

LOX/LCH4 Test Rig Construction

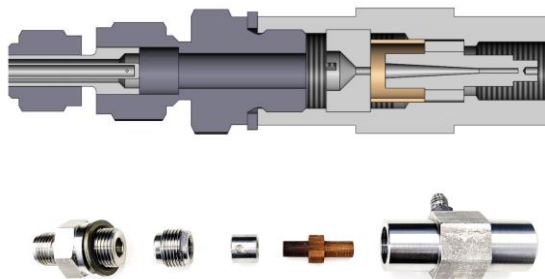
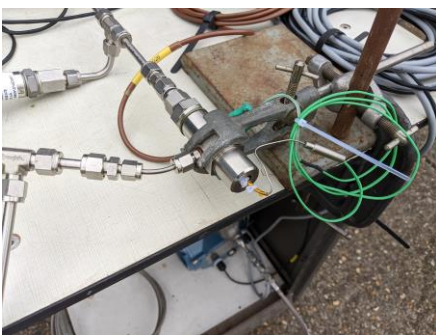
One of AEL's main current projects is a Liquid Oxygen/Liquid Methane facility for testing rocket engines up to 30kN. I worked on wiring up the valves and sensors in LOX rig, ensuring that cables were properly routed and strain relieved. I also helped assemble parts of the plumbing including a methane gas panel which delivers gaseous methane at high flow rates to an engine on the test stand.



Acoustic Igniter Research and Development

An independent project I worked on was a passive ignition system which uses acoustic resonance of supersonic gas flow to generate heat that can ignite a rocket engine. Several research papers have been published on the subject, including one by Firefly Aerospace. I designed and machined a small test article, which featured adjustable components to allow the critical dimensions to be fine tuned.

I put together a small rig to test the igniter and measure the inlet pressures/flow rates as well as temperature at the end of the oscillator tube. During one test, some soot was observed inside the ignition chamber, indicating that ignition had occurred. Future development would include more comprehensive testing as well as more advanced manufacturing methods such as EDM or DMLS to improve the geometry of the oscillator.



Other Projects

One other project I worked on was flight testing of AEL's hovering test vehicle, Gyroc. This included machining down and swapping out chamber liners between flights and replacing some cracked plumbing components.

I also made a CAD model of some legacy test stand hardware to help with interfacing for future customer and student rocket engine projects

