

# 日光照明系統

## Showing daylight the way

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Light is OSRAM



# Agenda

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# Significance of daylight

## Pros



### 陽光的美麗

- 天然且**免費**的資源
- 主導**生理節奏**
- 提供**天氣、色彩、氣溫、時間**等環境資訊
- **節能**降低碳排放
- 有效的替您**省錢**

# Significance of daylight

## Cons

陽光的哀愁...

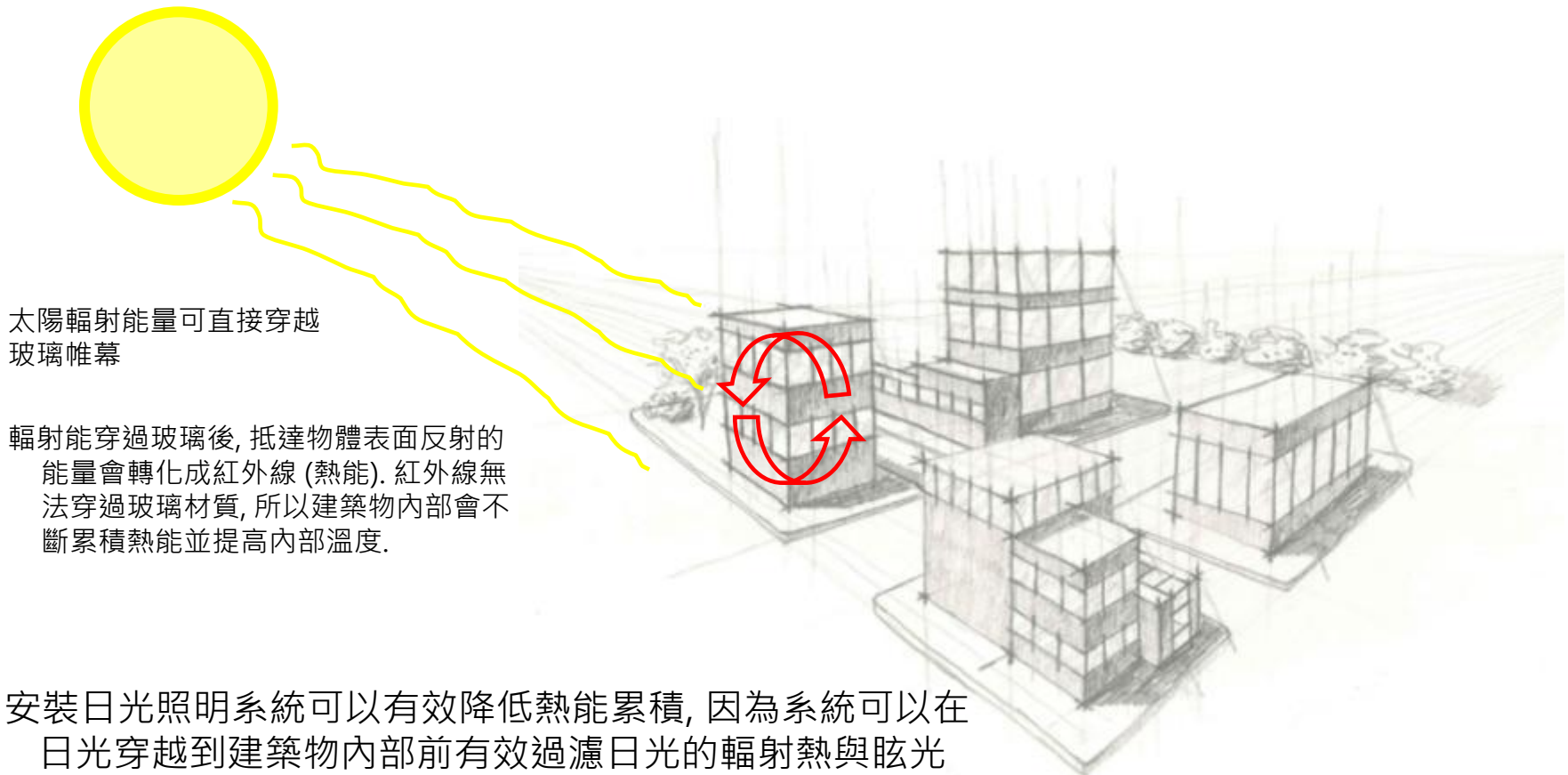
- 產生熱能
- 日光照度隨時間變化(不穩定)
- 強光產生不適與眩光

所以需要提供更有效率的日光照明系統保護建物玻璃牆面與屋頂



# Features of daylight

## The greenhouse effect



# Daylight systems

把自然的陽光加入你的照明需求

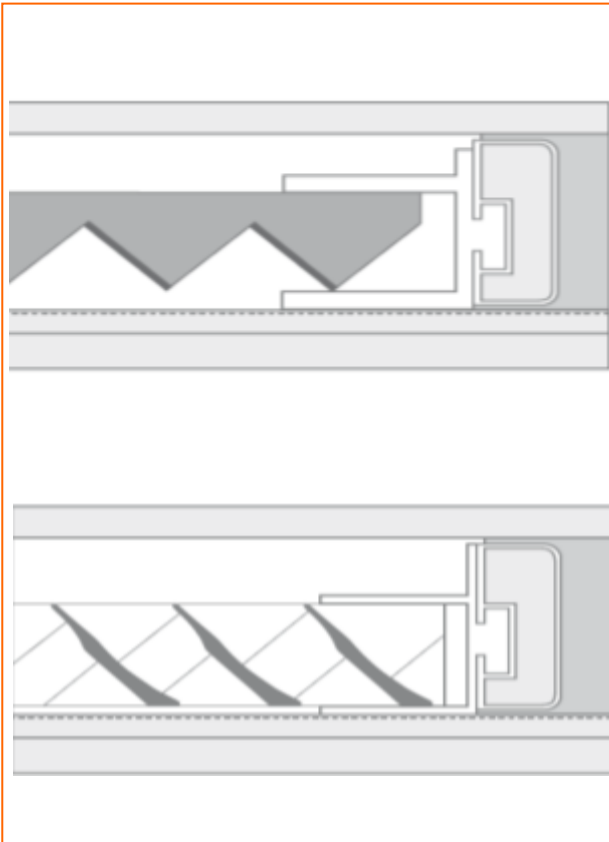


日光照明系統...

