

# Intelligente Lamellenstore

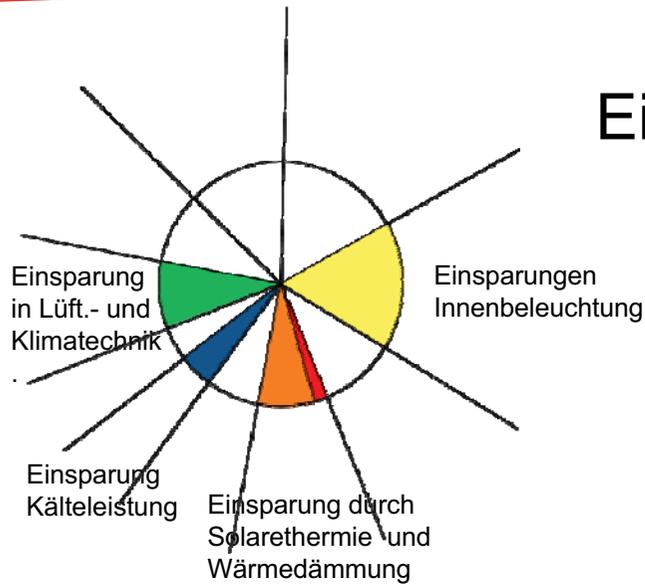
Forum-Energie-Zürich

Zürich 30.11.2010

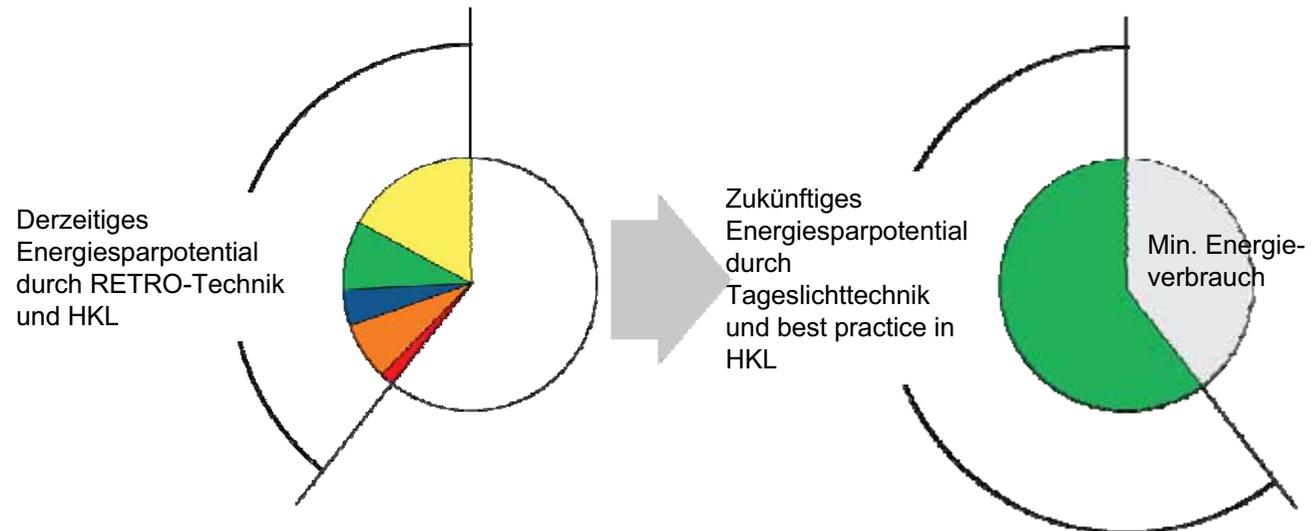
Dr.-Ing. Helmut Köster  
Köster Lichtplanung – Frankfurt/M  
[www.koester-lichtplanung.de](http://www.koester-lichtplanung.de)



Source:  
Department of Community, Trade and  
Economic Development,  
State of Washington, and EIA



