Tidligfasevurdering termisk komfort

Manuell metode

Utviklet gjennom prosjektet «Fasader i glass som holder hva vi lover»

Presentert på Indoor Air 2014 av Søren Gedsø, Arnkell Petersen og Ida Bryn

Problemer med komfort ved innvendig og mellomliggende solskjerming

Har erfart høye overflatetemperaturer (35 oC)ved solskjerminger med g-verdi på 0,15

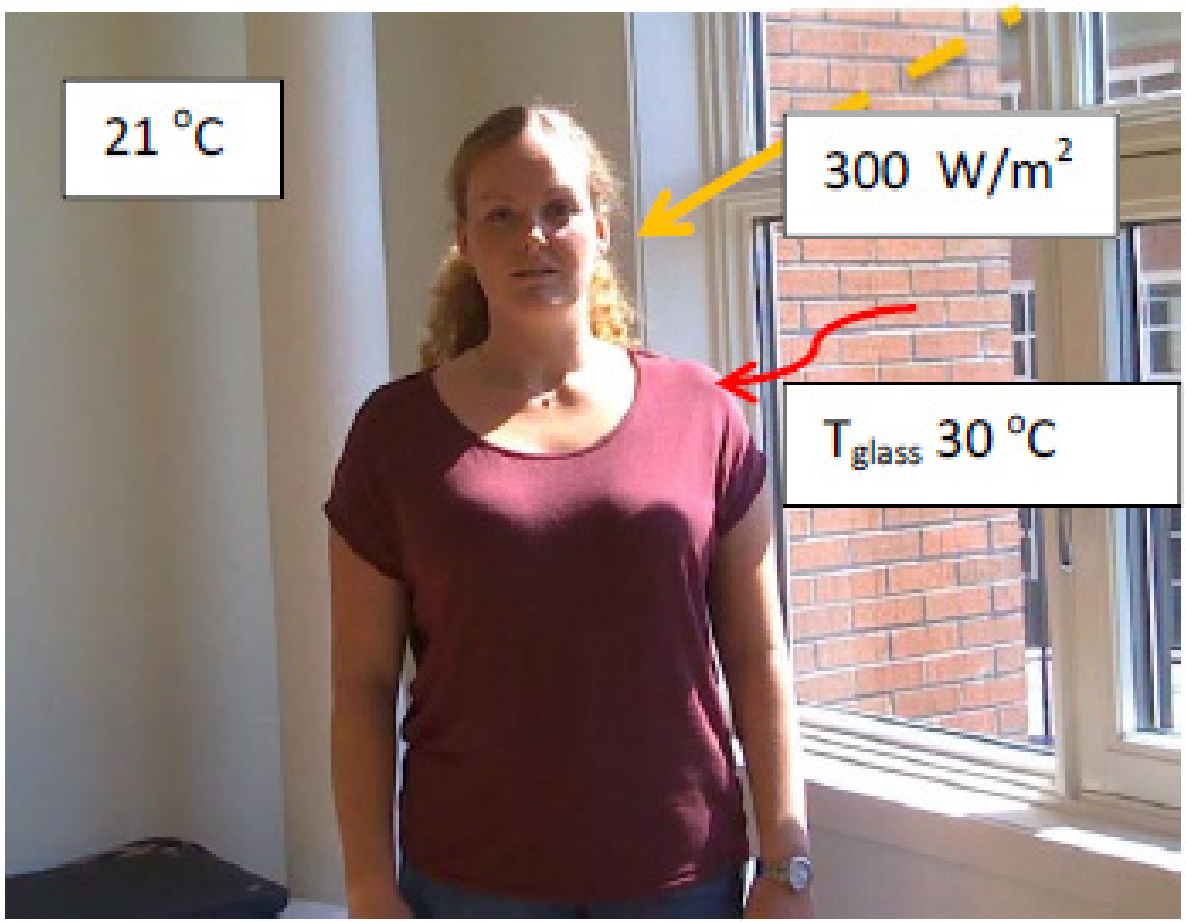
Problem spesielt erfart i bransjen ved:

Tett innvendig solskjerming

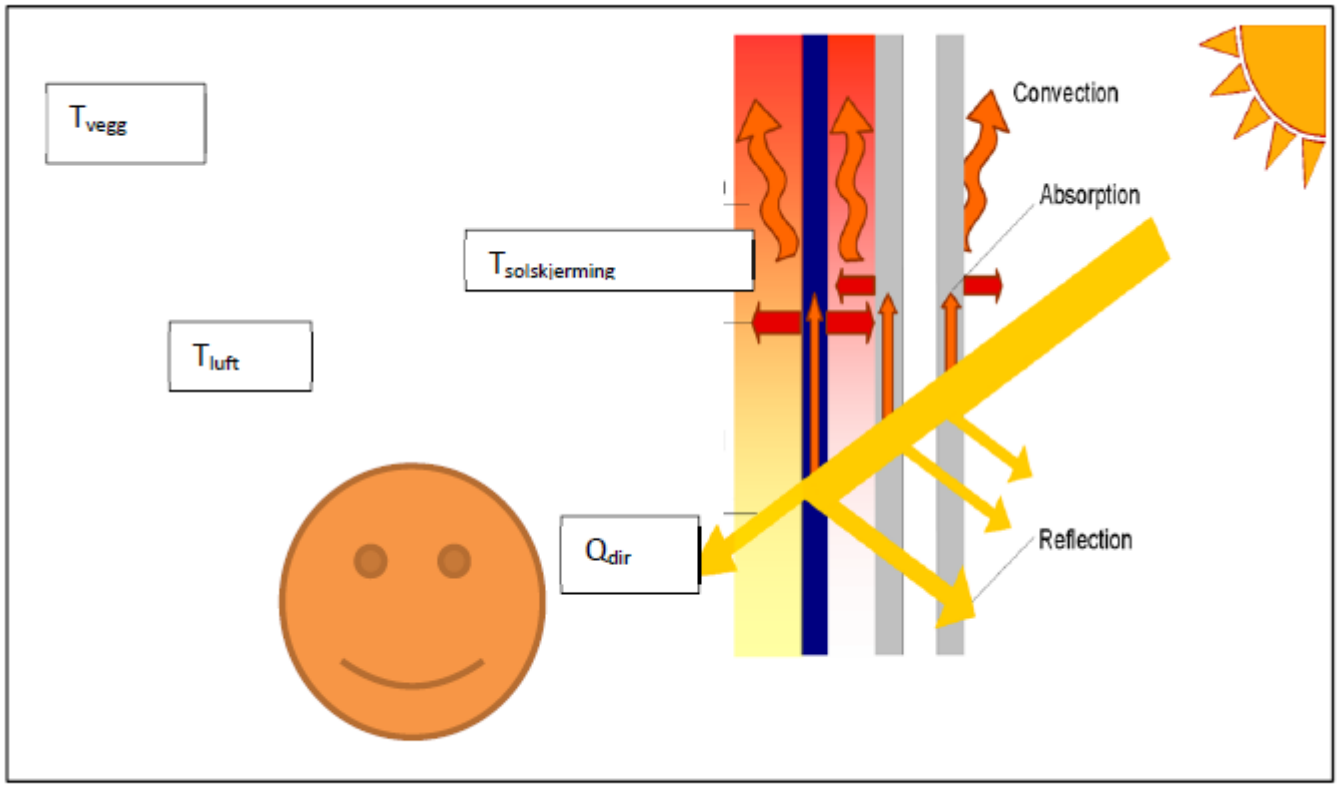
Mellomliggende solskjerming

Ønsket å vise årsaken til dette på en enkel måte.

Termisk komfort

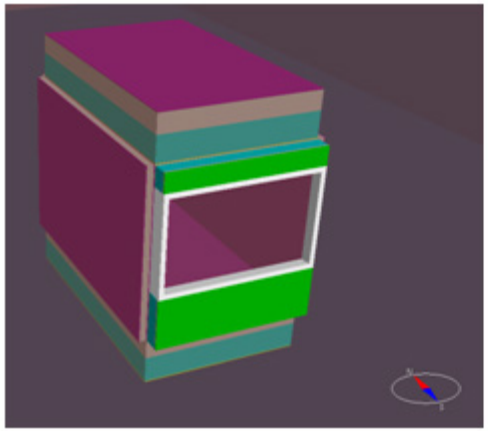


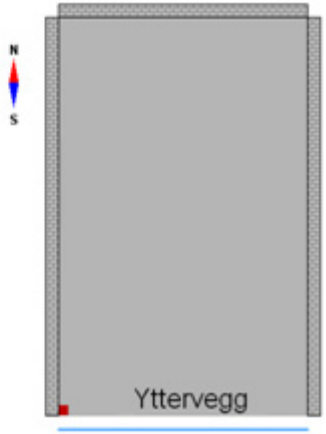
Varmestrømmer som påvirker termisk komfort