- 可以擷取日光的優點, 彌補日光的缺點
- 可以**節約能源**
- 可以**增加設計彈性**
- 可長可久
- 可以創造**舒適空間環境**:
  - 降低室內熱能累積
  - 消除眩光同時保持室內照度
  - 日光均勻灑落室內的景色

# Features of Daylight Systems

## 產品分類



### 稜鏡系統

整合地理位置資料與光學環境 (穿透, 折射, 反射等特性)

### 反射鏡系統

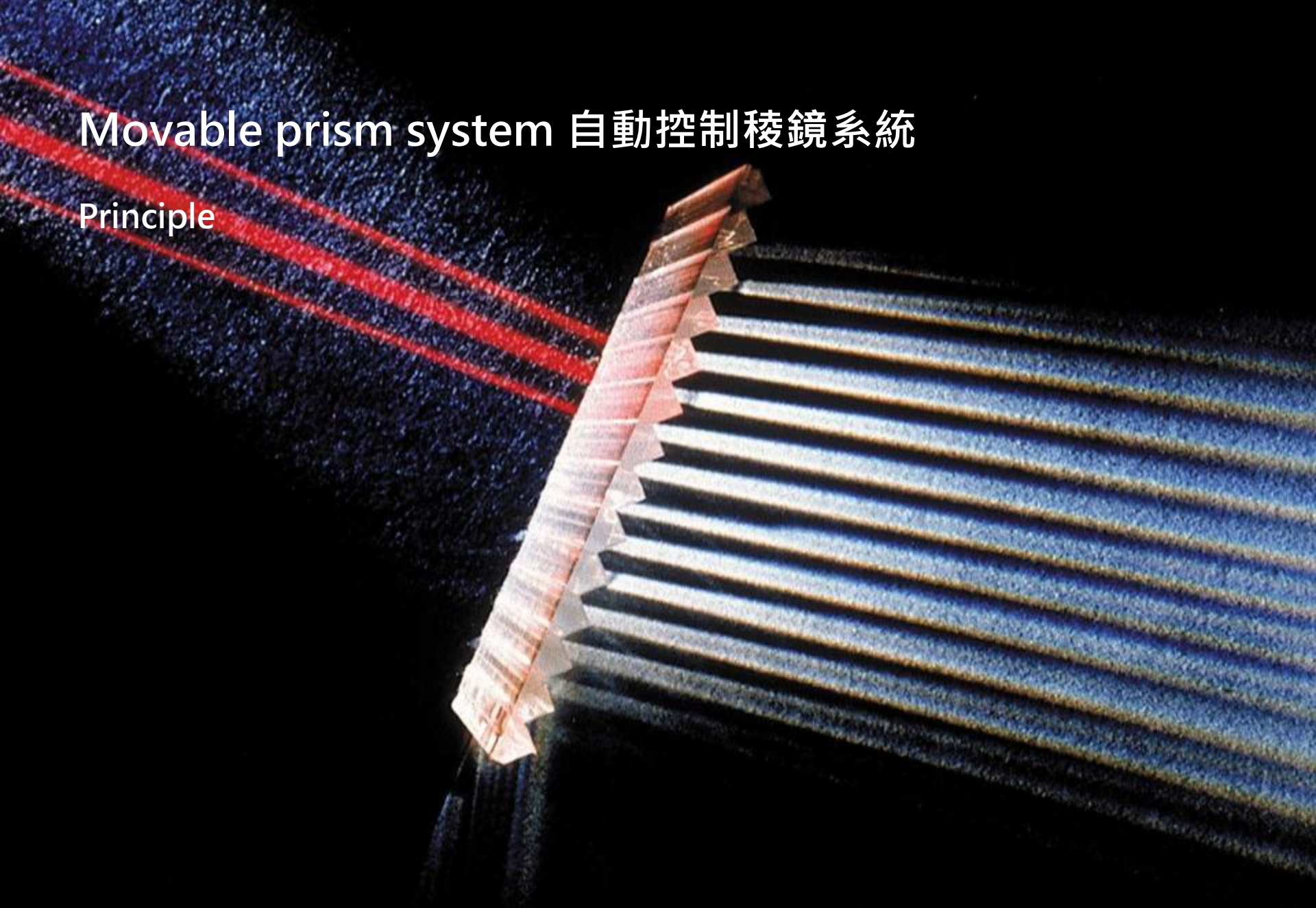
精密計算後的曲面與材質

2種系統透過不同的科技與材料可達成以下1至3種的機能

- 日光防護
- 導引日光方向
- 消除眩光

# Movable prism system 自動控制稜鏡系統

Principle

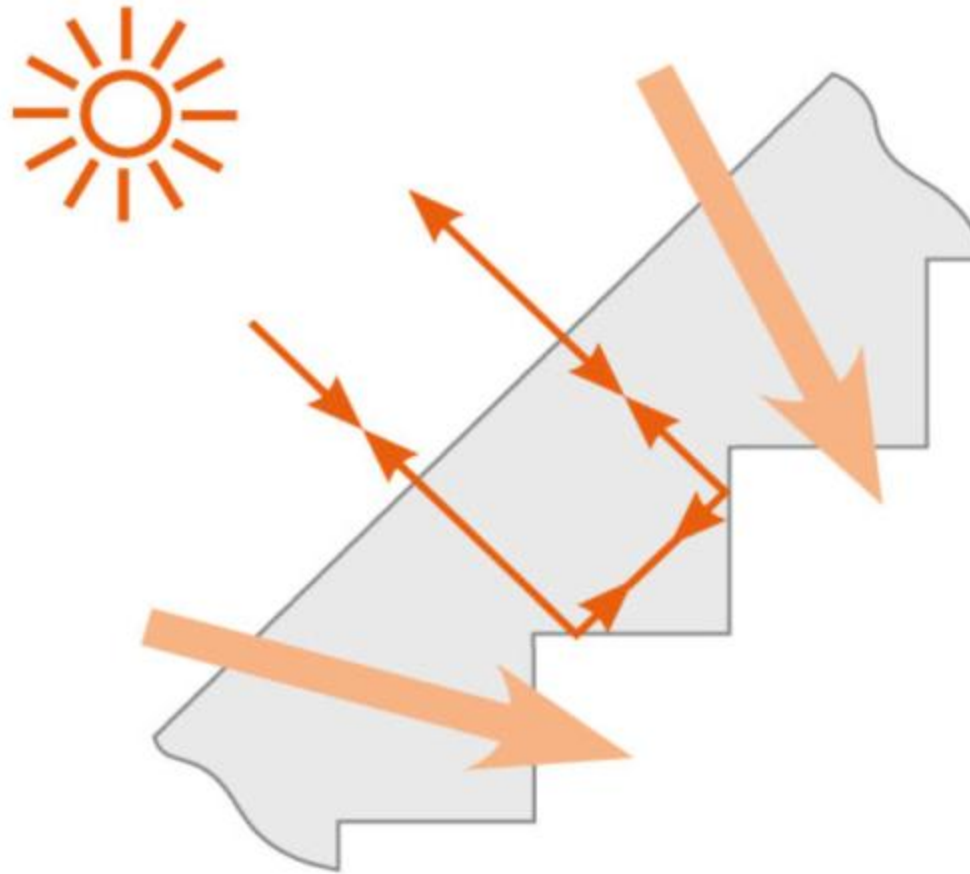




# Movable prism system 自動控制稜鏡系統

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## Functionality



# Movable prism system 自動控制稜鏡系統

## Technical data



Dimensions 310 x 750 x 12 mm

Total energy transmission value  $g < 12\%$

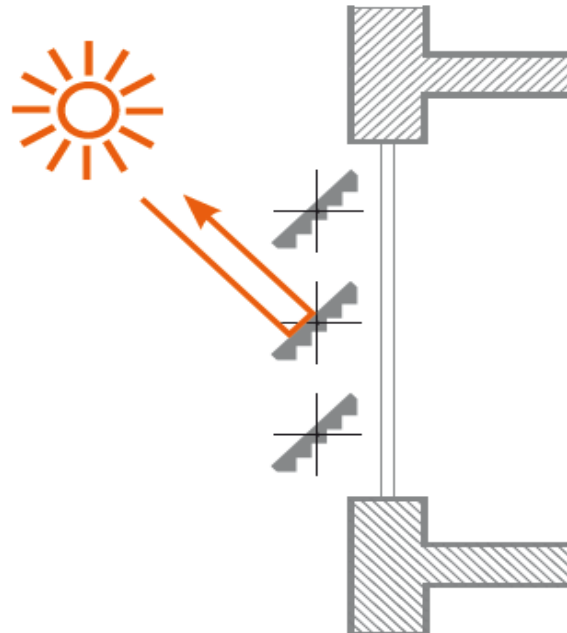
Light transmission  
in sun shielding position  $\tau = 53\%$   
in horizontal position  $\tau$   
= 74 %

