

MEMS FLOW CONTROLLER FOR EFFICIENT PROPULSION SYSTEMS

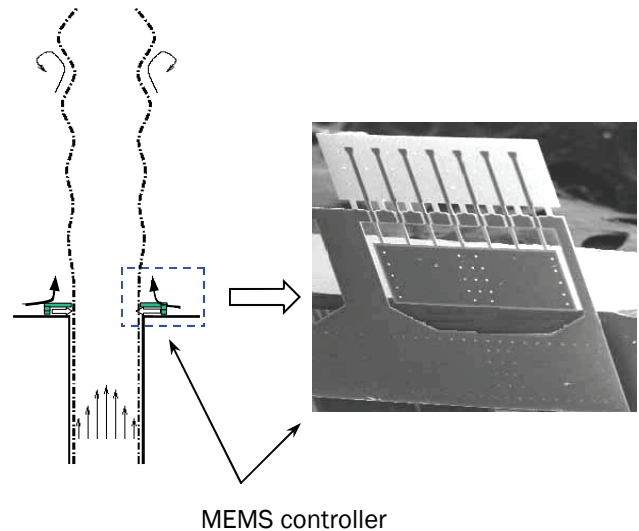
FLOW CONTROL BASED ON MEMS TECHNOLOGY



Unforced jet



Forced jet using MEMS actuators



MEMS controller

Features

- A small disturbance at the edge of the flow by this MEMS device can generate turbulent fluid motions to enhance fuel mixing and combustion efficiency
- MEMS actuators provide localized disturbances with a controllable phase relationship, suitable for distributed control of fluid flow
- The perturbation of the symmetric mode and anti-symmetric mode have been investigated
- Small size, reduced cost, and suitable for batch manufacturing

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Potential Applications

- Efficient propulsion systems for engines of UAVs, jet turbines, nanosatellites
- Heat transfer enhancement, orientation control, drag reduction, fluid transportation, and suspended particle collection
- Control of micro pumps