

Engineering Portfolio.

by Kian Raissian

About

Mechanical Engineer
BS, Olin College of Engineering
Class of 2020

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About Me

Kian Raissian



I am a mechanical engineer with experience in climate technology, heavy industry, vehicle engineering, and aerospace. I am passionate about creating user centric engineering solutions with high impact.

My journey in user centric engineering design began during my time at Olin College. The curriculum initially instilled the importance of user oriented design through design coursework, which led me to choose to partner with Toyota Mobility Solutions for my senior capstone design project.

I continue to be propelled by this passion as I interact with different customers, clients, stakeholders, and teams within the framework of my engineering practice.

Outside of my career, I enjoy cycling, cooking, and playing the cello.

OEM MK2-MK5 Electric Formula Vehicle Design

[For More Details ↗](#)

10.2016-05.2020

CLIENT

Olin Electric Motorsports/Olin College

PROBLEM

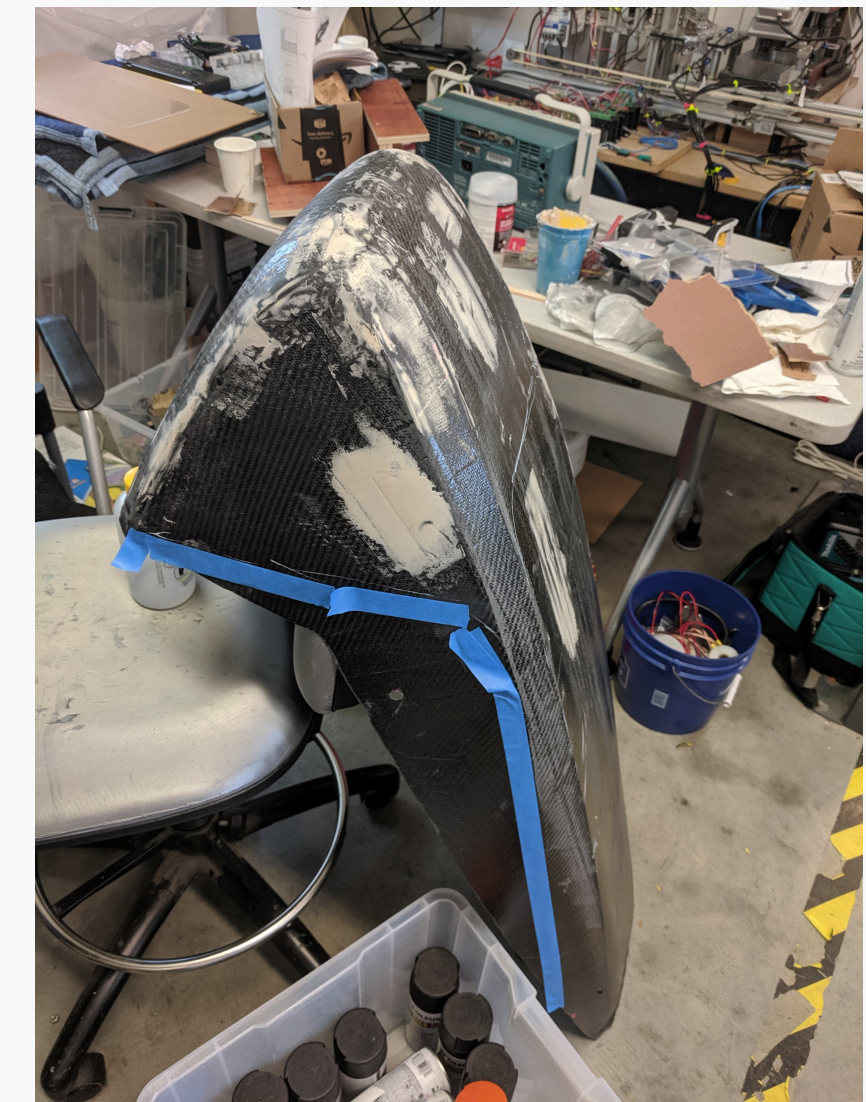
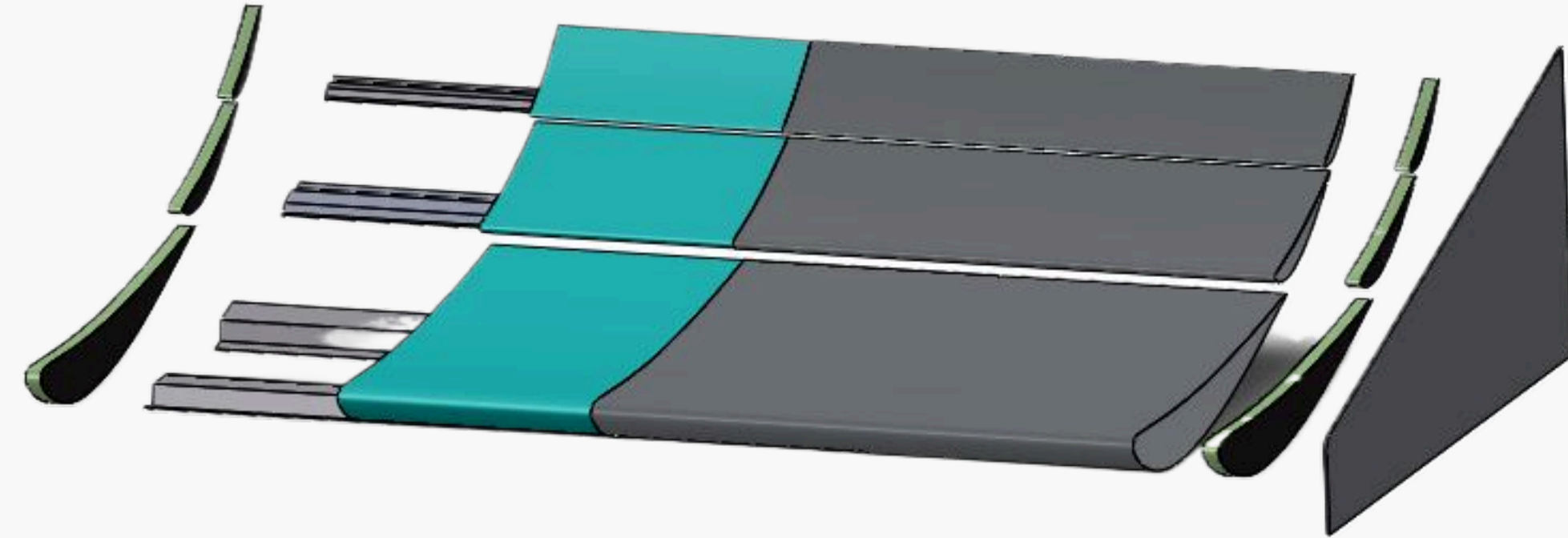
My project team in college was responsible for designing and building an electric formula style race vehicle to participate in annual races.

