100 mN HPGP Thruster

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Due to its compact size and non-toxic propellant, Bradford ECAPS's **100mN HPGP Thruster** is especially suited to small satellites and CubeSats. Key features of this system include:

- **Non-toxic propellant** makes for easier and less costly integration on secondary or 'piggy-back' missions.
- Allows for more secondary or 'piggy-back' launch opportunities, especially missions where there is concern about the hazards of hydrazine and its risks to the primary payload.
- Allows for more capable missions than spacecraft without propulsion
- Allows for more agile mission profiles than electric propulsion. Spacecraft take significantly less time to execute maneuvers and orbit changes.
- **Higher performance** over hydrazine allows for more payload or longer mission duration.
- 'Fuel at the factory' – integrate in place

Integrated small satellite modules using the **100mN HPGP** are also offered in conjunction with **VACCO** as part of their **MiPS** (Micro Propulsion System) within their CubeSat Propulsion line of products (**www.cubesat-propulsion.com**). The **VACCO MiPS** integrates arrays of **100mN HPGP** and cold gas thrusters working in symphony to provide highly capable and highly modular microsatellite propulsion systems.

VACCO MiPS and Bradford ECAPS 100mN HPGP are slated to be aboard an upcoming mission, ArgoMoon (**www.cubesat-propulsion.com/argomoon-propulsion-system**/) intended to be sent around the Moon to conduct scientific exploration.

Specifications Table

Thruster Type	HPGP
Propellant	LMP-103S
Thrust Class	100 mN
Primary Operational Mode	Δ v
Inlet Pressure Range	2.2 - 4.5 Bar

Inlet Pressure Range	2.5 - 4.5 Bar
Thrust Range	30 - 100 mN
Nozzle Expansion Ratio	100:1
Steady State ISP (vacuum) Typical	192 - 2050 Ns/Kg (196 - 209 s)
Density Impulse (vacuum)	2387 - 2542 Ns/L
Minimum Impulse Bit	≤ 5 mNs
Overall Length	55 mm ec. FCV
Mass	0.040 kg ex. FCV
FCV Type	Solenoid
- No of Seats	Single Seat
- Pull-in Voltage	10 ± 2.5 VDC
- Holding Voltage	3.3 VDC
- Coil Resistance (each coil)	Ω 40
Nominal Reactor Pre-heating Voltage	9 VDC
Regulated Reactor Ore-heating Power	6.3 - 8 W
Target Life - Qual. Level	
Pulses	2,000
Propellant Throughput	1 kg
Longest Continues Firing	18 minutes
Accumulated Firing Time	5 hours
Firing Sequences	150
Demonstrated Life	
Pulses	6,696
Propellant Throughput	0.4 kg
Longest Continues Firing Time	30 minutes
Accumulated Firing Time	2.3 hours
Firing Sequences	128
Maturation Level	TRL 5/6
Current Status	
	EQM in Qualification