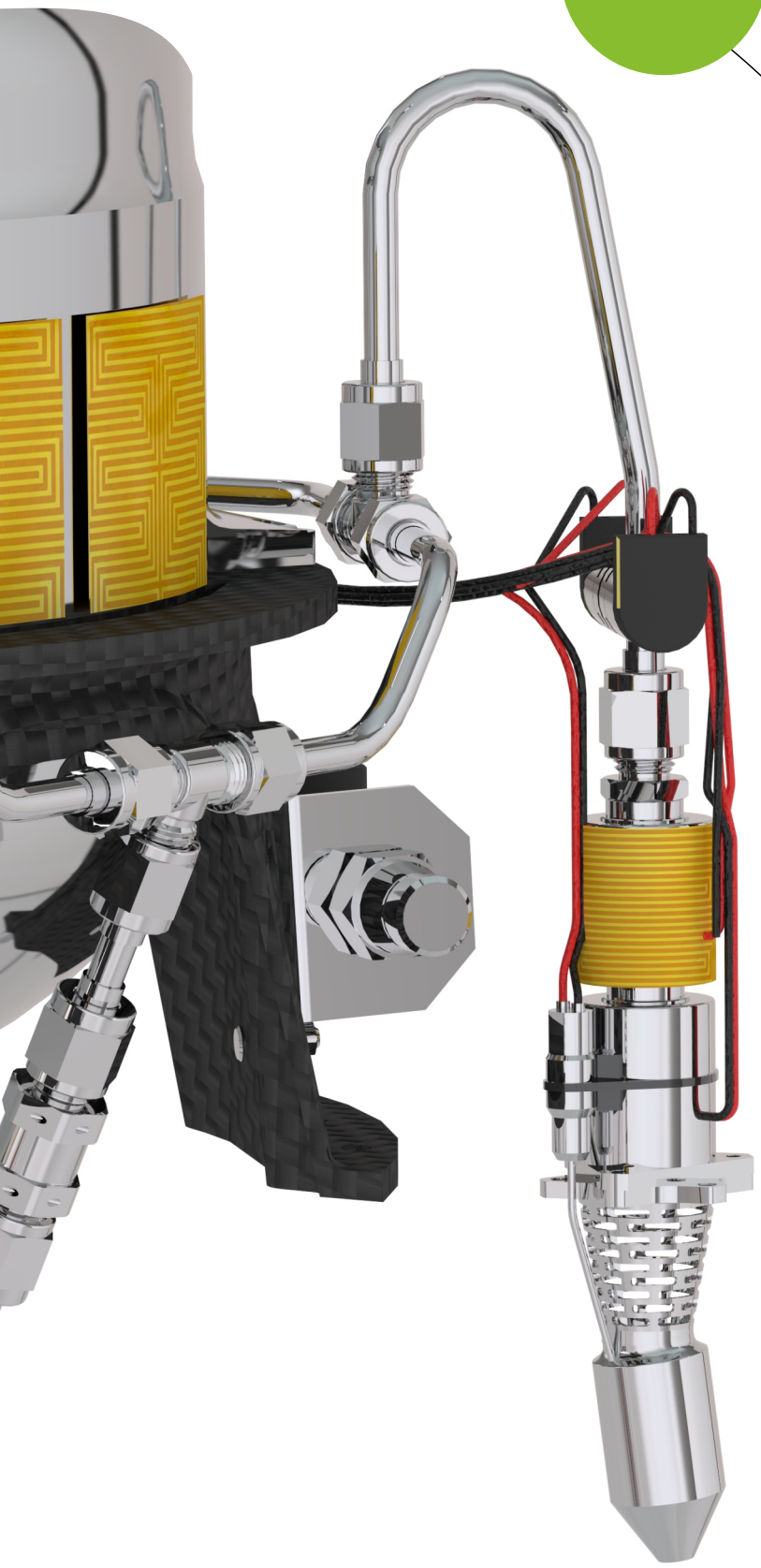
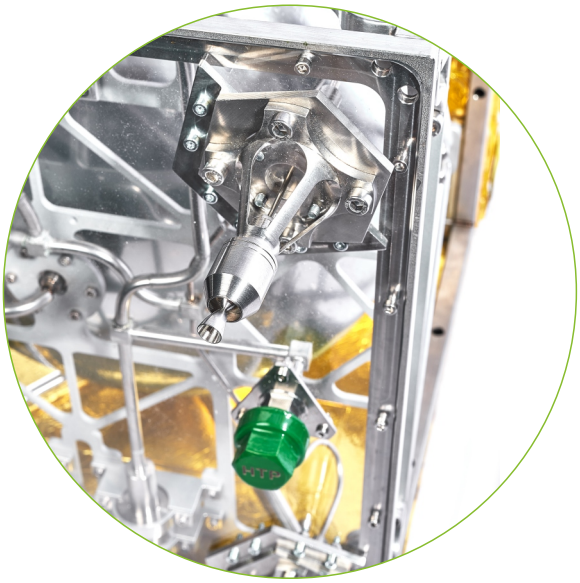
Łukasiewicz
Institute
of Aviation



