

STEFAN
ADAMSKI

Mechanical Engineering and
Project Portfolio

Mechanical Engineering
University of Waterloo
Waterloo, Ontario, Canada

UNICELL PROJECTS

Trim Booth Systems



Fiberglass truck body trim booth with PLC control.

Assembled, wired, debugged and redesigned varying components and original design issues.

Introduction to metal sheet forming and machining.

Assembled and prototyped truck body cart system.

Includes manual horizontal alignment system with indexing posts per foot.



UNICELL PROJECTS

Truck Body Movement Tools



Redesign and built light-weight spreader bar to carry 1600 lb truck bodies with varying widths.

Made from 6061 Al for its strength and rigidity.

Hydraulic truck body flipper with included damping system.

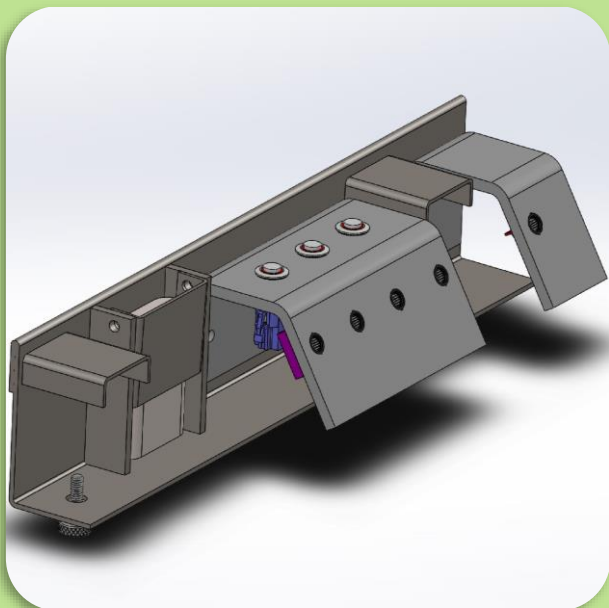
Plumbed and filled the hydraulic valve system.

Wired the control circuit with remote transmitter and receiver.



UNICELL PROJECTS

Portable Indexing System

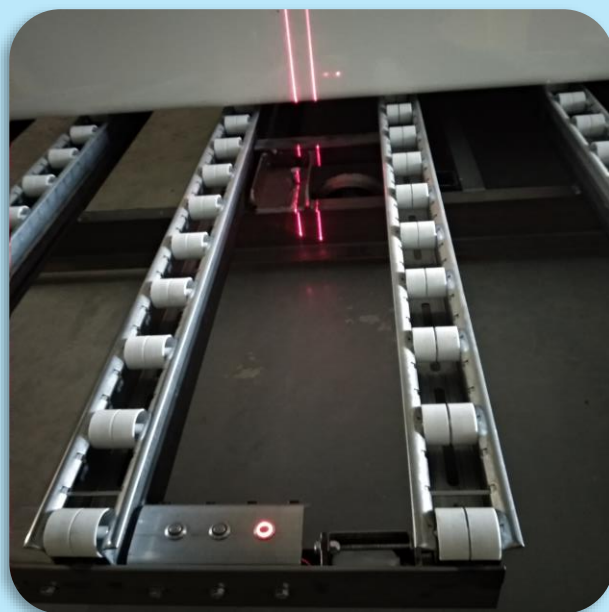


Laser indexer: Designed and 3D modeled laser alignment system.

System also accommodates for 3 different nominal lengths between standard sizes of truck body.

Laser indexer integrated with the cart system for each foot length increment.

Double laser system for easy worker alignment for length placement of truck body within trim booth tolerance.



