

September XX, 2009

KYOCERA Develops World's Fastest Inkjet Printhead

*Enhanced device offers high-speed, high-resolution, full-color printing
at 150 million dots per second*

KYOTO, September XX, 2009 — Kyocera Corporation (*President: Tetsuo Kuba*) today announced that it has developed the world's fastest* inkjet printhead — the key component in inkjet printing equipment. Each nozzle in the new KJ4 Series printhead ejects ink at up to 60,000 dots per second (at 60kHz drive frequency); with 2,656 nozzles per head, the device is capable of printing approximately 150 million dots per second.

Kyocera's previous inkjet printhead offered the world's fastest print speed when it was introduced in 2008 — 150 meters per minute at 600× 600dpi resolution, using a drive frequency of 30kHz. The newly developed printhead sets new records for high resolution, full-color inkjet printing, offering the world's fastest print speeds in any of three resolutions: 600× 360dpi (330m/min. at 40kHz), 600× 600dpi (200m/min at 40kHz), and 1200× 1200dpi (150m/min at 60kHz).

The new technology enabling this development was achieved by enhancing the drive frequency with Kyocera's unique elemental technology; making the interior ink channels more compact, optimizing the nozzle configuration, and improving the water-repellent coating on the printhead nozzle surface to prevent clogging, thus ejecting the ink more accurately. In addition to speed, it provides the high resolution required in the commercial printing market, with a 50 percent improvement in ink-drop placement accuracy over Kyocera's previous model. And like the original, the new printhead maintains the world's broadest single-unit print width, at 4.25 inches — enabling convenient printhead arrangement. Collectively, these features reflect Kyocera's commitment to lead the digital on-demand market with continuous technological advancement.

Kyocera will display the new printhead at the [Japan Graphic Arts Show 2009](#) from October 6 through 10 at the Tokyo Big Sight.

*World's fastest drop-on-demand inkjet printing based on Kyocera testing as of August 31, 2009.

**The new Kyocera KJ4 Series
inkjet printhead**

| Product Information

Product Name	KJ4B-JF06 Inkjet Printhead
Size	200×25×59(mm) (Width × Depth × Height)
Production Site	Kagoshima Hayato Plant, Japan
Availability	Samples will be available in spring of 2010

| Print Speeds by Resolution

Resolution	Grayscale	Print Speeds	
		Conventional model	New model
600×360dpi	Multiple-value	-	330m/min(40kHz) *World's Fastest
600×600dpi	Multiple-value	150m/min(30kHz)	200m/min(40kHz) *World's Fastest
1200×1200dpi	Binary	-	150m/min(60kHz) *World's Fastest

| Market Background

Recent years have brought increasing demand for on-demand printing, which allows for a larger variety of printing in smaller order volumes to meet specialized customer needs in the commercial high-speed printing market. In this way, inkjet printing is garnering attention for its flexibility on a page-by-page basis which contributes to productivity, and for its cost performance.

In 2007, Kyocera developed the original KJ4 Series printhead, which was capable of delivering both high speed and high reliability. With features that were mainstream for household inkjet printers, but unavailable in commercial printing, this product led Kyocera into the industrial inkjet printhead market in April 2008. After entering the business, Kyocera focused its R&D on a wide range of markets in which major printing equipment manufacturers seek an inkjet printhead capable of higher speeds, resolution and reliability. While retaining the high resolution and reliability of its previous model, Kyocera was able to greatly enhance the printing speed of this new printhead.

| Main Technological Developments

Kyocera leveraged its extensive knowledge and experience in various printhead technologies to create this new product. Three key points led to its development:

1. Enhancing drive frequency by utilizing elemental technologies in the piezo actuator, ink flow channel structure, and drive control
2. Enhancing ink nozzle configuration
3. Improving drop placement accuracy by 50 percent by redesigning water-repellent coating materials

| Features

1. Achieving the world's fastest high-resolution printing

Kyocera applied the piezoelectric ceramics technology that it has cultivated over the years to create a compact piezo actuator — the critical element in attaining the high speed and high resolution of this printhead. With binary printing mode, the 2,656 nozzles per head, each ejecting 60,000 dots per second, enable each head to print approximately 150 million dots per second (40,000 dots per second in multiple-value printing.)

2. Design functionality

The 4.25 inch-wide printhead makes configuring equipment more convenient; requiring fewer printheads for wide-format printing, and eliminating the need to organize such factors as micron-level printhead alignment, ink tubing and wiring.

3. Supporting various types of printing

The new printhead supports water-based ink for printing on paper, with further development plans to allow use of UV-curable and oil-based inks, which will make it possible to print on materials ranging from cloth to non-absorbent films and plastics. Because inkjet systems print without contacting the target material, expectations are high for this technology to allow printing textiles, electronic circuitry, and certain elements within electronic devices, such as LCDs.

4. High reliability

Along with high print quality, the new printhead also delivers the durability and reliability required in industrial printing applications. High reliability equivalent to the previous model has been confirmed through durability testing.