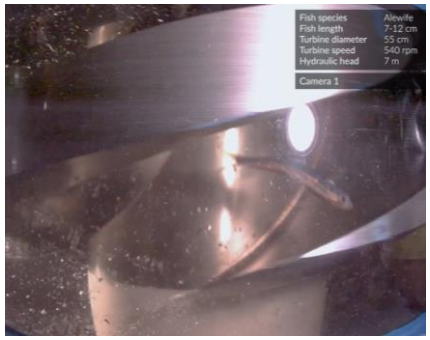
Engineering Portfolio

Peter Ascoli

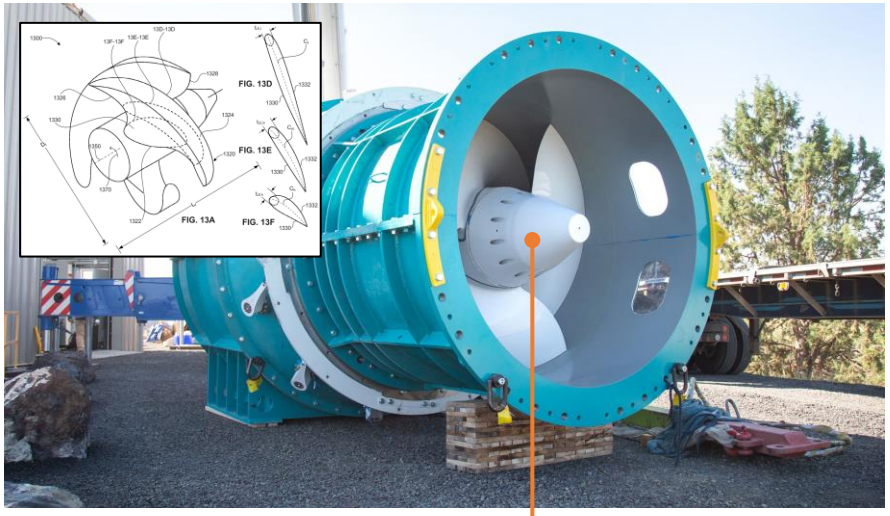
The content presented here is selected to show technical breadth, contribution, and growth. Review of this portfolio is best supplemented by my resume and an in-person discussion.

All photos and details shared in this document are publicly available information

Natel Energy: First MW-Scale Installation of the RHT

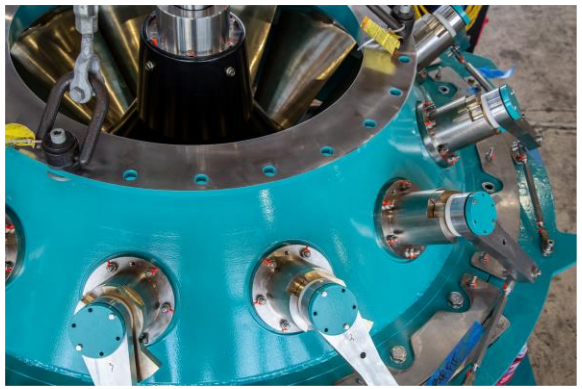


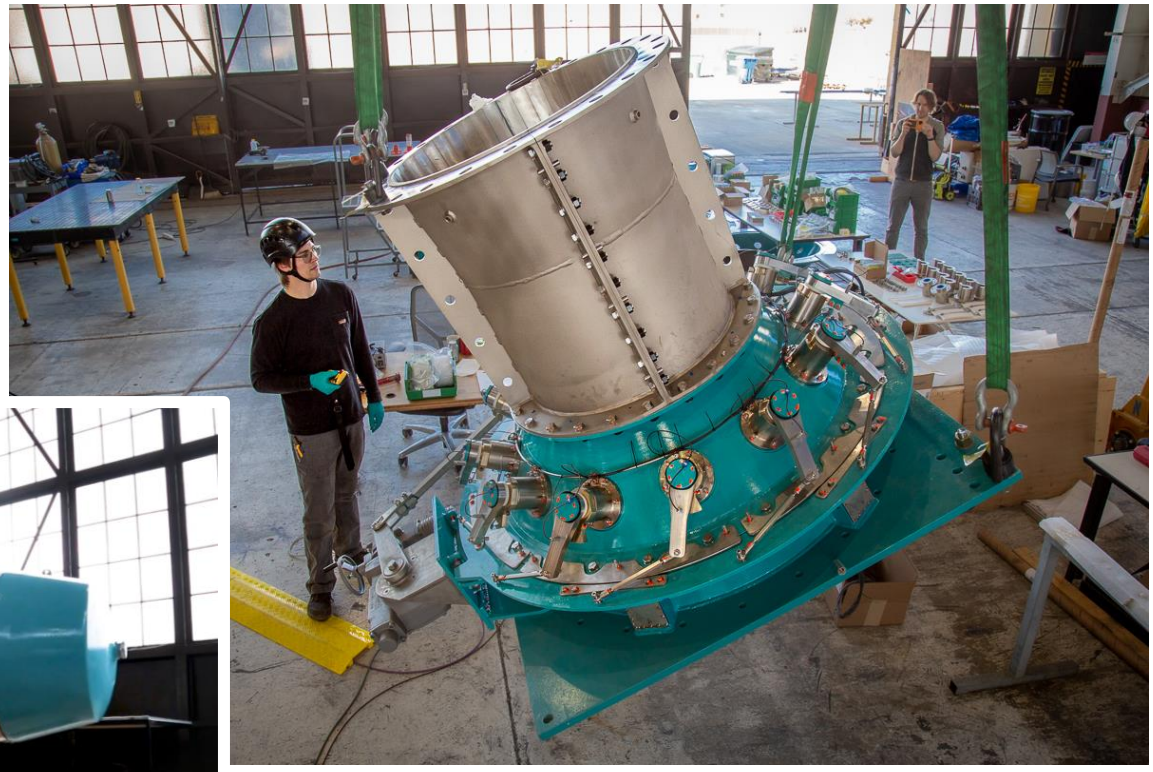
Hydraulic actuation system
for guidevane angle control



