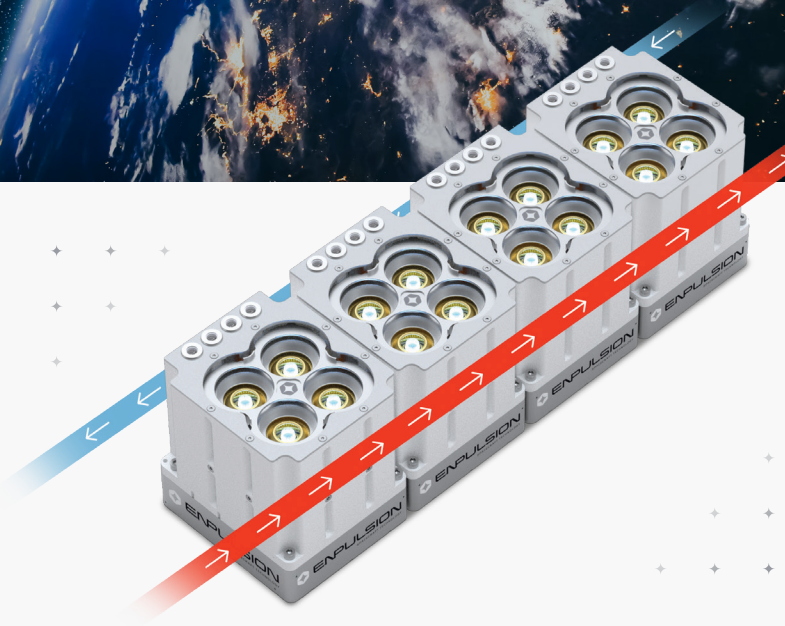
ENPULSION
SPACECRAFT TECHNOLOGY

Nexus Osprey

For small satellites requiring next-gen propulsion, Nexus offers higher thrust, greater agility, and seamless integration. Built on the proven TRL 9 and MRL 9 heritage of our Micro R3, this breakthrough innovation delivers a superior thrust-to-power ratio while maintaining Enpulsion's hallmark simplicity and reliability. Ideal for constellations, responsive missions, and advanced maneuvering or deorbit operations, Nexus brings powerful mobility to critical missions.



MATURE TECHNOLOGY

Built on the in-orbit success of over 250 flight-proven propulsion systems, Nexus leverages years of insights gained through production experience across diverse mission profiles.

HIGH IMPULSE. LOW MASS.

Delivering up to 4500s specific impulse with a propellant four times denser than xenon, Nexus packs high performance into a compact architecture.

STREAMLINED INTEGRATION

Thanks to its design without tanks or fluidic systems, Nexus installs via standard mounting panels and harnessing, connecting within a 15-inch ESPA-class ring.

INDIUM PROPELLANT

Indium is a nontoxic, unpressurized metal sourced as a by-product of zinc refining. More than 1,000 tons are produced annually, offering a stable, accessible, and safe propellant option.

REDUNDANT RELIABILITY

With approximately 2,000 ion emission sites and parallel high-voltage supplies, Nexus' design offers exceptional resilience and system-level robustness.

IMPRESSIVE THRUST-TO-POWER RATIO

Optimized for power and performance, Nexus increases thrust-to-power efficiency over lower-power systems by intelligently scaling beam output.

DEBRIS SAFETY

With no pressurized tanks or stored chemical energy, the system eliminates explosive risk during active operation or in-orbit collisions, enhancing overall spacecraft safety.

Nexus development and qualification are backed by the European Space Agency through the ARTES program. Building on the success of thousands of porous needle ion emitters produced for our Nano and Micro systems, this next-gen emitter enhances thrust density, specific impulse, and efficiency — advancing performance for the missions ahead.

ENPULSION
SPACECRAFT TECHNOLOGY

DEVELOPMENT SCHEDULE

With a clearly defined launch plan, Nexus is positioned to support confident mission planning and early engagement. The timeline below highlights key milestones in development, qualification, and delivery.

- **Q3 2025** — Preliminary Design Review (PDR)
- **Q1 2026** — Ciritcal Design Review (CDR)
- **Q3 2026** — Qualification Complete
- **Q4 2026** — Production Deliveries

	SINGLE	DUAL	TRIPLE	QUAD
DYNAMIC THRUST RANGE	700 µN - 1.72 mN	700 µN - 3.5 mN	700 µN - 5.28 mN	700 µN - 7.06 mN
MAXIMUM THRUST	1.72 mN	3.5 mN	5.28 mN	7.1 mN
SPECIFIC IMPULSE (ISP)	500 - 4,500 SECONDS	500 - 4,500 SECONDS	500 - 4,500 SECONDS	500 - 4,500 SECONDS
TOTAL IMPULSE	UP TO 30,000 NS (30 KNS)	UP TO 60,000 NS (60 KNS)	UP TO 90,000 NS (90 KNS)	UP TO 120,000 NS (120 KNS)
PROPELLANT MASS	1.3 KG INDIUM	2.6 KG INDIUM	3.9 KG INDIUM	5.2 KG INDIUM
POWER AT NORMAL THRUST	95 W	190 W	285 W	380 W
TOTAL SYSTEM POWER	50 - 100 W	70 - 300 W	90 - 450 W	120 - 600 W
HOT STANDBY POWER	15 - 25 W	30 - 40 W	40 - 50 W	55 - 65 W
MASS (DRY/WET)	3.6 KG / 4.9 KG	7.2 KG / 9.8 KG	10.8 KG / 14.7 KG	14.4 KG / 19.6 KG
THRUSTER HEAD DIMENSIONS	(140 X 120 X 160 MM)	(140 X 120 X 160 MM) X 2	(140 X 120 X 160 MM) X 3	(140 X 120 X 160 MM) X 4
EMITTER OPTIONS	GAMMA	GAMMA	GAMMA	GAMMA

NEXUS USE CASES

- Orbit raise and deorbit for SDA-class buses (150–500 kg)
- Constellation phasing, maintenance, and maneuvering
- Alternative to Hall Effect Thrusters in the smallsat class
- Agile defense and government missions (e.g., SDA, MDA, tech demos)
- Modular, clusterable solution for customizable spacecraft builds
- Non-ITAR customers seeking compact, high-thrust electric propulsion
- Stationkeeping and deorbit support for larger platforms using secondary thrusters