Exploring haze in privacy glass using both physical and virtual prototyping

Aliki Papasifaki

17th Radiance Workshop
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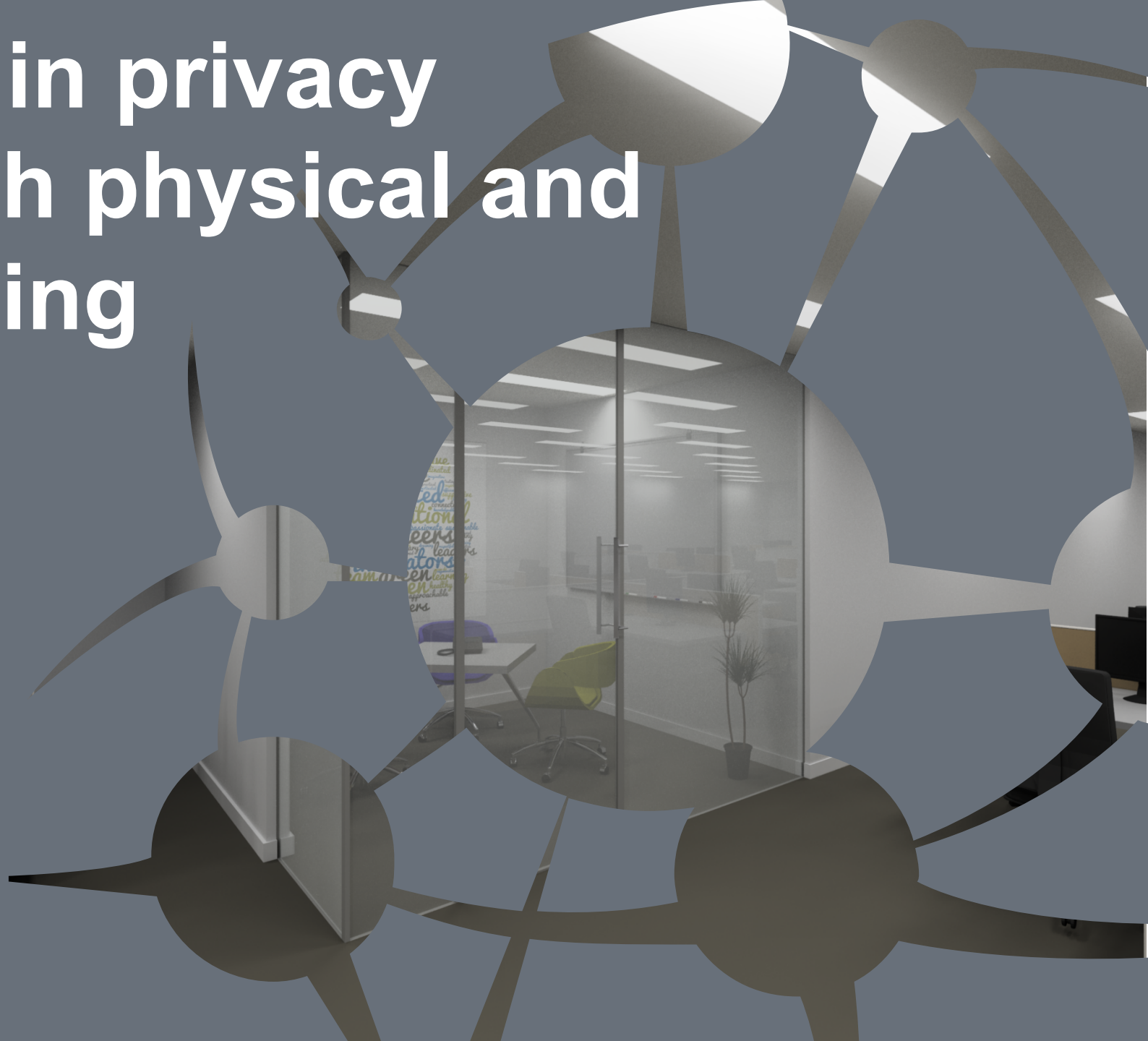


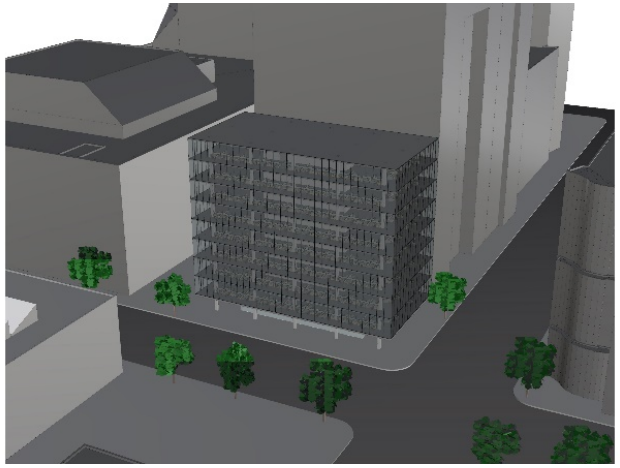
elementa
Member of Integral Group

1st study
Visual Performance of Liquid Crystal Window product in building facade systems

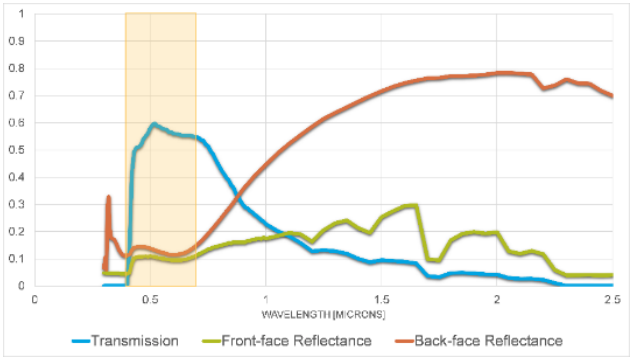
Design Intent vs Reality

Architectural render (left) and photograph (right) of 222 Second Street Office in San Francisco

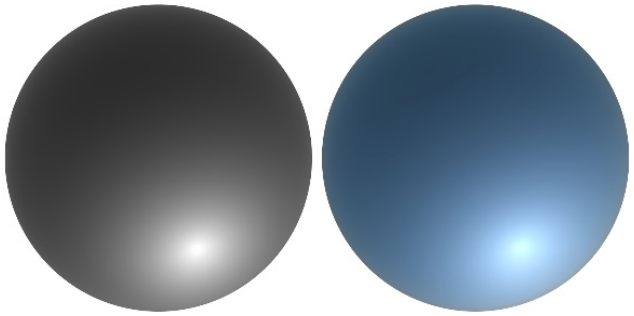
Physically Accurate Renders



Geometry + Material Definitions



Optics2rad + BRDF

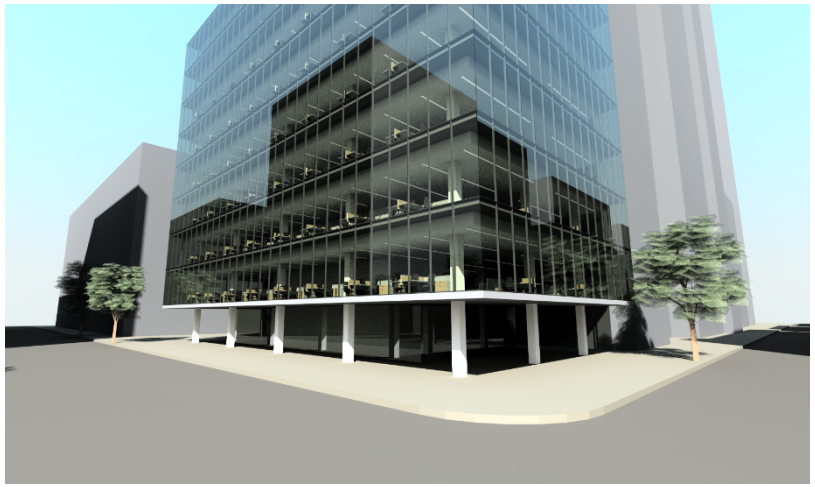


Compelling Sky Model

Radiance

Synthetic Imaging System

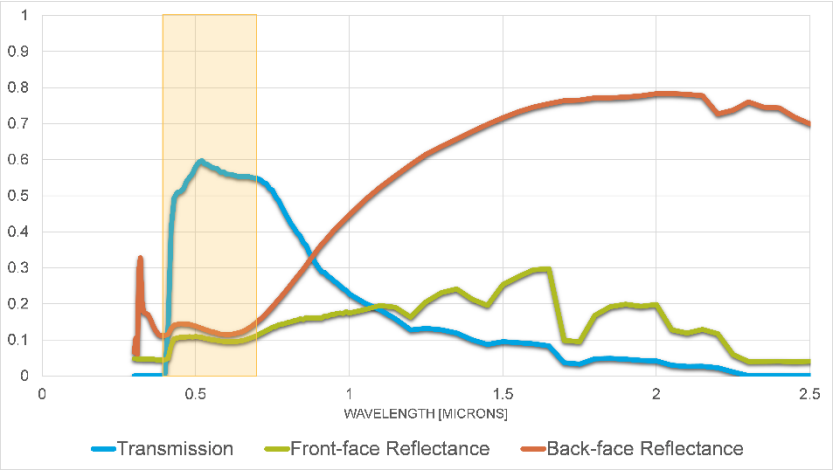
Radiance Model



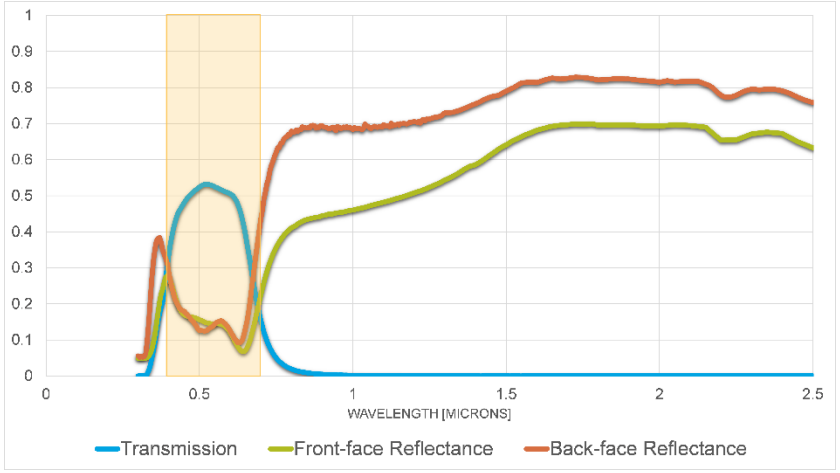
Visualization

Three Contenders

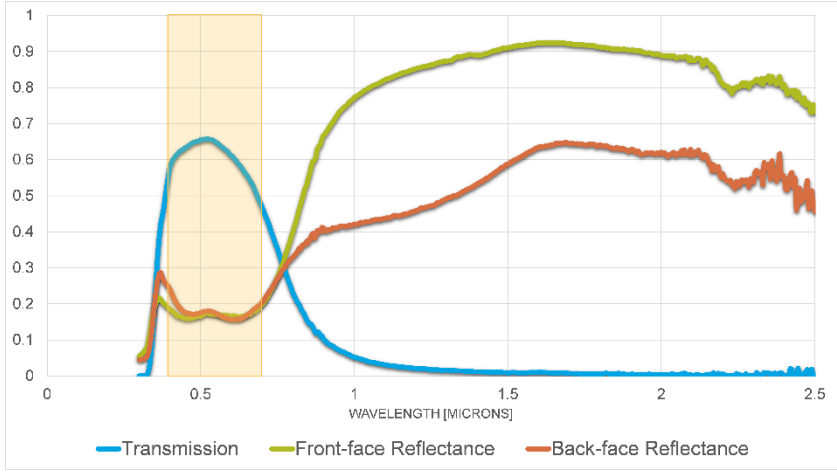
Liquid Crystal Window
No Internal Blinds