Responsible for the first MW-scale composite propeller featuring wide, swooping, cantilevered blades for fish safety. Commissioned in 2020 and has run smoothly for all water seasons since.

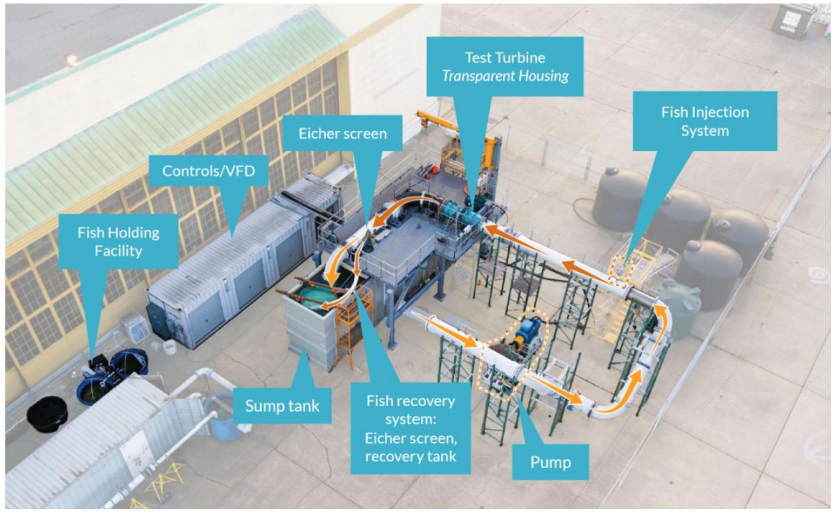
Natel Energy: First European Installation of the RHT

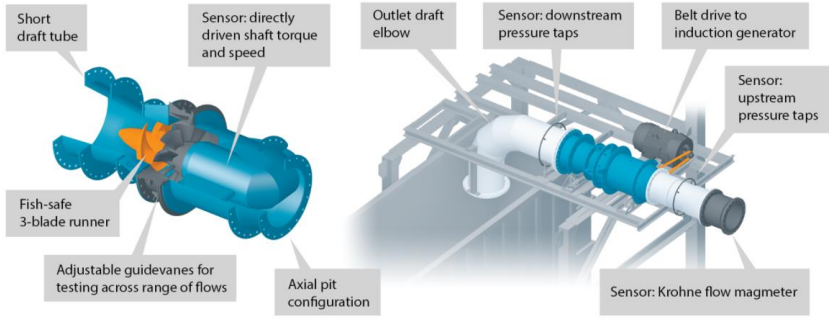




Led turbine structural design, responsible for the major weldment fabrications, and responsible for auxiliary systems such as guidevane actuation.

Natel Energy: RHT Other





Responsible for non-mechanical maintenance this critical hydraulic test loop, such as controller improvements. Responsible for control systems and instrumentation design on a smaller loop not pictured.

