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**Title of Poster: Development and Testing of a Tridyne Cold Gas Thruster**

**Abstract:**

A Tridyne thruster is a “cold gas” type thruster that uses a non-flammable mixture of an inert gas, hydrogen, and oxygen stored in a single tank. The premixed gas is passed across a catalyst bed that promotes an exothermic reaction between the hydrogen and oxygen. The hot product gases are then expanded through a nozzle to create thrust.

The Tridyne thruster developed and tested by ER-23 uses nitrogen as the inert gas and has tested three different catalyst types with varying bed lengths and varying inlet pressures. Additional testing took place incorporating an electric heater to pre-heat the catalyst bed to reduce the start up time. From this testing, it is possible to compare the performance of the Tridyne thruster to that of standard cold gas thrusters and draw a conclusion on whether this technology is a viable option to replace current cold gas thrusters on reaction control systems.

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