Figur 13 Varmestrømmer og temperaturer som påvirker følelse av komfort

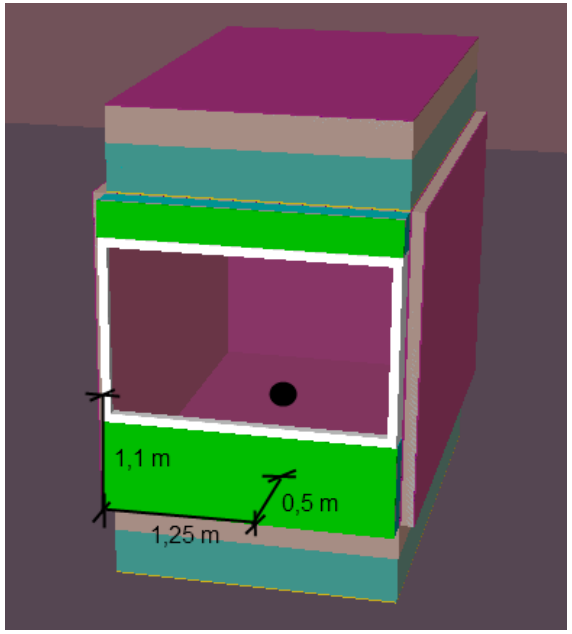
Study of surface and operative temperatures related to shadings with IDA ICE

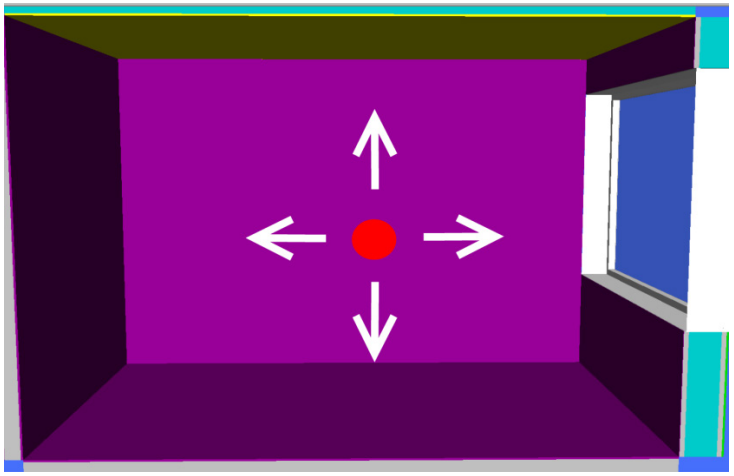


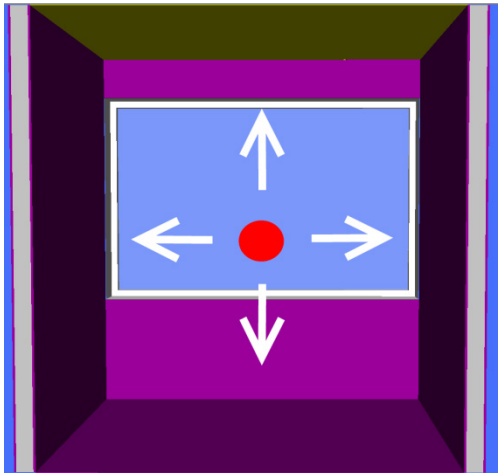


	g_{glass}	t_{glass}	g_{system}	t_{system}
Inside (A)	0,36	0,33	0,23	0,05
Between glazing (B)	0,36	0,33	0,14	0,04
Outside (C)	0,36	0,33	0,05	0,03