SOLUTION

The team designed and built a race vehicle every year that had to pass race inspections and compete in events to test our vehicle's capabilities. Over the four years I was a part of the team, I designed and manufactured our exterior body panels for 3 of our vehicles from fiberglass and carbon fiber, and spent my last year on the team designing an aerodynamics system, along with building a framework for the team to continue learning about composites and aerodynamics in race cars.

SKILLS

Mechanical Design and Analysis, Composites Design and Fabrication, CFD, Assembly and Integration, Vendor Management



A Powered Wheelchair for the Digital Age

[For More Details ↗](#)

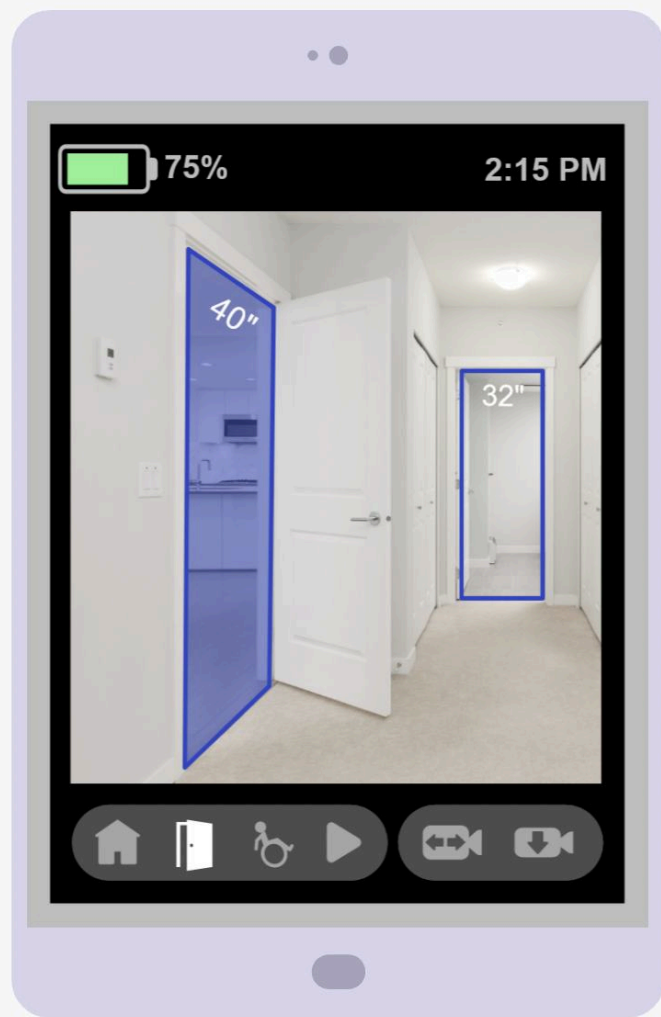
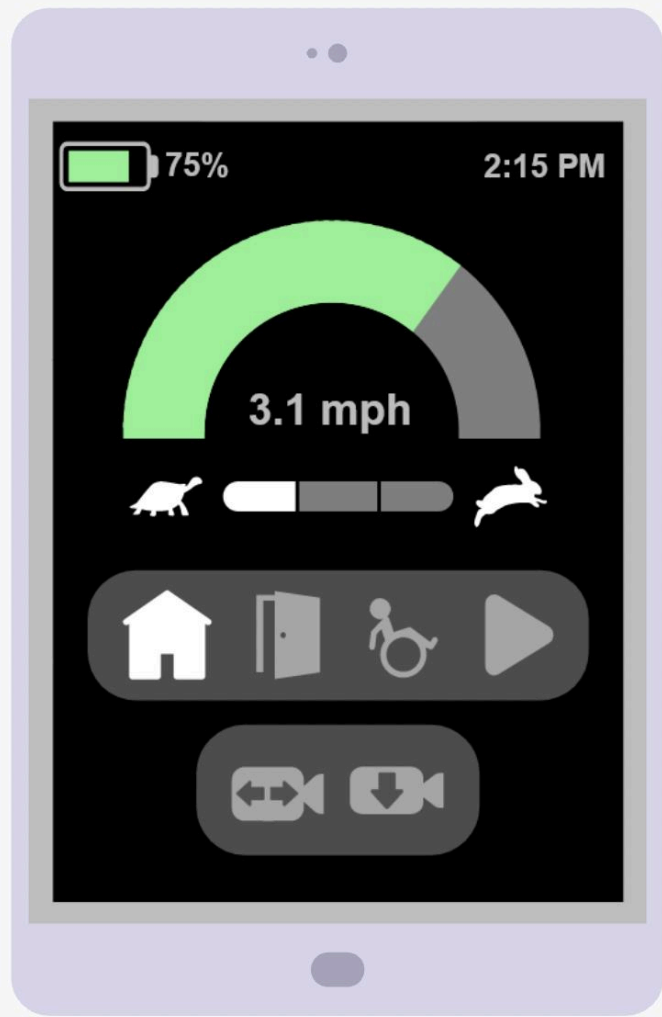
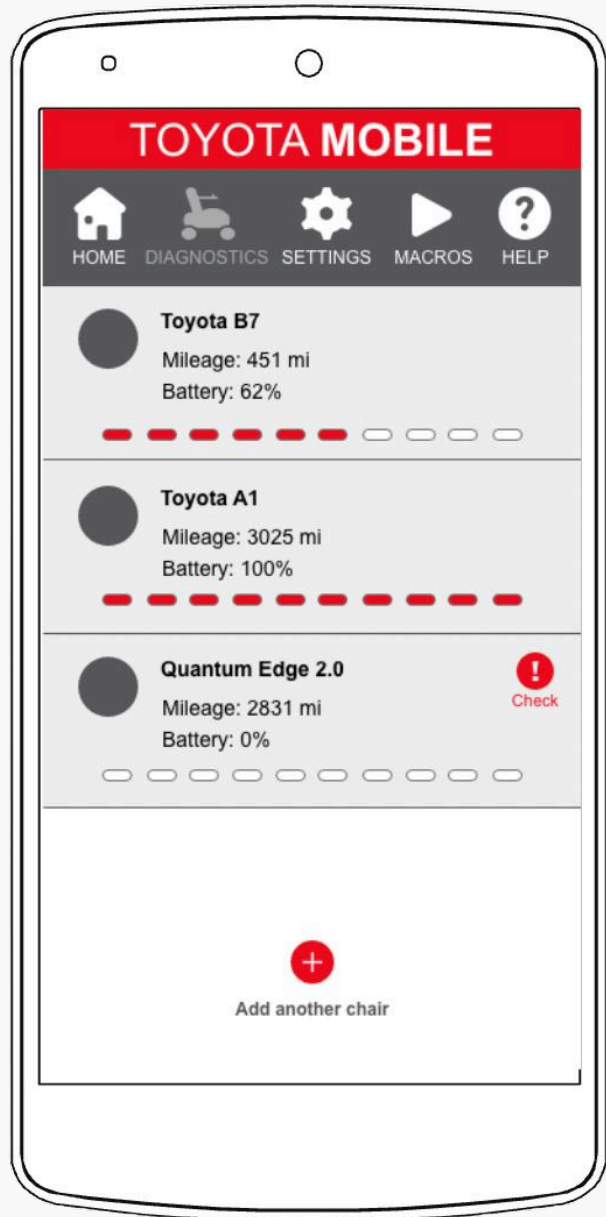
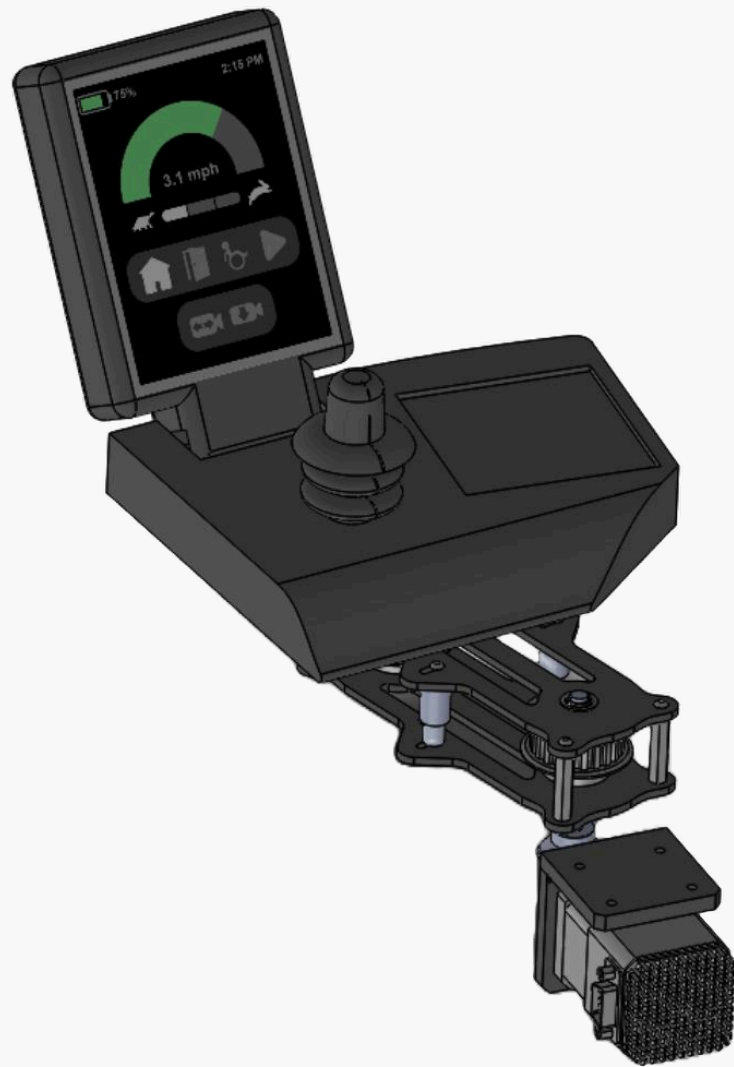
10.2019–05.2020

