Interior and Exterior Displays for Autonomous Cars

Karlheinz Blankenbach
Pforzheim University,
Germany

Autonomous capabilities have a huge impact on the design and use of cars. The "driver" will become a passenger. So more time is spent on displays, which must be large, as the intended trajectory should be visualized to build trust in autonomous capabilities. The driving mode must be visualized within the cars and outside, the latter for authorities. Automotive interior lighting will evolve to 1,000s of RGB LEDs providing orchestrated effects and living room feeling for autonomous and robot cars.

Conclusion

New concepts and prototypes have been developed and evaluated with the automotive industry: Large interior displays, augmented-reality Head-Up displays, pixelated interior lighting and exterior displays. Improvements of LCDs such as FALD and Dual Cell, automotive OLEDs with its optical image quality and lifetime testing, image enhancement for improved readability at bright light conditions, automotive pixelated RGB LED interior lighting (ISELED, temperature compensation, calibration, new method for uniformity measurement), the design and evaluation of "Scheibenwurzel-Displays" (perceived brightness of colors, luminance for all illuminance conditions) and approaches for exterior displays (resolutions, readability, size of text and symbols) will be presented.

Keywords:

Displays, LCDs, OLED, AR-HUD, optical performance, LED, lighting

Source: Group Antolin

Biography:

Karlheinz Blankenbach has three decades of experience in displays. From 1988 until 1995 he was with AEG-MIS (a Mercedes subsidiary) in Germany, developing display electronics, e-signage LCDs, and software. In 1995 he was appointed to full professor at Pforzheim University, Germany, where he founded the university's Display Lab. His main R&D activities are automotive display topics such as optical measurements, display systems, evaluations, HMI, and LEDs, as well as display hardware and software. Blankenbach is a member of the Society for Information Display's program subcommittee, Automotive/Vehicular Displays and HMI Technologies, and a member of SID's International Committee for Display Metrology. He has served as a member of the board of the Displayforum (DFF) since 2000; after nine years as chairman, he was appointed to honorary chairman in 2020.

karlheinz.blankenbach@hs-pforzheim.d

Received: 15 April 2022; Accepted: 17 April 2022; Published: June 09 2022