### Pros:

- 高透光度, 有效防護陽光傷害
- 可調整為全透光(無防護)的薄片機構
- **全自動控制**
- 精密且穩定的機械結構

# Movable prism system

## Application



牆面	屋頂	新建物	整修建物	抗輻射熱	消除眩光
++	+	++	0	++	0

# Movable prism system 自動控制稜鏡系統

Emergency hospital Linz, Austria



Architect: Prof. Lintl & Moser Architects, Vienna



# Movable prism system

Emergency hospital Linz, Austria

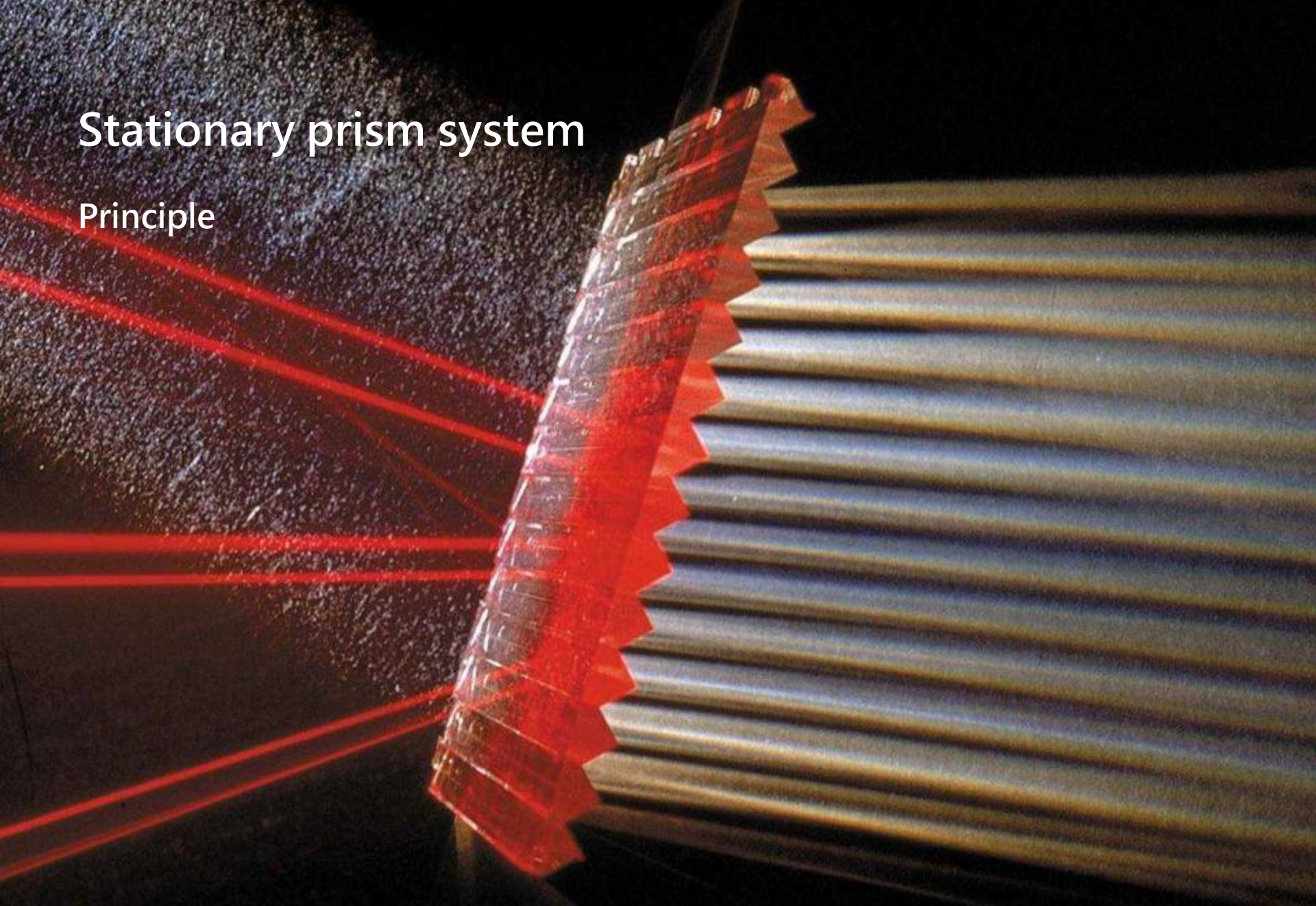


Architect: Prof. Lintl & Moser Architects, Vienna



# Stationary prism system

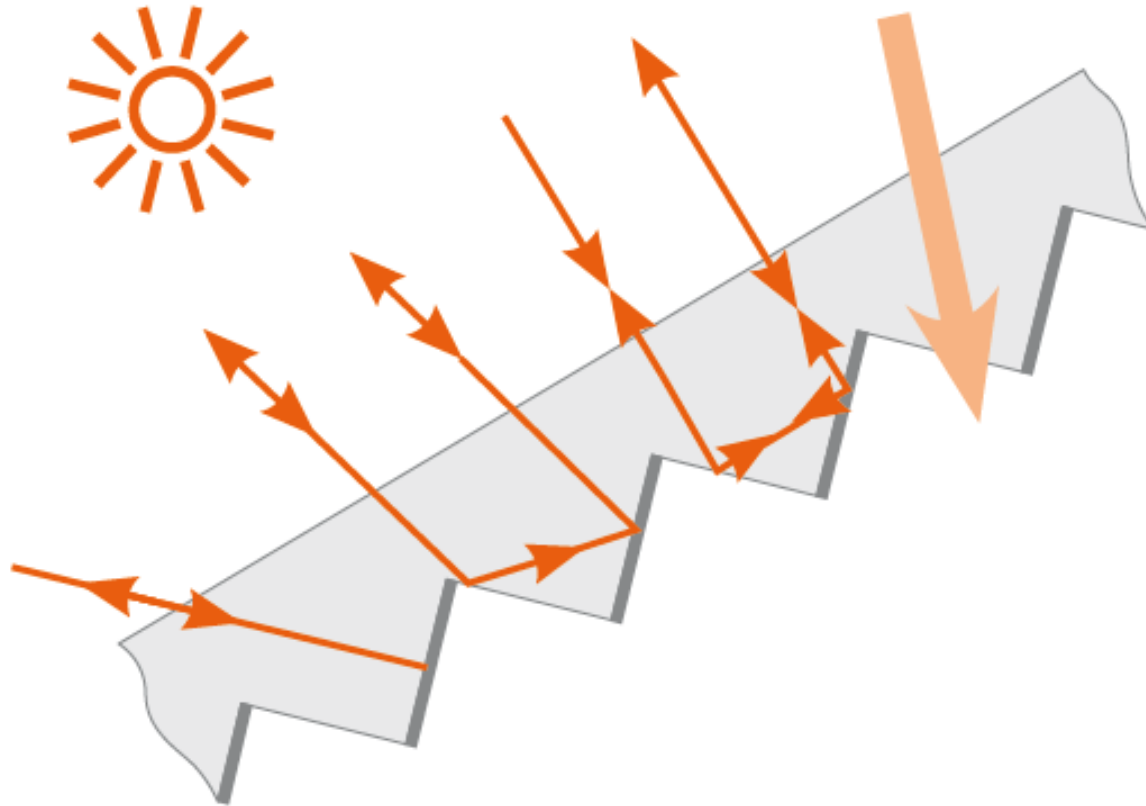
## Principle



# Stationary prism system 固定稜鏡系統

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## Functionality



# Stationary prism system 固定稜鏡系統

## Technical data

Dimensions (max.) approx. 2.20 x 3.00 m  
respectively approx. 1.50 x 4.00m

Airspace 20 mm

Total energy transmission value  $g = 15\%$

### Light transmission

dependant on the angle of incidence  $\tau = 0 -$