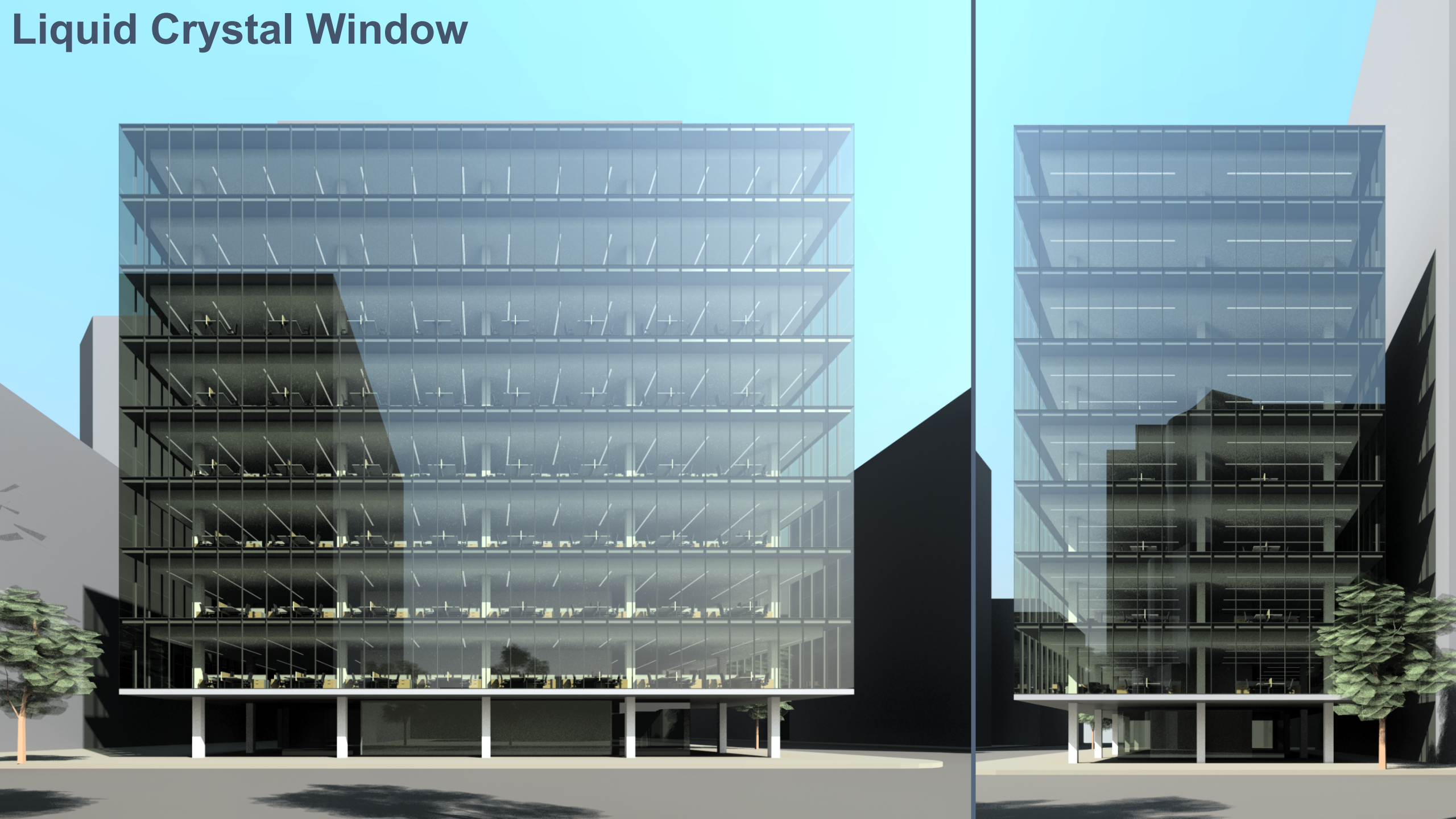
Double Glazed Unit
Triple Silver Solar Control
Manual Blinds



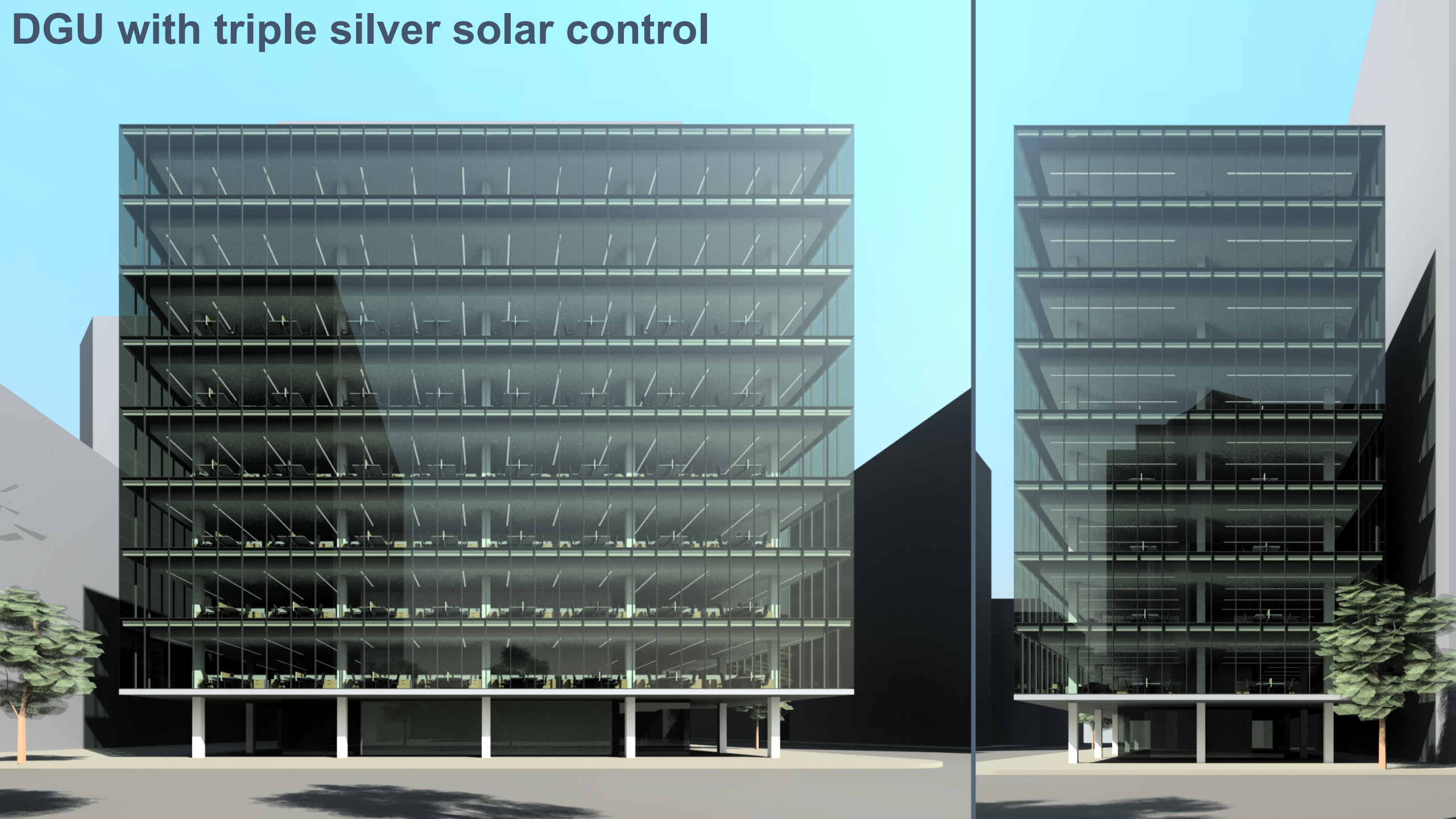
Closed Cavity Façade
Interstitial Automated Blinds



