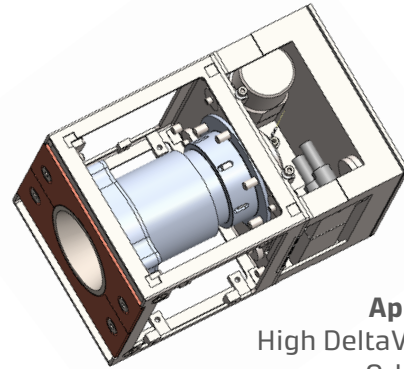
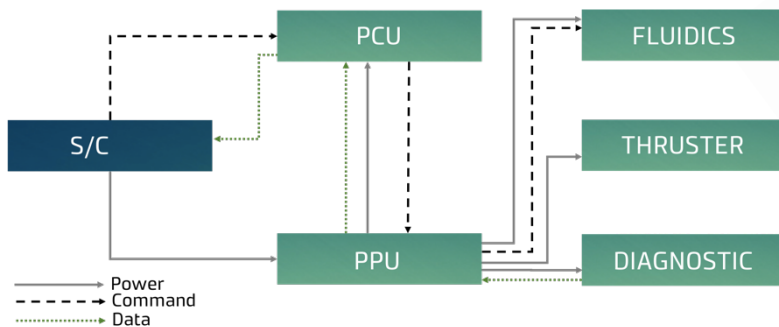


A reliable, complete and cost-effective propulsion system to provide mobility to small objects in space

A unique box including the whole propulsion package specifically designed for Cubesats and Micro platforms mobility (from 6U up to 150 kg)



Applications
High DeltaV missions
Orbit Raising
Drag Compensation
Formation Flying
Decommissioning

Enhanced Plasma Thruster

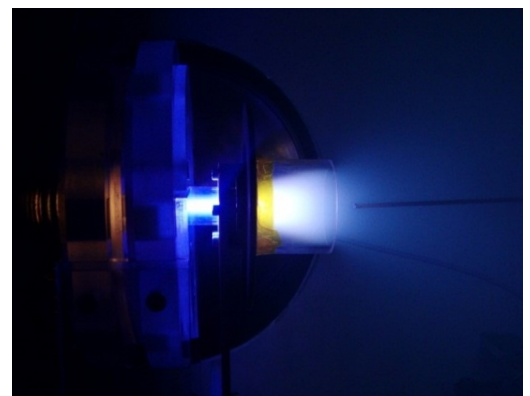
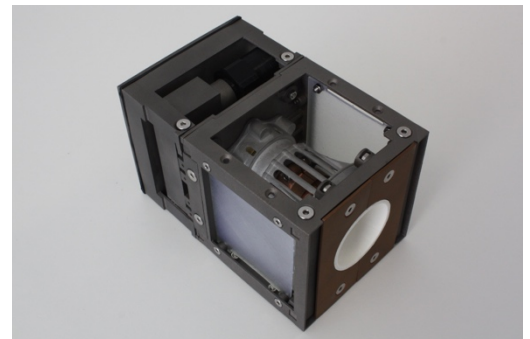
Based on helicon technology, the Magnetically Enhanced RF Plasma Thruster is under development in Padua since 2008, focusing on the needs of small platforms, characterized by low power and budget constraints.

Benefits

Thanks to its very simple architecture, the thruster allows for cost reduction, making it a valuable solution for small platforms down to multi U. It can be throttleable and is easily scalable to match with the customer needs.

The Technology

Deriving by helicon technology, the thruster is a simple engineering system, featuring a reduced number of components with respect to other systems. It is composed of a discharge chamber, an antenna and a magnetic field generator. It does not use electrodes, does not require neutralizers and grids, thus allowing cost reductions and long lifetimes. A proprietary (patented) helicon technology has been developed specifically for micro and nano-satellites.



Key Features	Advantages	Benefits
Ejection of neutral plasmas No grids	No electrodes subjected to deterioration No neutralizer Increased overall system simplicity	Suitable for high Total DeltaV missions, enabling different and new mission scenarios and interplanetary flights Low recurrent production costs Easy system reconfiguration
No elements exposed to plasmas	Multi propellant utilization High life time	Innovative mission scenarios Long term missions
External sizeable tank	No limit in propellant utilization	Flexibility of the system to adapt to different mission scenarios Flexibility of the system to match customers' particular needs
Intense knowledge of plasma production and acceleration physics	Capability to translate customers' specific needs in technical requirements and to scale the system	Low development costs for customization to match customers' particular needs
Robust technology experimentally proven	Possibility to work with different gases at different working conditions	High reliability
Intense technological assessment and development activity	Intense knowledge of the system behavior	Reduced/limited risks for flight system development
Miniaturized overall system	Compact propulsion unit	Flexibility on integration in the satellite platform
Standard interfaces with the satellite platform	Ease of integration	Plug & play unit Adaptability to different platforms with reduced customization costs
Conceived for Cubesats applications from the beginning	Smart manufacturing (3D printing) and assembly	Suitable for industrial production

SPECIFICATIONS

Envelope	1.5U @ 3000 Ns with possibility of mission extensions (i.e. 2U @ 7000 Ns)
Total weight	2 kg @ 3000 Ns
Input power	10 - 80 W (50 W nominal)
Input voltage	12 V DC (Optional 24 V DC)
Thrust	0.01 - 1 mN (highly modulable, 0.7 mN @ 50 W)
Specific impulse	up to 850 s (713 s @ 50 W)
Propellant mass flow	0.1 mg/s
Propellant type	Propellant Iodine (I ₂) in current configuration (extensive test with Xe, other gases under request)

REGULUS 3000 NS SCENARIOS EXAMPLES

6U orbital changes for a total of 700 km in 1.6 month overall
6U decommissioning from 1000 km in 1.5 month
6U drag compensation @ 310 km for 3 years and @ 350 km for more than 5 years
6U 180° phase change in 9 days, 12U 180° phase change in 15 days

REGULUS 7000 NS SCENARIOS EXAMPLES

12U orbital changes for a total of 550 km in 3.7 months overall
12U decommissioning from 900 km in 3.8 months
12U drag compensation @ 300 km for 3 years and @ 350 km for more than 5 years
6U 180° phase change in 9 days, 12U 180° phase change in 15 days

Contacts:

Ph.: +39.0499271547
Email: info@t4innovation.com

Our Project Partners:

