Company Profile

InZiv is a world leader in electro-optical testing and inspection solutions, with focused specialties in microLED displays and silicon photonics. driving the future of display technology. From augmented reality smart glasses and advanced smartwatches to next-generation automotive displays, premium TVs, and flexible screens, microLED technology is essential for the most cutting-edge innovations in the world of displays. MicroLED displays offer unparalleled performance and are the only display technology capable of maintaining flawless visibility - even in bright outdoor sunlight. In addition to exceptional brightness and contrast, microLED also maximizes energy efficiency, delivers the highest resolution available, and achieves true black color.

With all of these advantages, why haven't microLED displays taken over the market yet? Currently, the yields in microLED production are lagging behind other display technologies. One of the major bottlenecks in microLED production, and a main cause of these low yields, is the lack of *advanced testing and inspection solutions* that are needed to bring microLED to mass production. That's where InZiv comes in.

MicroLED chips are remarkably small, with manufacturers now designing chips in the single-digit micrometer (µm) range. (For comparison, a human hair is about 75 µm wide.) These chips are grown on wafers that contain millions of individual LED chips. Later in the process, they are carefully transferred onto displays for devices such as smart glasses, smartwatches, or premium TVs. However, faulty chips can compromise the display's functionality and/or energy efficiency. To prevent such issues, it is essential to verify that each chip functions correctly before integration. Early defect detection allows manufacturers to remove defective chips before they progress further in the production process, avoiding costly inefficiencies. The longer they wait to test, the greater the financial impact.

For microLEDs to truly flourish, the yields must be improved. The key to achieving these improved yields is effective testing and inspection equipment early in the process, before the microLED chips have been transferred from the wafer. Developing microLED wafer inspection equipment, capable of rapidly analyzing components at this microscopic scale, raises many significant challenges. The most critical testing methodology is called electroluminescence (EL), which activates the chip to emit light through electro-excitation

(i.e. by applying an electric current). Once the chip is activated, and light is emitted, all of the critical properties can be evaluated, and the chip's performance can be assessed. However, standard EL testing for millions of tiny microLED chips is extremely slow; at current standard EL speeds, one microLED wafer could take up to 2 months to inspect. Moreover, in addition to the challenge of inspecting millions of tiny microLEDs at high speeds, the process of testing with standard EL carries great risk of damaging the chips that are being tested. The direct contact with these delicate, micron-scale chips, that is required by conventional EL testing, may inadvertently damage them.

To address this bottleneck, InZiv has developed the **R-EL Glide™,** their flagship product, which revolutionizes microLED inspection for display manufacturers by offering high-speed electroluminescence (EL) testing without causing any damage to the chips. The R-EL Glide delivers unprecedented throughput, testing millions of microLED chips per hour – a dramatic and game-changing leap forward from the industry standard. The system provides true EL contact, but with no damage to the device, and is highly reliable, accurate, and features a long probe card lifespan. Proprietary AI algorithms identify defects and provide actionable insights, empowering data driven decisions and optimizing the microLED production process.

Key measurements provided by the R-EL Glide include:

- Go/No-Go (Pass/Fail) microLED electro-optical functionality
- Wavelength
- Intensity
- Electrical data per device: IV curve, V_f, and I_r

Additionally, InZiv has developed the OmniPix 3.0™, a versatile and advanced system for microLED characterization and validation. It empowers both production and R&D teams to accelerate innovation and ensure quality throughout the production process. As progress in display technology continues, the OmniPix 3.0 delivers high-resolution testing and comprehensive defect analysis for both microLED and OLED-on-silicon (OLEDoS) wafers and chips.

Based in Jerusalem, Israel, InZiv was established in 2018.