Liquid Crystal Window



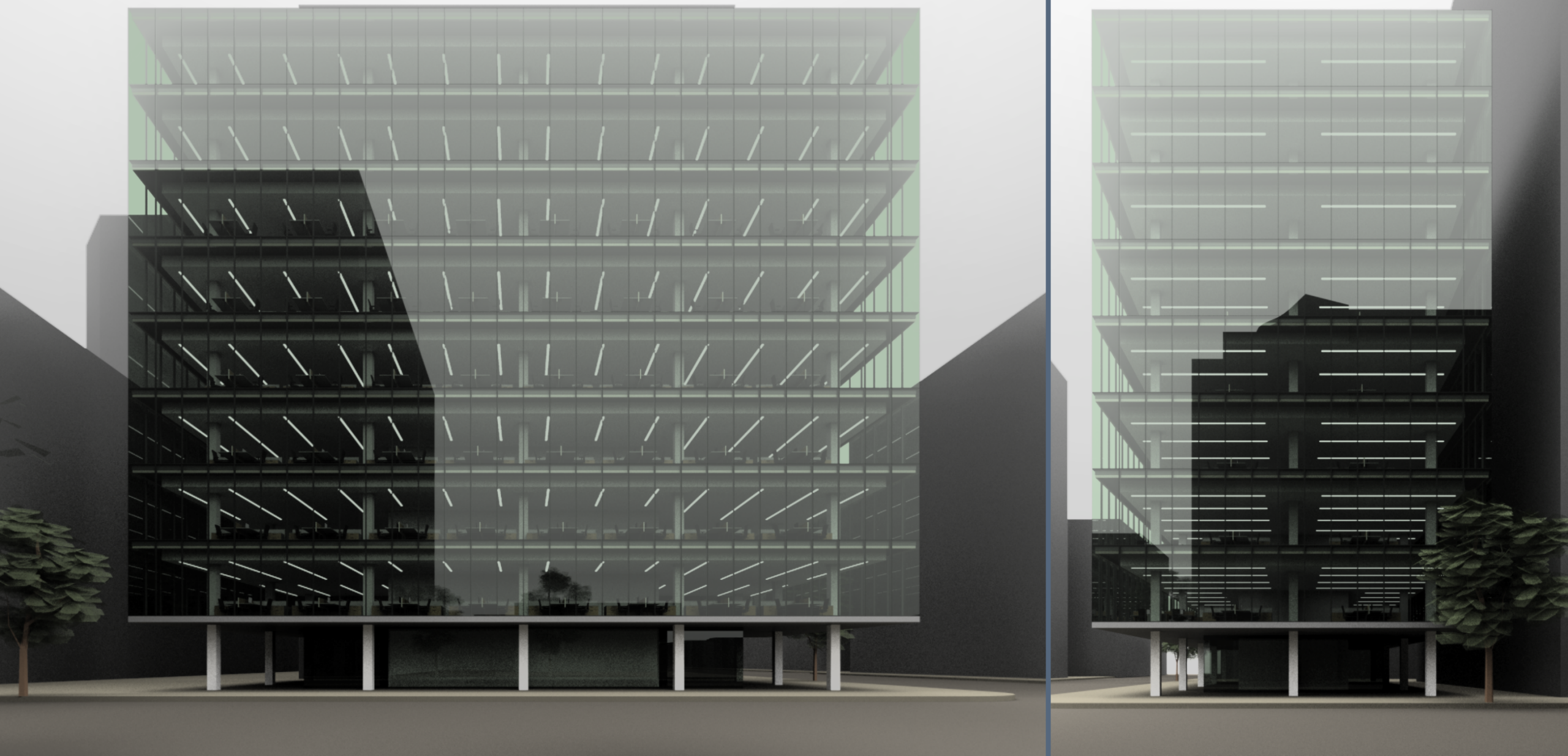
DGU with triple silver solar control



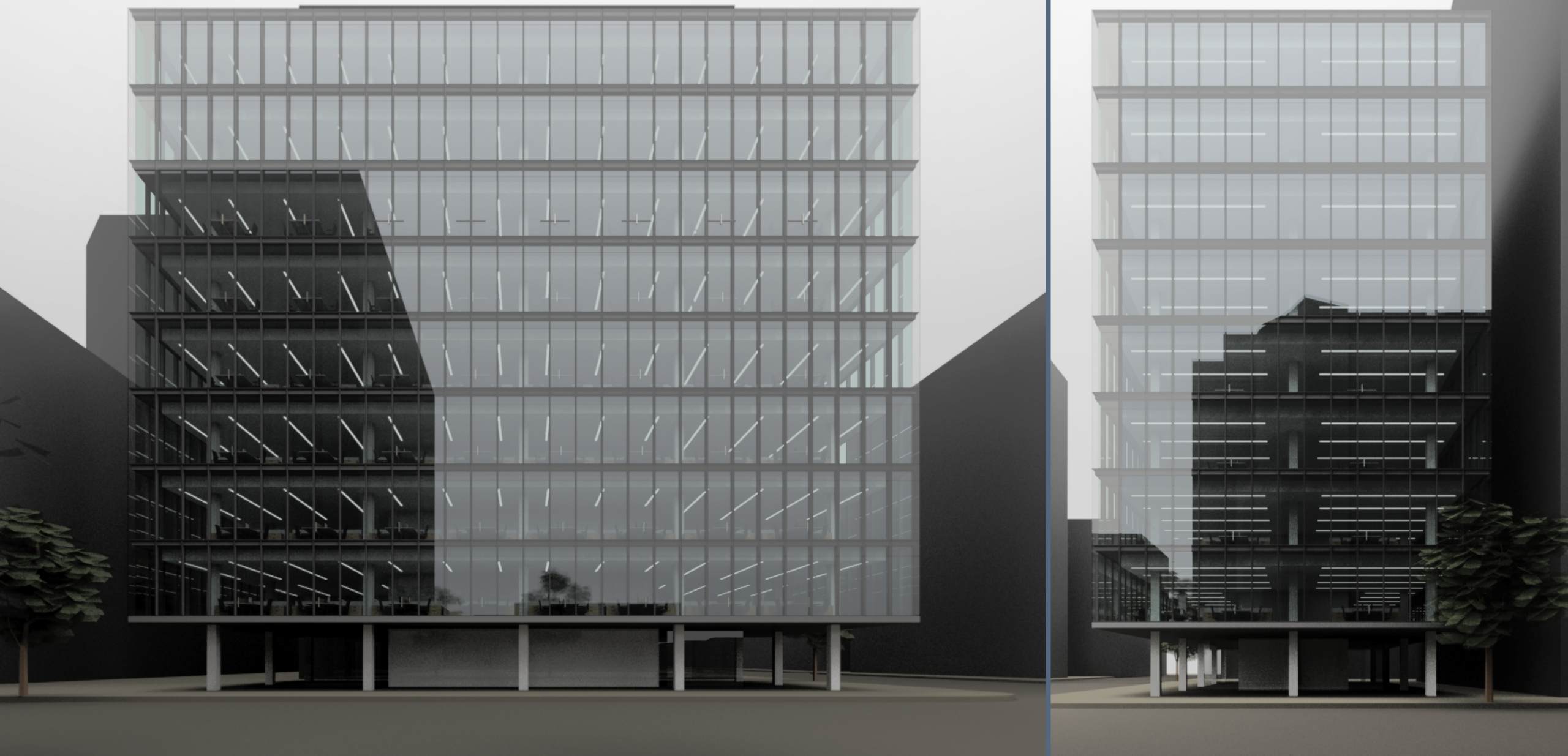
Closed-cavity façade with interstitial blinds

