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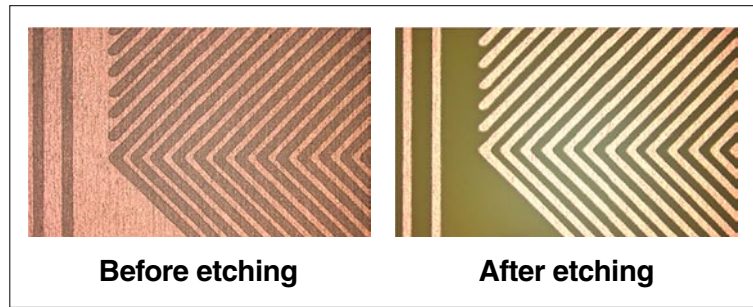
Dainippon Screen Develops Direct Patterning System for Manufacturing Flexible Printed Circuits

World's top throughput plus dramatically shorter circuit formation process

Kyoto, Japan -- April 16, 2009 -- Dainippon Screen Mfg. Co., Ltd. has successfully developed a direct patterning system that can be used in the manufacture of flexible printed circuits (FPC). The new system offers industry-leading throughput speeds* and Screen is currently working to prepare it for release to the market in 2010.



Direct patterning system



Example of FPC processing using direct patterning

Please download the photos from
<http://www.screen.co.jp/press/nr-photo/indexE.html>

In recent years, the progressive miniaturization and diversification of mobile phones and digital consumer electronics has been accompanied by a significant increase in the demand for FPCs, thanks to their light weight, compactness, excellent flexibility, and many other features. Long-type printed circuit boards (PCB) have shown particularly rapid market penetration and the applications for these boards are expected to expand significantly. This has led to a requirement for equipment that can offer both high quality and productivity in FPC manufacturing lines. Unfortunately, conventional circuit formation requires processes for 1. attachment of photosensitive film-type etching resist (protective film) on to copper substrates, 2. exposure using previously formed circuit pattern masks, and 3. developing and fixing of exposed circuit patterns. As a result, PCB manufacturers have introduced multiple units in an effort to maintain high processing capacity.

Dainippon Screen's direct patterning system incorporates a newly developed electrophotographic process that utilizes liquid toner with resist features. The process enables resist patterns to be printed directly on to the FPCs from drawing data, allowing the above three processes to be performed in a single process. This results in the world's fastest throughput, with speeds that are approximately three times** faster than in conventional processing. The system also contributes significantly to reduced running costs such as the reduction of defect rates and elimination of mask creation, which have been highly challenging areas in the process. In addition, it is highly compatible with existing production lines for pre- and post-processes and also environmentally beneficial thanks to the omission of developing, which means the disposal of waste liquids is no longer required.

With the development of this direct patterning system, Dainippon Screen is targeting the expansion of new business areas within the FPC industry. It also has its sights set on the creation of applications for various uses, including other PWBs and IC tags, which have been attracting significant attention in recent years. Through these efforts, Screen aims to expand the range of applications for this technology.

* As of April 2009 (according to Screen's research).

** Throughput values for the photosensitive film attachment, mask exposure, and developing processes are based on Dainippon Screen's research.