



## **PWDAS-3**

# **ANALYSIS OF GLARE IN INDOOR LIGHTING BASED ON THE HUNGARIAN STANDARDS AND EU DIRECTIVES**

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Although the UGR (Unified Glare Rating) system got general acceptance in glare calculation, some further tests on real applications are still necessary to see how well the system works in practice. Especially because there are many systems that have been designed using the older Söllner diagram method, and it is questionable whether these applications can be used after general maintenance or need new design.

Analysing and comparing of glare theories was the purpose of my work, in particular comparing the Söllner-diagram method and UGR-index method of CIE (International Commission on Illumination). During the last decades glare analysis was based on the Söllner-diagram method in Hungary. The new EU directives are using the UGR-index method. We posed us the question, what UGR indices one can measure for indoor applications that qualified positively according the Söllner-diagram method. This should give us answer on the theoretical differences between the two calculating methods.

To get an answer to above question several lecture rooms were selected, their lighting scheme was re-evaluated, both according the Söllner and the UGR method. Then actual measurements were made to determine the spatial luminance distribution in the rooms, partly using a hand-held luminance meter, and partly using a CCD luminance measuring camera<sup>1</sup>.

The investigation has shown that the room lighting examples that qualified positively by the Söllner method got also acceptable UGR index values. As a by-product, using the luminance measuring camera, it turned out that in one of the lecture rooms the not hundred percent light tight window blinds produced non-acceptable levels of daylight glare on some surfaces – a fact that naturally no artificial lighting glare program can handle.

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<sup>1</sup> Thanks are due to TechnoTeam for lending us the camera.