Study of surface and operative temperatures related to shadings with IDA ICE



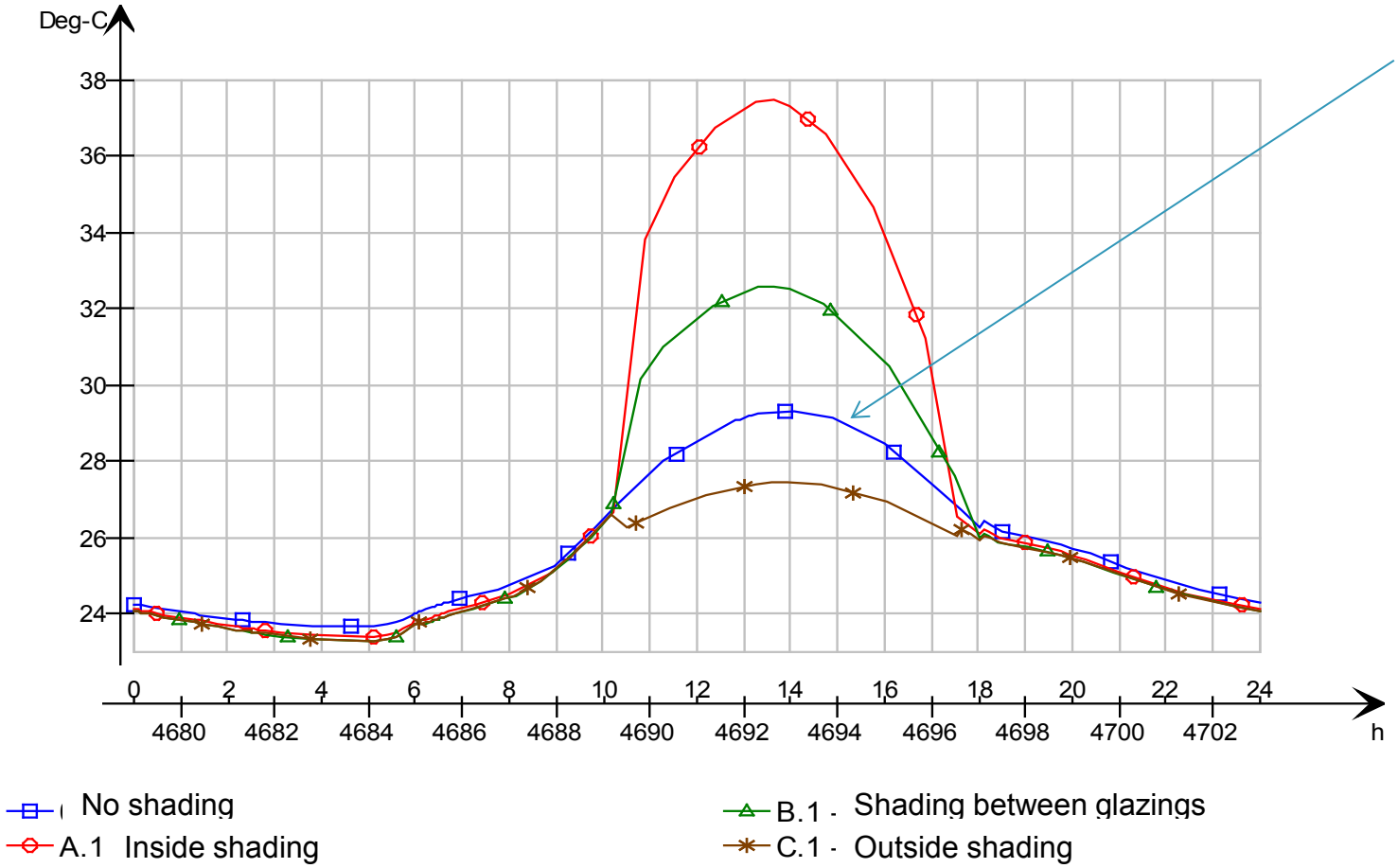




Point of study in the room

Window surface temperatures

Person will be exposed to direct radiation as well



Facade: Thermal Comfort, Documentation and Performance Criteria

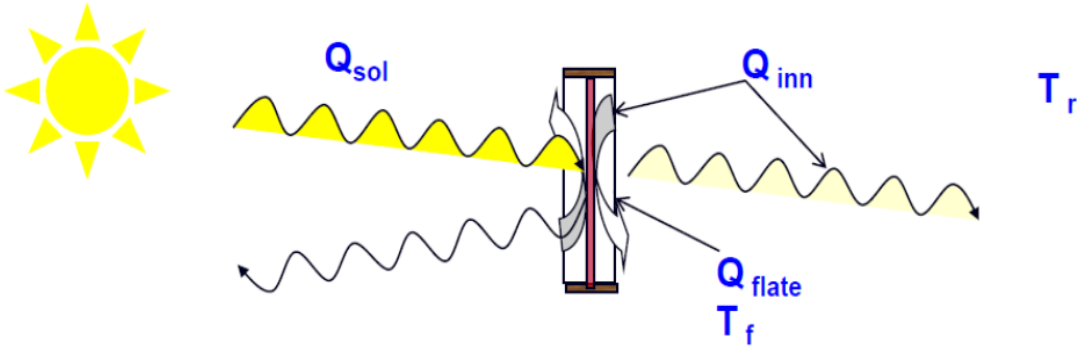
Purpose

- Develop a simplified method to document surface temperatures. This is to provide advice to clients and architects at an early design stage in order to achieve optimum façade design solutions.

