

JBD and tooz enter partnership for a new generation of smart glasses with prescription and full color virtual screens

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The curved waveguide by tooz and the color microLED display engine by JBD enable bright, full color virtual screens in the wearer's field of view. (© tooz technologies GmbH)

Under the newly formed collaboration, JBD and tooz are the first to achieve a new milestone in the development of smart glasses for end consumers by combining a curved waveguide including prescription with a color microLED display engine.

Jade Bird Display, a leading manufacturer in the development and mass-production of microLED displays, and tooz technologies, a start-up focused on the development of optics for data glasses, announced their strategic partnership to jointly develop a new generation of optical engines for smart glasses. The combination of the color microLED display engine by JBD and the curved waveguide by tooz enables sharp, full color virtual screens while keeping a slim and stylish form factor and fulfilling the essential function – individual vision correction – of everyday glasses. The companies have announced that a first demonstration will be unveiled at the Photonics West SPIE AR VR MR 2022 exhibition starting from the 24th of January 2022 in San Francisco, USA.



The tooz waveguide including prescription and the color microLED display engine by JBD allow for a slim and stylish form factor of the smart glasses. (© tooz technologies GmbH)

Combining powerful technologies

For the joint solution, JBD provides its unique display engine that combines three monochrome microLED display panels with a x-cube to form a polychrome display. The red, green and blue 0.13 " panels are aligned to the sides of a 5 mm x-cube resulting in a total volume of just 0.72 cubic centimeters. The JBD module is then attached to the curved waveguide lens by tooz. With several high precision free-form surfaces, the lens guides the light from the x-cube to the wearer's eye without the need for any additional separate optical elements. The tooz optics is currently the only curved waveguide lens on the market that allows seamless integration of vision correction.

Due to a high and fully customizable efficiency of tooz' waveguide concept and high transmissivity, the solution hits unreached levels of brightness of the virtual image without compromising see-through performance or power consumption. One of the main levers to achieve this is an optimization of the wavelength-dependent efficiency of the waveguide to the individual display characteristics, allowing to boost the red microLED color.



JBD and tooz combine a curved waveguide including prescription with a polychrome display engine consisting of a x-cube and a red, green and blue microLED display panel. (© tooz technologies GmbH)

Important milestone for end consumer glasses

By launching its first pair of smart glasses for developers in 2020, tooz has already proven that it is able to design and produce optical platforms that enable cost-effective, fully working turnkey smart glasses solutions. Together, the partners take the next step to make the vision of all-day smart glasses for end consumers reality: With the energy-efficient combination of waveguide and x-cube, the virtual information screens in the wearer's field of view can be multicolored allowing for a versatile visualization of the user interface. Further, the screens are brighter compared to former displays while consuming less battery power. Consequently, the augmentation is easier to see under high ambient lighting conditions, e.g. in bright daylight. The decrease in power consumption allows for all-day usage of the wearable in a slim and stylish form factor. These technological enhancements have a strong positive influence on how end consumers will accept and use smart glasses in the future.



The combination of both technologies enables sharp, full color virtual screens while fulfilling the essential function – individual vision correction – of everyday glasses. (© tooz technologies GmbH)

First demonstration at SPIE AR VR MR 2022

The combination of the curved waveguide and color microLED display engine will be showcased for the first time at Photonics West's SPIE AR VR MR 2022 exhibition in San Francisco, USA. JBD will be present to demonstrate the first results of the newly formed strategic partnership. In a joint talk on stage, Qiming Li, CEO at JBD, and Dr. Frank-Oliver Karutz, CTO at tooz, will provide inclusive insights.

More information and image download: www.tooz.com/jbd-tooz-partnership

About JBD

Founded in 2015, Jade Bird Display Ltd. has been focusing on developing the smallest, brightest, and most efficient microLED micro-display panels. JBD has achieved ultra-high yield and uniformity, making the hybrid integration technology commercially viable. With a pilot fab established in Shanghai, JBD continues to expand its manufacturing capacity and extend its development effort to support its customers.

For more information, visit www.jb-display.com

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About tooz

tooz technologies GmbH is a joint venture of ZEISS and Deutsche Telekom. With the mission to upgrade normal prescription glasses with digital virtual screens, tooz develops optical engines which enable cost-effective, unobtrusive and turnkey smart glass solutions. Innovative optical technologies for wearables by tooz unleash a variety of new use cases across industries, in the health sector and for consumer applications.

For more information, visit www.tooz.com

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