



REDEFINING SOLAR SHADING



Agenda



Redefining Solar Shading

- Today's challenges in the industry
- Future calculation requirements
- A vision for the industry

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The Problem



Daylight, View Out or Energy Reduction?

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Daylight, View Out or Energy Reduction

What does science say?



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- Patients in south facing wards tend to stay 8-50% shorter than those in the wards facing north.

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- Patients in south facing wards tend to stay 8-20% shorter than those in the wards facing north
- With good daylight, symptoms such as eyestrain, headaches and blurred vision are reduced by 84%.



Daylight, **View Out** or Energy Reduction

What does science say?



- Students who are taught in bright classrooms with a good view to the outside have about 1 to 2 months per school year advantage over those whose view is obstructed.

- Lack of a view out can lead to a sense of isolation

Good daylight and views are important factors in the well-being and thus to the productivity of employees.



Daylight, View Out or Energy Reduction

What does science say?



- Driven by EU regulations (EBPD 2010), many EU countries already have strong legislation for energy in buildings.
 - The well-being of the employee is highly dependent on the temperatures in the workplace
- There's a clear correlation between temperatures and productivity.

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Daylight, View Out **or** Energy Reduction

Great compromises in the façade solution



Future calculation requirements



Calculation Methods

EU legislations



Light Calculation (L_T -Value)
Open shading



Solar Protection (g-Value)
Closed shading



Calculation Methods

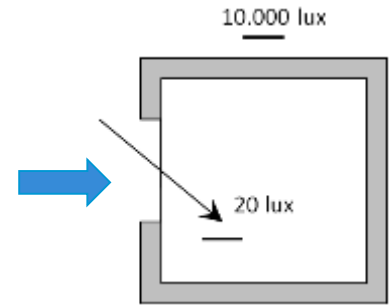
Daylight Factor



- Most building legislation permit us to calculate daylight with the screen up and solar protection with the screen closed.
- Until now, the Daylight Factor has been the ruling calculation method
- The Daylight Factor does not take into account orientation, location, different light conditions or dynamic solar shading solutions!
- It is a purely theoretical value!

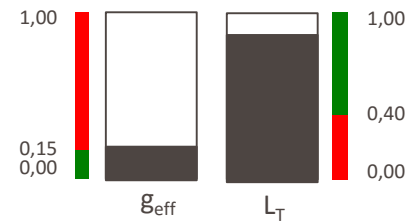
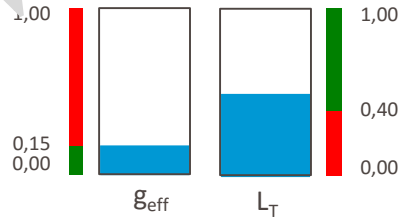
Daylight Factor:

The ratio between the light at the inside working area (table) and the illuminance in the open air in a horizontal plane from a overcast sky



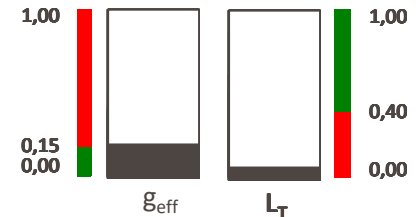
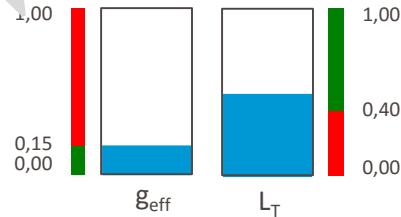
Calculation Methods

