

Product Assembly Automation Manufacturing the Future



Department of Mechanical and Aerospace Engineering

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BACKGROUND

Alcon's goal is to make the assembly process of the Legion, a cataract treatment device, as effortless and straightforward as possible. In assembling the Legion, it is necessary to gain access to three of it's four sided chassis.

Currently, workers assemble the Legion device by hand. Continuous manual tightening of screws can cause carpal tunnel in employees. To relieve this stress, a mechanism needs to be designed to work alongside Alcon's UR robot in order to flip and assemble the Legion with minimum effort.

OBJECTIVE

The objective of this project is to design a flipping mechanism that simplifies the assembly process of the Legion.

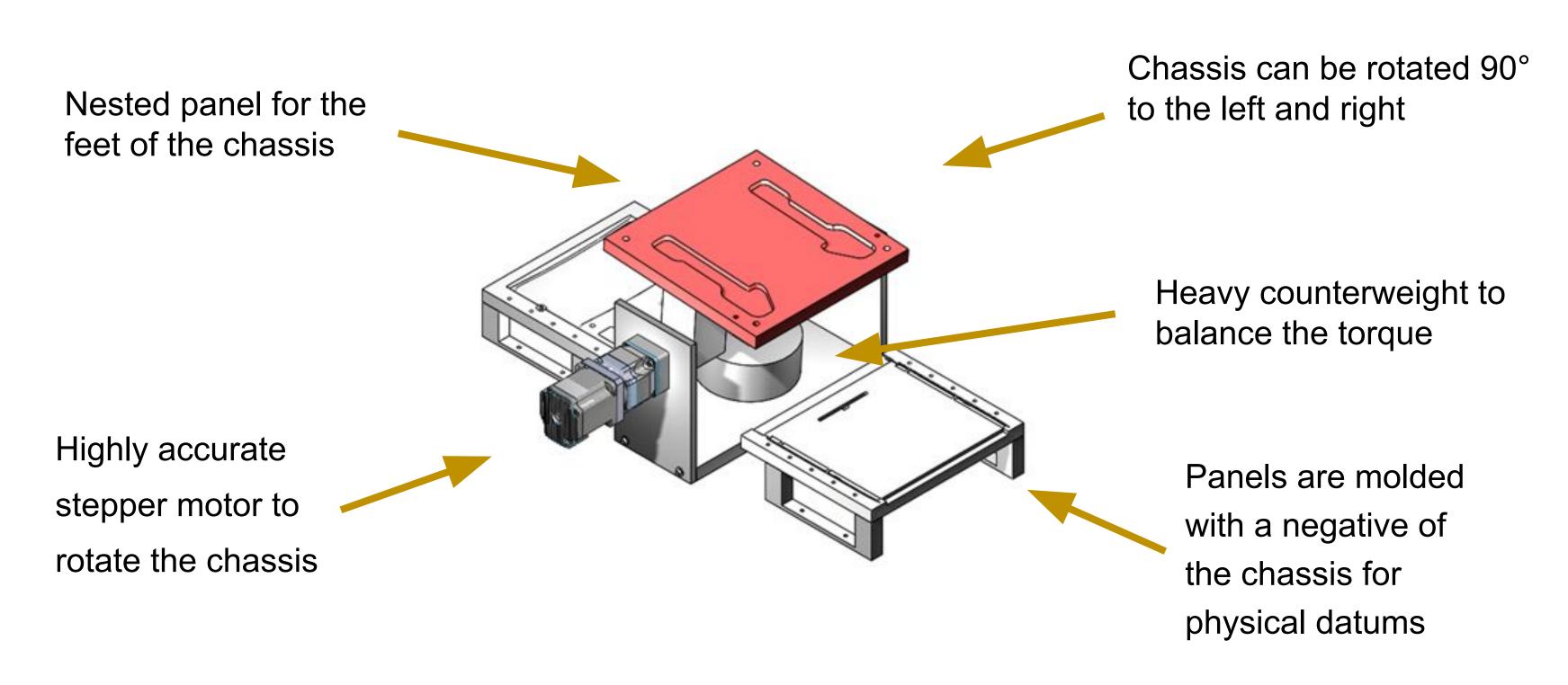
REQUIREMENTS

- Create an autonomous flipping mechanism
- Flipper will allow easy access to the chassis' 3 surfaces
- Create accurate and precise datums
- The assembly process will not exceed 300 seconds
- Ensure a reliable and repeatable system

DESIGN INNOVATION

Three Part Flipper Middle panel rotates 90° in both directions Pins lock and unlock with pneumatic linear actuators to alternate an axis Panels are to rotate around molded with a negative of the chassis for physical Electric linear actuator moves the middle panel up and down datums

Pivoting Arm



TIMELINE

Fall: Research and design several flipper concepts. Present to Alcon and agree upon two designs. Begin ordering parts

Winter: Prototype and test designs. Make modifications to models as necessary

BUDGET

This project is funded by Alcon. There is no set budget.

TEAM MEMBERS



Left to right: Andrew Marzban, Gregory So, Soha Foroughi, Christine Tran, Matthew Cruz, Anthony Nguyen, Majd Saleh, Ahmad Barbakh, Matthew Gonzalez, Blake Byrnes, Estin Liu, Quang Nguyen

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