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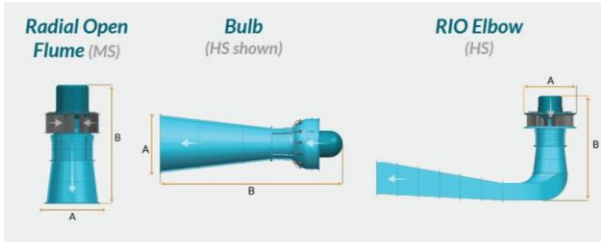
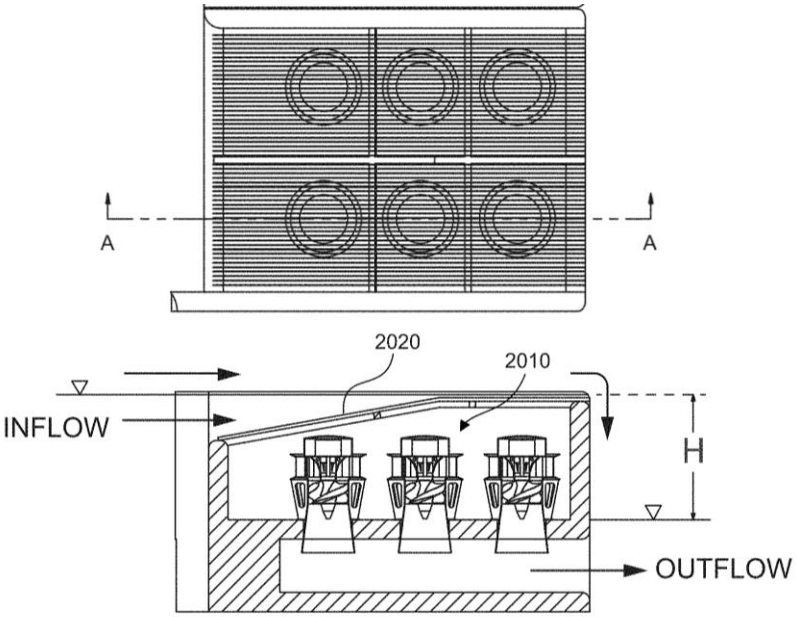
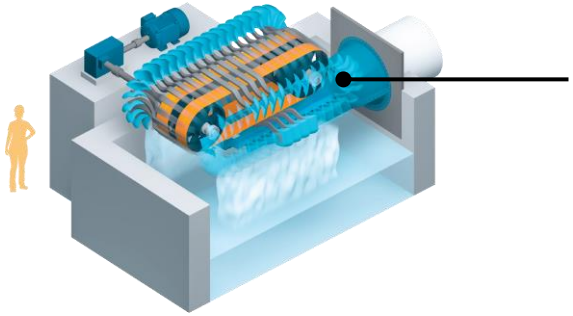




Developed plant designs tools for quickly selecting turbine sizes, layouts, and plant features needed for economical site designs.

Natel Energy: Linear Pelton



Linear Pelton – the linear, conveyor style turbine Natel was producing when I joined the company

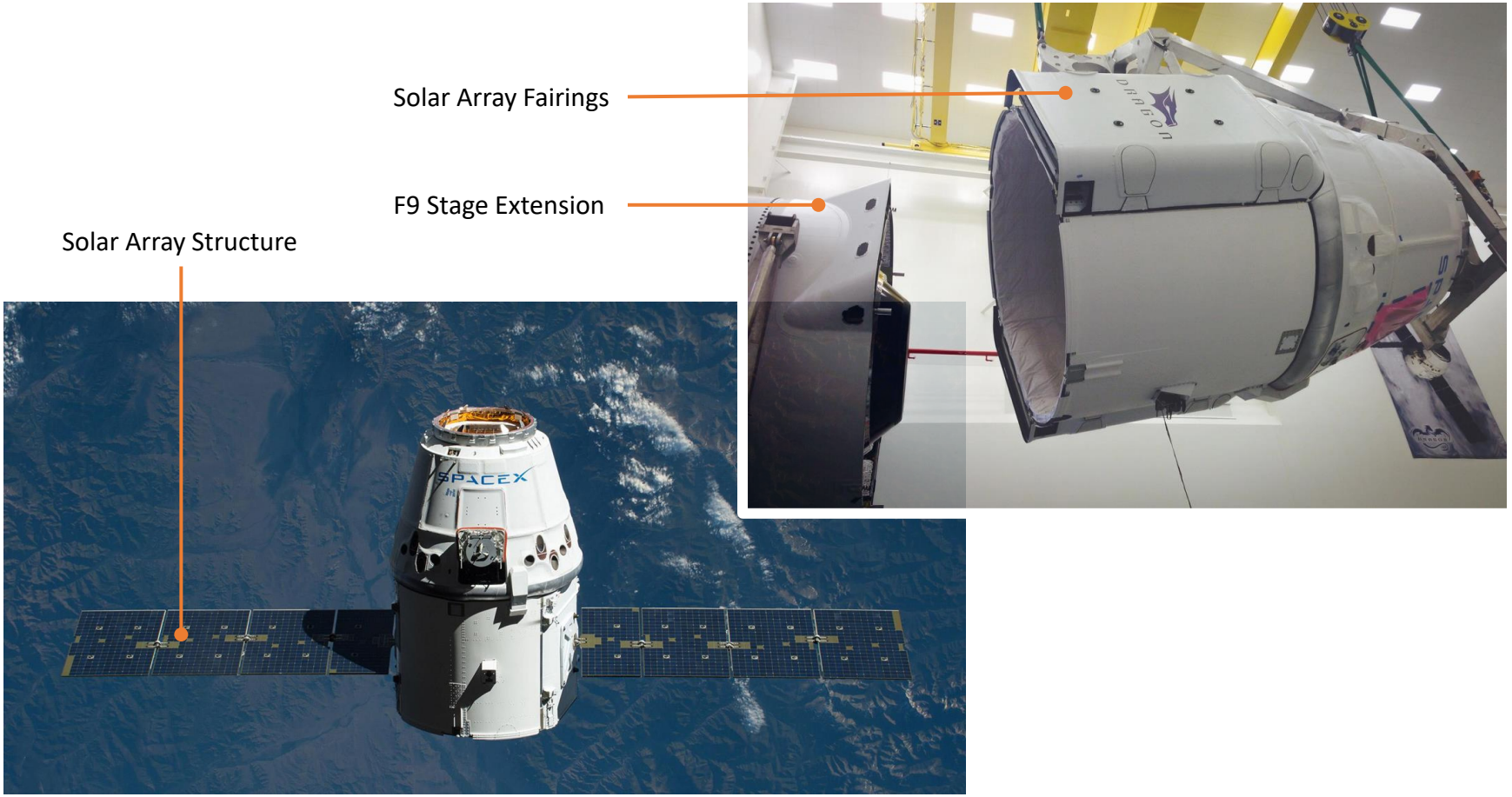
One of many fatigue testers I've designed: A pneumatically driven test of chordal action on belt attachments under belt tension. Other test rigs have since included advanced controllers, hydraulics, electromechanical components, and applied loads up > 10,000 lbs.

