



Łukasiewicz
Institute
of Aviation



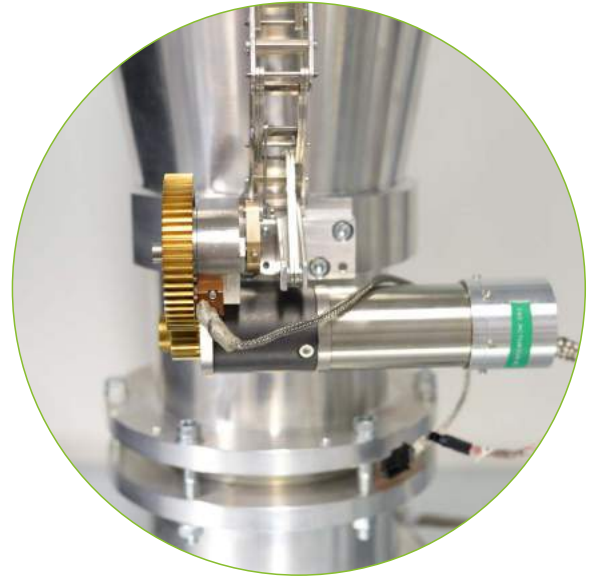
Advancing Spacecraft Maneuverability

TVC

SOLID PROPELLANT
ROCKET
MOTOR THRUST
DEFLECTION
SYSTEM

CHARACTERISTICS

Innovatory development in spacecraft maneuverability – the Solid Propellant Rocket Motor Thrust Deflection System is a technology that improves the control of solid rocket motors for spacecraft deorbiting and reorbiting missions, enhancing their precision and adaptability in space.

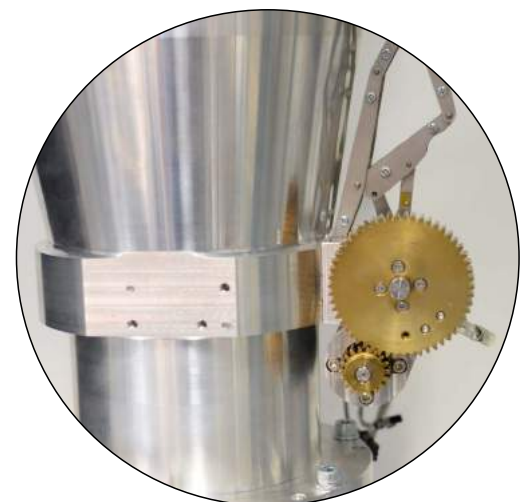


TECHNICAL DATA

Parameter	Value
Application	Controlled deorbitation/reorbitation
Power Supply	Electric
Operation Time	Up to 300 seconds
Thrust Angle Deflection	up to 15 degrees
Deflection Rate	3,5 degrees per second
Mass (one mechanisms)	Less than 8 kg
Envelope (one mechanisms stowed)	172 x 154 x 60 mm
Envelope (one mechanisms deployed)	218 x 154 x 84 mm
Mounting Interface	Plane with pins and screws
Accuracy	+/- 0.5 degrees
Technology Readiness Level	TRL4+
Funding	GSTP ESA

KEY FEATURES

- **Compact and Lightweight Design:** Our Thrust Deflection System boasts a compact and lightweight design, making it an ideal choice for space applications where every gram matters.
- **Reliable Mechanism:** The system's extensive heritage from aviation (a Fowler flap mechanism) ensures reliability, reducing the risk of malfunction during critical maneuvers.
- **Direct Deorbitation/Reorbitation Capabilities:** With the ability to adjust thrust deflection angles during the last maneuver, this system offers direct deorbitation and reorbitation capabilities, making it highly versatile for a range of missions. In nominal case 3 mechanism are required to control the thrust vector, but configurations with 4 or even 5 flaps improve capabilities in terms of reliability and controllability.
- **Scalability:** The technology is easily scalable, allowing for customization to meet the specific needs of various spacecraft.



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