esa

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- Life sciences, Pharmacy & Medicine
- Precision Mechanics & Optics
- Energy
- Services
- Other technologies

Flow Control Unit for gas regulation and transportation

Reference: TD-NL-1003

TECHNOLOGY DESCRIPTION

In partnership with the European Space Agency (ESA) and the Institute of Space Systems of the University of Stuttgart, the technology provider is engaged in the development of a new electric propulsion thruster system for small satellites. The system is characterised by a innovative flow control unit, designed to ensure precise gas flow in the challenging conditions of space. The core component of the flow control unit is a novel piezo-based micro-machined valve, engineered for high accuracy and efficiency.

INNOVATIVE ASPECTS

- Superior leakage performance compared to existing market alternatives
- Rapid response times (within microseconds)
- High precision control of gas flows and pressures (within flow ranges of 0.1-10.0 ± 0.01 mg/s)
- Compact design and minimal power consumption/heat generation
- Accurately and efficiently controlling various gases within specific flowrate ranges, maintaining an unprecedented level of precision
- Capability to handle various gas mediums
- Longevity: specially engineered for extended life endurance, the valves minimise maintenance and replacement costs.

TECHNOLOGY READINESS (in space application)

TRL 3 (2024)

COUNTRY OF ORIGIN

The Netherlands

LATEST UPDATE

04/2024

TAGS #propulsion #flow control #valve #gas regulation #accuracy #thruster

APPLICATION AREAS

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