

GEM3 PROPELLANT VIABILITY TEST



Matthew Karten, Jacob Blanton, Aidan Fogleman,
Ryan Meierjohan, Timothy Schroeder

PURPOSE

Characterize GEM3 combustion using thrust scalability to benefit the aerospace industry and space exploration overall.

TESTS AND TRIALS

- Substance Analysis Trials
- Combustion Analysis Trials
- Full System Tests

APPLICATIONS

- Currently used for RCS and military
- Project explores viability as main propellant for orbital LVs

MATERIAL COMPATIBILITY

Compatible Storage Materials	Compatible Plumbing Materials	Incompatible Plumbing Materials
High-Density Polyethylene (HDPE)	Stainless Steel 316	Copper
Kynar (Polyvinylidene fluoride)	Aluminum	Brass
	Most plastics	Black-dyed plastics

TIMELINE

5 MAY - 6 JUL 2024

Substance Analysis Trials

1 - 31 JUL 2024

Feed System Design and Assembly

7 JUL - 24 AUG 2024

Combustion Analysis Trials

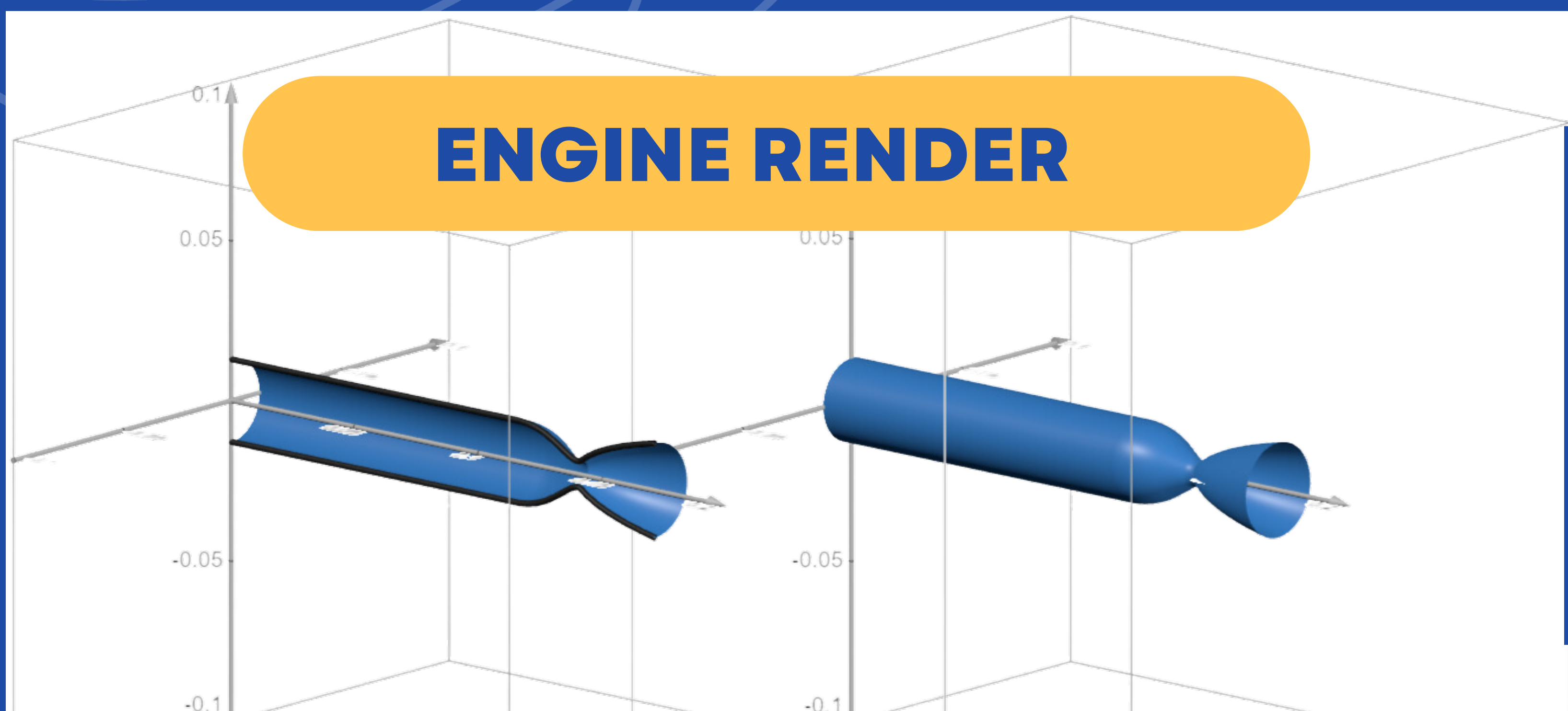
11 AUG 2024 - 30 JUN 2025

Full System Test Design and Experimentation

1 - 31 JUN 2025

Documentation and Publication with DSSP

ENGINE RENDER



FUTURE OF PROPELLANT

GEM3 is a liquid monopropellant that can be ignited and throttled with a voltage. Given its viability, GEM3 can greatly simplify liquid engines, decrease launch costs, and serve as a non-toxic replacement for hydrazine.