UNICELL PROJECTS

CAD Modeling of Components

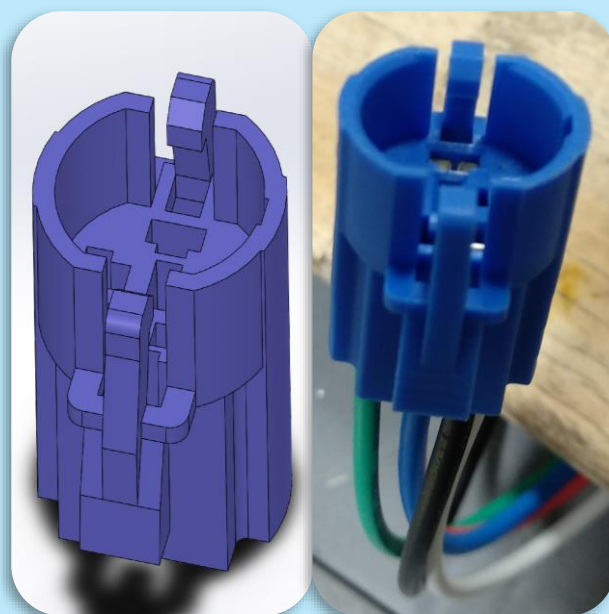


An off-the-shelf button found in the construction of the laser indexing system without existing CAD.

3D CAD modeled the part to scale for accurate use in the design process.

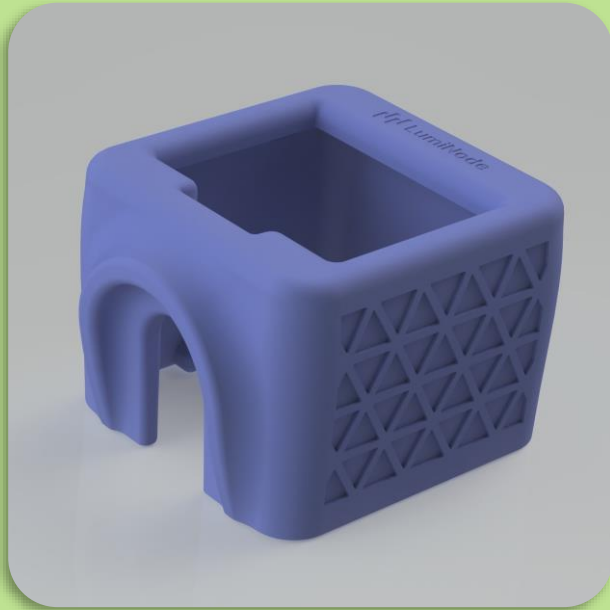
Real world dimensioned CAD model of the former button electrical harness.

Used for accurate CAD and project tolerances and for assembly check of finished design.



AOMS TECH INC. PROJECTS

Product Skin Design



Custom rubber model skin for ruggedized products used for every rented node.

Textured exterior and debossed branding for ease of installation on existing product with compatibility with existing mounting hardware ecosystem.

Protective rubber skin that has disposable acrylic windows and protection of important sensor connector.

Injection modeled, brightly coloured silicon covers to absorb impact and protect against concrete splashes.



AOMS TECH INC. PROJECTS

Product Skin Design



Custom humidity sensor shell designed to expose the sensor while protection the PCB from high moisture.

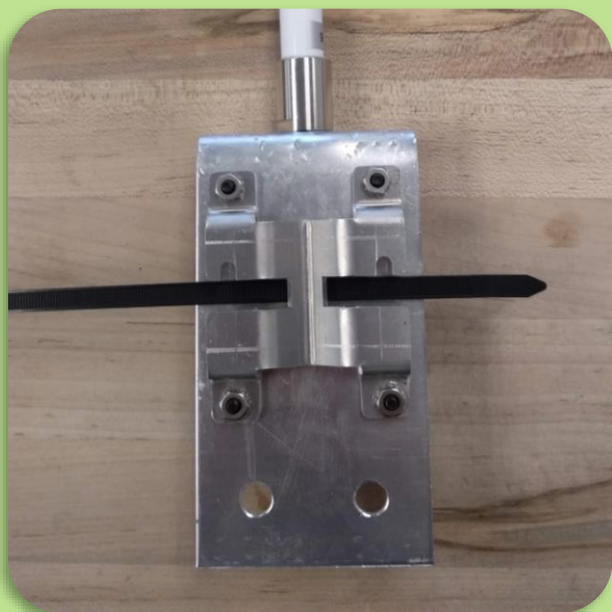
Injection molded shells used for all production cables to stop failures in the field.

