

**NUMERICAL SIMULATION OF TUBULAR TYPE
COMBUSTION CHAMBER WITH HYDROGEN, METHANE
AND SYNGAS**

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ABSTRACT

The combustion chamber of gas turbine unit is one of the most critical components to be designed. Scanning through literature reveals that the design methodologies for combustion chamber are available in a discrete manner and there exist a need to compile this information and evolve a systematic design procedure for combustion chamber. Moreover in combustion process nitrogen in fuel and in the air reacts with oxygen at high temperatures to form various oxides of nitrogen collectively called NO_x . Fossil fuel power plants are the second largest emitter of NO_x .

This is a hazardous pollutant creating visual and respiratory problems. Also NO_x combines with water to form acid rain, smog, and ground ozone. The present work is an attempt towards obtaining such gas combustion chamber running on different fuel proportion to obtain minimum NO_x . In this project numerical simulation of micro-gas turbine with hydrogen, methane (CNG) and syngas yielding change in output of emission and to obtained change in exit flue gas temperature at equivalence ratio 0.3, 0.5, 0.7, and 0.9.