Liquid Crystal Window

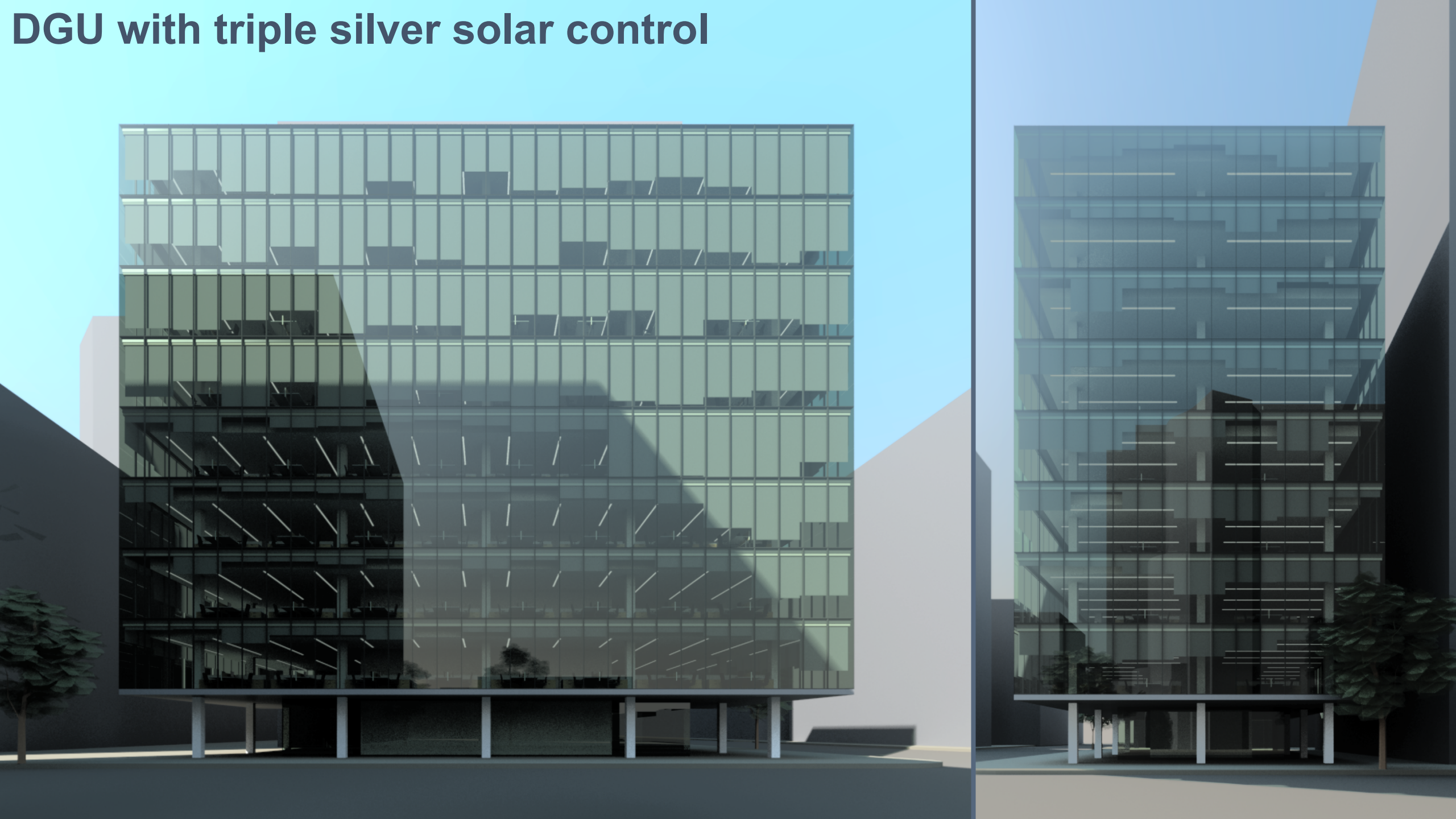
DGU with triple silver solar control



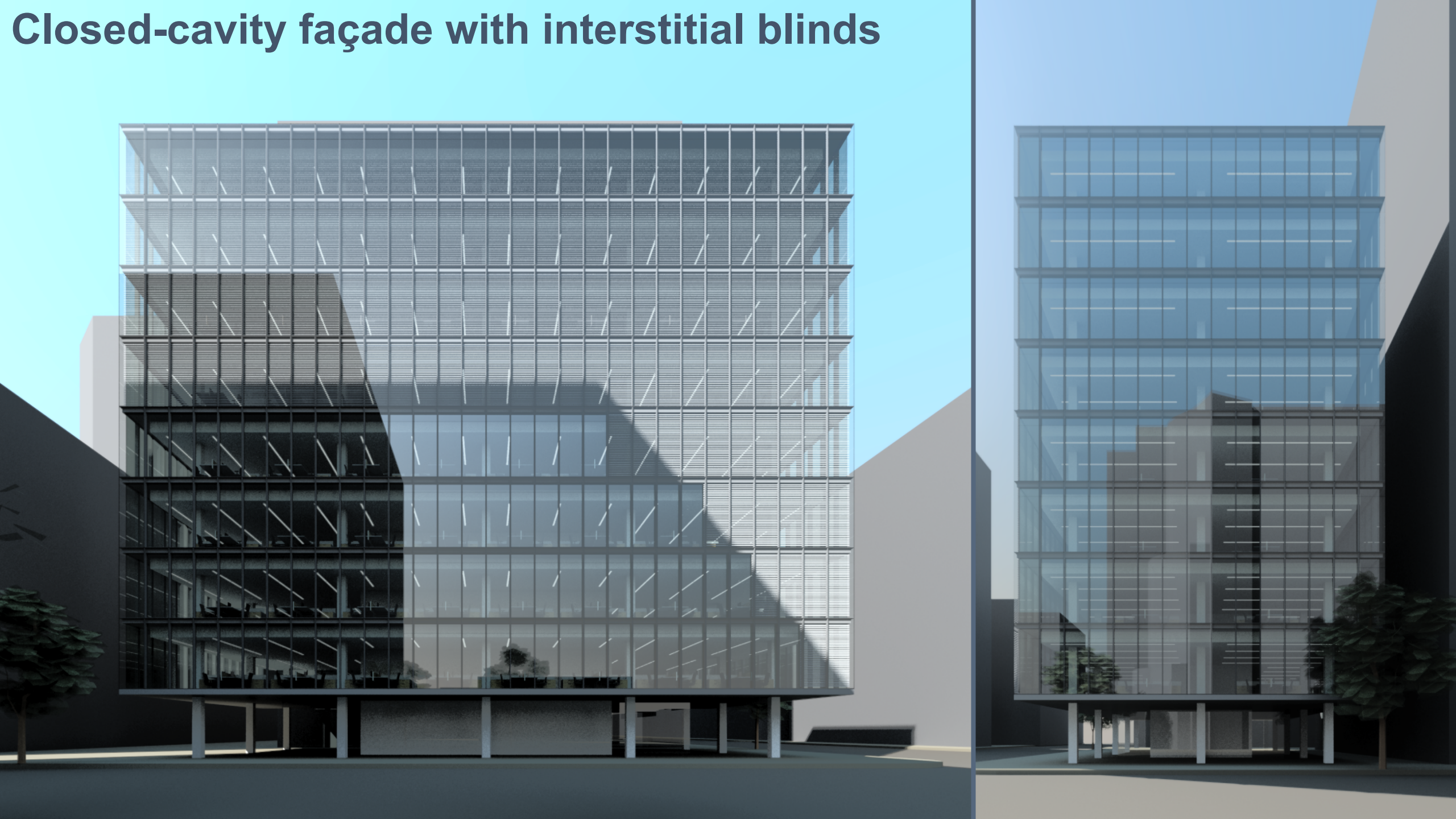
Closed-cavity façade with interstitial blinds