CLIENT
Toyota Mobility Solutions

PROBLEM
Toyota wanted to design a new powered wheelchair that matched the maturity of today’s integrated technology and solved problems users had with their current wheelchairs.

SOLUTION
My team and I conducted extensive research through existing surveys, data, and our own interviews with powered wheelchair users to design a new control module that was more sleek, robust, and adaptive to meet the broad demographic this community represents. I led the mechanical design of the armrest module, and along with my team, created a new digital interface for the module’s screen, along with an accompanying smartphone app to allow for more capability.

SKILLS
Mechanical Design, Graphic Design, UI/UX Design, User Interviews, Market Research, User Centric Design, Project Management



TONKA: A Zero Emissions Mining Truck

[For More Details ↗](#)

01.2021-02.2022

CLIENT

Anglo American

PROBLEM

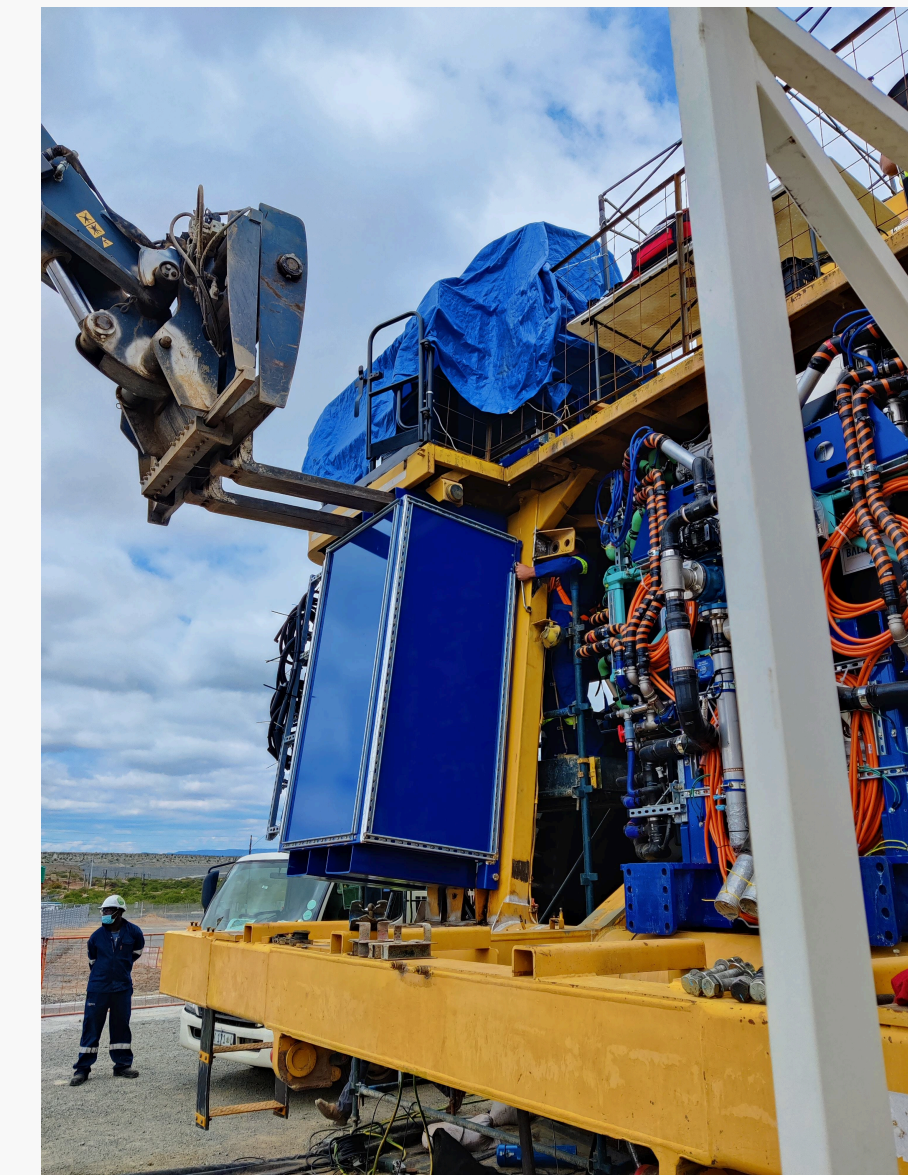
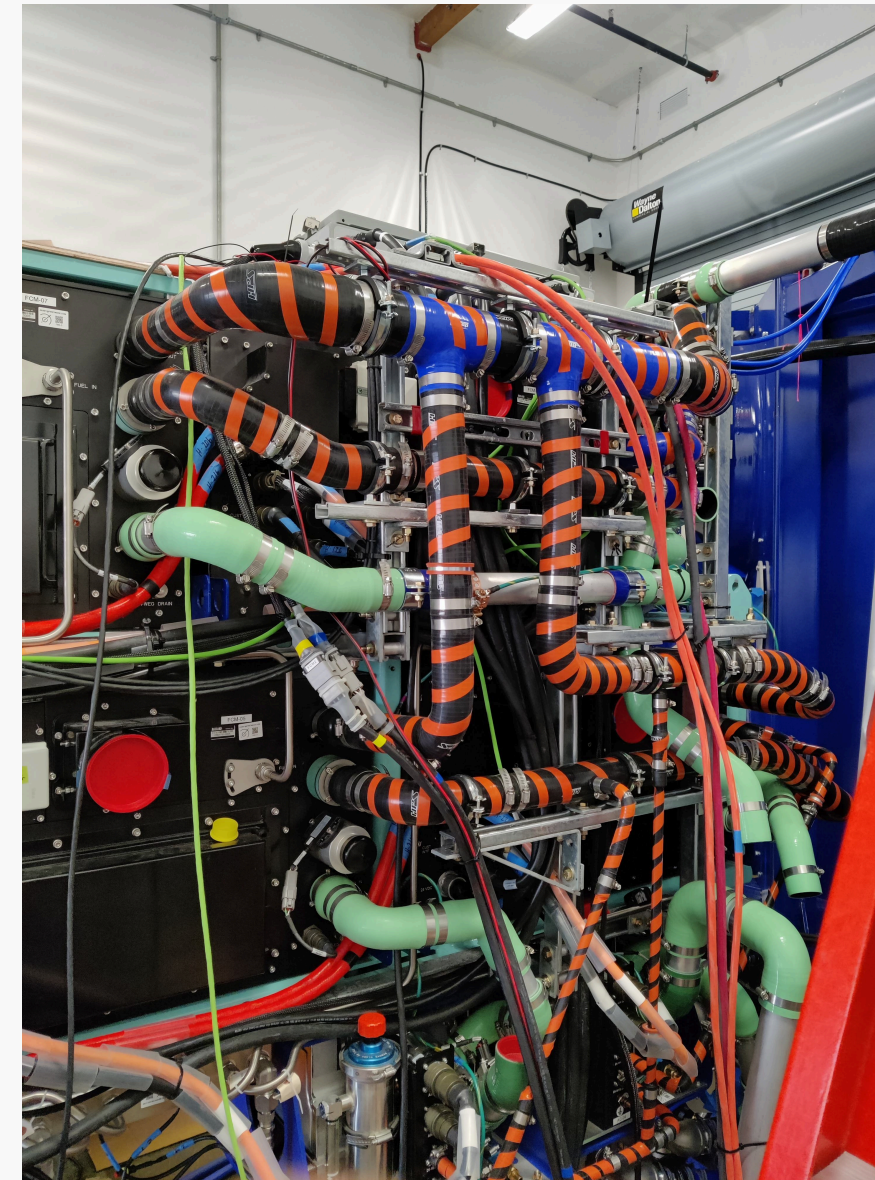
Anglo American, a large mining company, was a client of First Mode when I joined in 2021. They wanted to extend the lifetime of their available vehicles by retrofitting decommissioned trucks with a fuel cell and battery powertrain system.

