

46ESS-45: Micro Gas Turbines

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Micro gas turbines are very suitable and promising for small-scale combined heat and power generation systems. There is a relatively big potential market in the portable systems (military and/or civil) as well as aerial vehicles for micro gas turbines because of enhancement and reliability in term of efficiency, emission performances and economic benefits.

Micro gas turbines are essentially low pressure, single-stage and single-shaft gas turbines based on Brayton cycle, whose capacity ranges from 30-150 KW. Compared to the conventional gas turbines, Micro gas turbines have high power density, low emission levels, compact size and multi fuel capabilities. Even though micro gas turbines have some safety issues, installation problems and high sensitivity to ambient conditions, still it is well worth to be investigated in many aspects to realize the practical applications.

The following text reviews the configuration, performance, development , etc. of micro gas turbines and also explore the future prospects of the technology viability. In order to make a further and specific study of micro gas turbines, gas turbines developed by Onera would be focused on.

Conclusively, with the obstacles are being overcome gradually, it will hold stronger potential of overhauling the whole portable power generation and vehicle propulsion scenario.

Key words:

Micro gas turbines, performance, review, portable systems and vehicles, prospects