

## 제팅 제어를 위한 잉크젯 시스템 개발

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Ink jetting system has been developed such that it can understand the jetting status by software algorithms. In order to understand jetting conditions, two different approaches have been used. One is to use the self-sensing capability of the piezo actuator in the printhead. The other is to use the droplet image from a CCD camera for measuring meniscus motion. By the use of self-signal and meniscus motion, the in-situ diagnosis of inkjet system can be possible since it can detect abnormal jetting status such as trapped air bubble in the head. Furthermore, it can measure important ink properties for ink jetting such as speed of sound and viscosity. Finally, systematic waveform design methods have been under development for jetting control such that automatic waveform design be possible based on measured self-sensing signal and meniscus motion.

**Keywords:** inkjet, jetting control

## 인쇄전자부품생산용 롤투롤 복합프린팅 공정장비 기술개발

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Renovation required in the display process is the fine pattern formation process, which normally uses the semiconductor process based on expensive equipment, extreme process environment and photosensitive material. Current semiconductor process needs an expensive photomask and exposure radical, photoresist and sputtering. It is predicted that process reform for past several years reaches in limit of cost reduction. Research and development are achieved to accomplish process reform by applying ink jet or roll printing instead of semiconductor process for the method to accomplish this high price material waste and fine pattern formation process. However, in the case of the existing ink jet printing, the fine pattern application was obtained by reducing the nozzle diameter. This approach contains the problem that the yield rate of ink jet print head is fallen as the nozzle size is decrescent and process stability is fallen according as being blocked nozzle at process application. And in the case of the roll printing, when ink is decaled from master plate to board, the problems such as hangover is ever-present on master plate and mass high price ink should be engaged are indicated. Therefore, in this study, basis design and test to develop fine patterning equipment employing the hybrid R2R printing equipment were achieved as one approach to cope these problem.

**Keywords:** R2R(Roll-to-Roll), PEMS(Printed Electro-Mechanical System)