A composite cross beam of my design, being successfully dynamically tested to replace fatiguing metallic components.

SpaceX: Dragon 2 Interior

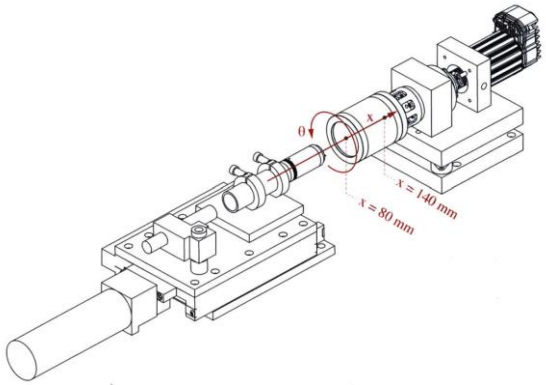
Responsible for interior backbone, display structure, and crew storage structures (blue outline)
Personally installed parts on DM1-Crew1 (all shown here). SpaceX has currently flown Dragon Crew 1 – Crew 5.

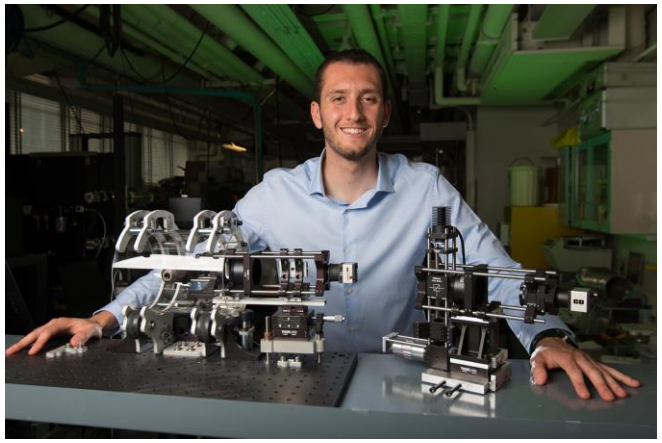
SpaceX: Dragon 1 Trunk Composites