## Einsparpotential mit RETROLux A

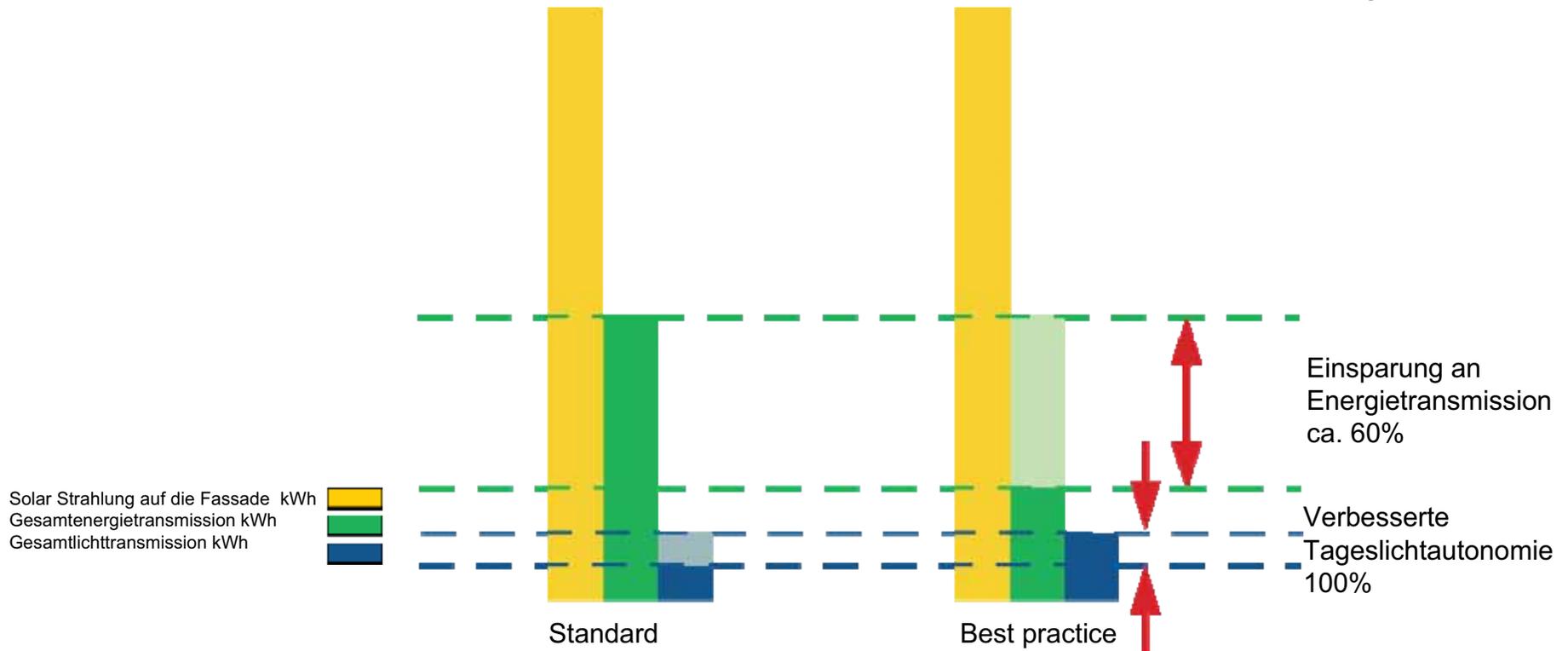


# Ziel der Tageslichttechnik:

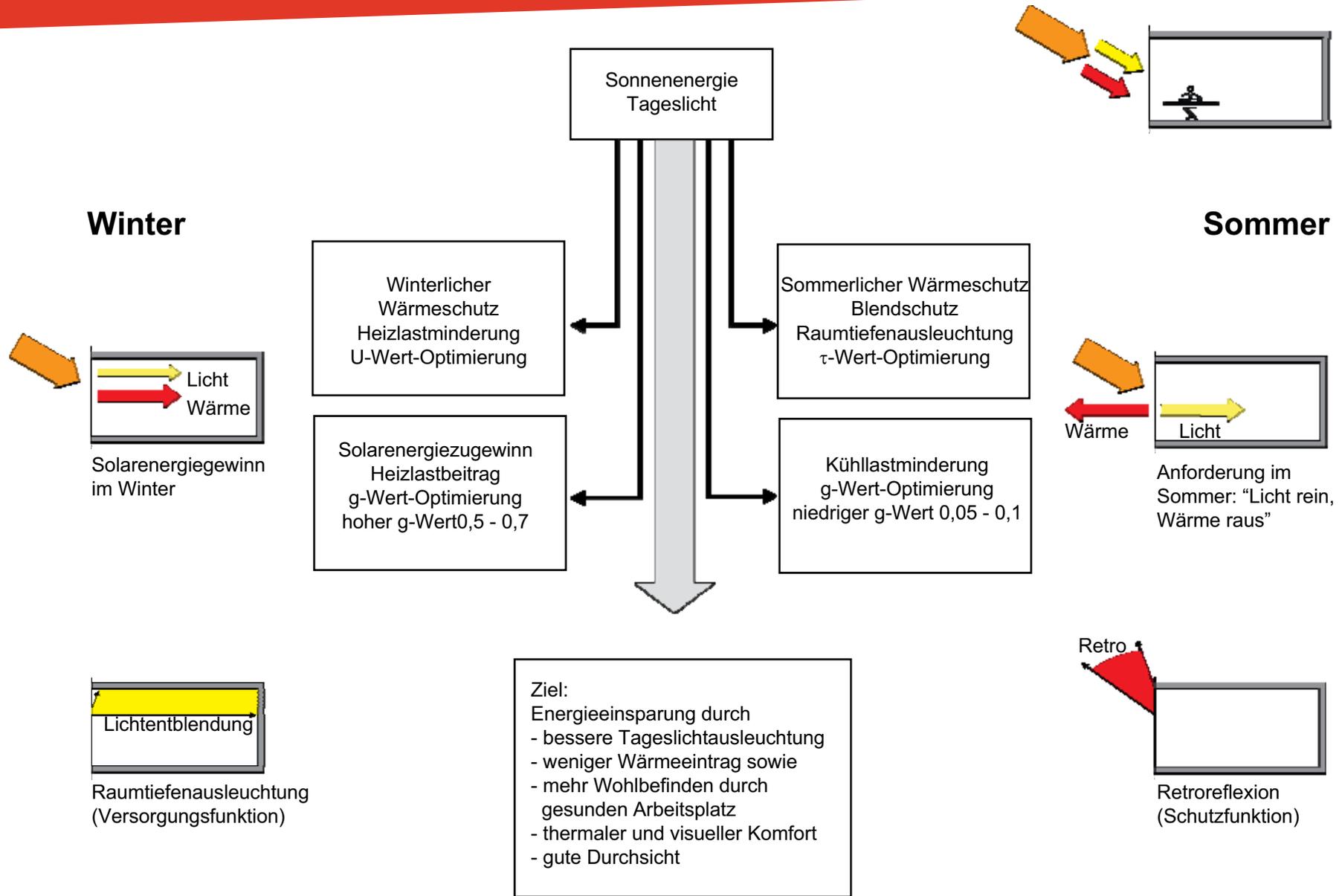
- Verminderung der Kühllast durch Retro-Reflexion
- Verminderung des Stromverbrauchs durch verbesserte Tageslichtautonomie



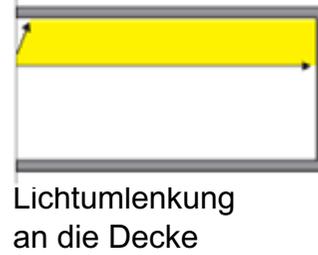
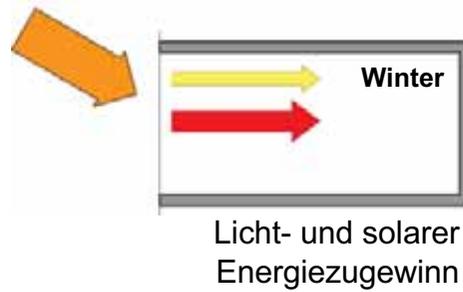
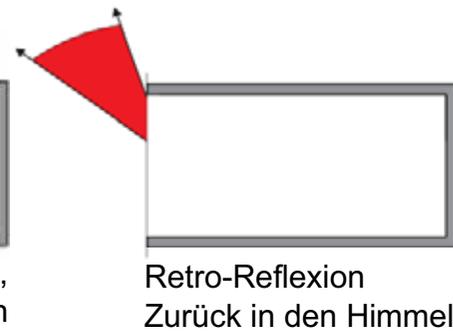
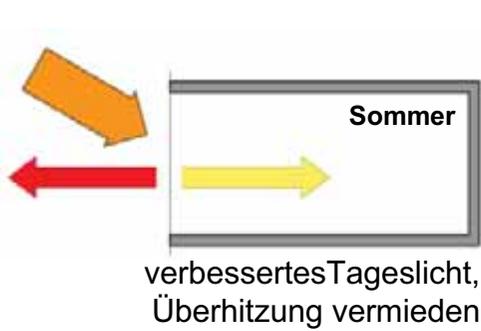
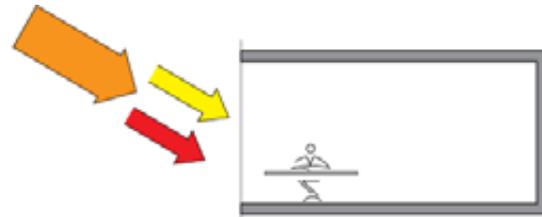
Energie AG, Linz