65 %

diffuse

$\tau = 27 - 40 \%$

Color rendering index CRI= 98

Thermal transmittance  $U = 1.5 - 1.7$   
W/m<sup>2</sup>K

### Pros:

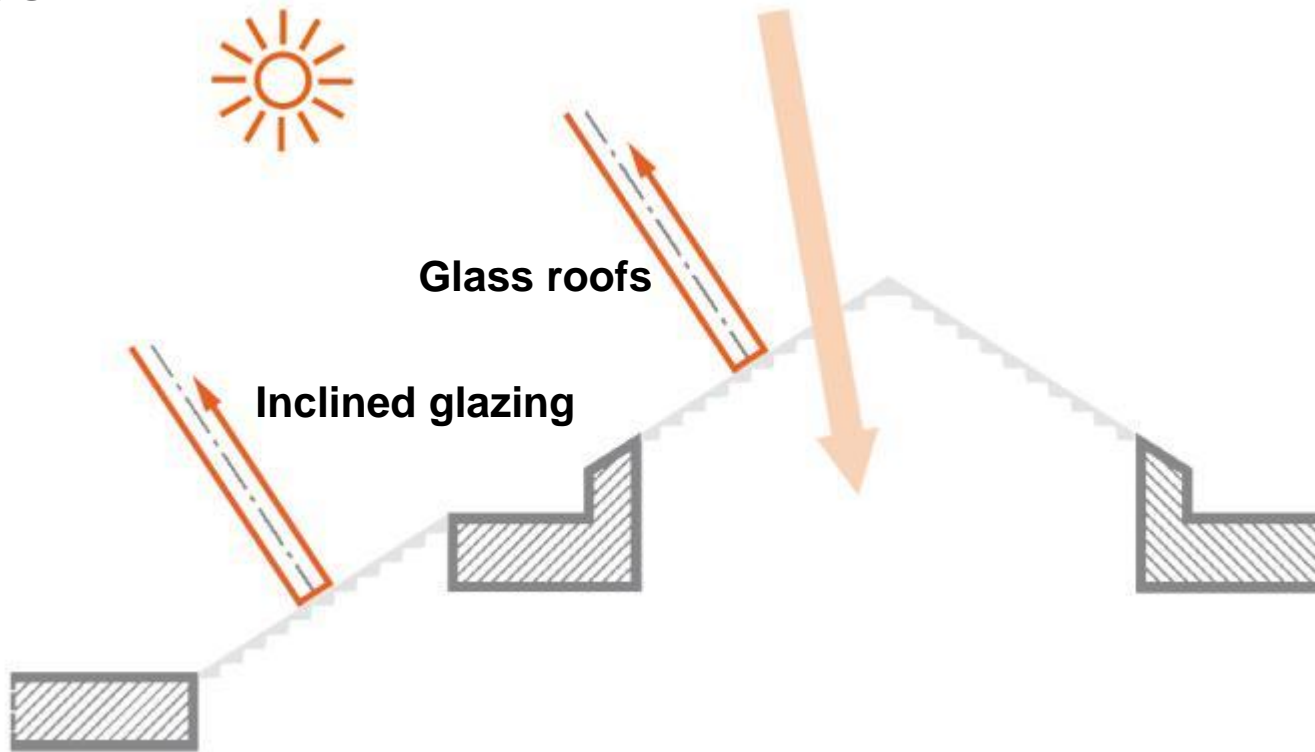
- 高透光度且有效防護陽光輻射能
- 無機械結構
- 低維護需求





# Stationary prism system 固定稜鏡系統

## Application



牆面	屋頂	新建物	整修建物	抗輻射熱	消除眩光
0	++	++	+	++	+

# Stationary prism system

Chamber of the Bavarian Parliament Maximilianeum, Munich



Architect: Volker Staab Architects, Berlin / Light Consultant: Licht Kunst Licht, Bonn/Berlin

# Stationary prism system 固定稜鏡系統

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# Stationary prism system 固定稜鏡系統

Villa Vauban, Luxembourg



Architect: Ph. Schmit, Luxembourg / Light Consultant: Licht Kunst Licht, Bonn/Berlin



# Stationary prism system 固定稜鏡系統

Villa Vauban, Luxembourg

Architect: Ph. Schmit, Luxembourg / Light Consultant: Licht Kunst Licht, Bonn/Berlin



