NEWSPACE MARKET

NEWSPACE MARKET · COMPANY PROFILE

CU Aerospace

United States · cuaerospace.com

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as of 26 August 2026

ABOUT

CU Aerospace

CU Aerospace (CUA) is an aerospace engineering company specializing in the development, manufacturing, and testing of propulsion systems and space hardware for small satellites. Founded in Champaign, Illinois, CUA focuses on small spacecraft propulsion with a portfolio spanning chemical warm-gas resistojets, pulsed plasma thrusters, monofilament vaporization propulsion, and advanced electric propulsion systems including VLEO air-breathing magnetoplasmadynamic (MPD) thrusters. CUA's propulsion systems use non-toxic, inert propellants and are designed for high reliability, compact integration into CubeSat and ESPA-class platforms, and maximum mission flexibility. Products such as CHIPS (CubeSat High Impulse Propulsion System) and FPPT (Fiber-Fed Pulsed Plasma Thruster) have been flight-proven, including through NASA demonstrations. CUA was awarded a multi-million dollar contract for VLEO air-breathing MPD thruster development and has participated in NASA's DUPLEX CubeSat mission to test innovative propulsion technologies in orbit. In addition to propulsion hardware, CUA develops mission optimization software for spacecraft trajectory optimization covering both high-thrust and low-thrust propulsion systems, and provides engineering services for space hardware design and development.

This profile is generated from the live NewSpace Market catalogue. Specifications are as published by the manufacturer; every product links to a page where a request for quotation reaches the company directly.

SERVICES

Services

CAD and Mathematical Physics Capabilities

CU Aerospace offers CAD and mathematical physics capabilities supported by in-house specialty design tools for systems and mission engineering.

Engineering Services

CU Aerospace offers experienced engineering services with a diverse range of capabilities to help customers meet their testing goals across various technical domains.

Modeling and Simulation

CU Aerospace provides in-house modeling and simulation services for refrigeration systems, astrodynamics, complex fluids, plasma, laser problems, and modular spacecraft design.

Testing and Verification

CU Aerospace provides testing and verification services using their laboratory facilities, equipment, diagnostics, vacuum chambers, and chemical processing hardware.

PRODUCTS

Product catalogue

CU AEROSPACE

CHIPS — CubeSat High Impulse Propulsion System

Miniaturized warm-gas resistojet propulsion system for CubeSats with integrated main thruster and 3-axis ACS.

Thruster type	Warm-gas resistojet (superheater)
Specific impulse (Isp)	40–50% higher than cold-gas Isp
Total impulse (CHIPS-180)	180 N-s
Package size (without ACS)	As small as 0.3U
Package size (with ACS)	As small as 0.6U
Propellants	R134a (refrigerant), R236fa (range safety approved); non-toxic, inert, self-pressurizing
Acs	Up to 8 ACS thrusters, 6 DOF

price on request datasheet

CU AEROSPACE

CHIPS (0.5U)

The CubeSat High Impulse Propulsion System (CHIPS) is a compact propulsion unit designed for CubeSats, offering significant total impulse for mission maneuvers.

Total Impulse	176 N-s
Thrust	15.00 mN
Specific Impulse	67 sec
Wet Mass	1,079 g
Volume Impulse	326 N-s/liter
Technical Readiness Level (TRL)	6

TRL 6 price on request datasheet

CU AEROSPACE

CHIPS CubeSat High Impulse Propulsion System

Miniaturized propulsion combining main thruster with 3-axis attitude control — non-toxic self-pressurizing propellants, 120M+ valve actuations, 0.54U CHIPS-180 variant.

Propellant options	R236fa and R134a (range-safety approved)
Chips-180 size	0.54U
Chips-180 total impulse	180 N-s
Valve cycle life	>120 million actuations
Temperature rise	~1°C per 10-min cycle
Minimum package size (no ACS)	As small as 0.3U
ISP advantage over cold gas	~50% higher

price on request

CU AEROSPACE

Filament pulsed plasma thruster (FPPT)

Fiber-Fed Pulsed Plasma Thruster (FPPT) provides high specific and total impulse for small satellites, available in various form factors.