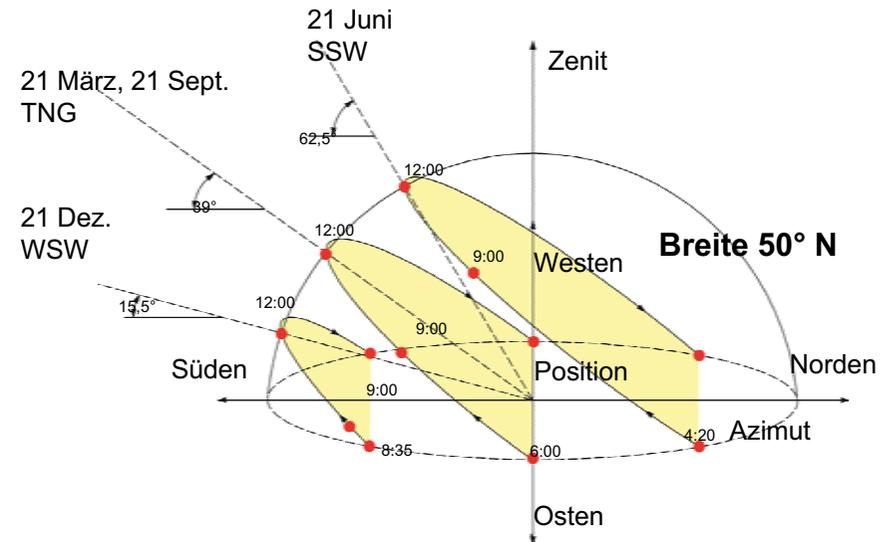
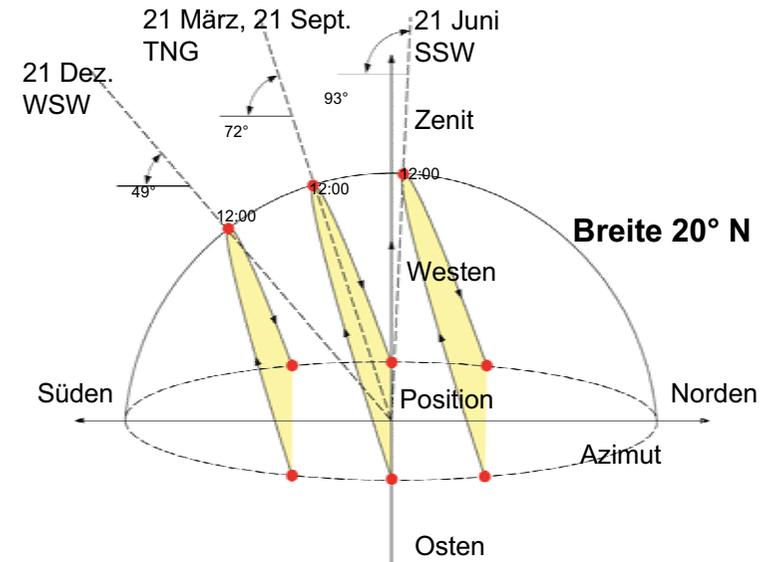
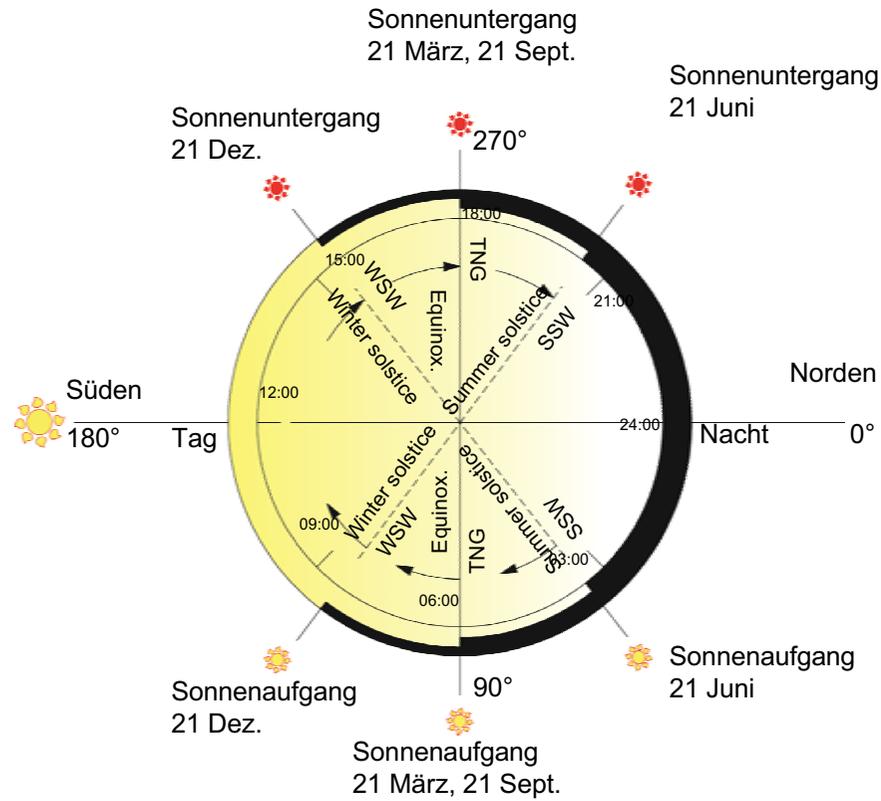
# Aufgaben der Tageslichttechnik



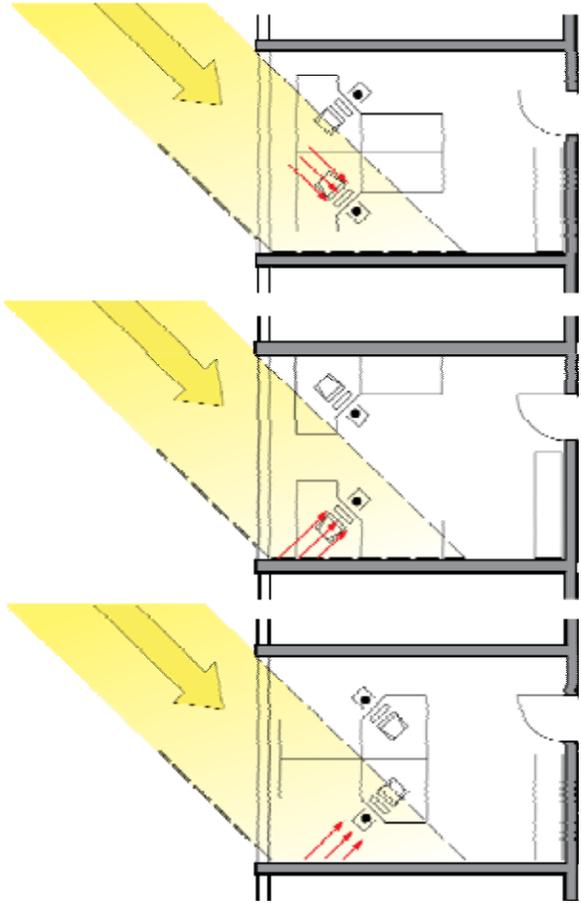
# Wärme oder Licht - ein Gegensatz?



