



SPACE
FOR BUSINESS
BUSINESS
FOR SPACE



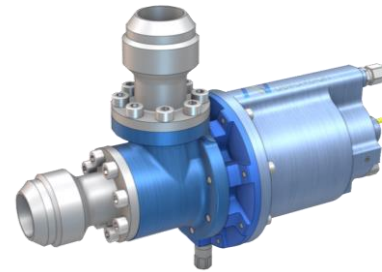
TECHNOLOGY DESCRIPTION

A lightweight, electric motor-driven control valve was specially designed for use with cryogenic liquids. Such control valves are of great importance for use as chamber and inlet valves in liquid rocket propulsion systems and in hydrogen aviation. The valve consists of a brushless DC motor drive and a control system. The rotation of the motor is converted into precise translational positioning of the valve cone by a lubricant-free ball screw gear to achieve high accuracy and resolution. The valve is capable of operating in a very wide temperature range (20 K to 400 K) and at moderate pressures of 60 bar. The control system is either open- or closed-loop, which continuously monitors the position of the control valve and adjusts it as required to maintain the desired flow.



INNOVATIVE ASPECTS

- Combining several tasks in a fluid system in one product (cooling, regulating, shutting off, flushing)
- The status of the valve can be monitored by reading and processing the data obtained from the electric motor and the position sensors (e.g. mechanical resistance) during operation. As the valve is supplied together with the electronics, status monitoring can be added as a software service.
- An electromotive actuator is characterised by a high power density, high actuating forces and a fast response time regardless of the valve stroke position.
- The valve and actuator concept presented is very flexible and can be used in many different fluid control scenarios as described in the previous chapter.



TECHNOLOGY READINESS (in space application)

TRL 9 (2024)

COUNTRY OF ORIGIN

Germany

LATEST UPDATE

06/2024

TAGS	#valve	#cryogenic	#high-precision	#regulation	#hydrogen	#monitoring
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APPLICATION AREAS

Aviation	Energy	Construction & Civil Engineering	Chemical Engineering & Biotechnology	Mechanical Engineering	Space technologies	Transport & Logistics
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TECH CARD

