ASME Urban Concept Motor Mount

OBJECTIVE: To design, manufacture and implement a motor mounting system for the 2022 Shell Eco-Marathon Urban Concept Vehicle

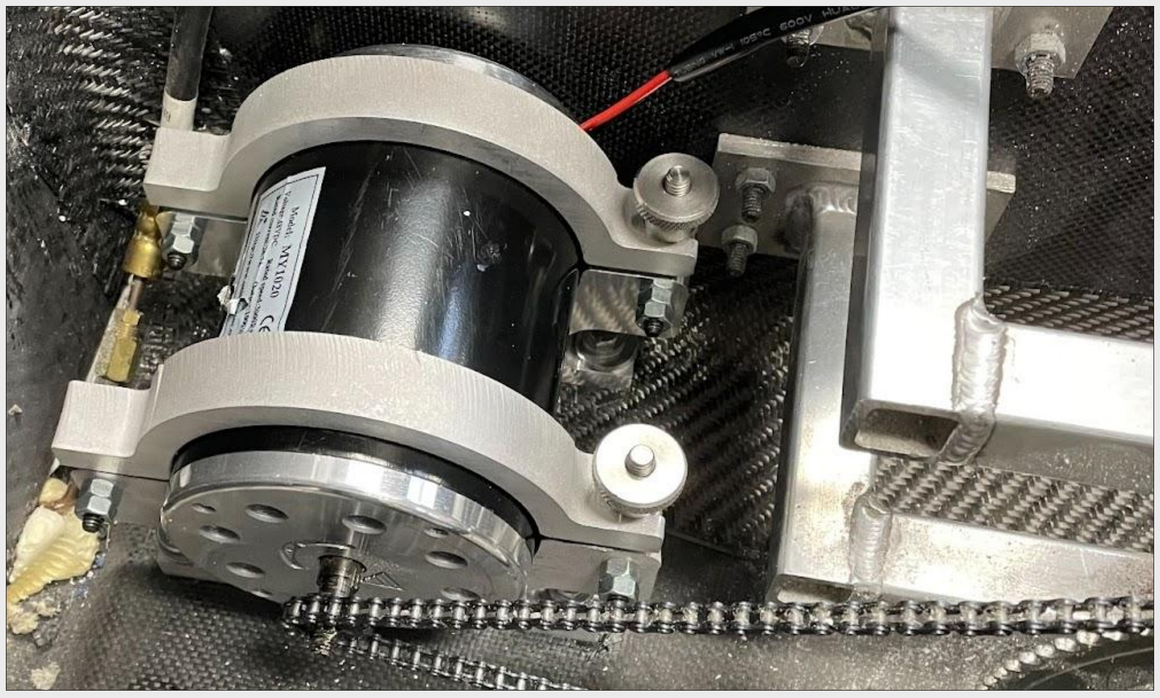
BACKGROUND

The ASME Club from Oregon State University is competing in the 2022 Shell ECO-Marathon, an international energy efficient vehicle competition. In April of 2022, the Urban Concept team will be going to Indianapolis to debut the new energy-efficient electric vehicle, which will come equipped with a horn, working windshield wipers, blinkers, luggage compartment and a newly designed carbon fiber shell.

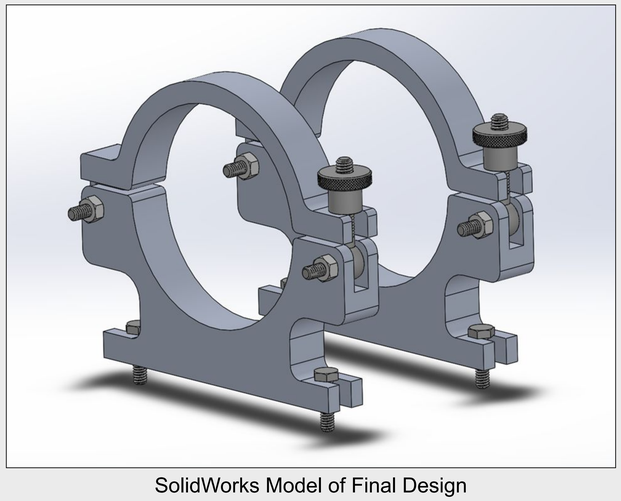
Team 119 is responsible for developing and mounting the drivetrain for the Urban Concept vehicle, particularly a mounting system that:

- is lightweight
- securely restrains electric motor in vehicle
- allows for quick installation
- reduces required fasteners
- reduces tools needed to install motor
- properly aligns motor in vehicle

2019 OSU ASME Club Urban Concept Competition Vehicle



Finished Motor Mounting System



SolidWorks Model of Final Design

MÖTÖR CRÜE

HOW DOES IT WORK?

- Motor is secured by two O-ring hinge and clamp fixtures
- The hinge and clamp design design allows for easy installation and removal of the motor
- The bottom half of the mechanisms are secured to the bottom of the chassis with ¼-28 screws into potted inserts
- To remove the motor, the knurled knobs are loosened and the top part of the fixture is rotated about the hinge

Team members: Jason Burns, Tristan McCabe, Colton Morgan, Nicholas Moufarrej, and Cade Schneider

Milling Clamp Features

DESIGN SOLUTION

- This mount is manufactured out of 6061 aluminum alloy to provide sufficient strength
- Parts cut on water jet, then finished on end mill
- The rubber padding inside the inner diameter reduce vibration and increase friction on the motor housing
- The design utilizes robust steel fastener

Waterjet result

Presenting final design to the faculty advisor, Dr. Hoyle