# Sonnenbahnen



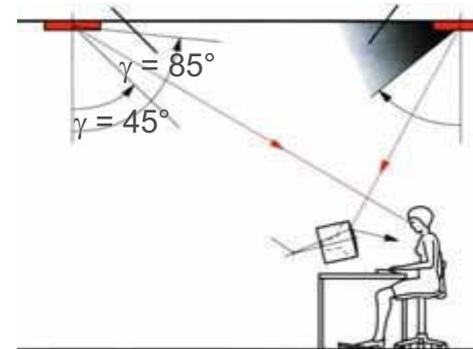
# Blendschutz

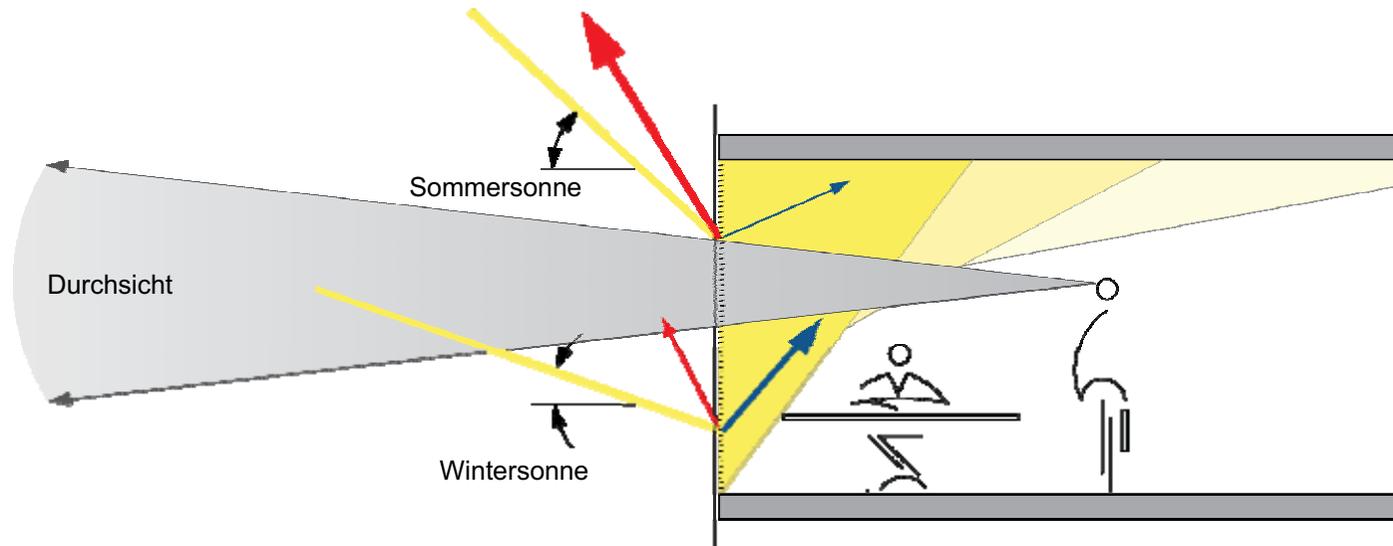


Direktblendung durch die Sonne

Hintergrundblendung

Reflexblendung im Bildschirm

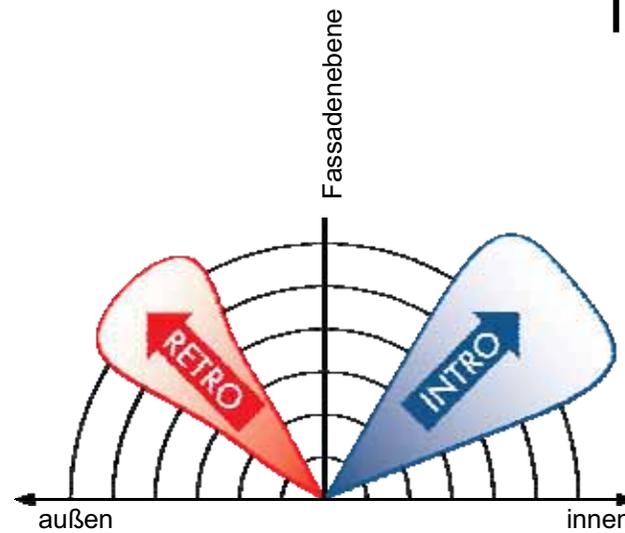




## Tageslichtkonzept

**Schutzfunktion**  
 - vor Überhitzung  
 - vor Blendung

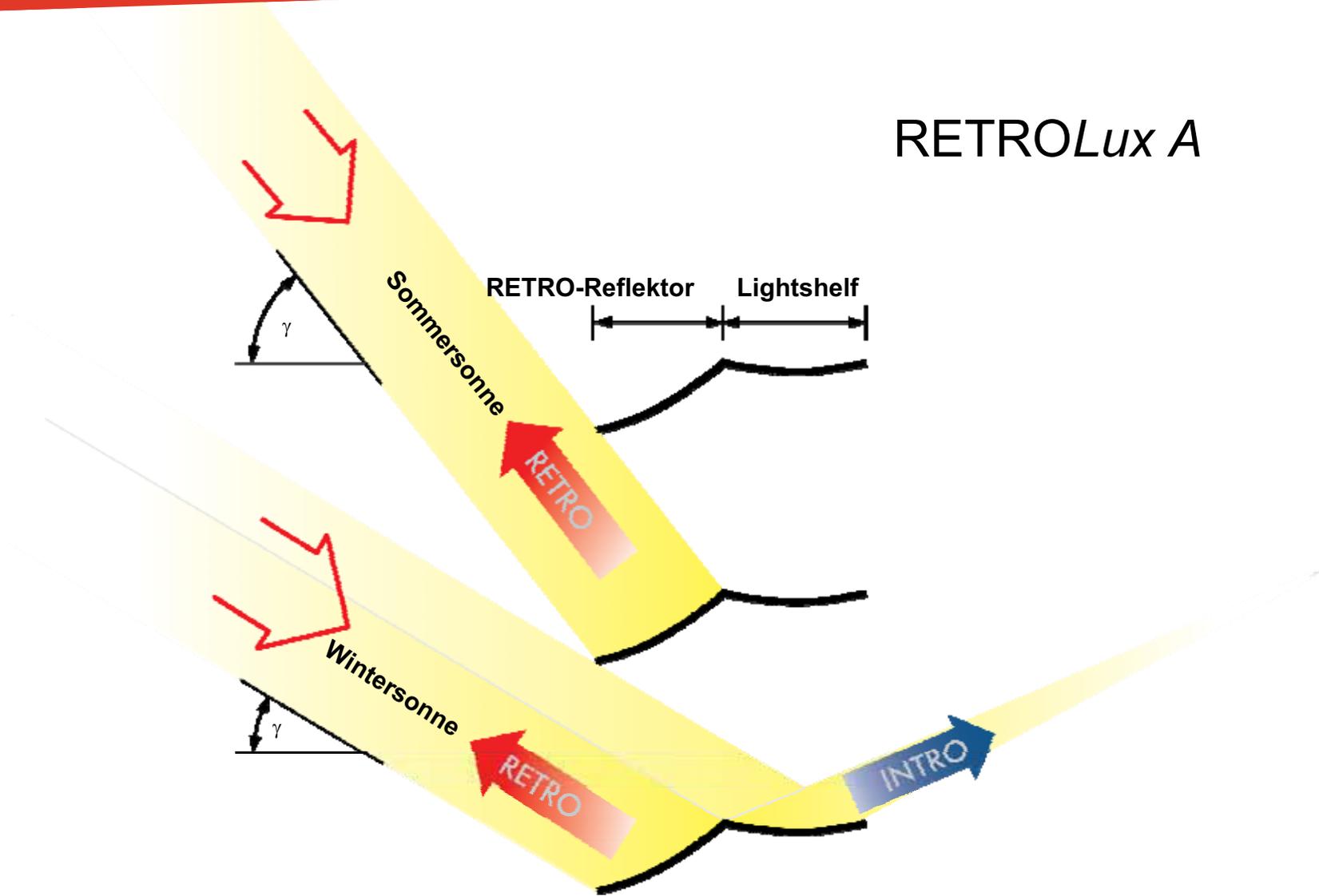
**Passive Kühlung**  
 durch Energieauslenkung