POLON's target market
includes space tech institutions
and companies, particularly
microsatellite constellation
manufacturers in need
of a modular satellite engine
offering low toxicity
and a small form factor

POLON
GREEN SATELLITE PROPULSION MODULE

CHARACTERISTICS



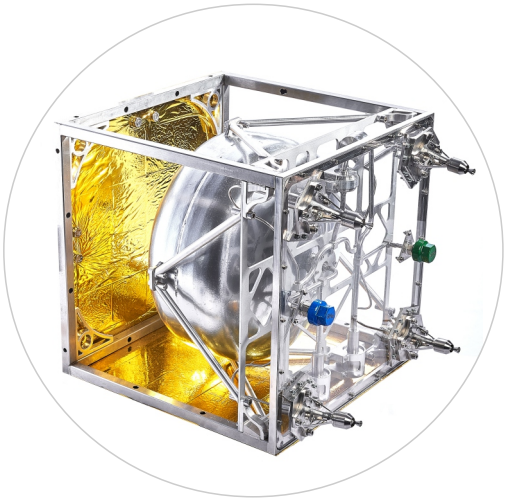
The POLON Propulsion System for Small Satellites (weighing up to 200 kg) is a versatile system allowing nano-satellites to perform:

- Drag compensation and orbit maintenance.
- Orbital maneuvering, including Hohmann transfer.
- Synchronization and positioning of communication equipment and payload instruments.
- De-orbiting at the end of the mission and other functions.

The proposed system can also be used in microsatellite constellations to extend their mission duration. With a nominal thrust level of 4 N in vacuum, the system delivers a minimum of 8 kNs of total impulse in its basic configuration.

KEY FEATURES

- Based on a monopropellant HTP 98% propulsion system, providing delta V and ACS.
- Modular satellite engine offering low toxicity and a small form factor.
- Easily scalable technology.



TECHNICAL INFORMATION

Parameter	Value
Propulsion Name	POLON
Propulsion System Dimensions	366 x 366 x 350
Propellant Type	Hydrogen Peroxide 98%+ (HTP 98%)
Thrust (N) per Thruster	1.2N BOL to 0.35N EOL
Propulsion System Dry Mass	8.3 kg
Propulsion System Wet Mass	21 kg
Technology Readiness Level	TRL7
Propulsion System Vibration	13.55 qualification Grms
Sub – System Operating Voltage for Heaters and Valves	12 V
Mission BOL Pressure	24 Bar
Mission EOL Pressure	5.5 Bar
Propellant Mass	12.6 kg
No. of Thrusters	4
Nominal Specific Impulse	172 s
Maximum Total Impulse	> 14000 N.s

The fluidic subsystem consists of: four 1 N thrusters, a propellant tank, valves and a temperature and pressure control system.

POLON uses a "green" propellant – hydrogen peroxide 98%+, produced in the Łukasiewicz – Institute of Aviation, as an alternative to toxic propellants mostly used in this type of thrusters. POLON is developed by Łukasiewicz Research Network – Institute of Aviation with Creotech Instruments, financed by the National Center of Research and Development. The project's primary goal is to achieve the 7th Technology Readiness Level (TRL7).

The Łukasiewicz Research Network – Institute of Aviation
offers a wide range of specialized research, engineering services and products. We provide comprehensive solutions, ranging from dedicated analyzes, simulations, engineering design, through the selection, testing and certification of materials and structures, to rapid prototyping and additive manufacturing.

al. Krakowska 110/114, 02-256 Warsaw, Poland
e-mail: info@ilot.lukasiewicz.gov.pl / www.ilot.lukasiewicz.gov.pl