given.

- **Credit 5: Refrigerant Management (1 point possible)**

Intent: To reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to global warming.

Verosol:
Good solar shading, like the products from Verosol, will help saving energy. The metallised solar shades help to reduce heat loss in winter – for example during the night. In the summer metallised solar shades keep out unwanted solar heat. This brings an attractive reduction in both heating and cooling.



- **Credit 6: Emissions Reduction Reporting (1 point possible)**

Intent: To document the emissions reduction benefits of building efficiency measured. Required is to identify building performance parameters that reduce convential energy use and emissions, quantify those reductions and report them to a formal tracking program.

Verosol:
Good solar shading can reduce the heat gain from sun radiation by between 50-70%. This also prevents the creation of heat peaks and heat radiation. As a result of this, often a lower cooling capacity is needed, and with that reduced CO2 emissions can be achieved (and calculated). Therefore Verosol's products can contribute significantly to reducing CO2 emissions.

Materials and Resources (MR):

- **MR Prerequisite 1: Sustainable Purchasing Policy Required**
- **MR Credit 3: Sustainable Purchasing: Facility Alterations and Additions (1 point possible)**

Intent: To reduce the environmental impacts of materials acquired for use in the operations, maintenance and upgrades of buildings.

This chapter is about having an Environmental Preferable Purchasing (EPP) policy that includes, at a minimum, product purchasing policies for the building and site addressing the requirement of MR credit 1. At a minimum, the policy must cover those product purchases that are within the building and site management's control. For these group of products their has to be an evaluation to identify environmentally friendly alternatives.

Verosol:
In the details window covering fabrics are not mentioned specific, like Adhesives & Sealants, Paints&coatings, Carpet systems or Composite wood & Agrifiber Products are. But this is one of the points were the Greenguard certification on Indoor Air Quality comes in. Having our product ranges, produced in an ISO 14001 certified enviroment and certified according to Indoor Air Quality Greenguard Programme (incl. Children and School application) will make a strong contribution to the IAQ management plan of a building. Verosol is IAQ / Greenguard certified for the 3 fabric ranges: Verosol (816, 812, 849, 878), SilverScreen and EnviroScreen (802, 810).

Children & Schools
GREENGUARD®
Indoor Air Quality Certified

Indoor Environmental Quality (EQ)

- **EQ Credit 1.1: IAQ Best Management Practices (1 point possible)**

Intent: To enhance Indoor Air Quality (IAQ) by optimizing practices to prevent the development of indoor air quality problems in buildings, correcting indoor air quality problems when they occur and maintaining the well-being of the occupants.

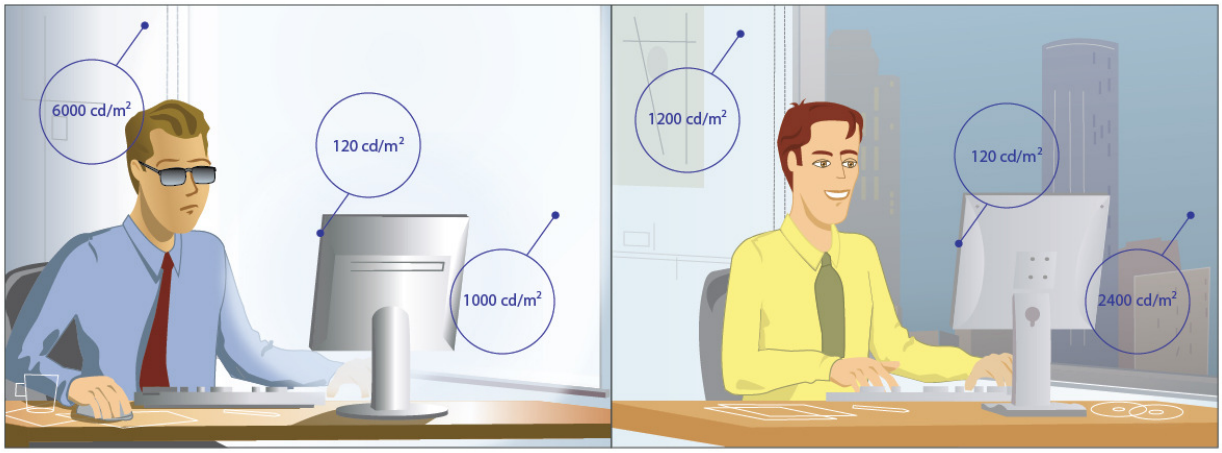
Verosol:
Having our product ranges certified according to Indoor Air Quality Greenguard Programme (incl. Children and School application) will make a strong contribution to the IAQ management plan of a building. The certification for IAQ / Greenguard includes the 3 fabric ranges: Verosol, SilverScreen and EnviroScreen.

- **EQ credit 2.1.: Occupant Comfort: Occupant Survey (1 point possible)**

Intent: To provide for the assessment of building occupants' comfort as it relates to thermal comfort, acoustics, indoor air quality, lighting levels, building cleanliness and any other comfort issues.

Verosol:
Verosol's products will contribute to the following points:

- Thermal comfort: This is one of the key selling points of Verosol. The high reflectance metallized backing when used under the right conditions guarantees' a (thermal) comfort atmosphere for the occupants.
- Indoor Air Quality: Greenguard certified for the 3 fabric ranges: Verosol, SilverScreen and EnviroScreen.
- Lighting levels: Given the fact that the quantity of daylight varies strongly from window to window and from office space to office space, each window can be equipped with brightness regulation. The better the brightness can regulated (Twin-concept) with solar shading, also more freedom is created for arranging the workplaces. Furthermore "Daylight-Harvesting" products can contribute to increasing lighting levels and helps to reduce the use of artificial lighting and electricity consumption. "Daylight Harvesting" is possible by placing the window covering products not on top of window/ceiling, but lower, to enable daylight to enter the room. This is of course depending on the height of the windows.

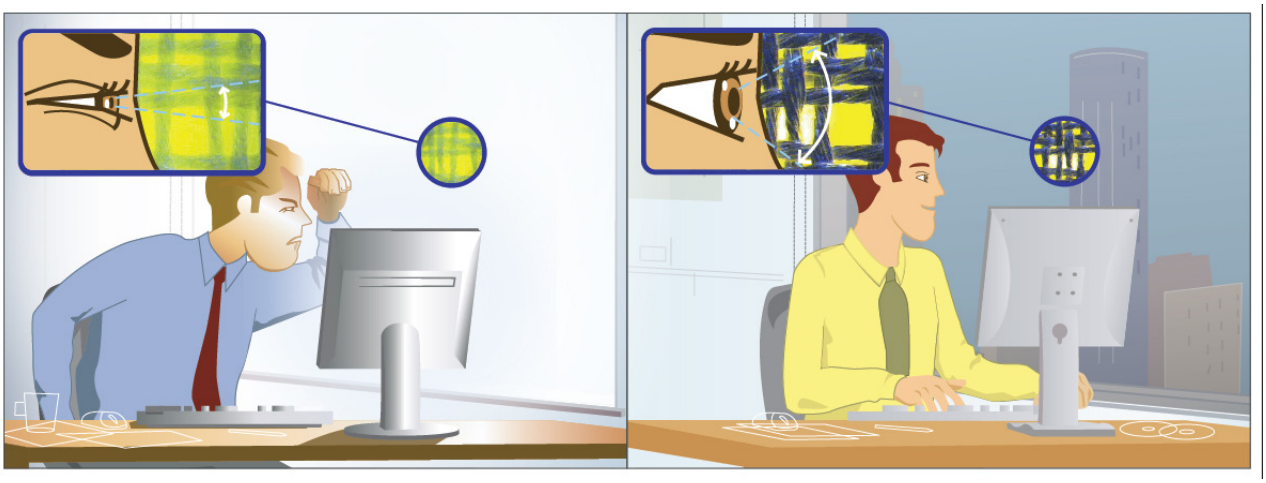


- **EQ Credit 2.2: Occupant Comfort: Occupant-controlled Lighting (1 point possible)**

Intent: To provide a high level of lighting control by individual occupants or specific groups in multi-occupants spaces (e.g. classrooms or conference areas) to promote the productivity, comfort and well-being of building occupants.

Verosol:
Additional to the intent is mentioned in this paragraph that at least 50% of the building occupants use lighting controls that enable adjustments to suit the task needs and the preferences of individuals or a group sharing a multi-occupant space or working area. Individuals should be able to influence their personal needs and preferences. By using individual operated twin-blinds, with a transparent + non-transparent fabric, one creates an optimal solution. Individuals in the room are able to position the blinds to their personal

needs at that moment: completely closed when a presentation is given, or open on a cloudy day, or the transparent fabric lowered on a sunny day, still enabling individuals in the room to do computer work without glare problems.
By offering this personalised solution, like a view trough, even on sunny days, individuals are aware of the time and weather during the day, which will contribute positively to their natural day-rhythm and well-being and with that to their productivity.
By controlling the lighting and blinds, daylight harvesting can significantly reduce the energy consumption of artificial lighting.