**Versorgungsfunktion**  
 - für Tageslicht  
 - im Winter mit Sonnenenergie

**Tageslichteinlenkung**  
 In die Raamtiefe  
 zur Verbesserung des  
 Tageslichtquotienten

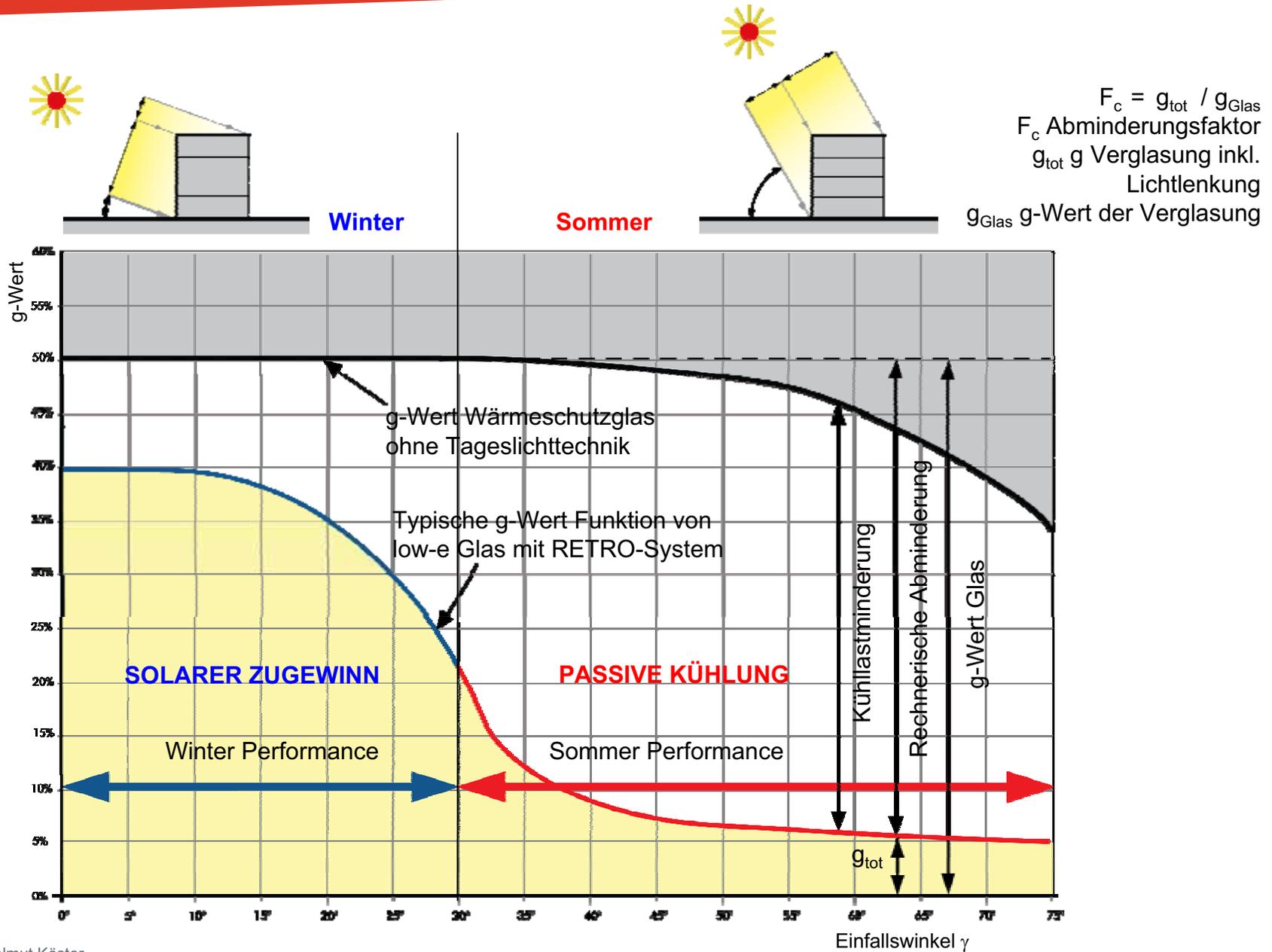
# RETROLux A

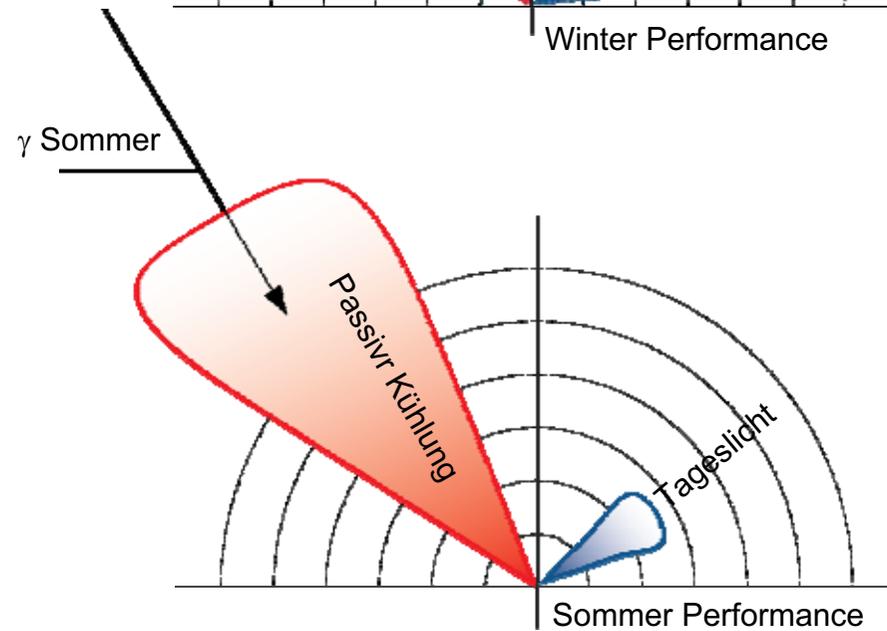
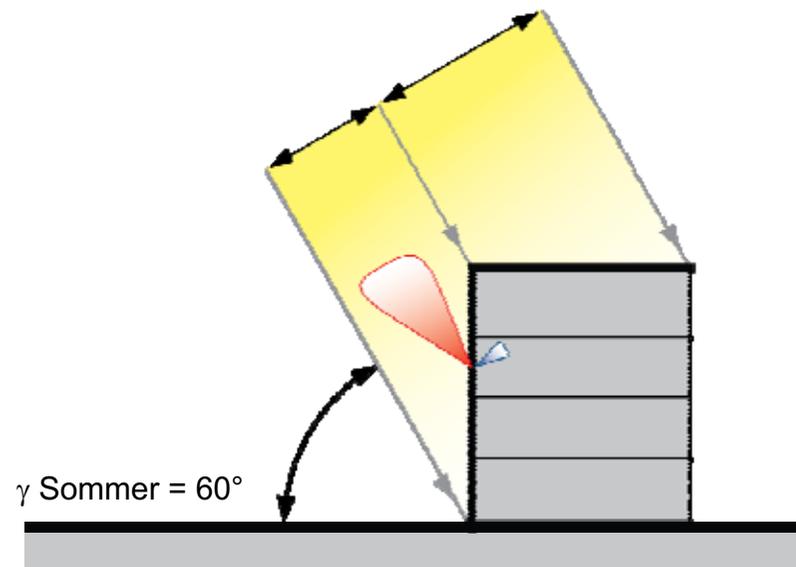
