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# Investigation on Flow distribution of the Fuel Supply Nozzle in the Annular Combustor of a Micro Gas Turbine

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## Abstract

The flow distribution of the fuel supply nozzle in the combustor of a 500 W micro gas turbine was investigated. Numerical simulation was performed. Numerical results for flow distribution of the fuel supply nozzle were validated from the corresponding experimental data. Based on the validated numerical model, the effects of the nozzle diameter, inlet mass flow rate, fuel temperature, and types of fuel on the flow distribution were examined. In order to quantitatively evaluate the non-uniformity of flow distribution, the relative flow non-uniformity parameter was introduced. Furthermore, the pressure drops between the inlet and outlet of the fuel supply nozzles were experimentally and numerically obtained. In the aspect of both the uniform flow distribution and lower power consumption of the pump, all nozzles with 500  $\mu\text{m}$  in diameter are appropriate for the fuel supply nozzle of the micro gas turbine. In addition, a simple method was developed to determine the geometry

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