SOLUTION

The team fitted 750 kW of fuel cells, 1250 kW of batteries, and large hydrogen storage tank onto a Komatsu 930E-4 mining truck at a platinum mine in Mogolakwena, South Africa. I designed the fuel cell's coolant, air exhaust, and hydrogen delivery system. Additionally, I travelled to the mine in South Africa to act as the integration liaison. I spent time with the mine team fielding questions and concerns to help inform design decisions on the future trucks.

SKILLS

Mechanical Design and Analysis, Vendor Management, Fluids Design and Analysis, Systems Design, Packaging, Assembly and Integration, Project Management



RETRO: An Improved Retrofit of a Mining Truck

06.2022-01.2024

[For More Details ↗](#)

CLIENT

Anglo American

PROBLEM

After a successful proof of concept with TONKA, Anglo American wanted to continue their relationship with us, allowing us to improve on our past design.

SOLUTION

This retrofit consisted of 1100 kW of fuel cells and 900 kW of batteries. I took what I learned from our previous retrofit across all the teams I interacted with to start a new design. I choose a new fuel cell and architecture, designed the mounting solution for the fuel cells, and created an assembly and integration plan that would allow the system to come together in a tight manufacturing timeline. I also worked cross functionally with different engineering teams, acting as a liaison to communicate requirements and design status.

SKILLS

Mechanical Design and Analysis, Vendor Management, Structural Finite Element Modeling, Systems Design, Vehicle Architecture, Assembly and Integration, Project Management

