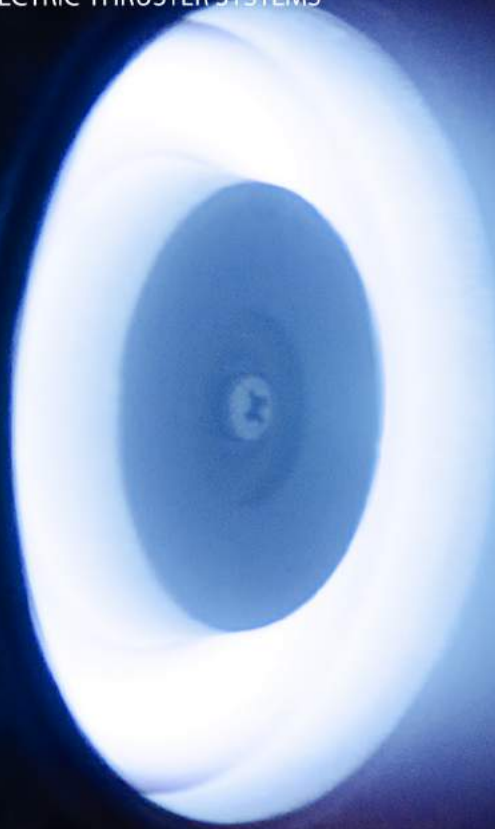




SETS

SPACE ELECTRIC THRUSTER SYSTEMS



SPACE PROPULSION SYSTEMS

Low Power Plasma Thrusters
Electric Propulsion Subsystems

What we do

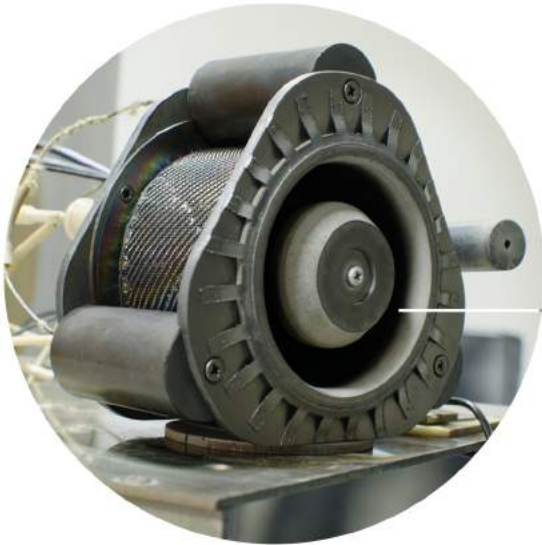
Propulsion Systems SPS37 & SPS40

We provide innovative solutions for orientation and stabilization of spacecrafts



Hall-Effect Thrusters and Cathodes

There has been developed two types of thrusters with closed electron drift with maximum power of 600W



Power Processing Unit

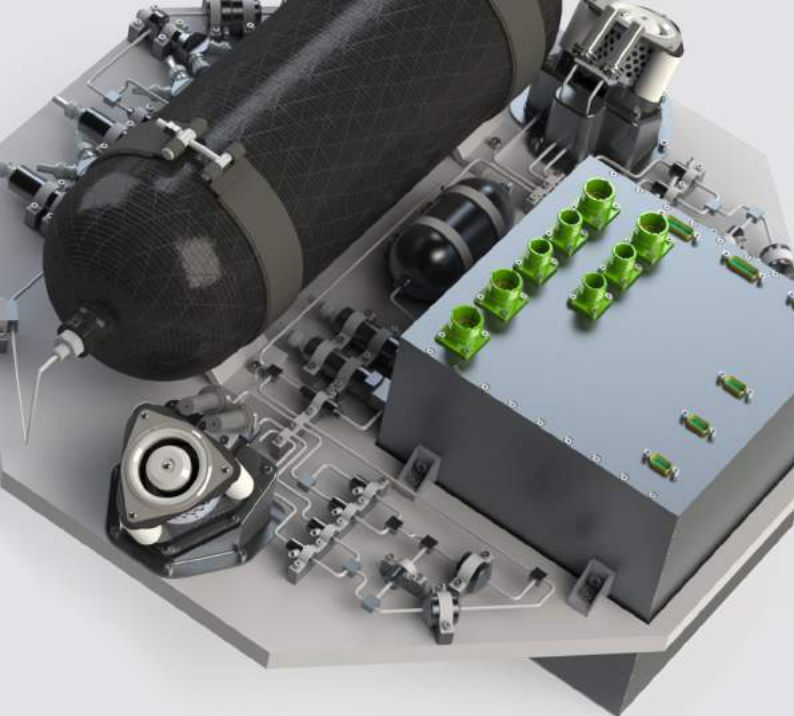
The Power Processing Unit includes all the elements for controlling and supplying the propulsion system



Xenon Feed System

A Xenon Feed System (XFS) has been developed as a subsystem of satellite propulsion system. The XFS delivers low pressure gas to the Anode and Cathode units from a xenon storage





