

HYDROS™ Thruster

Powerful 'Green' Propulsion for Small Satellites



Transformative Technologies
for Space, Sea, Earth, & Air

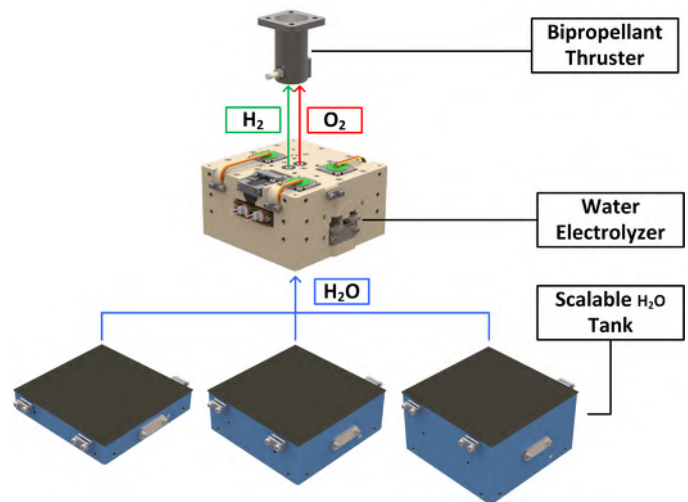
The HYDROS Propulsion System provides orbit agility, precision pointing, and rapid maneuvering to CubeSats and other small satellites. HYDROS is powered by a safe, storable, and non-toxic 'green' propellant – *water* – which it electrolyzes into hydrogen and oxygen on-orbit, to deliver high-thrust, high-specific impulse propulsion.

Capabilities

Available in 0.5U and 1U configurations delivering:

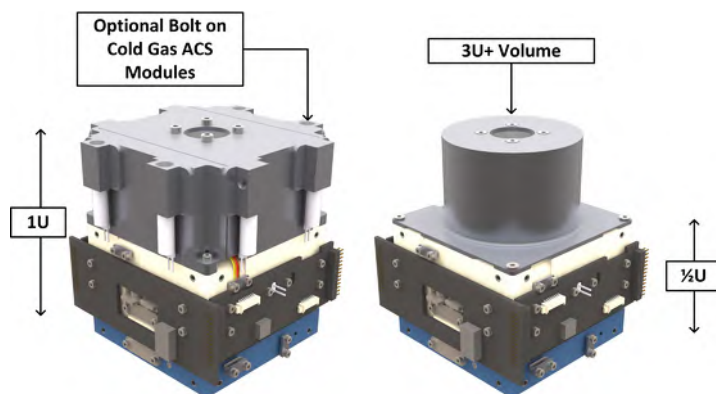
- Up to 0.8 N of thrust at 300 seconds of I_{sp}
- 100-300 m/s ΔV for a 3U CubeSat
50-150 m/s ΔV for a 6U (scalable to >2 km/s!)
- Safe, inert and non-toxic water propellant enables CubeSats to launch as secondary payloads without endangering primary payloads
- Easily expandable water tank for increased ΔV
- Versatile bipropellant microthruster is capable of pulsed hot and cold gas operation
- Water electrolyzer is designed for zero-g operation and inherently separates gases

System Overview



Attitude Control Module

- The HYDROS Thruster is designed to be augmented with a cold gas attitude control system
- Uses hydrogen and oxygen already available from water-electrolysis



Performance

- Technology is current at **TRL-5** and maturation to **TRL-6** is expected by Oct 2014

Performance Metric	Goal	Demonstrated To-Date
Thrust (Max)	1 N	0.8 N
Minimum Impulse Bit	0.1 mN-s	< 0.75 mN-s
Specific Impulse	300 s	Variable to 300 s