Theory vs. Practice



Calculation Methods

Theory vs. Practice



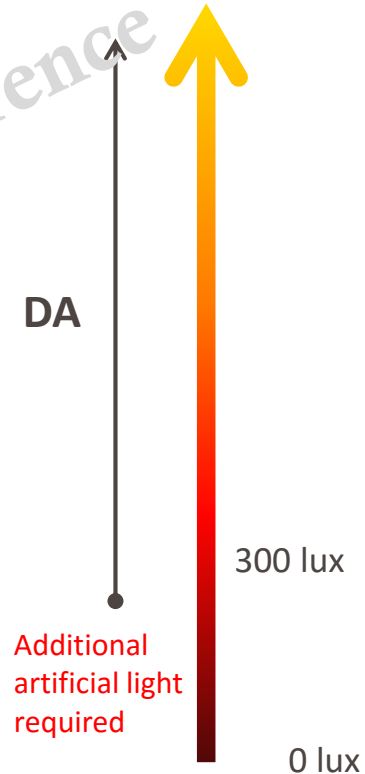
Future Calculation Requirements

EN 17037 – Spatial Daylight Atonomy



- 300 lux or more in at least 50% of the daylight hours for at least 50% of the work surface
- sDA takes into account weather, dynamic sun shading solutions, orientation, surrounding shadows
- sDA says nothing about the risk of glare (the more daylight the better)
- sDA is a more realistic estimate of the actual daylight conditions in a building
- sDA_{300,50} = min. 50% ← Percentage of area where the criteria must be met

↑ spatial
↑ Lower limit
↑ Percentage for hours with daylight



EN 17037 and EN 14501

Classification of view Out



EN 17037

- A view to the outside is also recommended: Minimum, Medium, High
- Viewing angle and visibility are the application criteria
- Larger window area shares are rated positively
- Problem: does not refer to the solar shading solution, but only to the "hole in the wall"
- The larger the glass area, the greater problems with overheating

EN 14501

- Classifies solar shading into groups from 0-4 for different shading and view out capabilities.

When reality replaces theory

sDA is a more realistic estimate of the actual daylight conditions in a building



(Other methods are still allowed)

A vision for the industry





SimShade

The software that simultaneously calculates light, view and energy protection



SimShade

Type in your information in the calculator below to get a detailed view:

Number of panes	Type of glazing	Place of shading	Type of shading	Shading contrast
3 layers	MicroShade	None	Select	Select

Element	mm	Product	Laminate
Pane 1	4	Clear	
Film 2		MS-A	
Gap 1	14	Argon 90%	
Coating 3		Low E	
Pane 2	4	Clear	
Gap 2	14	Argon 90%	
Coating 5		Low E	
Pane 3		Clear	



Your location	Window angle (°)	Orientation (°)
Select	90	150

Calculate

Facade/Room Building

Technical Specifications

Summer effect (EN410)	
Light transmission (EN410)	
U-value (EN410)	
Color rendering (EN410)	

Detailed technical datasheet

Detailed Technical Specifications

Tenderlist
B50F-Nav-cal file
Calculation guidelines

Economics

Cost of glazing pr. m²	- €/m²
Additional cost for MicroShade®	- €/m²
Cost of maintenance pr. m² pr. year	- €/pr
Total cost of ownership over 20 years pr. m²	- €/m²

Detailed economic calculator

Detailed Economic Specifications

Warranty

Environmental Specifications

DGNB, LEED and BREEAM are the three leading voluntary certification schemes, when it comes to sustainability assessment of buildings.

Detailed Environmental Specifications

Environmental Product Declaration
Life Cycle Assessment
Building Certification (DGNB, LEED, BREEAM)

Print report

Compare

Our Vision for the Industry

Daylight, View out **AND** Energy reduction



Tools for performance simulation of facade solutions:

✓ Basic SimShade® introduced June 2019.

- Glass and façade component performances
- Includes exterior shading

- Building data integration into SimShade® October 2019

- Basic access to performance data in buildings
 - indoor temperatures, sDA and view out
- Daylight calculations based on Radiance software
- Indoor climate and temperature calculations based on EnergyPlus software
- Daylight and Energy requirement calculations in one easy-to-use tool



MicroShade®

High Performance Façade Solutions



Let's build better buildings!

In MicroShade we always simultaneously consider :

- Highly effective shading
- Natural daylight
- View to the outside

This we provide in both our product and in our calculation tool

microshade.net

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