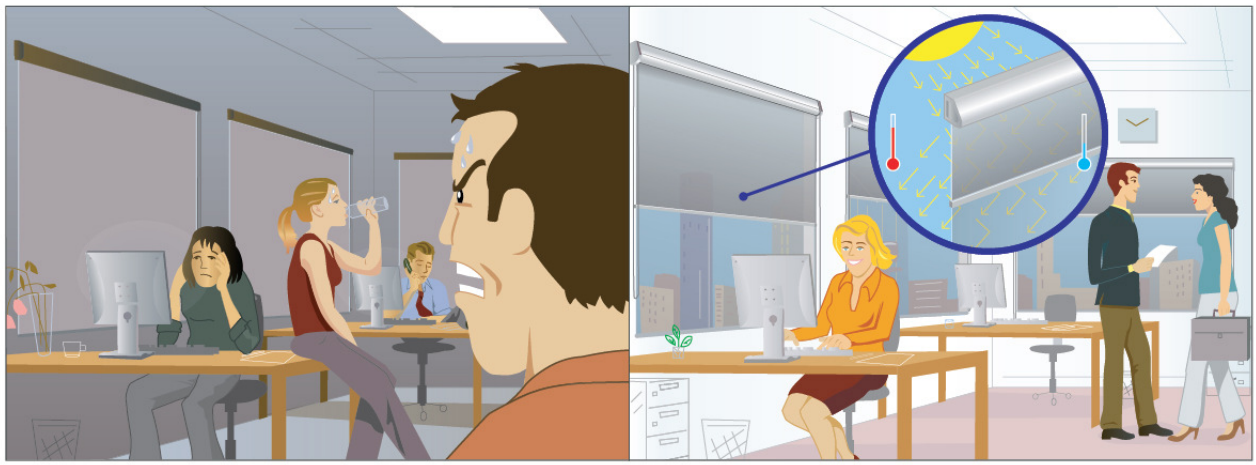
- **EQ Credit 2.3: Occupant Comfort: Thermal Comfort Monitoring**
  (1 point possible)

Intent: To support the appropriate operations and maintenance of buildings and building systems so that they continue to meet target building performance goals over the long term and provide a comfortable thermal environment that support the productivity and well-being of building occupants.

Have in place a system for continuous tracking and optimization of systems that regulate indoor comfort and conditions (ait temperature, humidity, air speed and radiant temperature) in occupied spaces. The requirements also refers to an ASHREA standard 55-2004. This standard combines comfort criteria: desired quality and occupant satisfaction with building performance.

Verosol:
Thermal comfort is one of the key selling points of Verosol. The high reflective metallized backing when used under the right conditions guarantees' a (thermal) comfort atmosphere for the occupants, which can be made objective with the energy-saving-calculator.

The radiant temperature in the occupied spaces can easily be adjusted to the desired level by using individual operated twin-blinds, with a transparent + non-transparent fabric, one creates an optimal solution. Individuals in the room are able to position the blinds to their personal needs at that moment: completely closed when a presentation is given, or open on a cloudy day, or the transparent fabric lowered on a sunny day, still enabling individuals in the room to do computer work without glare and thermal comfort problems.



- **EQ Credits 2.4 and 2.5: Occupant comfort: Daylight and Views (2 points possible)**

Intent: To provide a connection between indoor spaces and the outdoor environment through use of daylight and views in the occupied areas of the building.

Achieve a minimum of daylight factor of 2% (excluding all direct sunlight penetration) in space occupied for visual tasks.
And:

- **Credit 8.2 Daylight & Views – Views 90% of Spaces (1 point possible)+**
- **Credit 8.1 Daylight & Views – Daylight 75% of Spaces (1 point possible)**

Intent: Provide for the building occupant a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

To meet this requirement 3 options are mentioned:

A. Measurement: Indoor light measurements
B. Calculation: of the glazing factor
C. Simulation: by computer simulation

In all of the above mentioned options: provide daylight re-directions and/or glare control devices to avoid high contrast situations that could impede visual tasks.

Verosol:
Products from Verosol can make a contribution: The use of transparent, still highly reflective fabrics, to create outside views, without having glare problems. Furthermore “Daylight Harvesting” is possible by placing the window covering products not on top of window/ceiling, but lower, to enable daylight to enter the room. This is of course depending on the height of the windows.

Innovation in Operations

- **Credit 1.1 – 1.4 Innovation in Design (1-4 points possible)**

Intent: To provide building operations, maintenance and upgrade teams with the opportunity to earn points for additional environmental benefits achieved beyond those already addressed by LEED for Existing Buildings: Operations& Maintenance Rating System.

Required in to achieve exemplary performance in an existing LEED for Existing Buildings or achieve significant, measurable environmental performance using an operations, maintenance or system upgrade strategy not addressed in the LEED for Existing Buildings.
.

Verosol:
While the achievable points can be given for substantial energy performance and quantifiable environment benefits, a possibility is to show the differences in performances of the fabric's from Verosol compared to similar fabric from competition. Again it can be measured what the potential differences in energy performances will be, when used in proper conditions.

Furthermore by extracting the air gap between glass and Verosol blind and exhaust this heated air a very effective façade is realised whereas in winter this heat can be used to preheat fresh air (by a heat exchanger).