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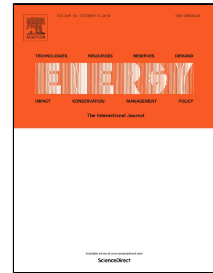
Flow field and combustion characteristics of integrated combustion mode using cavity with low flow resistance for gas turbine engines

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1 Flow field and combustion characteristics of integrated combustion mode using
2 cavity with low flow resistance for gas turbine engines

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10 **Abstract**

11 Structural weight and flow resistance of the combustor were important parameters
12 affecting the overall performance of gas turbine. The integrated combustion mode and
13 trapped-vortex combustion mode were the means to fulfill these requirements. Components
14 integration of combustor was an important trend in the development of the combustion
15 technology. In this paper, the trapped-vortex combustion mode was combined with integrated
16 combustion mode, and a new type of integrated combustor with various cavities was
17 proposed. By integrating the flameholder with the structural strut, light weight of the structure
18 could be achieved. By adopting trapped vortex combustion mode, high combustion efficiency
19 could be obtained in wide range of inlet velocity and fuel-air ratio. Using the particle image
20 velocimetry and experimental system, the flow field and combustion characteristics, including
21 ignition, combustion efficiency, outlet temperature distribution and wall cooling
22 characteristics, were thoroughly analyzed. Fuel droplets injected by simple nozzles could be

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