Simplified calculation method

- Based on a simplified heat balance of the inner surface.

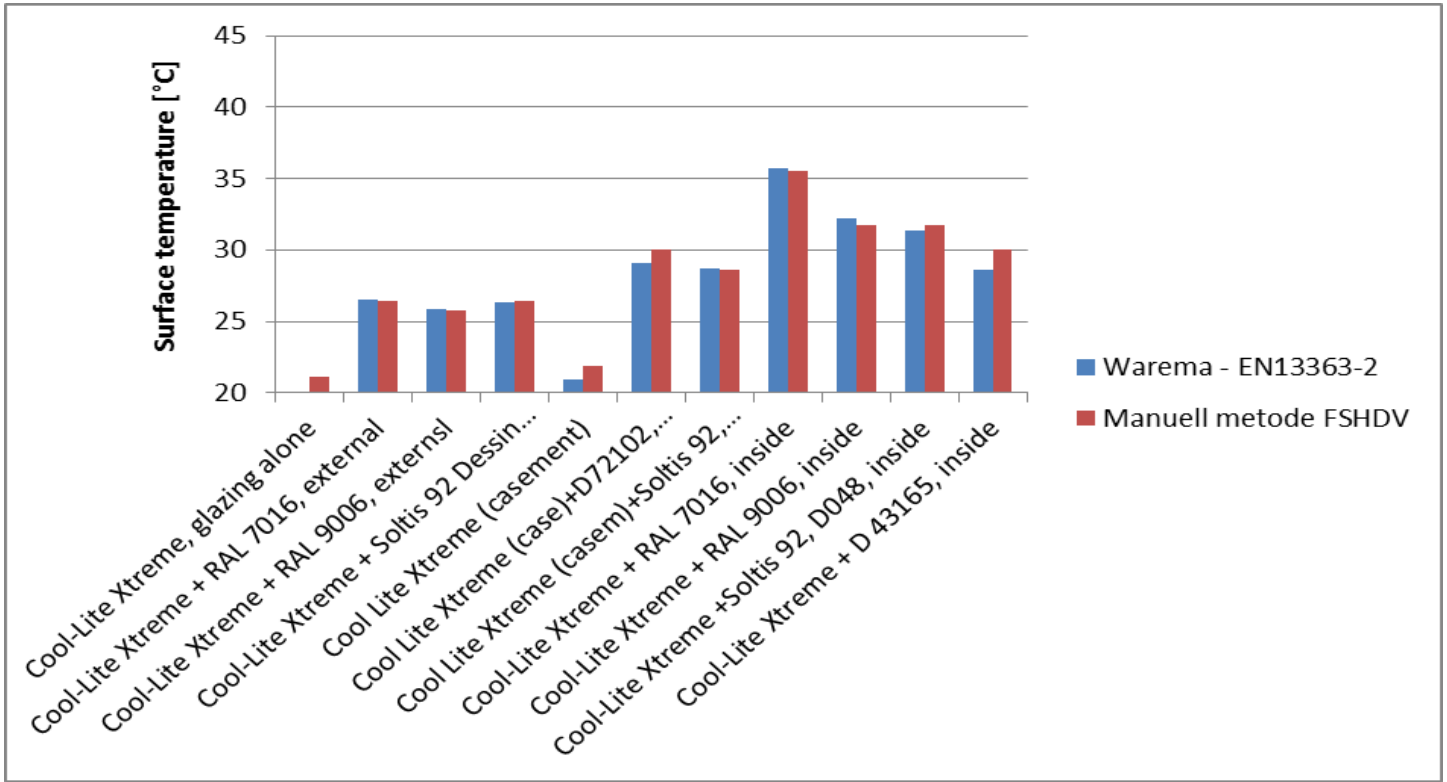
$$T_f = Q_{sol} * \frac{g\text{-}t_{dir}}{h_c + h_r} + T_r$$