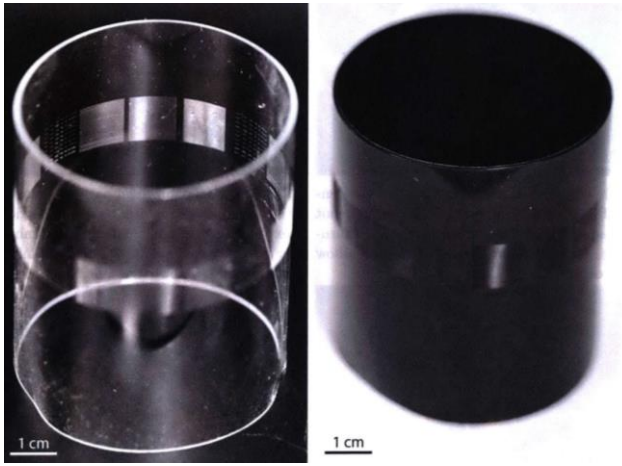


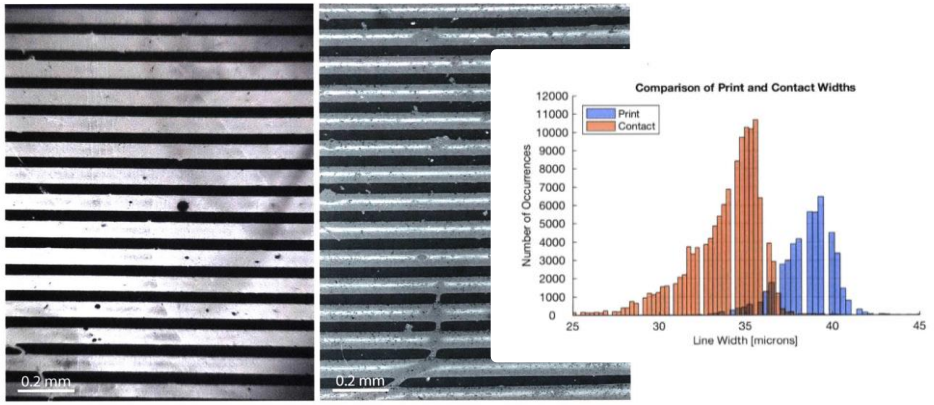
Components flown on Dragon 1 Commercial Resupply Missions (CRS) to the International Space Station (ISS). During my time at SpaceX, I managed parts for CRS13-CRS18 and witnessed CRS13-CRS15 flights. Dragon 1 retired after CRS22.

Masters Thesis: Stamp Manufacturing





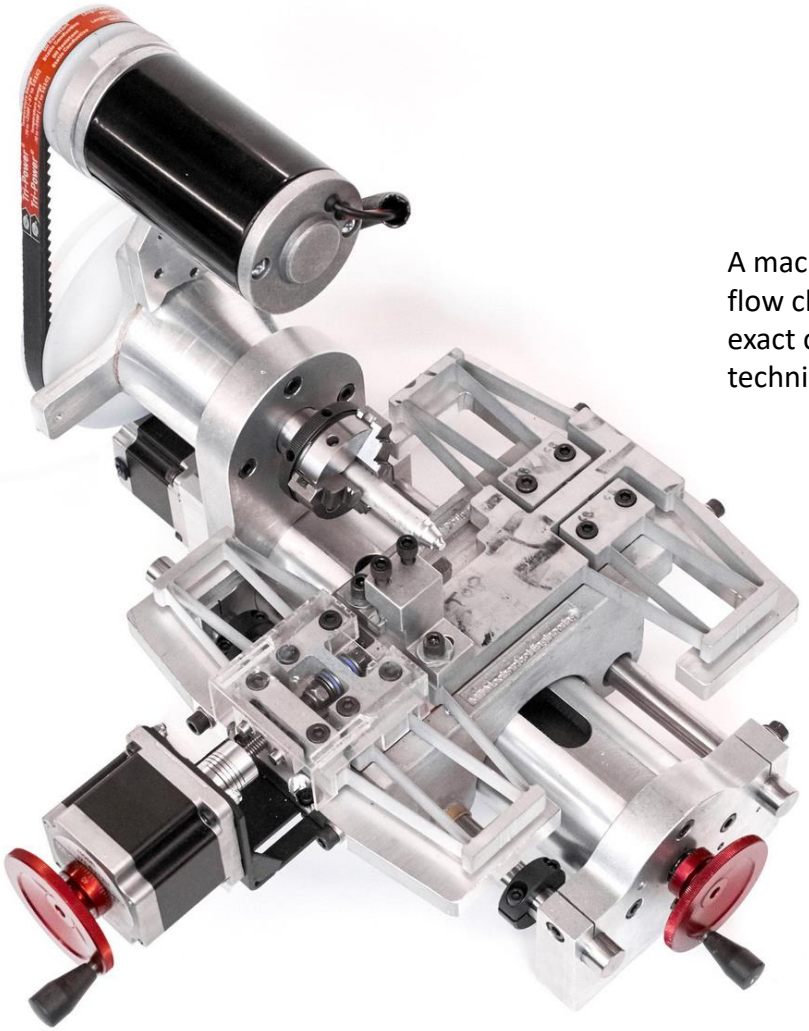




(a) Print image. (b) Contact image.