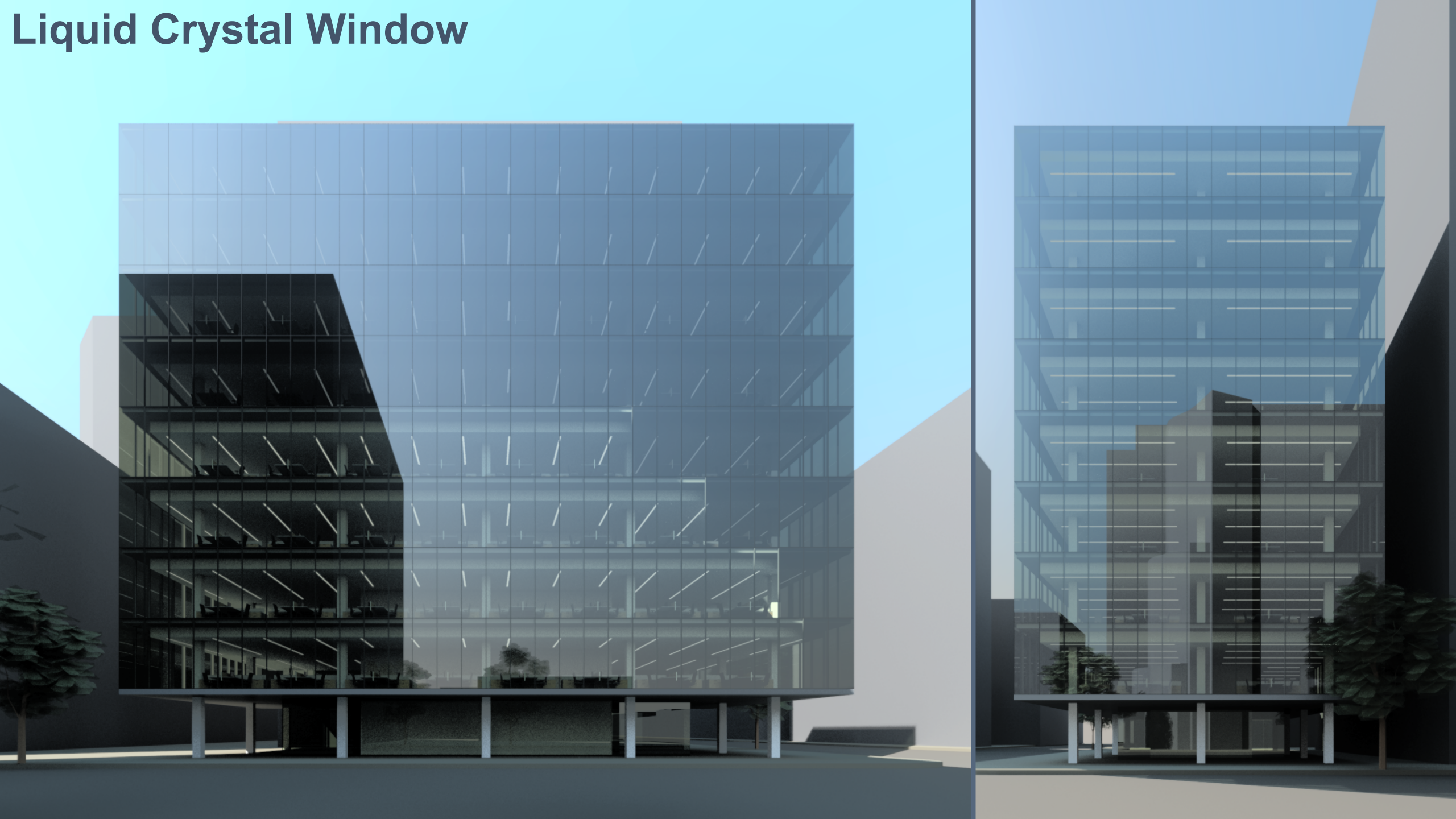
DGU with triple silver solar control



Closed-cavity façade with interstitial blinds



Liquid Crystal Window



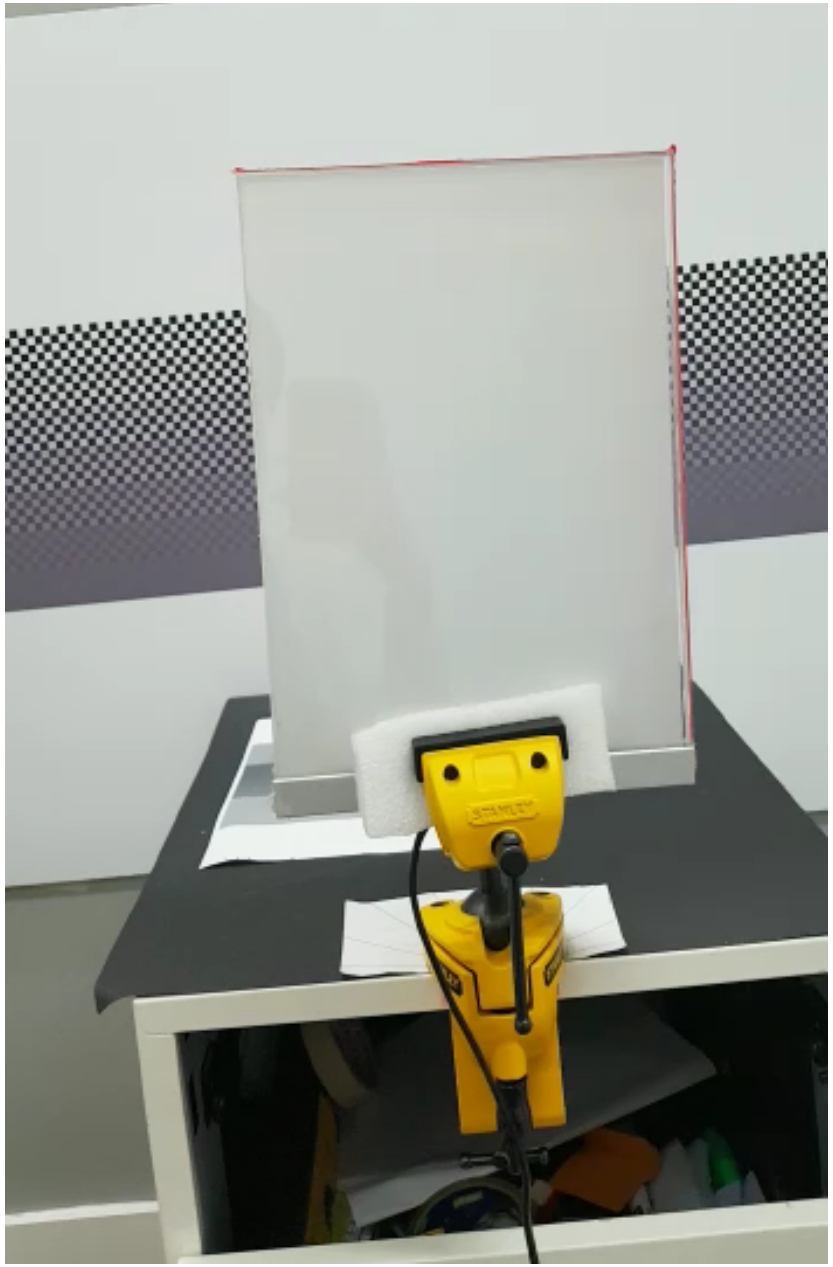
2nd study

Exploring haze in privacy glass using both physical and virtual prototyping

Optical Haze in PDLC products

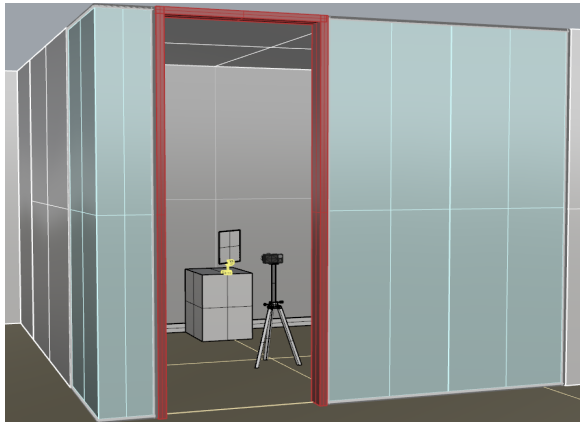
Haze at oblique angles of observation

Optical Haze in PDLC products

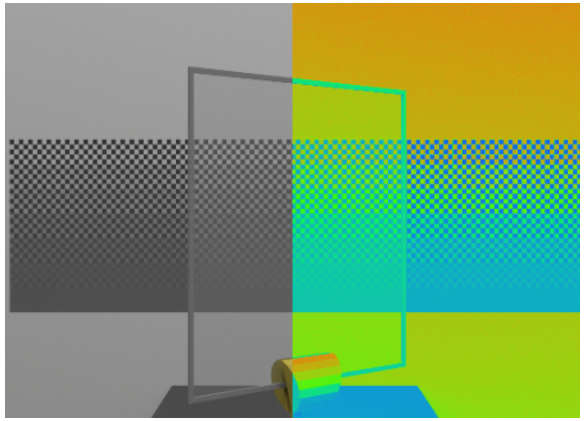


Privacy glass products comparative study

Physical sample HDR photography



Scene Illuminance Calibration



Material Definition calibration

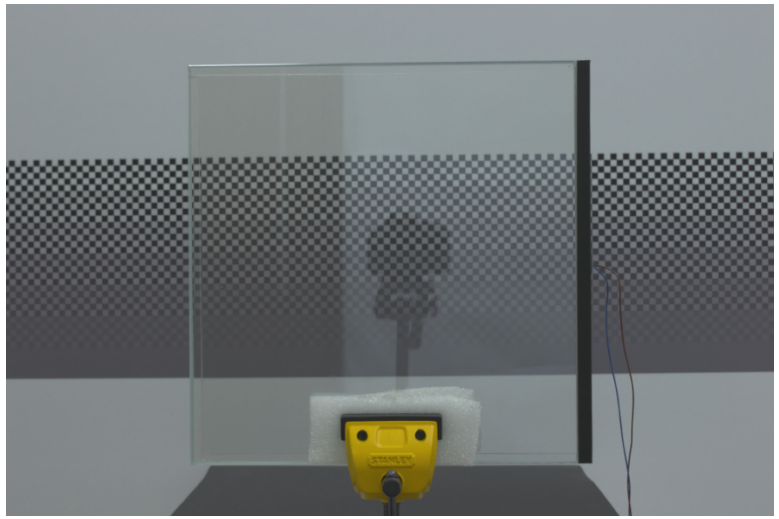
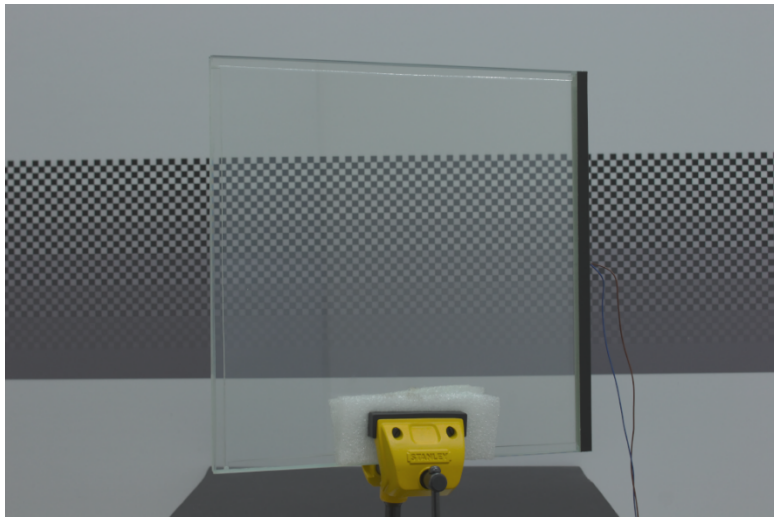
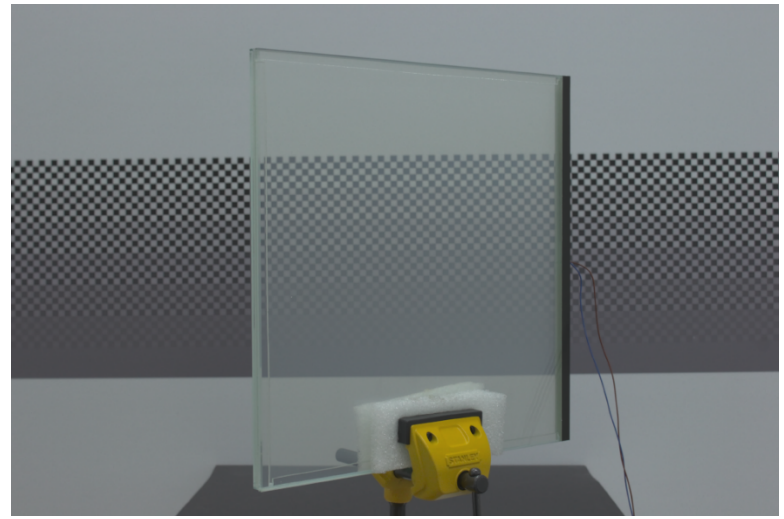
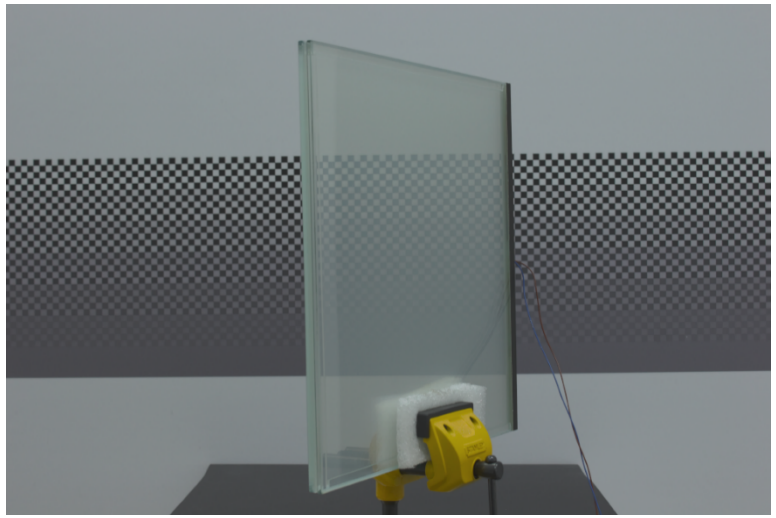
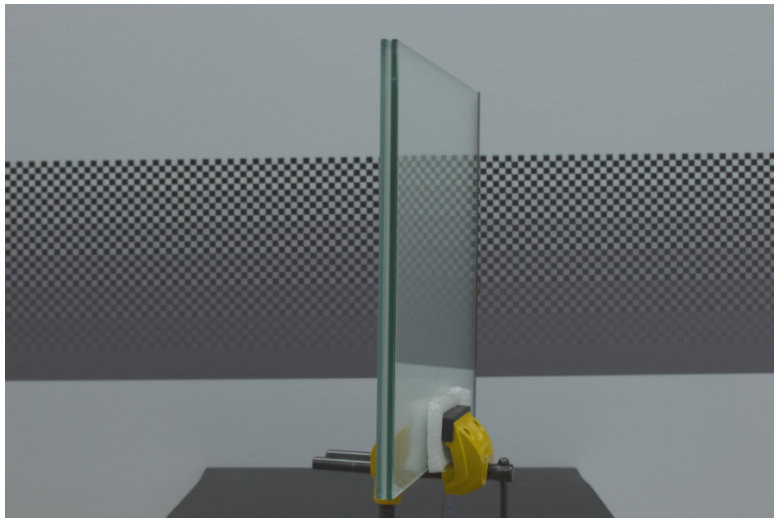
Radiance

