MEMS inkjet printheads are benefiting from growing interest in industrial printing for textiles, labels or decoration. A huge compound annual growth rate (CAGR) of 18% for the next five years is expected for commercial and industrial MEMS printheads, reaching more than $200M revenue in 2023.

System Plus Consulting has long experience in printhead reverse costing studies, with more than 15 custom analyses. Today we are using our competency to simultaneously release two reports on Epson and Xaar printheads.

The 1201 printhead is the first MEMS inkjet die from Xaar for industrial printers. The printhead integrates a large MEMS die, with area exceeding 400mm². Each printhead can print one, two or four colors thanks to their 1280 nozzles. The density is therefore 300dpi for four colors and 600dpi for two colors.

This reverse costing study provides insight into technological data, manufacturing cost, and selling price of the MEMS inkjet manufactured by Ricoh and the 1201 printhead supplied by Xaar.

The MEMS inkjet uses two silicon substrates to manufacture the inlet and the pressure chamber. The nozzles are still manufactured in steel.

The membrane of the pressure chamber is a very complex multilayer structure. The lead zirconate titanate (PZT) thin film actuator is manufactured above this, with its two electrodes showing complexity in material choice and in stacking structure. Significantly, exclusive deposition technology developed by Ricoh uses less of the very expensive sol-gel PZT.

The MEMS inkjet die has four rows of nozzles interleaved on the die. The MEMS dies are assembled in the 1201 printhead with a flex to connect the MEMS to the printer. The four driver integrated circuits are directly assembled on the MEMS die.

This report includes a comparison between the Xaar 1201 and the Epson PrecisionCore printhead.
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AUTHORS

Sylvain Hallereau is in charge of costing analyses for IC, power and MEMS. He has more than 10 years of experience in power device manufacturing cost analysis and has studied a wide range of technologies.

Yvon Le Goff has joined System Plus Consulting in 2011, in order to setup the laboratory of System Plus Consulting. He previously worked during 25 years in Atmel Nantes Technological Analysis Laboratory as fab support in physical analysis, and 3 years at Hirex Engineering in Toulouse, in a DPA lab.

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