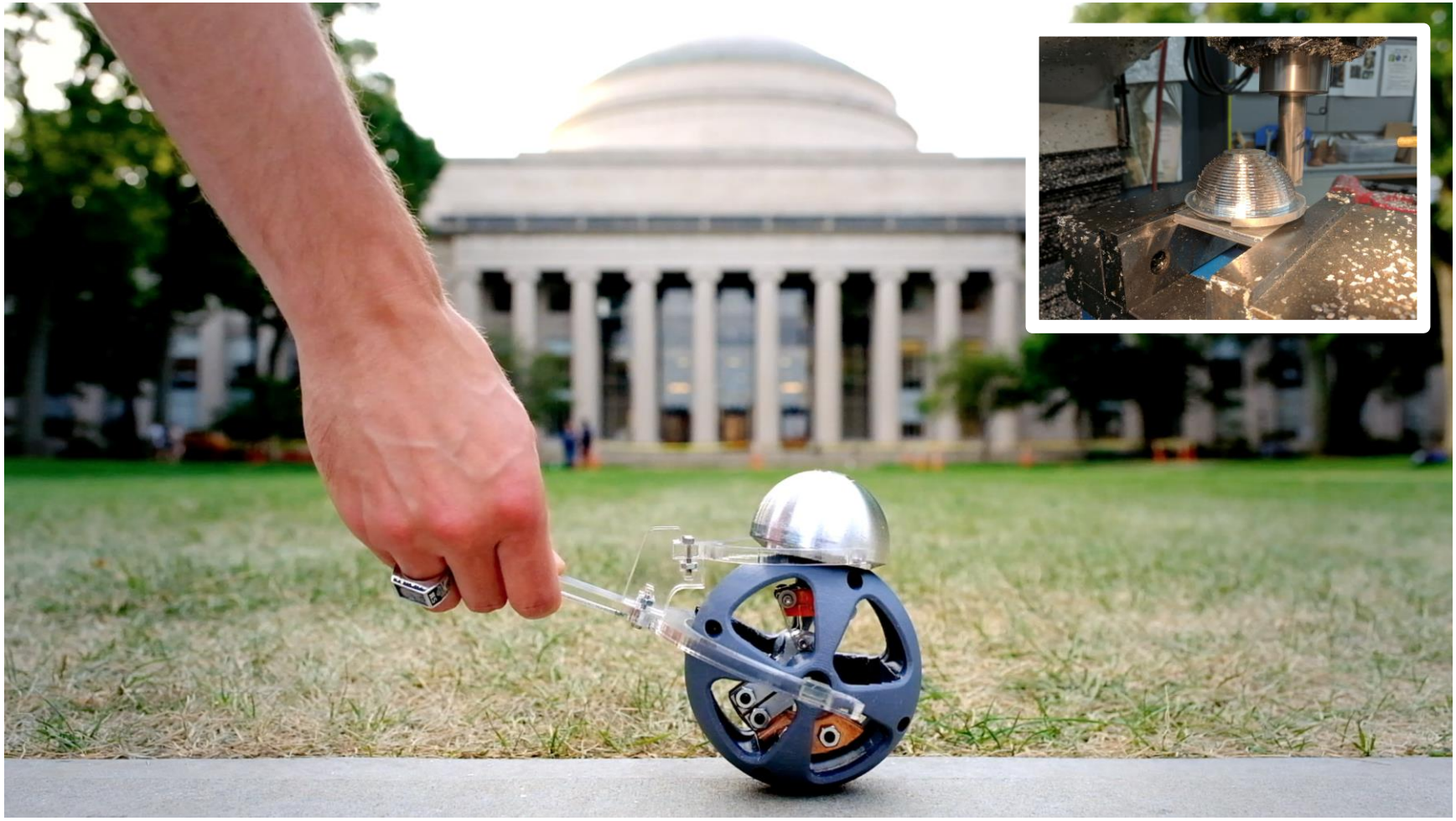
Investigated the variation of micron-scale features and print dimensions in roll-to-roll micro-contact printing

Graduate Projects: Desktop Lathe



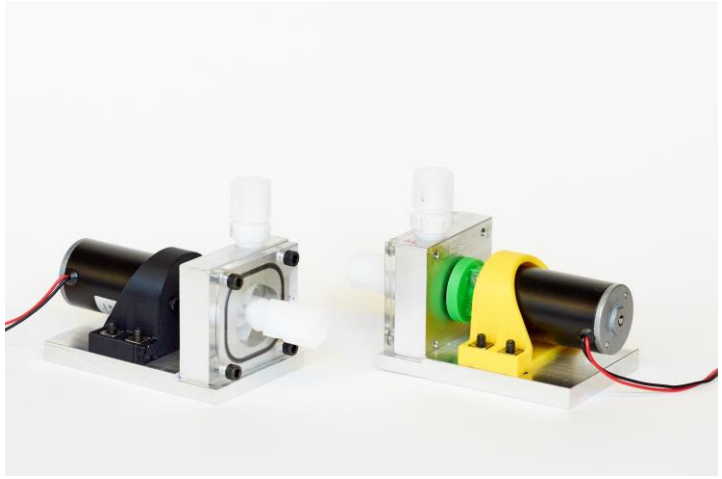
A machine design project focusing on datum flow chain management, stiffness budgeting, exact constraint design, fabrication techniques, and flexure mechanisms.

