

Lighting scenarios

21 June 2023

New measurement device prototype for lighting planners

Munich. TÜV SÜD has developed and tested a new directional photometer for use in planning lighting systems. The device is the first to provide highly accurate three-dimensional measurement data of how light is dispersed over objects in a space. This information is of enormous benefit for lighting manufacturers and planners, enabling them to assess and evaluate lighting scenarios more precisely to achieve specific moods or conditions. The experts from the testing, inspection and certification company are placing the plans for the device online to enable it to be further advanced.

“Previous light measurement devices have generally been confined to two-dimensional readings and are unable to evaluate different types of light, which restricts their usefulness in practice”, says Dr Jan Krüger, light and multimedia expert at TÜV SÜD. “Our new prototype now allows users to evaluate the effect of light on any object in the space under assessment in a simple process. We can also measure



the effect of individual point sources, linear sources and complex lighting scenarios.” Manufacturers, planners and users can thus create more targeted and individual lighting environments for reception areas, business premises, sales floors, vehicle interiors and displays of artworks, which enhance the wellbeing of those using the spaces and optimise the visibility of the objects in question.

Rotating measurement head in testing laboratory

The measurement device is built around a single-board computer which controls a photometer unit equipped with two digital light sensors. The device has two servo motors that automatically rotate the measurement head along two axes. During rotation, the photometer unit scans and documents light intensities as functions of the light source position and light direction. The device calculates the

distribution of light intensities from every angle and produces a light vector for every direction, as a basis for experts to derive information about the light directionality and diffusion. The result is a graphic image displaying the distribution of light intensity as a three-dimensional body.

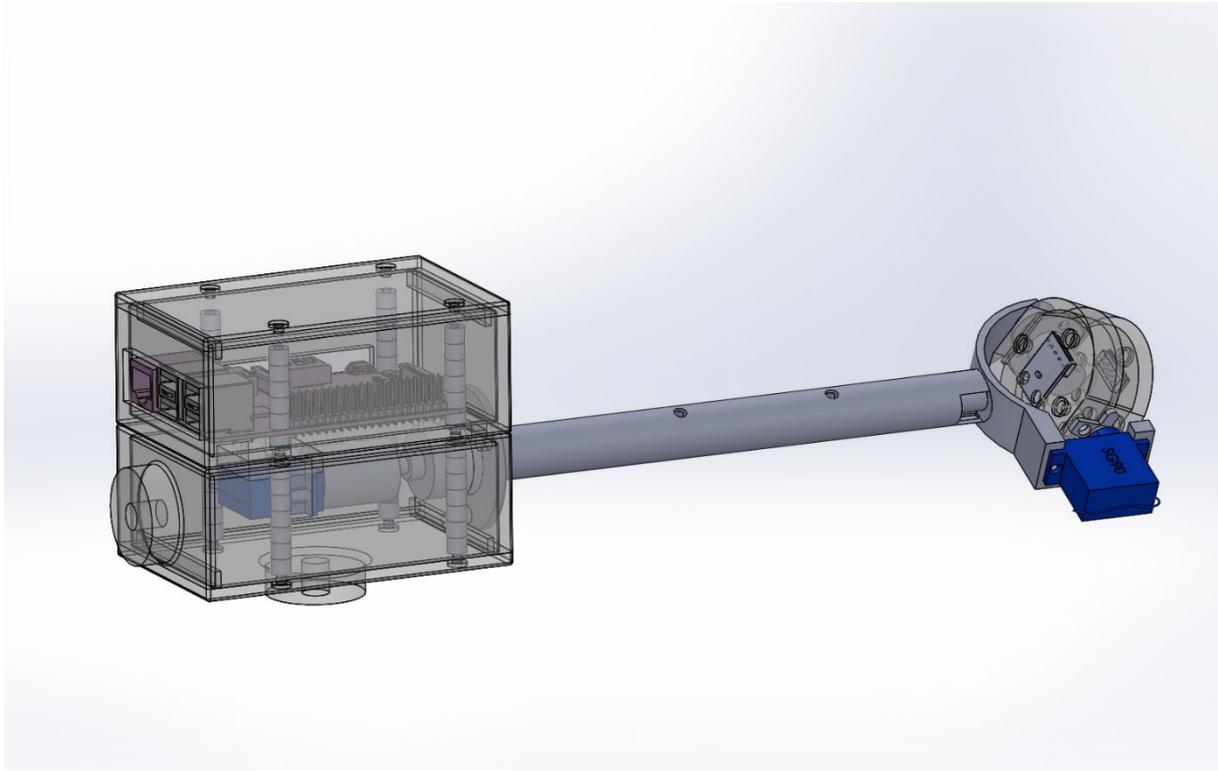


Fig.: CAD model of TÜV SÜD's prototype measurement device

Further development as open-source project

This March, Dr Jan Krüger presented the first measurement results from the device at the 25th LICHT2023, the European lighting congress held in Salzburg, Austria. The design data, Python code with graphic user interface (GUI) and circuit plans with data sheets for the sensors and motors are now available on the online hosting platform GitHub, together with software for graphic representation of the light distribution. “We’re looking forward to receiving new impetus from external sources”, says light expert Dr Krüger, and announces, “A further prototype is already in the planning stage.”

More information available at: <https://www.tuvsud.com/en-us/industries/consumer-products-and-retail/lighting/products>

Note for editorial teams: This press release and high-resolution photo can be downloaded from www.tuvsud.com/newsroom.

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