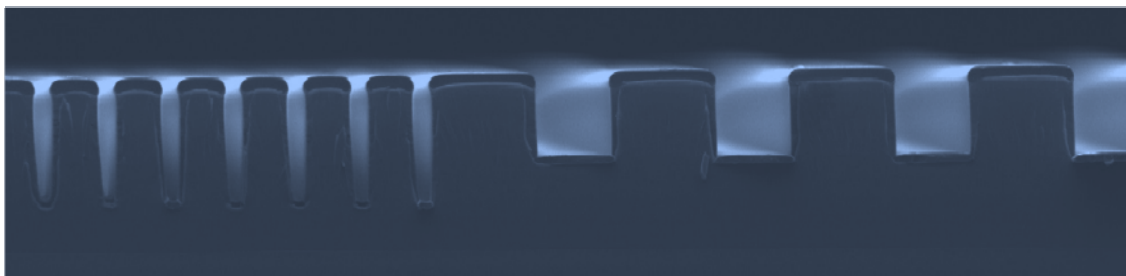


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## SCREEN Develops New Platemaking Technology for Printed Electronics

*– Advanced Printing Method Enables Production of Complex Electronic Circuits –*

Kyoto, Japan – November 5, 2015 – SCREEN Holdings Co., Ltd. has developed a world-first\* platemaking technology that allows simplified batch production of complex electronic circuits. In creating this new approach, SCREEN applied its own propriety technologies to existing gravure offset printing techniques.\*\* The method is effective even for circuits that contain a mixture of various line widths and does not require repeated print runs. SCREEN expects to have printing plates that use this technology ready for commercial application by January 2016. It is also considering various other areas including product development and system integration, and aims to establish itself as a leading company in the printed electronics field.



**Cross-section from a gravure offset printing plate that uses the new technology**

Please download the photo from  
[www.screen.co.jp/eng/press/nr-photo\\_2014-2015.html](http://www.screen.co.jp/eng/press/nr-photo_2014-2015.html)

Printed electronics has been attracting attention in recent years as a technology that supports relatively simple and low-cost mass production of a wide range of items such as wearable electronics and OLED lighting. With this technology, circuit formation usually involves an approach that utilizes either screen printing (stencil plate) or gravure printing (engraved plate). Particularly in the case of precision electronic devices, with their extremely complex and detailed circuitry, gravure offset is the preferred production method.

Unfortunately, during batch production of circuits with differing line widths, offset gravure can lead to transcription errors and resulting line breakages as well as uneven film thicknesses. To prevent this, it is necessary to prepare multiple printing plates that have each been created for individual circuits with the same line width. These plates are then used in separate, repeated print runs. This requirement has naturally formed a major barrier in the establishment of a large-scale production system.

After analyzing these trends, SCREEN drew on its full range of expertise. This included the platemaking and image processing technologies it had developed over many years in the printing industry, the highly regarded surface processing technologies used in its semiconductor and LCD-related production equipment, as well as its PCB-related direct imaging technologies. The result was the creation of a world-first platemaking technology that used an enhanced form of gravure offset printing to enable batch production of electronic circuits.

This new technology takes into account factors such as the material quality and viscosity of ink and impression information when preparing the platemaking data for a circuit. It then uses these details to create a printing plate with depths that are optimized for the line widths of the particular circuit. This approach successfully eliminates the transcription errors leading to line breaks and unevenness in film thickness that can occur during batch production of circuits. In a single stroke, this remarkable technology resolves both the productivity and cost issues that had been holding back the field of printed electronics.

SCREEN anticipates printing plates that use this platemaking technology will be available for commercial application by January 2016. It is also considering the development of optimized printing equipment and system integration. This technology is a significant advance that will contribute to the continuing development of the overall electronic device industry and also establish SCREEN at the forefront of the printed electronics field.

\* Details are based on SCREEN in-house research.

\*\* Gravure offset is a printing method in which ink supplied to a gravure (engraved) plate is first temporarily transferred onto a cylindrical rubber roller (blanket) that contacts the plate. The ink is then subsequently transferred onto the media used for printing. As the ink has a low fluidity (semisolid) when transferred to the blanket, it is possible to reproduce even fine lines with high definition.

Note: SCREEN will introduce this new technology at Printable Electronics 2016, to be held from January 27 (Wed.) to 29 (Fri.) at Tokyo Big Sight in Ariake, Tokyo.