

Digital Printing Without Ink?

ZINK Imaging, a spinoff of Polaroid, have developed an inkless printing system which could represent the first new print technology in a decade. Using a unique photo paper that changes colour when heat is applied, the technology could enable hand-held, pocket sized printers in the future.

The ZINK system offers a new way of printing images without using ink – and because traditional ink printers use bulky ink cartridges, ribbons, and mechanisms – the technology would be small enough to build into portable devices.

The trick is based on a clever photo paper and a thermal print head – similar to that used in current thermal printers, but without the need for a printing ribbon. The special paper, which looks and feels just like normal photo paper, comprises a number of thin layers of dye crystals. Although appearing transparent, the crystals change to an amorphous glass as heat is applied – a process which generates the colour.

The thermal printhead utilises 300 miniscule heaters per square inch, the precise time and temperature of each one controls the final colour. The crystal layers are arranged with yellow on top, followed by magenta, with the blue layer on the bottom. The yellow top layer requires the highest temperature but shortest time, with the other colours varying accordingly. To produce a green pixel for example, requires the thermal printhead to activate the yellow layer with a short burst of high temperature, followed by a longer, lower-temperature blast of cyan – all of which occurs in tens of microseconds.

The paper itself seems relatively stable too – it remains transparent at temperatures up to 70 °C and once an image is produced, it fades at a similar rate to regular inkjet and thermal prints. Indeed ZINK have plans to introduce 2 products before year end – a standalone portable printer and a printer integrated with a digital camera. The company believe the technology will ultimately find its way into computers, laptops, and possibly even TV sets.



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