

Recent Advances in Piezoelectric Inkjet Print Head Technology

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Abstract

Piezoelectric inkjet print heads have dominated in drop-on-demand (DOD) industrial and commercial market for last two decades, because they offer high jetting frequency, long life expectancy, and the ability to jet a wide range of fluids under harsh working conditions.

Emerging market opportunities will require precise fluidic dispensing with tight dimensional and positional accuracy. Uniformity of orifice diameter, orifice plate thickness, and chamber dimensions across the entire print head helps achieve this goal. This paper focuses on some recent developments and discusses the principle of print head operation, modeling and

simulation as well as some unique features such as accurate orifice manufacture, replaceable orifice - chamber plates, inert print head bodies, individual orifice jetting performance calibration, 4- inch print width, and a highly flexible design to adapt to a wide range of drop volumes and jetting fluids. Trident's 256 Jet has currently been developed to meet these applications.

Author Biography

Ty Chen received his Ph.D. in Mechanical Engineering from University of Wisconsin at Milwaukee. He has worked at Trident, an ITW company, since 2001. His work has primarily focused on piezoelectric and other actuators, MEMS processes, and inkjet print head design and analysis. He is a member of IEEE.