

**Title:**  
**Main Oxidizer Valve Design**

**Abstract:**

A developmental Main Oxidizer Valve (MOV) was designed by NASA-MSFC using additive manufacturing processes. The MOV is a pneumatically actuated poppet valve to control the flow of liquid oxygen to an engine's injector. A compression spring is used to return the valve to the closed state when pneumatic pressure is removed from the valve. The valve internal parts are cylindrical in shape, which lends itself to traditional lathe and milling operations. However, the valve body represents a complicated shape and contains the majority of the mass of the valve. Additive manufacturing techniques were used to produce a part that optimized mass and allowed for design features not practical with traditional machining processes.