Product critical custom sensor cable strain relief shells design and used in \$2,000,000 vertical concrete pour project where cable bear high loads as they are imbedded in the concrete to gather data of concrete temperature while curing.



AOMS TECH INC. PROJECTS

Product Skin Design

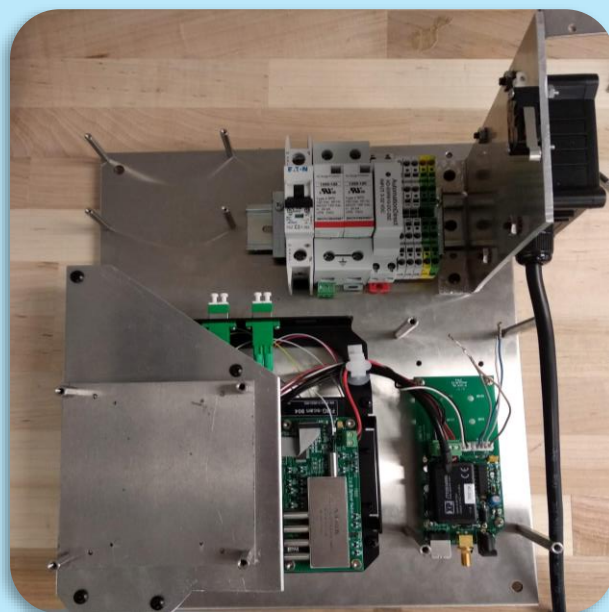


Custom hand-made brackets for 1 day turn around and redesigned universal mounting sheet metal bracket.

Able to be wall-mounted or pipe-mounted on the construction site for gathering information of the curing process of concrete.

Optical Data Acquisition Device layout and hand machined prototyped brackets.

Handmade repacked ODAQ used to optically sense strain, temperature, presence of hydrocarbons using a fiber optic sensor cables.



OTO LAWN INC. PROJECTS

Production Assisting Tool Design



An easily customizable, 3D printable handheld screw counter for low volume production assembly.

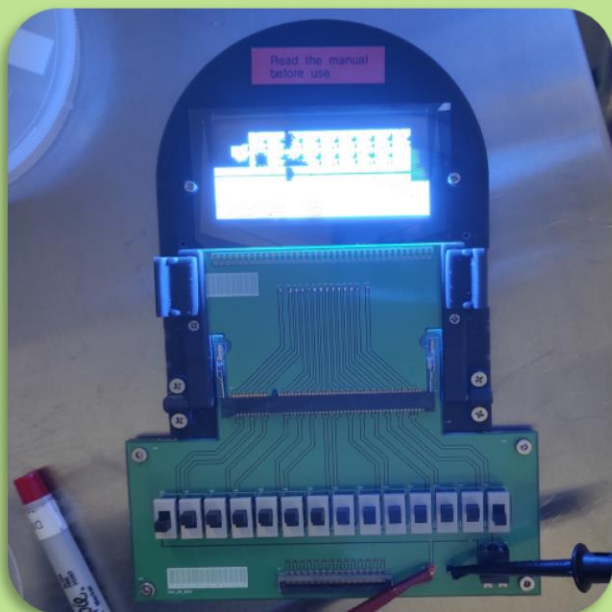
Each hand counter magnetically picks up a finite screw count in order to complete an assembly operation of the product.

A 3D printed drop-in lawn solution tester, designed and deployed to allow fast and discrete system testing of the dispensing of solution in the Oto Lawn automated lawn sprinkler as verification of function of the product.



