

# Design, Manufacturing, and Testing of a Cold Gas Thruster System with Minimized Actuators

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Cold gas thrusters are commonly used on spacecraft for in-space attitude control and adjustment. These thrusters use inert gases stored at high pressures to create small amounts of thrust and typically have multiple fixed outlets, each controlled by its own actuated valve, to control the direction the thrust is directed. Having individual outlets with their own actuated valve leads to a great amount of power drawn for the individual actuators, as well as general added complexity by having a large number of parts. To address this issue, this thesis investigates an attempt to minimize the number of actuators required for a cold gas thruster system to operate.

This thesis details the design, analysis, electronics integration, manufacturing, and testing of a cold gas thruster system that produces two pounds of thrust by using a single central selector valve to control the actuation of four outlets while only using two motors.

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