

Microsatellite Butane Propulsion System

SSTL's microsatellite Butane Propulsion System has the capability to perform orbit changing manoeuvres for microsatellites.

It has flight heritage on the 4 spacecraft in SSTL's DMC constellation. Alsat-1 (launched Nov 2002), UK-DMC, NigeriaSat-1 & BiSat-1 (launched Sept 2003). AlSat-1 used its system to reduce its apogee by 52km, after an out of specification launch injection. The four DMC systems were also used to phase the spacecraft in the constellation and maintain the orbits.



Features:

- Butane propellant stored in two x 2.5 litre propellant tanks. The tanks can be re-packaged to fit specific spacecraft layout
- The system has a maximum expected operation pressure of 4 bar, with a burst factor of > x 25 (including tanks)
- The propulsion system is built as a module with a single integrated thruster. The thruster alignment can be modified at both module and spacecraft levels to ensure the thrust vector coincides with the spacecraft Centre of Mass.
- SSTL's flight proven resistojet thruster with either 15, 30 or 50 Watt redundant heaters
- Series solenoid valves to isolate the propellant stored in the tank
- Can be supplied with Integrated electronic controller with interface to CAN bus. Could be modified to RS485 if required

Other SSTL Products

- **Propulsion systems:** Flight proven systems using nitrogen, nitrous oxide, butane, xenon and water propellants, impulses ranging from 1 N.sec to 52 kN.sec
- **Propulsion products:** Resistojet thrusters, Mechanical and Electrical Ground Support Equipment, Design and test services
- **Sub-systems** for C&DH, Power, Comms, ADCS and ODCS sub-systems, various Payloads and ground segments
- **Space missions:** From platform provision to turn-key commercial and science space missions from LEO to GEO, in the 5 to 1,000 kg range
- **Know-how transfer** programmes, including academic and industrial training of entire teams in real mission environments
- **Space Consultancy** for Insurance, Investment and Industrial sectors

Applications

- Launcher injection correction
- Station keeping and acquisition
- Orbit height maintenance
- De-orbit manoeuvres

Specifications

- Propellant: 2.35 kg Butane
- Thrust: 50 mN
- Storage Pressure: 4bar abs maximum @ 40°C
- Specific Impulse: > 80 sec @ 300°C
- Total impulse: 1.84 kN.sec
- Tankage capacity: 5 litres
- Life duration: > 3 years

Environmental

- Operating temperature: -20°C to +60 °C
- Vibration > 11.6 grms (all axes)

Power Supply

- Operating voltage: 28Vdc nominal (24 – 38 Vdc)
- Valve power: 26 Watts open, 0.83 Watts hold
- Thruster : 2 x 15 Watt heaters (30 & 50 W optional)

Physical Characteristics

- Dry mass:
 - Tank assy – 4.7 kg
 - Thruster assy – 104g
 - Control electronics – 720g
- Dimensions: 440mm x 440mm x 140mm (height)

Contact

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