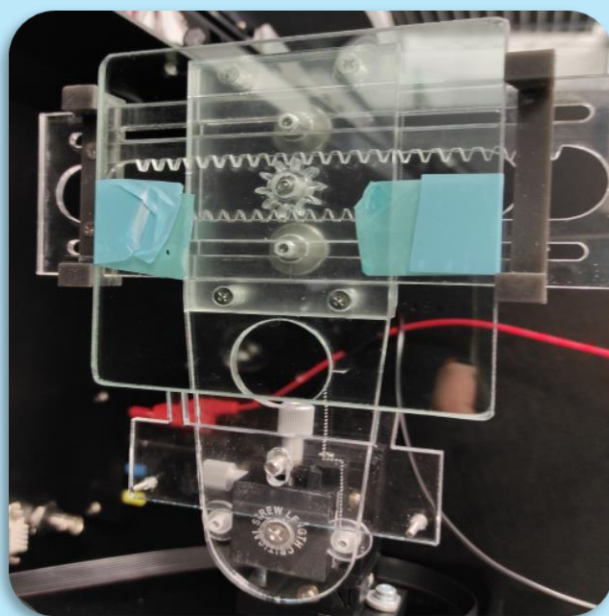
VUEREAL INC. PROJECTS

Production Assisting Tool Design



A custom modular testing system using 3D printed parts, and custom circuit boards to easily test small sensitive transparent displays change shape and test point location.

A variable transparent display holder made from mostly laser cut acrylic, two 3D printed parts, nut and bolts capable of expanding to hold displays ranging from 2" to 8" squared for light calibration testing.



ENGINEERING CAPSTONE PROJECT

Award Winning Safe Sound Surgery



Team of 6 mechanical engineering students with an advisor professor created a completely non-invasive cancer treatment using High Intensity Focused Ultrasound (HIFU), a 6 DoF motion machine, and a machine learning algorithm to treat breast cancer.

The use of 6 linear actuators with hall effect sensor in a modified steward platform to achieve 6 DoF, with another 1 DoF ultrasound probe to create real-time imaging of the ablated region of tissue.

The whole mechanism must be submerged in water to function using HIFU.



HOBBIES AND INTERESTS

Foundry and Metalworking



Designed an original natural gas forge torch for hobby foundry work.

Uses local 0.5 PSI natural gas pressure and a small shop vacuum to produce complete combustion.

Forge built and adapted for natural gas forge with a limited budget.

Temporary setup for first working prototype.

Using a combination of plaster of Paris and rockwool to reach the high temperatures.



HOBBIES AND INTERESTS

Welding and Metalworking



Metal foundry tools for crucible handling made with welding and limited machining tools.

Welding experience with a small home flux core welder and from my mechanical engineering welding and joining specialization.

Metal casting with temperatures to melt cast iron at 1500 degrees Celsius.

Casting aluminum, copper, brass and different metal alloys into ingots for later use.

Used muffin tins as cheap ingot molds.



HOBBIES AND INTERESTS

Metalworking and Knife Making



Custom aluminum branding stamp used on leather pen roll.

Made with an aluminum ingot from the forge.

Aluminum gathered from old hard drive chassis and soda cans.

01 Tool steel knife with maple handle scales and SS pins.

Handmade full tang blade profile with angle grinders and a filing jig for the bevel.

Heat treated in the forge, with handmade maple wood scale from a firewood log.



HOBBIES AND INTERESTS

Leather Working



First time handmade leather fountain pen roll with initials branded on the inside bottom right corner.

First veg tan leather travellers notebook for every day notetaking.

First attempt at a handmade veg tan wallet with 2 bifold, 2 hidden sideways pockets and 8 totals card slots.

Wallet designed from scratch with prototypes made from cheaper vinyl to prove the tolerance and dimensioning.

