

Liam Buckman Portfolio

Name: Liam Buckman
University: University of Waterloo
Field of Study: Mechanical Engineering
Graduation Year (hopefully): 2029



Projects:

Helium Leak Testing Rig - Bend All Automotive

I designed and built a leak-testing rig to be used with an INFICON Leak test unit. The purpose of this testing rig was to test components for compliance with GM product standards. I used Solidworks to design the testing rig and built it out of spare aluminum extrusions to minimize cost.



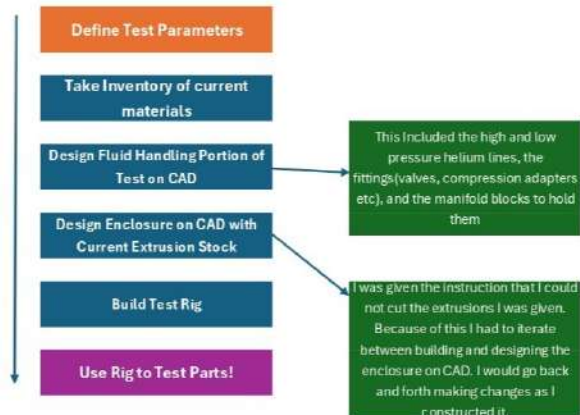
Cad Model of the Rig



Built Testing Manifold

Design Process:

Timeline: May 2025-June 2025



Formula SAE Car - Formula Electric UW

As a member of the University of Waterloo Formula Electric team, I had the opportunity to help build and race an electric formula SAE car. I was a member of the Aerodynamics subteam and helped the team complete aero package. My biggest contributions were improving our carbon fibre manufacturing process, helping to build the 2025 undertray, and helping to test the vehicle at the Ford Wind tunnel



Undertray Work Day



Wind Tunnel Testing

Some of my other Work for Formula:

Designed and built improved resin Catch Pot for Infusion process

Constructed resin catch pot out of an ABS pipe and connected it in series with the Infusion tubing to ensure no resin gets deposited into the vacuum pumps. Worked in a team of three to improve previous design and reduce the amount of resin clogging

Responsible for manufacturing airfoil spars and clevis brackets

I was responsible for manufacturing Airfoil spars and clevis brackets using school-provided water-jetting. I had to take the designs from CAD and create drawings for the shop technicians to water jet.

Personal Gym - Personal

During the height of the Covid-19 epidemic I got really into fitness, and because I could not get access to a gym I built my own using lumber and common hardware store materials. I enclosed a space on my front porch and even poured my own weights out of concrete. The set up also included its own pulley system, bench, and access to 300+ lbs of weight. I spent over two years building and changing the set up whilst using it. I designed two different squat racks, one using 2x6 lumber and the other 4x4. I used vapour barrier as an enclosure material (before it bent my porch supports in). I designed different pulley systems using old pulleys I found on a scrap cable machine.



Outside view of enclosure



Gym set up



Me using first iteration of home gym (age 15)

Here are some smaller projects I have completed that do not include pictures as they contain confidential material or I just don't have photos.

Aluminum Endforming Tooling - Bend All Automotive

- Designed 2 hit end forming process using Solidworks for a 5/8" slimline pilot
- Created dimensioned drawings using GD&T and worked with tool makers to ensure the tolerances were suitable

Sales Playbook - Voltra Energy (BET 430 project)

- Worked in a team of 5 to develop full sales playbook for Voltra Energy, a startup company out of Velocity focusing on software for EV charging infrastructure
- Created 70 page document outlining sales best practices and strategies for sales employees to use
- Worked with Co-Founders over the course of a few months to deliver playbook in timely manner and ensure satisfaction