Press Release

LumiTop guarantees the quality of µLED arrays in AFS applications

Due to the intelligent combination of instantaneous spectroradiometric reference measurement and camera-based color- and brightness measurement, the LumiTop system from Instrument Systems is predestined for use in the quality inspection of µLED modules.

Munich, September 2022 – *At Light+Building in Frankfurt Hall 8.0 H38, Instrument Systems will be showcasing its spectrally enhanced LumiTop 4000 2D imaging colorimeter for testing µLED arrays in AFS applications. The 12 MP camera simultaneously measures the individual LEDs of the array, and due to its high measurement speed, it avoids the temperature-dependence of high-performance LEDs. In combination with a high-end CAS 140D spectroradiometer, the system – calibrated to luminance (in cd/m²) – delivers highly accurate measured values. In particular, it is excellently suited to the quality control of the uniformity, brightness and color of µLED arrays.*

New adaptive front-lighting systems (AFS) use µLED arrays with several 10,000 individual light sources. This enables precise control of the light beam, as each µLED can be controlled individually. The major challenge in quality inspection of these high-performance LEDs is the immediate onset of temperature rise when switched on. The resulting heat causes a drop in performance and leads to a color shift. Due to the latter, measurement systems for quality control of uniformity, brightness and color of the arrays are confronted with combined challenges: the measurement must take place quickly and nevertheless very accurately, so that the temperature independence of the measured values has no influence.

With the camera-based LumiTop 4000 2D system, Instrument Systems offers a measurement solution that forestalls the effects of a temperature drift during measurement due to its high measurement speed. In addition, the procedure is synchronized with the current source of the µLED and begins immediately upon switching on the LED array. Compared to traditional measurement methods that measure each LED of the array individually, the simultaneously measuring LumiTop system is many times faster. Thanks to the spectral extension of the system with Instrument Systems' high-precision CAS 140D spectroradiometer, it also delivers highly accurate readings due to absolute system calibration. Instrument Systems is a test laboratory accredited to ISO 17025 and guarantees traceable measured values with known accuracy. The LumiTop

system is calibrated to luminance (in cd/m^2) as an optical quantity, and due to its design, precision, speed and resolution it is ideal for the µLED array measurement of AFS applications. With its 100 mm lens, the 12 MP LumiTop camera has a minimum field of view of 10 x 14 mm and is suitable for measurements in the lab and production line.

From 2–6 October 2022 Instrument Systems will be presenting its high-precision, traceably calibrated measuring systems at Light+Building in Frankfurt. Visit us in Hall 8.0 H38 and see for yourself the new model variants of the high-end CAS 140D spectroradiometer and LumiTop 4000 2D imaging colorimeter.

www.instrumentsystems.com

Figure: The LumiTop system offsets the heating effect of high-performance LEDs by simultaneous measurement of all color channels and single emitters in one shot.

Text material and images:
https://instrumentsystems.owncloud.online/index.php/s/Kb5wmJpF9byEFwl

Company portrait of Instrument Systems GmbH
Instrument Systems GmbH, founded in Munich in 1986, develops, manufactures and markets all-in-one solutions for light measurement applications. Its core products are array spectrometers and imaging colorimeters. The company's main fields of activity are LED/SSL and display metrology, spectral radiometry and photometry, as well as laser/VCSEL characterization where today Instrument Systems is one of the world's leading manufacturers. The Optronik line of products for the automotive industry and traffic technology is developed and marketed at its Berlin facility. Instrument Systems has been a wholly-owned subsidiary of the Konica Minolta Group since 2012.

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