# Stationary prism system 固定稜鏡系統

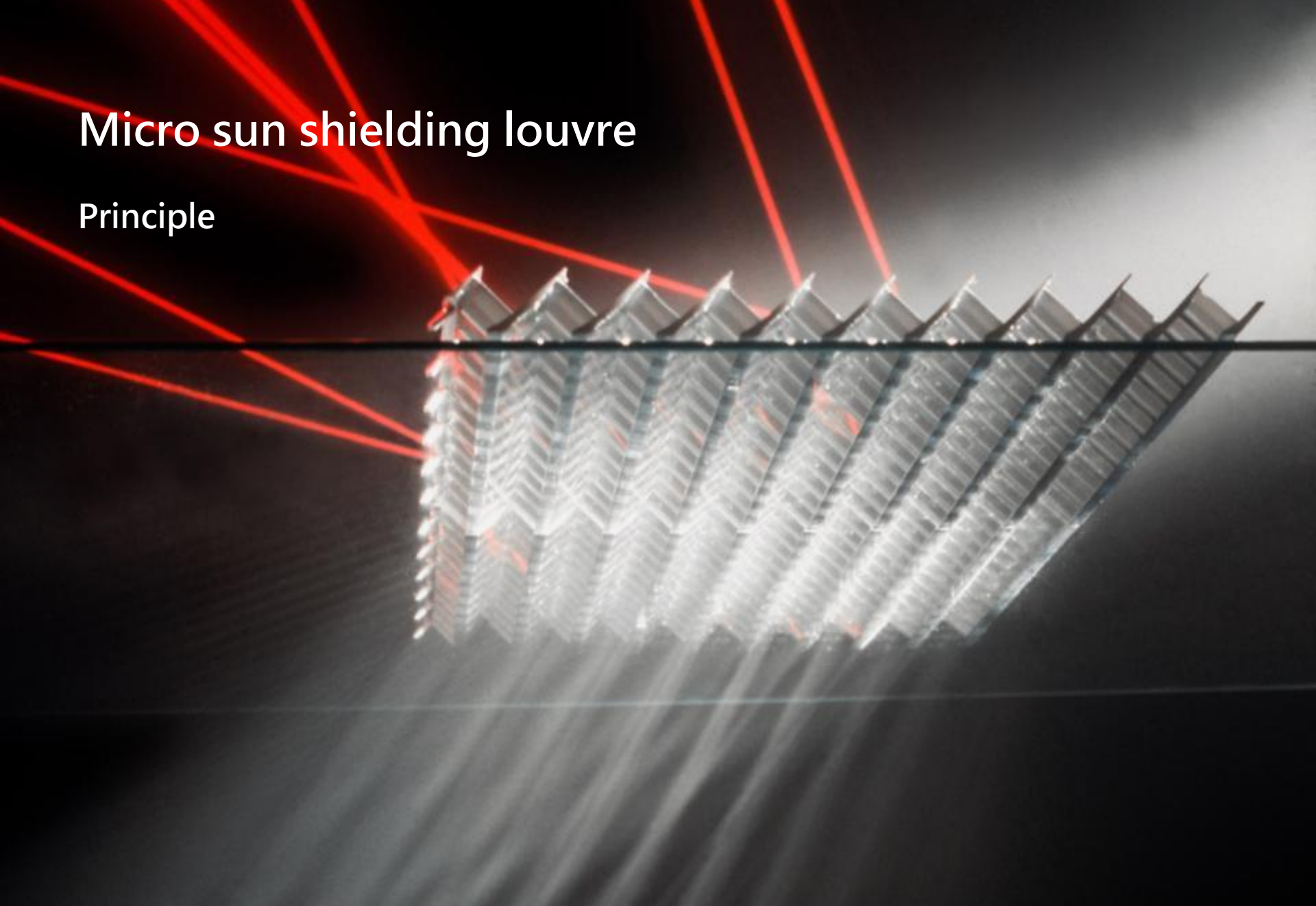
Neue Galerie, Kassel, Germany



Architekt: Volker Staab Architekten, Berlin / Light Consultant: Licht Kunst Licht, Bonn/Berlin