Synthetic Imaging System

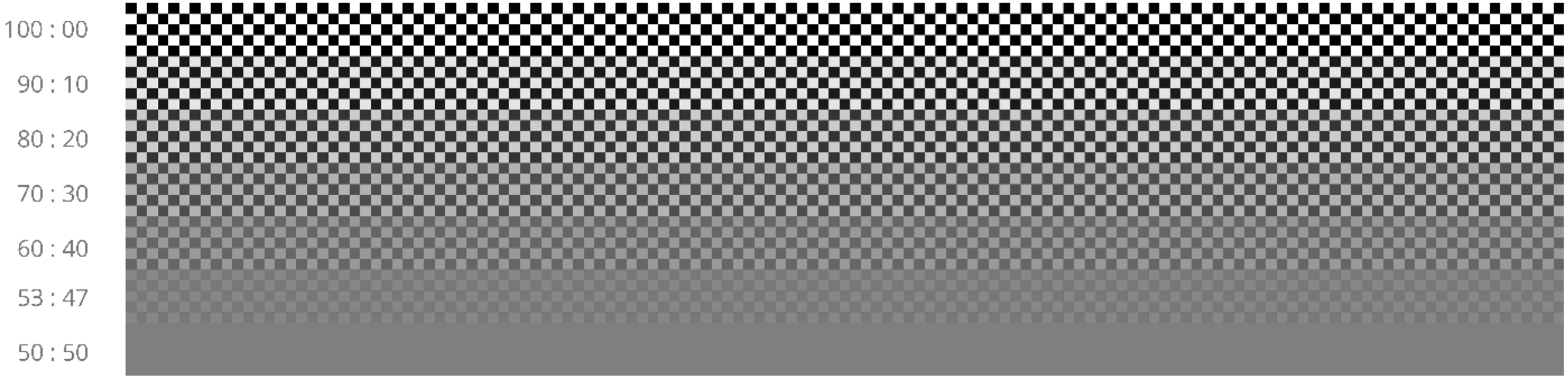
Radiance Model

Visualization

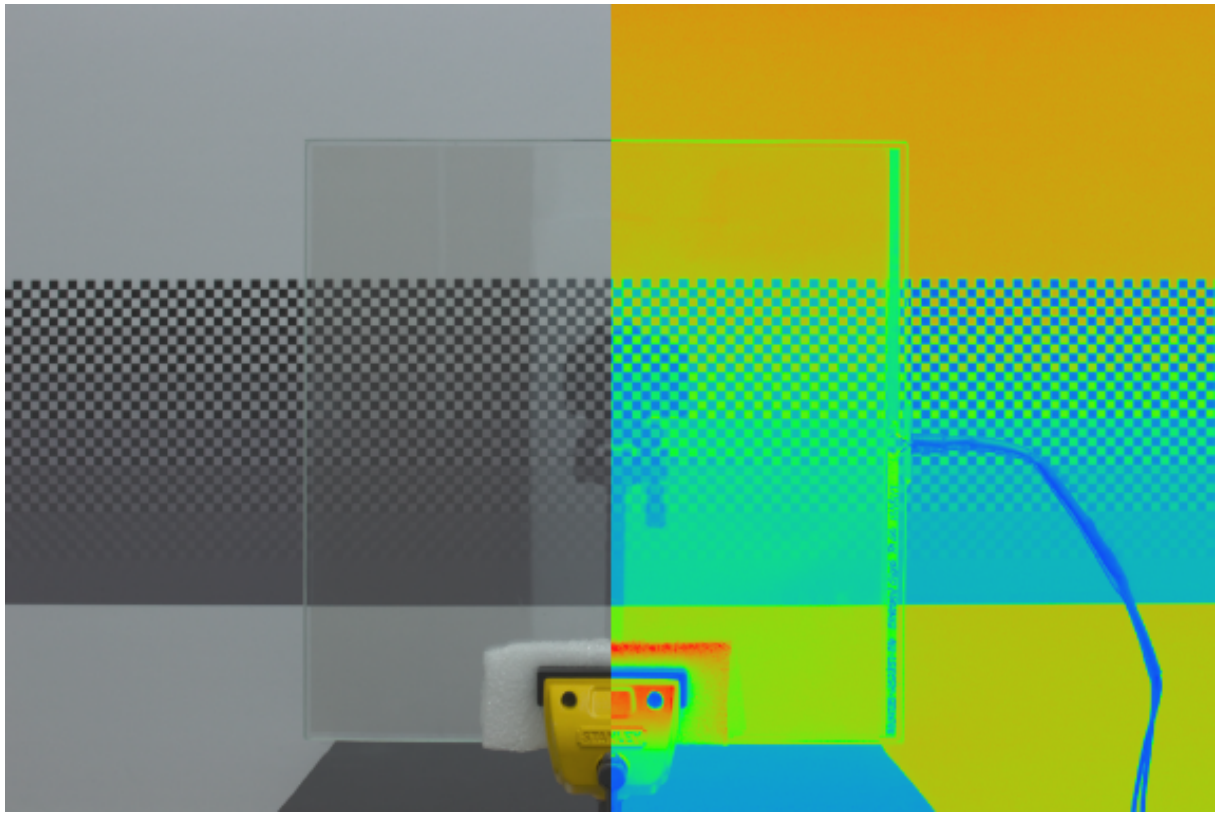
HDR Photography of physical samples

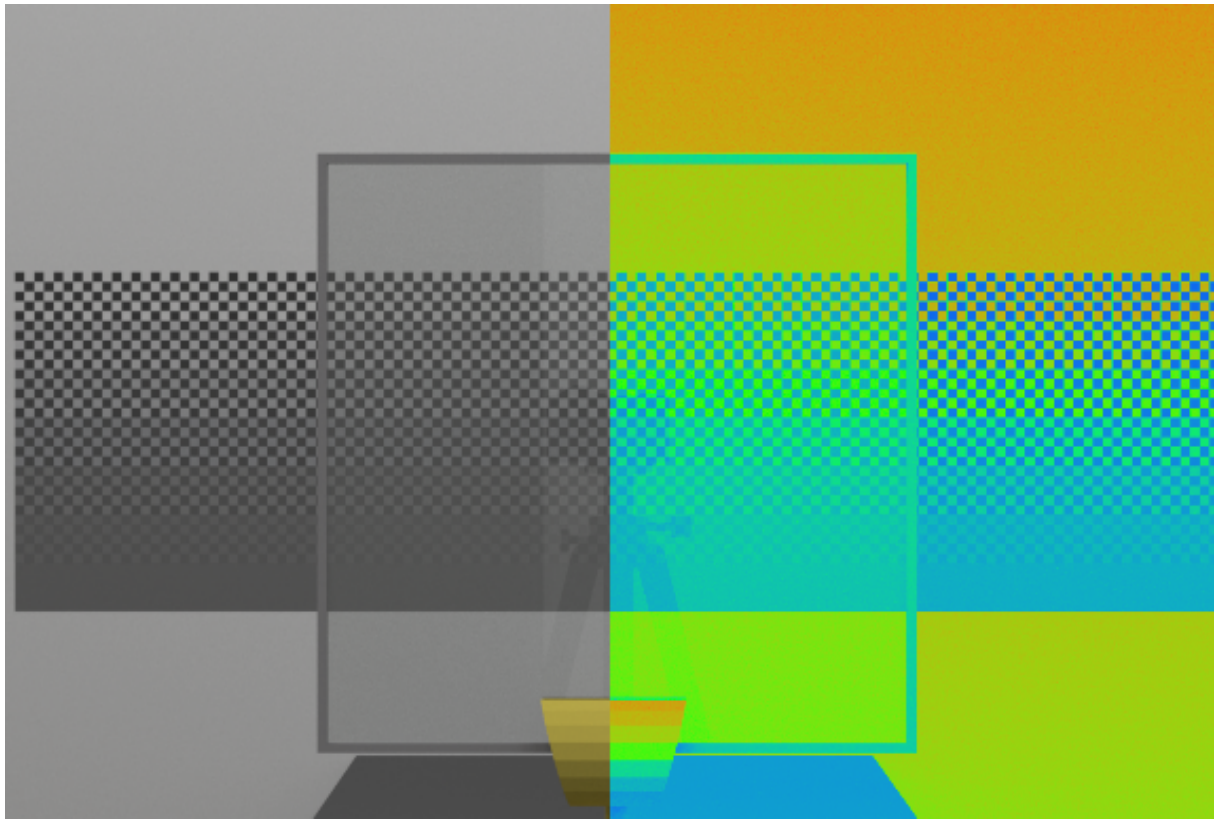






Haze as loss of contrast

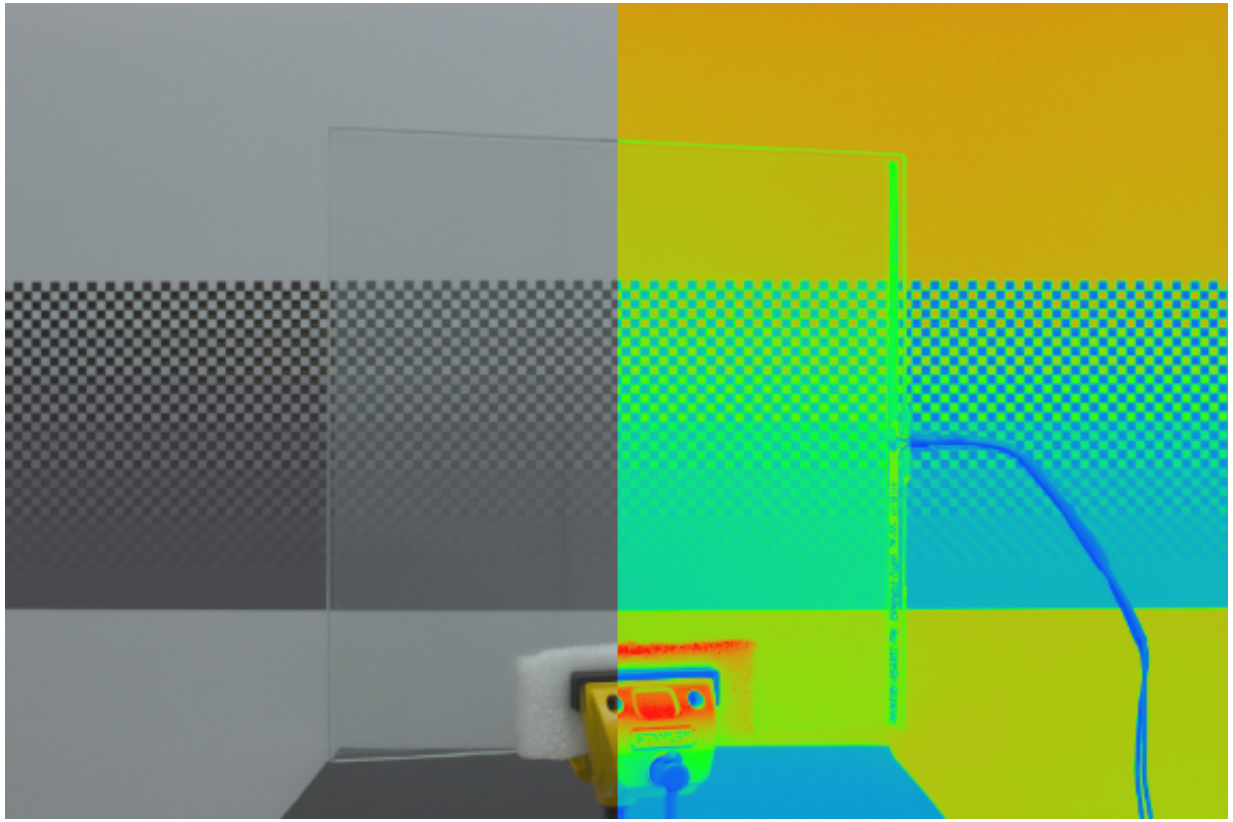


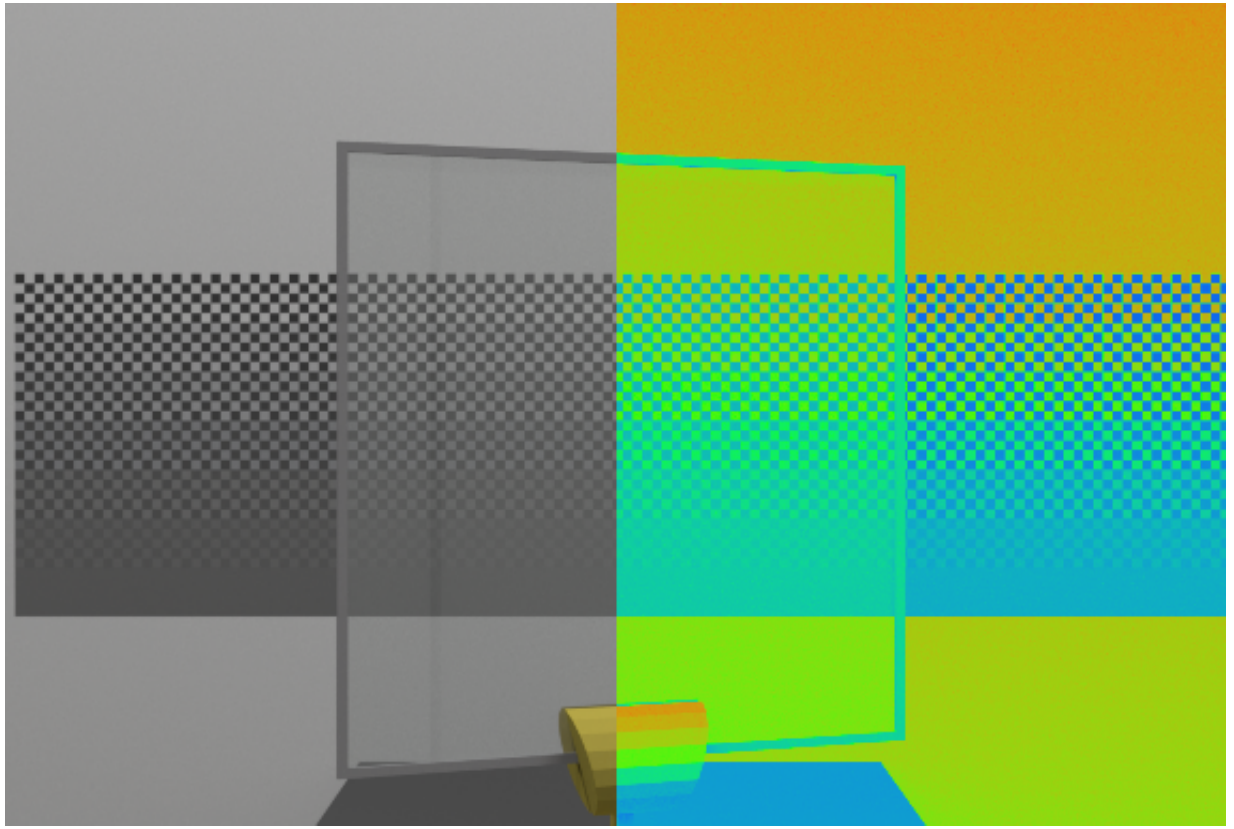
Material Definition calibration – 0 degrees