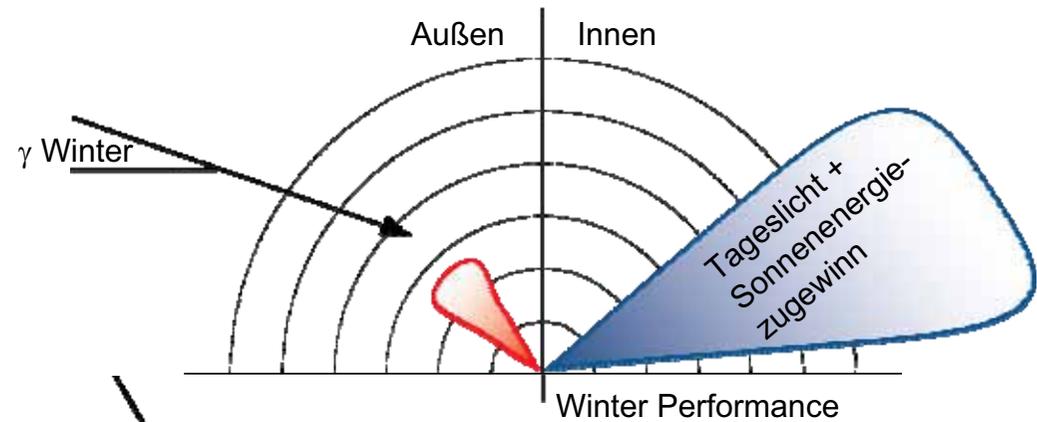
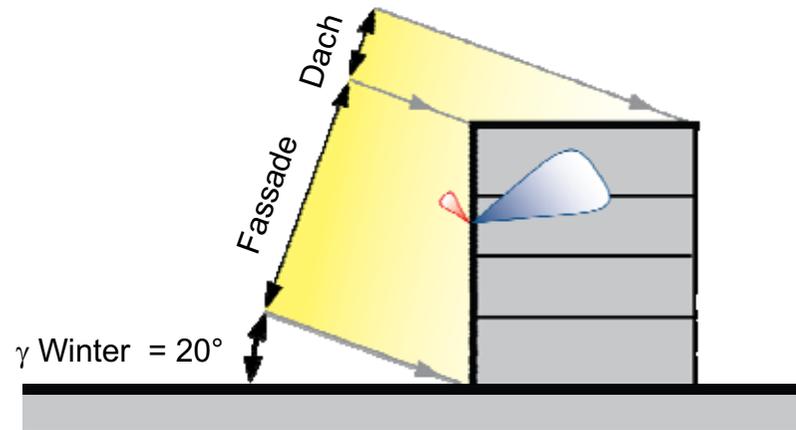




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Haus der Technik,  
Wien, Sensengasse  
Architekten:  
Neumann + Partner  
und Mascha &  
Seethaler, Wien  
Tageslicht:  
Köster Lichtplanung

