



The world's smallest deep-throttling engine

GATE Thruster

Flexibility

With their revolutionary new, patented injection technology, all GATE Thrusters are capable of precise continuous deep-throttling in a ratio of 1:10 at constant performance, transient thrust profiles and pulsed operation at 10 Hz.

Center of mass shift compensation

By throttling its thrusters independently, every OTV equipped with GATE Thrusters is capable of differential thrust. This makes the vehicle highly compatible with the shifts in the center of mass of the OTV, which are typically due to the release or capture of other spacecraft, asymmetric propellant depletion or even low integration precision. Being insensitive to asymmetric mass distribution, GATE Thrusters massively reduce mission planning and integration complexity and costs, and enable completely new configurations and mission profiles.

Differential thrust stabilization

With GATE Thrusters on board, a spacecraft is able to perform thrust vector control and 3-axes stabilization with thrusters mounted fixed on the spacecraft. In configurations with more than four engines, differential thrust enables single or double-failure redundancy.

Highly scalable design

Due to their modular design, GATE Thrusters can be manufactured according to the individual customers' needs in broad thrust ranges and for different propellant combinations. This includes oxidizers such as nitrous oxide, high-test peroxide and liquid oxygen.

	Thruster S	Thruster M	Thruster L
Basics			
Thrust level	2 – 20N	5 – 50N	20 – 200N
Lead time	3 months	3 months	3 months
Base price	\$30,000	\$40,000	\$50,000
Specifications			
Throttling ratio	1:10	1:10	1:10
Operational modes	Continuous — Pulsed up to 10 Hz — Cold gas		
Minimum impulse bit	0.2Ns	0.5Ns	2Ns
Propellant combination	C ₂ H ₆ and N ₂ O	C ₂ H ₆ and N ₂ O	C ₂ H ₆ and N ₂ O
Specific impulse	270s – 300s	270s – 300s	270s – 300s
Thruster mass	< 1000 g	< 1000 g	< 2000 g
Thruster geometry	D <75 mm × H <250 mm	D <75 mm × H <250 mm	D <100 mm × H <300 mm
Feed system pressure	15 – 60bar	15 – 60bar	15 – 60bar
Survivability temperature	–40 °C to +65 °C	–40 °C to +65 °C	–40 °C to +65 °C
Operating temperature	–20 °C to +30 °C	–20 °C to +30 °C	–20 °C to +30 °C

About GATE Space

GATE Space is a subsystem supplier and technology expert in the field of chemical in-space propulsion solutions for spacecraft. GATE Space's patented propulsion solutions are compatible with various propellant combinations and suitable for satellites, capsules and OTVs.