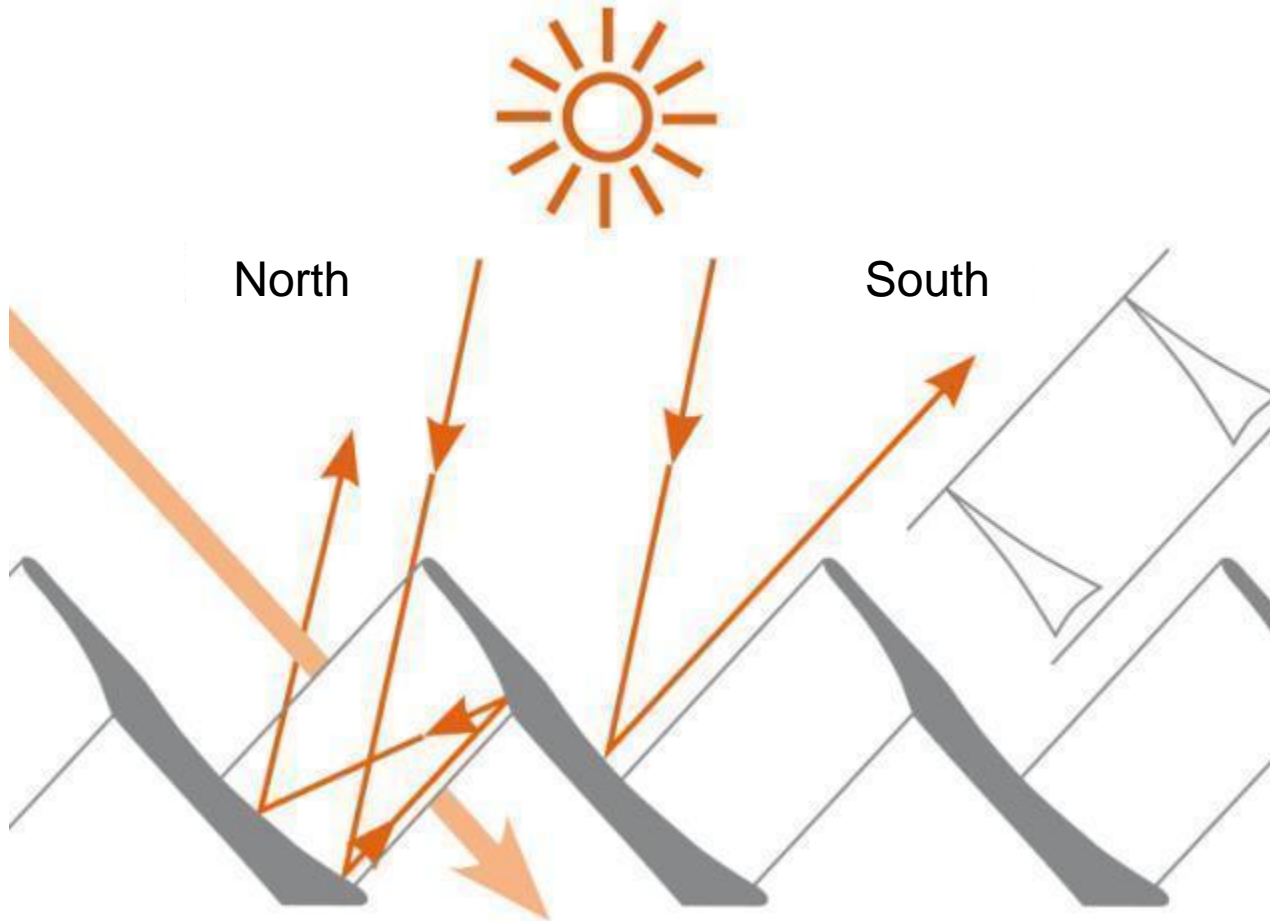
# Micro sun shielding louvre

## Principle



# Micro sun shielding louvre 微型反射鏡系統

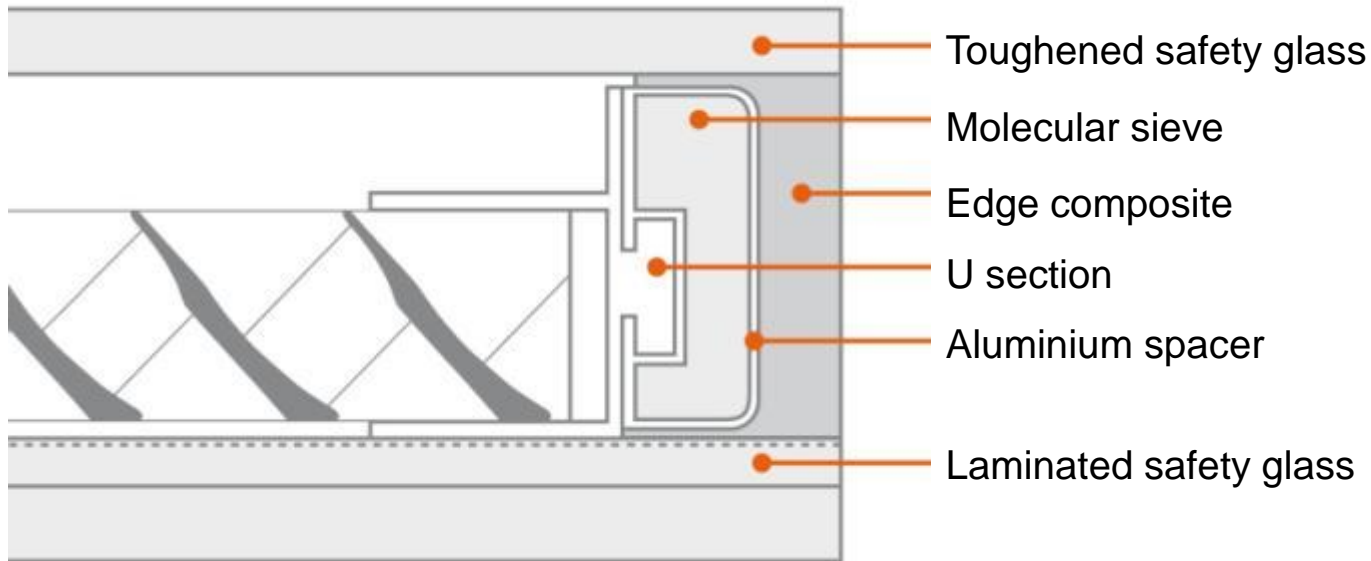
## Functionality





# Micro sun shielding louvre 微型反射鏡系統

Securely integrated in glass



# Micro sun shielding louvre 微型反射鏡系統

## Technical data

Dimensions (max.) approx. 2.20 x 3.00 m  
respectively approx. 1.50 x 4.00 m

Airspace 24 mm

Total energy transmission value  $g = 14\%$

### Light transmission

dependant on the angle of incidence  $\tau = 0 - 55\%$  diffuse  
 $\tau = 12 - 38\%$

Thermal transmittance  $U = 1.1 - 1.7 \text{ W/m}^2\text{K}$

color rendering index CRI = 97

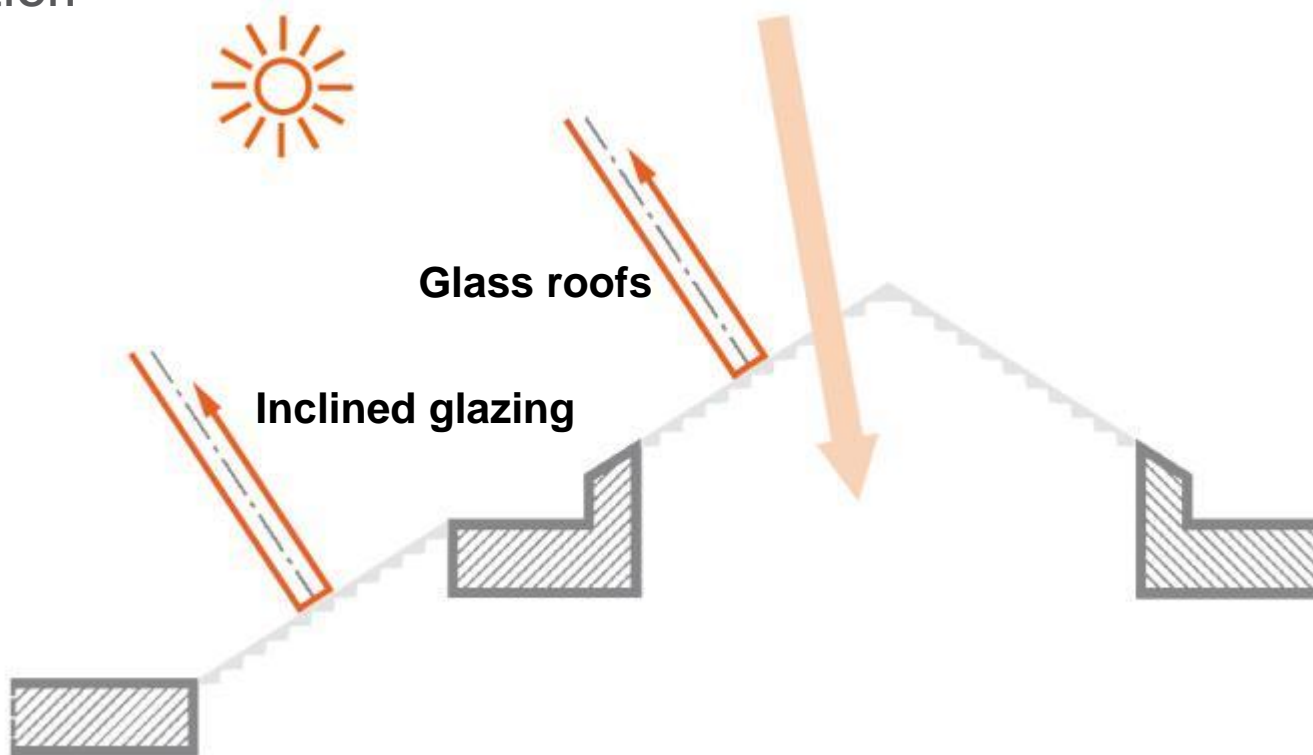
### Pros:

- 高透光度且有效防護陽光輻射能
- 無機械結構
- 低維護需求
- 針對北方具高透明度(指向性)



# Micro sun shielding louvre 微型反射鏡系統

## Application



牆面	屋頂	新建物	整修建物	抗輻射熱	消除眩光
0	++	++	+	++	+



# Micro sun shielding louvre 微型反射鏡系統

University library, Magdeburg, Germany



Architect: Auer+Weber Architects, Stuttgart





# Micro sun shielding louvre 微型反射鏡系統

Municipal Service Center, Erfurt, Germany

Architect: Dr. Worschech & Partner, Erfurt



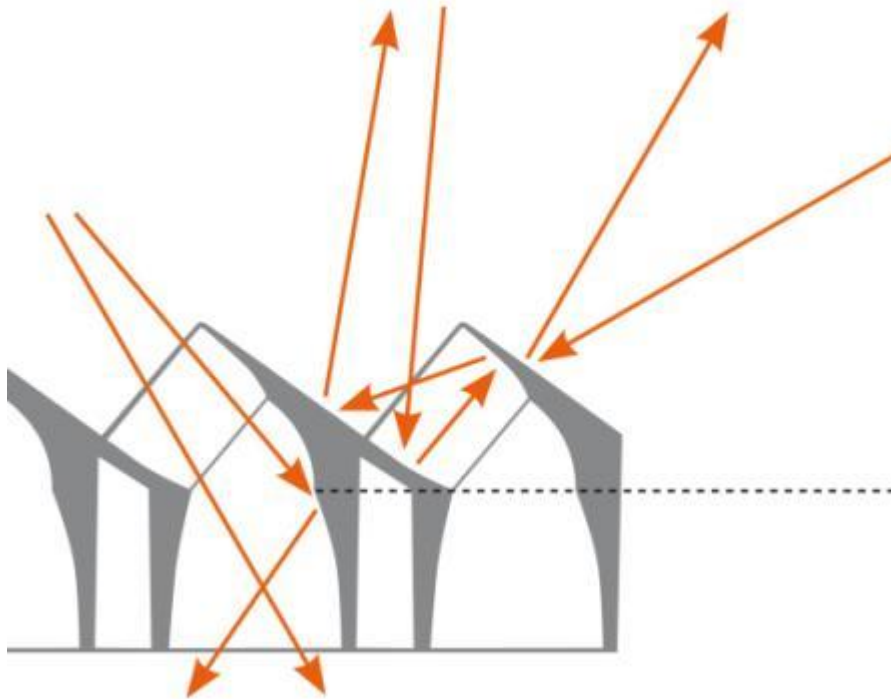
# CombiSol





# CombiSol 蜂巢反射鏡系統

## Functionality



### 1. level: sun protection

- Reflection of direct sun radiation
- Protection against heat gain in summer

### 2. level: glare protection

- Glare reduction in all directions
- Even light distribution

# CombiSol 蜂巢反射鏡系統

## Technical data

Airspace	24 mm
Total energy transmission value	$g = 12 \%$
Light transmission	
dependant on the angle of incidence	$\tau = 0 - 45 \%$
diffuse	$\tau = 13 \%$
Thermal transmittance	$U = 1.1 - 1.7$
W/m <sup>2</sup> K	
Dimensions (max.)	approx. 2.20 x 3.00 m respectively approx. 1.50 x 4.00 m



### Pros:

- 卓越陽光輻射能和眩光防護
- 最適合辦公室需求的產品
- 無機械結構
- 低維護需求

# CombiSol 蜂巢反射鏡系統

Control room Hamburger Hochbahn AG, Hamburg

Architect: Trapez Architektur, Hamburg / Light consultant: Vogt & Partner, Winterthur

# Q & A