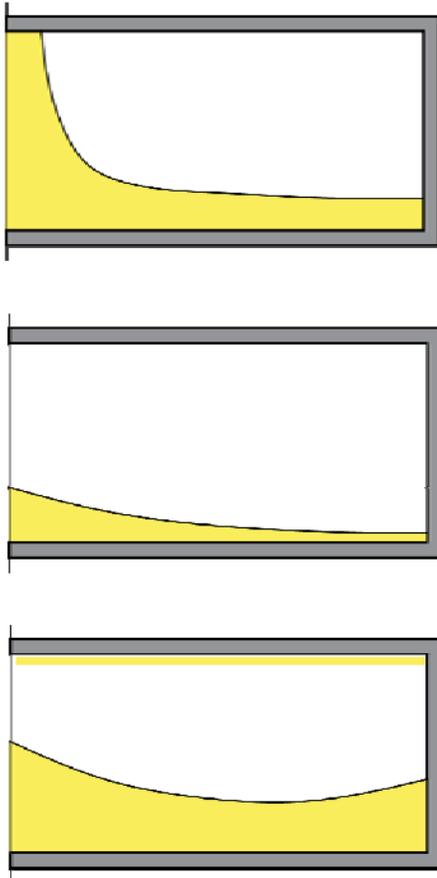




## Tageslicht und visueller Komfort

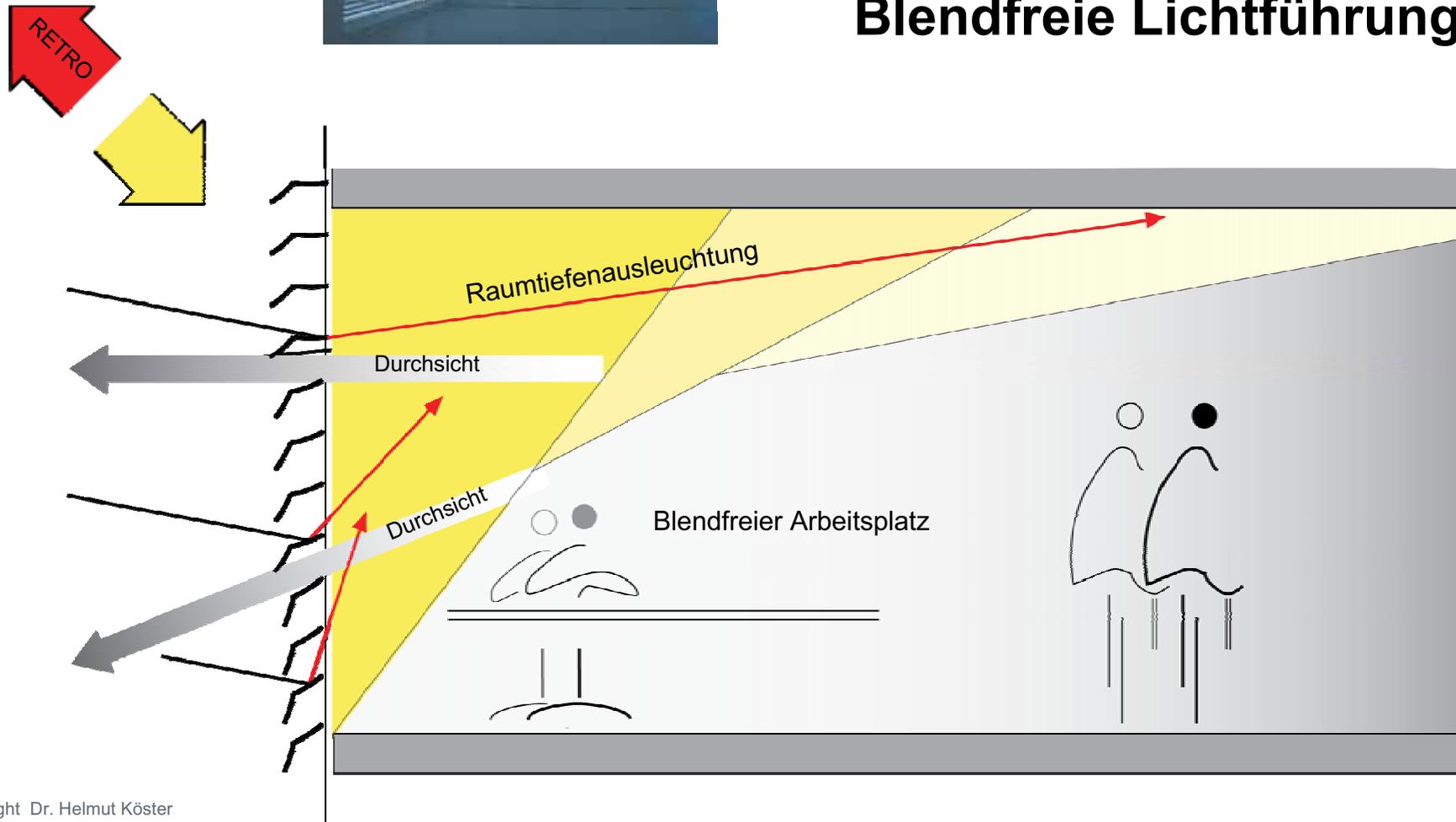
Tageslichtquotient  $D = E_i / E_a \times 100\%$

$E_i$  = Innenbeleuchtungsstärke [lx]  
 $E_a$  = Außenbeleuchtungsstärke [lx]



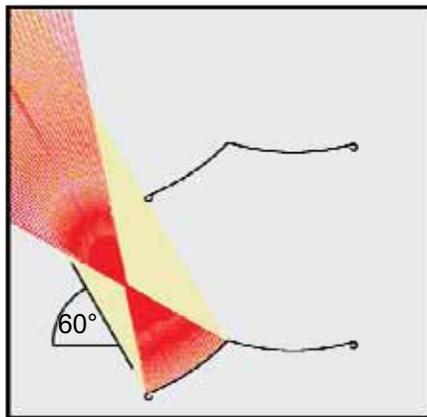


# Blendfreie Lichtführung

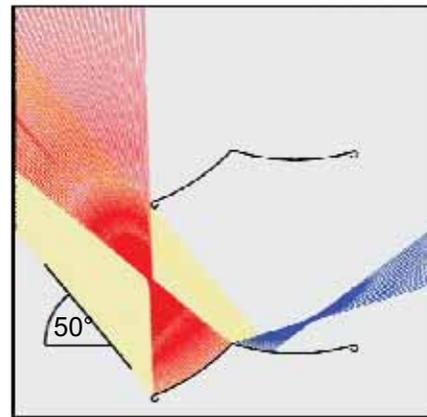


# Blendfreie Lichtführung

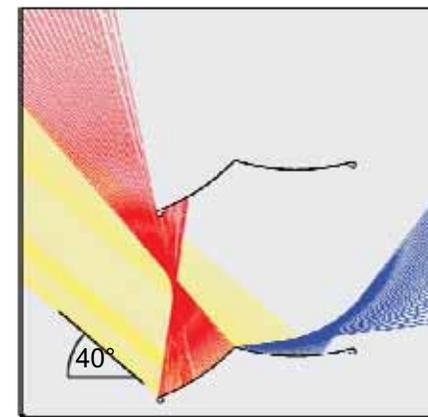
Strahlenverfolgung nach dem Gesetz Einfallswinkel = Ausfallswinkel