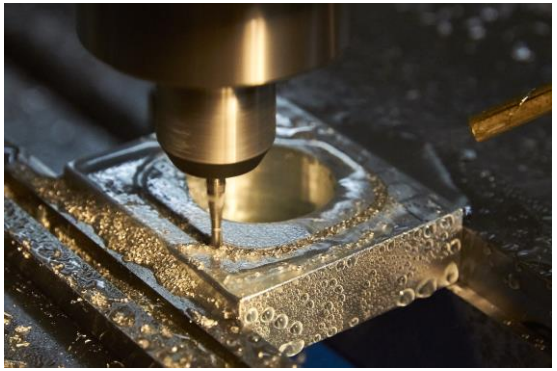
Graduate School: BetaBeta8



A personal project to improve CNC milling skills, machining parts from aluminum, steel, and copper.

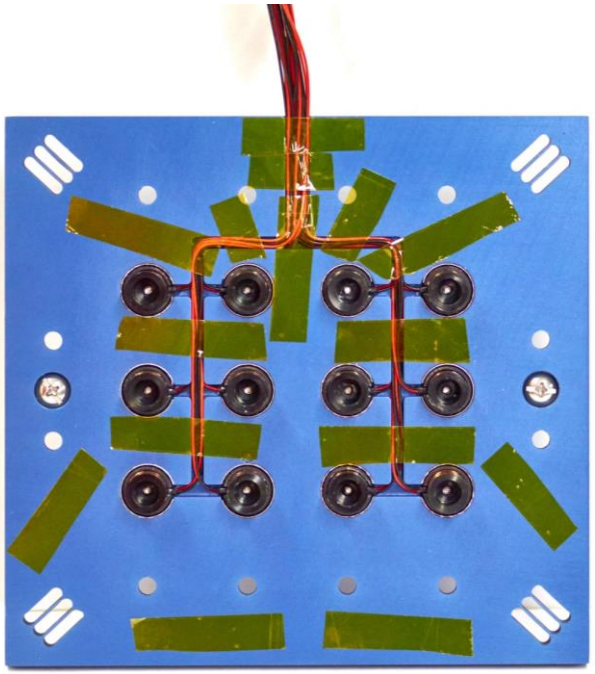
Graduate Projects: CNC Pump





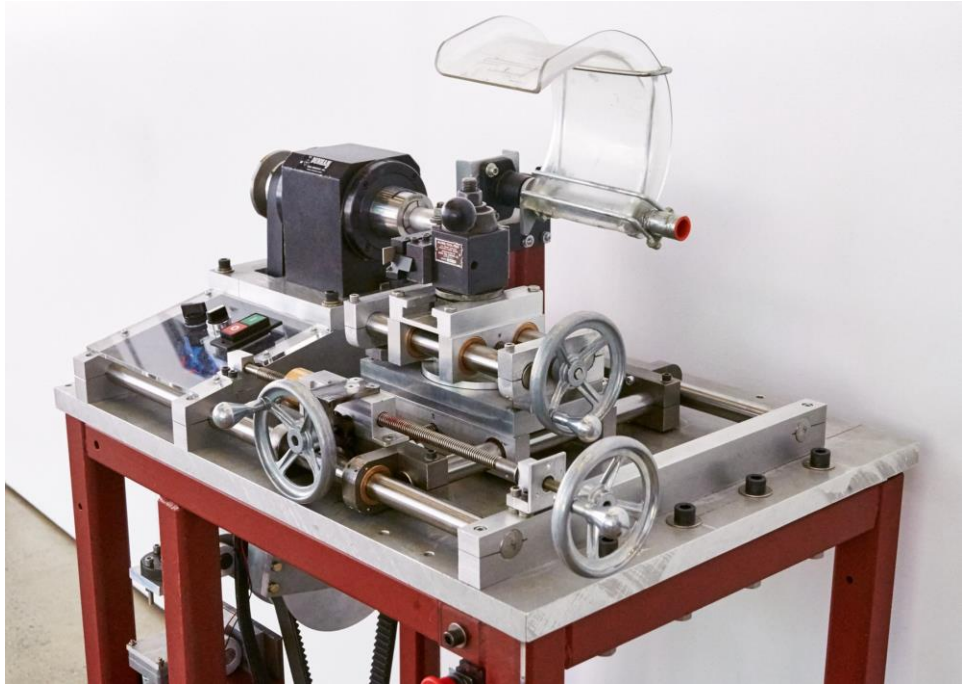
I helped develop and teach a CNC milling course with three other student-run machine shop technicians. A simple pump allowed for teaching how to machine with different materials and CNC techniques.

