

**SCREEN Semiconductor Solutions Co., Ltd.**

## SCREEN Develops Direct Imaging System for FOPLP

*– It Delivers Industry-leading 2.0  $\mu\text{m}$  Resolution Used in Semiconductor Packaging Processes –*

Kyoto, Japan – January 11, 2017 – SCREEN Semiconductor Solutions Co., Ltd. has finalized development of its highly anticipated DW-3000 direct imaging system for panel level packages (PLP). The DW-3000 delivers an industry-leading resolution of 2  $\mu\text{m}$ <sup>1</sup> and is specifically designed to handle fan-out panel level packages (FOPLP)<sup>2</sup> in semiconductor packaging processes. The new system will be released to the market in January 2017.



### DW-3000 for PLP

Please download the photo from  
[www.screen.co.jp/eng/press/download/SPE170111.zip](http://www.screen.co.jp/eng/press/download/SPE170111.zip)

In recent years, the increasing use of smartphones and other mobile devices has created a demand for ever greater integration, speed and miniaturization of semiconductor devices. However, with progress in the miniaturization of wafer processes gradually slowing, expectations are growing for package technologies. This trend has created intense interest in SCREEN's new DW-3000 direct imaging system for PLP. The system provides outstanding imaging resolution and speed and supports the enhanced layering and fan-out of semiconductor chips.

The DW-3000 combines imaging heads equipped with SCREEN's proprietary integrated grating light valve (iGLV)<sup>3</sup> optical engine and laser control technology. This enables it to achieve the industry's leading resolution (2  $\mu\text{m}$ ) for a direct imaging system used in mass production. The DW-3000 also features an image correction function that automatically adjusts exposure data to prevent alignment errors during repositioning of semiconductor chips. These errors had presented a significant challenge to improving fan-out processing. The image correction function utilizes the superior performance of direct imaging systems to achieve optimal exposure.

The new DW-3000 for PLP represents an impressive addition to SCREEN's lineup of direct imaging systems. It provides a comprehensive solution to the various requirements of the semiconductor package process as the technology continues to evolve and diversify. The system is also expected to make a significant contribution to the ongoing expansion of the overall semiconductor industry.

1. The figure refers to the resolution of a direct imaging system used in mass production (current as of January 2017, SCREEN research).
2. This type of semiconductor package technology is similar to that involved in the manufacturing of fan-out wafer level packages (FOWLP) except that it uses panels rather than wafers as the base medium. As the technology does not require a IC package substrate, FOPLPs have been attracting attention for their increased thinness, low cost and higher number of pins.

3. These display components are able to effectively control both the direction and intensity of light. They utilize the sensors and communication mode of micro-electro-mechanical systems (MEMS), semiconductor technologies employed in the biology field and light coherence theories. iGLVs are usually arranged in parallel rows of light-reflective ribbons above the substrates of semiconductor devices. This allows them to be used to create multiple channels for exposure beams.

SCREEN will introduce the DW-3000 for PLP at the 46th Internepon Japan, held as part of Nepcon Japan 2017 at Tokyo Big Sight in Ariake, Tokyo from January 18 (Wed.) to 20 (Fri.), 2017.

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