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 See a program history of our propulsion systems research.  
Visit our online video archive  
[www.appliedthermalsciences.com/blog](http://www.appliedthermalsciences.com/blog)

Research funded by 



**Applied Thermal Sciences**  
research and development



**Propulsion** for this world and beyond.

## Propulsion Systems and Component Research

Applied Thermal Sciences has the technology, experience, and equipment to take your idea from concept to proven solution. We're in the business of innovation. We propel our clients in government and industry by providing the research and development that creates breakthrough technologies. We surround ourselves with the brightest minds that are open to discovery and passionate about creating the future. Our resources allow us to quickly and efficiently develop cost-effective solutions for our clients' challenges.

We engineer prototypes, test theories, and ultimately produce technologies that increase efficiency, reduce weight, and improve productivity. Through it all, we focus on our clients' needs, adapt as those needs change, and never lose sight of our goal: their success.



Ramjet flight test Nov. 2009 Cherryfield, Maine

## Hypersonic Flight Research

### Scramjet | Ramjet Flight Testing on a budget

With the goal of extending the range and speed of aerospace vehicles while dramatically reducing the cost of access to space, ATS developed a flight test platform to acquire knowledge in the operation of ramjet and scramjet engines. Our unique approach provides a cost savings of 90-95%, bridging the gap between ground testing and traditional, high-cost flight testing. We achieve this remarkable savings by producing every element of our flight test platform in-house including motor housing, boost-vehicle and propellant.

To see a complete program history please refer to our online video interview archive [www.appliedthermalsciences.com/blog](http://www.appliedthermalsciences.com/blog)

## HiPerTEC - Internal Combustion Evolved

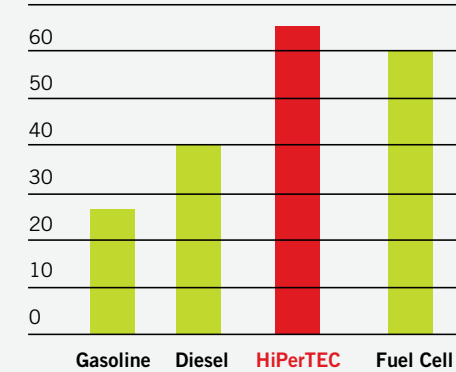
The HiPerTEC (High Performance Toroidal Engine Concept), engineered by ATS, provides an unprecedented power-to-weight ratio in an internal combustion engine. Hundreds of pounds lighter than a traditional engine of comparable power, the HiPerTEC employs combustion processes that are far more fuel-efficient. The engine achieves the ultra-high power to weight ratio with a patented torus design that incorporates double-faced pistons set at 90° intervals, reciprocating in equal but opposite directions for vibration-free operation.

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### Why HiPerTEC?

**62.5% increase in fuel efficiency over today's diesel engines.** High fuel efficiency is key objective outlined in Power and Energy and Platform Mobility of ONR's S&T Strategic Plan.

Fuel Efficiency (work/fuel energy)



**10x higher specific power than today's diesel.** A high specific power is very important for vehicle applications where maximizing payload weight is critical, such as USVs.

Power to Weight Ratio (hp/lb)