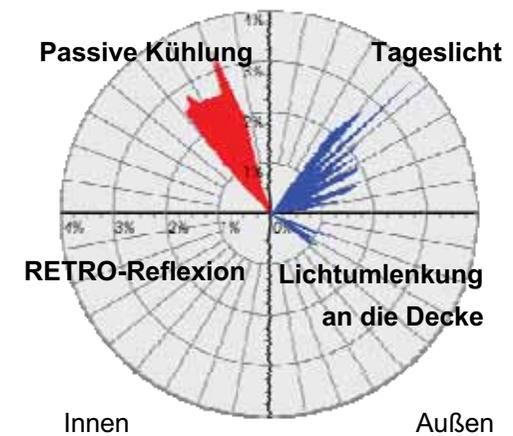
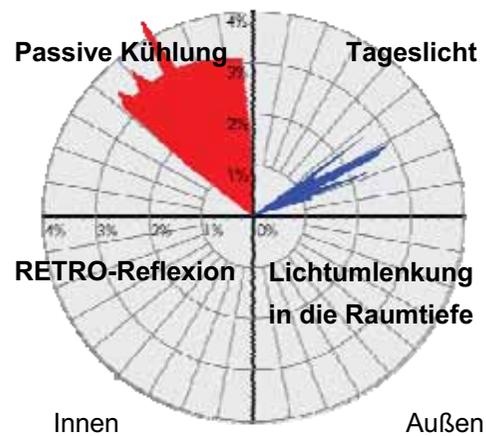
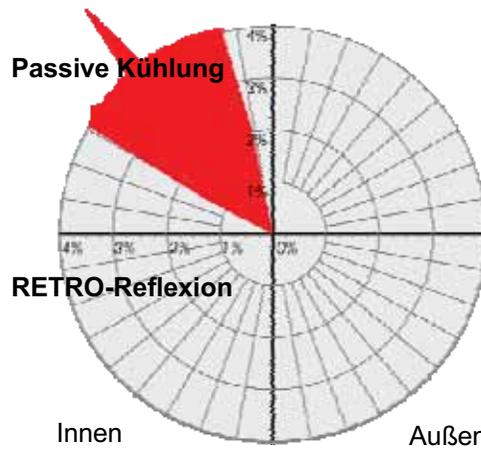
Lichtverteilung für  $\gamma = 60^\circ$

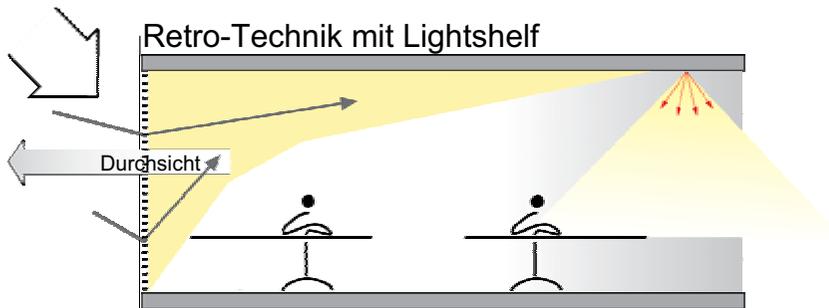
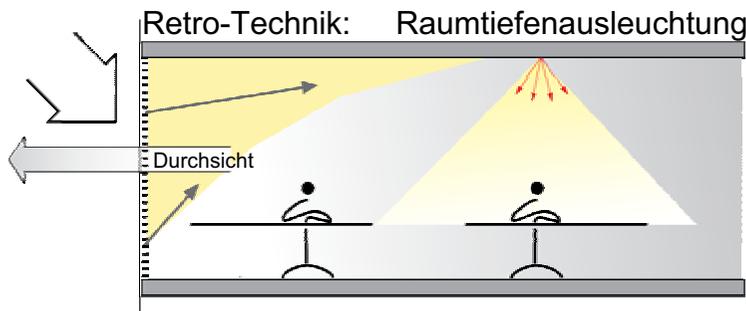
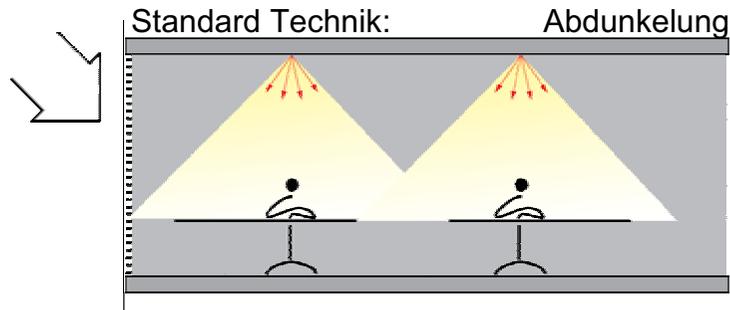


Lichtverteilung für  $\gamma = 50^\circ$

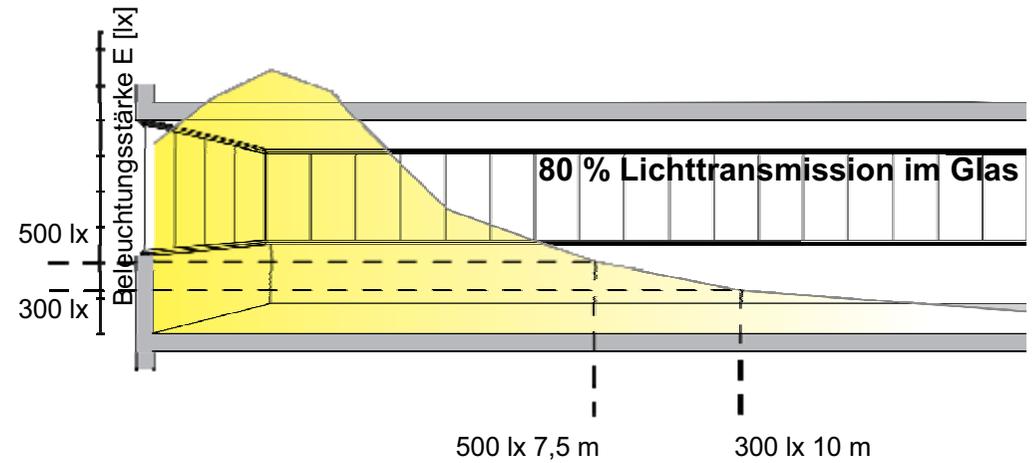


Lichtverteilung für  $\gamma = 40^\circ$





## Tageslichtautonomie: Einsparung elektrischer Beleuchtung



## Zweischalige Fassade mit RETROLux A



RETROLux A in zweischaliger Fassade,  
Postverteilerzentrum Wädenswil, CH  
Architect: HZDS, Heinz Zimmermann





RETROLux A in zweischaliger Fassade,  
Postverteilerzentrum Wädenswil, CH  
Architekt: HZDS, Heinz Zimmermann