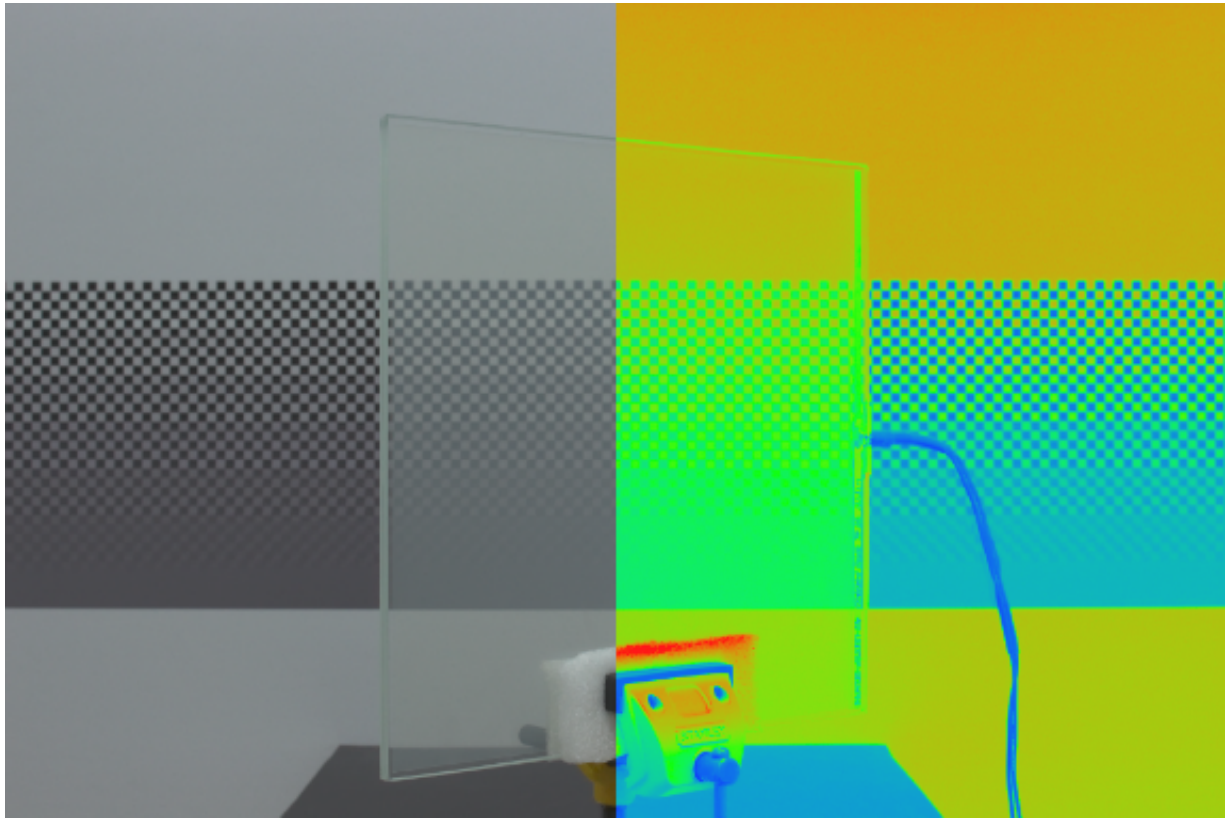


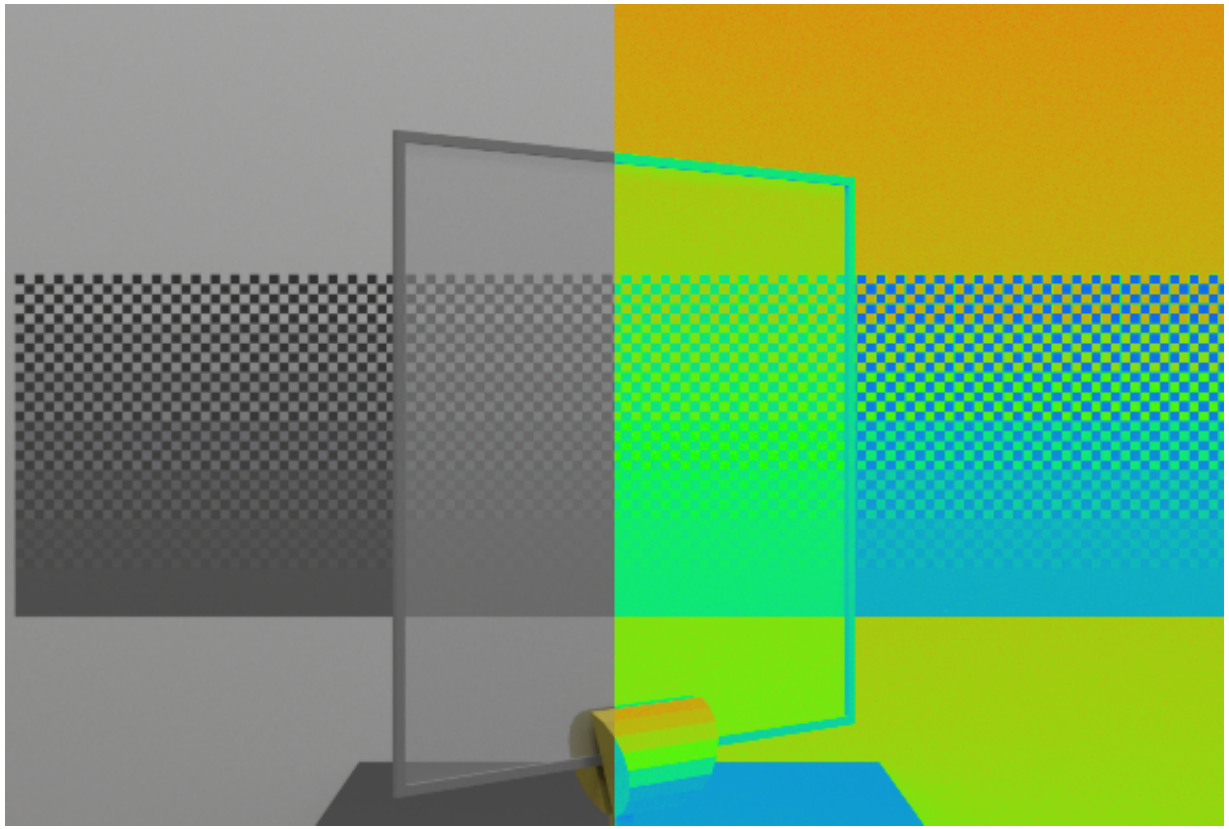
Material Definition calibration – 20 degrees



