



ELECTRICALLY-DRIVEN FEED PUMP

Exceptional performance for this pump and actuator, ideal for onboard systems for which mass, volume, efficiency and reliability are very important

Technological benefits

Cutting-edge technology

Miniature pump designed for the environment constraints of satellites and most onboard systems
Fully automated operation (built-in control electronics)
Accurate control of pressure and flow rate
Compatible with aggressive fluids such as hydrazine or ammonia

Specifications of the current model:

Flow rate: 2 to 5 cm³/s
Minimum absolute inlet pressure: 2×10^5 Pa
Nominal absolute outlet pressure: 22×10^5 Pa
Hydraulic efficiency: 80 to 90%
Piston frequency: 150 to 250 Hz
Power consumption: 15 W
Mass: 1.6 kg
Dimensions: diameter 90 mm, length 180 mm



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Invention overview

This electric diaphragm pump is designed to increase the performance of the propulsion subsystems of small satellites by optimizing use of the fuel tank and assuring a constant inlet pressure to the thruster

Potential applications

Electric pump:

Automobile, medical, aeronautical or defence sectors (missiles or drones)

Electromagnetic actuator:

- Valve, flowrate or gas pressure control
- ABS with adjustable stiffness; more flexible than hydraulics
- Micro-displacement generator (amplitude obtained during tests: 0.6 mm, frequency 0 to 1000 Hz depending on amplitude)
- Dynamic force generator or vibration attenuator

Commercial benefits

Limited bulk

Small and lightweight compared to its hydraulic efficiency

The pump offers any onboard system :

Longer operating times without having to increase fuel tank size

Weight savings due to a decrease in tank volume for the same operating time

TRL : 5

Invention developed by CNES