SPS40

Thruster System

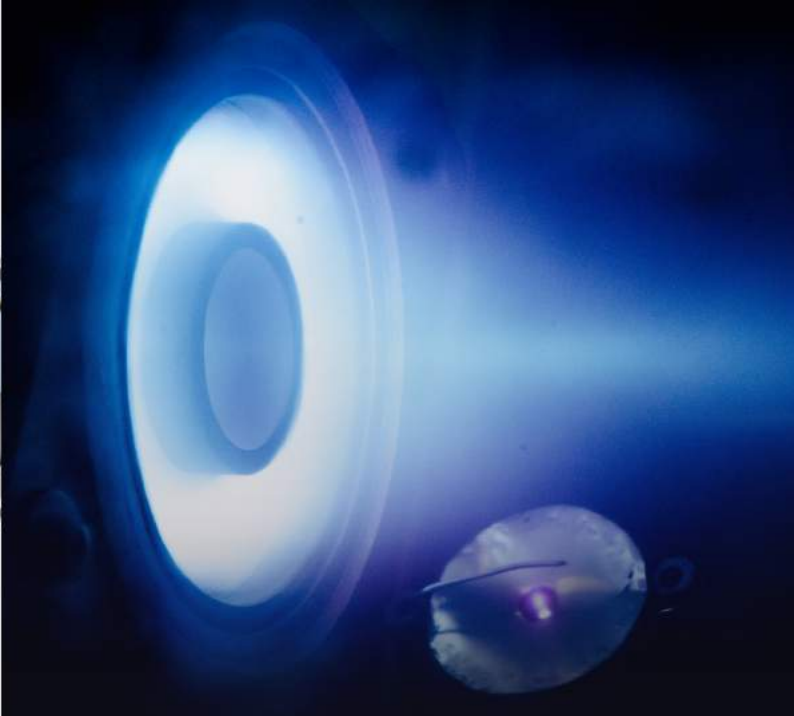
Description

The SPS40 Propulsion system was designed for medium and large satellites and able to adjust the orbits and increase the maneuverability of the satellite in space. The system is designed for advanced satellites constellations in order to correct them relatively to each other.

SPS40 is based on two ST40 thrusters.

Specifications

Input Power, W	1000
Thrust, mN	70
Weight, kg	40
Efficiency, %	45



SPS37

Thruster System

Description

The SPS37 Propulsion system was designed for mini satellites weighing up to 500 kg. The propulsion system is used to adjust the positions of satellites and deorbit them after the completion of the active existence. A vital feature of the propulsion system is a significant reduction of power consumption.

SPS37 is based on ST37 thruster.

Specifications

Input Power, W	200
Thrust, mN	15
Weight, kg	30
Efficiency, %	35



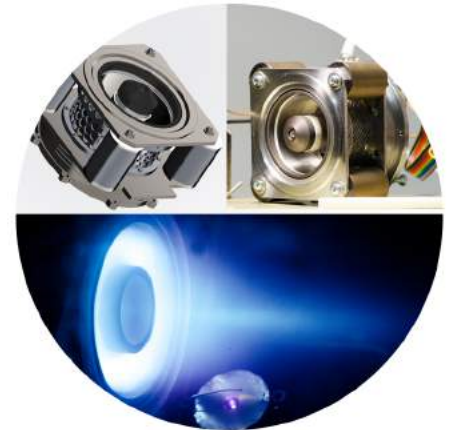
ST37 Hall-Effect Thruster

Description

ST37 is a thruster with anode layer. The magnetic system of the engine significantly differs from the classical scheme. A permanent magnet is used instead of an electromagnet in the central magnetic core which reduces the power consumption while increasing efficiency. At the exit of the accelerating channel, a pyro graphite ring is used to reduce the erosion of the channel material.

Specifications

Input Power, W	100–200	Specific Impulse, s	1150
Thrust, mN	16	Efficiency, %	37



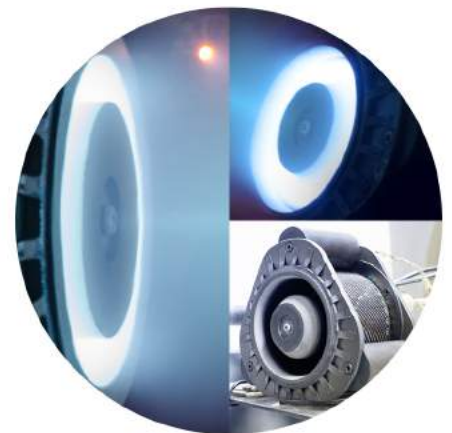
ST40 Hall-Effect Thruster

Description

ST40 thruster with anode layer is designed for use as part of the propulsion system for satellites mass up to 1T. It is aimed at solving the tasks of orientation and stabilization of the spacecraft in different orbits. The propulsion system provides a thrust of up to 40mN at a maximum electric power consumption equal to 600W. The propulsion system that contains ST40 can be used on satellites of various purposes.