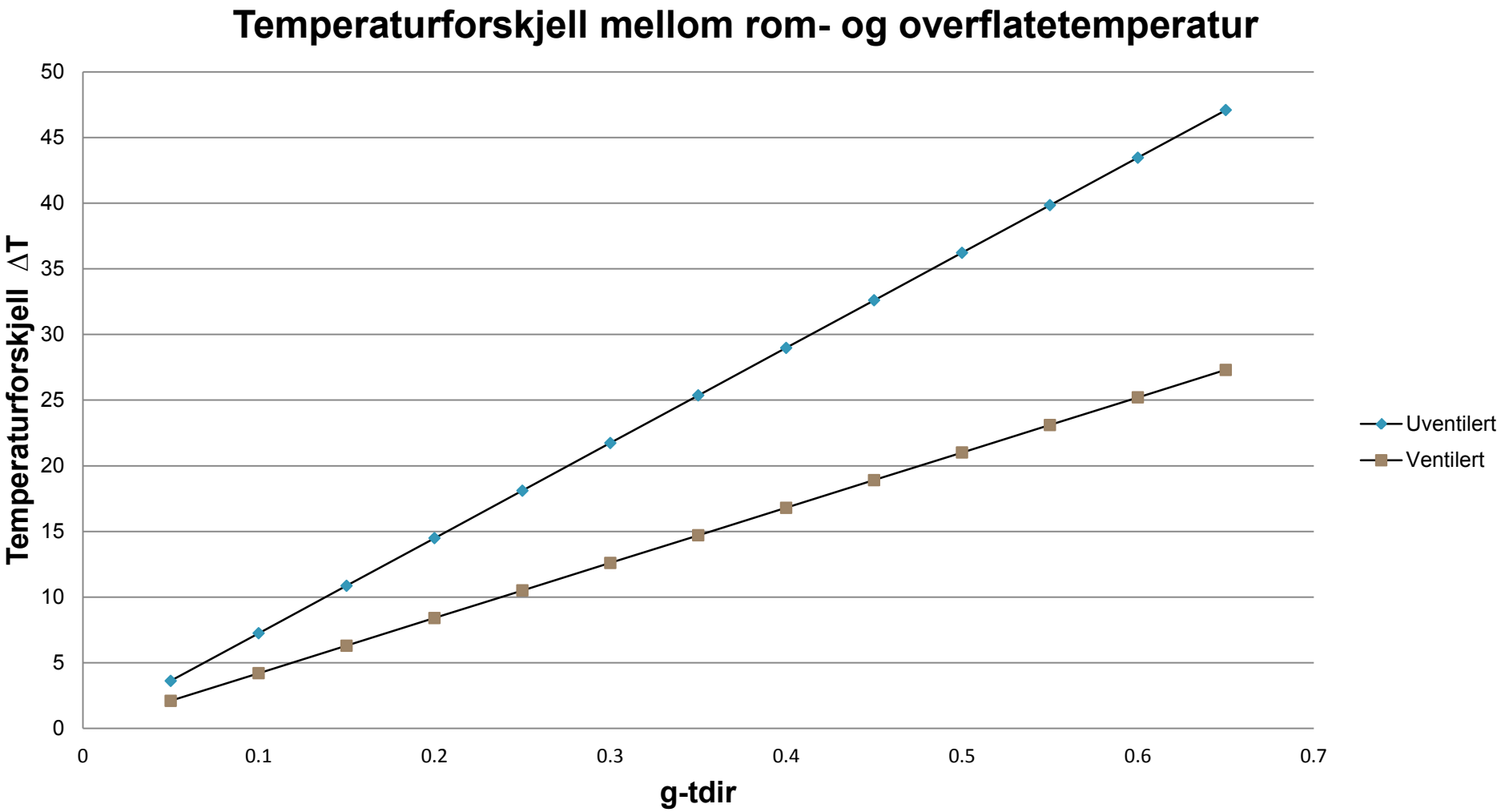
Facade: Thermal Comfort, Documentation and Performance Criteria

Validation

- Simplified method compared to method described in EN-13363 Part 2 “Sun shading systems in combination with glazing – calculation of solar radiation and luminous transmittance.
  - Deviation clear glazing 3,0 %
  - Deviation solar protecting glazing 1,5 %



Overflatetemperatur på vindu eller innvendig solskjerming



Gjelder for en normal innstråling på 500 W/m². Uventilert: Tett innvendig flate som f.eks glass. Ventilert: Fritthengende solskjerming der luft mellom solskjerming og vindu får passere fritt mot rom.