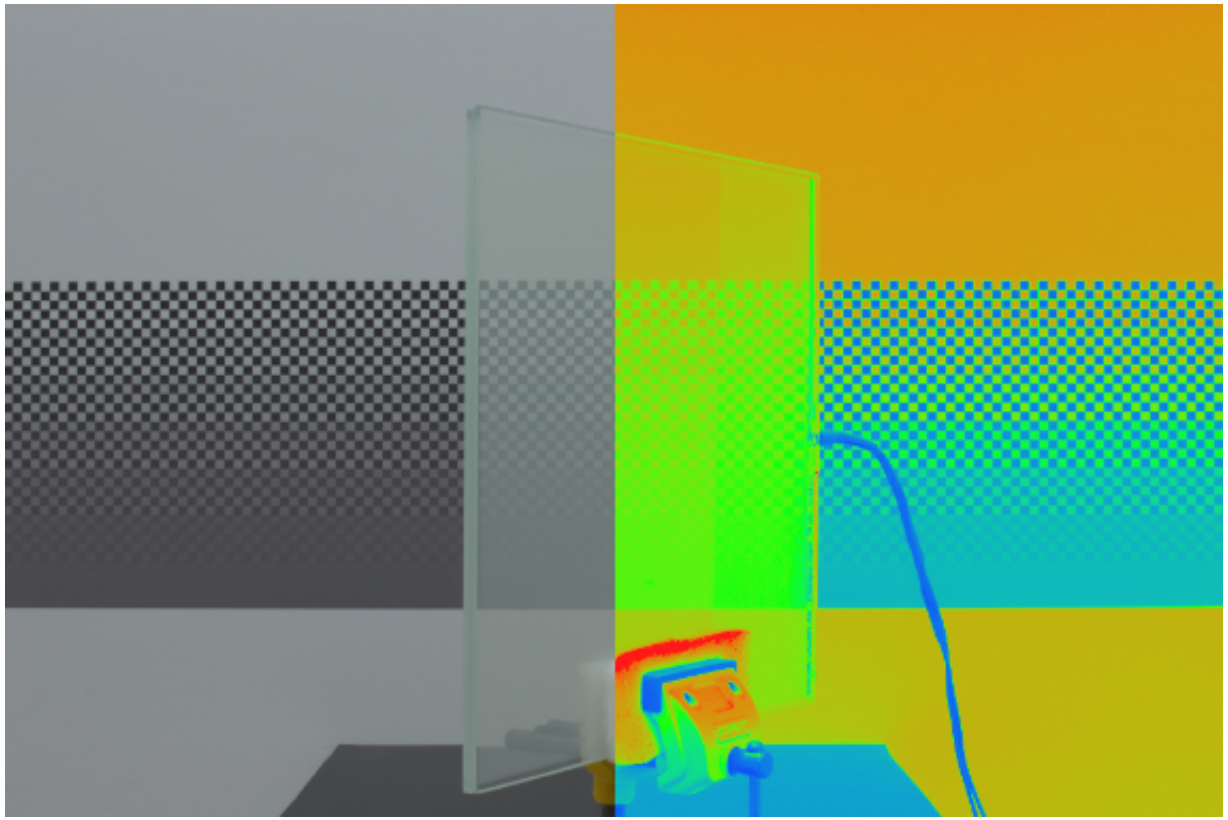


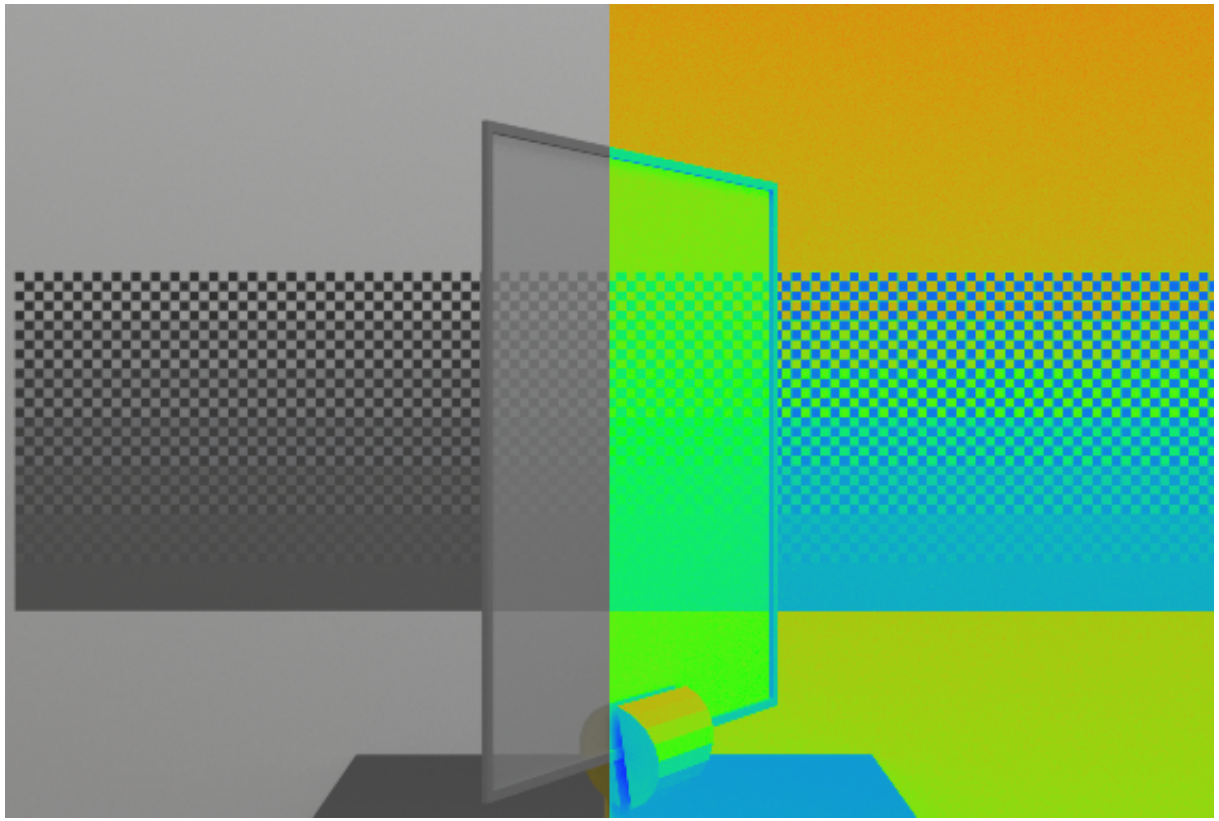
Material Definition calibration – 40 degrees



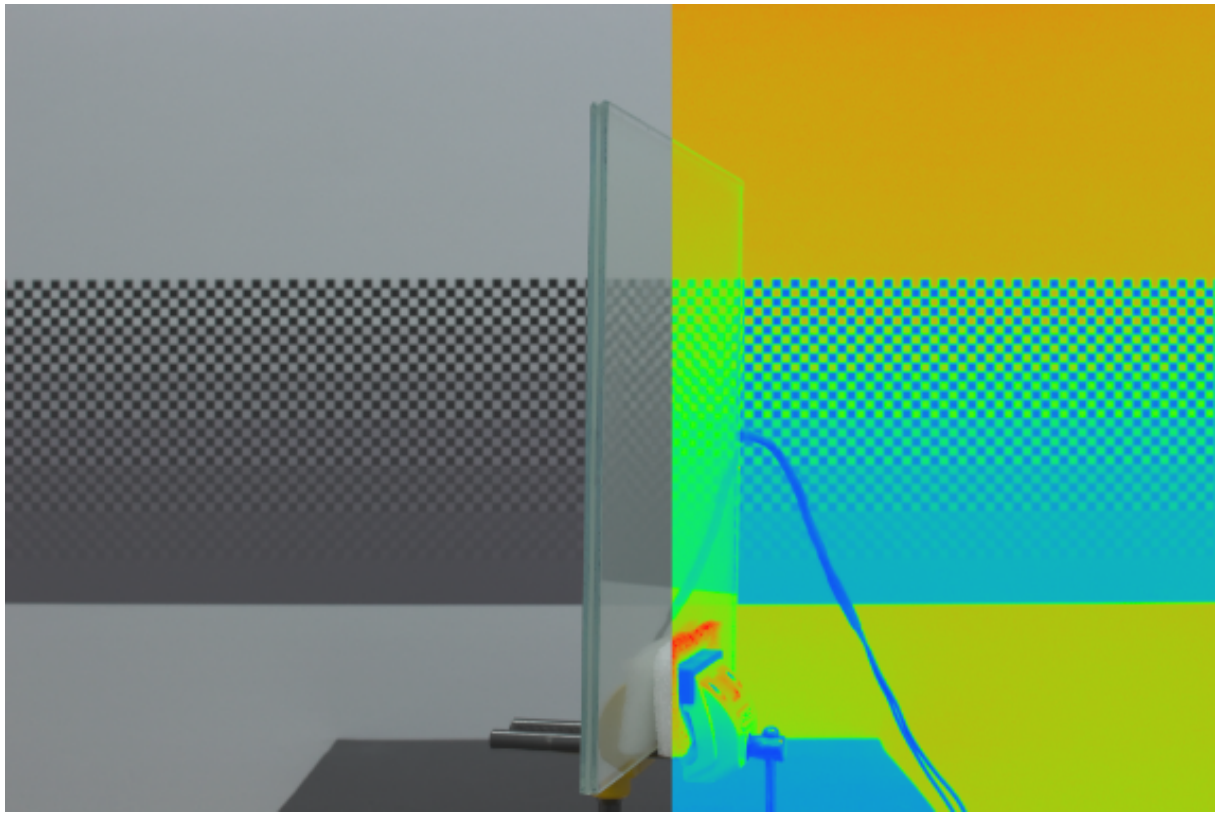


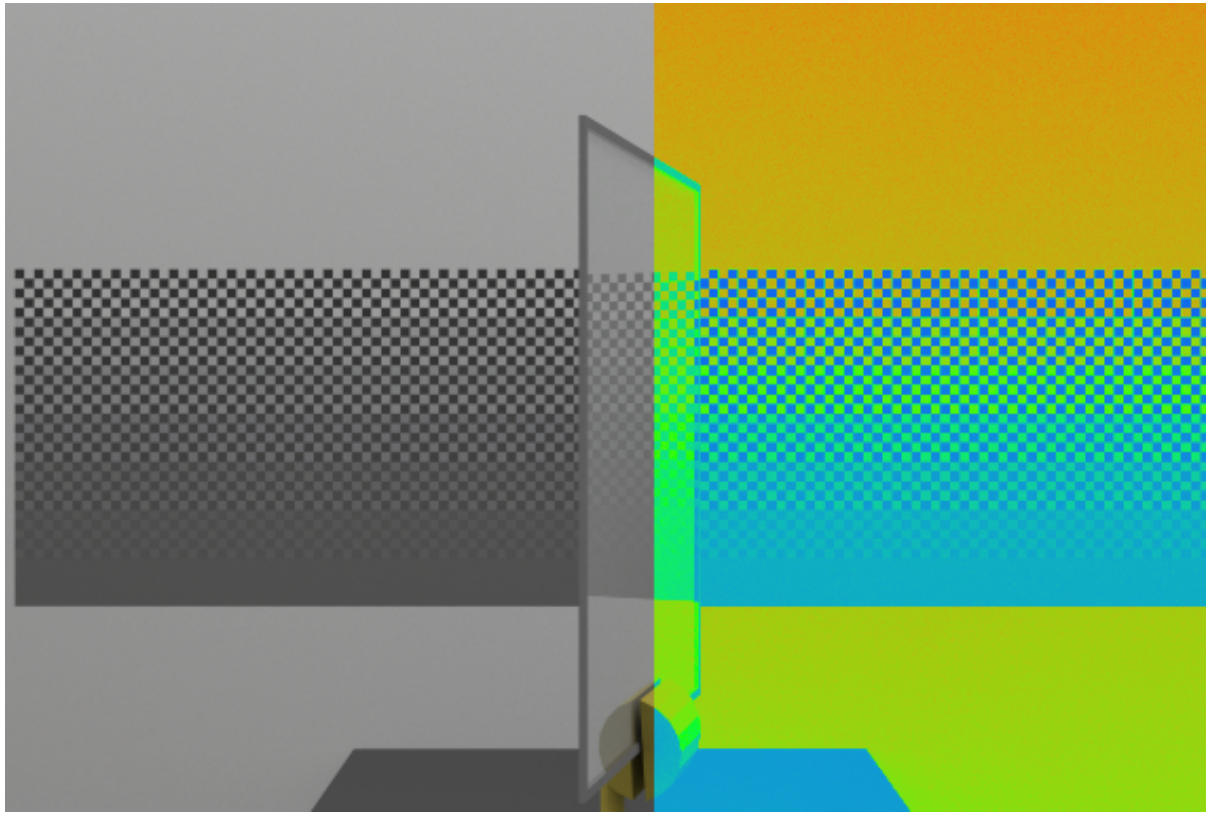
Material Definition calibration – 60 degrees





Material Definition calibration – 80 degrees





Final Renders

0 degrees

Final Renders

20 degrees

Final Renders

40 degrees

Final Renders

60 degrees

Final Renders

80 degrees

Thank you!

alkyoni.papasifaki@elementaconsulting.com