

## Development of a Cluster of Low Power Hall Thrusters

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As part of a U.S. Air Force Research Laboratory sponsored SBIR program Busek Co. Inc. has developed two different versions of a nominally 600 watt Hall Thruster to be clustered together into an array of four thrusters. The two versions are part of Busek's High Density Hall Thruster line, designated as BHT-HD-600 and BHT-HDC-600. The different geometries consist of a conventional rectangular five coil design as well as a circular two coil design. A 6.25 mm hollow cathode, BHC-5000, will also be developed for this program similar to the flight qualified BHC-1500 3.2 mm hollow cathode.

Detailed thruster performance characterization including thrust, Isp, and efficiency at a range of power and mass flow inputs are experimentally being measured for the two differing thruster geometries. An experimental survey of the external plumes of the two thruster geometries is also planned. This will involve the use of several plasma diagnostic systems including Langmuir probes, Faraday cups, and emissive probes. Thruster performance and plume data will be presented in detail. The two thruster geometries will be compared and contrasted as to their respective applicability operating as part of an array of thrusters.