Minimum specific impulse	3,500 s
Thrust vectoring	±5 degrees
Volume range	0.7 to 53 liters
Total impulse range	1,000 to 600,000 N-s
Package size for >25,000 N-s total impulse	1.7 liters
Pulse duration	10 microseconds

price on request

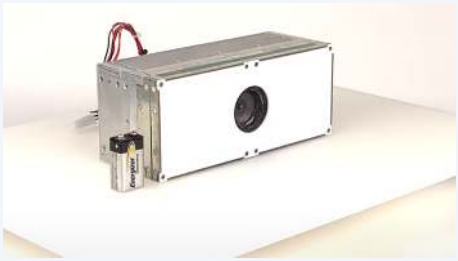
CU AEROSPACE

FPPT — Fiber-Fed Pulsed Plasma Thruster

CU Aerospace's Fiber-Fed Pulsed Plasma Thruster (FPPT) provides very high specific impulse greater than 3,500 seconds via a 10-microsecond electromagnetic pulse discharge usi

Thruster type	Pulsed plasma thruster (PPT) with electromagnetic thrust vectoring
Specific impulse (Isp)	>3,500 s
Total impulse (1.7L package)	>25,000 N-s
Total impulse range	1,000–600,000 N-s (0.7L–53L)
Package size range	0.7 L to 53 L (1U to ESPA-class)
Propellant	PTFE (Teflon®) fiber; solid, inert, no pressure vessel required
Thrust vectoring	±5° pitch and yaw electromagnetic steering

price on request



CU AEROSPACE

FPPT Fiber-Fed Pulsed Plasma Thruster

High-Isp electric propulsion ablating spooled PTFE fiber via short pulses — >3,500s Isp, no pressurized tank, scales 0.7L-53L, for orbit maneuvers and debris removal.

Pulse duration	10 microseconds
Specific impulse	>3,500 s
Thrust vectoring range	±5° (pitch/yaw)
Total impulse (1.7L package)	>25,000 N-s
Size range	0.7L to 53L
Total impulse range across sizes	1,000-600,000 N-s
Propellant	PTFE (Teflon) fiber

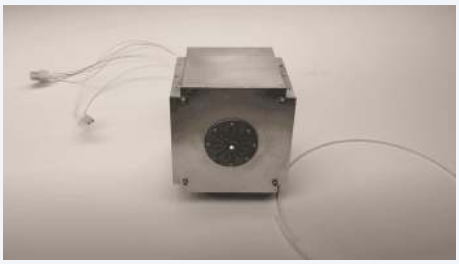
price on request

CU AEROSPACE

Genetic Algorithm

CU Aerospace offers a versatile and modern Genetic Algorithm (GA) for search and optimization, based on natural selection and survival of the fittest principles.

price on request datasheet



CU AEROSPACE

Monofilament Vaporization Propulsion (MVP)

The Monofilament Vaporization Propulsion (MVP) system uses 3D printer technology to provide continuous electrothermal thrust with Delrin fiber propellant.

Specific Impulse	66 s
Volume	0.93-liter
Total Impulse	265 N-s

price on request

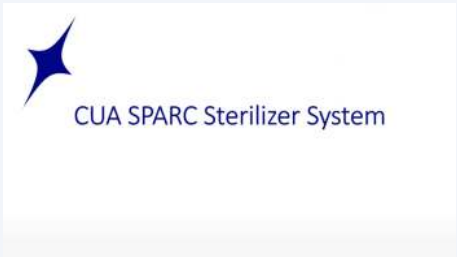
CU AEROSPACE

MPUC Monopropellant Propulsion Unit for CubeSats

High-thrust monopropellant propulsion using proprietary CMP-X ethanol/hydrogen-peroxide blend — safer, lower-cost alternative to hydrazine, >2,000 Ns total impulse.

Propellant	CMP-X (ethanol/hydrogen peroxide)
Flame temperature	~900°C
Demonstrated ISP	178 s at 230 mN thrust
Continuous firing demonstrated	>50 minutes
Freeze temperature	<-33°C
Total impulse (2-liter MPUC)	>2,000 N-s

price on request



CU AEROSPACE

Plasma Systems Technology

CU Aerospace is developing multiple plasma-based technologies to address emerging needs in various industries, including low-temperature sterilization and plasma-assisted combustio

price on request datasheet

Contact CU Aerospace

Open the company profile on NewSpace Market to see full specifications and datasheets, and to send a request for quotation that reaches the manufacturer directly.

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