Specifications

Input Power, W	300–600	Specific Impulse, s	1500
Thrust, mN	40	Efficiency, %	45



PPU Power Processing Unit

Description

The **Power Processing Unit** is the central part of the SPS40 and SPS37 propulsion systems. It provides power conditioning and control for the Plasma Thrusters and the Xenon Flow Supply unit. PPU includes a Thruster Selection Unit (TSU) aimed to select North or South Thruster for keeping a geosynchronous satellite according to figure hereafter.

Specifications

Input Power, W	1000	Thermal, °C	+70/ -25
Voltage, V	28±2	Efficiency, %	95



XFS Xenon Feed System

Description

SETS is developing a modular **Xenon Flow System (XFS)** with significant reductions in mass and cost while increasing system reliability. This system consists of a package of valves and jets to reliably lower and retain pressure in the specified parameters. The feed system can be scaled to almost any mission associated with LEO and GEO orbits.

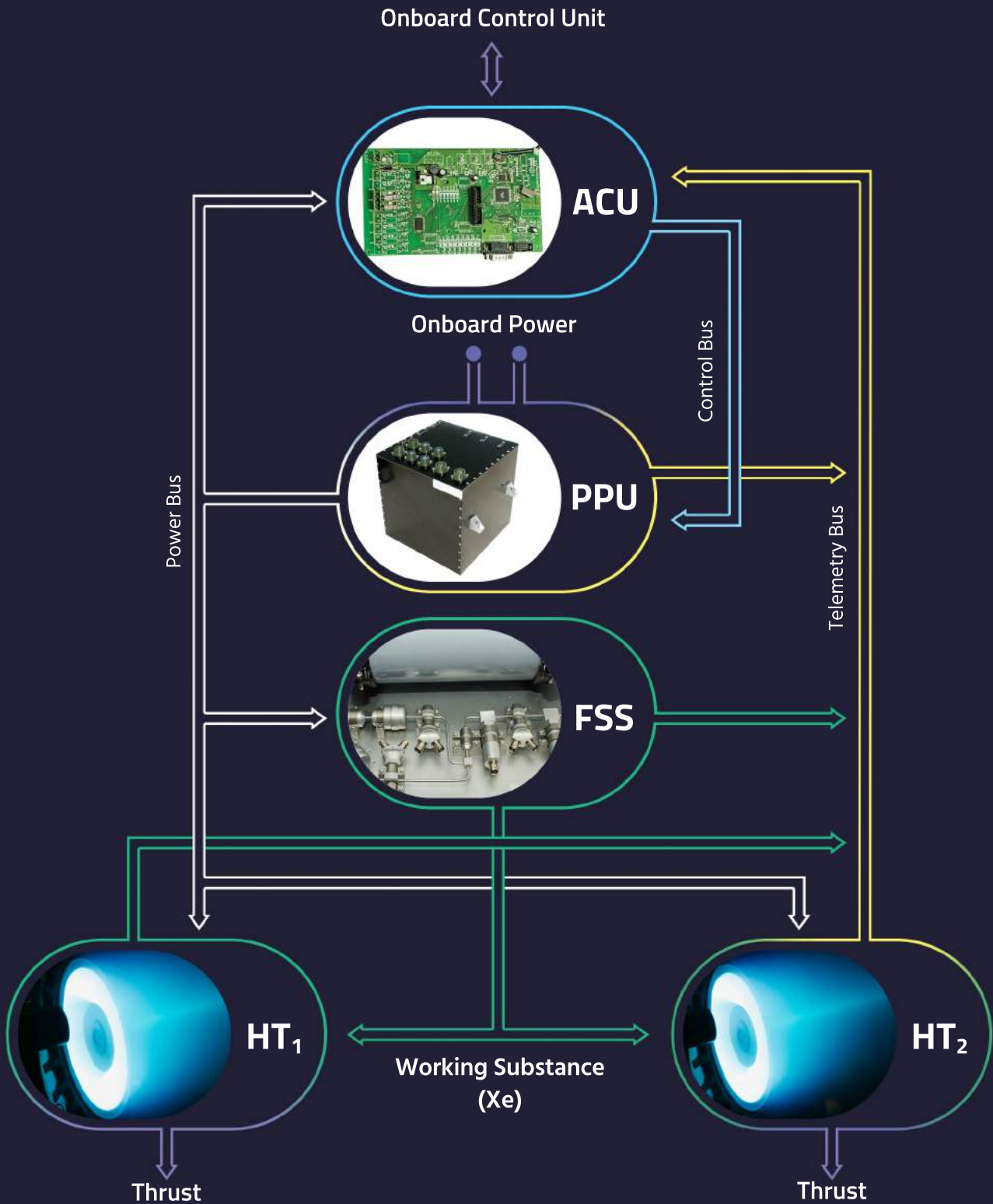
Specifications

Proof Pressure, bar	160	Nominal Flow Rate, sccm	Anode: 8–25, Cathode: 1–3
Operating Pressure, bar	1	Working Fluid	Xenon



Electric Propulsion Thruster Unit

Includes two Hall thrusters, feed and storage system, power processing unit, and automatic control system.



Tasks:



Keeping parameters of the orbit



Momentum management



Reposition of the spacecraft



Deorbiting of the spacecraft



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THANKS FOR YOUR ATTENTION



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