Graduate Projects: Cell Compression Apparatus



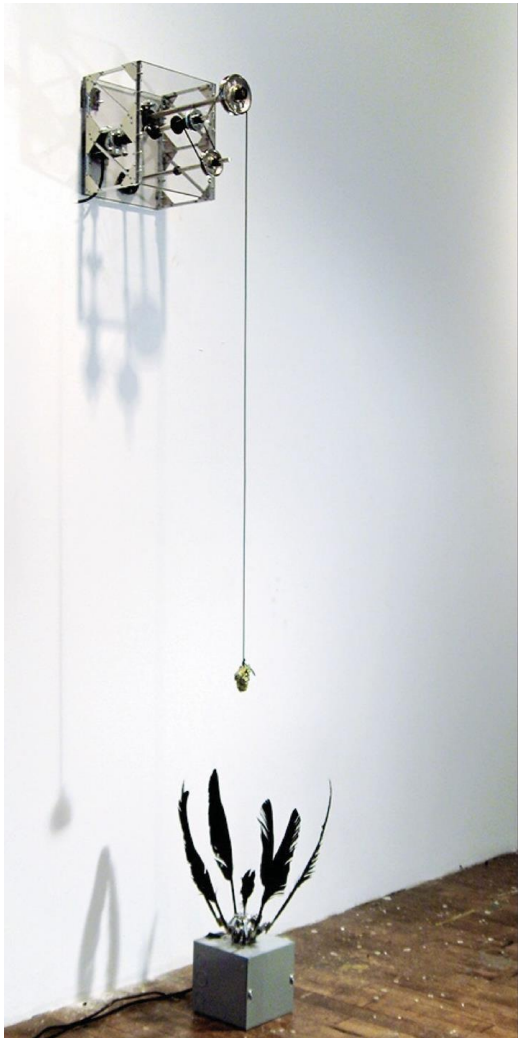
A medical device created for dental researchers to apply cyclic compressive forces to tissues using voice coil actuators.

Undergraduate Projects: Second Operation Lathe



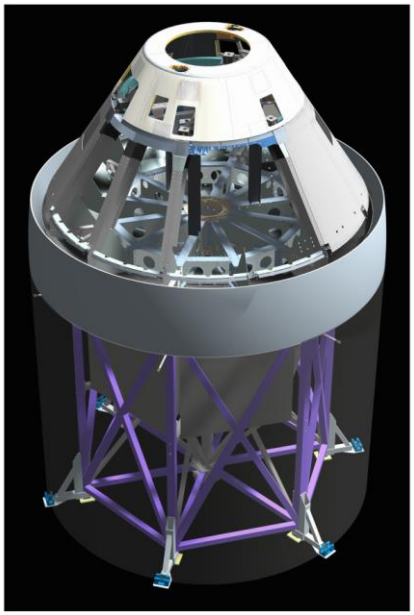
A senior machine-design project to provide the machine shop with a lathe for small turning jobs. Personally machined most of the components.

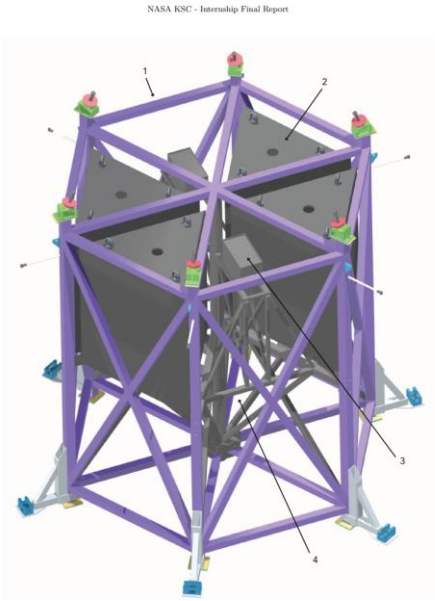
Undergraduate Projects: LURE



A kinematic sculpture designed and fabricated for a local artist. Focus was placed on materials, shape, weight, overall aesthetic, and ease of installation.

NASA Internship: Orion GSE





A structural design proposal for a mass and cg simulator to occupy and existing OML mockup of the Orion service module.

A simple hoist structure for lifting separable umbilical connectors in testing.

A college internship at NASA Kennedy Space Center, designing ground support equipment for Orion/Artemis and SLS. Recognized as the 2014 NASA Intern of the Year for my contributions.